

Forests Thematic Working Group Report

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8.1. Introduction and background

8.1.1 International context

About half of the earth's surface was covered by forests 8,000 years ago, but since the introduction of agriculture, the rate of deforestation has been estimated to be 0.25 mill ha/year (Ball, 2001). Gains and losses are unevenly distributed. Between 1990 and 2000 the world lost 16.1 mill ha per year of its natural forests, mainly in the tropical areas, and gained 3.6 mill ha per year for natural expansion of forests, mostly in non-tropical countries, as well as 3.1 mill ha per year of forest plantations, accounting for a global net loss of 12.5 mill ha per year. In the tropics, over 7 % of the forests, that is 142 million ha, were turned into "other land uses", while in non-tropical areas 1% of other, non-forested land use classes were (re)converted to forestry (FAO, 2001). Europe (including the Russian Federation) has 2,260 million ha of total area, of which 1,007 million ha of natural forest and 32 million ha of plantations (FAO, 2001). About 5% of the total area are located in one of the four categories of protected areas defined by IUCN (McNeely & Miller, 1984). While deforestation is the major problem in the tropics, conflicts in Europe are mostly due to changing demands concerning forests and forestry.

8.1.2 A historical perspective on forest management in Europe

In Europe, forests and forestry have been a battlefield for a variety of interests for a long time. Until the late eighteenth century, timber was a basic requirement of human existence across Europe. In mediaeval times, for instance, woodlands were a source of timber, valuable for raising cattle and swine and places where the nobility enjoyed hunting. Forests also played a key role in the development, maintenance and projection of economic and military strength and were powerful cultural icons which symbolised status in society (Schama, 1996). All this resulted in conflicts between the competing priorities within society for different forms of land use, and the quantity and types of goods and services derived from forests. It also resulted in those who wielded power taking steps to secure their interest in and access to the forest resource.

In the eighteenth century especially, the demands placed on forests in Europe escalated due to population growth. Conflicts around land use change, mainly the expansion of pastureland for sheep farming, were particularly acute. Although achieved to a large extent at the cost of tillage land, the usurpation of the commons also played a part in this agricultural revolution and resulting peasant displacement and social unrest (Lipson, 1949). Concerns about wood shortage (Perlin, 1989) triggered systematic forest management in Europe to increase productivity, control the rate and type of exploitation, and conserve the area of forest. Permanent forest administrations were set up, usually based on quasi-military lines and staffed by the first professional foresters. Forest science began to regulate and improve the techniques accumulated by practical experience (Matthews, 1989). This approach was adopted across a large swathe of Europe, particularly in landlocked countries that did not have access to the sea and hence could not readily import wood from other parts of the world. This advent of silviculture and the intensification of management gave rise to a whole new raft of potential conflicts, some of which did not fully materialise until much later in the twentieth and twenty-first centuries.

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The industrial revolution reduced the status of wood as a locally worked and utilized product. Coal and other materials were substituted. Nevertheless, wood remained important as an increasingly significant feedstock for industry. The practice of silviculture was also modified to take the radical demographic and social changes into account. Intensification of management and the establishment of plantations often comprising of non-local trees took place in the nineteenth and twentieth centuries. Natural and manmade ecosystems were largely perceived as a source of products having a direct market value only, while indirect market values, non-market values, ethic and aesthetic values were either not recognized or at least, not quantified. This new position of man above and in control of nature rather than as a constituent part of the natural world was to give rise to the biggest battles involving forests in the modern era of forestry.

8.1.3. Intensification of forestry practice and changes in the multifunctional role of forests

A number of conflicts may be related to the intensity of forestry practice. These include:

Overall changes in forest management:

- Changes in ownership structure e.g. concentration of ownership, commercialisation of state forests
- Changes in systems for transportation of wood to industry, e.g. to road transport
- Changing of planning strategy, e.g. regional focussing of timber harvesting
- Abandonment of “people living and working near forest”
- Suppression of natural forest fires in naturally fire prone forest types

Changes in silvicultural systems:

- Changes in harvesting, e.g. introducing clear cutting and/or areas cut
- Shortening of crop rotation times
- Introduction of exotic species and plantation forestry
- Installation and/or alteration of drainage systems
- Use of fertilizers, pesticides and herbicides

New technologies:

- New machinery for timber harvesting and e.g. treatment of regeneration areas (e.g. soil scarification)
- New types of forest roads

Changes in the above categories are often connected. Some of these practices have and continue to evolve in response to existing social and economic conditions. The increased recreational needs have led to demands on forests other than wood production. As a result, new groups of stakeholders including municipalities, a number of (local) NGOs, the media and individuals have become involved in decisions on forest management.

Biodiversity conservation in forests leads to new conflicts of interest. In most cases, species to be protected are the undergrowth plant and animal species, since they are much more sensitive to habitat fragmentation than the wind-pollinated trees. Here, the spatial scale may be larger than a single forest stand. Although mosaic landscapes will normally support a higher number of species and habitats than vast, continuous forest extensions, the degree to which habitat fragmentation has occurred, the size of the remaining habitat patches, the configuration and distribution of connecting elements, either corridors or stepping stones, and ideally, their capacity to support metapopulations over a prolonged time frame needs to be assessed. The identification of source and sink areas is one additional parameter to consider for the resolution of conflicts on biodiversity conservation. Habitat management can be used to enhance species richness, but decisions have to be taken "a priori" as to which taxonomic groups, guilds or communities will be addressed.

8.1.4. Conflicts between forest biodiversity conservation and other land uses

Policies pursued at local, regional or national scales may favour economic development and urbanization, agriculture, or grazing that may clash with forest biodiversity conservation. In addition, changing land ownership patterns and economy, such as those taking place in the eastern parts of Europe, may lead to conflicts with forest conservation. A range of policies may also indirectly result in land use changes. For instance, depopulation of rural areas leads to abandonment of land, including forested land. This may lead to both positive and negative outcomes for biodiversity. One negative outcome is an increased risk of forest fires. In southern Europe (Spain, France, Greece, Italy, Portugal), the area burnt increased exponentially between 1970 and 2000 (Goldamer, 2001) with an average of almost 480,000 hectares annually destroyed by fire (Common core of information on fires - report on data for 1985-97, http://europa.eu.int/comm/agriculture/fore/fires/scif/bilan_en.htm).

Another policy-related change is that management of natural resources at the watershed level is becoming increasingly important. Issues here include avalanche control in mountainous areas and flood control. Measures to control avalanches or floods can clash with protection of forests. Military training ranges and security areas may act as reservoirs for biodiversity, but may also act as barriers. Changes in political circumstances may alter the need and use for such sites.

Forestry and the management or natural development of ecosystems operate on time frames much longer than the time scales which politicians, society, and other land uses are comfortable with. For instance, it may take years to implement a new multifunctional policy in a large forested area, and it will take decades before the effects will become visible and one will be able to assess their success.

8.1.5. Emerging forest policy trends

8.1.5.1. Recent policy developments

There are several policy developments taking place in Europe that have an impact on forest resources, and therefore also on conflicts related to the various forest uses. The Convention on Biological Diversity (CBD) requested in 2001 all contracting parties to deliver a report on Forest Ecosystems (www.biodiv.org/world/reports). Furthermore, CBD launched an expanded work programme on Forest Biological Diversity at its sixth Conference of the Parties (The Hague, 2002). The priorities suggested include (a) conservation, sustainable use and benefit sharing, (b) institutional and socio-economic enabling environment and knowledge, and (c) assessment and monitoring. The second element, being directly related to this study, has three components: improved governance, determining causes for and addressing failures in policy, and improvement of the understanding of the value of forest biodiversity to humans.

