Environmental Issues and Best Practices for Ecotourism

Brief Description of the Sector

Ecotourism has become a significant part of the tourist industry in Latin America and the Caribbean. Increasingly, tourists are seeking out opportunities to experience undisturbed natural areas where they can observe and enjoy unusual scenery, unique plants and animals, and cultural and historical features. Ecotourism can contribute to economic development and the conservation of protected areas by providing local employment and community ownership while generating revenues that can be used to sustainably manage protected areas. But careful planning and management is required to avoid adverse impacts and balance ecological, social, and economic objectives.

The Nature Conservancy and the World Conservation Union have both adopted the following definition of ecotourism: Environmentally responsible travel to natural areas, in order to enjoy and appreciate nature (and accompanying cultural features both past and present) that promote conservation, have a low visitor impact, and provide for beneficially active socio-economic involvement of local people (see http://nature.org/aboutus/travel/ecotourism/). Key to this definition is the concept that successful ecotourism involves mutually supporting partnerships among three key elements: the natural environment, the local communities, and the tourism system (IUCN 1997).

Beyond ecotourism, USAID s activities should promote community-based natural resource management--increasing socioeconomic benefits to communities and landowners while sustainably managing the environment. It can also increase awareness and support conservation, boosting the capacity to conserve and manage natural resources outside protected areas. If local communities can benefit from the use of their land, water, forests, and other natural resources, they will want to participate in and supporting actions that conserve and sustain them.

Sample Visitation Rates to Selected Nature-based Destinations in Latin America and the Caribbean

Country	1990	1999	Total Increase	Average Annual
Costa Rica	435,000	1,027,000	136%	9.0%
Belize	88,000	157,000	78%	6.0%
Ecuador	362,000	509,000	41%	3.5%

Source: WTO 2000.

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Potential Environmental Impacts

Tourists can have a significant impact on a community s cultural and economic integrity.

The impact of ecotourism is similar to the impact of small-scale construction, water and sanitation, and roads, but there is added concern for sensitive environments. Potential adverse impacts include:

- Soil erosion or compaction from: poorly designed roads and trails that do not follow natural contours; off-road movements to avoid wet, rutted, or gullied areas; off-road or off-trail traffic to view unique wildlife or resource features; and poorly planned infrastructure or excessive use in areas such as camp sites and tour routes.
- Deterioration of water resources and quality due to inappropriate design and siting of latrines, septic tanks, and solid waste.
- Deforestation from firewood harvesting, camping, and construction.
- Destruction of unique flora.
- Changes in animal behavior due to human interference.
- Pollution from litter, oil residues, or vehicle exhaust.

Local resource users living near protected areas can also be affected adversely. Tourists can have a significant impact on a community s cultural and economic integrity. The seasonal nature of tourism can conflict with labor needs for crop planting and harvesting, and enhanced protection of an already protected area can conflict with a community s traditional use of the area for non-timber products (fuelwood, medicinal plants, game meat).

Management plans should be developed for specific protected areas before initiating tourism activities.

At the same time, the potential benefits of ecotourism can adversely affect the environment of the protected area. An increase in employment, infrastructure (roads, electricity, telecommunications) technical assistance, or services (education, healthcare) can stimulate people to migrate to the vicinity of a protected area. Also, improved economic conditions are often accompanied by increased production of solid waste.

Program Design--Some Specific Guidance

Adverse environmental impacts often result from poor planning and coordination. Ecotourism should be based on a national tourism plan and protected area managment plans, which would be useful in catalyzing soundly designed ecotourism programs. This plan can be used as a guide to establish regulations, policies, and responsibilities for tour operators and other users. In addition, management plans should be developed for specific protected areas

before initiating tourism activities. Standards for environmentally sound design and operation of camps and lodges need to be promulgated and legally required for all potential developers and operators.

The staff in protected areas should be trained in managing resources, materials, equipment, personnel, and budgets. Aside from enhancing the enjoyment and educational experience of visitors, properly trained staff can ensure that tourists stay within designated areas and use facilities--water resources, fuelwood, camping sites--in a sustainable manner.

