Chapter 12
Globalization, Local Communities, and Traditional Forest-Related Knowledge*

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Abstract Traditional forest-related knowledge (TFRK) has allowed human communities to adapt to specific locales. However, this local context is being dramatically affected by changes introduced through globalization. This chapter explores the different paths through which globalization is affecting local and indigenous communities and their traditional forest-related knowledge, and the potential for these communities to adapt to, or counteract, the impacts of globalization. We start with a reflexion on globalization and its links with local communities. Current globalization can be regarded as the most recent phase of a long-term process initiated by European expansion 500 years ago. Following a brief discussion of the positive effects and potential benefits of globalization on local communities, the remainder of the chapter considers the more disquieting aspects of this topic. European countries provide examples of how globalization has affected local communities in capitalist industrial economies as well as under communism. We then address the long-lasting influence of European colonialism, and explore how local communities are still being affected by political ideas developed in Europe during the eighteenth and nineteenth centuries and introduced to the colonies, including centralized control of forests and their management. We continue with a focus on developing countries and the influence of environmental policies and the market economy as important facets of globalization's impact on local communities. This discussion includes an

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examination of the application of violence in the framework of a market economy. Finally, we discuss how local communities deal with globalization, as well as the importance of participation and consultation processes to support these communities.

Keywords Colonialism • Globalization • Environmental policy • Forest conflict • Forest governance • Forest history • Indigenous peoples • Local communities • Market economy • Traditional knowledge

12.1 Introduction

Traditional ecological knowledge, which includes traditional forest-related knowledge (TFRK), is characterized by its strong local character: embedded in the local cultural milieu (Berkes 1999) and bounded in space and time (Banuri and Apffel Marglin 1993, cited in Berkes 1999). Knowledge of local species and ecosystems has allowed human communities to adapt to specific places and environmental conditions (Berkes 1999). However, the local context within which traditional knowledge exists is being dramatically affected as a result of the changes introduced by the world globalization. This chapter explores the impacts of globalization on rural communities and their traditional forest-related knowledge.

The term globalization represents one of the most fashionable buzzwords of contemporary political and academic discussions. In a popular sense it is perceived as a synonym for such phenomena as free market, economic liberalization, or internet revolution (Scheuermann 2006). A more precise definition stresses the fundamental changes in the spatial and temporal contours of social existence causing a compression of distance or space, which leads in turn to a profound alteration in the organization of human affairs (Scheuermann 2006). So, globalization can be defined as the 'worldwide interconnectedness of places and people' (Lambin et al. 2001), linking 'distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa' (Giddens 1990). Furthermore, globalization acts by 'removing regional barriers and strengthening global at the expense of national connections' (Lambin et al. 2001).

Being involved in weblike and netlike connections is an intrinsic feature of human groups, and history shows many examples of regional linkages well before AD 1400 (Wolf 1982). However, the European expansion initiated in the fifteenth century 'brought the regional networks into worldwide orchestration, and subjected them to a rhythm of global scope' (Wolf 1982). 'From then on,' continues anthropologist Eric R. Wolf, 'events in one part of the globe would have repercussions in other parts.' Against this background we can regard globalization as the most recent phase of a long-term process that took off 500 years ago (Tainter 2007; Pelizaeus 2008) and was dramatically accelerated with the innovations introduced by the industrial revolution in the fields of transportation and communication (Giddens 1990; Sheuermann 2006).

The different paths through which people located at distant places have woven their webs of connections have increased through time. So, in prior globalization

waves, trade played an important role (Wolf 1982), while currently the worldwide interconnectedness occurs 'through, for example, global markets, information and capital flows, and international conventions' (Lambin et al. 2001). This diversity of paths assures the far-reaching implications of the current globalization affecting every facet of human life, including culture, politics, and economics (Friedman 2005; Stiglitz 2006; Scheuermann 2006).

Regarding cultural globalization, a frequent message of critics refers to its destructive implications. Martin Heidegger, a pioneer of the globalization discussion, warned early about the global homogenizing effect of television, a medium that has definitively contributed to the 'abolition of distance,' rendering human experience monotonous (Heidegger 1971, cited in Scheuermann 2006). Recently Thomas L. Friedman recognized that globalization has homogenizing tendencies but, in contrast to the previous view, pointed also to its particularizing ones. Globalization represents a broad, deep, and complex phenomenon that involves new forms of communication and innovation. Particularly the internet is equalizing people, i.e., allowing them to interact with more equal power and opportunities and promoting the globalization of the local, thus counteracting homogeneity (Friedman 2005).

In the field of political life, new information technologies support stakeholders and activists to disseminate their concerns and requests across frontiers and to have a stake in political discussions. Furthermore, political globalization expresses itself also in the tendency towards supranational forms of socioeconomic lawmaking and regulation (Sheuermann 2006), such as the shift to global environmental politics since the late 1980s (Porter and Borwn 1996).

For decades, international policies have also shaped the globalization of the economy, but in the course of time the international economic system has become stronger and better organized than the international political system (Stiglitz 2006). Globalization is frequently identified with the spread of capitalism, markets, and trade. Karl Marx and Friedrich Engels (1848) already acknowledged capitalism as a basic globalization driver: 'The need of a constantly expanding market for its products chases the bourgeoisie over the entire surface of the globe. It must nestle everywhere, settle everywhere, establish connexions everywhere,' they wrote. Compared with earlier networks of economic connections, capitalism introduced for the first time a genuinely global order rested upon economic power (Wallerstein 1974). Sheuermann (2006) points to the disagreements regarding the precise causal forces behind globalization, since some authors question the strong economic focus of the Marxist approach. Nonetheless, the Nobel laureate Joseph Stiglitz (2006) insists that the private economy plays a leading role in driving current globalization. Because economic globalization has been so strong, democratic structures are not well-developed at the international level, and individual countries have become weak in their ability to control economic actors, which has led to a deficit in democracy (Stiglitz 2006; Sheuermann 2006). In fact, observers believe that the economic development of recent decades has led the world into a qualitatively new phase. World trade volume has increased by 20 times since 1950, and foreign investment flow almost doubled in merely a couple of years (1997–1999) (Levin Institute 2011). This wave of globalization has been driven, since the Second World War, by policies that include free-market, reductions in barriers to commerce and international trade,

and opening economies. International institutions such as the World Bank and the International Monetary Fund have played an important role, thereby promoting a global frame benefitting particularly rich countries (Stiglitz 2006). Thus, a frenetic self-reliant economy has provided globalization with an international industrial and financial business structure (Levin Institute 2011).

Such a market-centric approach is typical of neo-liberalism (Harvey 2005; Mudge 2008) and has serious consequences when it incorporates local traditional communities into its sphere (Martínez Alier 2002; Harvey 2005; Tainter 2007). Focussing firstly only on the market, economic time (guided by capital flow and profit rate) is much faster than the ecological time of traditionally managed systems. This antagonism damages both traditional cultures and their natural resources (Martínez Alier 2002). Moreover, David Harvey (2003, 2005) brings out how neo-liberalism forced open non-capitalist territories—not only to trade but also to privatization of natural resources, monetization of exchange, forceful expulsion of peasant populations, and suppression of alternative forms of production and consumption—thereby making available cheaper raw materials, labour power, and land. The process, denominated by Harvey as 'accumulation by dispossession,' assures growing profit rates and constitutes an inherent part of neoliberalism. This is facilitated by the disjuncture in scaling between the flow of materials and the flow of information at local and regional levels. Peripheries incorporated into global systems continue maintaining 'a local scale of information, even as the factors that affect them expand to the national and international arenas' (Tainter 2007). Local people lose autonomy, being even unaware that they have done so (Tainter 2007), while dependency and environmental deterioration is promoted (Martínez Alier 2002; Harvey 2005; Tainter 2007). Joseph Stiglitz (2006) concedes a point to critics who argue that globalization has caused too many losers, an involuntary group joined by many members of indigenous and local communities.

Summing up, although a certain amount of trade-driven reciprocity among distant groups existed even in preindustrial societies, this interconnectedness was by far not so extensive as the worldwide integration achieved since the nineteenth century. By representing distances typically measured in time rather than in kilometres, modern innovations in transport, communication, and information technology that accompanied industrialization have resulted in an effective compression of distance or space (Scheuermann 2006). This, in turn, has led to the blurring of geographical and territorial barriers, accelerating the interactions of culturally differentiated groups. Consequently, traditional societies accustomed to managing their local affairs have become more and more confronted with beliefs, habits, interests, and practices originated in other parts of the world. This is globalization. The new communication advances do allow local communities to make their voices heard even at the international level. Nevertheless, the economic-driven character of such advancement is constraining subsistence households and undermining their traditional knowledge systems. Some introductory examples are shown in Box 12.1.

Box 12.1 Convergent Trajectories

Local communities incorporated into global systems might loss the control over their affairs. Tainter (2007) emphasizes the convergent trajectories observed in different places. Additionally, similar events can be identified at different moments within the long-term process of globalization.

Rural communities in Madhya Pradesh and Maharashtra (India) and Sierra de Segura (Spain) have faced similar misfortunes. Máximo Fernández Cruz (1916–1986) lived as shepherd in Sierra de Segura (Gómez Mena 1987); shepherds have been keepers of traditional forest-related knowledge, such as managing trees for fodder. Fernández Cruz was adversely affected by a centralized forest administration, which had aimed to expand the area of national forests, in part through acquisition and afforestation of pastures, since the beginning of the twentieth century. Máximo refused to sell his land and the administration tried to overcome his resistance. 'They beat me and took me to the police barracks, the gendarmerie looked for me at any time during the night; if a forest fire initiated anywhere they named me as suspect, took me to prison and bashed me; and all this because they want to displace me from my property' (Máximo Fernández Cruz, quoted by Gómez Mena 1987).

In 1974 7,000 complaints were filed against shepherds in the court of justice (De la Cruz Aguilar 1994). One shepherd, depressed by debts, hung himself. Máximo Fernández Cruz, sentenced several times for disrespect to authorities, was sent to prison in 1982. According to the forest administration he had stolen 100 m of wire fencing. At the time he was 66 years old, lame, and half blind (Varillas 1987). Consequently, forest policies have generated resentment among rural communities and conflicts with the administration, whose goal was to displace mountain populations (De la Cruz Aguilar 1994).

In India, the economic situation in some remote hamlets in the tribal district of Satna and Nandurbar leads to infantile malnutrition (Jamwal 2008a; Chibber 2008). The use of medicinal plants is widespread in poor countries (Shand 1997, cited in Ribeiro 2005). The Tharus (Nepal), for instance, are able of living near dense malaria-infested forests thanks to their traditional healthcare system (Ghimire and Bastakoti 2008). But the forest department deprives communities in Satna and Nandurbar of access to the forests (Jamwal 2008a; Chibber 2008; Nidhi Jamwal, personal communication 2009).

