



BIODIVERSITY AND TOURISM

Impacts and Interventions

René van der Duim

Wageningen University, The Netherlands

Janine Caalders

Buiten Consultancy, The Netherlands

Abstract: This paper sets a framework for intervention in the relationship between biodiversity and tourism against the background of the Convention on Biological Diversity. It is argued that intervention cannot and should not only be based on considerations of measurable impacts of tourism on biodiversity alone. This action should also be weighed against arguments of legitimacy, feasibility, and effectiveness of its various types. Currently, feasibility seems to be the main principle on which interventions are based. As most instruments are non-compulsory, they are effective only to a limited extent. For reasons of legitimacy, the position of small-scale entrepreneurs should receive more attention in international and national policy debates. **Keywords:** biodiversity, interventions, sustainable development. © 2002 Elsevier Science Ltd. All rights reserved.

Résumé: Cet article établit un cadre pour l'intervention dans la relation entre la biodiversité et le tourisme dans le contexte de la Convention sur la Diversité Biologique. On soutient que l'intervention ne peut pas et ne devrait pas être basée seulement sur des considérations des impacts mesurables du tourisme sur la biodiversité. Il faudrait peser aussi la légitimité, la faisabilité et l'efficacité des différentes sortes d'interventions. Actuellement, c'est la faisabilité qui semble être le principe maître sur lequel sont basées les interventions. Puisque la plupart des instruments ne sont pas obligatoires, ils ne sont efficaces qu'à un degré limité. Pour des raisons de légitimité, la situation des entrepreneurs à petite échelle devraient recevoir plus d'attention dans les débats de politique nationale et internationale. **Mots-clés:** biodiversité, interventions, développement durable. © 2002 Elsevier Science Ltd. All rights reserved.

INTRODUCTION

Tourism has long been considered a “clean industry”, without any negative effects on the environment worthy of mention (Bundesamt für Naturschutz 1997). However, this image is now outdated. Most parties are aware of the possible negative impacts and see the need for action (UNEP 2000). At the same time, tourism is able to contribute to a growing awareness of the value of nature (Urry 1992) and, hence,

René van der Duim is Lecturer at the Department of Environmental Studies (Wageningen University, Wageningen, the Netherlands. Email: <rene.vanderduim@users.rpv.wau.nl>). His research focuses on the relation between tourism and sustainable development, especially in the Netherlands and Costa Rica. **Janine Caalders** is Partner in BUITEN Consultancy, Utrecht, the Netherlands, a research group working in the fields of urban, rural and regional development and tourism. She is currently completing a PhD thesis on rural tourism development in Europe.

to public support for the protection of biodiversity. Development of tourism can also be a way to make nature reserves economically viable and to provide employment and income for the local population (UNEP 1996, 2000; Weaver 1999). In this manner, it can provide a viable alternative to other more damaging activities such as slash and burn agriculture, cattle farming, hunting, wood collection, mining, and the like (Collins 1998; Ross and Wall 1999). These characteristics give tourism an ambivalent position in relation to biodiversity. The tourism industry very much represents "a double edged sword for the socioenvironmental movement, in that it is an activity which is both reviled and revered. It has become a focus of criticism, as a result of its impacts and a focus of promotion, as a means of achieving sustainable development" (Mowforth and Munt 1998:156–157). This means that it occupies a specific position in policies aimed at the conservation of biodiversity.

This article aims to contribute to the discussion on tourism in relation to biodiversity. It reconstructs some of the theoretical discussions concerning the relation between the two and possibilities to measure impacts. It will be argued that measuring impacts of tourism on biodiversity is highly complex and costly and so-called "dose-effect relationship studies" show several weaknesses. Therefore, setting priorities for interventions is not just a matter of knowledge on impacts. Such attempts in the relation between tourism and biodiversity should also be based on considerations of legitimacy, feasibility, and effectiveness. This paper will also evaluate different types of interventions currently undertaken and propose some leads for future intervention.

Biodiversity as a Policy Concept

Musters, de Graaf and ter Keurs (2000) have asserted that biodiversity as a policy concept is successful. It was first used in 1985, then taken up by the National Forum on Biodiversity in Washington DC in 1988, and included in the Convention on Biological Diversity in 1992. The convention was one of the outcomes of the "Rio Earth Summit": the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil. Over 175 countries have now ratified it. In the past decade, many countries have been working on the implementation of the convention and the other agreements reached in Rio, among others through "Agenda 21".

The Convention on Biological Diversity was born out of the growing concern for the deterioration of nature, more specifically the extinction and decline of species. This outlook has been translated into a statement aimed to promote conservation of biodiversity. Arguments against its further loss refer to both the intrinsic or "non-use" value of nature and its utilitarian or "use" value. These have been further specified in many different ways (Bundesamt für Naturschutz 1997). The Dutch government, for example, discerns the following biodiversity values: the intrinsic value of all that lives; the importance of biodiversity for the quality of life and wellbeing; its contribution to life-supporting

systems as the motor behind ecological processes; and its economic significance (Ministry of Agriculture, Fisheries and Nature 1999).

In the convention, biodiversity has been defined as “the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems”. This definition refers to three types: diversity of ecosystems, for each ecosystem diversity of species, and for each species genetic variation. It is important to understand, however, that the objective of the convention is not just to “conserve” biological diversity, but also to pursue the “sustainable use” of its components and promote the fair and “equitable sharing” of the benefits arising out of the utilization of genetic resources (UNEP 1999:1).

With the addition of these latter two objectives, the policy goals for biodiversity are in line with those of sustainable development as defined after the Rio Conference. The convention is not only concerned with ecological sustainability, but includes social and economic sustainability as well. Because biodiversity is now approached from a broad point of view, it leaves more room to include societal interests. Such a broad point of view is important for several reasons. From an international political (and ethical) perspective, inclusion of “equitable sharing” is important in light of North–South relations. The growing concern for the deterioration of nature is a concern mainly of the developed world, whereas a large part of this nature falls under the jurisdiction of Third World countries. They generally are confronted with many social and economic problems, which are felt to be more urgent than environmental and ecological ones. In order to create support for biodiversity policies among them, broadening the scope was a necessity. Including societal goals is also important from the point of view of policy implementation at a lower (subnational) level. If large societal groups in Third World countries are not allowed any benefits from the protection of biodiversity, it will be hard to create continued support for far-reaching measures. Measures will be more “sustainable” if they are widely accepted and supported, and especially if large parts of society are directly aware of the benefits they derive from the protection of biodiversity for themselves. However, this wider definition of biodiversity also creates a tension both at the conceptual level and at the level of interventions. Measures that are beneficial from the point of view of the protection or sustainable use of biodiversity do not necessarily create a more equal sharing of the benefits.

