Chapter 14

Cultural Services

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Main Messages

Despite changes in perceptions of nature—culture links (for example, the people and parks debate), many policies and economic incentives concerning management systems and conservation strategies are still based on separating people from their environments, freezing and stereotyping both cultures and ecosystems. Such policies have a limited success in addressing the linkages between ecosystem functioning, development, and human well-being. There is a range of possibilities of interactions between humans and nature. Responses concerning economic development and conservation strategies need to take into account the historical, political, economic, and cultural contexts of these interactions. It is only too common to lay the responsibility for environmental problems and conservation either in the hands of local communities or blame the private sector, while disregarding the linkages between local, national, and international policies and economic pressures. Overcoming the idealization of cultures and the dichotomic view of local communities as either "noble" or "bad" savages is equally important to promoting sustainable responses to ecosystem management and development. Recognizing various types of knowledge (scientific, local, indigenous) and their role in conservation, production systems, and management strategies may help to avoid the extremes of either dismissing local perceptions, practices, and knowledge as "unscientific" and harmful, or idealizing them.

Standard "blueprint" or "straightjacket" approaches to integrate human and economic development and ecosystem management do not seem to work. Paying attention to the larger context in which communities and governments are operating—and are linked to (including basic needs and capabilities) formal and informal knowledge systems, forms of ownership, and institutional organization—most likely increases the chance of success of conservation and development programs. Conventional "best-practices" responses which decontextualize knowledge are less successful in addressing the needs of communities or the goals of ecosystem management.

Understanding the complexities of different cultural perceptions of landscapes, management of resources, and local institutional arrangements contributes to alternative and more effective strategies to ecosystem management and socioeconomic development. Overcoming the idealization of landscapes and ecosystems as pristine, frozen in time, and dispossessed of human culture is important for the success of ecosystem management responses. Restoration and conservation initiatives pivot on the question of how far we need to go back in time. Therefore, these initiatives hinge on historical developments and the perspective of communities on their ecosystems. For example, while the "idea" of using sacred areas as a basis for conservation is not new, there is a recent growth in translating the sacred into conservation legislation or legal institutions granting land rights. However, this approach requires extensive knowledge concerning the specific ways in which the link between the sacred, nature, and society operates in a specific locale. Sacred areas may vary from a few trees to a mountain range, and their boundaries may not be fixed. Local specifics need to be studied thoroughly in a participatory way in order to develop initiatives that suit the local situation, and care needs to be taken to avoid an approach that is too instrumental.

In an international perspective, market-economic policies and technological change are interrelated as flows of resources, goods and services transcend national and regional boundaries linking local transformations of landscapes to global environmental change. This will continue to influence intensification and commoditization of resource use, land reforms, and the substitution of local technologies, which all affect local livelihoods, human well-being, and the environment. Responses such as co-management, conservation units, and integrated rural development are not only relevant to local economies, but also influence new carbon sequestration programs based on incentives for particular production systems.

A balance between a global environmental awareness and related international institutions, and respect for the sovereignty of national and local governments over their landscapes and resources, are more likely to contribute to avoiding conflicts. Lack of cooperation and backlashes lead to undesirable outcomes for ecosystem services and human well-being. Taking this balance into account also increases the chances for successful transboundary conservation initiatives.

Many governments and environmental organizations are realizing that the biggest challenge of conservation in the twenty-first century is for it to take place outside parks and enforced boundaries, thus integrated into agricultural and urban systems. Conservation and development responses entail a mosaic of strategies that include different types of production and management systems along with the valorization of rural and urban landscapes. Conservation outside parks will continuously grow in importance, opening new economic opportunities. Examples of responses such as incentives for agrotourism may help to promote conserving cultural landscapes, to value farming systems, and to address economic needs. Responses addressing the links between the rural and the urban may provide important alternatives to address the growing complexity within which human populations and ecosystems are nested.

The literature shows that conditions that favor better outcomes of environmental management tend to include: representative participation and governance, clear definition of boundaries for management, clear goals and an adaptive strategy, flexibility to adjust to new contexts and demands, and clear rules and sanctions defined by participants. In this context, any process related to ecosystem management and economic and human development is mediated by given land tenure conditions that influence the distribution of benefits derived from local and indigenous knowledge, innovations, and practices. Co-management, joint ventures, and other forms of control of resources are nested within historical conditions of land tenure control, the nature of the resources, and institutional arrangements. Hence, these forms of management are more likely to be successful if they accommodate changes and are flexible to changes in production systems and markets.

Cultural perceptions and practices affect biodiversity, including agrodiversity and management practices of ecosystems. Agrodiversity includes cultural memory and different pathways through which knowledge is transmitted, such as oral histories, rituals, sharing experiences, arts, and so forth; these are as important as inventorying species and creating germplasm collections. Furthermore, it is well known that the emphasis on substituting local technology and knowledge instead of building upon them, for instance in relation to intensification of agricultural production, often leads to different forms of land degradation and a decline in food security.

Fostering the articulation of international and national conventions and regulations linking biodiversity and local and indigenous knowledge is important, taking into account that knowledge is produced in the dynamic context of inter- and intra-group interactions, power relations, and historical settings. Responses such as compensating for the utilization of local and indigenous knowledge and resources entails taking into account relations between companies, national and regional governments, and communities as well as the power dynamics of these relations. Responses such as certification programs are more likely to be effective in addressing local economies and human well-being if they take into account the impact of particular resource extraction upon people and communities using the same resource basis, but not necessarily sharing resource ownership. Certification programs

are better served if accessible to communities and small producers' cooperatives that often are not familiar with bureaucratic and costly procedures of certification. Responses such as "Fair Trade" tools are more effective if they promote the participation of local producers in processes of commercialization and price negotiations, and the transformation and retailing of their products. Such responses are not only important for rural development and the conservation and management of natural resources, but also for commercial enterprises retailing the local producers' products.

Eco-, cultural, and agrotourism can provide important opportunities to link conservation and development. However, as the literature suggests, these forms of tourism are not necessarily the same thing as community-based tourism. Community-based tourism entails institutional capacity building in marketing and negotiation, defining access to benefits, and representative participation in decision-making processes of community members, tourism operators, and government agencies. Conflicts about resource use, development of infrastructure, the conversion of ecosystems, and dispossession of communities have negative impacts on the possibilities of ecotourism contributing to human well-being and economic development. In cultural tourism, problems may emerge in the representation and ownership of cultural symbols, the reproduction of stereotypes, consent among and within communities, and the blurring of boundaries between the public and private. In both forms of tourism, economic incentives and credit programs to foster tourism activities and capacity building could benefit from representative participation of local communities. The risks and opportunities provided by tourism are related to the economic position of communities and relations of power. Economic deprivation can lead to overexploitation of resources and the acceptance of unfavorable positions in the tourism industry (low-skilled labor, sex industry, drugs). Increase in land use value for tourism real estate development purposes may lead to displacement and dispossession. This is especially a risk for communities that enjoy informal or communal land rights.

Recreation, conservation, and environmental education can go hand in hand. Cultural tourism can serve to educate people about the importance of cultural diversity, as well as the importance of the latter for the conservation of biodiversity, provided the risks are taken into account. Tourism and recreation can be linked to environmental education, fostering knowledge about the functioning of ecosystems and provoking tourists to critically examine human–nature relations. Environmental education may serve very diverse audiences, ranging from schoolchildren to university students, protected area managers, policy-makers, and representatives of the private sector. In all cases, top-down education is less effective than education that is based on sharing experiences and attempts to reach a joint understanding of the dynamics of human–nature interactions.

There is a growing demand for the maintenance and creation of green spaces in urban landscapes. Green spaces and urban parks provide opportunities to integrate spiritual, aesthetic, educational, and recreational needs; they may also generate other ecosystem services such as water purification, wildlife habitat, waste management, and carbon sequestration. These green spaces may further contribute to human well-being by reducing stress and, hence, violence.

14.1 Introduction

14.1.1 Overcoming the Dichotomy of Nature versus Culture

Much of the thinking on nature conservation and ecosystem management is still based on separating nature from culture. Cultural perceptions of landscapes reflect a gradient ranging between the extremes of complete separation to the integration of culture and nature. These are reflected in histories of colonial occupation as well as academic developments over the past century. Transformations of landscapes have been and will continue to be influenced by cultural perceptions of nature as well as by sociopolitical and economic demands and aspirations. Species and entire land covers have been introduced or removed to ''domesticate'' the land and/or to recreate wilderness (Crosby 1986; Crumley 1994).

Academically, the understanding of culture and nature has changed dramatically in diverse fields such as geography, ecology, economy, and anthropology, where environmental deterministic and dichotomous views of the nineteenth and early twentieth century about the influence of environment upon culture are now being dismissed (Orlove 1980; Ellen 1982; Biersack 1999; Kottak 1999; Little 1999). The very concept of ecosystems reflects the changes in thinking about human–environment interactions, rejecting the idea of fixed equilibrium, closed systems, and static nature (Moran 1990; Golley 1993). Building a vision for the new millennium on the environment requires overcoming the dichotomy of nature versus culture, the perception that natural and anthropogenic landscapes are mutually exclusive, and instead building respect for the diversity of perspectives on environmental conservation and management.

This brief history provides context for the way we understand the relations between nature and culture. When we talk about culture ''. . . we locate the reality of society in historically changing, imperfectly bounded, multiple and branching social alignments, . . . the concept of a fixed, unitary, and bounded culture must give way to a sense of the fluidity and permeability of cultural sets. In . . . social interaction, groups are known to exploit the ambiguities of inherited forms, to impart new evaluations or valences to them, to borrow forms more expressive of their interests, or to create wholly new forms to answer to changed circumstances. Furthermore, if we think of such interaction not as causative in its own terms but as responsive to larger economic and political forces, the explanation of cultural forms must take account of that larger context, that wider field of force. 'A culture' is thus better seen as a series of processes that construct, reconstruct and dismantle cultural materials, in response to identifiable determinants'' (Wolf 1990, p. 387).

There are a number of relevant issues today relating to nature–culture interactions. In a global perspective, market-economic policies and social systems are interrelated as the flow of resources, goods, and services increasingly transcend and subsume national and regional boundaries. Market pressure, technological changes, and government policies influence production and consumption. Influences include the intensification of local resource use, land use reforms, and the substitution of local technologies. These affect local livelihoods, institutions, and the relations between people and nature (Arizpe 1996; Granfelt 1999). Increased global awareness of these effects in turn influences policies regarding issues such as global common resources, people, and parks issues, and regulations on biodiversity. A plethora of agents and institutions participate in bringing about and are affected by the abovementioned changes ranging from local activist groups, business and lobby groups, civil society organizations, governmental agencies, to international bodies.

Understanding the complexities of different cultural perceptions of landscapes, management of resources, and local institutional arrangements contributes to alternative strategies to ecosystem management and socioeconomic development. In a recent review of management of common pool resources revisiting thirty years of research on this subject since Hardin's seminal article ''the tragedy of the commons'' (1968), Dietz et al. (2003) call

attention to the need to avoid ''one size fits all'' when considering management and conservation of natural resources. Furthermore, it is important to realize that local communities do not operate in a vacuum, they create multilevel alliances, adopt and adapt global influences to foster their own livelihoods, yet do so on the basis of their own cultural repertoires, a process referred to by some as ''glocalization'' (Comaroff 2000).