These examples illustrate how state interventionism with different purposes (revenue generation, outside trade) might lead to ecological poverty (Brieger and Sauer 2000). Interventionism in rural affairs by imposing official expertise had occurred in Europe since the sixteenth century and supported the access of states to local resources. These political ideas were disseminated as technical facts during colonial times and still shape environmental policies.

(continued)

Box 12.1 (continued)

However, the market, new customs, or the aspirations of poor people for alternative opportunities also play a role. Traditional nutrition in India based on forest resources loses out to the market-dependent practices of urban areas, adversely affecting the health and economies of tribal populations. 'Our children,' says an elderly in Chichati, 'do not even know that forests can give food' (Pallavi 2008). Modern healthcare systems act negatively on the Tharus. The Nepalese government does not support their traditional practices and the youth prefer modern medicine (Ghimire and Bastakoti 2008). Thus, local and indigenous communities lose their traditions when they are subjected to external forces—a situation that also happened in the past in industrial countries.

The exposure of Western European mountains to broader markets provoked their depopulation, the specialized use of more productive parts, and the abandonment of most of the territory (Lasanta Martínez and Ruiz Flaño 1990). Many had left their villages by the twentieth century and emigrated to urban centres, resulting in great loss of traditional knowledge.

The goal of this chapter is to explore the different paths through which globalization is affecting local and indigenous communities and their traditional forest-related knowledge as well as the possibilities for these communities to adapt to or counteract the new circumstances emerging in this globalized world. Certainly, as Joseph Stiglitz (2006) concludes, for most of the world globalization is like a pact with the devil; a few have got richer but many have lost. Nevertheless, we will start our contribution optimistically by dealing with some positive achievements of globalization from which local communities can benefit. The rest of the chapter addresses more disquieting aspects of this topic.

First, we discuss how European countries provide examples of how globalization has affected local communities in industrial economies. After a short digression on local communities within communist regimes, we address colonialism. An essential role fell to Europe in bringing together the Old World and the New (Wolf 1982), with long-lasting influences reaching even the current institutional organization in post-colonial countries (Pelizaeus 2008). We show how political ideas developed in Europe during the eighteenth and nineteenth centuries and introduced in the colonies as technical facts are still affecting local communities as well as the opinion of government officials regarding traditional forest-related knowledge. Then we continue our focus on developing countries and deal with the influence of environmental policies and the market economy as important facets of globalization, complemented with information regarding the application of violence in the framework of a market economy. How local communities deal with globalization is the topic of the penultimate section, while the last one emphasizes the importance of participation and consultation processes to support these communities.

12.2 The Globalization of the Local

Globalization is a complex phenomenon with varied outcomes; while some places and people have flourished, for others it has represented a badly arranged programme (Stiglitz 2006). Correspondingly, its appreciation requires caution. 'The iron law of globalization,' writes Thomas L. Friedman (2005), 'is very simple: If you think it is all good or all bad, you don't get it.' In this section we focus on the good things.

Local communities might use the opportunities presented in the framework of globalization to expose their concerns and requests at the international level. It is an interaction from the local to the global sphere. This book is an example; it has resulted from the efforts made by people of different countries within the IUFRO Task Force on Traditional Forest Knowledge and contains information about local communities from all around the world. Thus, globalization currently allows broadly distinguishing the value of traditional forest-related knowledge and pointing to its importance. Another path communicating the local to the global is provided by side events in international negotiations and conventions, where representatives of indigenous and local communities expose their people's requests and concerns (see Fig. 12.1). Moreover, the United Nations has indeed passed a resolution on indigenous peoples, and in decisions of different conventions these groups are on occasion taken into consideration.

Interactions also occur from the global to the local level. Some internationally accepted concepts, such as integrated pest management, find application to the traditional practices of local communities, so contributing to their legitimization (Martínez Alier 2002). International organizations such as Oil Watch support tropical

Fig. 12.1 Representatives of indigenous peoples stress their concerns and requests in the framework of side events and demonstrations during international conventions. Demonstrators on the photo demanded more attention for their rights with respect to REDD during the climate change conference in Cancún (December 2010). 'No rights no REDD' was their slogan (Photo: Jesús García Latorre)

countries threatened by the oil industry (Martínez Alier 1999). The interaction between the local and the global might also be reciprocal. The environmental efficiency of traditional management systems has been appreciated by international agroecological movements, such as CLADES (Latin American Consortium on Agroecology and Sustainable Development), which, in turn, support the communities applying such practices (Martínez Alier 2002).

Furthermore, technological tools like geographic information systems, remote sensing, or accurate weather forecasts might benefit local communities managing natural resources in traditional ways. But of all the innovations of recent decades, the internet doubtlessly represents one of the most powerful for the issue in question. In discussing globalization, Friedman (2005) highlights the flattening of the world. Flatness describes 'how more people can plug, play, compete, connect, and collaborate with more equal power than even before.' It means equalizing power and opportunity. The internet has contributed considerably to this; it has created a global platform for sharing efforts and knowledge (Friedman 2005). Andean indigenous communities, for instance, used open-source software for developing a web-based multimedia community biocultural register (Swiderska 2007).

The internet also allows the worldwide diffusion of publications and experiences. One homepage offers a database containing publications that describe conflicts regarding local communities and natural resources (http://conflictbiography.recoftc.org/html/index.htm), while another (http://www.redd-monitor.org/) documents the spread of REDD projects (Reducing Emissions from Deforestation and Forest Degradation). Different organizations, such as Survival International[1] inform the world about the demands of indigenous peoples and abuses against their communities. Without leaving home, sitting comfortably in front of your computer, one can learn from Interpol about the risks to local communities from the negotiations addressing emissions from deforestation (Vidal 2009). One can also learn that these risks have become a reality for specific poor communities in Colombia (XLSemanal 2010). One can also access reports on the efficiency of shifting cultivation systems and other traditional management practices (Fox 2000), on human rights and environmental abuses, on the tricks behind concepts such as sustainable forest management (Global Witness 2009), and much more. A vast amount of information concerning traditional local communities is available with just a couple clicks of a mouse.

In Friedman's view, 'this flattening of the playing field is the most important thing happening in the world today.' It is supporting the globalization of the local (Friedman 2005), with a crucial consequence. If the parties to an international convention agree on resolutions, or if individual countries support policies that, if implemented, involve negative impacts for local communities, no one is now able to say 'we didn't know.'

Thus, globalization is not all bad, but, likewise, not all good. When balancing the pros and cons of globalization for local communities, its negative effects most probably would tip the scale. The following sections address how particular beliefs,

[1] http://www.survivalinternational.org/

different policies, and the economy act at the local level to dismantle traditional communities and their knowledge systems.

12.3 Impacts of Globalization on Local Communities and Their Traditional Forest-Related Knowledge

While the disintegration of traditional natural resource management systems is currently ongoing in developing countries, the cessation of old practices has already happened and become generalized in industrial economies. Here we summarize the impacts of globalization on local communities and their traditional forest-related knowledge separately for developed and developing countries. Addressing industrial countries first and focussing particularly on the European case is not eurocentrism but rather a necessity, because what occurred earlier in Europe set the stage for many of the scenarios that subsequently played out in developing countries. The similarities of current globalization processes in widely separated places, highlighted by Joseph A. Tainter (2007), are impressive, but no less so are similarities between current processes and those that occurred in Europe over the past three centuries.

12.3.1 Traditional Forest-Related Knowledge in Europe: An Almost Lost Heritage

Ancient pollarded trees in the middle of high forests and unmanaged coppiced woodlands containing old stools, nowadays merely used as game enclosures, are some expressions of traditional forest-related knowledge that can be observed in rural areas of industrial countries, as, for instance, in Western European countries (see Fig. 12.2a, b). These and other objects have an archaeological character constituting evidences of practices carried out in the long past. To mention two concrete examples, the tradition of pollarding, i.e., cutting the upper branches of a tree for gathering fodder or wood, goes back to more than 6,000 years in the Alps (Nicolas Haas 2002), while silvopastoral systems were already present in southwestern Spain in the Copper Age (Stevenson and Harrison 1992). Ethnobotanists' work has helped to save part of the experience of the rural population in managing woodlands and trees, as well as their knowledge in using plant species for many different purposes. Since traditional management activities have today almost completely disappeared, researchers apply a historical approach. For example, interviews with older farmers have revealed some knowledge they received from their elders. Historical documents constitute another important source of information (for examples in Europe see Rackham 1978, 1980; Peterken 1981; González Bernáldez 1989; Kirby and Watkins 1998; Pott and Hüppe 1991; Mesa and Delgado 1995; Stiven and Holl 2004; Jansen and van Benthem 2005; García Latorre and García Latorre 2007).

Fig. 12.2 Two examples of abandoned pasture woodlands with pollarded trees. (**a**) In the Sierra Nevada, Almería, southeastern Spain, spaces between the oaks (*Quercus rotundifolia*) have been colonized by shrubs. (**b**) Old beech trees (*Fagus sylvatica*) in an area close to the city of Bonn (Germany) have thick, straight branches, indicating that these trees have not been pollarded since long ago. Other stands in this forest are densely stocked with young beech trees that have regenerated since abandonment of traditional management. Both woodlands, formerly used for grazing and provision of fuelwood and charcoal, contain considerable amounts of dead wood (Photos: Jesús García Latorre)

The ecological effects of these management practices are of particular interest. They were frequently applied in commons—community-owned and collectively used land—according to the rules of the community. Communal ownership is characterized by its contribution to the conservation of natural resources (Berkes 1989). In northwestern Spain, for example, communally managed woodlands in the past were an important refuge for brown bears (*Ursus arctos*) and even now constitute a valuable habitat (Grande del Brío et al. 2002). Finally, considerable amounts of dead wood and many veteran trees, both essential components of forest ecosystems

that contribute to the maintenance of biodiversity (such as, for example, saproxylic insects and cavity-nesting birds), can be found in wood pastures with pollarded trees (Casas 1991; Alexander 1998; Méndez et al. 2010).

A sort of globalization at the European scale occurred during the past 300 years, with late global consequences for the rest of the world, by introducing radical socioeconomic changes in rural populations and causing the abandonment of traditional management practices. Two definitive elements of this process were a long tradition of state interventionism in the use of forest resources and the expansion of a market economy. Enlightenment intellectuals, among other actors, contributed to the dissemination of ideas across Europe supporting both 'scientific forestry' applied in the frame of centralized states, and the privatization and marketization of natural resources.

