

# II Forestry in Changing Social Landscapes

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**Abstract:** Social systems and ecological systems are both essential to building human well-being. The dynamic relationship between these systems is embedded in a larger social, cultural, political, and economic context. Many of the world's forests currently face rapid changes that tend to push both systems towards conditions where their historic relationship can no longer be sustained. The challenge is to maintain the balance between these systems and, simultaneously, secure ecological resilience while avoiding social disruption and insecurity. People are key actors in the social-ecological system. The growth of the global population, its concentration in urban centres, as well as changing consumption habits will impact on global land use, including on forests. Individuals and societies have essential roles in the larger social, economic, and political settings of globalisation, including shifts in policies and new power structures. In the interplay of society and the environment, an understanding of the perceptions and attitudes between individuals and groups of people may carry over to new and positive solutions, specifically in governance and institutions, both for people and nature. The set of perceptions and attitudes, and the inherent cultures of the individual and societies determine the public support and success of forestry, of implementation of sustainable management, and more effective conservation measures. Contradictory perceptions and potentially consequent mistrust and antagonism may cause conflict and inefficient management of the natural resource. Yet, conflict can provide an opportunity for mutual learning and may trigger new ideas that can improve or replace outdated patterns.

**Keywords:** social system, population, demography, perception, attitude, urbanisation, land use, conflict



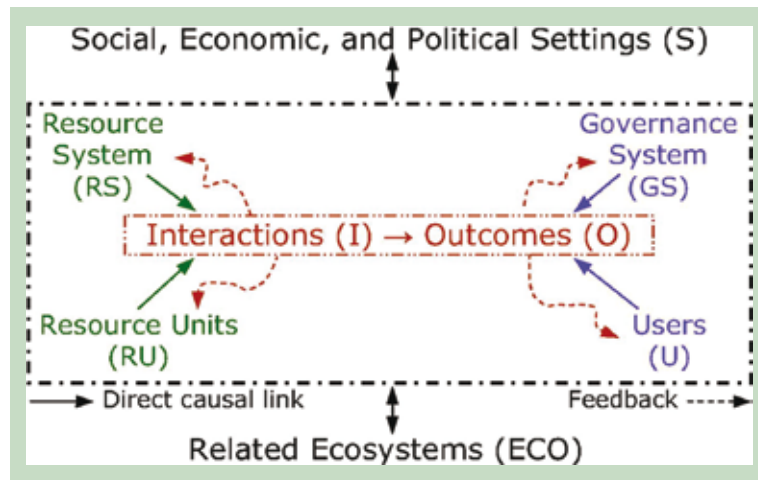
## II.1 What is “Forest” for People?

The social changes that will shape the future of the world's forests are, in many ways, difficult to describe. As the Food and Agricultural Organization of the United Nations (FAO) draft strategy for Forests and Forestry puts it “forestry is about people.” Just as we have come to understand that forest ecosystems are more complex than the early proponents of scientific forestry ever imagined, we now see that forest ecosystems are embedded in a broader and even more complex socio-cultural landscape that ul-

timately determines what people want from forests, and the kinds of institutions and practices that they will create to achieve their goals.

### II.1.1 Relationship Between Social Systems and Ecosystems

Social scientists and forest managers have expended a significant effort over the last two decades to try to understand and model the relationship between social systems and ecosystems. Much of this effort has been focused on the attempt to create a unified



**Figure 11.1. A multi-tier framework for analysing a social-ecological system (Ostrom 2007, Copyright 2007 National Academy of Sciences (NAS), U.S.A; reprinted with the permission of NAS).**

conceptual framework in which people and societies are understood as components of a larger whole, rather than existing outside or alongside nature and having “impacts” on it. The components of social and ecological systems are arranged in a nested fashion, such that they can be considered self-contained systems for some analytical purposes, but for others they are understood as parts of a larger whole. While there are many versions of approaches, one common conclusion stands out: the need to consider a much wider range of potential drivers and linkages between and among the components of nested social-ecological systems than resource management – including forest management – has traditionally done.

There is a cost in trying to accommodate such a high degree of complexity: “[T]he complexity of linked social-ecological systems is such that a tight body of theory governing their dynamics is unlikely in the near future, if ever ...” (Walker et al. 2006). Instead, research has focused on understanding how to maintain these systems in a productive state – their long-term sustainability – and especially the reasons why social-ecological systems can sometimes change for the worse, both quickly and irreversibly. In this latter respect, the concept of “resilience” has come into prominence. Building on the work of Holling (1973), resilience in socio-ecological systems is the capacity of the system to remain in the same state after a shock, or to return to that state a short time afterwards (see sub-Section 22.1.1 Definitions, Theories, and Applications).

Resilience can be seen as a quality of the complexity of social-ecological systems. As Elinor Ostrom (2008) has noted, an impossibly large number of variables would be required to explain outcomes in such systems. A more productive approach is to try to focus on a smaller set of variables and sub-variables that account for most of the impacts that we

are concerned about. People use a resource, in this case forests, to generate a wide range of benefits – from timber and non-timber forest products to more intangible “resource units,” such as the mitigation of extreme weather events, and other ecological services, such as predictable hydrological cycles. The activities of the users produce outcomes in forests, both in negative (deforestation, degradation) and positive (sustainability, restoration) ways. The lives and well-being of many people may be positively influenced through the income and employment generated from forest-related activities, or they may be negatively influenced by the loss of forests, declines in productivity, and loss of biodiversity and ecosystem services. Users typically regulate access to the resource through some kind of governance system that may be devised by those directly engaged in forest use or by those who benefit more indirectly from forest-related economic activity.

All this activity is itself embedded in a larger social-economic-political context, and in larger related ecosystems. Ostrom’s conceptual framework of the relationship between these components is depicted in Figure 11.1.

The problem of complexity is immediately apparent. For example, it is not only a question of how and how extensively forests are being used as a result of population increases, equally important are the social changes and changes in population distribution in the larger setting. Out of the estimated 1.0–1.5 billion forest resource-dependent poor in the world, only 60 million depend primarily on forests for their livelihoods. The rest live in the margins of forests or are smallholder farmers who grow farm trees or manage remnant forests for their subsistence (Scherr et al. 2004). The majority of people in the world live at forest edges, at some distance from forests or, increasingly, in large urban agglomerations. Even in

the developing world, economic growth is becoming more dependent on services and less so on manufacturing and agriculture. With changing economies and changing living environments and cultures, the values and attitudes of people towards forests are also changing. Such changes will be reflected in all the components of Figure 11.1, in the number of users, the kinds of benefits they want to see from forests, the likelihood that they will be indirect rather than direct forest users, and the kinds of governance systems that they will regard as legitimately restricting access and distributing costs and benefits from forest use.

### **11.1.2 Changing Social Structures and Institutions**

People act as individuals, as households, and as communities either at very local, national, or even global levels. People form diverse social structures and institutions of power and decision-making at all levels. In many societies, these may be quite stable. However, these structures transform with the operational environment and changing activities, and people's values and attitudes change simultaneously. Yet some structures and institutions do not change even when the operational environment changes. The result is a mismatch between the expectations of resource users and the capacity of the forest itself to meet these expectations. Without an appropriate governance system, this mismatch will more or less rapidly degrade the resource itself, perhaps to the point where resilience is damaged and changes in the previously forested ecosystems take place that are difficult or impossible to reverse.

Thus, governance is critical (see Chapter 23). Some changes in the human activities that influence forests are immediate and occur in the short term. Others, and often more important ones, are of indirect nature and can be seen in longer, historical dimensions. Social changes, including demographic changes, can bring about changes in power and decision-making; for example, which sections or strata of people devise governance arrangements. Formation and evolution of governance systems is a social process, so that policies deriving from the governance system are also socially determined. Nonetheless, there is often a serious mismatch of scales in which the dominant governance system is unable to include the most important variables that affect outcomes, whether ecological, social, or both (Cumming et al. 2006).

The other main conclusion from the socio-ecological systems literature is even more worrying. There is strong evidence that, given sufficient time, social and ecological systems can co-evolve, maintaining resilience in both the social and ecosystem

components in the face of change from both within and outside the system. Learning takes place and new linkages and feedback mechanisms are created. What many of the world's forests currently face, however, are scenarios of rapid change that tend to push both social and ecological systems towards conditions where the historical relationships between the components can no longer be sustained. Their resilience has been lost and these systems will not return to their historic states after the shocks that they are receiving. The speed and intensity of these changes leave little opportunity for learning. Once socio-ecological systems pass this point, we are in uncharted territory. Unless we can understand the main social causes of this kind of pressure, we will not be able to identify prospects for managing and mitigating them. The more we can anticipate these causes and their likely consequences, the more time governments and people will have to devise appropriate responses.