The Ministerial Conference on the Protection of Forests in Europe (MCPFE) was launched in 1990 as a pan-European cooperation addressing threats related to forests and forestry, and promoting the sustainable management of forests. This process now comprises around 40 European countries and the European Community. The MCPFE is not only a forum for co-operation of ministers responsible for forests, but also allows non-governmental and intergovernmental organisations to contribute with their knowledge and ideas. Although the actors involved represent a variety of interests, they share the commitment to the sustainable development and protection of forests in Europe. For example, the MCPFE has implemented a Biodiversity Work Programme that can be considered a pan-European contribution to the implementation of the Convention on Biological Diversity.

The Treaties on European Union make no provision for a comprehensive common forestry policy. The management, conservation and sustainable development of forests are nevertheless vital concerns of existing common policies such as the Common Agricultural Policy and rural development, environment, trade, internal market, research, industry, development cooperation and energy policies. The European Community participates in the MCPFE and the protection of forests falls within the scope of a number of Community policies and is the subject in particular of specific environmental issues such as the EU Biodiversity Strategy, Natura 2000 and the implementation of the Climate Change Convention. Accordingly, several Directives and Regulations have been established. Most

recently, a new Regulation has been proposed establishing an expanded Community monitoring scheme “Forest Focus”. This will include a continued monitoring of forest condition in response to the UNECE Convention on Long-Range Transboundary Air Pollution and information about forest fires but also address new issues such as forest biodiversity.

At the national level, many European countries expand their forest-related legislation to integrate various uses of forests. For instance, Sweden and Finland have revised their forestry acts in the late 1990s, and the new legislations require that biodiversity be taken into consideration in forestry. In particular, the Swedish Forest Act is very ‘biodiversity friendly’, stating that environmental and production considerations have equal weight.

Voluntary commitments to produce environmentally friendly wood products are becoming increasingly important. A number of companies like the furniture business and newspaper groups have introduced environmental standards (eco-labelling) of their forest based products. Forest certification has evolved since late 1980s and now covers substantial areas of European production forests. Forest certification involves a certifier (third-party inspector) giving a forest enterprise a written assurance that the quality of forest management practised by the enterprise conforms to specified standards. In Europe, several certification systems exist e.g. the Pan-European Forest Certification PEFC, the Forest Stewardship Council FSC, and systems based upon ISO Environmental Management System standards.

8.1.5.2 Social forestry

Although forestry professionals are used to dealing with biological, economic and technological issues, changes in society’s view on forests, such as the increased concern for forest biodiversity, mean that forest professionals now face discussions involving values and life-style, and the need to seek strategies that are acceptable for all stakeholders. This has led to forest-related conflicts in Finland for example, where conflicts are partly caused – or at least aggravated – by the inability of forestry professionals to adapt their views and approaches to accommodate changes in the society (Hellström & Reunala, 1995). Even though forestry faced public criticism, forest managers and planners did not have the tools to cope with it. This led to confusion among the staff, and consequently inability to find a common strategy to deal with the new kind of criticism.

In addition to topics, the scale of discussions has changed. Today, discussions on forest management will involve more than just local people. However, changes have been very rapid, and it will take time for all the stakeholders to adapt and accept the new situation. A fruitful dialogue between forestry professional and other stakeholders is currently developing in many European countries. Scientists can be of help in this process, and that is where this study can be of great assistance.

The aim of this forest report is to (a) identify sources of conflict in forests and forestry, (b) develop conflict management strategies, and (c) identify monitoring strategies.

8.2. Identification of conflict

8.2.1. Issues leading to forest-related conflicts

Forest conflicts since the 1950s are due to three types of development: (1) intensification of forestry operations, (2) increasing recreational needs, and (3) the increased importance of the environmental movement. Recently, institutional changes, conflicts and solutions arising from the new political map of Europe have contributed to changes in forest-related conflicts. Furthermore, other trends in the society, such as globalisation, communication revolution and societal and cultural changes are reflected in the type and intensity of forest conflicts. Thus, forests have become objects of various interests and interest groups having different and clashing views about forestry. Economic growth can be seen as the principal cause of the intensification of forestry, which has led to increased living standards and thus increased demand for recreational use of forests. On the other hand, the same

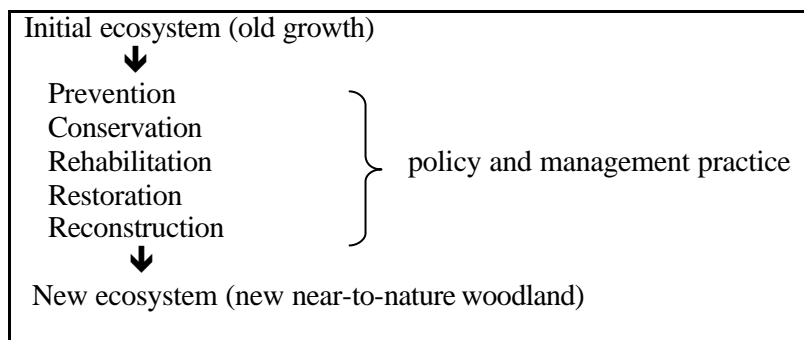
economic growth caused changes in the forest environment that were considered detrimental to biodiversity. Concomitantly, the increased societal importance of the environmental movement was at least partly fuelled by scientific reports on environmental problems. Thus, the process leading to intensified forest conflicts is intimately linked with social and cultural development in industrialized countries with such phenomena as urbanization, continued industrialization and increased standard of living leading to changed values among people (Hellström & Reunala, 1995).

8.2.2. Dimensions of a conflict

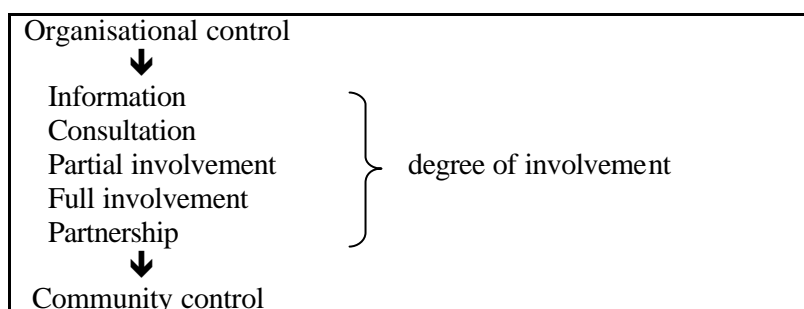
Three dimensions can be identified in conflicts: substance, process and relations (Walker & Daniels, 1996). Here we will define what these dimensions represent in a forestry situation, with specific attention to conflicts with biodiversity.

