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(eds.)

Forest Landscape Restoration in Central and Northern Europe

European Forest Institute

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Forest Landscape Restoration in Central and Northern Europe
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Contents

Foreword

The Global Partnership on Forest Landscape Restoration (FLR) was launched in March 2003 by IUCN, WWF and the Forestry Commission of Great Britain. It is a network of governments, organisations, communities and individuals who recognise the importance of forest landscape restoration and want to be part of a co-ordinated global effort. Since March 2003 several countries and organisations have become partners. The activities of the Partnership include e.g. presentation of case studies highlighting the lessons learned from the field projects, exchange of information, analysis of how FLR contributes to the implementation of existing international and regional agreements and commitments, and organisation of sub-regional or regional workshops in 2003–2004 and an international workshop in early 2005. The outcome from the sub-regional/regional workshops will form an important input to the international workshop.

The concept of forest landscape restoration is not a new idea. It builds on a number of existing rural development, conservation and natural resource management principles and approaches, bringing them together to restore multiple forest functions to degraded landscapes. Forests are addressed by several international and regional conventions and policy frameworks. Forest landscape restoration could make their implementation on the ground more visible.

In contribution to the global partnership, the Ministry of Agriculture and Forestry of Finland, in co-operation with the European Forest Institute and with financial support from the Ministry of the Environment of Finland organised an Expert Workshop on Forest Landscape Restoration in the Central and Northern European Region. This workshop took place in Hämeenlinna, Finland on 6–8 October 2004.

The purpose of this event was to demonstrate how the international forest policy dialogue can be translated into practical actions on the ground. Special focuses of the workshop were on the restoration of degraded forest areas and functions, and on participatory methods in forest landscape level planning. The role of private sector and further research needs on FLR were also highlighted.

The workshop brought together 40 experts representing policy makers, researchers, private sector and environmental organisations. The editors of these proceedings would like to thank the moderators and rapporteurs of the workshop Mr. Mike Dudley of the Forestry Commission of Great Britain, Mr. Stewart Maginnis of IUCN, Mr. Jeff Sayer of WWF, Mr. Anders Portin of Ministry of Agriculture and Forestry, Mr. Gerben Janse of EFI, Ms. Elena Kopylova of IUCN Russia and Mr. Jaroslav Ungerman of VERONICA of Czech Republic for their help in compiling this report. The gratitude is due to the authors who contributed with their papers and presentations, as well as to all participants and all others involved for making a successful workshop.

Editors
January 2005

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

Executive summary

1. The workshop

The purpose of the workshop was to demonstrate how the international forest policy dialogue can be translated into practical actions on the ground. The objectives were to:

- Show how forest landscape restoration might contribute towards meeting broader national economic, social, cultural, environmental and development goals, and to encourage further forest landscape restoration action on the ground in the Central and Northern European region.
- Improve links between the international forest policy processes and practical forest management activities on the ground by demonstrating how ongoing forest landscape restoration activities can play a significant role in meeting national commitments in relation to a range of international agreements and decisions.
- Encourage both the political support and technical expertise to implement the commitments of international and regional forest related commitments related to forest landscape restoration and demonstrate potential synergies between them within the context of field experience from forest landscape restoration in the Central and Northern European region.
- Facilitate partnerships between stakeholders dealing with environmental and/or socio-economic aspects of forest landscape restoration in the Central and Northern European region and address the evolving role of forests in the region.
- Demonstrate how the research community could contribute in promoting the forest landscape restoration.

The workshop was split into three main sessions and a working group session. Three main sessions were introduced by a series of background papers, followed by invited and voluntary case studies from the participants. The background papers and the case studies served as a catalyst for further discussion. Summary of the discussions is presented on page 153.

The first session dealt with the evolution of forest landscapes in Central and Northern Europe. The role of human activities in shaping the landscapes was explained through examples from Austria and Romania.

Forests are subject to an extensive number of international commitments, including the Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention to Combat Desertification (UNCCD), as well as the United Nations Forum on Forests (UNFF) and its predecessors. In addition, European level policies and initiatives, such as the Ministerial Conference on the Protection of Forests in Europe (MCPFE), Pan-European Biological and Landscape Diversity Strategy (PEBLDS) and EU policies and instruments deal with forests. The second session highlighted

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

these international and regional forest policy frameworks, and how they address forest landscape restoration and how they could possibly be used to support forest landscape restoration.

The third session looked at the restoration of degraded forest areas and functions, and participatory methods in forest landscape level planning in the Central and Northern European region. The special themes were introduced by background papers and practical examples were given from Denmark, Finland, Great Britain, Russia and Switzerland.

Two working groups further elaborated the following issues:

- Restoration of degraded forest areas and functions;
- Participatory methods in forest landscape level planning;
- Most urgent research needs for further development of forest landscape restoration;
- Strengthening the linkage between practical forest landscape restoration activities and regional/international policy processes.