Limits of acceptable use:
The maximum level of visitor use an area can sustain without sacrificing visitor experience or ecological, aesthetic, or natural resource values. Limits of acceptable use can be based on number of visitors per day, number of beds allowed in a zone, number of vehicles per kilometer, or other measurements. Whatever measures are selected, they must be easy for protected area staff to track and act on if exceeded.

Management Plans

Develop protected-area management plans. Based on social and ecological field assessments, these plans should incorporate limits of acceptable use for specific protected zones. Protected-area management plans should also establish criteria governing access to sensitive ecological, scenic, or cultural sites, including minimum distances for roads and the degree of foot access allowed. They should designate areas specifically reserved for research, wilderness, roads, trails, social preservation, visitor facilities, and overnight posts. The ecological assessment should identify sites to be avoided as well those to be developed, and the type and amount of infrastructure considered permissible--lodges, camps, roads, visitor centers, administrative offices, staff housing, and the like.

In many cases the most significant impacts are associated with roads and trails that provide visitor access. Existing plans should be revisited to determine whether roads might be relocated or replaced by trails. Increasingly, managers and developers recognize that visitor experience is often enhanced by experiencing natural environments on foot, rather than from vehicles.

Plans should incorporate environmental and social assessments to provide information on how local communities use protected areas. Many communities in Latin America and the Caribbean harvest (or use or depend on) resources from protected areas, including fuelwood, construction materials, game meat, fish, birds, insects, medicine, ornamental plants, and fruits and berries. Social assessments identify the people who use the protected areas and how their activities affect ecosystems and visitor experience. They can also be used to determine the potential for establishing sustainable partnerships between tourism managers and local communities.

Social assessments identify the people who use the protected areas and ... can also be used to determine the potential for establishing sustainable partnerships.

Once the ecological and social assessments are completed, a tourism plan can be developed that sets parameters for infrastructure development (roads, trails, camp sites), the number and location of tourist visits, and responsibilities for implementing and monitoring the plan. Consider the following when establishing management guidelines:

- Decide on the primary audience--general visitors, tour operators, user groups.
- Identify the theme or key thrust--environmental protection, increased cultural awareness.
- Include guidance for visitor behavior and use--campgrounds, hiking, boating.
- Consult with guides and drivers who escort tourists into target areas.
- Obtain technical assistance from scientists who have studied tourism impacts.
- Organize meetings or workshops with stakeholders in tourism development, and form a committee of residents, resource managers, guides, commercial operators, lodge owners, service personnel, tour drivers, and local vendors.

CONCESSIONS FOR TOURISM SERVICES IN COSTA RICA

In the early 1990s the Costa Rican National Park System established a tourism concession program in the Irazu and Poas National Parks. Concessions for tourism-related services such as entrance fee collection, tour guides, groundskeepers, security guards, food and beverage, and souvenir stands are competitively bid to local small businesses and residents living in the buffer zones of these parks. These commercial concessions, generally awarded for a three-year period, are a real and effective way in which communities can participate and benefit from protecting a natural area. FUNDECOR, a national environmental NGO, administers the concessions program for the Costa Rican National Park Service, and provides oversight and quality control of the concessions. Concessionaires pay a percentage of their gross profits to a fund (co-administered by FUNDECOR and the National Park Service) that finances capital improvements for the parks and training and equipment for staff. Currently there are more than 80 concessionaires working in the two parks.

The concession mechanism has greatly improved the facilities and services provided in the national parks and has contributed to their financial sustainability. Most importantly, surrounding communities have formed a strong alliance with the park service in protecting the biological resources of the national parks, which provide many of them with an alternative source of income. During 1995-2000, the concession mechanism generated more than $250,000, which has been reinvested in the management and operations of the two parks.

Source: www.fundecor.or.cr

- Use guidelines from other countries as models.
- Set objectives and formulate a way to evaluate whether the objectives have been met--improved views, decreased soil erosion.
- Develop a draft document that can be reviewed by technical specialists, and create a distribution plan for the guidelines.
- Establish official regulations based on the guidelines (requires enforcement and research personnel to make recommendations supported by data on visitor impacts on soil, water, endangered species, and habitat).