- Substance ('how things are') addresses the type and status of forest habitats concerned, e.g. natural versus artificial forest, in other words, status of ecological processes versus type of management regimes or natural capital versus economic capital (box 1)
- Process ('how things are done') addresses forestry (and environmental) legislation policy, strategy, planning, and implementation. It also includes the type and nature of stakeholder engagement (box 2)
- Relationships ('how people behave') address the culture of individuals, organisations and society, and how they interact with each other. For example, state forest services were often founded with a quasi-military, hierarchical management structure, while nature conservation organisations have loose management structures and are often reliant on the contribution of individuals. This difference may in itself cause conflicts between the two parties.

Box 1: Example of status of a (natural) forest, and the practices that may be involved when moving to a new status



Box 2: Example of level of engagement of stakeholders



8.2.2 Conflicts and how they can arise

Based on the three dimensions in conflicts presented in section 2.1, we can develop an understanding of how biodiversity-related conflicts arise in forestry. In the following table, a number of conflict areas are listed, and possible contributions by the three dimensions are indicated.

Table 8.1. Examples of the contribution of various types of forest, uses of forest, forest ownerships and wider use of forests to the conflicts of the substance of the matter, process of management or decision-making and relationships between people and organisations. For explanation of substance, process and relationships, see section 8.2.1.

Type of forest	Contribution to the conflict from the dimension of		
	Substance	Process	Relationships
Old growth	Should it be protected for nature or exploited for economic gain?	Designation of nature conservation area and legislation for species and habitat protection versus access to economic opportunities	Tree huggers versus tree loggers State or development company vs. local inhabitants (nimby's)
Semi-natural woodland	Should it be restored or exploited for economic gain?	Process of conducting restoration measures	forest industry vs. environmental NGOs
Intensive plantations	Space for nature	Forest planning and operational practice. Tree farming vs. multipurpose forestry	Environmental NGOs vs. forest industry
Reconstructed native forest	Conflict with other land use with other biodiversity assets	Land use planning	Professional stereotypes
Use of forest			
Grazing	Clearance for grazing	Planning of 'sustainable' grazing	farmers vs. environmentalists
Recreation	Site capacity	Communication systems	How do you get people to act and behave responsibly
Hunting	Site capacity and conflict with recreation and tourism	Protection or licence to exploit	hunters vs. other recreants
Tourism	Site capacity	Licences, zoning	tourism 'industry' made ecologically friendly, ecotourism

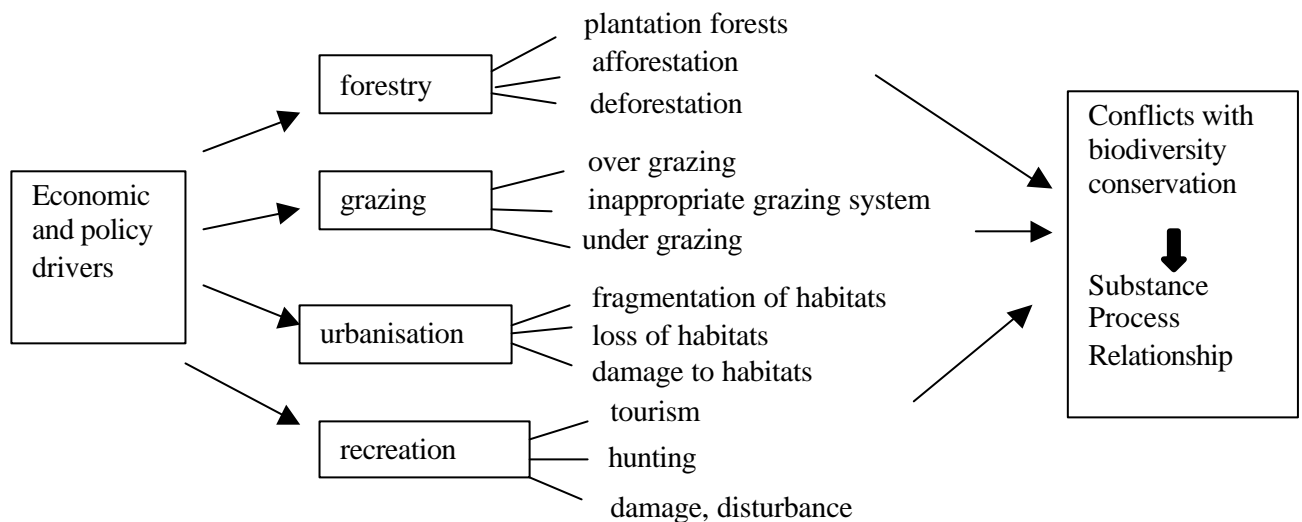
Wider land use

Roads, infrastructure and urbanisation	Forest loss and fragmentation	Planning priorities for economic development or nature conservation	regional connections vs. local recreation
Climate mitigation	local ecosystem or global benefit	e.g. system of carbon sequestration certificates	believers vs. non-believers of climate change

Conflicts in forests are usually related to changes in land-uses and/or conflicting land-uses that are incompatible (table 8.1). Management practices may cause conflicts. These conflicts are usually related to economic development in one way or another. In the case of harvesting vs. recreation the forest owner wants to gain economic benefits from his forest by harvesting trees, which conflicts with other kinds of values respected by the people using the forest for recreation purposes.

The chart below gives a few examples of how economic and policy drivers affect substance, process and relationships (see section 8.2.1). The chart depicts the ‘substance’ dimension (for example over grazing, or habitat loss through urbanisation), the process (for instance, if participatory planning is not practised, the management process may not have the support of the local communities) and the relationships between the stakeholders that may cause conflicts.

Figure 8.1. Examples of how economic and policy drivers affect substance, process and relationships of conflicts through various types of land uses.



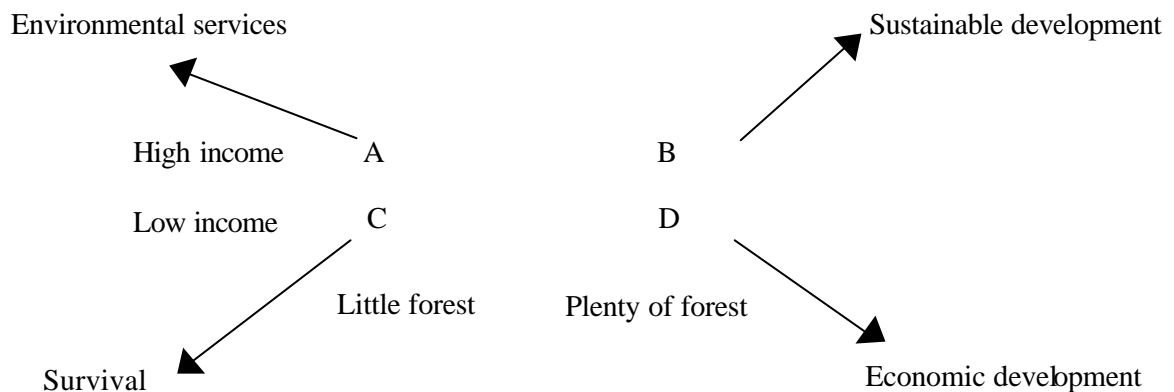
The scale of conflicts is important. There are several spatial and temporal scales of conflicts ranging from local conflicts to the regional, national or even international level. Similarly, there are several temporal scales. Immediate conflicts may arise from certain activities here and now, but there are also conflicts that may arise later from actions taken now. This is particularly true in forestry when actions may take several years to have an impact.