In the 1990s, the focus of conservation initiatives shifted to the local level, with demands for accountability and decentralization of authority over natural resources. The call for decentralization was driven partly by a combination of democratization processes and economic demands. Problems, however, occur with many governments decentralizing only responsibilities, not budgets or real decision-making powers, and often not recognizing local knowledge and authorities (Toffler 2003; Ribot 1999). In this context, there have also been some changes in the debate on ''people and parks.'' Conception and policies regarding the creation of conservation units have moved and continue to move back and forth between exclusion of communities and local forms of resource management (frequently in disregard of local political and cultural contexts) and inclusion. Policies range from a drive to protect pristine nature while disregarding local historical uses of resources on the one hand and, on the other hand, treating local communities as indisputable stewards of nature (West and Brechin 1991; Stevens 1997; Brandon et al. 1998; Hulme and Murphree 2001).

The above mentioned shifts coincide with changing attention from local to transnational conservation efforts: the creation of corridors for migrating species and trans-frontier conservation areas. We find examples in South and Central America, central and southern Africa, and Asia. The increased focus on trans-frontier conservation is partly based on the realization that ecosystems do not stop abruptly at national boundaries, but is also a result of wider societal debates about the importance of globalization (Draper et al. 2004).

The international dimension of ecosystem conservation has increasingly become an issue of geopolitical importance, and thus, sensitive to backlashes and conflicts. A global concern over the fate of particular ecosystems, especially tropical forests, has also created a sense of entitlement and ''right of voice'' beyond national boundaries. Different views, authority, and sovereignty need to integrate mechanisms that, while in tune with international treaties, also include the views and aspirations of national and local forms of use. It is important to pay attention to the way in which local communities creatively respond to socioeconomic and environmental change without losing sight of global–local interlinkages.

This chapter addresses emerging issues underlying responses to human–environment problems in policy-making and institutions. The issues are organized in relation to three overarching themes: cultural perceptions, knowledge systems, and tourism and education.

14.1.2 General Background on Drivers and Types of Responses

The definition of culture cited above provides a clear link to the way the concept of ''drivers'' is used in this chapter. Human–ecosystem interactions are processual and dynamic and, in this sense, drivers and responses co-evolve and are difficult to separate as one becomes the other depending on one's perspective and/or level of analysis. On the other hand, recognizing drivers and responses within particular categories (typology) helps to provide comparative insights into the way society and communities solve their problems, that is, economically, legally, etc. In introducing each topic, the chapter emphasizes the need to look at historical and contemporary contexts within which driver–response interactions develop, mediating conditions between macro and micro levels, and implications for ecosystem services at different scales.

It is fundamental to acknowledge here the differences in cultural perspectives influencing the ways in which people think about and take (economic) decisions (Wilk 1996). The discussion on ''rational choice'' and human behavior toward the environment has endured in the social sciences, including economics, for decades (Barlett 1982; Appadurai and Breckenridge 1986, Isaac 1993, Acheson 1994). It is important to recognize models of decision-making that do not always fit formal economic models of ''rational choice.'' Social scientists have dealt with the underlying principles of human decision-making in several ways, from questioning economic maximization models through cultural analysis (for example, formalist–substantivist debate in anthropology; see Isaac 1993; Wilk 1996) to adopting theories of bounded rationality (for example, institutional economics; see Simon 1957, 1990). The basic idea underlying these debates acknowledges that people integrate their local context, including the resource base at their disposal, into their decision-making. In this sense, the chapter emphasizes that the concepts of ''drivers'' and ''responses'' are context-dependent.

The discussion of cultural services responses is organized following three basic guidelines. First, the topic is considered in a historical perspective and relevant issues are identified, particularly regarding main ''drivers'' and notable problems during the past 30 years; relevant issues include policy and geopolitical issues, technological changes, and changes in production and consumption patterns. Second, responses are identified according to the typology in Chapter 2. In most cases, however, the set of responses capture the synergetic nature of responses, for instance, those that represent an intersection between legal responses (for example, a law defining conservation units) and institutional responses (for example, related changes in land ownership and rules of access to resources resulting from legal changes). Finally, in assessing each type of response, the process presented in Chapter 3 is taken into account, that is, the binding constraints, enabling conditions, trade-offs, and synergies for each type of response are discussed.

14.2 Cultural Perceptions: Human Cognitions, Spirituality, Aesthetics, and Arts

14.2.1 Cultural Perceptions of Landscapes

Land- and waterscapes not only have physical attributes, they are subjected to and influenced by cultural perceptions as well. As Simon Schama (1995, pp. 6–7) has put it: ''[t]here is an elaborate frame through which our adult eyes survey the landscape . . . Before it can ever be a repose for the senses, landscape is the work of the mind. Its scenery is built up as much from strata of memory as from layers of rock.'' Culture and memory play an important role in creating different, sometimes contesting meanings for any one place. Multiple identities associated with landscapes—both rural and urban—can exist simultaneously at local, regional, and national levels, with one or another being forced into dominance by historical and political circumstances (Stiebel et al. 2000; Ranger 1999). Relations between landscape and religion, for instance, have to do with both moral and symbolic imaginings, but also with staking one's claim, such as to land contested by immi-

grants or invading states and development agencies (Dzingirai and Bourdillon, 1997; Spierenburg 2004).

Certain cultural perceptions of landscapes become dominant or imposed through economic and political forces. In the African context, Ranger (1999) illustrates how dominant colonial views commonly saw Africans, living within their environment, as not having notions of landscape, not aesthetically appreciating the land they occupied. Yet Africans have long invested their environments with moral and symbolic qualities, and with beauty. Such views of the colonized were evident in other continents as well.

Language is among the most powerful forms of cultural mapping, and cultures provide maps of meaning through which the world is made more intelligible. Places themselves are rich cultural archives, for instance, the variety of names for a single site points to openness to cultural presences and shared histories in an increasingly multicultural world (Moore 1998; Stiebel et al. 2000). Language—including the poetry of song and dance that is part of popular historiography (Luig and von Oppen 1997)—can also unlock the secrets of the landscape; examples range from aborigine's song lines and pastoralists' oral mappings to European romantic operas. These ways of placing oneself in and on the land help stake one's claim to a part of the present, writing new histories, sometimes involving social and moral imagination (Coplan 1994; Cohen and Odhiambo 1989).

The downside of this particular discursive process of staking one's claim is that many armed conflicts, especially in Eastern Europe and the developing world, have been portrayed as ''ethnic'' or ''tribal'' wars when the opposing parties refer to certain identities and histories while fighting over certain natural resources. The label of ''tribal war'' blurs the vision to influences from outside the region fuelling armed conflict, as is the case with the so-called ''blood diamonds'' (De Boeck 1998; Lunde et al. 2003).

Recent studies have illustrated the misconception concerning pristine environments. One of the most provoking examples of the pristine versus anthropogenic debate is the Leach and Fairhead (2000) hypothesis proposing an interpretation of islands of forests in parts of Africa as signs of afforestation by people, instead of deforestation. . In the Amazonian context, Balée's interpretation of the ''culture of Amazonian forests'' suggests that a considerable portion of the region is composed of vegetation of anthropogenic origin resulting from long-term uses by pre-Columbian populations (Balée 1989). More recently, Willis and colleagues (2004), examining archeological and paleo-ecological studies, found considerable evidence of human uses in areas of the Amazon basin, Congo basin, and the Indo-Malay region of Southeast Asia where tropical forests are considered undisturbed. Their findings suggest a different perspective on the regenerative capacity of these areas. Attention to long-term interactions between people and landscapes has contributed to a more dynamic view of ecosystems and the role of human populations. Similarly, it provides examples of alternatives to use resources, for instance, by considering forms of forest management aiming at concentrating economic resources (Posey 1998; Crumley 1994; Balée 1999; Heckenberger et al. 2003).

The history of conservation spans various centuries and many different countries. Dating as far back as 5,000 and 4,000 years ago, China and Egypt were engaged in timber management (West and Brechin 1991; Menzies 1994; Rangarajan 2001). In the United States, regulations have been created since the 1600s (for instance, to impose limits on deer hunting). By the mid-eighteenth century, the need for conservation was particularly heightened as attention was drawn to the damaging impact of human activity on the landscape, particularly on the desecration of forests, and the need for adopting better strategies for managing and conserving the landscape. One of the first international conservation treaties—the Migratory Bird Treaty—was signed in 1916 between the United States and Great Britain. Overall, greater emphasis was given to the significance of nature and its related aesthetic appeal, and this prompted the emergence of the conservation movements and ''nature appreciation'' in North America (Beinart and Coates 1995). However, the economic potential of protected areas to attract tourism has also been a reason to foster conservation, as the case of Costa Rica's national conservation policy shows. (See Box 14.1.)

Conservation strategies have frequently reflected orthodox idealization of both ecosystems and people. On the one side, the majority of conservation units were created by excluding resident people, often at the cost of social conflict and displacement. Conversely, since the 1980s, recognition for the role of local communities has often led to reproducing a view of locals as ''noble savages,'' relying on the concept of ''traditional'' or ''indigenous populations'' to assign rights to land and other resource use (Conklin and Graham 1995; Draper et al. 2004).

The use of the term ''traditional'' is widespread and often misinterpreted within the context of conservation and ecosystem management. Although in many instances the term is applied rightfully to stress the importance of local and indigenous knowledge systems regarding resource management, it carries different meanings depending on the context. While alternative terms such as ''local'' and ''indigenous'' may also be misused, in most contexts these terms may reflect better what is intended. Using the word ''traditional'' to refer to local and indigenous knowledge may be static and backward-looking, and an opposition to modernity. On the other hand, the term ''traditional population'' has been applied as a political tool to support local communities (and by local communities themselves) to guarantee access and rights to land and resources, particularly within conservation areas and parks. However, it is also used to disqualify some communities that share similar rights, but do not fit in whatever characteristics/traits are used to define who is ''traditional.'' The term ''community'' carries similar problems of interpretation, such as assuming there is homogeneity and local consensus on belonging, boundedness, and aspirations among people settled in close proximity or participating in similar economic activities. Both the terms ''traditional'' and ''community'' require careful use and empirical understanding of the local and historical conditions within which they are applied (Sinha et al. 1997; Gibson and Koontz 1998; Sylvain 2002).

BOX 14.1

The Costa Rica Experience (Evans 1999)

The Costa Rica experience illustrates the important roles played by different key players such as environmental groups, education and nongovernmental organizations, indigenous movements, ecotourism, and the work of the National Biodiversity Institute in defining conservation policies. Interestingly, the emergence of the conservation movement reflects a process that some call the "'grand contradiction,' in the sense that conservation occurred simultaneously with massive deforestation in unprotected areas." In Costa Rica, 25% of the country's land mass is considered either a national park or protected area as a response to the rapid destruction of its tropical ecosystems due to the expansion of export-related agriculture.

