

Chapter 8: Nature-Based Tourism

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Introduction and Background

Tourism is the largest industry in the world according to figures on employment and expenditures. Over 800 million people, the equivalent of roughly 12% of the world's population, travel internationally each year – with many more travelling within their countries of residence. Airlines, the hotel and restaurant business, and outdoor equipment manufacturers and vendors are among the supplier industries that are highly dependent on a successful tourism sector. Tourism furthermore relies on and provides income to national infrastructures such as airports, rail systems, road networks, electric power systems, agricultural production, and water supply systems. On a more personal dimension, travelling provides individuals with the opportunity to escape temporarily from the humdrum of every-day life, to experience the novel or unknown and, possibly, to make a long-time 'dream come true'. 'Discovering the world' arguably figures amongst the top life goals for many people in developed countries. Consequently, the tourism sector as a whole seems to be fairly resilient to disruptions from economic downturns, political crises, extreme weather events, or even natural disasters (UNWTO press release of 24 January 2006).

The fastest growing element of tourism is 'nature-based' tourism, involving excursions to national parks and wilderness areas, to developing countries where a large portion of the world's biodiversity is concentrated (Olson et al, 2001, p.936; WWF, 2001; Christ et al, 2003, p.5). It may also include an 'adventure tourism' element that may carry physical risks. More and more people are living an urban life and the amenities and conveniences that come with globalisation increasingly lead to a near complete disconnect from nature: the living creatures behind the neat slices of fish and meat that we consume or behind the clothes that keep us warm are no longer visible to us; the seasonality of fruit and vegetables virtually has ceased to exist; and the furniture in our homes is impossible to picture as the trees from which it came. Yet at the same time we may have more intimate insight into the mystery of a giant sequoia, the hibernating habits of a grizzly bear or the hatching behaviour of a hummingbird than our rural ancestors could ever hope to have had – insights that are brought to us in breathtaking close-up pictures via the many media channels that cater daily to our information needs. For many people, 'getting back in touch with nature' thus provides the ultimately different holiday experience. Indeed, from snow-covered mountains to earth-coloured savannas teeming with exotic wildlife, lush rain forests, vast desert landscapes and pristine coastal strips offering spectacular bird and marine life, the opportunities for immersing oneself in nature seem countless.

Tourism activities which focus on the natural environment exert a number of pressures on the very resources on which they rely. They create risks for ecosystems and the 'services' they provide (such as freshwater supply, soil regeneration and pollination). At the same time, the on-going protection of

many of the world's protected areas and their natural resources depend on the well-being of the very tourism industry that also threatens them.

Nature based tourism also creates a number of different kinds of risk for the larger socio-economic system, both within and across national boundaries. Tourism at many of the world's nature 'hotspots' contributes significantly to gross domestic product (GDP) in the host countries. Serious disruption of the tourism industry can therefore have negative impacts on local livelihoods for which it is often the only source of cash income; the impact of its Maoist insurgency in Nepal's tourism industry is a dramatic example. At the same time, a flourishing tourism industry also carries the risk of altering the social fabric of local communities as rural people exchange subsistence farming for cash economies, for example. Nature-based tourism also entails risks to the personal health and safety of individual tourists. Even in countries where tourism is mature and well-managed like Switzerland, accidents can still happen; mountain climbing, skiing, or climbing waterfalls can cause loss of life, with attendant legal and financial liabilities. Finally, the tourism industry itself is subject to external risks, including increases in the price of petroleum (which affects the cost of travel) and potential disruptions due to civil strife or disease epidemics (the recent example of SARS is a good indication of how a relatively minor outbreak can have major ramifications in specific tourism regions and sectors).

Box 1: Facts and Figures

- Tourism accounts for as much as 11% of global GDP, offers jobs to 200 million people, and includes more than 800 million international travellers per year (figure projected to nearly double by 2020).
- Tourism makes up 3-10% of GDP in developed countries and up to 40% in some developing countries.
- For 83% of countries tourism is amongst the top five shares of exported goods and services; for 38% of countries it is the primary source of foreign currency.
- While, over the past 40 years, the world's population has doubled, legally protected areas have tripled, now totalling well over 100,000 sites and covering about 12% of the Earth's land surface.
- Over the past two decades, both nature and adventure tourism have developed to be part of the fastest-growing segments within the tourism industry. With an annual growth rate of 10-30%, nature-based tourism seems to be the fastest growing tourism sector. Its share in the world travel market is currently about 20%.
- Within the same territory, employment related to recreational activities can exceed employment related to resource exploitation by more than five times.
- 1.4% of the Earth's land surface accommodates 44% of all endemic plants as well as 35% of all endemic mammals, birds, reptiles and amphibians ('endemic' species are those found only within the defined geographic area).
- 24% (1130 species) of mammals and 12% (1183 species) of birds are thought to be endangered with global extinction.
- 40% of the global economy is estimated to be rooted in biological products and processes, demonstrating that biodiversity matters.

Sources: Christ et al, 2003; Higginbottom, 2004; UNWTO, 2005.

The focus of this case study is on the risks associated with nature-based tourism, i.e. those tourism activities that draw on the natural environment as the primary attraction. Visitation to national parks, trekking, scuba diving and snorkelling, and wildlife watching and birding, if combined with travelling, are amongst the most prominent examples of such activities. However, from a terminological point of view, such a focus presents some challenges. The tourism literature has a profusion of terms conveying similar and partly overlapping meanings, all of which in some way relate to nature-based tourism as defined for this case study while differing in terms of emphasis or underlying philosophy. A relevant selection of these terms is presented in Table 1.