12.3.1.1 State Interventionism: Top-Down Policies of Former Times

European monarchies and the rise of centralized states in the seventeenth and eighteenth centuries limited the access of rural populations to forest resources during those times. Authorities typically justified restrictive regulations and by-laws as necessary measures to protect resources from the farmers who were considered the enemies of the forest. A large body of legal documents concerning this matter, together with frequent disputes caused by the annexations and interventionism on the part of the ruling class, have helped disseminate the persistent idea that traditional practices are detrimental to the forest. Actually, disputes arose among different social groups over different forms of forest resource use (Warde 2006). Thus, historical legal documents contain only the very subjective view of the group that decreed them (the ruling class). Indeed, David Humphreys (2006) remind us that 'who is within the law and who is an outlaw depends on who writes the law.'

In preindustrial times forests represented one of the largest sectors of the state economy in many European countries. Wood was the primary source of energy for important proto-industrial activities such as mines, iron, and salt works. In response to the increasing wood demand and rising prices beginning in the sixteenth century, government officials aimed at expanding the wood supply (Lowood 1990; Ernst 1998). In this context scientific forest management emerged in the eighteenth century in Germany as an aspect of state administration (Lowood 1990) to serve the elite's economic interests (Pulhin et al. 2010). Its principal objective was the quantification of forest resources and the 'rationalization' of their use focusing basically on wood. From the beginning the new forest management clashed with local communities, whose practices were characterized by a communal and diversified use of forest resources in the frame of a sustenance economy (Rösener 1991). 'This diversity of utilization … endangered the forest stand in the eyes of the foresters because—according to the new standards—it was unorganized, unscientific and unsustainable' (Ernst 1998). Hegemonic foresters' discourses have excluded local knowledge and practices and misread traditional forest landscapes (Williams 2000). Furthermore, forest management 'led first to the abandonment and then the disappearance of traditional, empirical silviculture' (Ciancio and Nocentini 2000).

Early German forestry, recasting forests as a revenue source and promoting state interventionism, was the starting point for every other national effort in forestry science and management (Lowood 1990; Scott 1998). As an example, in the middle of the nineteenth century the study and practice of forestry was introduced in Spain. The 'importers' of this discipline, Agustín Pascual (1818–1884) and Esteban Boutelou (1823–1883), had studied in Tharand, Germany, with Heinrich Cotta (1763–1844), who is considered together with Georg Ludwig Hartig (1764–1837) as the founders of forestry. Both brought the ideological background of forestry with them, that is, Cotta's conviction that the state represents the most appropriate holder of forests and foresters are the only capable forest managers (Casals Costa 1996). To be sure, state involvement in protecting forest land was essential as nineteenth century enclosures ('desamortizaciones', the Spanish version of enclosures) gained prominence. But this involvement went far beyond mere state resistance to privatizing trends; German influence in fact promoted a centralized approach to forest management that still prevailed in the 1970s (De la Cruz Aguilar 1994) and that oppressed farmers and shepherds in rural communities. Such was the case with Máximo Fernández Cruz, in Sierra de Segura, almost 2,000 km away from Tharand (Box 12.1, above).

The history of conflicts and clashing interests behind the emerging discipline of forestry is still overlooked by some scholars who continue to uncritically glorify the origin of scientific forest management. 'Ein Kind der Not' (a child of necessity), reads Ernst Röhring and Hans Achim Gussone's (1990) interpretation of Central European forestry—i.e., forestry as a mere technical response to wood scarcity not linked to political interests. Another example is provided by Burschel and Huss' (1997) silviculture handbook. They argue that 'in spite of forest prescriptions and regulations … careless forest management [by peasants] led to an almost extensive forest devastation. As a consequence forestry emerged in the eighteenth century, first as an orderly activity and afterwards as a science.' These attitudes are similar to those of official historians, as emphasized by the distinguished historian Josep Fontana (1999), 'from the very first … history always had a social function, generally to legitimate the established order.' As a hegemonic discourse, forestry history has frequently been diffused by active practitioners (Williams 2000), who may not be aware of the social origins of the discipline as they treat it as only a technical field.

12.3.1.2 Expanding Market Economy

In international environmental and forest policy discussions, market-based measures are frequently considered as instruments expected to promote rational use of natural resources. However, opinions on the appropriateness of markets for such a task are far from uniform. How the market economy emerged and expanded during the past centuries and its effects on Western European rural communities represent an accumulated experience of great interest for current international policy processes.

The traditional skills documented by researchers' interviews of elderly mountain peasants probably represent only a last heritage from the enormous body of

knowledge that was available 150 years ago, when rural communities still managed (at least partly) their resources collectively. Two important elements of traditional peasant societies were their autarkic character and, consequently, their dependence on many different natural resources and a strong mutual cooperation within their communities (Rösener 1991). In addition to agricultural activities, rural households extracted fruits, mushrooms, herbs, fodder, fuel wood, timber, and other products from the woodlands (Pretty 1990) and used forests as extensive pasture lands (Rösener 1991). The collective use and management of these resources, their commons, was an expression of the reciprocal interdependence in peasants' everyday life. The old institution framing those communities is known as Ancient Régime or feudalism. Regardless of how inefficient and oppressive this organization form was, emphasizes Eric J. Hobsbawm (1962), it provided communities with notable economic and social security. This was a system anchored in customary law that allowed peasants, for instance, in times of meagre crops to fall back on landlord's support. Furthermore, they also had the right of acquiring firewood free of cost or at a low price in the forests of their landlords. This system had worked since immemorial times, but at the end of the eighteenth century it was about to change.

The emergence of the social group called bourgeoisie within the Ancient Régime and the successful implementation of their interests brought radical socioeconomic and political changes that dismantled the prior form of social organization, first in Europe and later in most of the world. Mercantilization of natural resources, substitution of the peasants' subsistence logic with the maximization of individual benefit and pre-eminence of private ownership (Hobsbawm 1962; González de Molina 1993) were among the leading ideas of the new social group. These all are constituents of capitalism and the market as forms of social relations and resource allocation respectively. Indeed, by bourgeoisie is meant the class of modern capitalists, the owners of the means of social production (Marx and Engels 1848); England, where this socioeconomic rearrangement began, represents the first capitalist country.

Extensive commons, along with landlords' and churches' forests, constituted important reserves, particularly during difficult times, for subsistence peasants. But these same fields, meadows, and woodlands were viewed as under-utilized by the capitalists. Furthermore, these resources offered a laboratory to test the new liberal model. And just as landlords for centuries had justified their interventionism in rural community affairs related to collectively owned lands, so now did the bourgeoisie. An argument frequently used by the latter was the 'bad' state of the commons, by which they meant that only private initiative and their inclusion into the market could generate the highest benefit.

But before the test could be carried out, an important institutional change was required. The removal of the Ancient Régime had been already initiated in seventeenth century England. However, its definite abolition in Europe was a direct or indirect consequence of the French revolution (1789–1799), which disseminated bourgeoisie liberal ideas everywhere within the period 1789–1848 (Hobsbawm 1962). This was a globalization at the European scale that deeply affected rural communities and their traditional management practices.

The winners of the liberal revolutions, having abolished the old rules, aimed at the privatization of communal resources (enclosures) in order to incorporate them into the market and, in doing so, to promote their efficient use. From the peasants' perspective their common lands, which provided them with indispensable resources and particularly important for the poorest of the poor (Hobsbawm 1962), were being usurped by the bourgeoisie. Consequently, conflicts between both groups became very frequent. In this regard, it should not be overlooked that how a social group acts on natural resources rests on its particular perception of those resources (Godelier 1981), and that a range of perceptions and values can be identified among different groups within a culture (Worster 1988). Thus, disputes between the bourgeoisie and peasants (as had existed for centuries between peasants and landlords) were based on differing views of ownership rights as well as on opposing forms of social organization and management of natural resources (Fontana 1999).

The consequences of the liberal revolutions for rural communities were catastrophic. In England, for instance, in 1760 more than six millions ha of commons were enclosed by 5,000 fences. By the middle of the nineteenth century, 57% of the cultivated land was owned by only 4,000 holders. Dispossessed poor peasants had to move to the cities and industrial centres (Hobsbawm 1962). And if such urban sinks for rural populations were not available, such as in Prussia, then peasants became emigrants. The redistribution of the land carried out all over Europe did not always generate the sort of enterprising people predicted by the bourgeoisie. Indeed, in some cases the old ruling class was reinforced (Hobsbawm 1962). Poor peasants depending on the commons were particularly affected by the enclosures. They had to experience the extraordinary situation of being penalized just for extracting fuelwood from forests that had been common land until a short time before. An eyewitness to this situation was Karl Marx (1818–1883), who reported how traditional customary practices that had allowed dead wood gathering by the poor were outlawed and replaced by new laws of private interests (Marx 1842).

The generalized incorporation of natural resources into the market also had an ecological effect. In a locally self-sufficient economy, diversified land use systems promoted landscape heterogeneity (Lepart and Debussche 1992; Lenz 1994). But replacing peasants' subsistence logic with the maximization of individual benefit and the incorporation of local communities into world markets led to the specialization and intensification of agroecosystems in order to response to the market's need. This meant dismantling complex agro-silvo-pastoral systems (González de Molina 1993; Naredo 2004); such systems still occurred in southeastern Spain at the beginning of the twentieth century, where a reduction of 17% of the forest and pasture surface has been detected in some areas while agricultural fields expanded by 26%. This was a landscape 'agro-colonization' consequence of the liberal revolutions (Cobo Romero et al. 1992).

Another eminent observer of the enclosures was Alfred Russel Wallace (1823–1913) who, before becoming an eminent naturalist, worked among other things as a surveyor as part of the land enclosure programme in mid Wales. At the time he didn't fully appreciate the political implications but later he railed about this 'land-robbery' (Alfred R. Wallace, quoted by Gribbin 2002). But many other scientists did not.