The key ongoing social changes are reflected in globalisation of the timber industry, shifts in national policies regarding forest management, and devolution of power to forest management communities in some countries. All these, as well as the ecological changes, are covered in other chapters of this book. As recommended by Ostrom, the approach taken here is to focus on a small set of variables that are impacting on the socio-ecological system. Here we mostly concentrate on the main ongoing demographic changes and on people's perceptions, again reflected and mediated on society's power structures and institutions. Individuals and societies are an essential part of the larger social, economic, and political settings and, equally, are actors in the social-ecological system. In the dynamic interplay of society and the environment, mutual understanding of the perceptions and attitudes between individuals and groups of people may carry over to new and positive solutions, both for people and nature. Contradicting perceptions and, potentially, consequent mistrust and antagonism may cause conflict and inefficient management of the natural resource.

### **11.2 Population Dynamics Impacting on Global Forests**

Decisions by societies – social values and attitudes, including political decisions whether democratic or not – have been and will be reflected in the human landscape and on forested land. Human impacts extend over the inhabited areas, but also to untouched wilderness. There is no linear connection between population and forest cover, as forest cover depends on a wide range of natural conditions. Although forests are often protected or planted when population

pressure increases, this is usually only in the high productivity zones, rarely in areas of low productivity (Persson 2003). Also, trees on agricultural land are often associated with aridity: the more humid the climate, the higher the level of tree cover.

### **11.2.1 Population Numbers and Decreasing Land Resource**

The global population reached 6.8 billion in 2009, and has been projected to surpass 9 billion by 2050 (UN 2009a). This increase of more than 2 billion new people on the planet by 2050 is equivalent to the combined populations of China and India today. The land area per capita to feed all the people will decline to a mere 1.5 ha in 2050, just one third of the 4.3 ha available per person in the early 1960s.

Today, roughly half of world forests are in the tropics, mainly in developing regions; the other half is in the developed world. The additional 2 billion people expected to be born in the next 40 years will mostly be in developing countries – the proportion of people in the developing world will increase from about 82% of world population to 88% by 2050 (UN 2009a). The population change in more developed regions is projected to be minimal; for example, the population will be diminishing in northern and western Europe, in Ukraine and the Russian Federation, Japan, and the Republic of Korea.

#### *Growing Demand for Food*

The global demand for food, feed, and fibre will nearly double with increased population. Yet, already over 1 billion (that is 1000 million) of the world's people are estimated to be chronically undernourished today (FAO 2009). Even if the lack of land is not the main cause of global hunger today, it is clear that with increased population, more land will be needed to meet the increased demand for food and to meet the United Nations (UN) Millennium Development Goals. Globally, 78% of the increase in agricultural crop outputs between 1961 and 1999 were attributable to yield and productivity increases, and only 22% to the expansion of arable land. By contrast, in sub-Saharan Africa, only 34% of increased output was derived from yield increases, and the remaining 66% came from expanding the farmed area (Hassan et al. 2005). Two-thirds of Africa's arable land suffered degradation from 1950 to 1990, and two-thirds of the remainder may suffer the same fate by 2025. Without improved agricultural productivity, rising food demand alone will perpetuate continued deforestation and forest degradation.

Agricultural productivity is not the only factor

that will affect forests; changing consumption patterns and consequent shifts in agricultural production might lead to deforestation and degradation of forest quality. In turn, this will affect ecosystem conditions and ecosystem services. The structure of consumption changes with higher personal income and products associated with higher income, especially livestock products, fats, and coffee, have large land requirements. In the near future, consumption patterns will form a very important variable for total land requirements on the global scale. As an example of the impacts of such changes on consumption, in the Netherlands in the period 1950–1990, larger demand for more affluent foods, such as cheese, beverages, fruits, and meat, led to a 40% rise of per capita land requirements (Gerbens-Leenes and Nonhebel 2005).

With freely operating markets and trade, the disparities in global supply and demand of food and feed could be met. However, that is not the case. The pressures on land in some Asian and Middle East countries have led to land leases, for example in sub-Saharan Africa. These large-scale leases are mainly to produce agricultural products or energy for export, possibly causing deforestation, contravening local land uses, and aggravating local food insecurity (see Box 11.4 on potential future areas of conflict). Land use will continue to be an issue with increasing demand for food and energy feedstocks, and with rising food and energy prices.

Increased demand for agricultural products and energy feed stocks brings up the role of forests also through another way: water availability may be threatened by land use changes, for example in deforested or degraded watersheds, or by excessive use of water by non-suitable tree species plantations. Almost 90% of an individual's water requirement is needed for food production. In China, per capita water requirement for animal products alone has increased by about 3.3% per year since 1996, while Chinese diets have shifted towards animal products, particularly meat (Liu and Savenije 2008).

#### *Growing Demand for Forest Products*

While increasing populations will demand more food for humans and feed for animals, they will also require more forest and tree products. Overall, use of materials and energy will continue to rise in absolute terms over time, even if changes in materials and energy intensity declines with growing Gross Domestic Product (GDP), as is usually the case. However, concerns expressed about forest land availability to meet long term demands for industrial wood seem to be overstated. Fibre supply from planted forests is set to eliminate any lingering spectre of wood shortage globally, if not always locally (Evans 2009), and





Bruno Locatelli

**Photo 11.1 Raising demand for food and biomass for energy imply continued pressures on forests and tree resources in many parts of the world.**

plantations are estimated to supply up to 64% of industrial timber supply in 2050 (FAO 2001). At the same time, an increasing share of national and local timber supply is being met by small scale and farm forestry. In Kenya today, farms have an average 10% tree cover, and some 70% of industrial timber demands in Pakistan and India are met from farms.

A positive sign is the slowdown of global population growth. The rate at which pressures are building up on natural resources – land, water, and biodiversity – will be somewhat tempered during the coming 40 years. Several countries in the developed world have entered the phase where forest cover is increasing, after the initial drop in the beginning of the industrial era. For example, in Europe, the net forest area increase between 2000 and 2005 was approximately 3 million hectares. However, the progress made in increasing the forest cover in China and Viet Nam, for example, indicates that forest cover growth can be reached well before the post-industrial stage of the economy (see e.g., Kauppi et al. 2006, Mather 2006, Meyfroidt and Lambin 2008).

Much of the future growth in energy demand is expected to occur in the less developed regions. It will be driven by the increased number of people and, more importantly, by rising incomes. In the developing world, even in densely populated areas in Asia and Africa, the dependence on biomass for energy will continue with continued high demand for charcoal and fuelwood. Eighty-nine percent of people and a similar share (84%) of small and medium enterprises (SMEs) in sub-Saharan Africa rely mainly on solid woodfuels, such as wood and charcoal or crop waste, for their energy requirements. It is projected that in sub-Saharan Africa alone there will be 627

million people using biomass in 2015, compared to 575 million in 2004 (Cotula et al. 2008). Population growth without an accompanying growth in affordable energy supply implies continued pressure on forests and tree resources, particularly in dry forests and open woodlands.

### 11.2.2 Population Distribution

People are very unevenly distributed on land and are increasingly concentrated. Human agglomeration and urban developed areas can be claimed to constitute the foundations of modern economic growth, wealth creation, and development, often setting the pace for social change and new social systems.

Nearly 200 million people migrated internationally in 2006 (UN 2009b), and many more within their own countries. Net migration from developing to developed countries alone is projected to average 2.4 million persons annually from 2009 to 2050. Adding to these numbers, there may be over 150–200 million climate change refugees by the middle of this century, as estimated by United Nations (UN 2009b).

#### *Urbanisation Changing the Landscape*

Use of materials, energy, and transport are concentrated mostly in urban areas. New demands for services are being placed on forests in urban environments: for fighting pollution, reducing noise, and for recreation and human well-being. Beyond the

role of forests in the urban environment, forests in the rural-urban fringe are widely used for the needs of urban-dwellers.

Urban areas now contain about half of the world's population on 3% of the planet's terrestrial surface. High-income countries today typically have 70–80% of their population in urban areas, although high levels of urbanisation also occur in lower income countries in Latin America. The United Nations estimates that same share of the global urban population will increase to 70% in 2050, that is, to 6.4 billion (UN 2008).

During the current decade, some 250–310 million people – mainly young people – will move into towns and cities. Urban residents will have a much higher natural reproduction rate than that in rural areas due to the younger age structure. Population growth over the next several decades is expected to be concentrated in the poorest urban communities in sub-Saharan Africa, south Asia, and the Middle East. It has been projected that by 2050, urban dwellers will likely account for 86% of the population of the more developed regions, and for 67% of people in the less-developed regions. Africa is the world's fastest urbanising region and, alarmingly, current trends show that 90% of new developments in cities occur in slums. Already, an estimated 37% of the urban population in the less-developed regions is living in overcrowded, poor quality conditions (Moreno and Warah 2006).