8.2.4 Resource distribution and forest conflicts

Various types of conflicts show specific economical and geographical distributions. The model (E. Hellström, presentation at Bioforum workshop, September 2002) can be used to understand the types of conflicts and the demands on forests. It correlates to the type and scale of forest on one hand, and human needs (whether economic, environmental, or social goods and services) on the other hand (Fig. 8.2). According to this model, conflicts may arise between regions or communities located in the different parts of the graph (A-D). In cell A, urbanised areas seek access to green areas that are considered a social and environmental service requirement from the forest and its management to the population. In area B with large forest resources present and a high level of income the population demands sustainable development. Wherever there is little forest and a low level of income (C), the imperative is meeting basic economic needs for survival. In this situation, one can guarantee only economic development of the forest, given the social and environmental needs. In case D where there are plenty of forests but a low level of income the forest will be regarded as a prime economic

opportunity. In this case, social and environmental considerations are secondary or missing. In addition to conflicts possibly taking place between different regions (A-D), there may be conflicts within the regions since populations are not homogeneous and members of the society may disagree about the goal of forestry. The conflicts may be even more complicated if forest owners live away from their properties.

Figure 8.2. Various types of conflicts (environmental services, sustainable development, survival and economic development) are related to the amount of forest (little, plenty) and level of income (high, low).



8.3. Conflict resolution strategies

Strategies and means that can be adopted to resolve conflicts in relation to forests and biodiversity conservation can be identified from Table 8.1 and 8.2 and can be divided into:

- Technical, which may contribute to reduce or solve the conflict acting on the ‘substance’ dimension, e.g. silvicultural guidelines, forest planning at or involving a local scale (watershed, community, farm).
- Political, which may influence the ‘process’ dimension of the conflict establishing principles or rules (e.g. EU regulations, forest acts, national/regional forest and land use planning), providing financial compensation and incentives, and favouring the participation of all the stakeholders in the resolution of conflicts;
- Cultural, which may affect the ‘relationship’ dimension of the conflict improving the ability of stakeholders to communicate with each other. The strategies to implement conflict resolution differ according to the attitude of people in the different countries: e.g. education policies aiming at improving the attitude of people to collaborate, and to acknowledge and respect the values of others; specific courses for forest managers to learn communication skills and techniques; advertising campaigns to make public opinion aware of the problems at stake and to contrast lobbying actions.

It is often necessary to act on the three dimensions of the conflict at the same time, integrating more than one strategy or resolution method. Technical solutions can prove to be inapplicable. For example, a group of experts (scientists or professionals) may devise an optimal management plan of a forest that takes into account biodiversity conservation aspects but it may not be put into practice due to opposition of other stakeholders whose interests are affected by the plan but were not involved in the decision making process.

The participatory process in turn cannot lead to feasible solutions without appropriate information and research provided either by experts and local people. In many cases it could be difficult to evaluate the impact of forest uses (harvesting, grazing, tourism) on biodiversity without data from long term monitoring. This should lead to solutions based on the precautionary principle.

Table 8.2. Strategies and means that can be adopted to resolve conflicts in relation to forests and biodiversity conservation. Several types of forests are identified and options and guidelines for conflict resolution are given. Options & guidelines are divided into those dealing with substance, process or relationships of conflicts. The ticks indicate instances where the identified options and guidelines operate.

Type of Forests					Options and guidelines for conflict resolution	
Intensive planting	Multi-functional	New native	Semi-natural	Old growth		
✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	<ul style="list-style-type: none"> • Habitat networks and natural reserves • Multiple use of resources • Application of various silvc. systems • Exemplars • Demonstration of good practice • Economic stability 	Substance
✓ ✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	<ul style="list-style-type: none"> • Legal instruments • Designation of protected areas • Purchase or lease by public and NGOs • Regulation of use • Forest policy frameworks • Planning systems and control • Multiple use of forests and integrated management plans • Application of 'good practice' guidelines • Incentives to follow 'good practice' guidelines • Certification/quality assurance 	Process
✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓	<ul style="list-style-type: none"> • Partnerships and co-operation in planning • Facilitation and negotiation in planning • Change of planning culture • Improved communication system • Application of participatory planning • Planning for local situations and conditions 	Relationships

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The tradition and research of participatory planning in natural resource management is based on social sciences (Creighton, 1983a, b). Social sustainability must be emphasised in resource management and utilisation on private lands. Social sustainability refers to local stakeholders' control over their own lives, and equity between them. This requires the plan to be acceptable among individual landowners, and demands co-operation between forest owners and planning experts. In order to achieve chosen landscape biodiversity goals, these need to make sense from the local stakeholders' viewpoint. Ideally the objectives for common forestry planning to preserve or enhance biodiversity at the landscape level should be expressed in general terms by a legal framework or voluntary commitments (e.g. to meet certification). Meanwhile, it should be possible to modify the prioritised elements of biodiversity in particular planning situations, in order to meet with the expectations of the forest owners. Furthermore, it is necessary to consider the acceptance of the forest owners not only on a general level ('prioritised elements of biodiversity') but also with regard to details of the planning methodology, e.g. indicators.

Methods of participatory planning have primarily been developed to promote communication between parties and gather information about the values, attitudes, and beliefs of private individuals and interest groups. Qualitative methods for promoting participation, e.g. working groups, the Delphi technique and semi-structured interviews (Pykäläinen, 2000), are often suitable for landscape level forest planning. However, qualitative methods alone do not always adequately support decision-making. The importance of including the goals of actual decision makers in the planning process cannot be emphasized too much, since forest owners will not implement plans that they find unacceptable and do not contribute to their welfare. Participatory planning could also help resolve conflicts (see our model above).

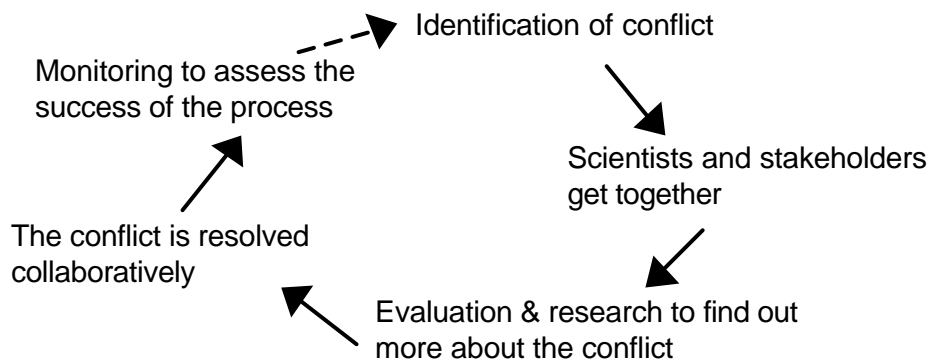
By applying tools of decision analysis, e.g. methods applying multi attribute utility theory (Kangas, 1999; Pykäläinen et al., 1999), participatory planning can be made more analytical, controlled and reliable. Such methods offer support for both determining the forest management goals and comparing the alternative plans. This kind of decision support is needed also in landscape level forest planning.