14.2.2 Responses Related to Cultural Perceptions: Multilevel Policies, Institutions, and Social Identities

Perceptions of natural and anthropogenic land- and waterscapes have been changing rapidly during the past decades. There is an increased awareness of global environmental problems such as climate change. Furthermore, there are changes in the circulation of information and commodities; all of this creates linkages among local, regional, and global issues (Arizpe 1996; Moran et al. 2002). The diversity of perspectives to address current environmental problems—embedded in cultural, political, and economic differences and interests—presents challenges both in terms of defining priorities, as well as of aligning local and national socioeconomic aspirations with international agreements aimed at changing economic practices affecting the global environment. The dismissal of the Kyoto Protocol by the United States—grounded in questioning the scientific and economic basis of the protocol—illustrates the complexity of these issues.

14.2.2.1 Awareness of the Global Environment and Linking Local and Global Institutions

Awareness of the globe working as a system has motivated the need to deal with ecosystems in an integrated way. This process has been characteristic of the so-called post-Stockholm way of thinking, that is, an emphasis on the human environment concept (which actually was the title of the Stockholm 1972 conference) and the discussion of environmental problems at a global scale. Global models of management and global institutions dealing with the environment have become prominent not only in environmental management, but also in international politics. Amalgamation of scientific thinking and public awareness, civil society, and business has been present not only at international government forums from Stockholm 1972 to Rio 1992 and from Kyoto 1997 to the World Summit on Sustainable Development in 2002 in South Africa, but also in science initiatives such as the Club of Rome, the Man and the Biosphere Program, the International Geosphere–Biosphere Program, and the Millennium Ecosystem Assessment, to cite a few of the most relevant.

Awareness of global environmental problems by the larger public has also led to the emergence of different views about rights to entitlement to global ecosystems and environmental resources (Ostrom 1990). Examples range from the public engagement in discussing the fate of tropical forests to pressures regarding regulations to curb the greenhouse effect (Geores 2003). International organizations now voice their opinions regarding national policies and international bank loans to development projects, while national governments complain about their lack of sovereignty and international ''ecological imperialism.''

Local organizations also take advantage of emerging global institutions and conventions to bring their case to wider political arenas. One among several examples is ''The Samarga Declaration.'' The declaration by the Udegei people of Sikhote Alin mountains of the Russian Far East aims at preventing the granting of industrial logging concessions in an area that they consider theirs; it received attention and support not only from the Russian Association of Indigenous Peoples of the North but also from international human rights and environmental groups (Taiga Rescue Network 2003; Molenaar 2002).

The strengthening of national and regional institutions, particularly NGOs, mediating international and local priorities of ecosystem management and conservation is fundamental in this process. Box 14.2 illustrates the example of a Brazilian NGO—the Socio-environmental Institute—working toward these goals.

BOX 14.2

The Socio-environmental Institute in Brazil

One of the most successful civil movements integrating environmental, sociocultural, and educational activities at various levels is represented by the Brazilian NGO Instituto Socio-Ambiental (www.socioambiental.org). Building upon long-term work with indigenous communities, ISA has articulated intervention and political work with a strong emphasis on the organization of information, databases, geographic information systems, and remote sensing for monitoring boundaries, mining and logging activities, development programs in indigenous areas, conservation units, and areas of relevant social and economic interest, such as key watersheds around the megacity of São Paulo.

ISA's work also involves a pioneer education program among indigenous communities. ISA is contributing to increased political organization and wider participation around topics of social and environmental importance in collaboration with other NGOs as well as community associations and government agencies. In a 1998 collaborative effort among dozens of national and regional institutions (NGOs and government organizations), ISA contributed to an effort that brought researchers and practitioners together to define areas of conservation priorities for the Brazilian Amazon. Not surprisingly, close to 75% of priority areas fall inside areas designated as indigenous reserves where, in many cases, centuries of continuous occupation has contributed to a diverse environmental mosaic. ISA's example serves to illustrate a middle ground approach, discussing social and environmental issues by involving a wide range of social groups and participant institutions.

Another response to a growing awareness of global linkages is the trend to establish transboundary conservation areas, as has already been mentioned. Most transboundary conservation areas have been in existence for only a relatively short period, making an assessment of impacts rather difficult. However, recent studies from southern Africa suggest that transboundary areas can contribute to local human well-being through increased revenues from tourism, but can also pose a threat to human well-being through the marginalization of local communities in (international) decision-making bodies and preferential treatment of tourists over local people (Wolmer 2003). At the same time, the creation of transnational corridors as special zones for economic cooperation and development presents a growing threat to environmental conservation and local livelihoods. Examples include the Amazonian route to the Pacific Ocean and the South Africa–Mozambique economic corridor (Grant and Söderbaum 2003), among others. Ecosystems do not exist in a vacuum and are not separate from economic and political histories. Consequently, awareness and action concerning local, national, and global environmental problems often intermingle cultural views, scientific knowledge, and economic ideologies proposing different forms of resource control and entitlement.

14.2.2.2 Multiple Responses: From Restoring Landscapes to Valuing Cultural Landscapes

As noted, landscapes are subjected to and influenced by cultural perceptions as well as political economic interests. Thus ideas about what landscapes should be conserved are also influenced by such perceptions. There is a growing recognition that a wider variety of landscapes, including agricultural, urban, and industrial landscapes, need to be conserved (see Box 14.3), and that certain species may have come to depend upon human-made environments. The importance of human environments for semi-

BOX 14.3

Plans for a New York Biosphere Reserve

The Columbia University/UNESCO Joint Programme on Biosphere and Society (CUBES) has established the Urban Biosphere Group, which is leading a discussion on how UNESCO's Biosphere Reserve concept may help the city of New York and its inhabitants to manage the enormous ecological footprint of the city and promote urban sustainability. According to the Group, the city is only metaphorically a "concrete jungle" (www.earthinstitute.columbia.edu/cubes/sites/nyc.html). Diverse flora and fauna find habitats in the built environment of the city as well as in its parks, vacant lots, community gardens, and backyards. Another important habitat is the Hudson River Estuary, which is also an economic asset to the city.

CUBES plans to organize an international partnership of cities, including New York City, Madrid, Rome, São Paolo, Seoul, and Cape Town, where scientists and stakeholders will examine how the Biosphere Reserve concept may be applied to urban areas to promote socially inclusive and environmentally sustainable urban processes.

domesticated and domesticated species has long been acknowledged (Clements 1999; Harris 1989). Now, however, there is also the recognition that urban environments have become an essential part of conservation of a variety of non-crop fauna species as well as wild animal species.

Nature conservation, however, still seems to be dominated by a search for "the pristine," a concept that often leads to conservation policies that "freeze" landscapes within enforced boundaries and attributes any disturbance to human intervention that needs to be undone. Many conservation efforts entail "restoring" landscapes to their "pristine, natural state," even though it may be hard to determine what that state actually was and how far back we need to look. There is, for instance, a lively debate going on in the Netherlands, where the government as well as NGOs are buying up farms to "restore the land to its original state." The Dutch national organization for agriculture and horticulture (LTO Nederland) recalls that most "natural landscapes" in the Netherlands are the result of a centuries-long interplay between farming, herding, and attempts to control water in this country of which large parts are situated below sea-level (LTO Nederland 2003).

Restoration of landscapes may involve the removal of species considered invasive or alien—a popular issue in conservation circles worldwide—or the reintroduction of species that have disappeared over time. (See Chapter 5.) These interventions may not always be appreciated by the local populations living in or near areas that are being restored. The reintroduction of brown bears in Spain and France is a case in point. (See Box 14.4.)

The classification of species as alien or endemic is not just a biological issue. Cultural issues and interpretations also play an important role in decisions concerning the need to eradicate or reintroduce certain species. (See Box 14.5.) The concept of alien species is, on the one hand, related to ecological changes and species composition of a particular region and, on the other hand, related to ideas of desirability, both economically and aesthetically. Alien species are sometimes referred to as "invasive" species (see Chapter 5) depending on their level of dispersion and competitiveness with species characteristic of a particular ecosystem. The concept is also a function of the temporal and spatial scale used for analysis. More often than not, people tend to incorporate "exotic" species as part of their perception of a given landscape and

BOX 14.4

The Reintroduction of Brown Bears in the Pyrenees

In 1989, a technical workshop was held in the Aran Valley of the Pyrenees on the sustainability of reintroduction of brown bears in the area. Two plans were tabled: an "island" type of reintroduction involving the release of about 60 bears, and a policy of conservation of the natural environment to facilitate the natural immigration of bears. At the workshop the first plan was rejected and the second adopted. Following the workshop, the French government released three bears into France that soon crossed the French–Spanish border, despite protests by the Autonomous Government of Catalonia. All but one city council of the Aran Valley rejected the reintroduction, claiming that it was incompatible with the economically important livestock breeding in the valley. One city council welcomed the reintroduction since it was promised grants for the establishment of a nature reserve for the bears.

Despite local objections, the Worldwide Fund for Nature presented a new, international initiative in 1996 involving 15 European countries, to reintroduce large carnivores to Europe, including brown bears in the Spanish Pyrenees. The then Director of WWF's Europe and Middle East Programme claimed: "By the end of the century, we aim to have proved to farmers and local communities that many of their fears about animals such as wolves and bears are excessive."(http://lynx.uio.no/jon/lynx/wwflynx1.htm). He furthermore claimed that agricultural subsidies encourage "irresponsible farming": "One reason why hill farmers lose sheep is because they buy stock using government aid, and then turn the animals out to graze, unsupervised. You'd never get a farmer doing that with animals he'd paid for with his own money."

BOX 14.5

"Alien" Species Control in the Cape, South Africa

In the dry winter of 2000, fires raged in the mountains surrounding Cape Town. Conservation authorities concluded that alien species such as the wattle and gum trees were to blame, since these consume far more water than the local fynbos, causing the groundwater level to drop, rendering the area vulnerable to fires. This conclusion was quickly taken up and published widely by South African newspapers and journals, which for weeks on end published horror stories about the effect of the aliens, calling for the conservation of the fynbos. Following the spate of fires, the provincial government of the West Cape proposed rather farreaching legislation that would require land-owners to completely clear their land from alien species before it could be sold. Local farmers worried whether this legislation would also apply to vineyards and apple orchards so important for the local economy.

Comaroff and Comaroff (1999) argue that the seeming obsession with alien species and the loud calls to protect the fynbos—referred to locally as an "indigenous" species rather than an "endemic" species—can be linked to the increased importance of the concept of "autochthony" in a world where transboundary flows of people, plants, animals, goods, and capital are increasing in scale. They see parallels with the widespread fear in many segments of South African society of "illegal aliens," that is economic and political refugees from other African countries. Draper (forthcoming), however, argues that the issues is more complicated. Whereas the wattle and gum tree are fought hand to tooth, another alien species, "rooigras," has come to symbolize the South African "veld."

as part of their ethnobotanical repertoire, particularly when economic, agricultural, and aesthetic motivations are involved.