Guidelines on concession operation and implementation provide environmental standards that will reduce visitor impacts.

Develop tourism concession programs. Designed to regulate development on protected lands, tourism concession programs can require that proposals and agreements follow specific guidelines for environmentally sound design and management. Within established limits of acceptable use, management plans determine which visitor activities and camping and lodging facilities will be allowed and can lay out the terms and conditions of commercial leases. A well-structured tourism concession plan provides a stable administrative environment for concessionaires, fair market value and reimbursement costs for protected area management services, and quality visitor facilities and services for the public.

Concession agreement leases are normally set for a limited number of years and monitored by periodic inspections. The information obtained from monitoring is used by protected area managers to determine whether to continue or terminate a concession. The information can also be used to determine whether a concessionaire should be allowed to build or operate additional facilities within established limits of acceptable use. A concession application should include specific information on the monitoring and implementation of the activity. The government, private sector, tour guides, interpretive workers, NGOs, donors, and local communities should agree on information and restrictions to be included in a concession contract.

Guidelines should also be developed for tourists, who need and usually appreciate information how to use and conserve protected area resources.

Guidelines on concession operation and implementation should provide environmental standards that will reduce visitor impacts. If a protected area has a concession system, its requirements can be mandated before a business is allowed to operate in the area. Without a concession system, adverse impacts from the management of tour operations, lodges, and all other enterprises in the area may be difficult to prevent.

Guidelines should also be developed for tourists, who need and usually appreciate information how to use and conserve protected area resources. Much of

Environmental Mitigation and Monitoring Issues

Issue or aspect of activity	Impact *The activity may*	Mitigation *Note: Mitigations apply to specified project phase planning and design (P&D), construction (C), or operation and maintenance (O&M)*
General Planning and Design		
Defining use limits	• Exceed limits of acceptable use (LAUs) for the protected area	• Develop management zone plans to set LAUs and the processes that will be employed to ensure that LAUs are not exceeded. • Employ the principle of minimum tool needed to provide emergency access to sensitive or wilderness areas. (P&D) (C) (O&M)
Selecting infrastructure site	• Cause loss of tropical forest and habitat necessary for maintenance of biodiversity • Adversely affect threatened or endangered species • Result in poor siting of infrastructure, roads • Adversely affect viewsheds and aesthetics	• Carry out environmental assessments or detailed mitigation strategies to avoid or mitigate adverse impacts on tropical forest, biodiversity, or threatened and endangered species • Use a multidisciplinary team hydrologist, geo-technical engineer, soil scientist, ecologist, tourism specialist to determine the nature of proposed infrastructure and site locations buildings, roads, camp sites, observation points (see Chapter 2: Small-Scale Construction in this manual) (P&D) (C) (O&M)
Providing access to protected area	• Unnecessarily alter natural setting and viewsheds • Siting too close to wetlands, rivers, water bodies, tropical forests, or sensitive areas • Adversely affect viewsheds and aesthetics	• Develop integrated road and trail network plans, emphasizing use of trails near sensitive exceptional resources, such as habitats for rare, threatened, or endangered species, tropical forests, and cultural, archeological, scenic, historical, or paleontological sites • Locate lodges, camps out of view of protected area visitors • Carefully analyze soil and subsurface geology. Incorporate correct siting and design within specifications (see Chapter 3: Rural Roads in this manual)
Quarrying for road surface maintenance and construction materials	• Adversely affect viewsheds and aesthetics	• Develop a quarry and borrow pit management plan for extracting construction materials. Plans should include assessments of quantity and quality of material from potential sites, in sufficient detail to also plan for restoration (see Chapter 2: Small-Scale Construction and Chapter 3: Rural Roads in this manual)
Selecting construction materials	• Result in over-dependence on imported construction materials	• Incorporate local materials as much as possible in designs, without depleting available resources or adversely affecting the environment tree re-planting or careful restoration of local quarries or borrow pits (see Chapter 2: Small-Scale Construction in this manual)