BIODIVERSITY AND TOURISM

In the 70s and 80s, tourism played a marginal role in discussions on biodiversity (Bundesamt für Naturschutz 1997). Recently, some important progress has been made in this respect, as sustainable tourism has been included as one of the themes for further implementation of Agenda 21. The Commission on Sustainable Development has been assigned to develop an

action-oriented international program of work to be defined in cooperation with the Conference of the Parties to the Convention on Biological Diversity, together with other relevant organizations, including the World Tourism Organization (WTO), the United Nations Conference on Trade and Development (UNCTAD) and the United Nations Environment Program (SBSTTA 1999:1).

In the recent Conference of the Parties to the Convention of Biological Diversity in Kenya, this idea was accepted. It was recommended to parties, governments, the tourism industry and relevant international organizations, in particular the World Tourism Organization, to consider the assessment of the relationship between tourism and biological diversity and the development of an international work program as a basis for their policies, programs and activities in the field of sustainable tourism (UNEP 2000).

Impacts and Interventions

The discussion on tourism and biodiversity tends to focus on the (negative) impacts of tourism on biodiversity. When trying to assess which activities cause loss of biodiversity, the typical approach would be to try to measure the impacts of tourism by using the technique of “dose–effect relationship research”. In such studies, the aim is to demonstrate the relationship between the “doses of recreation and tourism” and biological effect variables (Philipsen 1998). Such studies are enormously complex, as tourism has a variety of different types of impacts on biodiversity. In addition, a more general difficulty is to define biodiversity. As a result of this complexity, dose–effect relation studies are characterized by a number of weaknesses (Goedhart 1997; van der Duim and Philipsen 1995). These issues have been extensively dealt with in the literature (Buckley 1999; Butler 2000; Mathieson and Wall 1982; Musters et al 2000; Pigram and Jenkins 1999; WCMC 1995) and are thus only briefly considered in this article.

The composition of tourism complicates measuring impacts (Dietvorst and Ashworth 1995; Lash and Urry 1994; Tremblay 1998). In its most simple form, it consists of transport, accommodation, and recreational activities. When trying to measure its relationships with biodiversity, one should take into account the impacts of both construction and maintenance of (tourism) infrastructure as well as use of these facilities by tourists. Typically, for many of these elements, the impact will vary from one tourist to another (and from one producer to another) depending on activity patterns and general behavior. Impacts on biodiversity can be positive or negative, direct or indirect, temporary or lasting and can vary in scale from global to local. The relation between tourism and biodiversity is conceptualized in Figure 1.

The difficulty of working out the notion of biodiversity is related to the fact that it is a compound concept, including ecosystems, species, and genes. A simultaneous maximization or optimization of all these is not possible. Choices should be made as to what diversity should be conserved where, and how (Musters, de Graaf and ter Keurs 1999;

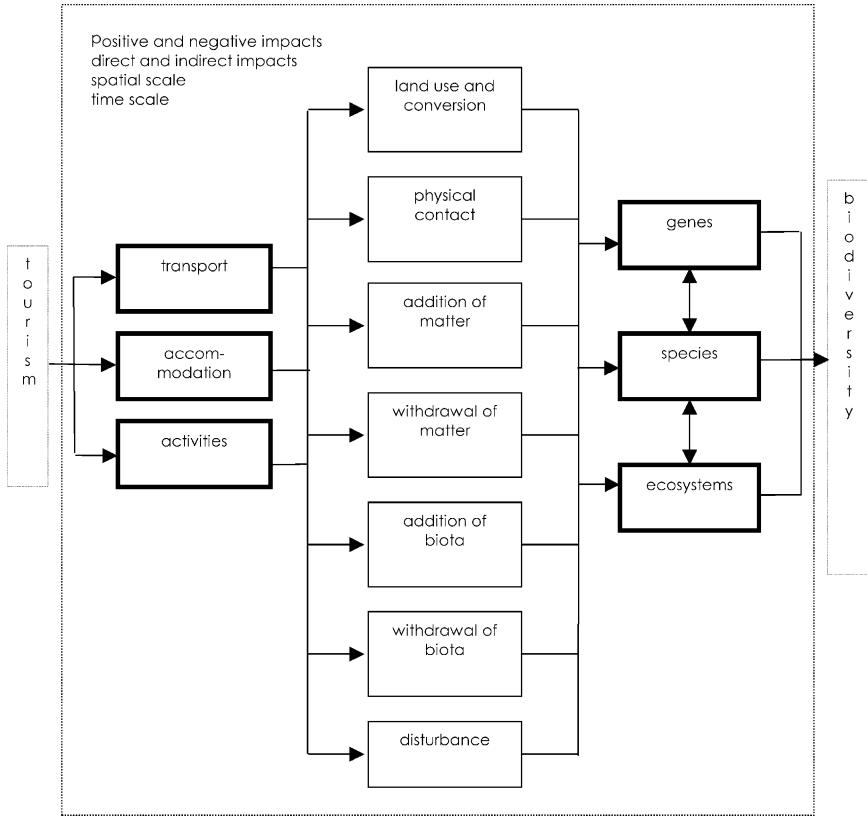


Figure 1. Conceptual Model of the Ecological Impacts of Tourism on Biodiversity

Sprengers, Flippi and van Leeuwen 1995; WCMC 1995). More fundamentally, measuring biodiversity is confronted with a lack of knowledge on the functioning and dynamics of natural systems. This lack of knowledge will have to be dealt with, no matter what priorities are set with regard to conservation (WRR 1994).