Table 1: Definitions of 'Nature-Based Tourism' and Related Terms

Term	Definition
Tourism	"The sum of government and private sector activities that shape and

	serve the needs and manage the consequences of holiday, business and other travel” (Pierce et al, 1998, cited in Higginbottom, 2004, p.2).
Nature-based tourism	“the segment in the tourism market in which people travel with the primary purpose of visiting a natural destination” (March 2003 Symposium “Tiger in the Forest: Sustainable Nature-Based Tourism in Southeast Asia”).
Nature tourism	“travel to unspoiled places to experience and enjoy nature” (Honey, 2002, cited in Christ et al, 2003).
Ecotourism	<ul style="list-style-type: none"> – "traveling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas" (Ceballos-Lascurain, 1987, cited in Blamey, 2003). – “responsible travel to natural areas that conserves the environment and sustains the well-being of local people” (Honey, 2002, cited in Christ et al, 2003).
Wildlife tourism	‘based on encounters with non-domesticated (non-human) animals ... in either the animals’ natural environment or in captivity. It includes activities historically classified as ‘non-consumptive’ ... as well as those that involve killing or capturing animals ...” (Higginbottom 2004, p.2).
Adventure tourism	“nature tourism with a kick – nature tourism with a degree of risk taking and physical endurance”. (Honey, 2002, cited in Christ et al, 2003).
Sustainable tourism	“seeks to minimize the negative footprint of tourism developments and at the same time contribute to conservation and community development in the areas being developed” (Christ et al, 2003).
Tourists	people who "travel to and stay in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited" (UNWTO, 1995).

While the terms ‘nature-based tourism’ and ‘nature tourism’ are all-embracing in comparison to the other terms, the terms ‘ecotourism’ (at least in its second, more narrow definition above) and ‘sustainable tourism’ anticipate certain outcomes of tourism activities by attaching quality criteria to them. Clearly, not every form of nature-based tourism qualifies as “eco” or “sustainable”. In addressing nature-based tourism, this case study thus deliberately chooses a relatively broad focus which allows for discussion of a wide range of risks. Where appropriate, and in order to illustrate specific issues, the case study will use examples from the other types of tourism defined in Table 1.

Analysis of Risk Governance for Nature-Based Tourism

Risk governance is a comprehensive concept requiring a broad analytic focus. Such analysis includes, and clearly goes beyond, the technicalities of pure risk assessment and management, the gathering knowledge about a risk as well as its potential pathways and taking informed action in connection with its potential effects. Analysing risk governance also involves a thorough investigation of the environmental, economic and societal context which largely influences how a risk would actually materialise and be addressed. The following sections thus try to map out the existing risk governance systems covering the risks from and related to nature-based tourism and to provide some insights into what could be done to improve them.

Risk Governance Context

Tourism has numerous actors and stakeholders¹, all inter-dependent and all having their own sets of rules, procedures, principles, responsibilities and objectives. The following major stakeholders and their decisions have an influence in identifying, assessing, managing, monitoring and communicating risks related to nature-based tourism: tourism industry players such as developers, tour agencies, guides, hotels, facilities and transport operators; governments (including relevant international organisations such as the World Conservation Union (IUCN) in which many of them participate); transnational organisations (mostly non-governmental organizations (NGOs) with international outreach such as World Wildlife Fund (WWF) or intergovernmental organizations (IGOs)); local authorities including planners and managers for public protected areas; local communities; and of course the tourists themselves (see Table 2 for more details; see also Tapper, 2006, for a classification of stakeholder groups).

Table 2: Major Actors And/or Stakeholders in the Governance System and their Roles

Actors and/Stakeholders	Roles
<p>International Organisations (IGOs/NGOs)</p> <ul style="list-style-type: none"> • World Tourism Organization (UNWTO) • World Commission on Protected Areas (IUCN) • World Wildlife Fund for Nature (WWF) • United Nations Environment Programme (UNEP) • United Nations Conference on Trade and Development (UNCTAD) • International Institute for Environment and Development (IIED) • Conservation International (CI) • The Nature Conservancy of the USA (TNC) • Flora and Fauna International (FFI) • Wildlife Conservation Society (WCS) • Wetlands International • BirdLife International • National Audubon Society (in the USA) • The Royal Society for the Protection of Birds (RSPB) in the UK • Earthwatch Institute • International Council on Monuments and Sites (ICOMOS) 	<p>Agenda-setting activities to development of best practice guidance and guidelines, research, advocacy and day-to-day management of nature reserves.</p>
<p>National governments</p>	<p>Develop legislation and policies / development plans setting the boundary conditions as well incentives for tourism development and the conservation of biodiversity. Governments sometimes also act as tour operators (e.g. in China and Vietnam)</p>

¹ Actor is a term used to describe anyone or any organization that may have a position on a subject whereas stakeholder implies having a more direct stake in or being more directly affected by the outcome of a risky activity. All are in some sense “interested parties.”

Regional governments and local communities	Promoters, beneficiaries, and enforcers of conservation
Tourism industry <ul style="list-style-type: none"> • Major tourism companies (Club Med, TUI, Carson Wagonlit, Thomas Cook, etc.). • Trade and professional associations such as: <ul style="list-style-type: none"> ○ World Travel and Tourism Council (WTTC) ○ International Air Transport Association (IATA) ○ The International Ecotourism Society (TIES) ○ International Federation of Tour Operators (IFTO) ○ International Hotel and Restaurant Association (IHRA) ○ International Council of Cruise Lines (ICCL) • Guides' associations such as: <ul style="list-style-type: none"> ○ Swiss Mountain Guide Association ○ Professional Association of Diving Instructors (PADI) (USA) • Hotel and restaurant chains • Expedition outfitters, recreational equipment manufacturers • Financial services companies catering to tourists needs <ul style="list-style-type: none"> ○ Local handicraft makers producing tourist souvenirs 	Tourism developers, operators, guides, etc.
Tourists	“liability” and/or “asset”, atomised market demands

The sheer complexity of the networks of these various interest groups, their perspectives and responsibilities, makes governance of the risks related to nature-based tourism an enormous challenge. Considering the manifold repercussions tourism as a whole can have on the natural environment, the economy and the society of a host region and how these repercussions can differ across destinations, countries and the various forms of nature-based tourism, it is not surprising that the existing governance system does not comprise a single and overarching control and co-ordination mechanism. Instead governance rests on a mosaic of mechanisms which cover the spectrum from voluntary to legally binding and which may vary by stakeholder group. This mosaic is composed of multilateral and regional conventions (e.g. in the areas of conservation and environmental protection) and international agendas that touch upon aspects of nature-based tourism, national laws and policy (regulating e.g. hunting and fishing and outlining a strategy for e.g. tourism development), industry codes of conduct as well as standard setting and certification schemes, liability and insurance schemes and, eventually, world-views, values, traditions and taboos (see Table 3 for a brief overview).