Issue or aspect of activity	Impact *The activity may*	Mitigation *Note: Mitigations apply to specified project phase planning and design (P&D), construction (C), or operation and maintenance (O&M)*
Supplying long-term water requirements	• Result in excessive water consumption that competes with protected area demands of fauna and flora, especially in arid and semi-arid areas	• Estimate protected area water demands for all future uses. Develop surface and groundwater budgets based on historical meteorological records and assessments of ground water flows. Select water conserving and purifying technologies (see Chapter 2: Section B Water Supply and Sanitation in this manual)
Determining site locations for human waste disposal and selecting human waste disposal system	• Place latrines and septic systems too close to wells and water supplies • Create human waste disposal problems spread of disease and odor, loss of potential soil nutrients	• Carefully analyze soil and subsurface geology. Incorporate correct placement and leachfield design into specifications w Establish a comprehensive schedule for disposal and reuse of accumulated human waste. For latrines, require ventilated improved pit designs; for campers provide instruction in soil mining (digging a pit for human waste and covering immediately after use) where pit latrines are not feasible. Establish a long-term plan for the removal and reuse of sludge (see Chapter 2: Section B Water Supply and Sanitation in this manual)
Selecting energy sources	• Increase dependence on non-renewable energy resources	• Employ solar water heat in low cloud-cover regions; employ photovoltaics for lighting, radio, and cold-chain storage in areas without access to grid electricity • Incorporate passive solar cooling and heating into designs • Investigate wind and small-scale hydro energy and employ where cost-effective • Develop and implement energy conservation plans (see Chapter 6: Renewable Energy in this manual)
Choosing solid waste disposal alternatives	• Cause solid waste accumulation at disposal sites	• Develop management plans for disposal of solid waste and recycling of wet wastes (organics), paper, metal, plastics, and waste oil. Require all visitors, concessionaires, and tour operators to bag and remove all solid waste from the protected area. Where feasible, employ check-in/check-out systems for all food consumed by visitors • Minimize incineration. Centralize it outside the protected area, or locate incinerator away from visitors and animal populations • Include design specifications to reduce access of potential disease vectors insects, birds, rodents to solid waste, requiring screening or regular covering (see Chapter 5: Section A Management of Solid Waste in this manual)

Issue or aspect of activity	Impact *The activity may*	Mitigation *Note: Mitigations apply to specified project phase planning and design (P&D), construction (C), or operation and maintenance (O&M)*
Equipment Operation		
Fueling and servicing vehicles and equipment	• Create noise problems hearing loss for equipment users, undesirable aesthetics for visitors, alteration of animal behavior • Give insufficient attention to contamination of soil and water	• Place generators and pumps below ground or in sound buffered earth mounds or sheds. Require earplugs or other hearing protection for workers • Design fueling and equipment maintenance areas to minimize fuel spillage and prevent gasoline and waste oil from contaminating soil or water (see Chapter 3: Rural Roads in this manual)
Developing financial management plan	• Generate insufficient revenues for sustainable operation	• Emphasize high value, low-impact tourism with fees and lodging cost structures adjusted to provide for sustainable management
Providing for local economic and social benefits	• Insufficiently benefit local communities	• Establish local employment requirements in concession agreements • Include community revenue and benefit-sharing clauses in concessions or trust agreements
Construction		
Creating roads and trails	• Lead to excessive road and trail networks • Contribute to soil erosion	• Ensure protected area management observes the long-term comprehensive road and trail network plan (see Chapter 3: Rural Roads in this manual)
Constructing hotels and lodges	• Contribute to unsustainable use of local materials • Result in excessive use of imported materials • Contribute to soil erosion and siltation of riparian systems	• (See Chapter 2: Section A Small-Scale Construction in this manual)
Quarrying road surface maintenance and construction materials	• Adversely affect viewsheds and aesthetics	• Ensure extraction follows the long-term quarry and borrow pit management plans for building construction and roads. Carry out phased and systematic restoration/reclamation (see Chapter 2: Section A Small-Scale Construction and Chapter 3: Rural Roads in this manual) (P&D) (C) (O&M)
Excavating for road or building construction	• Damage or remove paleontogical, archeological, or cultural artifacts	• Inspect site periodically. Establish severe penalties for damage or theft of artifacts. Encourage preservation with education and incentives (P&D) (C)
Siting construction camps	• Spread HIV/AIDS	• Periodic follow-up education with construction workers, communities, and protected-area staff