The lack of knowledge on the functioning and dynamics of natural systems exists on several levels, of which only a few are mentioned below. First, there is insufficient knowledge on the functioning of ecosystems. This means, for example, that it is not clear to what extent variation in biodiversity is a natural phenomenon. The self-recuperative power of ecosystems and of species is poorly understood, as are the related time-scales. Second, it is not clear what species play a key role in the survival of ecosystems, or with regard to life-support and environmental functions. Since it is not known what species are representative of groups or of the functioning of systems, it is difficult to make an educated choice as to what species to monitor. Third, current changes in ecosystems are, no doubt, to a large extent related to human activities. It is, however, difficult if not impossible to establish which changes exactly are due to this. It is also not certain what types of activities

mainly cause the decline in biodiversity (Sprengers et al 1995; ter Keurs, Musters and de Graaf 1997). The fact that such questions cannot yet be fully answered leads to uncertainties about the kinds of species that should be monitored in order to have accurate information about the state of the whole ecosystem. It also creates doubt about the effectiveness of measures to protect biodiversity.

However, even if a relation between tourism and a change in biodiversity is shown, the question as to whether these changes are acceptable or not still remains. This necessitates value judgements (van der Duim and Philipsen 1995). Dose–effect relationship research is but an instrument for measuring the effect of recreational activities on biological variables. This can never substitute for the normative and thus political character of making choices. The establishment of a boundary value, above which changes are unacceptable (meaning “Limits of Acceptable Change”), is not a technical task but a question of valuation (Beckers et al 1980; Korthals 1994; Manning 1986; Shelby and Herberlein 1984; Sidaway 1996, Sidaway and van der Voet 1993).

Coping with Intervention

How does one cope with this uncertainty about the relation between tourism and biodiversity? Because of the lack of knowledge on the precise relationship, policies will have to be based, to a large extent, on value judgements. Valuation is dependent on the perception of risks and on the interests of the parties involved and based on specific social constructs of nature (Urry 1992; Wilson 1992). With regard to international tourism, social constructs can be expected to vary considerably as both a large variety of interests and nationalities are involved. Environmental sensitivity and conceptions of nature are known to vary considerably from one country to the other, even among northwestern European countries (de Jong 1999; Jollivet 1997).

Stakeholders may dispute each other's knowledge on the seriousness of impacts and the need to cope with them, and they will value these impacts in different ways. Disputes on the origin and structural or cyclical nature of climate change is an example, as well as questions on the relation between acid rain and the decline of forests (WRR 1994). In such disputes, lack of knowledge tends to be used as an argument to strengthen political positions. For nature conservationists it will be used as an argument to underline the precautionary principle in order to avoid environmental catastrophes. Other parties will bring forward that by taking far-reaching environmental measures, one will risk causing economic and societal damage. As the exact magnitude of environmental damage is not known, establishing the importance of problems and the need to intervene become political issues, involving negotiation among various stakeholders. This negotiation will take place on the basis of perceptions of environmental, societal, and economic risks involved in taking certain measures. Interventions aimed at minimizing the negative impacts of tourism on biodiversity have to deal with the uncertainties arising from this lack of knowledge. However, if more knowledge were available, it would still be necessary to weigh the

impacts on biodiversity against the impacts on the economy, the tourist experience, and other impacts. According to Lyotard (1988) such disputes can be characterized as a "litige". As Lengkeek (1994) states, the root of the conflict of interest between nature conservationists, local interest groups, tourism organizations, and tourists, arrives from the struggle to maintain one's own construction of reality concerning nature. Therefore, setting priorities for intervention is not only a matter of (scientific) knowledge on the importance of impacts of tourism on biodiversity and urgency to mitigate them. At least three other aspects will have to be taken into account: legitimacy, feasibility, and effectiveness (Table 1).

Legitimacy of Interventions

Legitimacy of interventions deals with the question of "who benefits from these interventions". In other words, whose interest is intervention and what are the effects for the stakeholders, be they nature conservationists, tourism entrepreneurs, tourists, or indigenous people (German NGO Forum 2000). This issue is illustrated by two examples.

Economic Benefits: The Position of Small-Scale Entrepreneurs. The legitimacy of an intervention is highly related to its effect on the distribution of economic benefits. This is particularly the case with regard to (eco-)tourism in developing countries, and the position of the international tourism industry versus that of small-scale enterprises and the local population. What is considered to be an equal or fair distribution depends on the point of view taken. Should only locals be allowed to benefit from their "own" biodiversity? How should benefits be divided over the population? Such questions remain, however, rather theoretical. It is probably more fruitful to couple the issue of sharing to current practices and, especially, to needs. Whatever view is taken, the current distribution is highly unequal. Although very scarce, there are figures available that illustrate this fact. For example, 56% of the expenditure by the ecotourists traveling to Costa Rica is spent outside the country. Taking leakages into account, it is estimated that ultimately 37% of expenditure remains in Costa Rica itself (Inman 1998). How much of this money ends up in small companies is not known, but one might reasonably assume a low percentage. Studies in various peripheral regions show that much of the income from tourism ends up outside the region as the industry generates only a limited regional multiplier effect (Andrew 1997; Wagner 1997).

Table 1. Guiding Principles for Intervention^a

<i>Impact:</i> what activities (are assumed to) mainly cause loss of biodiversity?
<i>Legitimacy:</i> who benefits and in whose interests interventions take place?
<i>Feasibility:</i> to what extent crucial stakeholders will support intervention?
<i>Effectiveness:</i> what types of instruments are most effective to reach the desired goal?

^a Source: Caalders et al (1999).

To stress the importance of a more equal distribution of economic benefits, arguments of effectiveness are often used. The successful development of ecotourism depends largely on whether or not the local population derives benefits from nature conservation and associated tourism development. This is important because it can generate local support for the protection of nature, and income from tourism can provide alternatives for economic practices such as agriculture, cattle farming, the timber industry, and hunting, all very dependent on natural resources (Inman 1995; Valentine 1992). As Ross and Wall (1999) suggest, tourism has the potential to contribute to both conservation and development and it involves the creation of positive synergistic relationships among tourism, biodiversity, and local people through the application of appropriate management strategies.