Dialogue among stakeholders may be difficult because of lobbying actions or ideological prejudices. This situation is very common, at least in the Mediterranean area, in the conflicts between free cattle breeders and foresters, or between hunters and environmentalists. In order to create trust, understanding and appreciation among parties in the conflict resolution process communication is of importance. For instance, it is important to inform and involve the local communities about the conflict resolution in progress and create awareness about the different interests and values at stake. This may be achieved by creating a forum for working in groups including the relevant stakeholders with regular meetings. An example is the Mountain Forests Tending Group in Switzerland where representatives of Federal Forest Services and NGOs meet to discuss how to reconcile the management of stands protecting against natural hazards (especially avalanches) with biodiversity conservation. Some effective agreements have been reached on how to restore stands after heavy windstorms. To let nature act without immediately harvesting and replanting the destroyed stands was accepted by foresters and local communities as a possible experimental strategy to regenerate the stands and improve biodiversity in the forests. The experimental stands are monitored in order to intervene in case the protective function was seriously compromised because of lack or natural regeneration. Of course, financial compensation and incentives from the Swiss Forest Act for tending protective forests play a decisive role in implementing this strategy.

Some of the conflict resolution strategies highlighted in table 8.2 tend to exclude some uses of the forest (e.g. direct purchase by public sector or NGOs or compensation to forest owner). Those solutions are expensive and can be used only in a limited number of cases. More frequently it is necessary to reach consensus among all the stakeholders about a use of forest compatible with biodiversity conservation. As a consequence, many strategies require a participatory process based on an extended accountability system (Gamborg, 2002), which is particularly suitable when the non-monetary components of the social value of forests are important, and when users are numerous (Buttoud, 2000).

Based on the above discussion we have developed a general model of adaptive conflict management emphasising communication among the parties and participatory approach which could be efficient in monitoring the outcomes of conflict resolution (see also Pykäläinen 2000) (Figure 8.3).

Figure 8.3. General model of adaptive conflict management



Resource owners and managers are the lynch pin in the process depicted by the model. Evaluation and research is needed to find out what the conflict is and how it could be solved. The conflict is then (hopefully) resolved in collaboration between scientists, other experts and the stakeholders. The outcome is monitored, and if a new conflict arises, the procedure is repeated. The indicators to be monitored may include some or all of the ones listed and discussed below (see chapter 8.4).

An important question is whether to involve all the stakeholders in this participatory process. Although this may be a difficult and time-consuming process, it is a way of generating more democracy and the broadest public support ensuring the most robust outcome. Including all stakeholders and their wishes is only possible if it may affect the outcome of the process. Therefore, it implies that scientific data be taken into account as well as economic and social aspects.

8.4. Identifying monitoring strategies

Monitoring the outcome of the conflict resolution process is included as an integral component in the iterative model (Figure 8.3). Monitoring should not be an end in itself but provide feedback for improving the outcome and the process of conflict resolution. In order to make monitoring a functioning part of the conflict resolution strategy, the following questions must be answered before monitoring begins (Niemelä 2000):

- What is the goal of the monitoring to be undertaken?
- What are the indicators and methods to be used to achieve the goals?
- How are the data going to be analysed?
- How are the results going to be interpreted in terms of biological and socio-economic implications?
- How are the results and interpretations going to be communicated to managers, decision makers and the public?

When monitoring the outcomes of a conflict resolution process the goals should be to find out (a) what are the outcomes for biodiversity ('substance'), (b) how successfully the conflict was resolved, i.e. how did the process proceed ('process'), and (c) what could be learned from interactions between the parties involved and how the increased understanding could be fed back to improve the human interactions in the process ('relationships'). Here, we propose a monitoring strategy including criteria

and indicators to assess the success of a conflict resolution situation from the three points of view (substance, process and relationships). How these data are going to be analysed, and how results are going to be interpreted and communicated depends on the specific conflict situation.

(a) Substance. Monitoring of the substance dimension aims at assessing the outcomes of the conflict resolution for biodiversity, i.e. how the natural capital represented in forests is maintained after the actions agreed upon in the resolution process have been carried out. Such monitoring requires biological criteria and indicators (Lindenmayer 1999). Criteria may include performance of the biotic communities affected, and ecosystem health. Biological indicators that could potentially be used to monitor the outcomes of conflict resolutions have been developed in Europe. For instance, the EU-funded project 'Indicators for monitoring and evaluation of forest biodiversity in Europe BEAR' proposed a set of indicators for the forest stand, landscape and national levels. These are relatively simple measures that could form the core of indicators used in monitoring conflict resolution.

(b) Process. Monitoring the success of the process of conflict management deals with utilising the social capital in management organisations and local communities. Such assessment could include the following criteria and indicators:

Criterion 1. Performance of the process. Potential indicators:

- protected area acquired
- funding spent
- meetings held
- number of newspaper clippings reflecting media attention

Criterion 2. Stakeholder opinions and views on the success of the process. Potential indicators:

- efficiency and effectiveness of the conflict management process
- possibilities for stakeholder participation and engagement in the process
- degree of communication

Criterion 3. Long term management commitment to mitigation initiatives. Potential indicators:

- changes in strategies, policies and legislation
- changes in the management procedure and process
- changes in planning and implementation
- community and institutional participation in the process
- degree of communication between institutions

(c) Relationships. Monitoring addressing relationships (i.e. 'how people behave') in the process of conflict management concerns the culture of individuals, organisations and society, and how they interact with each other. Assessment of human relationships in the conflict resolution process could include the following criteria and indicators:

Criterion 1. Culture of individuals. Potential indicators:

- how was the conflict perceived by the individuals involved?
- how did the different stakeholders behave, communicate and collaborate in the conflict resolution process?

Criterion 2. Culture of organisations. Potential indicators:

- how was the conflict perceived by the organisations involved?
- how did the different organisations behave, communicate and collaborate in the conflict resolution process?

Criterion 2. Culture of society. Potential indicators:

- how was the conflict perceived by the society at large (e.g. others than those directly involved)?
- how did the conflict resolution strategy reflect the society at large (intense vs. mild conflict, cooperative vs. separative conflict, stable vs. changing societal situation regarding the conflict area)

By integrating these criteria and indicators into a comprehensive monitoring system and by adapting it to local conditions one could get comparable monitoring information about various kinds of forest biodiversity related conflicts throughout Europe.

The importance of developing monitoring strategies for assessing changes in European forests has been recognised also by the MCPFE. Already the first Ministerial Conference in 1990 emphasised monitoring. In the years to follow pan-European Criteria and associated indicators were developed at the 1998 Conference. In preparing for the fourth Conference to take place in 2003 a revision of the indicators has been performed. Of the 30 indicators, some eight or nine address biodiversity.

8.5. Discussion and conclusions

These are considered under the same themes of substance, process, relationships, and integration of all three of these.

8.5.1. Substance - assets and resources

There is a generic set of conflicts that relate to the reduction of natural capital, and the breakdown, disruption or loss of ecological processes and the provision of goods and services within and between habitats/land uses. A common approach to the resolution of conflicts that operate across land uses and habitat types is needed if a holistic and sustainable solution covering whole landscapes/watersheds (forests, wetlands, grassland, agroecosystems) and satisfying a wide range of stakeholders is to be realised. As suggested above, such common approaches should integrate policies and management planning which will provide shared understanding of the issues and hence assist conflict resolution. It is important to provide stakeholders with the opportunity to become involved in the process. This may usefully involve two-way communication and a bottom up as well as a top down approaches.