Fig. 12.3 Traditionally managed trees may live for hundreds of years. This ancient pollarded oak (*Quercus rotundifolia*) in Sierra de Filabres (Almería, southeastern Spain) has known at least two different societies: Muslim communities living in the area until the sixteenth century and Spanish peasants since that time. Local peasants refer to this veteran tree by a name (Carrascón de la Peana) that appears already in a document of the seventeenth century. Traditional tree management practices were abandoned long ago in this mountain range (Photo: Jesús García Latorre)

The concerns of the bourgeoisie were supported by scholars of the Scottish Enlightenment School, such as John Locke (1632–1704), David Hume (1711–1776), and Adam Smith (1723–1790), whose essays reflected capitalist ideology by criticizing among other issues property owned in common (Ostrom 1990; Fontana 1999). During the eighteenth and nineteenth centuries, liberal revolutions spread over Europe, legitimized by scholars whose ideas were rooted in the Scottish movement. So, for instance, in Spain the intellectuals of the Enlightenment also complained about the degraded state of forests. Some of them proposed more governmental interventionism while others supported common land privatization (Casals Costa 1996). The result was the same. Local communities lost their control on natural resources while the bourgeoisie increased their ownership (Cobo Romero et al. 1992).

Contemporary authors have for the most part adopted the classical criticism of rural communities. For example, Burschel and Huss (1997) maintain that traditional tree and woodland management practices such as pollarding, shredding, and wood pastures have caused considerable damage to the trees and forests—a statement inconsistent with observations that traditionally managed trees are known to be able to achieve considerable ages (several hundred years, according to Rackham 1978; see Fig. 12.3). Berkes (1999) reviews this topic and shows how widespread these convictions are among contemporary scientists—an unsurprising outcome

considering the centuries-old litany of the negative effects of traditional practices on resources, first promulgated by landlords and then by the bourgeoisie. The ideology of the Scottish Enlightenment School, underpinning the bourgeoisie liberal economic system, constitutes a paradigm of unparalleled success in human history that provided the foundation of modern social sciences and part of popular thinking (Fontana 1999) that still influences discussions on resource use.

From the twentieth century onward the market economy has continued to exert influence on rural communities. Since the end of the Second World War, farmers have reacted to long-lasting low prices of agricultural products, intensifying production through mechanization and the use of chemical fertilizers and pesticides to ensure ever-higher yields (industrialization of agriculture). This has promoted further homogenization of agroecosystems (Velvé 1992; González de Molina 1993; Naredo 2004).

With regard to mountainous regions, at the beginning of the twentieth century mountain ranges in Europe were still well-populated and included traditional management systems, constituting important reserves of traditional forest-related knowledge. But most of this cultural reservoir has already vanished. The incorporation of mountains into a broader and more dynamic socioeconomic frame has led to the intensification and specialization of the most fertile and accessible areas. Unlike in former times, when peasants aimed at managing all available resources in the whole territory, the new system strives for the maximal production per farmer in order to equate the earnings of the mountain populations to those of the lowlands (Lasanta Martínez and Ruiz Flaño 1990). Consequently, less productive marginal areas (steep slopes and remote areas located at high elevations) embracing millions of hectares that were formerly traditionally managed have been abandoned, and rural communities have become depopulated. Aside from regional particularities, this process is generalizable for Western European mountains (Lasanta Martínez and Ruiz Flaño 1990).

Thus, becoming embedded in larger systems has meant a transformation from self-sufficiency to dependency on commercial economy and the government, and a trend toward environmental deterioration (Tainter 2007). And the very internal mechanisms of capitalism, particularly market-oriented agricultural production, have played an important role (González de Molina 1993).

12.3.2 Local Communities and Communism

The perspective described in the previous section does not imply that communist regimes have done better. Communism was an idea of European origin that also experienced a globalization process. The same ambitions that elsewhere inspired state-supported industrialization are also characteristic of communism: state control and economic growth (McNeill 2001). Furthermore, communists believed in the absolute control of society over nature through the application of science (resembling in this regard the capitalist model) and, particularly in the former Soviet Union and

in Eastern Europe, had a clear preference for big projects such as collective farms (McNeill 2001). But centralized power and gigantism are not compatible with local subsistence communities.

Focusing on Russia, indigenous people currently live under lower standards than the rest of the population; their level of subsistence is low and their culture is endangered. About ten indigenous nations are on the border of extinction (Diatchkova 2001) as a consequence of the Soviet period. Within the totalitarian system imposed by the communist party, collectivization constituted a major factor of socioeconomic activities; any alternatives outside collective farms were forbidden.

Traditional livelihoods were integrated into Soviet society by force. Most indigenous groups had led a nomadic life, but in order to ensure its control the Soviet government made them settle down (Diatchkova 2001). Moreover, the Russification of schools during the latter half of the twentieth century exacerbated the difficulties encountered by families who tried to preserve and translate their traditions. Diatchkova (2001) concludes that 'during the Soviet period the policy of collectivization destroyed the very foundations of the traditional subsistence system.'

Democratization of former communist countries since the late 1980s has brought some improvements for local communities. In the Skole district of the Ukrainian Carpathian, for example, although the cultural heritage of local villages still is threatened by economic globalization (among other factors), the situation is at least better than it was under Soviet large-scale economic production. When the Soviet era ended, traditional villages re-appeared as a way of subsistence for local people; those villages today play a key role in the maintenance of culture and society in the region (Angelstam and Elbakidze 2006). And in Russia, democratization has helped indigenous peoples to appreciate their past. Interestingly, the mass media, which in other countries promote the introduction of Western values into traditional societies, have become in Russia an important mean of ethnic mobilization. Native enterprises have been organized in relation to traditional economies and are improving their skills in dealing with a market economy (Diatchkova 2001). Still recovering from the sequels of communism, these traditional local communities deal now with the constraints of capitalism.

12.3.3 Colonialism and Globalization

Globalization has deep roots that go back to the European expansion initiated in the fifteenth century. Five hundred years are more than time enough for ideas and beliefs affecting local communities to expand worldwide. Such diffusion has been the case with respect to scientific forestry and other forms of natural resource management of European origin.

Certainly, Europe was not impermeable to the influence from the colonies and received, among many other good products, tomatoes, potatoes, and sugar (Pelizaeus 2008). However, regarding forest management, it was not the Australian aboriginal people who came to England and applied their experience burning shrublands to manage coppiced oak woodlands. Rather, it was European (particularly

German) foresters who, on their arrival in Australia, concentrated their activities on the scarce tall and medium eucalypt forests, while disregarding the low woodlands of little commercial value on steep and stony slopes (Dargavel 2000). It is scientific forestry that has been globalized, and not traditional forest-related knowledge.

European colonialism has had an enduring influence on colonized countries that embraces language, institutions, state organization, religion, and techniques and modes of production. In all these different fields, colonial rulers were convinced of their (supposed) cultural supremacy (Pelizaeus 2008), including the management of forest resources. The whole 'forestry package,' including technique and ideology, was transferred. This transfer brought with it: disregard of traditional knowledge and communal management; limited access to forest resources for local communities; rational forest management focusing on wood and forests as a revenue source; state interventionism; and pre-eminence of foresters' skills. These ideas still pervade forest policies in once-colonized countries.

As discussed earlier, local communities have a long tradition of communal natural resource management, but this custom was not acknowledged as legitimate by European colonialists, as noted by Williams (2000):

> The imperial and colonial political overlordship of the past was convinced of the inferiority of native practices which were consequently repressed, and there was a strong conviction that the application of Western development and its science and organization was superior.

In Algeria and India, colonial bourgeoisie showed as little understanding for traditional agricultural societies as they had shown for European peasant communities. The complex network of rights—such as the avoidance of private ownership in Algeria, or the collectively owned land in India that could be neither bought nor leased—was incomprehensible for European liberals, who instead applied their rational and individualistic system, leading to the absolute pauperization of the farmers (Hobsbawm 1962).

In Latin America, it wasn't until 1850 that newly independent states initiated an effective assault on communal ownership (Hobsbawm 1962). And still today millions of hectares of land historically owned and governed at the community level through customary arrangements in developing countries worldwide are threatened by governmental dispossession (Alden Wily 2010; World Bank 2010). Customary rights of land frequently have uncertain official recognition, and states have considered such lands as empty and, correspondingly, the property of the state. This, in turn, facilitates transfers with few safeguards to foreign investors (Alden Wily 2010; World Bank 2010). 'The tendency to neglect existing rights often derives from a legal framework inherited from colonial days,' according to the World Bank (2010), which reflects the extensive European experience in enclosing common land. As we have seen, during the eighteenth and nineteenth centuries, the bourgeoisie also had viewed fallow lands as underused and demanded its privatization, even though it actually represented reserves of land or land extensively used by subsistence communities (see Sect. 12.3.1.2).

The consequences of this legacy can be found all around the developing world. In Zambia, most of the country's land is governed within the framework of customary rights; however, these rights can be neither registered nor surveyed. In Indonesia, 70% of the country is classified as forest estate and administrated by the Forest Department; traditional local communities are vulnerable to displacement since their customary rights are kept unrecognized. The same occurs in Liberia, where official governments deny customary land recognition (World Bank 2010). And even in countries that have developed appropriate policy frameworks regarding community consultations during land acquisition by investors, actual implementation may be unsatisfactory. For instance, in Mozambique, laws on management of land include provisions for community consultations and hearings when land uses or users change. However, district authorities may have more incentive to support the interests of investors and, thus, consultations are in practice fairly limited (Cotula et al. 2009).

Beyond disregarding customary rules, colonialists introduced their entire forestry package. Ciancio and Nocentini (2000) relate how 'the concept of the forest as a timber resource had been exported from Europe to many parts of the world during the colonial era, and left assumptions that persist today, very much to the detriment of the world's forested countries and of those who live in them,' still inspiring 'laws and professional values that underlie forestry.' And Geneviève Michon et al. (2007), after referring to the 'exclusion of farmlands, peasants, and local tree management practices' that occurred in European history, comment:

> This perception was transferred through colonial regimes to most tropical countries… [where] forest agencies still consider that forests should be managed exclusively by professionals under a comprehensive legal, administrative, and technical regulatory framework. … Consequently, forest people are almost never considered as legitimate and knowledgeable forest managers.

With the aim of exemplifying the consequences of the colonialism heritage, we summarize in Table 12.1 the cases regarding seven countries.

Misconceptions abound about traditional management practices. An exemplary case is provided by shifting cultivation, a system in which patches of forests are burned and cultivated for several years and then left to lie fallow, allowing secondary forest to regrow. Shifting cultivation has a long tradition in many parts of the world, such as in mainland Southeast Asia (Fox 2000).[2] It is a common belief that this system contributes to environmental degradation. International organizations such as the FAO and the World Bank have indeed recommended to governments to eliminate and transform traditional management. Correspondingly, governments have implemented policies that include eviction, subsidizing permanent and commercial agriculture, and outright banning of shifting cultivation. Customary rights to swidden fields have not been recognized, and fallows have

[2]Different forms of management that include controlled fires were common in Europe in former times; however, fire and foresters do not always fit well together. For example, in Italy, the forest administration disapproves controlled burns in chestnut stands, a traditional management practice of these woodlands (Grove and Rackham 2001).