Tourist Experiences. Legitimacy can also be related to tourist experiences, as intervention may result in limiting certain types. To some extent, when impacts on biodiversity are too severe, such interventions may be unavoidable. However, the diversity of tourist experiences should be considered when taking restrictive measures. Concepts like the recreation opportunity spectrum (Manning 1986) or the loves of nature (Lengkeek 2000) are useful tools in developing zoning systems (Pigram and Jenkins 1999 for other concepts used for zoning). The recreation opportunity spectrum offers a conceptual framework for thinking about such opportunities in relation to the management of natural areas. It refers to the relation between experiences derived from recreation and the settings in which it takes place, and it stresses the need to take environmental, social, and managerial aspects into account (Manning 1986). Lengkeek (2000) discerns five loves for nature, based on a theory initially developed by Cohen (1979). The metaphor of "love" serves to show that the relation with nature can vary from being superficial and shallow like a flirt (tourists who seek entertainment), or deep and lasting, as in a marriage. This latter type of relation refers to experts (biologists, ecologists) seeking to know and understand nature. The real love of this group is related to a desire for control, a tendency that becomes obvious in the longing to determine species or to grasp the laws of nature. In between these extremes, there are those who want a break from everyday life, those who are interested in nature and want to expand their horizons, and still those in search of exaltation. The meaning of biodiversity for various tourists with different "loves of nature" should be respected as much as possible and the opportunities for having different experiences should be provided (Elands and Lengkeek 2000).

Relevancy of activities in terms of tourist experiences should be weighted against the availability of alternatives. What is the risk that these will be harmed by this intervention? A visit to nature parks, for example, is a crucial aspect of a trip to many countries. Littering in those parks, however, is not. Interventions focusing on litter prevention will be easier to legitimize compared to actions aimed at closing parks. On the other hand, it is questionable whether tourists should necessarily want to visit the most ecologically sensitive parts of a nature

park. As examples in Monteverde and Manuel Antonio in Costa Rica show (van der Duim and Philipsen 1996), tourist experiences are not hampered by the fact that large parts of the park area are not accessible. From this perspective, zoning or quotas for visiting the most sensitive areas of the nature park, are legitimate.

Feasibility of Interventions

Interventions are more feasible if crucial stakeholders are willing to cooperate. This will generally be the case when the intervention is viewed as personally beneficial, or when positive consequences are seen to compensate negative ones. If stakeholders are not willing to cooperate, they may be forced to do so. However, many stakeholders possess some kind of power to delay or block developments they consider undesirable. Just one party cannot implement many interventions. They require the cooperation of several others in order to be effective. This is especially the case in the international arena, where conventions and agreements come about only if governments are willing to negotiate and honor their promises.

Knowledge of the tourism network is necessary to adequately understand the feasibility of interventions. Such questions as what stakeholders are involved or relevant, what their goals are, or what instruments they can use are relevant to understanding this network. An analysis of these aspects can provide an indication of whether and how support for a certain intervention can be obtained. The goals of stakeholders are indicators of their feelings about biodiversity, and of the arguments which may persuade them. The instruments for intervention, which they have at their disposal, are indicators of their power and of their ability to steer other stakeholders in return. Thus, various stakeholders are involved in the tourism chain, each trying to intervene or subject to intervention in the relationship between tourism and biodiversity. Tour operators, for instance, could be a source of information (for tourists or travel agencies), as well as a focal point for governmental extension campaigns or regulation. National governments are influenced by international bodies like the World Tourism Organization or the United Nations, meanwhile influencing policies of the international, regional, and local authorities as well.

For each intervention, a more detailed analysis of the entire network of stakeholders will increase its feasibility. For each stakeholder, such information as their goals, attitude towards tourism and biodiversity, their relation with other stakeholders, and their instruments (opportunities to exert control over resources or other stakeholders) should be gathered. The most powerful stakeholders (those who can veto the proposed intervention or that can seriously hamper the process) should be involved in order to increase the effectiveness of the intervention. Special attention should also be given to the less powerful stakeholders in order to increase legitimacy. It should be recognized that such stakeholders often possess a crucial position in terms of sustained effectiveness of measures as well (Broerse 1998; Bunders 1994).

Effectiveness of Interventions

Interventions aimed to manage the relation between tourism and biodiversity are diverse and vary in their effectiveness and acceptability. According to the Netherlands Scientific Council for Government Policy (WRR 1992), the central problems to face are the subordinate position of environmental problems in general, and biodiversity related problems more specifically, in the decision-making processes of producers and consumers. A recent Dutch survey (van Egmond 1999) revealed that 47% of the respondents stated that they were prepared to travel to destinations closer to the Netherlands, if that would serve environmental purposes. Their most preferred choices were the United States, Canada, Australia, New Zealand, Indonesia, and the Caribbean, showing an enormous gap between verbal intention and action. Generally speaking, environmental empathy among the Dutch is high (Beckers, Ester and Spaargaren 1999; SCP 1999; VROM 1998). However, this does not always result in environment-friendly behavior. Only when low costs (in terms of money, time, and effort) are involved or when the behavior has a high token value, are people willing to change their behavior. One is less inclined to change behavior when it is not easy or when freedom of movement is at stake, such as going on holiday wherever one wishes (SCP 1999).

The same applies to tourism. Generally speaking, the industry is reluctant to play a proactive role, despite many programs and projects around the world. According to Mowforth and Munt, "the tourism business community is much the same as other sectors of business in its invocation of 'business realities' in order to justify or excuse its resistance to change and to external influences" (1998:221). The question remains whether or not techniques used in the industry such as codes of conduct, seals, or environmental auditing are cosmetic and trivial or genuinely change the attitude and environmental impact of tourism.

In essence, the same question pertains to governmental interventions. The Bundesamt für Naturschutz affirms that:

The strategies developed so far are not very precise and have only little binding force, which is illustrated by the fact that there are many recommendations but no legally binding agreements addressing explicitly the relationship between biodiversity and tourism. Most advanced in this respect are national laws and regulations in a number of destination countries; however, often implementation and effective control measures are missing, particularly in developing countries (1997:10).