8.5.2. Participatory planning and a partnership approach

European forestry has a well-developed silvicultural tradition and century-long awareness of timber sustainability. However, implementation of landscape level strategies for biodiversity conservation presents a number of challenges. This is particularly true for landscapes in which forestry is practised by small-scale owners as about 65% of the forest land in the EU is owned by about 12 million private forest owners (EU, 1998). Small-scale private (or public) forestry differs from large enterprises, which are mainly dependent on the world wood and pulp market, in the wide range of specific needs and attitudes of the owners.

Landscape planning involving private holdings is crucial for a sustainable future of forest biodiversity but requires special practices. As well as biodiversity assessment methods and technical planning tools, the planning process requires means for conflict management through co-operation between private forest owners and stakeholders. Also at a medium scale, biodiversity-related objectives do not necessarily respect forest holding borders. These are often administratively delineated and may not coincide with habitat patches, which as regards many biodiversity aspects leads to (spatial) interdependencies between forest holdings. Assessing biodiversity at a landscape level is possible without co-operation of adjacent private forest owners, but their participation will help to generate actual means of improving landscape structure, e.g. in relation to certification criteria.

The organisation of landscape ecological management in areas split by several private holdings may be complicated. Even where there is a positive attitude to such a project among landowners, a number of obstacles remain. A key-issue is how to establish fairness in terms of economy and work load between landowners, when the interests of individual owners may conflict with those imposed by landscape considerations. Such situations are not easily handled even if similar economic conditions govern the decisions of all forest owners, if, for example, there are differences in size and type of habitats in different holdings (Carlsson et al., 1998). Furthermore, the management objectives of private forest owners may vary considerably both between countries and within planning areas. In recent years, there has been an increased willingness to abstain from silvicultural felling, in favour of conservation operations. The social and economic status of private forest owners is changing and some may not be strictly dependent on the income from their forest products. This variation between the

objectives of forest owners is not used in ecological landscape planning, and there is little or no co-operation between the forest owners during the planning process. Such variation is an important consideration in comprehensive planning for stakeholders' ecological management at the landscape scale. As a consequence, there is a need to develop planning approaches that can simultaneously consider several holdings and efficiently handle the variation in the objectives of forest owners (Davis & Liu, 1991). This target may be termed 'ecological efficiency', and planning with this target may be called 'ecologically efficient regional planning' (Pukkala et al., 1997). In regional planning, some of the stated objectives are related to individual forest holdings while others concern the whole planning area, ignoring the borders of the holding.

8.5.3. Conclusions

As the development and understanding of sustainable forest management (economic, ecological and social) continues to advance amongst policy makers, scientists, managers and other stakeholders, conflicts related to biodiversity conservation in forests may become less acute. International protocols for forestry, such as the European Ministerial Conference underpinned by the development of certification schemes have made a significant contribution to this process. However, there are still conflicts between the forestry sector and biodiversity conservation that remain to be dealt with. Furthermore, there are severe conflicts between forest biodiversity conservation and other land uses than forestry. The general management of biodiversity related conflicts are probably best dealt with as part of a wider consideration of multiple-use forestry rather than in isolation.

Conflicts between biodiversity and forestry are becoming more European if not global in their nature, significance and relevance. For instance, illegal logging, ecological footprints, climate change, loss of habitat and species, poverty, watershed management contribute to the internationalising of the conflicts. This will require new approaches to the sharing of ideas, knowledge, research, and other resources in order to support conflict resolution.

Social science has been under-utilised compared with biological science and business management techniques as a means of improving the performance of forestry, the conservation of forest biodiversity, and the effective and efficient engagement of stakeholders. The use of emerging techniques, such as participatory planning have already demonstrated their value, but need to be further explored and developed. The use of new technologies and tools in the social field of forestry is also less well developed than in the economic and to a lesser extent the biological field (e.g. GIS). Communication and the development of communication skills among forestry and the ecological specialists are important and should continue to be developed and improved (Norton, 1998).

Approaches to developing an understanding and management of conflicts are very variable across Europe depending on the nature, condition of the forest resource, the forest and land-use policies and practices, and the prevailing economic circumstances. This should not, however, negate the value of sharing experiences and expertise across Europe albeit that universal solutions may not apply in their entirety given that local circumstances differ.

Monitoring of conflicts, their management and resolution is poorly developed and needs to be improved. This is a deficit that is shared by other land-use sectors and activities.

Partnerships can be a very useful way of improving conflict resolution strategies. They should, however, not be confused with forums that tend to just discuss and comment. Successful partnerships can provide access to new resources (cash and skills), they stimulate creativity and sharing as well as develop synergies, common appreciation of the issues and opportunities and shared solutions.

8.6. Case studies of biodiversity conflicts and their resolution in forests

8.6.1. Conflict prevention and management in Estonia

An example of conflict prevention and management is the complex forest management practice of the Estonian State Forest Management Centre (SFMC). Forests cover over a half of the mainland of Estonia. Contrary to other parts of Europe, total area covered by forests has increased from 0.9 million hectares in 1920 to 2.3 million hectares in 2001. Today forestry forms important part of economy, particularly in rural areas, and lays out 13% of Estonian export. Therefore, forests face strong economical pressure. Forest reserves occupy 7.2% of total forest area. Although this is one of the highest numbers in Europe, we have not yet protected all forest types in Estonia.

During SU occupation all forests belonged to state. When Estonia became independent again, most of lands, including forest were privatised. Nevertheless, a large amount of forest remains as state owned forests. According to the Forest Act, in order to ensure the stable state of the environment and multiple uses of forest, the area of state owned forest shall be at least 20% of the area of the mainland Estonia. Today state forests cover over 1 million hectares, forming nearly 40% of the total forest area.

State forests are managed by SFMC the main activities of which are forest management, seed and plant production, nature management and recreation in a way that guarantees preserving the biological diversity and ability to renew, and the improvement of the health condition of the forest. SFMC produces forest-related budget revenue and provides for the preservation and progeny of forests. SFMC receives income from sales of timber, standing crop, transplants, forest seeds and recreational services. Besides earning income, SFMC ensures that state forests are accessible to all people. SFMC has built several public recreational areas and made forests accessible for every person.

SFMC pays special attention to nature protection and other uses of forest. Today forest reserves occupy 14% of state forests. In addition, 17% of state forests are protection forests with restricted management.

While being the only for-profit state agency, SFMC has established itself as a strong organisation and a steadily profitable undertaking. Successful business activities have not prejudiced sustainable management, but SFMC has become an example in terms of good forestry practices. In 2001, SFMC won international acclaim by being granted the FSC certificate on sustainable forestry, and the ISO 14001 certificate on environmental management. SFMC is the first state forest management organisation in Eastern Europe, recognised by FSC certificate. Interestingly, while Estonia is one of the smallest countries in the world, SFMC manages the largest single forest holding in the world certified by FSC.

At the moment there are no serious conflicts in state forests in Estonia. In the long term, some conflict sources are possible because of political decisions: 1) in case of requirements to increase profitability (more money from state forests to the state budget) instead today's practice of optimal profitability; 2) in case of decisions to privatise state forest or to sell some profitable SFMC units (e.g. recreational unit), therefore destroying complexity of forest management; 3) SFMC establishing itself as a well defined organisation could be overloaded with additional duties not directly related to forest management and therefore shading/loosing it's objective and operating efficiency.