The working group reports are attached on pages 159 and 161.

2. Key outcomes

The term "restoration" easily connotes a transition from a degraded state to a former natural or original state. Consequently, forest landscape restoration can easily be understood to fit in situations where original forest cover has been lost or is badly degraded. In many Central and Northern European countries there is good forest coverage and in general, the forest area in Europe is increasing. So, the applicability of forest landscape restoration in these situations might be questioned.

Many European forests, however, have been degraded through different types of human activities and/or natural hazards (e.g. fires, storms, avalanches, erosion, intensive forestry, air pollution) causing changes to forest soil, structures, flora, fauna and functions. Here, forest landscape restoration could provide an approach to improve the forests. It was emphasised that *forest landscape restoration focuses on restoring forest functionality that is goods, services and ecological processes that forests can provide at the landscape level*. It should be considered as a flexible package of site-based techniques recognising that managers have to prioritize management objectives at the site level. Management objectives can be e.g. timber production, biodiversity conservation, game management, water protection, carbon sequestration, and recreation. Applicable techniques can vary from pure ecological restoration through blocks of plantations to planted on-farm trees.

In the discussion the lack of clear definitions related to the concept was raised. On the other hand, it was felt important to *maintain the flexibility of the forest landscape restoration approach*, so that it could be applied in ecologically, socially, economically and culturally different situations. Applicability of the approach could be demonstrated through case studies and sharing of experiences of workable practices. Different presentations in the workshop showed that much is occurring in Central and Northern Europe that is consistent with the aims of forest landscape restoration although the activities do not carry that name. However, in order to promote forest landscape restoration amongst wider audience*, a better description of the approach should be provided*.

In forest landscape restoration it is important *to consider also the other ecosystems in the landscape*. The inter-sectoral collaboration in the land-use planning and management has to be emphasised and the effects of forestry to other ecosystems have to be considered. Furthermore, it should be realized that forests are not always the best solution in landscape

restoration. Other types of ecosystems (e.g. meadows, peat-lands) might be more important for example for biodiversity conservation.

Involvement of different stakeholders is emphasised in the forest landscape restoration approach. Mutual understanding on different forest values and functions can be increased through applying participatory planning and management methods. This will also help to avoid and/or manage conflicts in the use of forest resources. Private small scale forest ownership dominates in many Central and Northern European countries. Therefore it is important to bring private forest owners into the processes of planning and visioning forest landscape restoration. *Partnerships have demonstrated promising results in obtaining higher level commitment from those involved*.

A number of international commitments and European level policy frameworks deal with forests. Coordination is of utmost importance in order to strengthen synergy and to avoid fragmented and contradicting initiatives and environmental impacts. *Forest landscape restoration provides a useful means to implement international and European commitments on forests in a coordinated manner at the landscape level offering high potential for synergy*.

A great deal of relevant research has already been conducted that could contribute to the further development of forest landscape restoration. *Before embarking on new research programmes, an overview of research related to forest landscape restoration should be conducted*.

Welcoming remarks

Aarne Reunala

Ministry of Agriculture and Forestry
Helsinki, Finland

Forest landscape restoration is a relatively new, not yet fully established concept. Forest destruction or forest degradation are more familiar concepts, as it is a well known fact that tropical forests disappear at the rate of 10–15 million hectares per year. Therefore, the prevention of forest loss has been a top priority, both in development aid and in global forest-related processes.

The loss of forests has continued for decades, leaving huge areas of degraded and destroyed forest lands around the world. In the tropics there are about 850 million hectares of degraded primary forests. This enormous figure shows that the reconstruction of these degraded lands would be an effective tool in maintaining and increasing the forest cover of the world. It is important that this tool will receive sufficient attention as it can make a very useful contribution to the fight against forest loss.

The term "landscape" has many different meanings. In the context of forest landscape restoration the main idea is the restoration of relatively large areas of degraded lands. In this context "landscape" means a large area, not beautiful scenery as often understood in, for example, the Finnish language. Work needs to be done to clarify the concept so that it is correctly understood in different parts of the world.

In Europe we have a lot of experience in the restoration of forests. In earlier centuries the population pressure led to the destruction of vast areas of forest land in most European countries. In some countries almost all primary forests disappeared because of changes in land use, overcutting and over-grazing. The trend changed some 100–150 years ago along with the industrialisation and economic growth. New employment opportunities decreased the pressure on forests and, little by little, the state of the forests began to improve.

Finland is a good example of such a process. In the 1850s there were large areas around towns and villages where forests had disappeared and there was a general shortage of timber. The authorities had not been able to prevent forest degradation. Industrialisation, and in the case of Finland, especially the establishment of sawmills and pulp and paper mills changed the trend. The industrial demand for timber increased, followed by remarkable increases in timber prices. Forest owners realized that their forest had become a valuable property. Now they not only sold timber and got wealthier, but also began to protect and take care of their forests.