As biodiversity is a common good, the government can be regarded as the natural choice of stakeholder to take the lead for interventions. In principle, however, any stakeholder can intervene, although the instruments will be different. Which interventions are applicable in a given situation depends on the problem addressed, the scope of the problem, the target group, and the mechanism through which they intend to guide.

The choice of instruments is not often (or not only) based on con-

siderations of its effectiveness. They are chosen as best measures to achieve certain policy objectives. Instruments are partially chosen on the basis of custom or fashion and are adjusted in light of international affairs. They are also based on contemporary expertise and institutions and/or chosen for expected distributive effects or flexibility (Glasbergen 1994, 1995). Political considerations are also of great influence. Instruments can help strengthen the position of politicians, of specific policies and industries. The selection of instruments is subject to the same aspects as those mentioned, as relevant for setting priorities for intervention (legitimacy, feasibility, and effectiveness).

Classification of Instruments

A first main characterization of instruments is based on the type of force that they impose (Sprengers et al 1995; WRR 1992). There are social instruments (like extension, education, demonstration, exhibition aiming at changing behavior of specific target groups); economic instruments (like taxes, subsidies, financial compensation) and regulatory instruments (either enforced by law or voluntarily based on conventions or mutual agreement). The choice of instruments to apply depends on the stakeholder (only the government can impose laws, for example), the level of scale, and the situation at hand.

Second, there is an important distinction between one-sided versus two-sided transactions (Sprengers et al 1995). Either one party enforces its will onto others (for example laws and regulations enforced by the government) or cooperation or negotiation occurs between different parties (like covenants and joint implementation). One-sided interventions will only be effective if the imposing stakeholder can effectively enforce the consequences on the projected target group. Thus, one-sided economic instruments will often only be effective in a context of a (near) monopoly. A one-sided decision, such as the Dutch government placing a levy on kerosene, will arguably lead to relocating air traffic to neighboring countries, thus not benefiting the overall environment. Likewise, one-sided regulatory instruments such as laws will only be effective when implementation is sufficiently monitored and effective regulation exists. In cases where control cannot be effectively carried out, or when the identification and measuring of environmentally unfriendly activities are difficult, two-sided instruments are preferable. A precondition for two-sided regulation is public support. This can lead to an impasse, where suitable support is not available. In such a situation, one-sided activities can also serve as a symbol to indicate the relevance of a particular value for the stakeholder involved. It may be one of the ways to put environmental interests more firmly on the agenda. Such a strategy is in any case more effective than using arguments of dependency as an excuse for not taking action.

Third, there is the choice between instruments at the source or those dealing with effects. The latter alter environmental quality without producers and consumers having to change their behavior. These effects are characterized by retrieval, compensation, management, and

strengthening of the tolerance level. Such instruments usually do not include a change in attitude (Glasbergen 1994). By contrast, instruments at the source usually focus on a change of behavior. Examples of instruments at source are education, agreements, covenants, subsidies, regulating levies, direct regulation through levying permits, commitments concerning the exchange of information, responsibility, and examples of good practice (Glasbergen 1995 and 1995). Instances specifically concerning tourism are the restriction of accessibility of tourists during particular species mating seasons and zoning (including buffer and connection zones). Generally speaking, instruments at the source are to be preferred above instruments dealing with effects. Sprengers et al (1995:61) argues that at the source the responsibility for the consequences is clear and the controllability is the greatest. It is also possible to generate several positive effects by implementing only one measure at source, uncertainties can exist about the cause-effect chain, effects can be irreversible and intervention at the source is often less costly. Instruments focusing on effects, on the other hand, are often less controversial and easier to implement. This is especially the case if they do not demand a fundamental change in attitude and if they do not question the activity itself, but focus on the negative impacts it produces. These instruments often score higher in feasibility.

Fourth, the structure of target groups should also be acknowledged in the selection of instruments. Some target groups are much easier to address than others. For instance, one could choose to address tour operators or the Netherlands Federation of Travel Agencies instead of separate agencies or even tourists. In a similar way, hotel associations are easier to address than individual properties. A related issue is the "costs" target groups will face, reflecting the technical possibilities of and psychological resistance against change of behavior (WRR 1992).

Evaluation of Instruments

An evaluation of interventions shows that the relation between tourism and biodiversity is addressed by governments, nongovernmental organizations, and the private sector, at the international, national, and regional/local levels (Caalders et al 1999). Though the general overview gives the impression of a broad variety of measures being taken, a more critical analysis shows the following biases. One, emphasis has in practice been based on social instruments and voluntary regulations, which seems related to an emphasis on feasibility of interventions. Two, it appears that activities do not trickle down to the operational level, or only in the form of ecolabeling and seals. Three, the aspect of legitimacy, in terms of equal distribution of benefits, is lacking from the discussion. Four, effectiveness of social and voluntary instruments is questionable; in cases where tourism causes more severe impacts on biodiversity, legally binding compulsory instruments should receive more attention.

The emphasis on social instruments and voluntary regulations is understandable as tourism and biodiversity is a new policy field that

should first create support among crucial stakeholders, generate knowledge in order to be able to set priorities, and disseminate information to the general public to increase awareness. This strategy has been successful in achieving more attention for the relation between tourism and biodiversity in national and international policy. For example, the industry has become an integral part in the development of approaches and practices for the sustainable use of biological resources within the framework of the Convention on Biological Diversity (UNEP 2000).

However, no monitoring has taken place to measure the extent to which the commitments and agreements of interest groups at these levels effect tourism practice. Much of the attention given to biodiversity in this area is confined to the international and national level and to those organizations defending the interests of the industry (Mowforth and Mason 1995; UNEP 1995). As far as attention does trickle down to the operational level, it is in the form of self-regulation schemes. Mowforth and Munt recently expressed their doubts about the "practicality" of many of these. According to them,

self-regulation led by bodies such as the WTTC and the WTO, whose stated aims are the promotion of the tourism industry rather than restraining it, is likely to lead to policies which pursue profit making in a business world, where profit maximization and capital accumulation is the dominant form of operation (Mowforth and Munt 1998:208).