Table 3: Overview of Component Mechanisms of the Governance System

Multilateral conventions	<ul style="list-style-type: none"> • United Nations Convention on Biological Diversity (CBD, 1992), including <ul style="list-style-type: none"> ○ decision VII/14: Guidelines on Biodiversity and Tourism Development ○ decision VII/28: Programme of Work on Protected Areas • Convention of European Wildlife and Natural Habitats (Bern Convention, 1982)
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	<ul style="list-style-type: none"> • Convention on Migratory Species (CMS, 1979) and follow-up agreements • African Convention on the Conservation of Nature and Natural Resources (2003) • EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (Directive 92/42, Habitats Directive, 1992) • Protocol on Environmental Protection to the Antarctic Treaty (1991) • Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere (1940) • Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) • Convention on Wetlands of International Importance Especially as a Waterfowl Habitat (1971) • Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1973)
International agendas:	<ul style="list-style-type: none"> • Global system of protected areas, including e.g. World Heritage Areas, Biosphere Reserves, national parks • IUCN protected area guidelines and best practice • UNESCO's 'Man and the Biosphere Program' (biosphere reserves) • UN Millenium Development Goals • Agenda 21 (Earth summit) • Implementation plan from the 2002 World Summit on Sustainable Development
National/state legislation/regulations:	<ul style="list-style-type: none"> • Regulation on hunting and fishing (licence system, district system, combined licence and district system, community-based system), using a number of strategies: fish / game reserve systems, open and closed seasons, bag limits, size and sex restrictions, firearms incl. calibres, type of bait, equipment • National wildlife protection regulation • Customs and quarantine controls at the port of arrival
Industry declarations as well as standard setting and certification schemes:	<ul style="list-style-type: none"> • Quebec Declaration on Ecotourism • Cairns Charter on Partnerships in Ecotourism • The European Charter for Sustainable Tourism in Protected Areas • Green Globe 21

The most important governance mechanism operating on an international level is the Convention on Biological Diversity. Its Decision VII/14, on Biological Diversity and Tourism, provides guidelines on biodiversity and tourism development which are fairly detailed and identify the environmental, socio-economic and cultural impacts that may be related to tourism. The guidelines also provide approaches to impact management and mitigation, call for the development of national strategies and plans for tourism and biodiversity, and call for the training of tourism professionals in conservation, biodiversity issues, and impact assessment.

Risk Pre-Assessment

The benefits, both financial and personal, first and foremost accrue to those most directly involved in nature-based tourism – namely the different actors who comprise the tourism industry and the tourists themselves. For these actors, nature-based tourism is not primarily associated with risk but

with opportunity. Depending on the actor's or stakeholder's perspective, it may be seen as a business opportunity, as an opportunity to gain new experience and learn (e.g. study Serengeti wildlife), to achieve a personal goal (e.g. reach the top of Mount Everest), to overcome a challenge (e.g. hunt a bear), or, simply as an opportunity for a break from everyday-life. Critical voices exist, but compared to those of the vast majority of unfettered proponents, they largely go unheard. These voices may include disgruntled and alienated local communities at tourism destinations who suffer from tourism-related restrictions in the traditional use of 'their' natural resources, as well as the many organisations active in conservation and environmental protection that are concerned about irreversible impacts on both the natural environment and the prevailing socio-economic system.

Based on these various viewpoints, at least four possible ways of framing nature-based tourism exist: as an expression of personal freedom and choice (potential tourists); as a major factor in local and regional development (governments, development agencies); as a legitimate and necessary source of income (industry participants); and as a critical success factor for both the conservation of biodiversity and local livelihoods (parts of the environmental community).

Relatively little work has been done specifically on the risks of nature-based tourism, although a substantial literature exists on both ecotourism and other components of the tourism industry, and on outdoor recreation and recreation ecology (Buckley, 2004, p.1). The pathways that a specific risk in relation to nature-based tourism actually might take are furthermore determined on the basis of a multitude of local conditions and are thus extremely context-specific. For instance, whether or not hiking causes damage to soil and vegetation depends on factors such as soil conditions, the sensitivity of vegetation to trampling, the frequency of hiking and its spatial distribution, the season, the weather, and the behaviour of the hikers, etc. (Cole, 2004, pp. 52-54). Although the methodologies (e.g. ecological risk assessment, natural resource damage assessment, cost benefit analysis, etc.) exist to evaluate the varied impacts of nature-based tourism, no substantial body of knowledge currently exists. Given the variability of site specific conditions, establishing globally applicable procedures, ---operational formulations that go beyond the status of mere principles and general requirements ---will be challenging.

The situation may be slightly different with regard to system of protected areas that now covers about 12% of the surface of the globe. These sites are usually managed by government agencies established for the purpose, though some countries have private protected areas or protected areas owned or managed by NGOs. Global standards for managing these areas are agreed under the auspices of IUCN and its World Commission on Protected Areas (WCPA), a 'network of protected area expertise' which brings together a large number of protected area managers, subject matter experts, scientists, and NGO representatives. WCPA has issued a series of best-practice guidelines that address pressing management issues and one of them, No.8, is dedicated to sustainable tourism (Eagles et al, 2002). The guidance provided in this document deals with the planning and management of sustainable tourism to protected areas and, inter alia, suggests a basic risk management process and outlines requirements for a monitoring system for tourism-related impacts which, once it is in place, can also support early warning systems.

Risk Appraisal

Nature-based tourism poses risks to the natural environment, to local communities (especially indigenous peoples, who may be especially vulnerable in the more remote areas), to the tourism industry itself which suffers from economic fluctuations and, consequently, to the regional and national economy. As discussed earlier, tourists themselves may face health and safety risks. The risks to these various groups vary considerably, but all are amenable to identification, an assessment of exposure and vulnerability and, eventually, estimation. Whereas the assessment of risks to tourists' health and safety can be quite straightforward, the data required for estimating the risks to the natural environment and the social and economic setting present more of a challenge because these risks depend on a range of destination-specific observations. Because this study focuses on risks related to

nature-based tourism in general (as opposed to the risks in a specific location) the ensuing discussion is limited to an outline of what some of these risks are with regard to ecosystems (i.e. comprising the living organisms in a defined area and the environment in which they are placed), to the socio-economic systems within which tourism takes place and finally, to tourists' health and safety.