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

The State joined in for her part, supporting the development of forest economy by new legislation, new financial incentives and by developing stronger forest administration, forest research and other forestry organisations. This led to gradual restoration of degraded forests and improved forest management.

Finland has gone a long way from devastated forests to sustainable forestry which yields multiple benefits to forest owners and to the society. Since the 1950s the industrial use of domestic timber has doubled from 30 to 60 million cubic metres per year, while the annual increment of forests has increased from 55 to 85 million cubic metres. Forests are in a better condition and the forest sector offers much more well-being to the people than ever before.

Similar changes, in varying degrees, have occurred in all European countries. Europe's forest area is increasing and the state of the forests, their annual growth and timber volume, is improving. Active forest restoration measures are also being undertaken in many places. Europe has rich experiences to offer in promoting forest landscape restoration.

It is important to understand that forest landscape restoration does not mean the reconstruction of original pristine forests or the creation of new protected areas where people cannot live. It is mainly population pressure which destroyed the forests in the first place; therefore the restoration has to be carried out together with local people and users of forests so that the newly established forests satisfy the various needs of the people. Social sustainability is an essential element in forest landscape restoration. At the same time, of course, the restored forests should enrich and sustain the biodiversity as much as possible.

Forest landscape restoration is a promising tool for improving the state of the world's forests and the living conditions of rural people. It is to be hoped that European countries take an active role in the new Global Partnership on Forest Landscape Restoration.

Lessons and Challenges of FLR – A WWF Perspective

Jeffrey Sayer and Mark Aldrich

WWF – Forests for Life Programme

The prevailing paradigm of conservation organisations is to strive to conserve as much natural habitat as possible. However, forest conservation costs money, both in terms of direct costs (staff, purchase of vehicles and other costs associated with managing protected areas), and in terms of the opportunity costs associated with the land allocated for conservation. Both the management costs of conservation areas and the opportunity costs are a function of the relative profitability of alternative land uses. It is more costly to establish and maintain a protected area in a locality where profits from farming or logging would have to be foregone or where significant development has already increased the value of land (Balmford et al. in press). It is therefore easier to locate protected areas in places where competition for land is minimised. As a result, much of the global effort to conserve forests, especially in the developing tropical world, has to date focussed on the establishment of parks and protected areas in remote areas where forests are still well-preserved and the lack of conflicting demands on the land helps keep costs down. Much of the conservation forest estate is therefore composed of the "residual forests" on land that has not, up until now, been required for any other purpose (Pressey and Olson in press).

However, there are a number of reasons why this approach may be inadequate to meet forest conservation needs in the longer term. Firstly, the demands on land in areas that are remote at present are likely to increase as development facilitates access and economic activity in even the most remote areas (Kapos et al. 2000). The resources and effort devoted to the management of currently remote protected areas will need to be enhanced as the development frontier advances. Secondly, precisely because of their remoteness, such protected areas cannot meet the needs of society, and especially the poor, for forest goods and services. Provision of timber and non-timber products, storage of carbon and protection of soils and river catchments are all needed in areas that are settled and in many cases degraded. Priorities for biodiversity conservation, as determined by the occurrence of species and ecosystems of national or international concern, often include areas where ecosystems are already significantly degraded (Brooks et al. 2002).

The need for securing or enhancing the supply of forest goods and services including biodiversity are often most urgent in areas where forest ecosystems may have already been severely disrupted or degraded. In response to this situation several countries are embarking

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

on major investments in reforestation but often these programmes are driven by a very narrow vision of the values of forests. They are not based on a sound understanding of the full spectrum of forest values that are required by diverse local stakeholders. They ignore underlying social and environmental problems and potentials. The approaches often give too much emphasis to extensive planting of monocultures of exotic species and not enough to natural regeneration and the management of the fire, over-grazing and over-exploitation that are the causes of degradation. The recent ITTO Guidelines for restoration, management and rehabilitation of degraded and secondary tropical forests are innovative in presenting a much more holistic and integrated vision of landscape restoration (ITTO 2002).

From an early focus on protected areas and species WWF has gradually moved to address environmental issues in the broader forest landscape. The nurturing of biodiversity values in managed forests has been central to our promotion of forest certification. At the same time we have focussed our priority setting at an ecoregional scale, part of the process of setting our forest conservation work in its broader context. A natural outgrowth of this was the introduction, in 2001, of "Forest Landscape Restoration" as a formal target of our Forests for Life Programme. The rational for this was that in many situations habitat loss had progressed to the point that greater biodiversity gains can often be obtained by restoring degraded habitats than by conserving residual areas of natural habitat. We were also motivated by concern that many large scale reforestation programmes undertaken in the name of the environment were not yielding the biodiversity or even the social benefits that they claimed.