In Europe alone almost 50 different types of ecolabels and awards exist for hotels, camping sites, destinations, and tour-operators, among others (ANVR 1998; Ecotrans 2001; ICT 1998, 1999). Notwithstanding general (and legitimate) critique, the better examples among these initiatives do create environmental benefits. An example of "good practice" in the Netherlands is the so-called "Environmental Monitor" (Milieu-barometer) of the National Association of Recreation Entrepreneurs (RECRON 2000). However, the number of enterprises involved is still limited. Important from the point of view of the entrepreneur is the fact that such "green" measures are also cost saving in the long run. Buckley and Araujo (1996) consider this to be the main rationale behind implementation of such measures at the Australian Gold Coast. Further, environmental management systems and green labels seem to gain importance in the relations between tour operators and the hotel sector. Current trends indicate an increasing tendency of tour operators to work with those companies that have some type of "green seal".

Apart from practical problems related to efficiency (many different seals exists, each has its own criteria and problems related to control and monitoring) the legitimacy of this trend can be questioned, as it seems to benefit particularly large-scale enterprises. Implementation of environmental management systems demands disproportionate efforts from small-scale enterprises and may be less effective in terms of environmental gain. Small enterprises will often lack the knowledge, money, or manpower needed to implement the changes and to deal

with the bureaucracies involved in attaining a “seal”. More generally, the position of small-scale enterprises does not receive much attention in the tourism-biodiversity discussion.

Legally binding and compulsory instruments have received less attention in this discussion as well (Caalders et al 1999). In cases where impacts of tourism are considered to be severe or are valued as highly undesirable, the possibilities of introducing more binding instruments (like levies, spatial laws, and compulsory forms of zoning), should be considered. For different reasons, these do not function optimally in practice. This is related to the fact that implementation of most of the instruments mentioned is difficult (Butler 2000). For example, the introduction of ecotax on flying is urgent from an ecological viewpoint, as involving an important cause of global warming. There are, however, a number of reasons why the introduction of such taxes is difficult. Countries that are willing to introduce ecotax, like the Netherlands, point out the need to take measures at an international scale. Introduction by separate countries would merely lead to relocation to geographic neighbors. From the point of view of developing countries, introduction of taxes on flying would most probably lead to a decrease of the number of tourist visits. From the viewpoint of equal sharing of benefits, the practicality of this instrument requires careful consideration.

Even in the case of more obvious instruments like zoning, spatial planning, and environmental impact assessments, effectiveness is limited when there is no public support and no monitoring system. Without “flanking” measures, planning systems are just a matter of form. Recently van Wijk (2000) extensively studied the use of environmental impact assessment in Costa Rica. She concluded that human and financial resources are lacking for effective implementation of this instrument, and the protection of the environment through it is not guaranteed.

Part of this lack of resources stems from the weak internalization of the instruments by politicians and proponents. Since environmental planning tools are essential for guiding (tourism) development towards sustainability, the Costa Rican government stands for the options to either bring their ambitions with the (environmental impact assessment) instrument more in balance with reality or to bring reality more in balance with their ambitions (van Wijk 2000:99).

Finally, biodiversity is not an issue typically considered among most entrepreneurs. In order to promote the importance of this issue, it should be related more directly to their daily practice. This would suggest the need to link activities currently undertaken at the international and national levels to the local level. So-called “bridge-actors” or “gatekeepers” are necessary to cross this gap (Fromholt-Eisebith 1995). Such actors are aware of developments and needs that are present locally and globally and in “nature conservation” as well as “tourism”. Special attention should be paid to how these bridge-actors can facilitate small-scale enterprises and help gain access to crucial resources (van der Duim 1997). In this way, they will contribute both to the effectiveness and the legitimacy of interventions.

CONCLUSION

In this article the relations between tourism and biodiversity have been conceptualized. It has been argued that measuring impacts of tourism on biodiversity is highly complex and costly. As a consequence, instead of depending on scientific knowledge of impacts, other considerations for selecting interventions to mitigate effects or to increase (potential) contributions have been identified. Special attention has been paid to feasibility, effectiveness, and legitimacy. Feasibility seems to be the main principle on which current interventions are based. Emphasis is placed on social instruments (like extension services and education) and on voluntary regulatory instruments (based on conventions or mutual agreement). These noncompulsory interventions and instruments are effective only to a limited extent. The legitimacy of many proposed interventions can also be questioned as they disproportionately represent the various interests and seem to benefit particularly large-scale international enterprises. All things considered in this article, a few items for discussion remain.

First, it is argued that more binding instruments are needed to address activities with major impacts. This may be one way to place environmental interests more firmly on everyone's agenda. Implementation of such instruments presents its own set of difficulties, particularly spatial laws, and enforcement and monitoring systems.

Second, greater emphasis should be placed on tourism's potential to contribute to the conservation of biodiversity. Measurement tools currently being developed for this purpose tend to focus on the negative impacts. The relevance of such measures for policy purposes would increase if the positive and negative impacts could be weighed. Tourism is influential, especially in terms of quantity of land preserved for nature. This is an important contribution because worldwide habitat destruction is the single most important cause of the loss of biodiversity. Tourism contributes by providing the financial means for conservation and by raising understanding about the issue. For many private and state owned national parks, tourism is the most important generator of income. It can provide an alternative to agriculture, animal husbandry, or other forms of land use as primary causes of deforestation.

Last, for reasons of legitimacy, the position of small-scale entrepreneurs should receive more attention in international and national policy debates. Current interventions and instruments predominantly address conservation and sustainable use of biodiversity and to a limited extent aim at creating a more equal sharing of benefits. If tourism is to contribute to the latter goal, it should be more firmly coupled with the local economy. Linkages between international tourism and small-scale local entrepreneurs and between this industry and nature conservation agencies are seriously hampered. Since each organization follows its own missions and operates according to a different "logic", it is not just a difference in goals, but a gap between different paradigms and perceptions of the world, that must be

bridged. To link these various realms, knowledge concerning the processes guiding the various organizations at different levels is crucial. ■

Acknowledgements—The article is based on a study commissioned by Ecooperation/Fundecooperación within the framework of the Sustainable Development Agreement between the Netherlands and Costa Rica. This Agreement is built on principles of reciprocity, equality, and participation. The authors thank Lianne Boomars, Gwen Boon, Henk Eggink, Peter Konijn, Kees Musters, Jan Philipsen, Hernan Quesada Rivel and the participants of two “expert meetings” for their valuable contributions, and Stuart Cottrell and Michael Sean White for their editorial comments.