Issue or aspect of activity	Impact *The activity may*	Mitigation *Note: Mitigations apply to specified project phase planning and design (P&D), construction (C), or operation and maintenance (O&M)*
Construction and operational safety	• Create potential hazards to workers and communities (injury, disease, human-animal encounters) • Create potential hazards to visitors	• Prepare a health and safety plan for the protected area and environs, including appropriate safety for workers masks for dust, gloves for exposure to waste oil, earplugs for high decibel equipment use. Provide health and safety training • Protect against human-animal interactions • Develop mitigation plan to reduce speeding (see Chapter 3: Rural Roads in this manual) (P&D) (O&M) (C)
Operation		
Protected area visits	• Exceed visitor LAUs	• Enforce limits of acceptable use for protected area zones. Conduct annual protected area reviews of compliance with limits of acceptable use and the need for any additional action (P&D) (O&M)
Vehicle or foot traffic in protected area	• Result in off-road or off-trail visitor movement • Create multiple tracks • Change animal behavior • Interfere with reproductive patterns of threatened or endangered species • Result in loss of aesthetics • Introduce exotic species	• Regularly schedule field inspections by designated road inspectors • Keep water off existing roads and trails • Determine acceptable visitor movement levels that do not alter animal behavior. Impose and enforce substantial penalties for off-road and off-trail movement • Remove non-indigenous species before ecological impacts occur (see Chapter 3: Rural Roads in this manual) (P&D) (O&M)
Visitor use	• Cause loss of tropical forests and habitats necessary for maintenance of biodiversity • Adversely affect threatened or endangered species	• Regularly schedule field inspection by designated ecologist or inspector • Revise annual workplans, management plans, and strategies
Visitor and community natural resource extraction	• Result in illegal extraction beyond established limits for sustainable use for fauna and flora • Damage archeological, paleontological, historical, or cultural sites • Contribute to removal of artifacts, fossils, and the like	• Provide budget and training for local community residents and local staff to act as protected area resource monitors for flora and fauna to ensure observance of extraction limits and for archeological, paleontological, historical, or cultural sites • Provide awards or incentives for exemplary performance of resource monitors and concessionaires. Use strong disincentives (loss of concessions or employment, visitor or tour operator fines) for illegal extraction or damage to resources of special significance and sensitive areas • Regularly schedule field inspection by designated inspectors or resource monitors

Issue or aspect of activity	Impact *The activity may*	Mitigation *Note: Mitigations apply to specified project phase planning and design (P&D), construction (C), or operation and maintenance (O&M)*
Providing potable water for ecotourism activities	• Result in excessive water consumption that competes with protected area demands of fauna and flora, especially in semi-arid and arid areas.	• Schedule site inspections to ensure water supply and use rates are as predicted and that water supply technologies are being used effectively. Monitor water supply to ensure that proper health practices are observed (see Chapter 2: Section B Water Supply and Sanitation in this manual)
Visitor and staff human waste disposal	• Contaminate water and soil with human waste	• Periodically test water and soil. Schedule field observations (see Chapter 2: Section B Water Supply and Sanitation in this manual) (P&D) (O&M)
Visitor and staff solid waste disposal	• Contaminate water and soil with solid waste	• Regularly schedule field observations (see Chapter 5: Section A Management of Solid Waste in this manual) (P&D) (O&M)
Visitor interactions with local communities	• Alter local cultural values	• Arrange educational sessions and materials for tour concessionaires, tour operators, and visitors (P&D) (O&M)
Sex worker and local community interacting with laborers, truck drivers, tourists	• Spread HIV/AIDS	• Periodically follow up education with laborers, hotel staff, communities, and protected area staff (P&D) (O&M)
Operation of equipment	• Insufficiently train staff in equipment operation and maintenance • Create excessive noise, affecting equipment operators, other staff, visitors, and communities	• Provide budget and conduct periodic retraining of staff in maintenance and operation of equipment. Emphasize the need for accurate operation and maintenance logs on equipment • Schedule field observations (P&D) (O&M)
Administrative and financial management	• Insufficiently train staff in administrative and financial management • Infringe on traditional land use by local communities • Prompt in-migration to ecotourism sites or protected areas • Contribute to natural population increase in the area over time	• Provide budget and periodically retrain staff • Design and implement a community support service program employing protected area staff. Work with district governments, villages, and nongovernmental organizations to develop regional assessments of land use outside the protected areas and regional environmental assessments and regional plans for reducing population pressures. Carefully assess cumulative impacts • Develop and institute companion health and family planning services and non-farm employment initiatives • Ensure establishment of a licensing, permit, or quota system for residents in or near the area (P&D) (O&M)