Risks to Ecosystems

- Unplanned development of tourism infrastructure and facilities in an area – that is, development without management standards and guidelines ensuring participation of local communities in both conservation and the revenue from tourism – often results in significant alteration of ecosystems. The changes can include deforestation, drainage of wetlands, soil erosion or compaction, desiccation through excessive groundwater extraction, fragmentation and disruption of habitat, potential encroachment on protected areas, littering, air and water pollution, eutrophication (i.e. a process in which water bodies receive excess nutrients, leading to excessive growth of and ultimately to a reduced concentration of oxygen), increased risk from fires, and, ultimately, loss of biodiversity.
- Tourists and their means of transportation can facilitate the introduction of invasive alien species (weeds, pests and possibly animals)².
- Wildlife tourism can have adverse affects on wildlife in three main ways (for a detailed discussion of potential ecological impacts of wildlife tourism, see, for instance, Newsome et al., 2005): by causing changes in the behaviour of birds and animals (e.g. deserting nests and eggs, stopping foraging due to restricted patterns of movement, coming close to campgrounds and roads in search of food, etc.), by leading to physiological changes (e.g. in heart rate, body temperature etc.) or by causing damage to habitats (see Tapper, 2006, p. 51, particularly for a case studies outlining the impact of tourism on the Galápagos Islands and of whale watching on Valdés Peninsula, Argentina). The nature and magnitude of responses depend on a range of factors such as the species, the characteristics of an animal itself (age, sex, breeding status), its habitat, the frequency and intensity of tourists' interactions with wildlife, the approach distance, and the types of stimuli created by the interactions. In the longer term, wildlife tourism can affect the mortality rate of some species (e.g. through increased vulnerability to exotic infectious diseases introduced by tourists and/or lethal collisions with road vehicles and boats). For instance, road death is believed to be responsible for the local extinction of eastern quoll populations in Victoria and parts of Tasmania in Australia (Australian Museum, 2003).
 - Wildlife observation often happens at critical stages in an animal's life history: e.g. for marine wildlife, during "migration, breeding, feeding, resting and socialising" (Valentine and Birtles, 2004, p.28). Humans compound the problem by desiring to get too close. The tourism industry's need for predictability of viewing wildlife creates strong incentives to manipulate habitat, or, in particular, to provide wildlife with food. These actions can create a range of negative impacts (wild animals no longer behaving naturally, death/disease from inadequate diet, over-population, introduction of alien species, change in an ecosystem's natural 'balance of species') which need to be compared to perceived benefits (conservation of threatened populations, creation of positive attitudes towards wildlife). Tourists, out of misplaced concern, may misinterpret wild animals' needs (e.g. the needs of predators vs. prey) or the need for management policies such as culling programmes. Their well-intentioned interference may have adverse consequences for wildlife.
 - Hunting and fishing can affect the 'genetic fitness' of a species in by changing the sex ratio and/or age distribution and disturb or through secondary effects such as poisoning following the ingestion of lead shot. They can also impact 'non-target species' via 'by-catch'. However, overexploitation and over harvesting of wildlife,

² The main driving factor in introduction of invasive species is probably international trade and in particular the use of ballast water in cargo ships.

leading to the local extinction of wildlife,, has most often been associated with illegal hunting (poaching), subsistence hunting, and wildlife trade (Green and Giese, 2004, p.89). A further risk for some species (in particular shells, corals and butterflies) derives from their value as popular tourist souvenirs, which leads to unsustainable specimen collection in some areas. Wildlife tourism also routinely practices the 'preventive' removal or killing of species such as snakes and insects in order to make tourists' wildlife experiences both safe and comfortable.

- Ultimately, wildlife tourism can endanger the reproductive success of a breeding group, population or animal community and consequently alter the species structures of an ecosystem. These impacts can be brought about by "even relatively minor stresses [including those that don't provoke a measurable change in an animal's behaviour], if experienced often enough, or experienced at key times of an animal's life cycle..." (Green and Giese, 2004, p.92).
- The impacts of long-haul travel to ecotourism destinations, transportation between sites, and vehicle travel within a specific site may also be considerable. Substantial energy use, in particular burning of fossil fuels for traveling, results in the emission of greenhouse gases, thus contributing to climate change. In this respect, ecotourism is no less harmful to the environment than mass tourism. In an analysis of 'between-site travel' for different forms of tourism, an 'ecotourists' daily energy consumption is estimated to be nearly three times than that of a 'mass tourist' staying at an all inclusive resort holiday (Simmons and Becken, 2004, pp.18-19).
- Climate change poses a major risk to tourism in multiple ways: bleaching and disappearance of corals; destruction of mangroves and coastal wetlands; general coastal erosion and degradation; loss of alpine glaciers, snow cover and meadows; shift of animal and plant ranges; extinction of species; and rising sea-levels threatening low-lying islands and other areas. Ultimately, these effects of climate change may contribute to the loss of the unique features that characterize both scenic landscapes and refuges for specific animals and plants.

Risks to Socio-Economic Systems:

- Due to all kinds of tourism activities, local communities may find that access to or use of important resources may become more difficult or altogether restricted. For instance, in protected areas, traditional wood gathering or spiritual practices may no longer be permitted (Eagles et al. 2002, p. 32). Tourists' consumption of fresh water supplies, food, electricity, etc. in areas where such resources are scarce further competes with the needs of local population. For example, use of water for showers, swimming pools, and golf courses can conflict with local domestic and agricultural water uses.
- Displacement of local populations is another risk. An increased tourism-related demand for infrastructure, facilities and goods and services can put a financial burden on local communities both in the form of taxes as well as rising property values. These and other factors can eventually cause locals to move to places that are more affordable places, but ones that may be less suitable for earning a living from the land.
- A further concern is the potential disruption of indigenous culture and ways of life. Such disruption can be caused by an influx or the immigration of new residents in search of jobs and business opportunities. Increasing inequalities in local communities as tourism generates winners and losers can also strain the social fabric. Intergenerational and gender conflicts can result.
- Economic speculation about a rising tourism market can lead to overdevelopment and the creation of over-capacity, thus decreasing economic viability and leading to additional environmental damage. This phenomenon has been observed in some parts of Spain, Thailand, and Indonesia.
- Tourists can also be a significant vector for disease, as in the case of SARS. Travel entails multiple interactions, often taking place in crowded spaces with poor air circulation, and within short time frames before travelers know they are contagious or become overtly ill

(transit times of 24-48 hours are shorter than the incubation periods for many infectious diseases). Even tourists traveling to and from remote locations typically rely on major transport hubs, often located in major cities, from which they disperse to home and work environments where the spread of disease can continue (Wilson, 2002). By serving as a link between multiple locations, tourists thus have the potential to greatly fuel the dispersal of an infectious disease. Tourists can also facilitate the transport and dissemination of invasive alien species which can cause economic damage.