Only one private forest has been certified by FSC in Estonia, with total area of 517 ha. Biodiversity in remaining private forests often face over-harvesting. In many recently resold forests, where the owner lives away from his property, principles of sustainable forestry are largely ignored and clear-cutting exceeds replanting or natural regeneration.

Although Estonian forests have multiply uses, owners often see forests only as direct source of wood to cut and gain economic income. Therefore, only complex forest management by its owner is a key to prevent biodiversity conflicts. In complex forest management the owner takes into account all aspects

of forest use: 1) maintenance of protected natural objects (nature conservation); 2) protection of a landscape or landscape variety, soil or water (environmental protection); 3) protection of people against the pollution spreading from industrial production sites and transport facilities, and against the harmful effects of weather (sanitary protection); 4) creation of opportunities for people for resting, health improvement and sports activities (recreation); 5) gathering of tree seeds, forest berries, mushrooms, herbs and ornamental plants and parts thereof, moss, lichen, nuts, hay, branches, ornamental trees, bark and tree roots, resin and birch sap, the location of beehives and grazing of animals (use of by-products); 6) research and education; 7) obtaining of timber; 8) hunting; 9) national defence.

8.6.2. Comparison of state policy stances related to forest conflicts

Finnish policy

As much as 70% of Finland is covered by boreal forest. Consequently, forests are of great economic, ecological and socio-cultural importance. However, due to the intensive forestry many species and biotopes are threatened. Forests harbour about 40% of the threatened species in Finland, and about one third of threatened species in the country are declining due to forestry practices. Furthermore, forestry is in conflict with the traditional Sami use of natural resources, and to some degree with recreational uses and nature tourism.

The traditional way of resolving the conflict between intensive forestry and nature conservation has been the establishment protected areas. In Finland, most of the large, and therefore ecologically and recreationally most valuable protected areas are in the north and east, where the forests are rather unproductive and mainly owned by the state. Up to 20-30% of forest land is protected in the northern parts of the country, while only about 1% is protected in the more productive and mainly privately owned southern forests.

During the past decades it has become evident that protection of forest biodiversity cannot be solely based on protected areas. In particular, this is the case in southern Finland, where protection is expensive. Therefore, a societal demand emerged, especially from environmental groups and also scientists that forestry practices in managed forests must become more 'environmentally friendly' and take biodiversity into consideration. This situation led to rapid changes in forestry practices in Finland, as well as in Sweden and Norway, during the 1990's. The previously dominant clear-cutting has been modified by leaving more live and dead wood in the logged stands. Furthermore, the size of the logged blocks have decreased so that in southern Finland the average cut-block size is today around 2 hectares.

Important drivers of forest policy in Finland are public criticism of forest management and its ecological consequences, and national and international agreements. Finnish forest industry is highly international. Thus, policy issues come not only from within Finland but also from other parts of the world, especially other European Union countries. One of the pressures contributing to changes in the Finnish forest sector is the so-called 'market pressure', i.e. consumers demanding changes in forest management by claiming to use their power to select the most environmentally friendly products they buy. There are contradictory views about whether 'market pressure' is exerted by ordinary consumers demanding wood products from forests treated with environmentally friendly logging methods or is 'market pressure' created by vocal and strong environmental groups acting as 'representatives' of consumers. Nevertheless, in reality environmental groups are one of the drivers of changes in Finnish forest management, for instance, by influencing buyer companies of wood-based products and thereby 'forcing' the producers to change forestry methods.

Another, and related policy issue and pressure to change forest management comes from international agreements and consequent forest certification. Forestry and biodiversity were among the priorities of the UN Conference on Environment and Development in Rio de Janeiro in 1992 resulting in the

Convention on Biological Diversity, the Forest Principles and a forest component of Agenda 21. In Europe, the implementation of these commitments has resulted, for instance, in the Ministerial Conferences for Protection of Forests in Europe (MCPFE) set up by the Forest Ministers of the European Union member states. MCPFE has developed a set of *Pan-European Criteria, Indicators and Operational Level Guidelines for Sustainable Forest Management* which also are implemented in current certification schemes. The Pan-European Forest Certification (PEFC) scheme is a voluntary, private sector initiative that aims to provide assurance to the customers of forest owners that the products they buy come from independently certified forests managed according to the Pan-European Criteria as defined by the resolutions of the Helsinki (1993) and Lisbon (1998) Ministerial Conferences on the Protection of Forests in Europe. Finnish forest sector has adopted a certification system of its own (FFCS, Finnish Forest Certification System) which is in accordance with the PEFC certification.

Another major policy issue of Finnish forest management is legislation. In Finland, forest legislation has been revised during the 1990's. The forestry law requires biodiversity to be considered in forestry operations. For instance, the legislation includes a list of 10 forest biotope types (so called 'key habitats') that must be set aside whenever encountered. These are usually small, but significant biotopes for forest biodiversity.

In addition to signing international agreements, Finland has produced a national forest strategy which aims at ensuring sustainable forestry in the country. The strategy comprehensively treats the different components of sustainability (economic, ecological, socio-cultural) and sets targets for the future.

In Finland, a hotly debated national policy issue is the protection of forests in the southern part of the country. In the south only ca 1% of forests protected, which is not enough for the maintenance of forest biodiversity. Environmental groups in particular have demanded more protected areas to be established in the southern part of the country. The way that this problem was tackled was to establish a multi-stakeholder committee. However, the issue remains unresolved as the committee was not able to reach consensus about how much forest should be protected and how the society should go about protecting it.

According to Hellström (2001) conflicts between forestry and conservation of biodiversity are rather intense in Finland and often take the form of physical confrontation. On the other hand, this state of affairs has also prompted rapid and rather profound changes and reforms in forest management aiming at taking biodiversity better into consideration.

UK policy

UK forest policy is set out in Sustainable Forestry the UK programme. The devolved government administrations in England, Scotland, Northern Ireland and Wales have developed national forestry strategies which determine the main economic, environmental and social priorities for forestry in each country. The GB Forestry Commission and the Northern Ireland Forest Service are the main public sector players involved in taking forward the strategies often in conjunction or partnership with other agencies. Multi-use/multi-purpose/multi-benefit are concepts cemented in SFM in UK given the pressures on land and land use in a country with high population densities over large parts of its territory.

Forest policy in the 20th century responded to the over exploitation and rundown of the forest resource in preceding centuries (<3% forest cover in early 1900s) by founding the Forestry Commission and charging it to increase the forest area and the production of home grown timber as a strategic reserve. This core objective was replaced in the late 1940s with a commercial remit. This in turn has diversified particularly in the 1970s when recreational use of forests escalated and in the 1980s/90s when environmental awareness increased and resultant conflicts accelerated the rise of more environmentally sympathetic forest management and practices. This has been augmented by the UK Biodiversity Action Plan and the EU Natura and country programmes of designation of protected

areas. In the late 1990s the social dimension of forestry gained prominence, fuelled by social change and also the forest privatisation programme during the 1980s and 90s, together with a realisation of SFM underpinned by independent certification.