Although very large cities with more than 10 million inhabitants are still growing, such mega-cities will account for a small, although increasing, share of the world's population. At least half of the world's people will live in smaller urban centres that have fewer than half a million inhabitants. Whatever the pattern of urban growth, it implies further fragmentation of existing landscapes, with intermediate land uses and continuous changes. All this may further fragment forests and woodlands. In the urban fringes in more densely populated areas, land development competition will lead to increased land prices.

#### *Rural Areas as Resource Base*

Some developing-country regions, like parts of Asia, are largely rural. Today, Africa and Asia account for almost 90% of the world's rural populations. Even if urban areas often set the pace and possibly the structure of social change, rural areas will remain the resource base for growth and development. Yet, the divide between urban and rural is not always clear-cut, as regions are increasingly functionally integrated. Securing and maintaining the rural production functions in a sustainable way certainly will require new approaches in management and technology, and specifically in governance of land and

natural resources.

The rural population is already decreasing in Europe, and the world rural population is projected to start decreasing in about a decade, with an even larger decrease in rural working-age population (UN 2008). In 2050, 0.6 billion fewer rural inhabitants are expected than today, with far-reaching implications for agricultural and forest productivity. Improved technology and development is needed, and possibly more extensive production on a global scale parallel to intensive land use around local and regional consumption centres. This decline in the rural labour force will be a constraint on the capacity of many rural areas to meet demands for food, fodder, energy, and managing regional ecosystem services. This includes activities needed to mitigate and adapt to climate change. The current planetary land-use patterns may have to change fundamentally, as they are the sub-optimal result of erratic historical processes, done without global sustainability considerations of the present economies and numbers and concentrations of people. An effort towards optimal land use planning will be a challenge at all levels. Optimal land use planning at a global scale, however, is currently a utopian idea (see Schellnhuber and Huber 2009).

At the same time, rural functions are changing. Traditional agricultural and forestry activities are declining in relation to other sectors. In most developed countries, the main rural occupations are now in services rather than agriculture or forestry. The decline in traditional forest sector employment – in forest management, logging, and processing – has been most abrupt in many countries, for example in Eastern Europe. At the time of these changes, the profitability of forestry has also been challenged with globalisation and market changes. New products and innovations have been called for in historically forestry-based economies of North America and Europe.

Rural areas in the developed world are becoming more and more differentiated and complex, not only in relation to production potential, but also in relation to social structures and their future development prospects. The decline in the role of traditional forestry, and increasingly diverse views about some management practices in many parts of Europe and North America, have considerably reduced the social acceptance of traditional forestry (see Boxes 11.2 and 11.3; e.g., Niskanen et al. 2008). Yet local use for diverse non-wood forest products continues and has important contributions for the rural population.

In the developing world, local dependency on forests for household, social, and cultural needs will continue, even with slowly declining rural population pressure. However, land use and property rights will continue to be contested because of competition between local uses and the need to provide both goods

and services for the growing urban populations. Conservation measures will be increasingly critical for long-term soil productivity, erosion control, and maintenance of biodiversity.

### 11.3 Changing Attitudes and Perception Regarding Forests

As explained in section 11.1, the social meaning and individual perception of “forest” is culturally formed, and the way that forests are represented is likely to differ between societies. Each interpretation is done in the context of each society's own local natural and socio-cultural environment. The whole concept of forest may differ by local climate and natural conditions, and between individuals and groups. Where the forest starts and what it consists of, which tree species make a forest, what is accepted as “trees” are all open to different interpretations.

Local natural resource management systems work in spatial-temporal cycles of land use and production. Can forests, trees, and agricultural fields be identified and separated if cultivation is done for a few years only, then forest vegetation returns, then is cleared again for subsequent food crops? Many traditional cultivation systems are multiple use; changing agricultural mosaics contain trees for many purposes: food crops, and pastures – wooded or not – both for short and long term use. Forests can also be a wilderness, where we may see them as “all good things are wild and free” or as threatening, hostile, and wild.

Trees are an integral part of the agricultural landscape in most parts of the world. Roughly estimated, 7% of global land classified as agricultural has more than 50% tree cover, and some lands with tree crops are undoubtedly classified as forests. Almost all of Central American agricultural land has over 10% tree cover, as does most (82%) of southeast Asian, and 81% of South American agricultural lands (Zomer et al. 2009).

Forests can be part of a continuum of complementary and often interchangeable land uses (Schmithüsen 1995). A study on land use developments for 5000 km<sup>2</sup> in the Black Forest in Germany shows that the classified forest area increased between 1780 and 1985 from 32% to 53%, whereas the land area for combined uses decreased from 30% in 1780 to 13% during the second half of the 19th century, and to nil beyond 1902 (Schmidt 1989). In this case, the separation between forests, pastures, and agricultural land has been slow to be complete. There are many other examples in Europe, especially in the Alps and Mediterranean regions, where combined uses continue to exist in spite of the wider trend to reduce them.

#### 11.3.1 Forestry Paradigm Change

The forestry paradigm, a concept of science-based forest management established by Hartig (1795) in the 18th century and adopted subsequently across the world (see Tsouvalis 2000), is slowly changing from sustainable yield towards more comprehensive sustainability, including environmental and social values, at a varying pace in different parts of the world. As early as the 1920s, the first voices in England were heard against the most easily perceptible negative aspects of single species plantations: their unpleasant effect on landscape variety. The monotony of rectangles of dark conifers across the land was considered to detract from the visual aspect of a landscape. In 1928, conifer plantations even led to public protest and indignation in sites with national cultural associations, such as the New Forest and in the Lake District (Nail 2008).

The post-industrial paradigm in forestry is based on the notion that there is public interest in forests. As Mather (2000) points out, this paradigm change occurred initially in relation to natural forests in Australia and New Zealand, as well as in areas such as the United States Pacific Northwest. In the “New World,” it took time to attract opposition to the intensive management of industrial plantations as much as to logging of “old-growth” forests. In parts of Europe, there are signs that similar shifts are occurring in perception of plantations. Views and attitudes to industrial plantations versus natural forests have both “elements of constancy and of change” (see Box 11.1).

The paradigm change involves, and calls for, a wider scope of forests and forestry. Most often, only the needs and demands for forest goods and services are measured and evaluated. However, consideration of attitudes and perceptions is equally important for public support and social acceptance – and most importantly for success of implementation of activities – in the ongoing new challenges about forests. The values, beliefs, or practices of human groups determine the success of forests and forestry, together with good governance, which is also based on culture and worldviews of the community. A prerequisite for positive results in participation and cooperation in decision-making on the use of forests is understanding the perceptions and priorities of all relevant stakeholder groups. Such an understanding would lead to better implementation of sustainable management and more effective conservation measures in forests.

**Box 11.1 Australians' attitudes to forests***Peter Kanowski*

Australia is a wealthy country with unique native forests, predominantly woodlands, covering about 20% of its land area. European colonists began settling Australia in the late 18th century, dispossessing and displacing the original Aboriginal inhabitants. In the process of settlement and economic development, the settlers converted about half of Australia's forests to agriculture and pastoralism. Most of Australia's industrial wood production now derives from the plantation forests, established on a large scale since the 1960s, but occupying only 1% of national forest area. Australia has become one of the world's most urbanised nations, with more than 85% of its population living in coastal cities.

These historical and demographic factors, and a conjunction of cultural, economic, and social factors, have shaped Australians' attitudes to forests. For Aboriginal Australians, forests remain an integral part of "country," inseparable from identity. The forests are imbued with cultural significance and customary knowledge, but are also a necessary and legitimate source of livelihoods so long as these are generated in ways respectful of cultural and environmental values.

Among non-Aboriginal Australians, attitudes to native forests have evolved from those of the settlement era to those of an affluent, predominantly urban society. The dominant attitude of settler society was to see forests largely as an impediment to agricultural development and as a timber resource. This view was epitomised in 1931 by a public inquiry into the fate of the tropical rainforests of northeastern Australia, which concluded that "the productive wealth of the country at present suffers from the fact that there are too many, rather than too few, trees" (Carron 1985). However, alternative discourses existed from the time of settlement, and had gathered sufficient strength by the end of the 19th century to catalyse the reservation of forests from conversion, and their management for conservation and production by professional foresters.

As Australian society became richer and more urbanised during the 20th century, and as increasing areas of native forest were clearfelled for plantation establishment or wood production in the 1960s and 1970s, community attitudes shifted to emphasise the forests' environmental values. Old-growth forests – particularly those in the relatively limited extent of rainforest and wet eucalypt forest types – came to assume a particular, iconic, significance in the minds of many Australians. By the turn of the 21st century, most of these forests had been reserved from wood production or conversion to other land

uses. In many rural communities, the "Landcare" movement that emerged in the 1980s reflected a growing recognition amongst farmers and rural residents that too many environmental values of rural landscapes had been lost in the earlier development-oriented era. The movement called for a practical commitment for the restoration and rehabilitation of key components of these now largely agricultural landscapes.