Tourism is a major source of national income for many countries, a fact clearly reflected in the share tourism contributes to their gross domestic product (GDP). And from a global perspective, tourism provides, on average, a large and steady contribution to global GDP. However, dependence on tourism presents a risk to the economy both on a local and national level; for tourism has proven to be a volatile industry in specific countries, regions and destinations (e.g. in the Caribbean, the Maldives). Extreme fluctuations in tourist volumes are often dependent on 'external factors' such as terrorism, civil unrest, natural disasters, outbreaks of infectious diseases, the price of petroleum, exchange rate fluctuations and changing tourist preferences, all of which are hard to foresee and/or control. For instance, the hotel bombings in Bali greatly reduced tourism for at least several months, and it took well over a year for the tourism economy to recover. Over the past decade, trekking tourism in Nepal has suffered because of civil unrest, undermining one of the few sources of income for many of the rural people. The tsunami of December 2004 dealt a devastating blow to tourism in southern Thailand although the country was able to recover relatively rapidly because it had the infrastructure to deal effectively with the disaster. Nonetheless, the disaster was extremely costly, especially to small operators who were essentially wiped out and whose risks were uninsured. Thus, it is often the local communities who are most vulnerable to of the 'boom or bust' nature of the industry.

Risks to Tourists' Health and Safety

Risks to tourists' physical well-being are inherent to travel, with traffic accidents being a particular – indeed the prevalent – hazard in many parts of the world. Accidental injuries or deaths are also not uncommon among hikers, skiers, and other mountain sports, or among enthusiasts of kayaking, rafting, scuba diving and other water-related sports. Some tourists are killed or injured every year by the very wildlife that they have come to observe, particularly by large carnivores, rhinos and elephants.

Fatalities and injury are features of adventure or extreme tourism as the recent increases in high profile deaths on Mount Everest illustrate (Krakauer, 1997). Over 150 climbing deaths have occurred on Mount Everest since its summit was first reached in 1953. Climbing in the European Alps can also be deadly: a study of mountaineering accidents in the European Alps for the period of 1987 to 1997 reveals an average of 414 fatalities per year, with the number of deaths climbing to 470 for 1988, the most deadly year within the period investigated (Lischke et al, 2001).³

Characterization of Risks as Simple, Complex, Uncertain, or Ambiguous

As part of structuring an approach to evaluating and discussing risks and identifying key stakeholders, the IRGC framework suggests that the risks be categorized as 'simple', 'complex', 'uncertain', and/or 'ambiguous.' For nature-tourism, the risks posed to ecosystems can be characterised as 'complex' and/or 'uncertain'; ecosystems rely on intricate interactions between species as well as with 'exogenous' elements such as temperature, atmospheric gases / nutrients and light, the total displaying the stunning dynamics of complex systems (Cooney, 2005). Socio-economic

³ For lack of a full set of data for France, Italy and Switzerland, the authors had to resort to data for the Chamonix region, Southern Tirol and the Zermatt area, respectively. The totals given in this study therefore do not convey the full picture.

systems, in addition to interacting with and transforming the natural environment, hinge on values and goals. Risks linked to the socio-economic systems should therefore be viewed as mostly 'ambiguous'. Health and safety risks to tourists, in contrast, would probably fall in the category of 'simple' risks, at least in comparison to the other risks affecting ecological and socio-economic systems.

Tolerability and Acceptability Judgement

Judging whether any of these risks are acceptable, tolerable or intolerable requires balancing potential negative impacts with likely benefits for each potential travel destination and form of nature-based tourism and across the stakeholder community. Overarching values and issues such as personal and economic freedom, right to development, right to subsistence and autonomy will come into play and need to be considered. Any judgement about acceptability or tolerability of risks will also have to take into account the potential impact that options to alleviate a certain risk might introduce: risk reduction measures themselves can introduce new risks, creating risk-risk tradeoffs and requiring compromises. These issues should be identified and put on the negotiation table early on.

For adventure tourism, judgements about acceptability or tolerability need to take into account that inherent risk is often part of the attraction of the activity. While the tourism operators may take reasonable measures to prevent a risk from occurring or at least mitigate its effects (for example, providing life vests for running rapids), those participating in the activity are theoretically, at least, aware of the risks. Adventure tourists may be assumed to have assessed the risks and have determined that they are acceptable, although it is not clear that they have been fully informed.

Risk management

Successful management of the risks related to nature-based tourism is dependent on at least four factors: a favourable regulatory framework and far-sighted government policies; adequate funding for conservation and nature protection; education of all of the stakeholders; and intelligent and adaptive management at the site level management. Some options that target each of these factors are outlined below (for a comprehensive discussion of the 'instruments' that governments can use in order to enhance the sustainability of tourism, see UNEP 2005).