14.2.2.3 Recognizing ''Sacred Areas''

A recent development in nature conservation tries to link sacred areas to conservation by using sacred areas as a point of departure when creating protected areas (Mountain Institute 1998). The idea in itself is not new. In the colonial period, the British had to incorporate the concept of sacred groves and the land for local priests to collect their salaries (*pahanoi* in Jharkhand, India) or lands to feed the ancestral ghosts (*bhutkheta* in Jharkhand, India). This was enshrined in the Chotanagpur Tenancy Act (Bahuguna 1992; Chandran and Subash 2000).

While the ''idea'' of linking sacred areas and conservation is not new, recently there has been an increase in translating ''the sacred'' into legislation or into legal institutions granting land rights. However, this approach requires extensive knowledge concerning the specific way in which the link between the sacred, nature, and society operates in a specific locale. Sacred areas may vary from a few trees to a mountain range, and their boundaries may not be fixed. In some cases, access may be restricted to a few religious specialists, in other cases they are open to the public to perform acts of worship that may involve the harvesting of some of the natural resources from within the sacred area. Local specifics need to be studied thoroughly in a participatory way to develop initiatives that suit the local situation, and care need to be taken to avoid an approach that is too instrumental. (Box 14.6 discusses the role of the sacred in land reform in Zimbabwe, and Box 14.7 discusses Tibetan and Buddhist ecology.)

BOX 14.6

Sacred Areas in the Struggle against Land Reforms (Spierenburg 2004)

In 1987, a land reform program was introduced in the north of Zimbabwe, with the aim of "rationalizing" local land use practices and rendering them "'more efficient." The program would entail the relocation of farmers from areas that were classified by project staff as "non-arable." The relocation would cause considerable deforestation. The program would furthermore render about a third of the farmers in the area landless (Derman 1993; Spierenburg 2004). Local resentment against the program was expressed by the mediums of royal ancestral spirits, Mhondoro. They rejected the program claiming that the government could not hold authority over an area that actually belonged to the ancestral spirits. The spirits were said to be particularly angry about plans to locate farmers to Tsokoto, an area they considered sacred. Some of the mediums had joined the freedom fighters in Zimbabwe's struggle for independence, which is why it was difficult for government to dismiss their statements offhand. Attempts by government to buy the mediums' support by offering them handsome rewards for their support of the struggle failed. In the end, the program was never fully implemented, as the staff members charged with the relocation feared repercussions from the spirits.

BOX 14.7

Tibetan and Buddhist Ecology (Swearer 2001)

Religion forms a significant component of the worldview and as such contributes to the way people look at the ecology of their region. A religion which induces peace and allows no harm to come to plants or animals is likely to be much more concerned with policies and programs relating to ecological conservation. This is especially true of Buddhism. In fact, "Buddhist environmentalists assert that the mindful awareness of the universality of suffering produces compassionate empathy for all forms of life, particularly for all sentient species." (p. 226) Buddhist doctrines of *karma* and rebirth link together all sentient life forms in a moral continuum. This was why an environmental policy based primarily on a utilitarian cost-benefit analysis could not possibly be sufficient. It integrates environmental ethics as general principles, collective action guides, and takes into account particular contexts. While all species have a shared dharmic nature, they have an intrinsic value to individuals. This is an ideal principle on which to base a scheme of biodiversity. This attitude toward the environment is seen in the attitudes and practices of Buddhists in their daily life. Critics claim that this attitude is against Buddhist history and the past—that the individual should not engage with the world but should attempt personal salvation and purification. Others counter that narratives of place can make a crucial contribution to environmental ethics.

14.3 Knowledge Systems

14.3.1 Scientific, Indigenous, and Local Knowledge

There is increasing recognition of the validity and importance of farmers' knowledge of ecosystems, species, germplasm, and soils (Brush and Stabinsky 1996). Similarly, numerous studies have demonstrated the importance of local and indigenous knowledge of aquatic systems (Dyer and McGoodwin 1994). Nevertheless, the drive for modernization and technological change is often based on the substitution of small-scale practices. Understanding of crop and forest biodiversity lies in the oral history and cultural memory of local and indigenous communities, but is frequently disregarded as backward and unneeded.

The pace of technological, agricultural, and environmental changes, and large-scale environmental modification by infrastructure development often happens at the expense of local resources and knowledge (Scott 1998). While this has an impact on local food security and economies, it is also relevant to (national and international) issues of conservation and economy. Priorities for economic development are often based on technological modernization (such as monoculture and industrial fishing) and frequently contradict policies to promote local and indigenous knowledge, conservation of germplasm, and local management strategies. Despite their productivity, local technologies are often perceived as extensive when compared to high-input production systems. While technological change may contribute to increased food production, one needs to be careful with substituting local technologies, knowledge, and forms of production. This does not automatically mean that one or the other is better; one should avoid extremes of either dismissing or idealizing both forms of knowledge, technology, and production systems (Netting 1993; Brondizio and Siqueira 1997; Posey 1998; Nazarea 1998; Pinedo-Vasquez et al. 2001; Zarin et al. 2004; Brondizio 2004a).

Wynne argues that there is a distinct difference in the way local farmers respond to uncertain environments and the way natural scientists do: ''Ordinary social life, which often takes contingency and uncertainty as normal and adaptation to uncontrolled actors as a routine necessity, is in fundamental tension with the basic culture of science, which is premised on assumptions of manipulability and control. It follows that scientific sources of advice may tend generally to compare unfavorably with informal sources in terms of the flexibility and responsiveness to people's needs'' (Wynne 1992, p. 120).

Likewise, local knowledge plays a key role in lowering the degree of uncertainty in aquatic systems. Knowledge on habitat conditions, and on the behavior and life history of the fish species comprises the base to make choices about where, when, and how to fish. Acheson and Wilson (1996) argue that the focus on how to perform the fishing activity differs strikingly from the focus of scientific management systems on how much fish can be withdrawn. Box 14.8 discusses the responses of local communities to growing commercial pressure over fishing resources and the evolution of ''fishing accords'' in the Amazon.

Science tries to replace ''haphazard'' experimentation by controlled experiments that are context-independent and thus more widely applicable. This is one of the reasons why governments and development agencies have long favored ''scientific'' solutions, and where they have become interested in local knowledge, often try to de-contextualize it by compiling ''best practices'' that can be disseminated to other parts of the country or even the world. Scientists who do acknowledge the existence of local knowledge generally apply scientific methods to verify and validate the knowledge to reach a wider acceptance in policy and academic communities.

BOX 14.8

Community-based Management of Floodplain Resources

The introduction of new fishing-related technologies such as motor boats, synthetic fibers, and ice boxes, led to the intensification of fisheries in the Amazon since the 1960s. The mounting pressure of commercial fishers in the floodplain lakes caused constant confrontations between local residents and outside fishers. Since the 1970s, the populations living along the rivers have developed a local management system to restrict commercial lake fishing. The ''fishing accords,'' as they are locally known, are formal documents that restrict access to floodplain lakes and limit the use of fishing resources (McGrath et al. 1993). These documents vary regionally in format and rules types (Lima 1999, McDaniel 1997, Castro and McGrath 2003); yet, they have in common the strategy of discussing and voting the rules collectively, writing a document that is legitimated by the residents' signatures, and carrying out a self-monitoring system.

Unlike many community-based management systems described in the literature as traditional and based on verbal understanding, the ''fishing accord'' emerged recently, and its structure is framed in written documents with a clear system of rules. This unique aspect of the fishing accords is due to the influence of the Catholic Church in fomenting political organization of the rural populations in the Amazon over the last decades (Castro 2002). Until recently, the illegal status of the fishing accords, which violated the open access to the water system, combined with the lack of political support by the government, limited the scope of this local management system. In the last decade, however, the local populations gained support from local and international nongovernmental organizations (NGOs). As a result, the Brazilian government has launched a research program aimed at developing legal instruments to recognize the local management systems.

The fishing accords are by no means free of problems (Castro 2002); yet, despite many barriers still to overcome, the process of recognition of this local management system by the government has created, for the first time, the ground for participation of local users in the management of resource use, leading to the integration of local and scientific knowledge, increased legitimacy, and a basis for negotiation of conflicting interests.

Scoones (1996) attributes the failing of many land reforms and other projects trying to render the landscape more ''legible'' to the distrust between local farmers and the ''purveyors of the scientific solution.'' Local farmers understand the solutions offered to them; it is not ignorance that engenders their reluctance to adopt the proposed practices, but a more fundamental disquiet about the technical rationale for the suggested solution under local circumstances and a suspicion about ulterior motives. Local farmers have preferred to follow their own informal and flexible alternatives for survival because changing their methods will disrupt their production. Top-down approaches to implementation limit the possibilities of exchanging perspectives and negotiating outcomes between local farmers and external agents. The result is the emergence of forms of resistance that are actively pursued but perceived by outsiders to represent ignorance of the ''correct'' solution, implying that people require education and persuasion (Scoones and Cousins 1994).

The persistent perception that ignorance is at the root of resistance or noncompliance does not lead to questioning of the assumptions behind the intervention or a reexamination of its scientific premises (Scoones 1996; Posey 1998). This does not mean that resistance is the sole or main reaction to external introduced knowledge and technologies. Actually, most farmers, indigenous or not, draw upon different sources of knowledge and integrate different technologies and techniques that best fit their interest, needs, and conditions (Reij and Waters-Bayer 2001; Scoones 2001). Experimentation and diffusion of knowledge are central tenets of livelihood strategies at any level (Netting 1993).

14.3.2 Responses: Protection, Compensation, and Certification

The growing recognition of local indigenous knowledge has also led to its commercial exploitation. Market imperatives and international monetary policies have caused developing countries to gear their economies towards export. In most cases, this has led to the exploitation of their natural resources beyond long-term sustainability. At the same time, the richness and possibilities of resources, for example medicinal herbs, and their possible economic benefits, became an important argument for the conservation of nature. The prospecting for local resources has led to exploitation of local knowledge without communities being compensated. Few mechanisms are available to feed the benefits back to local communities that in many instances contributed to the production of the knowledge concerning certain species, or even the production of the species themselves.

14.3.2.1 International Agreements and Conservation of Biological and Agropastoral Diversity

Increased exploitation as well as a growing consciousness concerning the disappearance of local resources and the knowledge about these has led to concerns for the need to protect local and indigenous knowledge. The international community has recognized the close and traditional dependence of many indigenous peoples on biological resources, notably in the preamble to the Convention on Biological Diversity, which has been ratified by over 170 countries. Article 8(j) in the CBD specifically addresses local indigenous peoples and their knowledge. The CBD adopted the facilitation of indigenous peoples' participation ''in developing policies for the conservation and sustainable use of resources, access to genetic resources and the sharing of benefits, and the designation and management of protected areas.''

Many governments are now in the process of implementing Article 8(j) of the Convention through their national biodiversity action plans, strategies, and programs. Some have adopted specific laws, policies, and administrative arrangements for protecting indigenous knowledge, emphasizing that prior informed consent of knowledge-holders must be attained before their knowledge can be used by others (Cunningham 1996). Other international conventions have followed suit, such as the Ramsar Convention on Wetlands; the signatories have adopted Resolution VIII 19 that fosters the incorporation of cultural values in conservation efforts with the obligation of doing so with the active participation of indigenous communities. In many cases, protection of local/indigenous knowledge is a byproduct of the protection of biodiversity, while in others the main aim is to guarantee economic benefits to communities.