For most of the 20th century, industrial plantation forests were established almost exclusively on forested land, reflecting the dominant societal view that this was less valuable than agricultural land. Since the 1970s, community attitudes to land use have switched, and public policy has increasingly promoted plantation production. The consequent rapid expansion of plantations on farmland in some parts of Australia generated opposition in many rural communities where residents expressed dissatisfaction with the landscape and perceived social impacts of plantation forests. Instead, a preference for more integrated farm-forestry systems was expressed. While concern about rapid and inappropriate landscape change remains strong, attitudes to the social impacts of plantation forests have moderated as research results inform communities and policy-makers that the economic and social impacts of this land use change have not usually been adverse.

Contemporary Australian attitudes to forests thus have elements of both constancy and change. Aboriginal Australians' attitudes have remained consistent, despite their colonisation and attendant disempowerment; recent legal decisions and policy initiatives returning forest ownership and management authority to Aboriginal people have begun to enable their views. Other Australians are increasingly sharing Aboriginal Australians' respect for native forests, although many urban Australians appear unable to reconcile the joint conservation and utilitarian values of forests that Aboriginal culture recognises. Research suggests that most Australians would welcome more forested rural landscapes in which agriculture and tree growing were more integrated. Landscape-scale transformation, however, is unlikely to emerge until policy measures, such as payments for environmental services, generate adequate funding.

*Key sources: Bonyhady 2000, Campbell 1994, Carron 1985, Cooperative Research Centre for Forestry, Dargavel 1995, Feary 2008, Kanowski and Williams 2009, Montreal Process Implementation Group 2008, Wentworth Group of Concerned Scientists 2009.*



*Universal Attitudes and Perceptions?*

Post-industrial values are often connected with urban values. The human-nature relationship has evolved from the Biblical anthropocentrism to biocentrism of the Romantic era, and further to the post-industrial society, where human life is considered independent from the physical world. Independence, however, does not necessarily mean indifference to nature.

In the developed world – also, for example, in European rural development policies – increasingly, rural inhabitants place greater emphasis on the role of forests in maintaining ecological and social values. Even if rural inhabitants do not use forests for any economic reasons, or simply as an attractive surrounding for leisure activities, forests often have great symbolic value either as a constituent of rural identity or as a representation of nature (Elands et al. 2004). In individual interviews in the 16 case study areas in Europe about how local people regarded the contribution of forests to quality of life, it was striking that the longer the forestry tradition in the area, the more forestry was perceived as positive (Elands et al. 2004).

We can see, therefore, that the attitudes and perceptions of people towards forests depends on the relationship between their society and their environment. The extent to which societies or individuals see themselves as either separate from or part of the wider physical or “natural” environment, determines the society’s attitudes and perceptions to nature. However, even more is needed than seeing just the interconnections in the fast changing environment; as Heyd and Brooks (2008) propose, the inability to understand the dynamic and variable systems of nature will make it more difficult to respond to changes in the environment.

The relationship between people and forests, as well as between rural and urban, is not simple. The key characteristics of many rural areas are disappearing, and the rural areas are becoming more diverse. Some of the traditional lifestyles, for example in southern Africa, imply continuous movement between cash jobs in towns and life in rural “lands.” Especially in the developing world, the present global recession may initiate migration from towns back to rural areas driven by unemployment.

Rural, nature-connected second or leisure homes are increasingly favoured with increased incomes. Rural tourism and global nature tourism are increasing, both in volume and value. Memberships in environmental organisations are growing, as are the numbers of nature and recreation organisations and clubs, whose memberships in many countries are larger than any other civil society organisations except trade unions. Even in the developing countries, national and international nature organisations are increasingly active; education about nature, in

many instances, is part of the training and activities of youth. The middle-class is growing in most parts of the world, resulting in increased leisure time, particularly for city inhabitants, who use the time to visit national parks and nature areas.

Increased communications, extensive spread of information, and the easier movement of people build people’s perceptions. Obviously, as in Box 11.3, public media has an essential role in building the public view and people’s perception on forests, even for people who never visit forests.

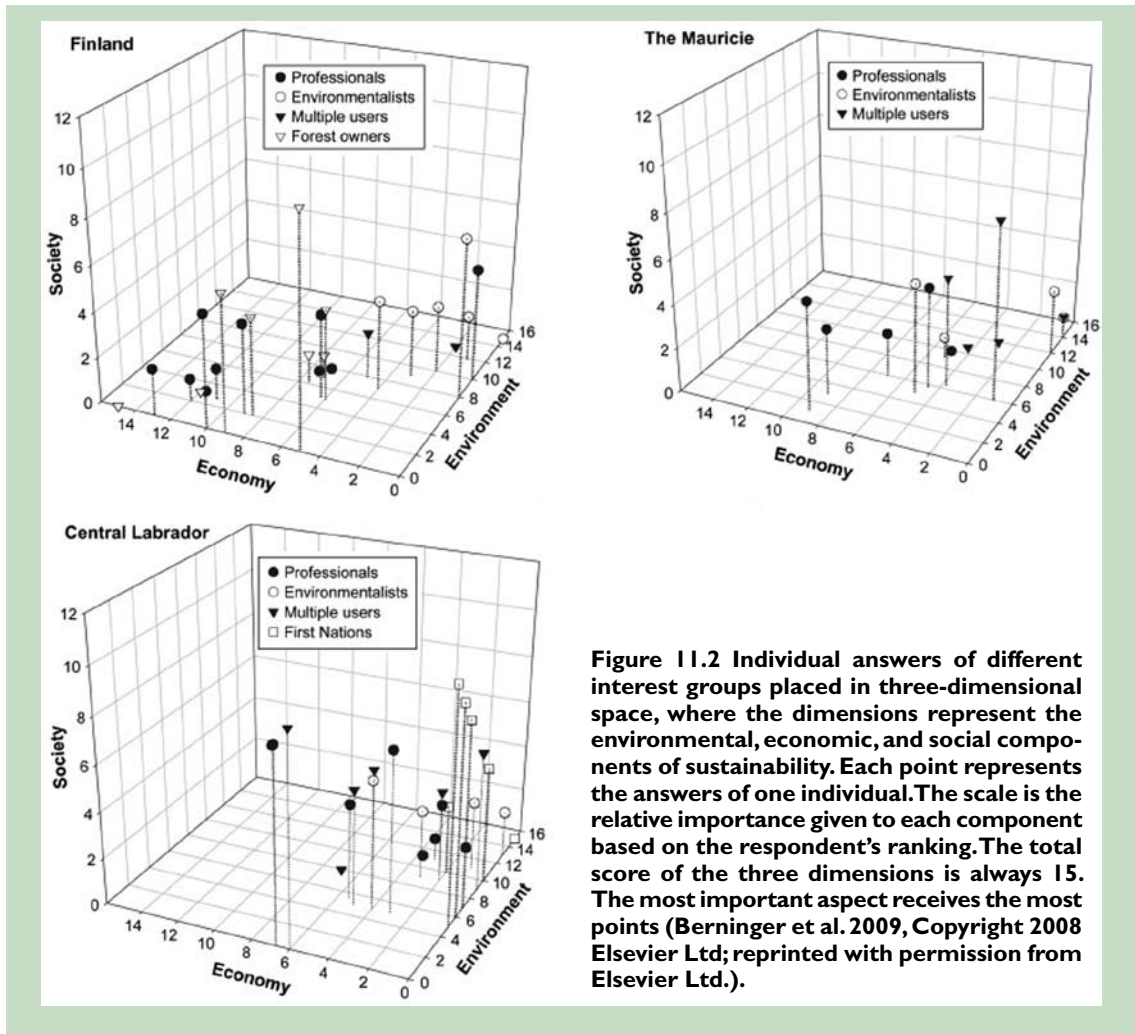
As well, landscape quality and aesthetics are increasingly considered to be essential for human well-being. In many regions, such as in the United States, Canada, and Europe, there is “amenity migration” (i.e., mainly urban people moving to rural and marginal areas outside the daily commuting distance) permanently or intermittently, for aesthetic rather than for economic reasons (e.g., Chipeniuk 2006).

**11.3.2 Diversity of Perceptions**

It has been argued that the key dominant international paradigm in forestry today, that of sustainable forest management (SFM) (see e.g., FAO-GTZ-ITTO 2001), does not lie in technical aspects alone, but in the diverse perceptions of the value of forests by the sectors of the population that determine their fate. There exist different views about what constitutes SFM, depending on the social meaning of forests reflected by the specific realities of different cultures in their prevailing stage of evolution.