Regulatory and political frameworks

- Regulatory frameworks (including prohibition/preclusion of tourism for particularly sensitive and endangered areas) in combination with permits / licenses for operators allows for governments to define the conditions under which tourism is acceptable or tolerable and provides for environmental standards as well as standards of safety and competence.
- Industry self-regulation including certification (e.g. Australia's Nature and Ecotourism Accreditation Program, Ecotourism Association of Australia's 'accreditation system for nature guides', Green Globe 21) and eco-labelling, in combination with dynamic and adaptive best-practices and codes of conduct, are also valuable and increasingly popular tools for ameliorating the ecological and social impacts of tourism. However, industry self-regulation – and in particular eco-certification schemes created by commercial ventures – may lead to adoption of the "lowest common denominator" measures and thus may not actually do much to enhance industry standards (Buckley, 2004, pp.10-11). This tendency needs to be carefully watched and counteracted by those industry participants who adhere to the highest operational standards.
- Establishing incentive schemes which induce desirable behaviour patterns can be another way to manage risks. Private and/or communal landowners could, for instance, be encouraged to set up wildlife observation as well as hunting and fishing tourism on their properties as alternatives to large scale cattle, agricultural, logging and mining operations. In addition to restoring wildlife and increasing the habitat area for both fauna and flora, such practices are also likely to pay off economically: wildlife tourism activities that facilitate

conservation can in fact lead to higher yields per hectare than alternative forms of land-use (Eagles et al. 2002, p.26). Where necessary, indigenous and local communities could also be provided with economic incentives (e.g. employment or other compensation for managing nature-tourism sites) to change potentially detrimental resource management practices (e.g. poaching, capturing for live trade, extensive logging). Another option is rewarding tour operators and tourism guides by adding, for example, a 'conservation component' to the salaries of those who actively engage in conservation of both wildlife and other natural resources.

- Institutionalising collaboration between the public and private sectors and the affected local communities is a goal that both governmental and industry actors should work toward. Ideally, such collaboration will take the form of multi-stakeholder planning and decision-making with regard to tourism strategies and master plans, in which all parties are given equal opportunity to participate. Master plans should include a broader sustainable development rationale and address both biodiversity and socio-economic considerations. Collaborative schemes are also more likely to be successful at helping with surveillance and enforcement of tourism management strategies, activities which might otherwise be extremely difficult to carry out due to the remoteness of many nature-based tourism destinations. Collaboration amongst key stakeholders on political action and advocacy in support of conservation issues should also be encouraged.
- Environmental impact assessments, carrying capacity assessments, and other assessments relevant to specific regions should be made mandatory in tourism planning. Socio-economic impact assessments with a view to better integrate livelihood needs of local population with conservation goals are also an important component of (McNeely, 2005, p. 109). Setting indicators for monitoring the success of the goals established in any plans is also a key step. For nature-based tourism, specific site management plans should require the inclusion of physically measurable biodiversity and conservation indicators. In the case of wildlife tourism, the indicators might, for example, include "species presence / absence, abundance, diversity, breeding success, behaviour or health; or attributes of the habitat" as well as "amount of noise made by tourists, or degree of soil compaction" (Higginbottom, 2004, p.215-216). For monitoring to be effective it must include tourist data such as "numbers, activities, distribution" (Higginbottom, 2004, p.216).

Importance of funding

- Relevant government agencies need to be convinced that tourism should be seen as a major means to generate funding for the management of sensitive ecosystems --- conservation and protection initiatives for endangered animals, patrolling for poachers and other illegitimate users of resources, control of visitor numbers and support of neighbouring communities. Currently, income from tourism is seldom returned to the protected area but rather goes into countries central budget. Ideally, the economic value generated from tourism would encourage the public and politicians to embrace the conservation of nature, wildlife and cultural heritage, which in turn relies on adequate government funding. This is particularly important in the context of protected areas, where funding for their management does not keep pace with the expansion of protected areas (McNeely, 2005, 12).
- Tourists' willingness to support conservation should be better utilized to underwrite conservation programs. Increasing entrance fees for protected areas, the active soliciting of donations, or offering conservation-related work for a fee to volunteers ('conservation holidays') can all raise revenues. However, in the case of protected areas it is crucial, though very difficult, to strike the right balance between income from visitor fees and the potential negative impacts of increasing the number of visitors.
- Reducing the share of 'revenue leakage', in which the economic benefits accrue primarily to individuals or industries outside the tourist destination, is imperative. This can be most effectively achieved if those in charge of planning and managing nature-based tourism operations employ local people and use local products.

Education

- Awareness about the impacts of tourism, the importance of biodiversity, and the need for conservation efforts needs to be raised within the tourism industry. It should be integrated all along the tourism supply chain, from tour developers to the indigenous communities. Tour guides who are knowledgeable about the environment and act responsibly can play an important educational role and can effectively influence tourists' behaviour (Littlefair, 2004, p. 305-306). They can also influence tourists' continued engagement in conservation, both as donors and political campaigners. In areas where enforcement of regulations or guidelines is infeasible or impossible, education is often the only instrument to prevent, or at least mitigate, the harmful impacts of tourism activities.
- Increased research and monitoring efforts are necessary to improve knowledge about both the potential and actual impacts associated with nature-based tourism, particularly at the local destinations. Research efforts need to include evaluation of the effectiveness of available management approaches and monitoring methods so that adjustments can be made in accordance with the findings.
- Realistic marketing is a prerequisite for managing tourists' expectations (e.g. about hand-feeding and handling wildlife) and should include clear statements as to what experiences tourists can (and cannot) reasonably be expected to have. Publicising conservation efforts might help tour operators to attract environmentally-conscious tourists.

Micro-management

- In wildlife tourism, specific measures to 'harden' the environment are now commonly taken to reduce the impact on animals. In these cases, viewing areas are strictly defined, for example by building physical structures like platforms, bridges, boardwalks, barriers or blinds. Although highly controversial, another measure involves the conditioning of wildlife such that 'being watched' does not cause them excessive stress; this has been done quite successfully with mountain gorillas in Uganda (Higginbottom, 2004, p.222) and in Rwanda. In many protected areas, tourists are encouraged to stay on marked paths, and in many African protected areas, tourists are forbidden to leave their vehicles without an armed guard.
- Requiring a minimum level of expertise among tourists undertaking certain risky activities can be used to reduce risks to tourists. For example, most countries require scuba divers to be certified before they are allowed to dive. This approach might be extended to the licensing of tourists to operate equipment such as mountain bikes or motorcycles.
- For some types of adventure tourism, improved equipment is also an option, but this would need to be traded off against costs.
- Finally, as adventure tourism continues to expand, insurance against liability will be likely to be more in demand and may play a role in reducing risks.