Apart from (inter) national policies, there are also instances of local strategies to protect as well as transmit local and indigenous knowledge. Local knowledge is, just as scientific knowledge, produced in a context of power relations. Not everybody will have access to local and indigenous knowledge; some of it may be considered the domain of specialists. Specific groups in communities may be excluded from such knowledge on the basis of their socioeconomic position and/or gender (Clark 2003). Knowledge may not be equally shared within communities; some of it may be considered sacred and/or secret, which poses problems concerning legislation. Other problems relating to legislation are the fact that a lot of the knowledge is produced by groups of people, not by individuals; is developed over time; and continues to be developed. Legislation may ''freeze'' knowledge as well as the rituals and practices associated with this knowledge (Laird 1994; Brush and Stabinsky 1996).

The World Intellectual Property Organization has been the voice behind intellectual property rights. But instead of supporting ''local knowledge,'' WIPO became a western capitalist-biased organization that envisions any type of knowledge whether it is medicinal plants, songs, crafts, or any other form, as a commodity. Local communities are concerned with the extent of exploitation of local knowledge and how it is being used or removed from its culturally appropriate context and how it is being usurped as a capitalist commodity.

An issue is the western patenting system which is used to protect the IPRs of monopolists. The scale and tendency to focus on corporations is exemplified by industrially advanced Western European countries who have been strong supporters of IPR and who have imposed this system on Third World countries. Patents could translate into wealth and power for foreign transnational companies and may have negative impacts in the biodiversity of particular areas, depending on the level and structure of market demand and exploration practices. There are about four million patents in the world, which already provide a source of wealth for companies working in ecosystems across the world (Shiva 1997; Settee 2000). Local and indigenous communities, however, increasingly are organizing themselves by establishing NGOs and lobbying governments and international organizations to change legislation concerning patents; WIPO is increasingly willing to lend an ear to the protests.

Much of the local and indigenous knowledge is not written down, but transmitted through daily practices, stories, songs, dance, theatre, and visual arts. Not only knowledge but also attitudes and perceptions are transmitted that way (Dove 1999). Increasingly, programs on local/indigenous knowledge take these forms of transmission into account, and try to incorporate these into educational activities.

Language is crucial to mapping biodiversity. There is concern that when languages disappear, knowledge may disappear as well (Cox 2000). Increased recognition of this threat has resulted in a number of initiatives to protect local and indigenous languages, including UNESCO's ''Safeguarding of the Endangered Languages'' program (http://www.unesco.org/culture/heritage/intangible/meetings/paris_march2003.shtml). This program specifically recognizes the possibility that dispossession and loss of habitat are important risk factors leading to the disappearance of certain languages. Box 14.9 illustrates two UNESCO programs related to intangible cultural heritages.

Local and indigenous knowledge does not only pertain to species that are harvested on an extractive basis, but also to production methods, cultivars, and germplasm (Brondizio 2004b; Padoch et al. 1998; Brookfield 2001). Production systems that evolved over long periods of time benefit from cultivars and methods adapted to particular micro-environments, as well as social conditions (Altieri and Hetch 1990, Caballero 1992, Netting 1993). An important part of indigenous knowledge about fishing systems is related to secret fishing spots. In contrast to terrestrial ecosystems, water-based environments lack clear property boundaries. Yet complex tenure systems based on environmental information such as lunar-tide pattern and triangulation of beach marks, regulated by social relations, can be observed (Cordell 1989).

Diversity of production systems increases the resilience not only to factors such as climatic change, but also facilitates alternative economic options to minimize risks in household food supply (Wilken 1987; Hladik et al 1996). In *Dynamics and Diversity, Soil Fertility and Farming Livelihoods in Africa,* Scoones (2001) and colleagues show that conventional methods using demonstration plots are inadequate to extrapolate to larger areas. They argue that researchers should look at the entire farm with all its components and the ways in which farmers invest labor and inputs to maintain or increase fertility in different parts of their land. In most cases, different levels of land management intensity co-exist to attend household and market demands; and in most areas, one finds complex environmental mosaics with a high diversity of crop and wild species. Likewise, coastal communities rely on the combination of water- and land-based activities to lower the risk of each environment. Box 14.10 illustrates the importance of accounting for social indicators such as the nutritional status of children, in understanding the impact of changes in production system and environment upon the well-being of local populations.

Some initiatives at the international level are concerned with local knowledge systems and their associated landscapes and agrodiversity. One example is the Food and Agriculture Organization program ''Globally Important Ingenious Agricultural Heritage Systems.'' GIAHS aims at enhancing, demonstrating, and promoting these systems through a number of pilot sites representing different types of agricultural and pastoral production systems and their associated landscapes. It includes examples dealing with rice and maize based systems, root crops, pastoral systems, irrigation and soil management systems, agroforestry, and extractivist systems from around the world. This program is still in its early phase, so it is not possible to assess its impact to date (http://www.fao.org/ag/agl/agll/giahs/). The UNESCO World Heritage Program deserves mentioning for its recognition of a wide range of agricultural and other cultural landscapes, including the Rice Terraces of the Philippine Cordilleras and the forest of ''Cedars of God'' (Horsh Arz el-Rab) in Lebanon (p://whc.unesco.org/nwhc/pages/home/pages/homepage.htm). Finally, the People, Land Management, and Ecosystem Conservation program is in a more advanced stage of development; it was built upon under-

BOX 14.9

UNESCO's Intangible Cultural Heritage Program and Local and Indigenous Knowledge Systems

UNESCO has initiated two programs related to intangible cultural heritage. Implemented by UNESCO's Division of Culture, the first program consists of three components: safeguarding endangered language, creating ''living human treasures'' systems, and identifying and preserving ''masterpieces of oral and intangible heritage'' (www.unesco.org/culture/heritage/intangible). In the context of the Division of Culture's emphasis on intangible heritage, the term ''preservation'' means the safeguarding of heritage in the context and environment in which it is generated. In the Masterpieces of the Oral and Intangible Heritage of Humanity program, the ''masterpieces'' refer to cultural spaces that are defined as places in which popular and traditional cultural activities are concentrated, or as the time usually chosen for some regularly occurring event, or forms of popular and traditional expressions (for example, as languages, oral literature, music, dance, games, mythology, rituals, costumes, craftwork, architecture), and other arts as well as traditional forms of communication and information.

Nominations for the masterpieces program should be accompanied by detailed plans to preserve the masterpiece, for which funding can be obtained. The main challenge of the program is to prevent the stifling of dynamic practices. The nominating guidelines demand that ''The expression is presented as a clearly defined corpus of the orality concerned.'' However, ''clearly defined'' is open to interpretation. For instance, in the case of the Sunyanta epic (Mali), the seventh-yearly performance by griots is preceded by rehearsals during which griots argue about the interpretation of the Sunyata stories and their meaning for the interpretation of current events in society. This process is a crucial aspect of the epic (Jansen 2000).

The second UNESCO program, ''Local and Indigenous Knowledge Systems in a Global Society,'' is an intersectoral program whose focus is not so much on the preservation of local/indigenous knowledge as on promoting the recognition of the value of this kind of knowledge as a fundamental component of sustainable development (UNESCO/Links brochure 2002). The program aims at securing an active and influential role for local communities in sustainable development and resource management processes by strengthening dialogue among traditional knowledge holders, scientists, and decision-makers, and establishing cooperative processes. Local and indigenous knowledge systems are considered to be dynamic, and special attention is paid to the way they are generated, the context in which they are generated, as well as the way in which each generation reassesses, renews, and reinvents its knowledge. The program aims at strengthening transmission of knowledge, practices, and worldviews, from elders to youth, and developing quality education that contributes to this end, so as to sustain traditional knowledge as a living and dynamic resource within local and indigenous communities.

BOX 14.10

Nutritional Status as a Social Indicator of Well-being

Despite its importance to smallholders' food security strategies, local production systems tend to be neglected by developmental agencies—usually for not being market oriented and/or for being considered backward in terms of technological use and productivity. In some cases (exemplified by several agroforestry activities) these production systems are not even considered as agricultural work, and are labeled as ''extractivism,'' carrying with it the prejudice and the stigma of lacking a ''civilized'' process of plant domestication and the necessary labor specialization. Nonetheless, local crops also tend to be considered of ''bad taste'' and/or of poor nutritional value. The outcome of these misperceptions tend to induce changes in the agricultural work and productivity and bio-physical environment, but not necessarily induce higher and better household food consumption.

One example is the implementation of agricultural projects among rural populations of the Amazon estuarine region which tend to favor mechanized agriculture and cash crop fields. The projects intended to increase community household income and well-being. However, instead of implementing new crops side by side with food items that were part of the local diet, the project designers opted to replace them. Manioc, a crop cultivated by slash-and-burn technique and a staple food and one of the main sources of energy among Amazonian populations, was often dismissed as an important food crop and replaced by more ''nutritious'' crops such as beans and corn. Beans, despite being a staple food in other parts of Brazil, were not considered a desired food by many household members and were not consumed; corn was usually fed to the animals (Murrieta et al. 1999).

Nutritional status provides a way to evaluate the efficiency of food production systems as well as household and community food security (Frisancho 1990). Through the use anthropometric data—a series of standardized techniques to measure the body and its parts—and diet surveys, one can evaluate the nutritional status of individuals, households, and communities. At the community level, growth and development of individuals, mainly of children under 10 years old, have been presented as good health and nutritional indicators of a population, especially in poor areas of the world. Being in an active growth process, a child's physical development is susceptible to and directly affected by both the availability of food (quality and quantity) and the incidence of diseases, which ultimately reflect social, cultural, economic, and physical environmental conditions. Height-for-age and weight-for-age are the measurements most widely recommended by the World Health Organization to assess protein-energy deficient children. While height-for-age is used as an indicator of the past state of nutrition, weight-for-age and weight-for-height are used as indicators of current nutritional status. For adults, body mass index (a relation between height and weight) is also used to assess nutritional status. While providing a good indicator of household and community well-being, diet surveys and anthropometric techniques also permit assessing possible differential gender and age access to food and household resources, thus allowing a broader understanding of household and community structure and dynamics.

standing and translating the experience of local farmers to their colleagues, operating across rural areas representing different international realities (Brookfield 2001, PLEC 2002, Brookfield et al. 2003). Box 14.11 illustrates this example in more detail.

There are also a number of local and regional level initiatives to conserve biodiversity, including agrodiversity, by setting up seed banks (for example, at Kew Gardens). However, storing seeds is not sufficient (Nazerea 1998). People and Plants, for instance, also compiled local and indigenous knowledge associated with the species, and provided training for local ethno-botanists. Nazerea proposes the establishment of memory-banks in addition to seed banks, including oral histories, evaluation criteria, ranking, and sorting schema and cognitive drawings (1997). Another example incorporating some of these strategies is illustrated in Box 14.12 on the cultivation of medicinal plants in India.