The UK forest certification standard (the UK Woodland Assurance Scheme [UKWAS]) was developed by a consensus process involving owners, managers and stakeholders and represents a unique approach globally. UKWAS is recognised by the Forest Stewardship Council (FSC) and is currently applied to all state forests managed by Forestry Commission and a growing number of private forests. These achievements were recognised in 2001 by WWF awarding the Gift to the Earth to the Forestry Commission and its land management agency Forest Enterprise. Investment by the state via Forest Enterprise or incentives to private owners has progressively moved to paying for public benefits.

Current areas of conflict in the UK relate to land uses incompatible with forestry and woodlands (eg overgrazing by deer/livestock); urbanisation; fire; pollution/fly tipping; fragmentation of woodland habitats; poor returns from productive forestry due to low timber prices (high exchange rate = cheap imports from for example the Baltic States) under investment in environmental/social benefits; local vs national “agendas” and priorities.

The advent of new social forestry, better application of ecological principles, new tools eg GIS and visualisation and skills together with the building of partnerships are helping to resolve or at least minimise conflict to reasonable levels at least for those forest manager/owners and stakeholders who wish to engage in productive dialogue.

8.6.3. Landscape ecological planning by non-industrial private forest owners in Finland

At present, there are only few preliminary Finnish experiences from practical landscape ecological planning projects in private forest areas. However, due to recent political decisions, practical tests will start in the near future. The plan of action for the biodiversity maintenance in the forests of Southern Finland and Ostrobothnia (Etelä-Suomen, 2002) includes experiments for the establishment of cooperation networks in forest areas under multiple ownership, where at least part of the forest area is owned by non-industrial private forest owners. The implementation of these experiments will very probably start during the year 2003 as part of a large research program entitled the “Forest biodiversity research program”.

The Finnish forest management planning research identified the need for landscape level planning in private forests some years ago (Kurttila, 2000; Pukkala et al., 1997) and several planning methods that are suitable for different regional planning situations have been developed. These are based on hierarchical planning approaches that include several objectives targeted at different parts and hierarchies of the planning area. Due to the complexity of the planning problem, optimisation methods are used in the search of the solution that best satisfies all the stated goals. A planning model that aims at combining spatial landscape-level ecological goals with holding-level owner-specific goals was recently presented (Kurttila & Pukkala, 2002). The influence of ecological objectives extends across holding borders, but their impact is greatest in areas where they are least in conflict with the owners’ goals. This feature results in minimum utility losses to individual landowners and thus promotes ecological efficiency. In the case study, the ecological objective was to cluster the breeding and foraging areas of flying squirrel (*Pteromys volans*). Other sets of objectives were related to individual holdings according to the various preferences of the forest owners. The case-study results were promising: with the model presented, the spatial structure of flying squirrel breeding and foraging areas could be improved with only minor losses in holding-level objectives. The spatial structure of the landscape after the 60-year planning period was very close to the area-level plan produced for the whole area by ignoring forest holding borders and owner-specific objectives. This outcome was made possible by synchronizing the treatment proposals across forest-holding borders.

The outcome of the presented model (Loikkanen et al., 2002) seems promising also from the practical standpoint: because the variation in the objectives of forest owners is efficiently taken into account in optimization, only rarely do the solutions suggest that the holding-level targets be compromised. In practical planning situations the voluntary participation of the areas forest owners must always be maintained in different phases of the planning processes. Modifications to the plan due to holding-specific changes must be allowed also in the implementation phase of the plans. In addition, area's forest owners must have a direct effect to the definition of the area-level ecological objectives. Very probably the assistance of ecological experts and planning consultants is needed in various phases, and the many diverse and specific characteristics related to the practical use of this new planning approach all greatly emphasize the flexibility that must be allowed. In addition to allowed flexibility, the existing variation in the forest owners objectives will make the planning approach possible and its results ecologically beneficial.

8.6.4. Regulating forest uses in areas with landscape and natural values: case study in altzo, spain

Gipuzkoa is a small province in Spain, with roughly 200.000 hectares of land. Around 60% of this land is covered with trees, and one single species, *Pinus radiata*, occupies half of these forested areas. This species has its optimum growth below 400-500 metres of altitude. Gipuzkoa is hilly and crossed by narrow valleys, which has brought about the development of towns and small cities in the valley bottoms, intertwined with industrial development and transport infrastructures. This is also the area where small farms, *baserriak*, developed their activities in the last five or six centuries. The difficulties imposed by topography and small-holding did not allow these *baserriak* to adapt to intensive farming, which, together with the job offer derived from industrial development, as well as other external factors, has brought about the decline of farming. As a result, many portions of land owned by these *baserriak* that were no longer used for farming, have been covered with small *Pinus radiata* plantations over the last 4 or 5 decades.

Still, there are small towns and villages that retain interesting landscape and natural values in their rural landscapes. These small towns are currently worried because their leaders and inhabitants feel threatened by the growth of pine tree plantations where only a few years ago there were fields, fruit orchards, and crops. This is the case of Altzo, a small village of 200 inhabitants, where the town council designated an area of 138 hectares for the protection of landscape and agriculture.

Following this designation, a planning document has been developed, in order to regulate forestry, as well as to put forward measures that will help retain agricultural uses. As a result:

- No new forest plantations will be allowed in the areas currently occupied by fields, orchards and crops (68 hectares);
- Mixed plantations dominated by broad-leaved species will be allowed in zones adjacent to existing copses, usually located on the steep slopes of small brooks (31 hectares);
- Mixed plantations dominated by conifers will be allowed in zones adjacent to existing conifer plantations in the higher ground (20 hectares);
- And in parts that cannot be seen from the core of the protected area, this local plan does not add any limitations to forest use (19 hectares).

This planning document was written by external consultants, provisionally approved by the town council, open to public enquiry, and is currently awaiting its final approval by the provincial government. Public participation was ensured by:

- A presentation of the plan to the inhabitants of Altzo and the landowners involved;
- A set of individual meetings between the consultants and those landowners that requested it, to deal with individual questions;
- And the offer to farmers unions, the foresters' association and the regional rural development office to make their contributions.

There was not one single allegation or question put forward by any landowner regarding forest uses; most of them dealt with limitations to build new houses, also contained in the plan (only new buildings related to existing farms will be allowed).

The main challenges that Altzo faces, being the first town in Gipuzkoa to designate such an area, are:

- To overcome initial distrust caused by the top-down approach taken in the development of the plan, since landowners were not involved in the plan until it was relatively shaped;
- To contribute to the conservation of agricultural uses in the most favourable areas, because if those lands are abandoned, there will hardly be any strength to ban forest plantations;
- To add to the current debate on whether those landowners affected by forest use limitations based on biodiversity and/or landscape values need to be compensated or not; and if so, who and how must pay those compensations.

In our opinion, these questions could be better tackled if these kinds of initiatives were set within the Local Agenda 21 framework. So far, in Gipuzkoa only large towns and cities have developed their Local Agenda 21, their main problems being issues such as traffic, industrial pollution, refuse, etc. Therefore, a new methodology would need to be developed for small rural towns and villages, where dealing with environmental issues and sustainability necessarily implies dealing with farming and farmers, forestry being one of their activities. The main constraint to develop this planning document, and to improve public participation in the process, was due to the small budget that a 200 inhabitant village could allocate to it. Setting this initiative within the Local Agenda 21 would have allowed the town council to benefit from a grant given by the Basque Government, which is only available to larger towns at the moment.

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