Internalizing the environmental costs of tourism impacts in the cost of travel could be an important way to couple travel with conservation efforts. For instance, many international organizations are responding to the problem of climate change by making their travel "carbon neutral". The IUCN, for example, charges all staff air travel a 'carbon tax' which is assessed at the current European Union rate and paid into a special fund that is allocated to approved carbon sequestration projects. This tax is relatively modest, and many ecotourists may be willing to offset their carbon dioxide production against an appropriate carbon sequestration project, such as preservation of mature, old-growth forest (for a both fascinating and extensive discussion of the market approach to capturing carbon and conserving biodiversity, see e.g. Swingland, 2002). Relying on a more altruistic approach, there are increasing calls for tourists to chain trips together in order to minimise air travel, to keep travel limited to a specific region, and to use less energy-intensive travel alternatives (e.g. walking) at their destinations. Though such behavioral changes are desirable, implementing them faces numerous

challenges including increases in the time and costs of travel and the need to persuade individual tourists to abandon the compelling logic that their marginal impacts are small --- 'my own actions don't make a difference if you consider how many tourists are out there infesting almost any place on the world.' Improving transport efficiency through better logistics and planning, and more ample use of renewable energy sources would also reduce impacts.

Risk communication

Risk communication is the key to raising awareness of a risk issue and consequently, to finding a remedy. In the context of nature-based tourism, communication may be described in using several terms such as 'interpretation', 'information' or 'education' though each may be slightly different in application (McNeely, 2005, p.184). Unfortunately, awareness of the risks to ecological and socio-economic systems cannot simply be considered a given. While this conclusion applies to operators and guides, it ultimately applies to those whose choices and behaviour lie at the origin of these risks -- the tourists.

While many potential tourists may have some general understanding of environmental and socio-economic problems in the places they visit, they may not link these issues to the footprint that they themselves leave behind when travelling. The existing governance system, with its multilateral conventions, principles of law, policies as well as spawning industry declarations and standards, is not an effective means of communication. It is not something the average tourist can realistically understand or connect with -- assuming the issue makes it onto the tourist's 'radar screen' at all.

Raising awareness of risks related to nature tourism and of the existing governance system must be linked to the individual's travel experience and interests. Many protected areas have designed sophisticated communication strategies to this effect, sometimes even relying on them as their primary means of managing impacts (Eagles, 2002, pp.108-111; Littlefair, 2004, p.297). Sophisticated communication strategies may be more difficult to achieve for nature-tourism destinations outside the protected area system since responsibilities are often scattered amongst stakeholders with conflicting goals and interests.

Risk communication is however also crucial amongst the international community, governments, the tourism industry, NGOs -- those stakeholders or actors who by virtue of their function and/or purpose should be aware of the risks and what they can do about them. Communication enables sharing of insights into aspects of risks that might not have been considered, other concerns, and strategies for risk management. Risk communication ultimately is a prerequisite for any form of coordinated action.

Risk communication directed at tourists' health and safety needs to be broken down between the different elements of the industry. In the travel sector, the airlines, for example, have a very comprehensive perspective of risk assessment, as do those involved in road transport, at least in the relatively advanced countries. Road transport standards are likely to deteriorate in the remote, and hence more risky, areas that are likely to be of greatest interest to adventure tourists.

In the case of adventure tourism, various standards have been developed for different kinds of activities. The mountaineering associations often have developed training and standards at a fairly sophisticated level. Some of the newer forms of adventure tourism, such as bungee jumping, are far less regulated, and the risks are poorly communicated. In areas where wildlife poses a danger, risk communication is often very mixed, with indigenous peoples being more aware of the risks than the tourists.⁴

⁴ That said, local people continue to suffer mortality from animal attacks, for example, from attacks from rhinoceros and tigers in Nepal, from hippos and lions in Africa.

Stakeholder participation

In the long run, although opinions may diverge widely about the direction and methods that management should take, it is in the interest of all those involved in the tourism industry to manage the risks associated with nature-based tourism. The earlier all those generating or affected by these risks are involved in the management process, the more probable it is for any divergence to be resolved or addressed through a suitable compromise. Rarely does the responsibility and capability for risk management lie with one single actor.

The conservation and the development communities advocate broad stakeholder involvement from the planning stage of a tourism venture and through to the setting up and management of the operation and its impacts. In the case of protected areas, stakeholders are increasingly seen as ‘constituencies’, the most vulnerable of which, need to be able to draw on tangible benefits (e.g. via employment and the recognition of ‘customary’ resource use and access rights) in return for their support for protection efforts. Those most vulnerable are local and indigenous communities who, if not meaningfully included in the governance of a protected area, often feel disenfranchised or are driven into depleting the very resources that are to be protected in order to secure a livelihood (McNeely, 2005, pp.101-128). A broad stakeholder approach requires the forging of new alliances with partners who are not traditionally associated with supporting conservation such as the extractive industries (in particular the mining and energy sectors), urban dwellers, policy-makers and the security community⁵ (see McNeely, 2005).

Recent developments with wildlife tourism involving for hunting illustrate the advantages of such alliances. Although hunting is highly controversial for some, it can alleviate some of the socio-economic risks related to nature-based tourism while limiting risks to the ecosystem. In fact, big game hunting in southern Africa has been both economically lucrative and a positive conservation force, enabling rural people to actually earn money from their wildlife. Photo safari tourism or wildlife observation tourism have had similar benefits. South Africa especially has developed a thriving industry around these types of tourism, often on private lands. It has changed local perceptions of the value of wildlife, creating widespread support for the conservation of numerous species. Similarly, Ducks Unlimited, a non-profit organization devoted to the conservation of waterfowl and wetlands in Canada and the US primarily to benefit duck hunters, has earned substantial income over the years from selling duck stamps and other fundraising activities. A result has been considerable expansion in waterfowl populations and reductions in the loss of wetland habitats.

While the need for such broad stakeholder participation may be less obvious and more difficult to organise in ‘unregulated’ nature-based tourism destinations, it is nonetheless crucial. After all, the income from tourism activities that accrues to stakeholders will only continue to flow if the environmental and socio-economic features of a destination remain largely intact. Good governance of the risks that come with tourism, however, can only be achieved if all those interested, affected, or able to help manage the risks work toward the same goal.