14.3.2.2 ''Best Practices''

Though very important lessons can be learned from diverse experiences in local communities, it should be noted that local and indigenous knowledge evolves in specific contexts and one needs to be very careful with de-contextualizing it. This applies to several types of responses aiming at addressing issues of ''knowledge systems'' and environmental management. Conventional ''best practices'' methods focusing on content may not be the best way to deal with local/indigenous knowledge. A content-based best-practices approach is based on the assumption that it is possible to objectively validate or disqualify local knowledge. Yet the question arises what indicators can be used to determine whether a practice is a ''best practice''? Who decides what a best practice is?

There are many aspects that determine whether a practice is a best practice such as economic performance, improvement of individual rights, the range of beneficiaries, and its sustainability over time. The social and economic context is important, since it defines who benefits from opportunities opened up by particular development programs and what factors constrain local participation. Basic issues such as land tenure conflicts and rights, institutional organization, farmer's and fishermen's access to basic services, and markets for their products, need to be considered.

BOX 14.11

The People and Land Conservation Program

The People, Land Management, and Ecosystem Conservation program has further developed the concept of farmer-to-farmer learning by creating a network of farmers, communities, and sites across 13 countries. The work emerges from the collaboration between the United Nations University, the United Nations Environmental Program, and the Global Environment Facility, with national, regional, and local organizations in these countries. Following a consistent, but adaptive research design, PLEC researchers have partnered with local farmers and extension officers to learn from and systematize local experiences, knowledge, and creative solutions to increase and sustain land productivity. The work of PLEC has involved inventories of agrodiversity and production systems. Using local forms of social organization as the basis for demonstration activities, PLEC has helped to create channels to diffuse technologies and exchange experiences. Considerable efforts have been put into the valorization of farmer's knowledge and overcoming preconceptions and stereotypes not only of extension officers in relation to small-scale farmers, but also of farmers themselves in relation to other farmers.

BOX 14.12

Project in India on the Cultivation of Medicinal Plants

A company called Gram Mooligai Company Limited (GMCL) procures herbs from traditional herb gatherers of the *vallaiyar* community in Virudunagar district of Tamil Nadu, India. It makes these herb-gatherers shareholders and offers better prices. Twenty five villages of the Virudunagar, Sivagangai, Dindigul, and Theni districts of Tamil Nadu have benefited. This public limited company is a spin-off from the Medicinal Plants Conservation Network (MCPN). It is supported by the Bangalore-based Foundation for the Revitalization of Local Health Traditions (FRLHT). It began in 1993 involving state forest departments of the Karnataka, Kerala, and Tamil Nadu states of India in medicinal plants conservation. It also involves research institutes and NGOs. In the Madurai region they were helped by Covenant Center for Development. GMCL was registered in January 2000 as a public limited company. A federation of 164 self-help groups called *mahakalasam* created *sanghas* or self-help groups in villages.

GMCL now has 0.5 million subscribed shares among 44 gatherer and 12 cultivator *sanghas* in the Virudunagar district. They avoid contamination by not collecting plants along the roadside or plants that have moisture. GMCL now sources more than 300 tons of medicinal plants for pharmaceutical and herbal companies. The prices are pre-announced, weighing is transparent and the villagers can sell directly from their villages. The company encourages sustainable harvesting. Sometimes, however, the prices offered are not competitive and rivals try to undercut. (Vijayalakshmi 2003)

14.3.2.3 Compensating for Knowledge

Compensation for the use of local and indigenous knowledge by third parties is an important, yet complicated response (Moran 1999). Given the way in which such knowledge is produced, determining who owns what knowledge may not be easy. The distribution of knowledge varies according to type, use, and access to resources. Some knowledge may be shared and produced by numerous local communities (Reyes-Garcia et al. 2003). In other cases, production and diffusion of knowledge may be restricted to certain groups or individuals within communities (Moran 1999).

Local authority structures are an important, but not the only factor, that needs to be taken into account in deciding, in close cooperation with local communities, who should be responsible for distributing benefits. As remarked above, local and indigenous knowledge may concern different domains and may be produced by different individuals or groups within communities. Though possessing certain knowledge may enhance someone's position in society, the idea that powerful people within communities are related to or responsible for local and indigenous knowledge is not necessarily correct. Thus the popular idea that local and indigenous knowledge can be promoted by strengthening ''traditional'' authorities may not be valid in many cases. (See Box 14.13.) Such a strategy is not always ''innocent''; both governments and enterprises may find it easier to deal with such authorities than with whole communities (Ribot 1999).

Furthermore, the distribution of benefits is influenced by relationship among companies that seek local and indigenous knowledge, national legislation and authority structures, and regional government bodies (Schutz 1970; Berger and Luckman 1971; Laird 1994).

14.3.2.4 Responses Changing Resource Ownership and Control

Control over resources is another crucial issue that influences the distribution of benefits derived from local/indigenous knowl-

BOX 14.13

An NGO Imposing "Traditional" Authorities in Mali
(Kassibo 2001)

The government of Mali has initiated a decentralization process that is not yet completed. Locally elected "communes" have been established that have some decision-making powers, but forest resources are still controlled by the state.

A British NGO introducing a forestry management project into the Mopti region opted to re-invent tradition as the basis for the project instead of supporting local calls to decentralizing control over the forest to the commune. The NGO based its project on the oral traditions of one of the ethnic groups in the area. According to these traditions, in the pre-colonial era groups of young people constituted associations called *ton,* which were charged with forest protection. They were accountable to the village authorities and supported by the land chiefs in resolving conflicts. Under colonization, the French authorities banned this system, and appointed civil servants to manage the forest. Access and user rights of local populations were severely restricted. From the colonial period to the present day, local populations have never ceased to try to reclaim their participation in forest management.

The NGO appropriated the traditional approach to legitimize its intervention in the area of environmental management and to more effectively lobby the central state administration for recognition. An "outside" actor by definition, the NGO created successors to the *ton* in the form of watch brigades, and established village associations that were to supervise the brigades and report back to the NGO. The NGO financed all operations of the brigades and village associations, and supervised them. Brigades and associations were accountable to the NGO, but neither they nor the NGO itself were accountable to local government structures. The NGO had no real accountability downward to the community, although members of the brigades and associations were nominated by the community. Furthermore, the brigades and village associations had no real control over the forest; they basically fulfilled the patrolling function of the Conservation Service, but without sanctioning powers.

The NGO did not take into account the fact that the local communities had become multi-ethnic when they imposed the neo-traditional structures derived from the oral traditions of one of the groups in the area. Some groups felt misrepresented by these structures, and as a result of the lack of downward accountability there was a lot of favoritism. Furthermore, the structures set-up by the NGO were used by the state to claim that there was no need to decentralize control over the forest to the existing, democratically elected local government bodies.

edge. Various tenurial options exist, including co-management, joint ventures, and the creation of conservation and sustainable management units to assign forms of land tenure rights to communities. Factors such as historical land tenure control, complexities of local institutional arrangements, and types of resource uses, all play a role. While guaranteeing tenure rights and access to resources to particular groups, legislation may constrain the level of flexibility to allow changes in production system, adoption of new technologies, accommodation to population increases, and higher pressure over particular resources. For instance, communities that are "allowed to stay" in conservation areas are often forbidden to carry on or increase their agricultural activities (West and Brechin 1991; Stevens 1997; Agrawal and Ostrom 2001; McGrath et al. 1993; National Research Council 2002; Ostrom 1990).

Uncertainty concerning tenureship not only poses problems for the distribution of benefits, but also for strategies that are becoming more and more common, for example reinforcing traditional leadership to conserve local and indigenous knowledge. The link that is not always made explicit is that communities do need control over natural resources, but whether this should be through traditional leadership remains to be seen and depends on the local context and history. Local government institutions that are democratically elected and have real authority over resources in some cases may be better options. Yet many governments seem to have a tendency to shift responsibilities back and forth between "traditional" authorities and local government bodies, without giving any of them real decision-making powers. This decreases communities' control over resources and increases central government's control, often undermining the efforts of both sides (Ribot 1999; Spierenburg 2003). Another problem concerns the control over territories that contain resources deemed of national importance, such as oil and minerals. In most cases, central governments refuse to devolve authority over such resources.

14.3.2.5 Certification Programs

Certification programs have emerged as tools to control the source and distribution of particular products and their means of extraction (Zarin et al 2004). Examples include forest products, fisheries, and agriculture. The criteria on which certification is based include biological and ecological components of production areas and ecosystems, approved management plans and environmental impact assessments, compliance with national legislation, and the participants involved, among other issues. Less attention is given to the impact of particular resource extraction upon people/communities in those areas using the same resource base. Sustainable forest certification ensures that wood products that are being sold to consumers have gone through a checklist to guarantee that they meet the standards set by the certification process (Certified Forest Products Council 2002). Although this is a very positive response, many communities do not have access to certification programs for their products or are not aware of their existence, thus limiting their participation in a growing market. In addition, the financial costs involved in establishing a certification program reduce the chances for local communities to be able to participate independently. Capacity building at the local level to prepare, implement, and monitor certification programs could be implemented alongside the regulations requiring certification in international markets.

14.3.2.6 "Fair Trade"

"Fair trade" is a long-lasting movement initiated to help disadvantaged or politically marginalized communities; its aim is to obtain better prices and providing better trading conditions, as well as raise consumers' awareness of their potential role as buyers. Yet from the early 1990s, fair trade began to overlap with initiatives focusing on the environmental performance of trade (Robins 1999).

Among the successor perspectives is the so-called "Rainforest Harvest," which focuses on the conservation of tropical forests and their dwellers. Proposed in the late 1980s by Jason Clay, the "Rainforest Harvest" centered on helping indigenous and other rainforest communities. The baseline argument was that the introduction of fair and environment-friendly markets was a powerful approach to protect people's standards of living and promote their empowerment (Clay 1992). Prompted by conservationists and indigenous advocacy groups, and made possible by consumers' interest, a series of trade initiatives began to be installed that encompassed concerns over environmental management by indigenous and rural communities, linking issues of social justice

and recognition of the stewardship of these communities over natural resources. Though this is a very positive response, care should be taken of the issues already mentioned in relation to the benefits generated by local and indigenous knowledge.

Furthermore, successful fair trade initiatives depend upon local skills concerning market negotiations as well as leveling skills vis-à-vis middlemen and retailers. Commodities such as coffee, while experiencing a growing market, have seen decreasing prices due not only to increases in production (the ''Viet Nam factor''), but also as a function of the centralized control of stocks by a handful of companies. Shortening the commodity chain between producers and consumers is one of the most notable contributions to rural development that may allow communities to increase their income and to value their resources and production systems. Box 14.14 illustrates fair trade examples of the Amazon and highlights key principles facilitating the success of fair trade initiatives.

14.4 Tourism: Recreation and Education

14.4.1 Valuing the Environment and Culture in Tourism

Tourism and recreation are related to cultural perceptions of land- and waterscapes and of culture itself, both embedded in economic dimensions. Tourism is a large revenue generator, representing the most important source of income in some countries. The growing awareness of cultural diversity and environmental issues has had an impact on tourists' expectations and behaviors. In some cases, the impact of large-scale tourist enterprises on the environment and local economies has undermined the very basis of tourism. Hence, a growing number of tourists are looking for new destinations and experiences; this provides both opportunities and risks for communities and landscapes.