Table 12.1 Examples of how different aspects of scientific forestry were introduced by Europeans in colonized countries and continue exerting a strong influence on forest management and on local communities

Country	Colonial background	Current influence
India	India's forest management has a European legacy: British colonial rule. Tribal communities' resources were eroded as state agencies and the private sector established greater control. Even after independence the British influence on forest policy and administration persisted.	Most of India's forest land remains under state control. Access of local communities to productive forestland is limited by government control.
Nepal	Forest policy was directly influenced by the British; British experts helped the Rana rulers establish the Department of Forest in 1942; this department started the nationalization of forest land and perpetuated the colonial notion of scientific forestry.	The Department of Forests retains greater control of high-value forests.
Philippines	Forest management represents a legacy of Spanish and American systems. The first forestry bureau was established by the Spanish administration in 1863. A forestry school was established during the American colonial period supported by Gifford Pinchot, the founder of the U.S. Forest Service.	Forest management is based on scientific forestry. Less productive forests are transferred to local communities. The more productive lands are still under private timber concessions or under government-controlled protected areas.
Cameroon	The state's tendency to retain valuable forest lands is rooted in colonial tradition (German, British, and French).	Forest land is classified into non-permanent and permanent forest estates. Local communities are entitled to access and use the (less productive) non-permanent forests, while high-value forests are reserved for commercial logging and protected areas.
Thailand	British timber companies took control of the teak industry and established a symbiotic relationship with the central power in Bangkok by establishing the Royal Forest Department (1896).	At the beginning of the 1990s a powerful alliance of army generals, forestry officials, and pulp and paper companies unsuccessfully tried to implement a non-participatory, ecologically unsound and repressive state forest policy that included eviction and *Eucalyptus* plantations.
Morocco	French foresters interpreted Moroccan landscapes as degraded and promoted forest regulations that favoured imperial interests over indigenous interests, thereby facilitating land dispossession and the destruction of Moroccans' traditional livelihoods.	In the 1980s the centralized and coercive forest administration tried to eliminate the Agdal practices (a system based on complex ownerships, with positive environmental effects) applied by rural communities to manage their forests in Central High Atlas. Between 1964 and 2002 the forest area increased by 3.1% within the Agdal areas, while deforestation took place beyond them.
Indonesia	Dutch colonial state law and trade arrangements supported increasing state interventionism in forest lands. This has pervaded Indonesian forestry policy long after colonial times.	Foresters still consider themselves to be the exclusive forest custodians. A national extractive model assures a continued flow of resources from the forests to the government centre.

Sources: Pulhin et al. (2010) for India, Nepal, Philippines and Cameroon; Pye (2005) for Thailand; Davis (2005) and Aubert et al. (2008) for Morocco; Robbins (2004) for Indonesia

been perceived as unused or abandoned. These policies are, again, a legacy of the colonial era (Fox 2000). The disregard of shifting cultivation is based on misconceptions of how the system works, because forested ecosystems in which swidden agriculture is applied are actually characterized by their complexity, dynamic successional stages, and structural diversity. In general terms these ecosystems have a low deforestation rate, in contrast to the areas with permanent commercial agriculture (Fox 2000).

Table 12.1 shows how 'the states' tendency to retain valuable forestland is rooted in their colonial tradition and perpetuated by modern forest bureaucracies' (Pulhin et al. 2010). Thus, the set of ideas of Western origin that pervades these bureaucracies has a functional component—namely, to promote government control over resources serving the economic interests of elites. In Indonesia policymakers often decide to convert forest to industrial plantations without proper consultation. And in Liberia customary land frequently is assigned to companies without compensation for local communities (World Bank 2010). States in Southeast Asia typically prefer to devote areas under traditional shifting cultivation to commercial agriculture and plantation forestry (Fox 2000). Thus, traditional forms of forest management, with a recognized social and environmental legitimacy (Fox 2000; Michon et al. 2007; Pulhin et al. 2010), are replaced by industrial plantations that, in turn, frequently lead to fatal clashes and conflicts among local communities and firms or forest departments (World Bank 2010).

Many foresters apply their accredited skills to the state's interest, 'even though they rarely view their policies or implementation as political acts' (Pulhin et al. 2010). In fact, such foresters are applying a belief and value system that is several hundred years old, expressing the same convictions that served the interests of both landlords and the bourgeoisie in Europe. These ideas now legitimate interventions in rural land-rights systems in developing countries that serve the interests of governments, with tragic consequences for the poorest people.

12.3.4 Traditional Forest-Related Knowledge in Developing Countries: A Decaying Heritage

Unlike in many industrial countries, traditional forest-related knowledge in developing economies constitutes a daily instrument applied by rural populations (Fig. 12.4). In fact, resources managed within these traditional systems play an essential role for meeting the needs (from firewood and vegetables to game and medicinal plants) of countless millions of poor households (Chaudhary et al. 2008). The economic importance of non-timber forest products, for instance, can be considerable, accounting for more than half the total employment and contributing to half the total annual income of households (Nanjundaiah 2008). Moreover, these subsistence activities are frequently embedded in philosophies reflected

Fig. 12.4 Farmer with a jackfruit (*Artocarpus heterophyllus*) in an agroforest also containing timber-producing trees in Lantapan, Mindanao (Philippines) (Photo: Manuel Bertomeu)

simultaneously in religion, social institutions, and land-use practices (e.g., sacred forests), something not typically understandable for Western managers (Godelier 1981). Such traditional systems, encompassing all livelihood aspects, feature a high complexity and have been termed 'domestic forests' by Michon et al. (2007).

In spite of this, when facing the influence of modern land-use models, the defenders of traditional knowledge are seldom local people, but rather often foreign scientists and non-governmental organization activists (Feintrenie and Levang 2008). And today not only alternative management practices but completely new ways of life are being offered to local communities, even in remote areas, making changes in their customs and habits unavoidable.

Half a century ago the German philosopher Martin Heidegger prophesied that television would abolish every possibility of remoteness (Scheuermann 2006). What happen when young people gain access to knowledge of alternative livelihoods as shown on television? Hendarti and Youn (2008) relate the case of Kasepuhan people, an ethnic group living in the Halimun Mountains in West Java. Their daily life, including the management of natural resources, is integrated in a philosophy called Tatali Piranti Karuhun. But the youth, influenced by television, have lost respect for this tradition and are more interested in 'working in the city to earn cash income for buying cloth, mobile phones, etc.' In this regard, many other examples could be mentioned. Tainter (2007) comments how peasants in Epirus, a remote mountainous area in northwest Greece, were stimulated to acquire material goods as cash became increasingly important after World War II. Indigenous and local communities in developing countries, such as the Kasepuhan people, are similar to the Greek example; some villagers, influenced by non-Kasepuhan middle-men who promise them cash

money, lose respect for their sacred forests and engage in illegal logging. Such changes are not surprising. According to Brian Hayden (1993), an archaeologist who has lived with indigenous communities on different continents, 'we are all materialistic'. 'I can say categorically', he continues, 'that the people of all the cultures I have come in contact with exhibit a strong desire to have the benefits of industrial goods that are available. I am convinced that the "nonmaterialistic culture" is a myth.' However, many cases of the 'environmentalism of the poor' referred to below would relativise Hayden's categorical statement.

Aside from the impact of the media and other external influences, indigenous and local communities in developing countries are subjected to diversified destabilizing factors that adversely affect them and provoke the loss of traditional forest-related knowledge. Global markets, information and capital flows, and international conventions constitute basic paths of globalization (Lambin et al. 2001). In this context we have indentified the integration of natural resources within a market economy and improper environmental policies as major forces exerting influence on local rural communities. On the one side, the neoliberal economic expansion of past decades has promoted the inclusion into the market economy of all aspects of natural resources, even in very remote areas. Furthermore, since the end of the 1980s, a shift to global environmental policies supports the implementation at the local scale of measures recognized at the international level, including international conventions. Many of these measures contain some of the ideas and beliefs disseminated during colonial times that were described in the previous section, such as the disregard of traditional forms of natural resource management.

12.3.4.1 Market Economy

Toledo et al. (2003) emphasize that peasant farmers around the world carry out a dual economy: 'They produce goods for the market and buy goods using cash yet, at the same time, they produce basic commodities for their own consumption.' Correspondingly, they adopt a strategy that addresses both subsistence and market production, aiming at the multiple use of spatio-temporal and natural resources. The goal is to maximize the diversity and number of available options and, simultaneously, to guarantee subsistence and minimize risk. Nevertheless, their integration into society at national and indeed international levels through the market (linking them to infrastructure projects, the media, or educational programmes, for example) exposes them to external threats.

Regarding the effects of the market on the environment, Tacconi (2000) points out that it is not the market but the dynamics of the economic process that might lead to environmental problems. Such dynamics include changes in values, increasing demands, and specialization—which also reflect the effects of the market on traditional local communities.

The response to the market demand for some products can be accompanied by changes in the value and belief frame of a community, as was noted above with the

case of the Kasepuhan people in West Java (Hendarti and Youn 2008). Traditional belief systems underpinning the management of natural resources by Malayali tribal people, the inhabitants of the Kolli Hills (eastern Namakkal district, India), also have disintegrated in past decades. Modern developments have contributed to this situation: encroachment of cash crops like tapioca and the introduction of other economically important plants; the dilution of traditional beliefs through formal education; rising economic status; and declining interest in traditional forest-related knowledge among the youth. This interweavement of factors is promoting the degradation of the Sami Sholai, the sacred forests traditionally managed by the Malayali people (Israel and King 2008).

A comparative study (Ruiz-Pérez et al. 2004) has shown that commercial trade drives a process of intensified production and specialization among forest peoples, leading to higher incomes. How production strategies are influenced by the transition from subsistence to cash economy depends on the degree of integration into the latter. In particular, increasing market demand for a product is identified as an important destabilizing factor that restricts the productive amplitude of traditional households (Martínez Alier 1993; Toledo et al. 2003).

Increasing demands promote the replacement of locally produced agricultural and forest plants by high yielding varieties 'since they provide a short-run economic advantage (in the chrematistic sense)' (Martínez Alier 1993). Additionally, traditional management practices, applied in the framework of a subsistence economy, are replaced by standardized systems (such as plantation forestry) (Fox 2000). The result is the abandonment and loss of traditional forest-related knowledge.