Sustainable forest management and weighting the topics of its three-pillar approach to sustainability – environmental, economic, and social – were compared between three different boreal regions by Berninger et al. (2009; see figure 11.2). The study areas compared were the Forest Region of southeastern Finland, the Mauricie region of central Quebec, and the Goose Bay area of central Labrador, all having different histories of forest use. Each area was represented by three to five interest groups, each consisting of 4–10 persons: those actively involved in the use or protection of forests, including environmentalists; forestry professionals; multiple users; forest owners; and, in Canada, members of area First Nations.

The five most important indicators of SFM were listed by each individual and analysed (for weighting, see Berninger et al. 2009). Clear qualitative differences were illustrated by these individual answers: nature was important in all three areas, but most important in central Labrador. In southeastern Finland and the Mauricie, the most important issue within the nature topic was biodiversity, while in Labrador it was wildlife habitat, reflecting the importance of



subsistence hunting in Labrador. People from the Mauricie area were the most concerned about the permanence of forests. Southeastern Finland was the only place where economy and silviculture were ranked high as indicators of SFM.

Interestingly, the biggest differences between the three boreal areas were among the forestry professionals: the professional foresters in southeastern Finland were the most concerned about profitability, and the Quebec professionals about continuous wood supply, whereas professionals from Labrador talked about ecosystem integrity. No significant differences were detected across regions for multiple users or environmentalists. Berninger et al. (2009) conclude that people's views strongly depend on the forestry foundation of the local society: when moving from a region where industrial forestry is of great importance to a region where it is less important, forest values tend to be more environmentally, and also less economically, oriented, and also more uniform among the socio-cultural interest groups. Interestingly enough, it is suggested that people are mainly concerned about changes from the existing conditions, whatever they are.

Even if in Berninger et al. (2009) economy and silviculture ranked high in each group of those interviewed in Finland, between socio-cultural groups, there are clearly identifiable differences within Finland. Several studies have highlighted the perceptions and opinions of the Finnish non-industrial private forest owners, who own 60% of forest land. One of the primary reasons for these studies, so far, has been to secure industrial timber supply. There are about 440 000 private family forest holdings in Finland in which just over 5 million people live.

Even if every sixth Finn owns forest, their opinions differ from those of the public. Concerning forestry practices, forest owners accepted treatments aimed at intensifying wood production, such as clearcutting, forest road construction, and ditching more often than other citizens. However, the clearcutting method was severely criticised: 76% of the citizens and 56% of forest owners did not approve of this type of harvesting. Forest restoration to a more natural state was more acceptable for non-owners than for forest owners (Valkeapää and Karppinen 2010).

As shown in Box 11.2, about half of the forest owners supported economic utilisation of forests, while only one-third of the non-owners shared this attitude. This implies that every second forest owner would be ready to increase utilisation of forests at the expense of forest conservation, but only one in three among non-owners. However, biodiversity protection was the most important goal also for forest owners. Non-owners were more environmentally oriented than forest owners, as may have been expected.

In two regions in Spain – Cantabria, with a long forestry tradition and Valencia, where the Mediterranean forests have been degraded mainly due to frequent fires – the perceptions of residents about their forests were along the same lines in both regions, but for rather different reasons (see Box 11.3). About 40% in Cantabria and 60% in Valencia considered their forests to be in poor or very poor condition. In Cantabria, the main reason for the poor rating was exotic plantations. Yet, surprisingly, more than one in five persons (22%) never visit the forest in Cantabria, and only more than one in ten (13%) in Valencia. Also, in both regions, the attitudes on the importance of forest functions were highly rated, although environmental benefits had different connotations between these two regions. In both regions, the potential benefits gained from their regional forests were clear for the residents.

In Valencia, the benefits were strongly influenced by public media. Also the “Euro-barometer” on environmental attitudes shows that people get most of their information from the mass media (European Commission 2008). All information, including scientific information, however, is interpreted and mediated through cultures and worldviews of individuals and communities (Liverman 2009).

### **11.3.3 Will Climate Change Alter the Public’s Attitudes to Forests?**

A follower of the narrative of climate change might argue that in the history of climate change, public perceptions have followed a striking ebb-and-flow dynamic: peaks of attention – specifically at heights of international negotiations – and lapses back to indifference. It has not been facts, evidence, and argument, for the public, since much of the debate has been between scientists, politicians, and powerful interest groups. For the public in the western world, perceptions have been based largely on images of melting glaciers and polar bears. The developing world has more concrete experience with El Niño events, erratic rains, and other extreme weather conditions.

A study of climate change perceptions of North Americans (Leiserowitz 2006) concluded that the

American public had moderate risk perceptions of climate change that appear to be driven primarily by the perception of danger to geographically distant people, places, and non-human nature. “Global” climate change is unlikely to become a national high-priority issue until Americans consider themselves personally at risk” (Leiserowitz 2006). This applies to other nations as well, where the public may not be able to see the influences of climate change on their own lives (see Chipeniuk 1998). As in social acceptance of new bioenergy, the acceptance depends on how the accompanying technology is perceived by society and how societies and individuals stand to benefit from it by job creation, contribution to regional economy, and income improvement. Concepts like “biodiversity,” “ecosystem,” or “climate change” may have little reality in the minds of the university-educated, much less in the minds of others. As Chipeniuk points out, people with no practical understanding of nature have reduced ability to read relative biodiversity in local landscapes. Without profound understanding, it would be difficult to see the climate change effects, beyond the experienced annual variations.

A telephone survey conducted in 2009, including a total of 11 106 citizens across 27 European Union (EU) Member States found that, “conservation and protection” was overwhelmingly more important than “climate change” as a topic in their national forests (European Commission 2009). “Conservation and protection” was mentioned first by nearly half of all respondents (49%). This response was followed by other protection-related topics: environmental issues, forest health, and pollution were mentioned by one in seven. Only just over one in ten named climate change as a first choice as a topic of importance about forests in their country. In relation to more direct personal implications on the use of forests in the respondent’s country, the protection of people from natural disasters and the detrimental effects of climate change was clearly ranked as very important by 57% of EU citizens. In total, over three-quarters of EU citizens ranked this protective function of forests against disasters and climate change as important to very important. Also, 74% of all the respondents suggested that forests should be more or much more actively managed to protect people from these disasters. As a matter of fact, more EU citizens called for more active management to protect people from disasters and climate change, rather than for management to provide wood (European Commission 2009). Yet, again the concept of “management” may have diverse meanings to different social groups and individuals (see Boxes 11.3 and 11.5).

Most of the decisions for mitigation and adaptation activities are based on some expert’s recommendations. This expert knowledge does not formulate the layperson’s perceptions. Individual perceptions

Box 11.2 Do attitudes about forests differ between ordinary citizens and forest owners?

Heimo Karppinen and Annukka Valkeapää

The differences in attitudes about forests between ordinary Finnish citizens and non-industrial private forest owners towards forest conservation and the economic utilisation of forests were compared by Karppinen and Hänninen (2000) using personal interview data and multivariate methods. Four attitude groups were identified (Figure 11.3). There were non-forest owning citizens who supported either increased forest utilisation or increased forest conservation, and rejected the alternative. Multifunctionalists supported both increased conservation and economic utilisation of forests. This kind of attitude seems to be in line with the international environmental agreements emphasising multiple-use of forests and the common assessment of the abundance of forest resources in Finland. Finally, there were citizens who opposed both. Such indifferent citizens obviously accept the present situation or are disinterested in the issue.

Forest owners’ attitudes towards forestry differed from those of other Finns. About half of the forest owners belonged to the supporters of economic utilisation of forests, while only one in three of the non-owners shared this attitude. One-fifth of the forest owners supported conservation at the expense of wood production, whereas conservation supporters amounted to one-fourth of the non-owners.

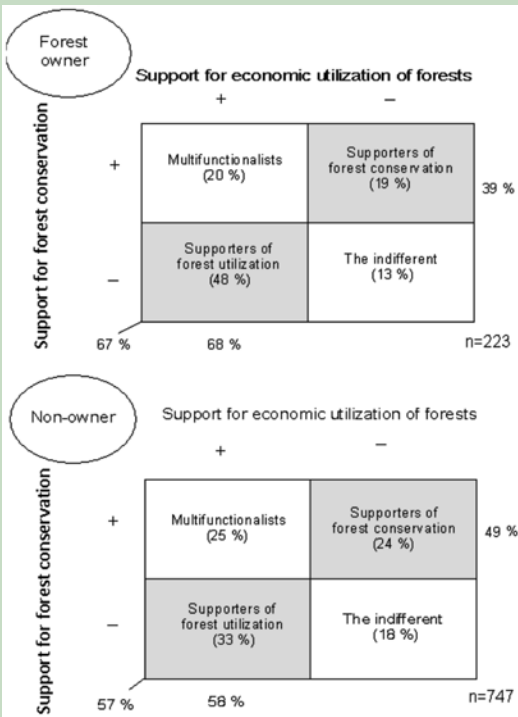


Figure 11.3 Forest attitudes of forest owners and other citizens. (+ positive, – negative)

Valkeapää et al. (2009) inquired into Finnish citizens’ opinions on the importance of various forest policy goals and their acceptance of dif-

Table 11.1 Importance of forest policy goals for forest owners and other citizens. Group means and p-values for Mann-Whitney’s non-parametric test for two independent samples. (scale: 5 –very important, 1 – not at all important).