The choice of the "Landscape" as a scale of reference came from the recognition that targeted restoration could complement protected areas and other forest categories in providing a "Forest landscape" where the "whole" has greater value than the "sum of the parts". Restoration could improve landscape "performance" in ways that yielded benefits both for local livelihoods and for natural values. We saw our conservation programmes as contributions to the development of multi-functional landscapes (Sayer et al. 2003).

WWF has recently revised its operational definitions of FLR. Currently we understand the term as follows:

- Forest Landscape Restoration is a *"a process that aims to regain ecological integrity and enhance human wellbeing in deforested or degraded landscapes".*
- For the purposes of WWF, forest landscape restoration essentially equates to *implementing forest restoration within a landscape context* – i.e. targeted interventions aimed at restoring the functions of the forest in the landscape…
- …We are not talking about restoring forest cover across a whole landscape
- ...We are not advocating large scale (monospecific) reforestation projects

WWF's experience with FLR

WWF currently has Restoration Initiatives underway in:

- Annamite Range Moist Forests, Vietnam
- Borneo Forests, Kinabatangan, Malaysia
- Forests of the Upper Yangtze, China
- New Caledonia Dry Forests
- Nusa Tenggara Dry Forest, Rinjani, Indonesia
- Eastern Africa Coastal Forest, Kenya and Tanzania
- Madagascar Forests and Shrublands
- Mediterranean Forests/Woodlands, Portugal and Morocco

- Danube River delta, Bulgaria(/Romania)
- Plus several locations in Latin America and the Caribbean.

FLR has been a programme priority for WWF for four years. The main lessons from this first period of our FLR work are that we have to set very clear and realistic objectives for FLR. Some of our initial efforts to promote FLR over very large areas may have been over-ambitious given the resources and influence that we were able to deploy. A second lesson is that it is difficult to subject large-scale landscape-level activities to a formal planning process. There are too many other actors in these landscapes, often with conflicting agendas and greater resources. Success in FLR depends upon building relationships and becoming part of the decision making process. Negotiating, doing deals and generally "muddling through" (Wollenberg et al. 2004; Linblom 1959) seem to work better than formal ex-ante planning. Interventions have to be made at multiple scales, we need focussed practical restoration interventions on the ground as well as policy interventions at various spatial scales. Our greatest success has come in places where we have been present for a long period and are recognised as serious and legitimate actors. Our ability to convene multiple-stakeholders and build bridges has yielded benefits. FLR has to be a process of continuous experimentation and learning and has to be based on sound science (Sayer and Campbell 2004).

Our work on FLR highlights the value of relict forest fragments and the role of restoration in both protecting them and extending their area or linking them with other forests. The use of guided natural regeneration processes has also proved a cost effective and feasible way to restore natural forest values.

The greatest challenges that we see for the future are in focussing restoration efforts in ways that yield the greatest livelihood and biodiversity benefits. Where we have a comprehensive understanding of landscape level processes we are able to focus our restoration efforts in a way that enables small restoration investments to yield major biodiversity gains. A major challenge in operating FLR programmes is to track progress. This requires an ability to measure the performance of not just the management unit – the areas actively restored – but also to measure the impact of this restoration on livelihoods and biodiversity at the scale of the landscape. Developing such a tracking capacity is one of our priorities for the coming five years.

The lessons of four years of Forest Landscape Restoration

1. We should be realistic about mega-landscape restoration projects – we do not have the resources of influence; some of our earlier efforts were far too ambitious. We can influence the course of events in large landscapes but we cannot control them.
2. It is important to focus on sensible-scale programmes with clear achievable biodiversity gains. FLR has to be applied to solve a real problem – it is not an approach to be applied in a vacuum. If a landscape is dysfunctional in terms of its ability to conserve a species, protect a watershed or support industry or local livelihoods then FLR may be needed.
3. Field interventions must be sharply focussed but conceived within a broad vision of landscape processes. The ultimate goal must be clear – the way to get there will be explored with the other stakeholders.
4. If you can't measure it you can't manage it – so we need a tracking tool. When we attempt to manage a large complex landscape we must have some means of measuring the performance of that landscape. Performance measures must cover both human development goals and environmental ones.
5. We should not prepare excessively detailed plans up front – even at modest scales we will always have surprises so all interventions are experimental and we must seek to constantly

learn from them. If plans are used they must be prepared with the input of all stakeholders. They must not be just an expert vision of what would be ideal.
6. We do not have the resources for large scale interventions but we can convene the major actors and try and get them all to work together to achieve better landscapes – but even here we need to have clarity on the long term goal and we have to have the capacity to build consensus.
7. The principles of "Ecosystem approaches" apply to FLR – but they are only principles, not a management prescription. Much of the literature on ecosystem approaches also applies to FLR.
8. We have to be a permanent part of the system – we need to justify our seat at the table – we are stakeholders just like everyone else. FLR will not work if it is addressed through a short-term project designed and implemented by outsiders. FLR will generally take decades not just a few years and will be a process that unfolds with time and that requires constant learning and adjustment.
9. We must be part of the "policy narrative" so understand who influences it and how. Sometimes "stroke of the pen" policy changes can work. But usually policy decisions are based upon a "policy narrative" or conventional wisdom shared amongst influential people. We have to be part of this community of people who discuss and implement policies.
10. We need to understand how decisions are made and by whom – we need to understand the drivers of change. Simply making statements about desirable outcomes will not usually be sufficient.
11. FLR is in some ways similar to JAZZ – it requires a consistent theme, constant adaptation, perfect communication within team and with clients and continuing improvisation.
12. FLR will need new sorts of knowledge systems. Formal scientific knowledge will be important but all sorts of local and informal knowledge and especially traditional knowledge will be relevant and should be mobilised.