Issue or aspect of activity	Impact *The activity may*	Mitigation *Note: Mitigations apply to specified project phase planning and design (P&D), construction (C), or operation and maintenance (O&M)*
Decommissioning		
	• Erode abandoned roads and trails • Adversely affect aesthetics of abandoned infrastructure • Create hazards from abandoned infrastructure, quarries, and borrow pits	• Include plans and budget for decommissioning in original planning and design and incorporate in design and construction specifications • Inspect site at time of decommissioning to ensure abandoned infrastructure does not adversely affect aesthetics or pose safety or health hazards (see Chapter 2: Section A Small-Scale Construction and Chapter 3: Rural Roads in this manual) (P&D) (O&M)

the environmental and cultural damage that tourists cause results from lack of information and understanding.

Partnerships and shared commitments should be forged among communities, the government, and the private sector to strengthen ecotourism ventures, plan the sustainable use and management of resources, boost business and community marketing, and build financial and organizational skills. These partnerships must provide equitable tourism benefits to communities and the private sector to ensure their sense of responsibility to sustainable management.

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WTO (World Tourism Organization). 2002. *Sustainable Development of Ecotourism: A Compilation of Good Practices.* Madrid: WTO.

This publication was prepared for the International Year of Ecotourism 2002 as a second edition of its series, *Sustainable Development of Tourism: A Compilation of Good Practices*. The 55 case studies from 39 countries present a wide range of successful ecotourism initiatives in a systematic form, describing stakeholders, objectives and strategies, funding, sustainability and monitoring, problems, and solutions.

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General Sources of Information

CI (Conservation International).

The Conservation International Web site outlines regional ecotourism initiatives and CI ecotourism programs and seminars. Online: http://www.conservation.org/xp/CIWEB/programs/ecotourism.

Rainforest Alliance.

The Rainforest Alliance is an international conservation organization whose mission is to protect ecosystems and the people and wildlife that live within them by implementing better business practices for biodiversity conservation and sustainability. The Rainforest Alliance site provides information about their sustainable tourism program, which certifies ecotour providers, and coor-

dinates tourism research. This site also provides a link to the ECO-Index Web site, which serves as an electronic almanac of conservation projects in Latin America and the Caribbean. It provides summaries of 37 ongoing ecotourism projects in the region. Online: http://www.rainforest-alliance.org/programs/sv/index.html.

TIES (The International Society for Eco-Tourism).

TIES offers a number of valuable resources for ecotourism professionals, including links to the staff s selection of the best recent research articles. Online: http://www.ecotourism.org.

TNC (The Nature Conservancy).

This Web site contains a section dedicated to ecotourism, and TNC s initiative, The Ecotourism Program. Online: http://nature.org.

WPCA (World Commission on Protected Areas).

WCPA promotes the establishment and effective management of a worldwide representative network of terrestrial and marine protected areas. They provide a wealth of resources. Online: http://wcpa.iucn.org.

IUCN (World Conservation Union).

The IUCN Web site has a page dedicated to ecotourism, which provides a comprehensive listing of guidelines and case studies, as well as current meetings and other ecotourism events. Online: http://www.iucn.org

WTO (World Tourism Organization).

The World Tourism Organization is the leading international organization in travel and tourism. It serves as a global forum for tourism policy issues and a practical source of tourism know-how. WTO s membership includes 139 countries and territories, and its Web site provides statistical information on international tourism and reports and documents on tourism and sustainable development. Online: http://www.world-tourism.org.