An example of this is offered by the current expansion of oil palm plantations in response to the increasing worldwide demand for biofuels. Poor farmers in developing countries, stimulated by the expectation of earning some income, use their small plots of land for growing oil palms. Although under appropriate conditions biofuels could offer opportunities for poverty alleviation—as, for instance, in the form of a mixture of plantations and agroforests (Feintrenie and Levang 2008)—the dominant agro-industrial model imposes dramatic constraints on local communities. Smallholders become bonded to oil palm companies by the credit provided by these firms, accumulated debt, etc. One of the most important oil palm producers is Indonesia. According to Bailey (2007) 'about 30% of Indonesian palm oil is produced by smallholders, supporting up to 4.5 million people. Most of these are drawn from local communities and indigenous peoples that lost their land to the advancing plantations.' The production of palm oil has not excluded the displacement of indigenous and local communities in Colombia (XLSemanal 2010).

12.3.4.2 Environmental Policies and Traditional Forest-Related Knowledge

Globally agreed-upon environmental policy measures can also potentially lead to the marginalization of traditional groups and their practices. On the one side, the rights and values of local communities and their traditional management systems

have been recognized and disseminated by international environmental and forest policy processes. However, constraints on local communities and disregard for their traditional knowledge are being imposed, too, in the name of nature conservation and rational resource use.

Geneviève Michon and her colleagues (2007) relate how in the frame of the current conservationist movement, 'a new kind of self-appointed legitimate forest manager has recently emerged: environmentalists and conservationists, active at the local level through the creation of parks and reserves, and at the global level through the development of international conventions.' These 'legitimate managers' frequently ignore and even despise traditional practices and promote their replacement with Western techniques, exacerbating the problems that were originally intended to be solved. Even worse, they might invent environmental problems or present their severity in a dramatically exaggerated way.

Such is said to already have been the case in savannah ecosystems 'compromised by inappropriate outside interventions, which in the environmentally conscious 1990s cynically see this degrading environment as the way to gain money, justify budgets and keep environmental institutions solvent by attracting major international funding for rehabilitation' (Williams 2000).

Thomas Bassett and Koli Bi Zuéli (2000) have studied the savannah forest mosaics in the Côte d'Ivoire, where (as in other African countries) the World Bank (WB) has supported the development of National Environmental Action Plans (NEAP). These plans place 'the identification of environmental problems and their underlying causes as the first step,' and assume 'that most environmental issues are easy to identify and can be classified along a simple colour scheme.' But the participatory planning of the World Bank 'did not involve consultations with ordinary men and women living in rural areas about what they considered to be the most important environmental issues.'

The NEAP for Côte d'Ivoire presented a grim scene of environmental degradation, blaming peasants for the deforestation of the savannas. It is stated that as a consequence of shifting cultivation, bush fires, and overgrazing, the tree savannah is being replaced by the grass savannah: 'we are increasingly witnessing a decline in vegetation cover' (République de la Côte d'Ivoire, quoted by Bassett and Bi Zuéli 2000). But actually, the contrary is true. By interviewing peasants, comparing old and recent aerial photographs, and doing field work, Thomas Bassett and Koli Bi Zuéli demonstrate that the landscape is becoming more wooded and simultaneously the herbaceous component of these ecosystems is decreasing, as a consequence of changing controlled fire regimes and grazing pressure.

One of the grave outcomes of the hegemonic ecological managers' discourses of degradation is their detrimental effect on local communities. Rural populations might become impoverished through the imposition of fines on the use of forest resources (Williams 2000). Regarding the Côte d'Ivoire example, the NEAP provides a highly regulatory and intrusive cookie-cutter planning model that includes: outlawing logging, encouraging tree planting, controlling bush fires, and creating a forestry police - measures that are at heart reformist and technocentrist. 'Such policy recommendations,' conclude Bassett and Bi Zuéli (2000), 'can be seen as misconceived and a waste of limited resources.'

Bassett and Bi Zuéli (2000) emphasize that 'identifying environmental problems and their causes is one of the most difficult and time-consuming stages in environmental planning and policy making. … One of the challenges … is that so little data exist with any meaningful time depth.' A consequence of this information gap is that well-grounded decision-making is still lacking in many environmental projects, affecting local and indigenous communities. Thomas Griffiths (2005) has documented numerous cases of projects carried out by the Global Environmental Facility (GEF, the main institution for international funding for the Convention on Biological Diversity) that have caused quite grave circumstances for poor rural communities. As the World Bank 'experts' did in the Côte d'Ivoire, the planners of GEF-funded projects have frequently presumed the unsuitability of rural people for managing their own resources and have introduced radical changes negatively affecting those small stakeholders. For instance, almost half a million villagers living within and around several protected areas in India were affected by an ecodevelopment project (1996–2003) financed by a GEF grant ($20 million) and a World Bank loan ($28 million) that aimed at biodiversity conservation. The conservation strategy included such measures as voluntary relocation and provision of alternative non-forest based livelihoods. Some reports suggest that in Periyar Tiger Reserve (Kerala), attention was paid to gender, land rights, and forest access, so they consider that this initiative succeeded (Griffiths 2005). But overall, most affected communities consider the project as detrimental to their rights and interests. The effects of existing land use practices on biodiversity were not assessed by baseline field studies, drastically limiting the scientific legitimacy of the project. In the Nagarhole National Park (Karnataka), the forest department was strengthened by the project and local communities were forcibly relocated. Other villagers complained that alternative livelihood plans were developed exclusively by the forest department, which disregarded villagers' proposals based on their own traditional knowledge. Indigenous people have questioned the scientific basis for this interventionism: 'where is the science to show that a specific local resource use practice is damaging to biodiversity conservation? In many cases, restrictions on resource use and new livelihoods are introduced without first establishing what the most genuine threats to biodiversity are' (Griffiths 2005).

The disregard for the human component of ecosystems is detected also in initiatives developed by governmental institutions. Developing countries' governments might try meeting commitments achieved in the framework of international environmental policy processes, increasing their efforts for nature protection. This is the case of India, 1 of the 12 "megadiverse" countries in the world and a member of the Convention on Biological Diversity. The Indian State has enforced protected areas and supported ex-situ conservation projects (Israel and King 2008). However, '*in situ* on-farm conservation by rural and tribal women and men largely remains unrecognized and unrewarded' (Swaminathan 2000). Recently a new law was passed (Recognition of Forest Rights, December 2006) that aims at giving tribals and other traditional forest dwellers 'responsibility and authority for sustainable use, conservation of biodiversity and maintenance of ecological balance…' (Forest Rights Act 2006, cited in Misra 2008a). However, the implementation of this act is

so far plagued by complex procedures leading to chaos, confusion, and officers overburdened with paperwork (Misra 2008a; Jamwal 2008b). Not surprisingly, less than 2% of the state's 2001 tribal population had submitted the form by mid 2008 (Misra 2008b).

Cases like the Indian one described above are not the exception. In fact, a generalized acute asymmetry between the attention drawn to environmental and social aspects of conservation is the norm; 'biological concerns have gained policy backing and financial resources toward their practical implementation (park establishment), while social approaches remain under-designed and under resourced (Cernea and Schmidt-Soltau 2006). It should be considered that top-down one-sided conservation approaches adversely affect both biodiversity and people. Kapp (2008) and van Vliet et al. (2008) have shown how rural communities in Africa, confronted with the strengthening of restrictive environmental policies (indirectly supported by international NGOs and development agencies), fall back on more intensive agricultural use, with deleterious effects for soils and forest vegetation. In extreme situations thousands of persons belonging to local communities can be displaced and impoverished in the frame of nature conservation policies (referred to as 'eviction'; see for instance Cernea and Schmidt-Soltau 2006; Brockington and Igoe 2006).

Finally, measures adopted within climate policy negotiations might potentially affect indigenous and local communities in the near future[3] (Vidal 2009). This is the case with REDD (Reduction of Emissions from Deforestation and Forest Degradation) in the context of the United Nations Framework Convention on Climate Change (UNFCCC). One of the criticisms made regarding that process is the absence of indigenous and local community representatives in the negotiations; being addressed so far exclusively by governmental officials, REDD constitutes a classic top-down policy approach (Griffiths 2007). This is of great concern to many since potential substantial rewards for forest conservation could represent perverse incentives to enforce unjust forest laws as well as promote eviction and expropriation, as has occurred with some of the environmental measures addressed in this section.

12.3.4.3 Environmental Policies and the Market: Not So Far Away from Each Other

The distinction made regarding the respective impacts of the market and environmental policies on traditional forest-related knowledge facilitates an understanding of some of the paths through which local communities and their traditional practices are being affected by globalization. Nevertheless, this procedure is rather a

[3]Examples of negative impacts of REDD initiatives on indigenous communities in the frame of voluntary carbon trading have been recently documented. A tribe's leader in Papua New Guinea was forced at gunpoint by "carbon cowboys", aiming to develop a voluntary carbon trade project, to sign away the carbon rights to his people's forest (Astill 2010; Greenpeace 2010): "They came and got me in the night… police came with a gun. They threatened me. They told me, You sign. Otherwise, if you don't sign, I'll get a police and lock you up," said the leader (Greenpeace 2010).

simplification. In reality such impacts frequently result from a closely interweavement between global environmental policy processes and the economy.

In some cases this relationship is quiet evident. The expansion of oil palm plantations, encouraged by the increasing demand, offers an example. Bailey (2007) relates how some policies aiming at reducing emissions through the enhancement of the proportion of biofuel in the transportation sector in countries like United States and the European Union may be disastrous for poor people. Regarding particularly the EU, the biofuel share is expected to move to a share of 10% by 2020. Bailey (2007) emphasizes that 'a scramble to supply the European market is taking place in the South, and poor people are getting trampled.' Indonesia, for instance, plans to expand the land area devoted to oil palm production by 14 million ha by 2020 (Bailey 2007). In 2008 there were more than reported 500 conflicts related to oil palm plantations in that country (Steni 2010). Recently Persson and Azar (2010) suggest that EU and U.S. biofuels policies are contributing to deforestation in the tropics.

The market may appear later, interweaving with environmental policies in unanticipated ways. An example is provided by 'eviction for conservation,' which is the 'displacement resulting from the establishment and enforcement of protected areas' (Brockington and Igoe 2006). Cernea and Schmidt-Soltau (2006) report how 19% of the hunters resettled in 2000 from Korup National Park (Cameroon) 'have increased their hunting due to better access to markets' depending 'nearly entirely on the old hunting grounds in the national park.'

But the interweavement between global environmental policy processes and the market goes beyond this more or less direct relationship. According to Martin O'Connor's (1993) reflexion on the assimilation of natural resources by the economy, conventional environmental policy would be just a component of the capitalization of nature, an aspect of the so-called 'ecological phase of capital,' with the term capital understood in its rigorous definition—a form of social relations (Baudrillard 1980, cited in O'Connor 1993). Thus, global environmental policy might be, in fact, facilitating the access to natural resources. Some details will be helpful in order to explore Martin O'Connor's perspective with regard to local communities.