Measuring landscape performance

WWF is developing techniques for assessing progress in restoring landscape functions. This work is at an early stage but preliminary attempts negotiated with local stakeholders on the Indonesian island of Lombok have led to assessment processes based upon the following sorts of questions.

- Total forest extent
- Areas of community forests
- Change in Village Development Index (measures of health, education and physical assets)
- Water discharge from catchment
- Amount of environmental service payments

The importance of participation and negotiation

Spatial analysis methods provide important tools for setting priorities and monitoring progress in forest landscape restoration. However, they tend to favour biophysical considerations. The challenge is to adapt these and other tools to take account of the full range of benefits that are required from any given landscape. An important element will be employing methods for

determining local peoples' knowledge and interests and incorporating them into the thinking about land-use options from the beginning. Sheil and Wunder (2002) have discussed the difficulties of formal forest valuation techniques in capturing the real determinants of local decision making. There is abundant evidence from many field programmes that more sustainable outcomes are achieved if all stakeholders are involved early in, and throughout, the process of development of scenarios for forest conservation. It is also likely that local processes will identify more finely grained mosaics of land use and to reveal an increased variety of management options than an externally generated conservation plan.

Many of the rules for securing effective participation are common to all local level natural resource management activities. For instance it is important that such negotiations are genuinely equitable and that power differentials are not allowed to prevail. It is necessary that the conservation lobby is explicit about its conservation objectives. Negotiations will be more meaningful if conservation objectives are spelled-out in terms of the species or species assemblages that need to be conserved and the resources that conservationists can contribute. Hagmann (1999) and Hagmann et al. (2002) provide valuable guidance on the conduct of such negotiation processes.

It is important to recognise that technical and participatory tools for planning and prioritising landscape management and restoration can be complementary in important ways. Spatial analysis and mapped data can help participants to visualise others' values of the landscape and the options available for its management. Effective participation can help to generate value surfaces other than those commonly available to the scientifically based conservation community. Analytical tools and approaches such as analyses of complementarities can be used to identify potential landscape management options that maximise improvements with respect to a number of different goods and services.

Another important use for complementary application of technical and participatory approaches is in monitoring the progress of restoration programmes in improving the ability of a landscape to deliver the forest goods and services that are important to its stakeholders. Monitoring processes must be designed with full inputs from the intended beneficiaries.

Issues specific to Northern and Central Europe

Initiatives in Northern and Central Europe provide interesting lessons and opportunities for FLR. Reform of the Common Agricultural Policy and the interest in providing environmental payments to support multi-functional landscapes are excellent opportunities to explore the ways in which forest values can be restored at the landscape level.

The fire problems in Mediterranean Europe are examples of where the "forest landscape" could be managed to reduce fire risk instead of investing excessive resources in futile efforts to extinguish fires.

In many European situations biodiversity conservation objectives require that areas be kept clear of forest or that a mosaic of successional stages be maintained. So it is not a question of restoring old-growth forest on as large an area as possible.

Conclusions

WWF has recently revised its targets and milestones for FLR. The newly adopted ones are:

- By 2020, restore forest goods, services and processes in 20 landscapes of outstanding importance within priority ecoregions to regain ecological integrity and enhance human wellbeing.
- By 2007, 20 detailed landscape restoration plans with clear biodiversity and socio-economic goals are integrated within ecoregion action plans.
- Multi-year funding secured and demonstrable progress achieved on Forest Landscape Restoration in at least 5 landscapes by 2007
- By 2005, develop and pilot a tracking tool that measures improvements in landscape values through protection, management and restoration.
- By 2005, develop and pilot a tracking tool that measures improvements in landscape values through protection, management and restoration.

Our overall position at present is that we believe that Forest Landscape Restoration is an approach to forest conservation that can provide high pay-offs for a range of forest benefits. It recognises that complementarities can be fostered between the different components of landscape mosaics – that the whole can be more than the sum of the parts. The key characteristics of the approach are:

- It focuses attention on the complementary relations between the different components of landscape mosaics and not just on the management unit.
- It involves all stakeholders in equitable negotiations over outcomes.
- It allows for maximising production in specialised management areas whilst allowing other benefits to be managed at a larger scale.
- It can reduce the opportunity costs of very extensive single use approaches such as large-scale industrial plantations or very extensive protected areas.
- It will often yield higher biodiversity pay-offs than further investment in protecting the remote residual forests on poor soils that are often the focus of conservation initiatives.
- It can bring multi-functional forests to areas of high human population density and thus serve a valuable educational and awareness raising function as well as directly contributing to the quality of life of people in densely populated and degraded areas.