BOX 14.14

Fair Trade in the Amazon

The Amazon is perhaps the chief platform for forms of fair trade. The pioneer and flagship initiative was ''Rainforest Crunch,'' a candy bar containing Brazil nuts produced by the U.S. company ''Community Products.'' An enterprise derived from ''Ben and Jerry's'' ice cream industry, the newly formed enterprise followed different management rules such as returning a percentage of the profits to conservation programs. A second flagship initiative was ''The Body Shop'' cosmetic industry of England that implemented a ''trade not aid'' commercialization program with communities around the world, declaring that it would pay ''Third World producers, First World prices'' (Clay 1992; 1997). With several trading partners, the company became particularly known for commercializing Brazil nut oil with the Kayapo indigenous group of Brazil (Corry 1994; Turner 1995).

In addition to these well-known initiatives, numerous other agreements based on fair trade deals were implemented. In the Amazon, the leading commercial sector in this effort is perhaps the cosmetic industry. Pioneered by large corporations such as the Body Shop and Aveda, cosmetic industries have adopted declarations of ''beauty with social responsibility plus environmental conservation'' as a common marketing strategy. However, a wide range of other sectors are involved as well, spanning from the food industry, essential oils, medicinal plants, fibers, and resins, to the automobile industry. Retail industries are also increasingly jumping into the ''fair trade'' business. By now, ''South–South'' fair trade deals are becoming increasingly common; an example is one of Brazil's largest supermarkets, which implemented a program to directly trade products with rural communities.

Fair trade projects are frequently promoted by NGOs; the Tagua initiative in Ecuador is a famous example. In an extractive community of Afro-Americans living within a biodiversity-rich but economically extremely poor area, the NGO Conservation International fostered the production of buttons made of the Tagua nut or vegetable ivory (Hidalgo 1992; Ziffer 1992). A traditional product in the process of being abandoned, the NGO actions reversed and improved the socioeconomic situation (Robins 1999).

Although they are a growing business, rainforest harvest deals are not free from criticism. It has often been said that they (1) support consumerism by ''green washing''; (2) have a hidden agenda to integrate indigenous peoples into national societies; (3) resemble a renewed version of the traditional Amazon system of debt-bondage; (4) are an unviable proposition for tropical forests; and (5) produce social and cultural disruption (Corry 1994; Entine 1994; Turner 1995).

Even those who have confidence in the approach do not pretend that the task is easy. Some common problems include irregular sourcing, structural dependence on subsidies, bureaucratic processes of export that require specialized management skills, lack of storage capacity with communities, deficiencies in quality control and lack of training capacity, low efficiency of the workforce, and high transportation costs (Anderson and Clay 2002). In addition, fair trade agreements can be troublesome, particularly to indigenous groups where cultural transformations are an important issue. The reason is that commercial production commonly occurs at the expense of subsistence in labor scarce situations, and a movement away from traditional subsistence practices may imply cultural changes (Behrens 1992; Godoy et al. 1995). Although some production levels might avoid unwanted changes, they may require the payment of unsustainable premium prices for the products (Morsello 2002).

Although they have their difficulties, fair trade deals still offer substantial advantages and opportunities: increased income as a result of shortened market chains and premium prices, improvements in management skills, resources to control the territory, economic opportunities for remote communities, and, in some cases, also reductions in inequalities (Anderson and Clay 2002; Morsello 2002). Some conditions for success include (Clay 1996; Anderson and Clay 2002): undertaking resource inventories and markets research; starting with traditional products and markets; adding value locally; improving harvesting techniques; keeping the strategy simple; diversifying market niches yet concentrating on a small number of products; establishing product standards; establishing partnerships with research and government organizations; not exaggerating the profits or benefits; requiring community investments and using loans, not grants; and adopting certification or labeling.

There are nevertheless many uncertainties about conditions for success because systematic and empirical research on the subject and comparative studies are particularly scant and difficult to set up. As a consequence, it remains unclear whether these activities are successful for one of the terms of the equation—indigenous peoples societies or the forests they live in—let alone for the combination of both. Important unresolved issues include: whether forest communities are being exploited and how they are compensated; under what conditions local transformation is beneficial; whether system of paying premium prices and the possibility of dependence on specific dealers; the exclusivity demanded by some implementers based on their high investments to start up the production; the links with biological conservation; and which forms of labeling are more suitable, certification or ''ethical codes.''

Fifty years ago, at the time of the first successful Himalayan expedition, there were fewer than a dozen expeditions and about a hundred trekkers. Now trekkers have increased to a staggering half a million and more than a thousand expeditions have been organized. As a result there is pollution on some Himalayan trails; the lack of anti-pollution measures by some trekking agencies, lack of environmental education, and overcrowding of certain trails has negative impacts on the ecosystems involved (Kohli 2002).

Tourism can, however, provide an alternative form of land use which decreases pressure for land use conversion (for example, tropical forests to pastoral lands). Tourism can also contribute to the maintenance and revival of lifestyles and cultural practices (Hillman 2003). Opportunities arise for education and awareness-raising to understand and respect cultural diversity and biodiversity. Conservation areas are especially valued for their educational significance and for providing recreational services. Valorization of cultural landscapes and monuments can also be an important asset to the larger society. Box 14.15 highlights the Rhön Biosphere Reserve in Germany, which aims to integrate environmental conservation and cultural landscapes through traditional agricultural systems while finding economic solutions for its long-term sustainability.

Tourism and recreation pose risks as well. Consumptive tourism activities, such as sport fishing, may represent pressure on the resource. For example, marine recreational angling in the United States alone comprise more than 15 million fishers in North America, with a total harvest of 266 million pounds in 2001 (http://www.st.nmfs.gov/st1/recreational/mrf_why.html). Conflicts between recreational and professional fishers are occurring in some parts of the world where recreational fishers retain strong political power in the fishing councils.

BOX 14.15

The Rhön Biosphere Reserve in Germany (Pokorny 2001)

Biosphere reserves are recognized areas of representative environments that have been internationally designated to promote solutions to reconcile the conservation of biodiversity and its sustainable use. They are nominated by national governments through the focal points for the Man and Biosphere Programme and UNESCO in their respective countries. The main concern of the Rhön Biosphere Reserve is the maintenance of cultural landscapes through traditional agriculture systems, currently threatened by a constant decrease in the number of farms and income of farmers. This is done by promoting on-farm tourism, but also through marketing local products. The Biosphere Reserve has been looking for business partners to develop innovative and environmentally friendly products and help create or safeguard jobs in the rural area.

"The Biosphere Reserve Business Partners" project was initiated by the local government of Hessen. This partnership involves all types of businesses, for example farms, restaurants, hotels, grocery stores, crafts, tourist agencies, and riding stables. Business partners in agriculture must meet the European Union Council regulation on organic production of agricultural products, including livestock production (EU No 1804/99). Restaurants and grocery stores must offer a minimum number of products that come from other Biosphere Reserve partners. The project is now in phase three, looking for a way to introduce a Biosphere Reserve label that would be product/service related rather than simply focused on businesses; enable the marketing of a variety of regional products in regional supermarkets, and enable the integration of non-food products or services.

Furthermore, representations of nature and culture used to entice tourists often refer to pristine ecosystems and exotic cultures, reinforcing stereotypes as marketing tools of communities subjected to tourism. Commoditization of culture can generate income, but does not always benefit those portrayed. Another problem is the blurring of boundaries between private and public. Emphasis on pristine ecosystems can furthermore easily lead to eviction of people.

The risks and opportunities provided by tourism are related to the economic position of communities and relations of power. Some of the most notable risks related to tourism activities, including ecological, cultural, and agrotourism, include pollution and waste, change in consumption pattern and nutrition, change in land use and livelihood, and the spread of infectious diseases (tourist to host and host to tourist). Increase in land use value for tourism real estate development purposes may lead to displacement and dispossession. This is especially a risk for communities that enjoy informal or communal land rights. Coastal communities have long suffered from these impacts as the tourist potential of coastal landscapes continuously pushes the local residents away from their livelihood strategies. Economic deprivation can lead to overexploitation of resources and to individuals accepting unfavorable positions in the tourism industry (low-skilled labor, sex-industry, drugs). This is particularly visible in the relationship between cultural stereotypes and sex tourism in parts of Asia and South America.

Recreation and education can go hand in hand. Cultural tourism can serve to educate people about the importance of cultural diversity, as well as the importance of the latter for the conservation of biodiversity, provided the risks are taken into account. Tourism and recreation can be linked to environmental education, fostering knowledge about the functioning of ecosystems and provoking tourists to critically examine human–nature relations. Yet tourists are not the sole targets of environmental education. The Omo Biosphere Reserve in Nigeria, for example, is the site of environmental education programs for very diverse audiences, ranging from schoolchildren to university students, protected area managers and policy-makers (Ola-Adams 2001).

The Fitzgerald Biosphere Reserve in Australia conducts awareness raising activities to help local farmers address the problem of wind erosion. West (2001) stresses that awareness raising requires development, especially among communities that experience periods of economic decline. Recently more attention is being paid to the transmission of local and indigenous knowledge. Elders are invited to schools to transmit their knowledge through stories and art, for example, instructing pupils in their mother tongue. In all cases, "top-down" education is less effective than education that is based on sharing experiences and attempts to reach a joint understanding the dynamics of human–nature interactions.

14.4.2 Responses Related to Tourism and Recreation

Economic responses have been developed side-by-side with responses working at the level of social-behavioral changes, legal and institutional incentives, and cognitive behavior. A good example is the public demand and economic-political valorization for cultural, ecological, and rural and urban tourism. Infrastructure for cultural and eco-tourism has increased in response to a growing awareness of cultural and biological diversity (Ashley et al. 2001). Environmental NGOs have contributed to awareness-raising and political pressure and are providing capacity building, with various levels of success. National governments have realized

the potential benefits of tourism for their economies. Many countries have developed policies and incentives to develop tourism industries. Policy-makers need to take into account environmental, cultural, and historical variability in defining priorities and strategies. The scope of policies can be constrained, however, by the economic situation of the country. Internal and regional differences may exist in possibilities of providing tourism services and generating benefits. Box 14.16 illustrates the importance of accounting for diverse views on the use of state parks and forests in the midwestern United States.

14.4.2.1 Cultural Tourism

Cultural tourism involves representations of culture at different levels—regional, national, and local. The questions that arise pertain to who represents whom and what cultural symbols are used. A recent conflict over attempts to patent an Inuit symbol used as a marketing tool by a tour operator shows how pertinent these questions are. Attention needs to be paid to a number of issues such as revenue sharing for cultural items, rights pertaining to certain cultural symbols, and the blurring of boundaries between the private and the public. Indigenous rights interplay with national imperatives of revenue earning. Furthermore, different groups will benefit differentially from tourism depending on local arrangements.