REFERENCES

- Andrew, B.
1997 Tourism and the Economic Development of Cornwall. *Annals of Tourism Research* 24:721–735.
- ANVR
1998 Nota Duurzaam Toerisme II. De Meern: Vereniging van ANVR Reorganisatoren.
- Beckers, T., J. Loedeman, R. Meester, C. van der Ouderaa, C. Sloet van Oldruitenborgh, and H. van der Voet
1980 Vaar wel, een Literatuuronderzoek naar de Mogelijkheden voor het Bepalen van de Capaciteit van Waterrecreatiegebieden. Wageningen: Wageningen University.
- Beckers, T., P. Ester, and G. Spaargaren
1999 Verklaringen van Duurzame Consumptie. Een Speurtocht naar Nieuwe Aanknopingspunten voor Milieubeleid. Tilburg: GLOBUS. Institute for Globalization and Sustainable Development.
- Broerse, J.
1998 Towards a New Development Strategy. How to Include Small-scale Farmers in the Biotechnological Innovation Process. Delft: Eburon.
- Buckley, R., and G. Araujo
1996 Environmental Management Performance in Tourism Accommodation. *Annals of Tourism Research* 23:465–469.
- Buckley, R.
1999 An Ecological Perspective on Carrying Capacity. *Annals of Tourism Research* 26:705–708.
- Bunders, J.
1994 Participative Strategies for Science-based Innovations. The Case of Biotechnology for Small-Scale Farmers in Developing Countries. Amsterdam: VU University Press.
- Bundesamt für Naturschutz, eds.
1997 Biodiversität und Tourismus. Konflikte und Lösungsansätze an den Küsten der Weltmeere. Berlin: Springer.
- Butler, R.
2000 Tourism and the Environment: A Geographical Perspective. *Tourism Geographies* 2:337–358.
- Caalders, J., V. van der Duim, G. Boon, and H. Quesada Rivel
1999 Tourism and Biodiversity: Impacts and Perspectives on Interventions in the Netherlands and Costa Rica. Wageningen: Buiten Consultancy and Wageningen University.
- Cohen, E.
1979 A Phenomenology of Tourist Experiences. *The Journal of the British Sociological Association* 8:179–210.
- Collins, A.
1998 Tourism Development and Natural Capital. *Annals of Tourism Research* 26:98–109.
- de Jong, D.
1999 Tussen Natuurontwikkeling en Landschapsschutz. *Sociaal-cognitieve*

- Configuraties in het Grensoverschrijdende Milieubeleid. PhD dissertation, Nijmegen University. Delft: Eburon.
- Dietvorst, A., and G. Ashworth
 1995 Tourism and Spatial Transformations: An Introduction. *In* Tourism and Spatial Transformations. Implications for Policy and Planning, G. Ashworth and A. Dietvorst, eds., pp. 1–16. Oxon: CAB International.
- Ecotrans
 2001 Eco-labels and Awards <<http://www.eco-tips.org>>.
- Elands, B., and J. Lengkeek
 2000 Typical Tourists. Research into the Theoretical and Methodological Foundations of a Typology of Tourism and Recreation Experiences. Wageningen: Mansholt Graduate School. Mansholt Studies 21. Wageningen: Wageningen University.
- Fromholt-Eisebith, M.
 1995 Das "Kreative" Milieu als Motor Regionalwissenschaftlicher Entwicklung. *Geographische Zeitschrift* 83(1):30–47.
- German NGO Forum Environment and Development
 2000 Biological Diversity and Tourism in the Convention on Biological Diversity. Bonn: German NGO Forum Environment and Development.
- Glasbergen, P.
 1994 Milieubeleid, een Beleidswetenschappelijke Inleiding. Gravenhage: VUGA Uitgeverij B.V.
 1995 Managing Environmental Disputes. Network Management as an Alternative. Dordrecht: Kluwer Academic.
- Goedhart, D.
 1997 The Unknown Relationship between Tourism, Nature and Environment. A Doses-effect Relation Survey on the Impact of Tourism on Nature and Environment and the Possibilities to Develop Indicators for Sustainability. Thesis, Wageningen University.
- ICT
 1998 Programa Bandera Azul Ecológica 1998. Unidad de Comunicaciones ICT. San José: ICT.
 1999 Certificación para Sostenibilidad Turística. Hacia una Nueva Forma de Competitividad. San José: ICT.
- Inman, C.
 1998 Impacts on Developing Countries of Changing Production and Consumption Patterns in Developed Countries: the Case of Ecotourism in Costa Rica. Draft-report. San Jose: INCAE.
- Jollivet M. ed.
 1997 Vers un Rural Postindustriel. Rural et Environnement dans Huit Pays Européens Paris: L'Harmattan.
- Korthals, M.
 1994 Duurzaamheid en Democratie. Amsterdam: Boom.
- Lash, S., and J. Urry
 1994 Economies of Signs and Space. London: Sage.
- Lengkeek, L.
 1994 Een Meervoudige Werkelijkheid. PhD dissertation, Wageningen University. Delft: Eburon.
 2000 Liefdes voor de Natuur. *Vrijetijdstudies* 18(1):42–45.
- Liotard, F.
 1988 The Differend. Manchester: Manchester University Press.
- Manning, R.
 1986 Studies in Outdoor Recreation, Search and Research for Satisfaction. Orvallis: Oregon State University Press.
- Mathieson, A., and G. Wall
 1982 Tourism: Economic, Physical and Social Impacts. London: Longman.
- Ministry of Agriculture, Fisheries and Nature
 1999 Discussion Paper on Biological Diversity, unpublished. Den Haag: Ministry of Agriculture, Fisheries and Nature.
- Mowforth, M., and P. Mason
 1995 Codes of Conduct in Tourism. Occasional paper. University of Plymouth.