References

Balmford, G., Blyth, J. and Kapos, V. In press. Global variation in terrestrial conservation costs, conservation benefits, and unmet conservation needs. PNAS.

Brooks, T. M., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B., Rylands, A. B., Konstant, W. R., Flick, P., Pilgrim, J., Oldfield, S., Magin, G. and Hilton-Taylor, C. 2002. Habitat Loss and Extinction in the Hotspots of Biodiversity. Conservation Biology 16: 909–923.

Hagmann, J. 1999. Learning together for change. Facilitating innovation in natural resource management through learning process approaches in rural livelihoods in Zimbabwe. Margraf Verlag, Weikersheim, Germany.

Hagmann, J. R., Chuma, E., Murwira, K., Connolly, M. and Ficarelli, P. 2002. Success factors in integrated natural resource management R & ED: Lessons from practice. Cons. Ecol. 5: 29.

International Tropical Timber Organisation, 2002. ITTO Guidelines for the restoration, management and rehabilitation of degraded and secondary tropical forests. ITTO, Yokohama, Japan.

Kapos, V., I. Lysenko and R. Lesslie. 2000. Assessing Forest Integrity and Naturalness in Relation to Biodiversity. UNEP-World Conservation Monitoring Centre, Cambridge, U.K. 60 p.

Lindblom, C.E. 1959. "The Science of Muddling through" Public Administration Review 19(2): 79–88.

Pressey, R and Olson, D. In press. A framework for conservation planning.

Sayer, J.A. and Campbell, B. 2004. The Science of Sustainable Development: Local livelihoods and the global environment. Cambridge University Press, Cambridge UK and New York.

Sayer, J.A., Elliot, C. and Maginnis, S. 2003. Protect, manage and restore – conserving forests in multi-functional landscapes. World Forestry Congress, Quebec, Canada.

Sheil, D. and Wunder, S. 2002. The value of tropical forests for local communities: Complications, caveats and cautions. Conservation Ecology online URL: http://www.consecol.org/vol15/iss2/art9
Wollenberg, E., Iwan, R., Limberg, G., Moeliono, M., Rhee, S. and Sudana, M. In prep. Muddling towards copperation: Spontaneous orders and shared learning in Malinau District, Indonesia.

Forest Landscape Restoration: A National Perspective of a Global Partnership

Mike Dudley

Forestry Commission, United Kingdom

Within the Forestry Commission we have recognised that "Forest Landscape Restoration" provides the opportunity to make a positive contribution through working in partnership at several different levels.

Over the past few years we have supported the global partnership to promote the sharing of some of the practical lessons that have been learnt by many through the implementation of FLR on the ground.

The partnership is a network of governments, organisations, communities and individuals who recognise the importance of forest landscape restoration and want to be part of a co-ordinated global effort. As such we hope the partnership will serve as a model of how the international forest community can move constructively from dialogue to action by linking policy and practice.

Introduction

When IUCN and WWF approached the Forestry Commission in 2002 with idea of a global initiative on forest landscape restoration we saw this as an important chance for the UK to share our expertise with others around the world on an issue that is becoming increasingly important. The opportunity to revive deforested and degraded landscapes so that they benefit local communities through drawing inspiration from successful forest restoration stories around the world was one we thought was too good to miss.

At the same time we also saw the opportunity this initiative provided for us to make clear links between the international forest dialogue and action at the national and local levels. As we worked on the initiative with a growing number of partners we wanted to maintain as much flexibility as possible in order to reflect the diversity of situations that could contribute and benefit the initiative and its partners.

Now the Global Partnership on Forest Landscape Restoration provides a focus for governments, communities, organisations and others the world over who are engaged in

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

restoration activities to share on-the-ground examples of what works. The partnership is attracting a growing range of partners and has already provided support for a number of national and regional events to inspire and facilitate the positive exchange of experience for those active in restoration – at the national level and at the regional level through workshops such as the Central and Northern European one and at the global level through the workshop planned for the first half of next year.

Forest Landscape Restoration

Many degraded landscapes have been modified to such a degree that they are no longer capable of delivering the goods and services that people demand now and need for the future. Local land use patterns have led to a situation where forest landscapes are typically mosaics of degraded primary and secondary forests, planted forests, agricultural/pasture lands and human settlements, each with its own economic, social and environmental elements. Deciding which configuration or mix offers the optimal outcome in terms of human welfare and nature conservation constitutes a major challenge for practitioners and policy-makers.