BOX 14.16

Taking into Account Diverse Views on the Use of State and National Forests in the Midwestern United States
(Welch et al. 2001)

The diverse pool of users around many parks in densely populated areas entails a variety of opinions and views on how to use public areas and which ones to conserve. Much of the controversy centers on how people view and use natural resources. A *preservationist* approach focuses on limiting the human interference. A *conservationist* approach focusing on multiple uses entails sustainable harvesting of forest resources. *Recreational users* concentrate on access to the public land and having suitable conditions for their activities in the forest. Different coalitions are formed among various interest groups.

Disagreement over the management of the national forests has led to lawsuits and an effective cessation to logging. The loss of tax dollars from timber concessions is a sore point for county-level administrations and has had a perceived negative impact on the quality of services supplied by these entities. In the midwestern United States there is a growing debate between the proponents of the use of state and national forests for recreation and conservation and those supporting the original purpose of some parks as areas for managed logging operations. However, even recreational activities are controversial such as the opening of parks to off-road vehicles or hunting.

Interest groups often use ecological arguments to support their position on the use of public land. Preservation groups focus on the importance of unbroken tracts of mature forest for neotropical migrant birds. Other groups concerned with habitat for game species lament the shrinking area of heterogeneous forest patches of variable age and the decline of tree species reliant on disturbance. One important contribution of the academic community in collaboration with the U.S. Forest Service has been on the study and survey of different groups of users. Such studies contribute to the understanding of controversial views and opinions of different user groups and local communities and may serve to inform not only park management plans, but also educate the public benefiting from different "services" provided by the conservation area.

14.4.2.2 Ecotourism

Ecotourism can provide economic alternatives to value ecosystems services. There may be potential conflicts in resource use and the aesthetics of certain ecosystems. Different ecosystems are subjected to different types and scales of impact from tourism infrastructures. Furthermore, some ecosystems are easier to market to tourists than others are. The market value of ecosystems may vary according to public perceptions of nature. Freezing of landscapes, conversion of landscapes, dispossession, and removing of human influences may result, depending on views of what ecotourism should represent. Yet when conservation receives no budgetary subsidy, tourism can provide revenues needed for conservation purposes.

Cultural and eco-tourism are not necessarily the same thing as community-based tourism (Binns and Nel 2002). Concerning access and benefit-sharing, tensions often exist between tour operators, local communities, conservation units, and other government departments. In some cases, local communities may actually run tourism enterprises themselves; in other cases, they may only have access to low-paid menial jobs. Issues that are important are matters of local decision-making powers concerning land use, infrastructure, and dealing with externalities, for example, the choice of tour operators and types of tourists, boundaries between the private and the public, goods that are imported by tourists, and waste management. Capacity-building tends to be more successful if it not only involves individual professional training, but also includes institution building, marketing, and negotiating capacities. (Box 14.17 discusses conflicts arising from tour operations without local input.)

14.4.2.3 Rural and Urban Tourism

Rural and urban tourism have been receiving increasing support in recent years, including in terms of tax incentives and credit. Changes are occurring in perceptions concerning what types of landscapes and cultural practices are of interest to tourism. Industrial monuments and certain types of resource use are now seen as having historical, social, and environmental potential for tourism. This also broadens the scope of environmental conservation in areas outside of protected areas. Small-scale farming production, while facing difficult competition in agricultural markets, can find an alternative in providing tourist services. This is just one example of how tourism can contribute to the maintenance of certain lifestyles and production methods. Other examples include farm-tourism combinations in Italy, Germany, Israel, and Russia. In Canada, ecotourism packages available to European markets offer tourists a chance to live in teepees and experience traditional First Nation peoples' lifestyle. The tours also offer chances to go on horseback and explore traditional trails. Hunting tours are offered to European and American hunters, in which First Nation peoples are used as guides because of their local knowledge of the environmental landscape.

14.5 Conclusion

Cultural perceptions and practices affect biodiversity and ecosystem management practices. Nevertheless, many natural resource management systems and conservation strategies still separate people from their environments, freezing and stereotyping both cultures and ecosystems. Such systems and strategies are less effective in addressing linkages between ecosystem functioning, develop-

BOX 14.17

Conflicts with and over Tour Operators in Zimbabwe

In the Zambezi valley in Zimbabwe, several districts have been granted appropriate authority over wildlife and participate in the Communal Areas Programme for the Management of Indigenous Resources (CAMPFIRE). These districts have the right to utilize wildlife and other resources to generate benefits that ideally should be devolved to the so-called producer communities, that is, the local communities that live with wildlife and through good stewardship assure the presence of wildlife. In many cases revenues are derived from sports hunting operations. Some CAMPFIRE projects have been very successful, with the districts actually devolving large sums of money derived from wildlife to local communities and giving them the authority to decide how the revenues are distributed (Nabane et al.1995; Spierenburg 1999; Murphree 2001). In other districts, severe conflicts have arisen over the distribution of benefits to local communities (Dzingirai 1995).

Another bone of contention has been the selection of tour operators who are awarded hunting concessions by the district authorities. In most districts, local communities have no say in this selection. One district had started its own tourist operation, employing two licensed hunters to accompany tourists. These hunters were on good terms with the neighboring community, entering into joint ventures, always impressing upon visitors that they were actually hunting in an area that (since it is part of a Communal Area) belongs to the community, and urging them to respect that. In another part of the district, however, a concession had been awarded to a tour operator who falsely considered the area as his private property. He employed guards who at night would move into the neighboring villages, overturning cooking pots to see if villagers had been poaching (Hasler 1996). The villagers have repeatedly, but in vain, demanded that the concession be awarded to another operator.

ment, and human well-being. Overcoming the nature–culture dichotomy towards a more encompassing view of ecosystems that does not isolate cultural services from other ecosystem services is necessary to face the challenges of the new millennium. There is a range of possibilities of interactions between humans and nature. Conservation and management strategies that take into account the historical, economic, and cultural contexts (including different knowledge systems, forms of ownership, and institutional organization) of these interactions are more effective in terms of contributing to both ecosystem and human well-being. Generally, standard, blueprint approaches do not seem to work.

Furthermore, global-national-local linkages are important. In a global perspective, market-economic policies are interrelated as flows of resources, goods and services transcend national and regional boundaries. Market pressures, consumption patterns, technological changes, and (inter)government policies will continue to influence intensification of resource use, land reform, and substitution of local technologies; all affect local livelihoods, capabilities, and environments. It is only too common to lay the responsibility for environmental problems and conservation in the hands of local communities, or blame the private sector, while disregarding the linkages between economic pressures and local, national, and international policies. Neither local communities nor private enterprises operate in a vacuum; all creatively seek opportunities to have their opinions heard and to promote their interests by concluding alliances at the local, national, and global level. Understanding the complexities of different cultural perceptions of landscapes, management of resources, and local institutional arrangements contributes to alternative strategies of ecosystem management and socioeconomic development.

Nature–culture relations have been the subject of intense debates, such as the people and parks debate. As a result, ideas about what land- and waterscapes should be conserved, as well as how they should be conserved, have changed. There is a growing recognition that a wider variety of landscapes, including agricultural, industrial, and aquatic landscapes, need to be conserved. Many governments and national and international conservation organizations have recognized that the biggest challenge of conservation in the twenty-first century is for it to take place outside parks and enforced boundaries, and thus be integrated into agricultural and urban systems.

Concepts and policies regarding the creation of conservation units have moved from exclusion of communities and local forms of resource management to inclusion. It is, however, difficult to assess the impacts of community participation on ecosystems and human well-being. Studies that have attempted to do so have had mixed results. Some programs do contribute to biodiversity conservation and local economic needs. In other cases the contribution to human well-being has been easier to assess than the contribution to the conservation of biodiversity. In cases where the contribution to human well-being has been limited, this is often attributed to flaws in the decentralization process. Furthermore, numerous authors have problematized the concept of ''community.'' Perceptions of land- and waterscapes are influenced by cultural repertoires, which in turn are influenced by and influence knowledge production (scientific as well as local and indigenous).

Local and indigenous knowledge is important in conserving ecosystems and contributing to human well-being. The understanding of crop, forest, and aquatic biodiversity lies in the oral history and cultural memories of indigenous and local communities. Yet the pace of technological and agricultural change, and of large-scale environmental modification by infrastructure development, often happens at the expense of local resources and knowledge. This has an impact on local food security and economies, and is also relevant to national and international issues of conservation and economy. Local and indigenous peoples have reacted proactively to such changes by organizing themselves (for example by establishing NGOs) and concluding alliances at local, national, and global levels.

Fostering the articulation of international and national conventions and regulations linking biodiversity and local and indigenous knowledge is important, taking into account that knowledge is produced in dynamic context of inter- and intra-group interactions, power relations, and historical settings. Compensating for the utilization of local knowledge and resources entails taking into account the power dynamics of the relations among companies, national and regional governments, and communities. Certification programs are more likely to be effective in addressing human well-being if they take into account the impact of particular resource extraction upon people and communities using the same resource basis, but not necessarily sharing resource ownership. Certification programs work better if they are made more accessible to communities and small producers' groups that are not always familiar with bureaucratic procedures, and cannot afford high costs for certification. Responses such as ''Fair Trade'' tools are more effective if they promote the participation of local producers in the commercialization process, price negotiations, and the transformation and retailing of their products.

The economic exploitation as well as the growing consciousness concerning the disappearance of local resources and the knowledge about these has led to growing concerns of the need

to protect local and indigenous knowledge. The international community has recognized the dependence of many indigenous peoples on biological resources, notably in the preamble to the CBD. Many governments are struggling to develop national policies to protect local and indigenous knowledge. Intellectual property rights, as advocated by WIPO, entail the risk of considering any type of knowledge as a commodity, removing it from its cultural context. Many legal strategies fail to take into account local and indigenous strategies to protect as well as transmit knowledge.

Eco-, cultural, and agrotourism can provide important opportunities to link conservation and development. However, in many cases, they do not directly benefit the local communities, that is, they are not necessarily community-based. The latter entails institutional capacity building in marketing and negotiation, representation among community members, tourism operators, and governments, and defining access to benefits. Conflicts about resource use, development of infrastructure, conversion of ecosystems, and dispossession of communities have negative impacts on the possibilities of ecotourism contributing to human well-being. In cultural tourism, problems may emerge in the representation and ownership of cultural symbols, reproduction of stereotypes, consent among and within communities, and blurring of boundaries between the public and private. Studies show that the risks and opportunities provided by tourism are related to the economic position of communities and relations of power. Economic deprivation can lead to overexploitation of resources and accepting unfavorable positions in the tourism industry (low-skilled labor, sex-industry, drugs). Increase in land use value for tourism real estate development purposes may lead to displacement and dispossession. This is especially a risk for communities that enjoy informal or communal land rights.

Recreation, conservation, and environmental education can go hand in hand. Cultural tourism can serve to educate people about the importance of cultural diversity, as well as the importance of the latter for the conservation of biodiversity, provided the risks mentioned are taken into account. Tourism and recreation can be linked to environmental education, fostering knowledge about the functioning of ecosystems and provoking tourists to critically examine human–nature relations. Environmental education may serve very diverse audiences, ranging from schoolchildren to university students, protected area managers, policymakers, and representatives of the private sector. In all cases, top-down education is less effective than education that is based on sharing experiences and attempts to reach a joint understanding of the dynamics of interaction between humans and nature.

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