The ecological phase constitutes capital's strategic response to decreasing natural resources, increasing competition for them, and social discontentedness. This phase is undergoing a semiotic expansion. Terms such as rational use, sustainable development, stock designation, property rights, and consideration of externalities are characteristic of current environmental policy rhetoric (Martínez Alier 2002), and an inherent constituent of capital's discourse in its ecological phase. The strategy is to institute harmony by means of those signs. Moreover, the process of semiotic expansion is 'aided by the co-option of individuals and social movements in the "conservation game"' (O'Connor 1993). But the real goals are quite different:

> Such self-interest in profits does not equate to an authentic interest in these sources as life-forms or social ends in themselves! The dominant responses of capitalism to environmental crisis and to demands for respect of cultural difference continue to be premised on an instrumental, if not downright cynical, treatment of nature and human nature. There continues to

> be direct appropriation of supposedly "free" natural domains, which in general means exclusion of other human groups … through this process of capitalization of all domains of raw materials and services, through the internalization via the extension of the price system considered as susceptible to giving account of everything and to directing all processes (O'Connor 1993).

Thus the final achievement is neither harmony nor conservation, but a struggle to have particular interests and capitals valorised at the expense of others, 'the fact and imminence of annihilation for the less favoured interests and beings who are the "used" and "abused"' (O'Connor 1993).

Against this background we assess now how emerging global environmental regimes in the fields of forest policies and access and benefit sharing interweave with the economy and might negatively affect local and indigenous communities.

Capital's control on international environmental policy has been highlighted by David Humphreys (2006). Tropical forests represent sources of valuable timber exploited by concessionaries supervised by governmental administrations (Michon et al. 2007). Developed governments push for promoting private investment in sustainable forestry in the tropics, while developing countries are prepared to grant use rights to private companies in the form of concessions (Humphreys 2006). In this regard, the use of the term sustainable and the belief that market forces injected into new domains provide for public goods are constituents of capital's ecological phase. In fact, to assure their access to resources, corporate and political interests promoting trade 'wish any international instruments on the environment and human rights to be kept soft and outside the purview of the WTO [World Trade Organization].' Such instruments 'are kept entirely separate from international trade law, thus ensuring that they neither compromise neoliberal objectives nor are subject to WTO compliance mechanisms.' Furthermore, 'the influence of neoliberalism,' Humprheys writes, 'informs all aspects of global forest discourse.'

Consequently, there is no agreement to negotiate a convention to avoid deforestation. Within the United Nations Forum on Forests, which aims at promoting '… the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end'[4], only non-legally binding instruments are approached (Humphreys 2006). These instruments are of uncertain value but rest 'comfortably with neoliberal logic' since they contain only soft commitments and are adopted by states on a voluntary basis (Humphreys 2006).

Nevertheless, negotiations in the framework of climate policies (such as Reducing Emissions from Deforestation and Degradation, REDD) might introduce stronger forest policies addressing deforestation. 'Tropical forests have been recently invested,' emphasize Geneviève Michon and her colleagues, 'with a key role in the protection of the global environment against global warming.' This approach has an underlying economic background, since those carbon sinks would be 'regulated and managed through global economic and financial instruments' (Michon et al. 2007). Joan Martínez Alier (1993) advised against the limitations that such international regimes might introduce, depriving 'not only local communities but even independent

[4] http://www.un.org/esa/forests/about.html

states of control over the forests, which would be vested in international ecological managers.' In fact, governments might benefit.

REDD negotiations began at the end of 2005 and still have an uncertain way ahead. Market-based approaches are among the instruments being discussed for deforestation reductions in developing countries. Observers predict substantial rewards for forest conservation, whereas 'payments would in large part be made to government ministries or treasuries' (Griffiths 2007). Consequently, avoiding deforestation also features a strong economic component. Thus, forests would become lucrative carbon reservoirs 'deemed by the government and the courts to be "state" lands,' according to Thomas Griffiths (2007), who summarized the potential negative effects of such a regime on rural livelihoods. He mentions among others: increased state and 'expert' control over forests, perverse incentives for government and business to expropriate indigenous land, evictions, reinforce of unjust forest laws, etc. Moreover, Interpol recently warned about a speculated threat that a REDD regime might initiate: 'the chances are very high that criminal gangs will seek to take advantage of REDD schemes in African and Asian countries,' (Vidal 2009). In Colombia, even in remote areas, pamphlets offer local communities incredible fortunes for the carbon saved in their forests (XLSemanal 2010; see also footnote 3, earlier).

A second example regarding the infiltration of economic interests into environmental policy processes comes from the international regime addressing the access to genetic resources—Access and Benefit Sharing (ABS)—which is being negotiated within the Convention on Biological Diversity (CBD). This convention emphasizes states' sovereignty over their natural resources as well as their endeavour to create conditions to facilitate access to these resources. Furthermore, parties are to promote the wider application of traditional knowledge of indigenous and local communities with their approval and encourage the equitable sharing of benefits (Secretariat of the Convention on Biological Diversity 2005). This approach has received scholars' criticisms regarding different issues (Sharma 2005 Shiva 2005; Ribeiro 2005; Swiderska 2007; Frein and Meyer 2008). Here, we focus some of its economic aspects.

According to Ribeiro (2005) and Swiderska (2007), parties to the convention prefer mechanisms for sharing benefits from the commercial use of traditional knowledge that are consistent with intellectual property rights (IPRs). In fact, IPR regimes are becoming increasingly strong, supported by the agreements within the WTO and bilateral free trade agreements. This framework is accelerating the commercial use and privatization of indigenous knowledge and resources (Swiderska 2007). Moreover, since CBD emphasizes states' sovereignty over natural resources, few ABS laws require the previous informed consent of communities (Swiderska 2007). Against this background, Krystyna Swiderska concludes that 'the ABS framework effectively facilitates access by outsiders to community resources.'

A further critique refers to the sharing of benefits arising from the commercial use of genetic resources in a fair and equitable way. Martínez Alier's (1993) reflexion on the distributional obstacles to international environmental policy

casts serious doubts on the real benefits. For example, pharmaceutical businesses realize profits of millions of dollars (Frein and Meyer 2008); even accepting these firms' willingness to share, indigenous people's 'piece of the pie' would be very small compared to the firms' returns. The reason for this is that 'peasants and indigenous peoples are likely to set a low price to their hypothetical Farmer's Rights, not because they themselves attribute a low social value to their labour and agronomic knowledge … but also because they are poor' (Martínez Alier 1993); and, as Martínez Alier emphasizes, 'the Poor sell cheap.' An example of this is provided by the drug jeevani, which has anti-fatigue and anti-stress properties and was developed based on the knowledge of Kani tribes in Kerala. Its estimated commercial value is in the range of at least US $50 million to 1 billion; the Kani tribes so far have received about US $12,000 (Sharma 2005). In general terms, the experience gathered in the field of 'bioprospecting' since the 1990s shows that the sums paid by pharmaceutical companies for their access to genetic material have been in the end smaller than anticipated (Pagiola et al. 2002). Thus, in spite of the recognition of community ownership of environmental capital, the final effect is 'a mobilization of the resources—their entry into the sphere of exchange value—in the larger interests of capitalism as a dominant social form' (O'Connor 1993).

Summing up, global policies targeting environmental issues such as forest conservation or the access to genetic resources might also play to concrete economic interests and negatively affect local and indigenous communities. Regarding these two fields, David Humphreys (2006) concludes that 'the trade liberalisation of forest products and the contentious principle of access and benefit sharing each aim explicitly at the continued exploitation of forests for private gain' (Humphreys 2006). Researchers have pointed out the similitude between this current privatization process and the enclosure of the commons that occurred in Europe during the eighteenth and nineteenth centuries (see Sect. 12.3.1.2) (Ribeiro 2005; Humphreys 2006).

12.3.4.4 The Economy and Violence

The application of violence to access resources is not necessarily a characteristic of a market economy. But Martin O'Connor points out that supplying the market demand through capitalist firms eventually does not exclude violence. Violent events adversely affect local and indigenous communities, so we address them briefly.

> Many individual capitalist enterprises, hellbent on survival in a competitive world, would prefer indeed to continue to treat nature and societies as open-access terrains to be mined and trampled upon at will. This is illustrated not only by military or quasi-military operations of *force majeure*, but also by the great pressures on governments. … Such attempts at maintaining favourable (to capital) cost and supply conditions for needed raw materials and services (of nature, of labour, of society as socialization force and infrastructure) can involve fairly obvious dispossession, as well as cost-shifting onto local communities (O'Connor 1993).

Dramatic examples of this are provided, for instance, by the exploitation of rainforests, as exemplified by following cases.

During the 1980s, indigenous peoples, small farmers, and rubber tappers were displaced by landholders ('fazendeiros') in the Amazon or murdered by their hired killers. Fazendeiros and 'garimpeiros' (gold miners) promoted deforestation and provoked extensive forest fires. Fazendeiros raised cattle in response to the market demand for hamburger meat, and violently eliminated the resistance offered by rubber tappers—such as Chico Mendes, who was murdered in December 1988—and peasants who were sustainably using forest resources (Moro 2006) (see further discussion in the next section).

With respect to oil palm plantations, Bailey (2007) relates how 'in Colombia paramilitary groups are forcing people from their land at gunpoint, torturing and murdering those that resist, in order to plant oil palms, often for biofuels. Many of these violent acts occur in the traditional territories of indigenous peoples.' Local communities might try to defend themselves by organizing labour associations. However, in parts of Latin America, varied circumstances thwart unionization (obstructive legislation, intimidation, lack of worker rights). In Colombia, again, palm oil trade unionists have been tortured and murdered (Bailey 2007). At the beginning of 2010, the online magazine XLSemanal further confirmed the situation described by Robert Bailey and reported on several cases of human rights abuses (XLSemanal 2010). Worldwide, several millions of indigenous people have been affected by the deforestation of their land to make way for biofuel plantations (Bailey 2007).

12.4 Adaptations and Reactions of Local Communities to Globalization

Previous sections have shown some of the almost insuperable forces that oppress local communities, causing the loss of their traditional forest-related knowledge. However, the following cases demonstrate that rural communities are also able of offering their own solutions to cope with the problems derived from globalization.