Forest landscape restoration offers a constructive and pragmatic way of approaching this question. It recognises that land-use trade-offs are inevitable and therefore focuses on optimising forest functionality at a landscape rather than at a site level – i.e. placing emphasis on the attainment of the optimal quantity and quality of forest resources necessary for improving and maintaining people's well-being and ecological integrity. To do this it brings together people and organisations to identify and put in place a variety of land use practices to help restore the functions of forests across a whole landscape.

To illustrate the many ways in which forest landscape restoration can benefit both people and nature the Global Partnership's compiled a portfolio containing information in a broad range of case studies from around the world. Some might say that this breadth of the initiative is well illustrated by the UK's case study "Kielder Forest".

Kielder Forest

Forest cover in the United Kingdom had been reduced to around 5% by 1900. To address this downward trend the government created the Forest Commission, which over the past 80 years has undertaken a massive reforestation programme.

The planting of Kielder Forest, in northern England began in 1926. By 1970, 50,000 hectares of mostly even-aged, single species Sitka spruce plantations carpeted the wet and windswept hill country. Although the reforestation programme was a resounding success it became clear during the 1970s that not everybody was happy with regimented monocultures of alien species, which offer little in the way of environmental or social benefits. In responding to these pressures the Forestry Commission has transformed Kielder Forest, and other areas like it, into multi-purpose forest landscapes.

The transformation has been achieved through a restructuring process that is based on forest design plans. Kielder Forest is divided into a number of landscape units ranging in size from 1,000 to 10,000 hectares. Each unit is served by a design plan that sets out the changes that will occur through felling, planting and other activities. This restructuring is gradually producing patchwork of stands with trees of varying sizes and ages, enhancing biodiversity and its attraction to visitors. The UK's largest man-made forest is being transformed into a resource that is rich in wildlife and recreational opportunities.

A key lesson of this process has been that through involving representatives of the local community, and local wildlife and recreational experts, in the formulation of forest design plans and other processes, the Commission has helped to "reconnect" people with the forests and the land.

National Dimension

Having contributed a case study to the portfolio we also wanted to make the links between the international commitments and actions on the ground within the UK. Our initial approach was to carry out a rough and ready assessment of the various activities in which the Forestry Commission was engaged that related to Forest Landscape Restoration. It became clear very quickly that there were links to a very broad range of our activity research, policy and practice. One of which is the subject of a presentation later on in the workshop.

As a first step in making the links between the international views on sustainable forest management and actual practice on the ground the exercise also demonstrated a resonance between developments internationally and nationally over the past 10 years. From such a cursory assessment it was difficult to identify direct causal links but there was a clear sense of a growing shared understanding of what the sustainable management of our forests requires. Which I think reflects the growing willingness of policy makers, researchers and practitioners to share their experience and learn from others both nationally and internationally.

In the discussions I have had with a variety of colleagues in the UK several elements have struck me. Firstly that those involved in restoration were passionate about what they were doing; secondly the need to get buy in from those on whom the projects would impact; and finally in most cases the Forestry Commission was not working on its own but with a range of partners to deliver action on the ground.

Global Partnership

At the global level there is a diverse array of people and organisations involved in forest landscape restoration. One of the aims of the Global Partnership on Forest Landscape Restoration is to build on this activity through providing a network for governments, organisations, communities and individuals who recognise the importance of forest landscape restoration and want to be part of a co-ordinated effort at the global level. With partners learning from one another's experiences to identify, undertake and support forest landscape restoration activities leading to increased profile and support for their activities.

The partnership has the potential to demonstrate clear results by 2005 and to serve as a model of how the international forest community can move constructively from international dialogue to national action linking policy and practice.

Amongst the project partners there is a feeling that the profile of forest landscape restoration can be significantly raised in national, regional and international decision-making. Through this approach hopefully forest restoration will have been extended into new areas, and increased support will have been generated on-the-ground to benefit people and nature.

There are many ways to contribute to the partnership. These include hosting a workshop such as this one at a regional level or at the national level, preparing a case study for presentation, providing technical or policy advice, introducing domestic policy reforms, initiating a field project, hosting a web site or otherwise facilitating information exchange, providing funding, etc. Each of the partners of the Global Partnership on Forest Landscape

Restoration is actively involved in forest landscape restoration or supporting it through technical and policy advice or funding, and is eager to work with other partners to safeguard natural resources and improve the livelihoods of millions of people.

Activities of the Partnership to date include:

- the production and exchange of information on where and how forest landscape restoration could be undertaken or reinforced;
- an analysis of how forest landscape restoration contributes to the implementation of existing international and regional laws and agreements;
- the presentation of case studies, highlighting the lessons learned from field projects;
- the organisation of sub-regional or regional workshops in 2003–2004.

A number of regional workshops have already taken place, including in South-East Asia, the Mediterranean, Northern Africa and Latin America. These have resulted in broader understanding of forest landscape restoration approaches and the development of specific projects to implement forest landscape restoration in various countries.