Forest policy goal	Importance for forest owners	Importance for other owners	P-value for Mann-Whitney test
Protecting biodiversity	4.3	4.5	0.000
Support for rural livelihood	4.2	4.0	0.000
Scenic values	4.0	4.1	0.058
Support for employment	3.9	3.8	0.289
Profitability of forestry	3.9	3.3	0.000
Increasing use of wood energy	3.7	3.2	0.000
Preconditions for recreation	3.5	3.8	0.000
Forest owners’ income	3.4	2.3	0.000
Conservation of forests in northern Finland	3.3	3.6	0.000
Preconditions for forest industry	3.3	3.0	0.000
Increasing wood production	3.3	2.9	0.000
Conservation of forests in southern Finland	3.1	3.6	0.000
Cultural aspects of forests	3.1	3.2	0.185
Preconditions for tourism	2.8	2.9	0.144
Revenue for state	2.2	2.2	0.959



ferent forestry practices. Based on the same data, forest owners' opinions were compared with those of other citizens (Table 11.1). The most important forest policy goals for both groups were protecting biodiversity, support for rural livelihoods, scenic values, and support for employment. Non-owners emphasised forest conservation and recreational values, while forest owners underlined the profitability of forestry and the increased use of wood energy.

American studies have not reported significant differences between the attitudes of forest owners and other citizens (Bliss et al. 1994, 1997; Bourke and Luloff 1994). Nonetheless, Bliss et al. (1997)

found differences in attitudes among forest owners. Differences were detected between timber sellers who used professional forestry assistance, and non-sellers. According to Karppinen and Hänninen (2000), the different results for Finland and the USA could be explained by the relatively high frequency of timber sales and the intensity of contacts to forestry extension organisations among Finnish forest owners. It is obvious that the majority of the Finnish forest owners resemble American timber sellers. However, the primary reason for this disparity of attitudes is diverse landowner objectives. Finnish owners are clearly more often timber production oriented than their American counterparts.

on forests are based on very personal concerns, on the individual's cultural, psychological, and social values. Hence, to simply adapt to and act in objective conditions of the natural environment is difficult for people who may not see the impacts of climate change to their own lives. At the pragmatic day-to-day level, as well as on the political arena, climate change policy will not receive the support needed for implementation unless cultures, perceptions, and values are taken into account.

## 11.4 Conflicts Over Natural Resources and Forests

Even without an open conflict, contradicting perceptions and attitudes, and consequent mistrust and antagonism, often cause inefficient management, aggravate the existing imbalance between the actors, and increase friction. Resource conflict is more prevalent these days, and this is not merely an illusion generated by more research. Disagreements over natural resources such as forests, land, and water are common (Buckles 1999, FAO 2000) as the parties involved perceive a threat to their needs, interests, or concerns. These conflicts, whether minor clashes or open war, however, may serve a positive function as a driver of social change.

### 11.4.1 Underlying Causes and Actors

Various drivers, which are dynamic and may shift over time, contribute to the emergence and prolongation of resource conflict. Some are highly specific to certain contexts, but others are common across geographical and cultural settings. One school of thought views scarcity as a main driver for conflict.

More people compete for fewer resources, making it harder for some groups to sustain their livelihoods and well-being (Homer-Dixon 1999). However, Peluso and Watts (2001) reject a simplistic linear relationship between scarcity and conflict. They argue that there is much more than scarcity that explains conflict situation. Natural resources are arenas upon which stakeholders attach value, contest claims, and struggle for legitimacy. Conflict can be understood by looking at the interplay between local and extra-local factors. Conflict is embedded in the historical context and wider processes that take place at higher levels. Thus, conflict cannot be reduced to scarcity alone; it must be understood within the web of social, historical, and political contexts and the interrelationships among them. A recent global review based on conflict cases from Africa, Asia, Europe, and Latin America highlights that conflict over natural resources is rarely about a single issue. Various drivers work at the same time; as conflict develops some issues shift, new ones arise, and others become no longer relevant (Adams et al. 2003).

Conversely, the resource curse, or greed-driven conflict theory, argues that conflict is derived from resource abundance. Resources such as forests, oil, and diamonds motivate and often finance conflict in resource-rich countries in Asia, Africa, and Latin America (de Koning et al. 2008).

Mainstream conflict theories divide actors based on the nature of the parties and the levels of social structure that they represent (Mack and Snyder 1957). Conflict includes interpersonal and intergroup antagonisms. Meanwhile, LeVine (1961) defines conflict by types of parties, according to the levels of social structure, such as: intrafamily, intracommunity, intercommunity, and intercultural. Galtung (1965) argues that one needs only distinguish two types of actors: individuals and collective entities. Actors can be defined in different ways. In the context of resource conflict, we can consider actors,

### Box 11.3 Comparing citizens' perceptions of forests in the Spanish regions of Valencia and Cantabria

*Miguel Fabra-Crespo*

A survey was carried out by personal interviews in Valencia in 2002, and in Cantabria in 2004 to 1111 citizens in each region. The interviews were developed in the frame of the Regional Forest Programs in both regions by the initiative of the government forest department.

More than half of the people in both regions had visited a forest less than five times or never during the post year ("never" in Cantabria 22%, and 13% in Valencia). One-quarter (25%) of those interviewed in both regions had visited their local forest more than 20 times in the post year.

As perceived by the residents, the condition of the forests was considered poor in Valencia (60% bad and very bad) more often than in Cantabria (40% bad and very bad). The reason for the poor state of forests in Valencia was given as the accumulation of biomass in bushes and undergrowth, which was seen as a dangerous fuel for forest fires that are typical in the Mediterranean forests. This deterioration has occurred mainly during the last two decades due to the drop in profitability of sheep and goat husbandry. Cattle have previously controlled the excess vegetation in forests.

In Cantabria, the poor state of the forests was seen to be due to the increase of exotic species planted in the region (*Eucalyptus* mainly) for use in the paper industry in the neighbouring regions. These exotic plantations carry a bad reputation because of their ecological consequences, such as

acidification of the soil and decreasing biodiversity. Also, paper mills in the region had a bad image because of their high chemical pollution.

There were noticeable differences in the news sources on the topic of information on forests. In Valencia, the main source of information was "from TV in Valencia region," as there are two regional TV channels. In Cantabria, the first source of news was the press. Apparently, the attitude and perceptions of forests are built and based on information coming from the media, not necessarily from personal experience from visiting the forest. In Valencia region, most news in 2002 was related to forest fires, because it is an important issue mainly during summers. In Cantabria, the news was spread among more issues such as rural development and substitution of old oak forest by *Eucalyptus*.

Concerning the most important function of forests (Figure 11.5), 93% of Valencia's citizens and 96% of Cantabria's citizens replied that the environmental function (forest as a protector of the flora, fauna, water, and soil) is clearly the most important and valued function; the other two, economic (income and employment) and social (recreation and landscape) functions were considered less important.

However, between the two regions, there was a clear difference in the meaning of the term "environmental." For Valencia people, it means to protect the soil from erosion and to recharge the aquifers. In Cantabria, "environmental" rather referred to the maintenance of the natural forest as against the



**Figure 11.4** Valencia and Cantabria in Spain are two extremely different regions: Cantabria is far more forested, with forest cover of 40% and 0.40 ha of forest per capita, and with a long tradition in wood processing. Valencia is more urban with only 0.15 ha of forests per capita. In Valencia, 66% of forests are private, while in Cantabria, 28% of forests are private. The basis for perceptions and attitudes about forests were different when these two areas were compared. (Map developed by Miquel Fabra-Crespo).