- Mowforth, M., and I. Munt
1998 *Tourism and Sustainability. New Tourism in the Third World*. London: Routledge.
- Musters, C., H. de Graaf, and W. ter Keurs
2000 *Vooronderzoek Operationalisering Biodiversiteit ten behoeve van Beleid. Voorstel voor een Werkwijze* Leiden: MIBI.
1999 *Voorstel tot Operationaliseren van het Begrip Biodiversiteit*. Unpublished paper. Leiden: MIBI. University of Leiden.
- Philipsen, J.
1998 *Ecologische Betekenis van Natuur*. In *Management van Natuurlijke Omgevingen voor Recreatie en Toerisme*, H. Boerwinkel and J. Philipsen, eds. Wageningen: Center for Recreation and Tourism Studies, Wageningen University.
- Pigram, J., and J. Jenkins
1999 *Outdoor Recreation Management*. London: Routledge.
- RECRON
2000 *Milieubarometer. Handleiding voor de Ondernemer*. Arnhem: Recron.
- Ross, S., and G. Wall
1999 *Ecotourism: Towards Congruence between Theory and Practice*. *Tourism Management* 20:123–132.
- SBSTTA
1999 *Development of Approaches and Practices for the Sustainable use of Biological Resources, including Tourism*. Note by the Executive Secretary. Second draft. 4 February 1999, UNEP/CBD/SBSTTA/4/xx. New York: UN.
- SCP
1999 *Verspilde Energie? Wat doen en laten Nederlanders voor het Milieu?* Cahier 156. Den Haag: Sociaal-Cultureel Planbureau.
- Shelby, B., and T. Herberlein
1984 *A Conceptual Framework for Carrying Capacity Determination*. *Leisure Sciences* 6:1–14.
- Sidaway, R.
1996 *Outdoor Recreation and Nature Conservation: Conflicts and their Resolution*. PhD dissertation, University of Edinburgh.
- Sidaway, R., and H. van der Voet
1993 *Getting on Speaking Terms. Resolving Conflicts between Recreation and Nature in Coastal Zone Areas of the Netherlands*. Wageningen: Wageningen University.
- Sprengers, S., R. Flipphi, and B. van Leeuwen (eds.)
1995 *Omgevingskwaliteit voor Biodiversiteit. Onderzoeksprogrammering en hanteren van Onzekerheid*. Publication No. 113, NRLO 95/10, RMB. Den Haag: RMNO.
- ter Keurs, W., K. Musters, and H. de Graaf
1997 *Spielerei of Oorlog? Biodiversiteit* 2. *BIONieuws* 7(2):2–3.
- Tremblay, P.
1998 *The Economic Organization of Tourism*. *Annals of Tourism Research* 25:837–859.
- UNEP
1995 *Environmental Codes of Conduct for Tourism*. United Nations Environment Program. Technical Report No. 29. Paris: UNEP.
1996 *Global Biodiversity Assessment*. Paris: UNEP.
1999 *Convention on Biological Diversity. Development of Approaches and Practices for the Sustainable Use of Biological Resources, Including Tourism*. Fourth Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice, Montreal, Canada, 21–25 June 1999, Item 4.8. of the Provisional Agenda. UNEP/CBD/SBSTTA/4/1/Rev.1. Paris: UNEP.
2000 *Report of the Fifth Meeting of the Conference of the Parties to the Convention on Biological Diversity*. Nairobi, 15–26 May 2000. UNEP/CBD/COP/5/23/185–195. Paris: UNEP.
- Urry, J.
1992 *The “Tourist Gaze” and the Environment*. *Theory, Culture and Society* 9:1–26.

- Valentine, P.
 1992 Nature-based Tourism. *In* Special Interest Tourism, B. Weiler and C. Hall, eds. London: Belhaven Press.
- van Egmond, T.
 1999 Het Verschijnsel Toerisme. Verleden, Heden en Toekomst. Leiden: Toerboek.
- van Wijk, J.
 2000 Costa Rica: Going for the Green? The use of Environmental Impact Assessment in Costa Rica with Special Attention to Golf Course Development. Wageningen: Socio-Spatial Analysis and Recreation and Tourism. Wageningen: Wageningen University.
- van der Duim, V.
 1997 The Role of Small Entrepreneurs in the Development of Sustainable Tourism in Costa Rica. *In* Tourism, Small Entrepreneurs and Sustainable Development. Cases from Developing Countries, H. Dahles, ed., pp. 35–48. Tilburg: Atlas.
- van der Duim, V., and J. Philipsen
 1995 Recreatie, Toerisme en Natuurbescherming tussen Romantiek, Ecologie en Commercie. *Vrijetijd en Samenleving* 13(2):21–41.
- 1996 Hoe Eco is Costa Rica's Ecotoerisme? *Derde Wereld* 15(1):59–71.
- VROM
 1998 Dutch Consumer Patterns and their Impact on Biodiversity. Final Report. Publikatiereeks Stoffen, Veiligheid, Straling, No. 1998/35. Den Haag: VROM/DGM.
- Wagner, J.
 1997 Estimating the Economic Impacts of Tourism. *Annals of Tourism Research* 24:592–608.
- Wilson, A.
 1992 *The Culture of Nature*. Oxford: Blackwell.
- WCMC
 1995 Biodiversity: An Overview. World Conservation Monitoring Center. <<http://www.wcmc.org.uk/infoserv/biogen/biogen.html>; 31-3-99>.
- Weaver, D.
 1999 Magnitude of Ecotourism in Costa Rica and Kenya. *Annals of Tourism Research* 26:792–816.
- WRR
 1992 Milieubeleid. Strategie, Instrumenten en Handhaafbaarheid, Wetenschappelijke Raad voor het Regeringsbeleid, Rapport 41. Den Haag: WRR.
- 1994 Duurzame Risico's. Den Haag: WRR.

Submitted 8 December 1999. Resubmitted 7 May 2001. Accepted 1 July 2001. Accepted 6 July 2001. Refereed anonymously. Coordinating Editor: John Pigram