Research in the field of traditional forest-related knowledge constitutes an important support for the conservation and even improvement of local and indigenous communities' management systems. So, for instance, the production and quality of almaciga resin in Palawan (Philippines) has been increased by scientific research, in turn positively affecting tappers' incomes (Ella 2008). Similarly, the adoption of new crops, together with valuable timber species and their management, have enhanced the annual revenues generated by the shifting cultivation system applied in Yunnan (China) (Liang et al. 2008). Traditional knowledge has also made a considerable difference in many research projects and management strategies. Nevertheless, its wider application still remains elusive (Huntington 2000).

Research with local and indigenous communities has brought a better understanding of subsistence economies, something substantial in order to design well-grounded decision-making and development projects (Godelier 1981). Regarding

access to genetic resources, for example, cooperation between scientists and indigenous peoples has emphasized the deep differences that exist between the dominant Western paradigms (such as access and benefit sharing, intellectual property rights) and customary laws and collective custodianship underlying traditional societies. This is a necessary approach to inform the development of more appropriate policies and mechanisms for the protection of genetic resources and traditional knowledge (Swiderska 2007).

Furthermore, investigations carried out by Geneviève Michon and her colleagues (2007) provide evidence for the inherent sustainability of traditional management systems still applied in developing countries, which, in turn, might represent by itself a guarantee of resilience against external pressures. Traditional agroforests, for example, constitute a better contribution to the maintenance of the forest cover in the Philippines than the unsuccessful afforestations supported by the government during recent decades (Bertomeu et al. 2008). In spite of this, the term forest applied by the Food and Agriculture Organization (FAO) does not include agroforests. By contrast, plantations, such as rubber plantations, are considered by the FAO as forests (FAO 2006). Obviously, traditional forest-related knowledge still requires more recognition.

An important feature of traditional knowledge is its dynamic character and openness to change (Berkes 1999). This allows local communities to adapt actively to the new situations originated in a globalized world. In Indonesia, as mentioned above, these communities frequently opt for the conversion of their traditionally managed agroforests into commercial plantations of rubber or oil palms (Feintrenie and Levang 2008). However, these systems managed by farmers deeply differ from the plantations carried out by large companies:

> Farmers try integrating oil palm into their own cropping practices, especially agroforesty, applying less fertilisers and chemicals. They favour a less intensive cropping system, and associate oil palm with several other perennial crops. … By integrating oil palm into their existing farming systems, by adapting techniques to their constraints, objectives and knowledge, farmers make it their own and reinvent tradition (Feintrenie and Levang 2008).

This adaptable character of traditional systems would merit further research since scholars envisage future models as a mixture of monospecific plantations and agroforests (Feintrenie and Levang 2008).

Apart from adaptation, local communities have sometimes actively reacted, denying the unlimited inclusion of their resources in the market system. A well-known case is that of Chico Mendes and the ‘seringueiros’ (rubber tappers) in the Brazilian Amazon (Martínez Alier 1993), as mentioned earlier. Mendes organized fellow workers into the National Council of Rubber Tappers to protest the cutting of the trees by cattle ranchers. The union succeeded eventually in negotiating government support for the creation of ‘extractive reserves,’ which protect small areas of land for sustainable use such as rubber tapping.

Many other examples can be found through the developing world. In northern Peru at the beginning of the 1990s local famers supported by estate engineers opposed the firm INCAFOR, which intended to manage forests in a protected area (Martínez Alier 2002). Also by that time thousands of farmers in Thailand refused to abandon their villages and to comply with authorities who intended to implement the Khor Jor Kor, a

state forestry programme backed by a coalition of army generals, the forest department, and pulp companies (Pye 2005). If implemented this programme would have caused eviction while promoting deforestation and eucalyptus plantation. But farmers organized themselves and resisted the project, and Khor Jor Kor was scrapped in July 1992 (Pye 2005). This success supported in turn the emergence of a network of rural activists within the organization Samatcha Khon Chon (Assembly of the Poor), which proposes a democratic form of forest and land management including integrating farming methods and community forests (Pye 2005). Moreover, regarding the issue of access to genetic resources, indigenous organizations in Chiapas (Mexico) successfully opposed to a U.S. bioprospecting project aimed at collecting plants used in traditional Mayan medicine as well as at patenting drugs and knowledge (Sharma 2005). Worldwide many other social initiatives exist that emphasize a 'moral economy' and react 'against the threats coming from the generalized market system against the livelihood of the poor' (Martínez Alier 1993); such initiatives have been labelled by Joan Martínez Alier as 'the environmentalism of the poor' (Martínez Alier 1993, 1999, 2002).

In wealthy countries, much research effort is being devoted to regional development in order to find measures that can counteract the marginalization processes in mountainous and other rural areas. In this regard, the results of projects such as ISDEMA (Innovative Structures for the Sustainable Development of Mountain Areas) or EUROLAN (Strengthening the Multifunctional Use of European Land: Coping with Marginalisation) highlight the importance of the following aspects (Dax and Hovorka 2004):

- institutional local development;
- emphasis on local initiatives and resources;
- reinforcement of local identity;
- a regional (rather than sectoral) approach;
- integration of small and medium enterprises supplying different but complementary products;
- a multi-sectoral approach, e.g. through the enlargement of the relationships among agriculture, forestry, trade, and tourism, including both market mechanisms and public measures; and
- long-term development projects.

Pettenella et al. (2008) describe the application of this framework to mushroom gathering in the forests of Borgotaro (Italy). Six enterprises deal with the commercialisation of mushrooms, and several others sell additional products gathered in coppiced beech, oak, and chestnut woodlands. A considerable number of people are engaged in different activities ranging from silvicultural interventions to hiking trail maintenance. And, particularly important for the scope of this chapter, in order to favour the production of mushrooms, woodlands are actively coppiced, which is a traditional form of woodland management. Finally, research studies such as those already mentioned have also accentuated the enormous importance of enhancing the broad participation of local communities and their initiatives in the framework of regional development (Dax and Hovorka 2004). This issue is of great relevance, too, in developing countries and to which we devote the final section.

12.5 Participation, a Requisite for Adaptation

In 2006, one of the authors of this chapter attended a seminar on biodiversity organized by the Chatham House in London. During the discussions, participants repeatedly mentioned projects carried out by the Global Environmental Facility (GEF) in developing countries. The author raised the issue that projects developed by international organizations such as the GEF and the World Bank sometimes have negative impacts on poor rural communities. The statement was supported by various papers (Bassett and Bi Zuéli 2000; Griffiths 2005). Participants, except for one, remained silent. The only reacting person argued that the GEF and the World Bank were the most important institutions funding such projects in developing countries, and excitedly rejected the critical statement. This reaction illustrates the dilemma of whether the good done by such organizations should prevent discussion of the resulting problems of very poor people. Such discussion, in fact, is important particularly for two reasons (among others): their consequences for local communities and the difficulties these communities encounter in trying to participate in the policy process.

The similitude of the misfortunes affecting rural communities in Southern Spain and India to which we referred in Box 12.1 relates also to their final development. The health of Máximo Fernández Cruz, the mountain shepherd dispossessed of his freedom, began declining while he was in prison. Affected by asphyxia and tremors he was taken to the jail ward. Later his progressive health deterioration continued until he passed away in 1986 (Gómez Mena 1987). And in India, in Nandurbar alone from April 2007 to March 2008 more than 40 children below 5 years of age died of malnutrition (Jamwal 2008a), while in Madhya Pradesh 46 children died in 2 months (Chibber 2008). Between 2003 and 2004, nearly 9,000 children under the age of 6 had died directly or indirectly of malnutrition in tribal areas of Maharashtra (Mahapatra 2004). All these communities are economically depressed, a situation exacerbated by the forest departments that do not allow them access to the forest for food gathering (Mahapatra 2004; Chibber 2008; Nidhi Jamwal, personal communication 2009). And as we showed in Sect. 12.3.3, such strict measures are inherited from colonial times. Thus, these children, as in the case for Máximo, were victims of, among other factors, restrictive forest policies disseminated worldwide in the process of globalization.

But globalization does not necessarily imply changes that always act in a uniform direction. Rather, mutually opposed tendencies are also possible (Giddens 1990). Globalization so far has caused many losers and it is obvious that a different world is inevitable (Stiglitz 2006). But the bidirectionality of the process also offers a chance for better changes. In this regard, reforming globalization is a question of politics (Stiglitz 2006), which implies taking into account a wide range of ideas within the framework of collective decision-making (Latour 2004, cited in Trosper 2007)—that is, participation.

There are, indeed, global tendencies supporting positive changes in the South, such as the shift in forest tenure since the mid 1980s embracing some 200 million ha of forest land legally transferred to local communities and indigenous

people (Larson et al. 2010). This trend matches the increasing recognition that reinforcing forest tenure for local communities leads to better welfare of people, supports them against outside claimants, and improves forest resource conservation and management (Pulhin et al. 2010). Nonetheless, forest policies continue to be severe and coercive, counteracting recent forest tenure reforms (Larson and Ribot 2007; Pulhin et al. 2010), while effective participation, despite the widespread discourse, remains very limited (Larson and Ribot 2007; Cotula et al. 2009).

Correspondingly, promoting discussion on the topics addressed by this chapter is an urgent necessity. However, like the participants at the workshop in London mentioned earlier, probably many delegates attending international environmental conventions are unaware of these issues. Indeed many scientists, as shown by Berkes (1999), still have a dismissive attitude to traditional knowledge. Environmental policy processes certainly should be broadened to allow local communities and indigenous peoples the ability to represent their own interests and needs in the decision-making process (Swiderska 2007). Furthermore, such inclusion would help reverse the main North–South direction of globalization and would allow enriching Western forest management science with the experience from other cultures. 'Indigenous knowledge,' insists Berkes (1999), 'holds much promise for insights and applications, provided care is taken not to use it out of context.'

A last example in this chapter illustrates this point. Forests in the Menominee Indian Reservation (Wisconsin) are managed by Menominee tribes. They use harvest rates longer than 200 years, which enables large growing stocks and many non-timber products, application of controlled fires, and adaptation of the mill plan to forest management considerations. An important fact here is that thanks to their self-determination and political power, Menominee people have been able to express their values and beliefs in the management of the forests (Trosper 2007).

This demand for participation is made by non-governmental organizations as well as by scientists, such as David Smorffitt (2008) of James Cook University in Cairns, with whose quotation we conclude:

> There should be no doubt whatsoever that national and international policy development needs to undertake a greater level of consultation with local communities whose intimate knowledge of the area and communities in which they live, can play an important role in 'getting in right' the first time around. The personal and commercial interest of stakeholders and the political bias at various levels ensures this is a long-term process but is required in order to develop policies that are the best for all concerned.

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