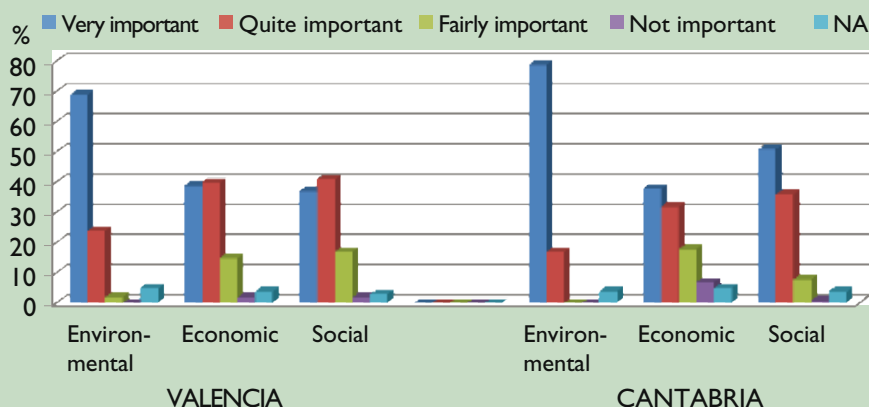


Figure 11.5 Perception of importance of the forest functions in Valencia and Cantabria.

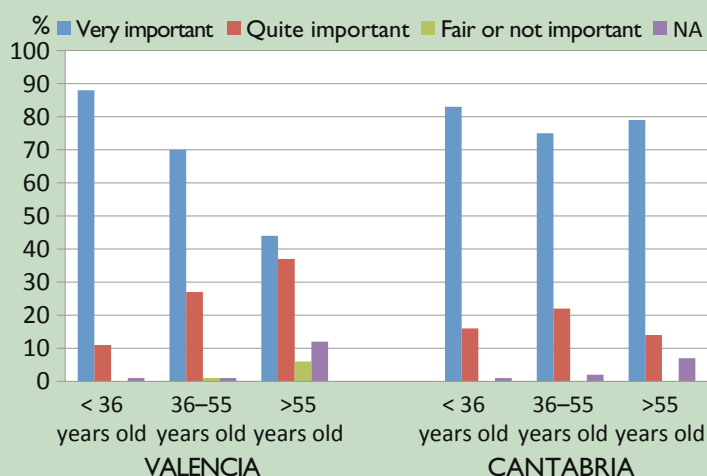


Figure 11.6 Perception of importance of the environmental function by age.

plantations of exotic species like *Eucalyptus*.

It was somehow unexpected that in Cantabria the economic function was not considered to be more important because the timber sales are an important source of income for Cantabrian private forest owners, as well as the pasturage.

It was also unexpected that the social function (recreation and landscape) was considered more important in Cantabria as compared with Valencia. Valencia, with a high potential of outdoor recreation in forests, is characterised by the big tourism sector, the forest serving as an alternative to the sun and beach tourism. Also, there were remarkable differences in preferences by gender: women preferred beach (against forest) more than men did, which could be partly explained by the strong tradition of men going to hunt in forests.

The views by age of the respondents concerning the importance of the environmental function (Figure 11.6) were rather uneven in Valencia; clearly those older than 55 years gave much less importance to the environment in Valencia than those in the Cantabria region. Maybe in Cantabria most people in all ages still have close mental contact with rural forests, and therefore their views were more homogeneous. Yet, even if the urban young people may have less direct contact with the forest, they have access to much more information. Also, the visits of young people to forests are increasing, not just because of the forest itself but as risk and adventure sports are practised in forest scenery.

Key sources: *Conselleria de Medio Ambiente 2002, Consejería de Medio Rural y Ganadería 2004.*

for example, based on the scope of conflict: local, national, and international conflict. Local conflict may involve individuals within certain clans or villages, households, local governments, and other actors that operate at local levels, such as logging or mining companies (FAO 2000). Wider scale conflict, e.g., national or international conflict, may involve actors such as national agencies, national governments, multi-national companies, non-governmental organisations, and international organisations. Conflict in relation to trans-boundary resource management may involve actors at several levels from two or more countries.

### **11.4.2 Escalation and Impacts of Conflict**

Conflict can range from a small disagreement to violence and war. It is commonplace that conflict will intensify if not timely addressed (Glasl 1999). Intense conflicts do not materialise out of thin air, they develop gradually. The process of conflict escalation in the context of natural resource management is complex (Yasmi et al. 2006). Various paths of escalation exist due to the peculiarities of resource management, e.g., multiple actors, multiple drivers, and a diversity of contexts, be they political, cultural, or demographic.

Many resource conflicts are of low intensity. Disputes may be over access to certain resources that involve several households or individuals. In such conflicts, actors may challenge each other's legitimacy as users. Other low level conflicts may manifest themselves in terms of feelings of unhappiness, grievance and anger due to unfair decisions, etc. Sometimes, conflicts can spur open debate or verbal clash among various actors, which sometimes are soon settled.

Some conflicts can escalate to violence. A global analysis by Peluso and Watt (2001) provides examples of violent conflicts in various parts of the world. In the same vein, de Jong et al. (2007) demonstrate violent conflict in forested areas throughout the tropics. They indicated that at least half of the global conflicts in the 20th century were in forested areas. In the 20th century, three-quarters of Asia's forests were affected by violent conflict (Kaimowitz 2004 – 2005).

Natural resource conflicts have multiple socio-cultural, economic, and environmental impacts that are highly dependent on the escalation levels of conflict. The higher the escalation, the more difficult the conflict is to manage and thus the more likely it is that the impact will be destructive. In low intensity conflicts, negative impacts may include low trust among actors, unhealthy relationships, grievances,

hostility, and social exclusion. In higher intensity conflicts, such as violence and war, the consequence can be quite serious, such as injuries, displacement, political instability, loss of life, and resource degradation. According to Renner (2004–2005), more than five million people were involved in resource related conflicts in the 1990s, about six million fled to neighbouring countries, and around fifteen million were displaced within their own countries. Armed conflicts harm forest dwellers the most and often have negative repercussions on forest conservation efforts. In such situations, poverty reduction efforts are also likely to fail.

### **11.4.3 Future Conflict Over Natural Resources and Forests**

There is no doubt that conflict will continue to exist in resource management due to the multitude of issues involved and socio-cultural and economic complexities embedded in resource management. Old issues, such as competing interests, unclear property rights, weak governance, and law enforcement in various countries will still be major conflict issues in the future. Despite progress in some countries in improving legal frameworks for resource management, some countries still lag behind. Structural issues, such as corruption, remain unresolved, leaving room for future conflict.

Tenure reforms in various parts of the world have led to better resource management and more forest areas being managed by local people (see section on tenure in 23.4). However, recent studies show that conflict is among the major issues in tenure reforms (Nguyen et al. 2008). Moreover, devolved forest management throughout the Asia-Pacific region has tended to bestow weak, ambiguous, and short-term rights. Many communities have been given fewer rights than responsibilities to manage forest resources. In many cases, their rights cannot be fully exercised because they are constrained by regulations, high taxes, and levies that reduce the potential benefits to communities – sometimes leading to conflict.

Recent initiatives on climate change mitigation and adaptation, and other types of Payments for Environmental Services (PES) schemes, introduce a new discourse that invites debate and possibly conflict. For example, their success will likely be controversial for a number of reasons. Some stakeholders may perceive incentives for participating in these schemes. They may reclaim their rights to land in order to secure benefits even when land tenure and property rights are not clear, as is the case in many developing countries.



**Box 11.4 Potential future areas of conflict***Yurdi Yasmi and Thomas Enters*

- ◆ *Land grabbing* – Large amounts of land will be needed for bio-fuel and plantation (e.g., oil palm, rubber, soya bean, coffee). International investors will seek more land in Asia, Africa, and Latin America for large-scale land acquisitions.
- ◆ *Climate change mitigation and adaptation schemes* – The implementation of these new schemes will likely be controversial for a number of reasons, e.g., unclear property rights, unclear benefit sharing mechanisms, and lack of acknowledgement of indigenous rights.
- ◆ *Conflict over land allocation or re-distribution* – In many countries, lands are being reallocated to local people for certain periods of time; some permanently, such as in Latin America. Most of the allocated lands are poor or degraded, making it hard for local people to benefit, increasing tensions between local people and governments as well as among local people. Local elites and their families may dominate access to lands, creating local inequalities.
- ◆ *Increased energy and food prices put more pressure on forests* – Major economies are in recession. Many people have lost their jobs in recent years. People are expected to go back to rural areas.
- ◆ *Conflict over value* – In the developed world, conflict often revolves around such values as how to define eco-tourism areas, where to locate landfills, how public consultation is conducted, aid policies, etc. Society in the North also often has different values for resource management (e.g., land and forests) than in the South; some impose such values for certain choices of forest management in the South.

At the same time, Reduced Emissions from Deforestation and Forest Degradation (REDD) schemes, for example, are likely to be coordinated through national governments. This may be controversial as central governments in many countries have extremely bad track records. Also, in many cases, the formal laws do not acknowledge indigenous peoples' rights. Most lands are officially state owned, which makes it hard for local people to make any formal claims to the lands that they have traditionally used. While local people may be the most likely to serve as stewards of nature, unless the issues of property rights and tenure are adequately addressed, they may play insignificant roles in REDD implementation, nor will they be able to share in the benefits from REDD.