Conclusions

Tourism has experienced rapid growth over the past 50 years and is expected to continue to develop, particularly in biodiversity ‘hotspots’. Ecosystems constitute the main capital not only for nature-based tourism, but they for other critical resource ‘services’ -- watershed management and local climate regulation -- on which our societies and other economic activities rely. They need to be protected and conserved in order to allow both ecological and socio-economic systems to thrive. In addition to tourism, challenges to conservation of these ecosystems come from short-term high-yield alternatives in land-use (e.g. oil-drilling in the Arctic National Wildlife Refuge in Alaska,

⁵ Security community includes those involved in border control, including the army, navy, a coast guard, and border patrol police.

deforestation in order to enable industrial agriculture) or, in the case of poor countries, from the pressure of a growing population and the needs of local communities to earn a living.

Nature-based tourism, when well managed, can contribute both to biodiversity conservation and to alleviating poverty. It is one means by which local people can derive economic benefit from protected areas, their habitats and wildlife, creating incentives for protection of those resources. Tourism and conservation can then coexist or may even be seen as symbiotic. The challenge for developing nature-based tourism is to make it symbiotic with conservation (Lynam, 2006).

Such a symbiotic relationship is of course not only desirable for protected areas: those in charge of nature tourism destinations outside the protected area system should aspire to achieve the same. It will require a very delicate balancing act in terms of sharing accrued benefits as well as 'governing' the risks in relation to tourism activities. Such a balance can probably be achieved best if based on a polycentric, nested system of governance (McNeely, 2005, p.19-20) in line with the characteristics of a tourism location. Effective risk governance however requires that the risks be understood and evaluated in the wider system within which nature-based tourism operates, including 'multi-origin' risks such as those arising from transportation and motorised travelling as well as climate change. Such a system furthermore has to 'have teeth' in that it must be able to regulate those whose behaviour creates risks, that is, the industry and ultimately, the tourists themselves. If done successfully, nature-based tourism could become a role model for sustainable development, thereby clearly outperforming other forms of land-use.

Lessons Learned and Recommendations

Risks in relation to nature-based tourism, irrespective of whether they potentially affect the ecosystem, the overarching socio-economic fabric or the well-being of individual tourists, are of predominant concern only to a few players with special interests such as the conservation and development movements, parts of the tourism industry and, possibly, local communities. Unlike the risks related to genetically modified organisms (GMOs) or nuclear energy, these risks have yet to develop into a burning issue for the general public. Within the public realm, they seem largely overshadowed by the obvious benefits that potential tourists associate with travelling and nature-based tourism.

Consequently, it is doubtful that the systematic framework for risk governance that this case study advocates would have changed much in the way risks from nature tourism are generally perceived and dealt with, even if had it been available earlier on. It seems more likely that they would still have been the primary preoccupation of a relative few for whom the benefits and economic opportunities of tourism do not outweigh the risks. While the framework might have helped individuals or particular sectors to better understand and manage the risks within their control, a fragmented approach to managing risks is unlikely to have been successful.

Where the framework might have made a difference, however, is with regard to stakeholder involvement in general. Had all those concerned had their say and been part of decision-making, some of the more egregious examples of the development of tourism resorts could perhaps have been prevented (for example, the beach resort of Cancun, Mexico, where mangroves, swamps, dunes and inland forests, home to a vast number of animal species, had to give way to a town of 300 thousand inhabitants that attracts 2.6 million visitors per year and has a major waste water problem (Christ, 2003, p. 21)). Similarly, the establishment of protected areas, might have been less conflict-laden had local communities and their ancestral rights been acknowledged as part of the process. In the past, these areas have typically been created by government in a top-down approach despite the fact that an estimated 50% of the main eco-regions of the world are located on the ancestral territories of indigenous peoples (Mc Neely, 2005, pp. 179 and 116). While it is clear that stakeholder involvement

in itself does not automatically lead to good risk governance, it can nonetheless define the boundaries for both making and implementing risk-related decisions.

This case study demonstrates that the major advantage of using the IRGC framework is that it encourages the establishment of the ‘big picture’, the appropriate framing of a risk issue with which any detailed assessment begins. Investigating the relevant stakeholders’ networks along with the rules, interests and values that affect their actions, the governance context, existing bodies of knowledge regarding risks, concerns and management alternatives provides opportunities to identify where major gaps in risk governance might lie that can prevent a technically adequate solution from being embraced and successfully implemented.

Applying the framework to the risks related to nature-based tourism also met with a number of difficulties, pointing to areas where the framework could benefit from more clarity:

- The analysis required under the pre-assessment component proved difficult because the terms used to outline the structure of this analysis seem insufficiently defined and delineated (namely ‘early warning’, ‘risk assessment policy’ or ‘screening’ and ‘scientific conventions for risk assessment and concern assessment’). It would be very helpful if this part of the framework were complemented with specific examples providing illustrations of all four of these elements.
- The framework’s development of four distinct risk classes (simple, complex, uncertain, and ambiguous) which are then juxtaposed with specific risk management strategies (see Table 6 in the Risk Governance Framework in Chapter 1), is very helpful in setting priorities for risk management. As usual with summary tables, however, a user might mistake the distinctions made in this table for distinct and mutually exclusive choices. For many risk fields, such clear-cut compartmentalisation hardly reflects reality. Instead these risk classes may simply describe different aspects of the same risk. Risk management would therefore have to consist of a mix of the offered strategies and instruments as well as possibly others. A word of caution to this effect might prevent the user of the framework from misinterpretation.
- Even if the framework is being applied to well defined, very specific risk topics, the requirements it poses to its users are substantial. The framework components presuppose a substantial background and in-depth knowledge, including on how the issue has evolved within the wider socio-economic context. It therefore seems that any user who is not a seasoned expert with regard to the topic in question might struggle to make best use of the framework. In its current format, the framework is not particularly ‘user-friendly’. Despite the many summary tables, the framework requires the first-time user to basically ‘juggle’ the content of up to 50 pages. Framework users who have to work with tight deadlines might therefore benefit from a condensed and easy-to-handle version of the framework which comes in an accessible format (such as a 2-3 page template or blueprint). That said, such a format would need to ensure that the analytic structure it provides is not mistaken for a rigid frame – or all-embracing form – which merely has to be filled in, thus replacing genuine thinking. Instead the format should provide the impetus for the right questions to be asked and the relevant issues to be considered in both a systematic and creative manner with regard to the governance of a particular risk.

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