#### **11.4.4. Collaboration and Managing Conflicts for Positive Change**

Forestry issues are increasingly cutting through and across many sectors, and many actors have an interest in forests and forested land. Cooperation and collaboration cannot work without trust, and conflicts relate to mistrust and different perceptions. What is needed is consensus-building and building of trust.

Sometimes, conflict management capacity can be improved through experience and learning. Conflict intervention can be seen as promoting a “learning culture” within which actors continuously improve their capacities and instrumental skills (Beitler 2005, Plowman 2005; see also Box 11.5). Social learning

is also a process that in many cases can help to avoid conflict by leading to mutually acceptable solutions to emerging management problems. Collaborative identification of problems and solutions, attention to equity, systematic monitoring of the experiment, stronger links between all the parties involved, communities and government and other stakeholders, all these skills and capacities represent components towards more effective governance.

Despite the many negative associations, conflict is increasingly viewed as an agent for positive change. Conflict management, however, requires a deep understanding of the underlying causes, the actors involved and their values and perceptions, and the scope and escalation of conflict. Underlying causes may well be different for different actors; rarely is it question of one issue only.

Conflict does not necessarily need to be avoided and suppressed at all cost. It may trigger new ideas that can improve or replace outdated patterns. It can also provide opportunities to discuss issues that would have been otherwise left unattended. The notion of positive conflict has increasingly influenced conflict management intervention in recent decades (Ayling and Kelly 1997, Susskind et al. 2000, Engle and Korf 2005). Conflict may bring people together around common concerns, and spark enthusiasm for collaborative action. For an example, in studies on Adaptive Collaborative Management (ACM; Colfer 2005), the existence of problems of the participants became clearer and the motivation to solve these problems strengthened under conditions of extreme conflict. Yet in litigant societies, further action may be blocked and result in a stalemate.

**Box 11.5 Attitudes to forestry and conservation in Indonesia***Jakob Mainusch*

In recent years, it is increasingly accepted that nature cannot be conserved in isolation from society, rather, that it requires the support of local people (Walpole and Goodwin 2001). There has been increasing attention to quantifying the economic benefits that local communities get from forests. Salafsky and Wollenberg (2000) show that communities whose livelihood activities are directly linked to ecological services have the highest financial incentive to conserve forests.

Studies in Indonesia have investigated attitudes to conservation among people living in the vicinity of protected areas (PAs). Lee et al. (2009) found that local people's positive attitudes to conservation were positively related to the degree to which they participated in the establishment and management of the PAs. Furthermore, it has become clear that attitudes are site- and group-specific: attitudes to conservation may differ strongly from one village to the next, and different groups within each community may also have starkly different attitudes (Lee et al. 2009). Walpole and Goodwin (2001) found that in communities around Komodo National Park, Indonesia, it was mostly the local elites and migrants who profited from and interacted with tourists visiting the park. Less endowed groups' livelihoods were linked to the forest more directly, in such activities as collecting non timber forest products and construction materials. Conservation

efforts that promote nature tourism may thus also prevent some groups from using the forest as they have traditionally done, and establishment of PAs often results in conflicts over land. Such land conflicts are, in turn, a major cause of negative attitudes toward conservation among some groups in local communities. It is crucial to identify the different interest groups in local communities, especially those whose livelihoods depend on natural resources, as their dependency can take a different form and attitudes to conservation may vary accordingly.

Lowenhaupt Tsing (2004), drawing on examples from the Indonesian forests, uses *friction* to describe the interaction of local, national, regional, and global actors in Indonesia's forests. A multitude of individuals and groups convene in a single place, and all bring with them not only different attitudes and values, but also discrete understandings of the meanings of words such as "conservation" and "nature" (see Rigg 2003 for a discussion of the importance of semantics in this context). It would be productive to understand conflict not as something that happens on local, national, or global scales, but rather as something that manifests itself locally as a result of the friction that exists between the values and attitudes of actors who operate on different scales. Only such a holistic understanding will allow for the development of management systems that take the needs of local, national, and global stakeholders into consideration.

While there are a plenty of challenges involved in conflict management, success stories continue to emerge (Thomas 1999, Pomeroy et al. 2001, Jamal and Eyre 2003). What is important to underscore is that conflict management should be devised based on the needs of conflicting parties, not on the needs of outsiders. Therefore, conflict management will likely be successful if it is rooted in local practices. Difficulties in conflict management arise with outside powers and their veto rights. Conflict management skills – institutionalised or not – sometimes already exist within society and only need to be fostered through actor empowerment processes (FAO 2000, Engel and Korf 2005, Marfo 2006).

## 11.5. Managing Forests in a Changing Social Landscape

By the next generation, both the ecological and social systems will co-evolve at a speed not experienced before in history. The challenge is to maintain the balance between these systems and simultaneously secure the ecological resilience and avoid social disruption and insecurity. Both systems are essential in building up human well-being.

The use, users, and accessibility of forests will be increasingly diversified. Timber supply will be diversified as well, with planted forests dominating, but also with increased supply from small-scale private and community suppliers. The market system, including pricing and legislation, needs to be adjusted to these changes. The diversified forests and forest functions call for diverse management systems, as well.

The vast majority of people on the globe will live in urban environment during the very next generation. The urban dwellers in the developing world alone will be well over half of the world's people in 2050 (UN 2008). Inequalities in access to services, housing, health care, and employment will have socio-economic, environmental, and political repercussions, including rising violence, underemployment, and ecological degradation. Social, economic, and environmental vulnerability is equally an urban and rural problem, with high probability of conflict and social unrest in urban areas. All efforts must continue to alleviate poverty in the rural areas, but at the same time social resilience must be maintained with the bursting numbers of urban youth. The share of young people will remain extremely high in urban centres, especially in the developing world, where the youth unemployment rates are, on average, more than double of that of adults (ILO 2008).

The consideration of urban needs requires urgent attention. Beyond decent jobs, income, and food, urban populations demand adequate and clean water, and affordable energy – with woodfuel continuing to dominate in many parts of the world. In addition, fighting pollution and noise, and providing amenity services both within the urban settlement and the urban fringe are needed. Today, urban forestry can be seen influencing forest management even beyond forest in urban landscapes (see Chapter 13 Extra-sectoral drivers of forest change, section 13.2.3 Urbanisation).

With concentration of people and specialisation of activities, the spatial structures emphasise the complexity of the nested environmental, economic, and social realities. The urban-centred consumption and production activities are essential drivers in the long-term ecosystem changes. The urban values and perceptions on the environment and forests will increasingly emphasise different benefits than those important for rural people. Ecological and social integrity must be managed in view of long-term viability of human well-being and equitable growth. Sustainable management of resources, well-operating markets, smooth production chains, and efficient and transparent structures and institutions are needed to make the urban demand and rural supply meet, and for equitable benefit sharing. This can be secured only with sectoral collaboration and more careful land use planning – and at a larger scale.

Positive views and perceptions of forests are needed for effective collaborative planning and for success in implementation. This is the task for all stakeholders and is, basically, good governance. Communication is crucial. Foresters and forest institutions must take an active role in building positive views and in opening realistic potential opportunities for societies, both urban and rural, to answer their needs and expectations. Social acceptance of forestry

can be regained where lost with past performance in forestry activities, be it debatable logging, poor management of monocultures, closed factories, or unequal sharing of benefits.

New messages are needed also with the expansion of intensive plantations. With intensive plantations, much of today's positive perceptions of nature, ecological diversity, and some of the social functions and myths of forests, may be lost. "Natural" may lose some of its palatability for people, by necessity. Positive views of forests and forestry often demand perceived short-term concrete benefits. In the face of global scale challenges, like climate change, building awareness and positive views of forestry is more difficult because the impacts may not be personally experienced, or at least not recognisably so. As to forests, a further challenge is to justify actions between the urgent needs of the current day and those of the future.

The ongoing societal changes – and changing views of the environment and forests – involve changes in power and decision-making. Diverse interests will continue to contribute to institutional conflicts over forest use, and more and more over land use in general. Efficient institutional structures are urgently needed for guiding resource management. These new structures must be flexible and socially innovative because many of the ecosystem services are difficult for private agencies to own or trade – and difficult for public agencies to manage or regulate.

The challenge is to bring forests into the scene of the changing social landscape in an ever wider scale of activities and global policies. Simply providing more detailed and accurate information, while important, is not sufficient to highlight the opportunities. Neither will just more information generate appropriate public concern for some risks or to allay public fears about others. There is a fundamental and broadly based human cultural inability to fully comprehend or act on certain risks associated with environmental variability and change, even when information on these risks is widely available. Human information processing works through two parallel and interacting modes of information processing: a rational system and an emotionally driven experiential system. This applies to individuals as well to societies.

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