However, an important point is that the partnership is not seeking to establish a policy process or duplicate the efforts of other international bodies but rather to weave a thread through existing activities, projects, processes and institutions. In this way to encourage and reinforce the positive roles and contributions of each of them to through forest landscape restoration.

In order to draw all these activities together and build on all the work to date the Partnership is organising global workshop in the form of a UNFF Intersessional on Forest Landscape Restoration. The workshop dates and location are now set: April 4–8 2005, in Petropólis, Brazil. An Organising and Technical Committees have been established to develop the program and consider participants. To date more than 100 participants have been proposed, from all around the world and reflecting a mix of practitioners and policy-makers.

Conclusion

Working on the forest landscape initiative is only one element of my current job but I have found over time that I am using it more and more to demonstrate the way in which we can link the international dialogue on forests to practical action on the ground. For me the strengths of forest landscape restoration are its adaptability, its use of partnerships and its links to practical application on the ground. Through national workshops, the global workshop and regional workshops such as this, as well as through the creation of a web site and production of a demonstration portfolio, we have created a means for information to be shared and an implementation support network between practitioners and policy makers at the national, regional and global level, hopefully in a two way process.

What is Forest Landscape Restoration?

Stewart Maginnis

IUCN – The World Conservation Union
Forest Conservation Programme

Centuries of land-use change have transformed many landscapes compared to their original natural state. Sometimes the changes have been so extreme that these landscapes are now characterised by diminished ecosystem functionality and productivity, drastically reduced biological diversity, and, in some cases, a paucity of local livelihood opportunities. However strategies for the sustainable management and conservation of forest resources has tended to accept this "*status quo*" focusing on the protection and sound management of remaining forest cover and forgetting about degraded and ex-forest lands. Even when the establishment of new forests is recognised as a national priority such goals have usually been pursued through afforestation programmes which are seldom capable of restoring the multiple values that flow from natural forests or of adequately addressing all the needs of key interest groups.

How to promote the restoration of forest goods and services at a scale that could really make a difference is a growing challenge for 21st century sustainable forest management. In many areas there is a pressing need to identify viable land-use options that can enhance the productivity of degraded landscapes, revitalise moribund rural economies, safeguard communities from extreme climatic events and underpin the integrity of protected areas through better landscape level connectivity. What is obvious is that there is no single intervention that can deliver all those needs from a single site.

Forest Landscape Restoration seeks to create a framework whereby both ecological integrity can be regained and human well-being enhanced in deforested or degraded forest landscapes'. It focuses on restoring forest functionality: that is, the goods, services and ecological processes that forests can provide at the broader landscape level as opposed to solely promoting increased tree cover at a particular location. While it recognizes that managers have to prioritize management objectives at the site level it equally recognizes that making the same trade-off right across the landscape will result in diminished forest functionality. The landscape is therefore promoted as the unit at which social, economic and environmental trade-offs should be equitably balanced.

Since forest landscape restoration addresses the supply of forest goods and services at a landscape level it is not limited to – nor does it exclude – particular site-based technical interventions. Any individual application of the forest landscape restoration approach will be

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

a flexible package of site-based techniques – from pure ecological restoration through blocks of plantations to planted, on-farm trees – whose combined contribution will deliver significant landscape-level impacts.

The practical challenge is how to establish the conditions so that different forest-related land use activities can ensure that the landscape "whole" is greater than the sum of its "site-level" parts. A traditional approach has been one of expert-driven land-use planning. Rather than focusing on "ideal" land-use configurations it is proposed that more attention needs to be given to understanding the institutional and political context that shapes landscape functionality. Only with a broader understanding of the landscape and the factors that determine whether different land-uses (and land use policies and incentives) are mutually reinforcing or in conflict will it be possible to identify and remove the constraints to the restoration of landscape-level forest functionality.

Session 1: Evolution of Forests Landscapes in Central and Northern Europe

Evolution of Forest Landscapes in Romania

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Introduction

On the international arena there are several legal frameworks, policies and programmes targeted at preserving biodiversity in general, including the biological diversity of forests. A synergy can be achieved between different initiatives, agreements and conventions, but in order to derive these mutual benefits there should be a clear understanding of the ecological, socio-economic and political processes. On the one hand, conservation means protection and sustainable use of the existing values and avoidance of further degradation, losses and habitat fragmentation and, on the other, it means restoration of functional ecosystems with their habitats and populations.

Forest landscape restoration is analysed from the points of view of conservation and sustainable use within the framework of the ecosystem approach of the Convention on Biological Diversity (CBD), rural development and interests of local communities, participation of stakeholders in decision making on resource management in forested areas, regulating function of forests in water catchment basins, flood control, relationship between river basin management, forestry and the civil society, international issues related to floods and deforestation-afforestation, and role of forests in delivering goods and services for the benefit of the human community. The role of the Natura 2000 Network in Romania is discussed, together with the role of forests in a functional ecological network as core areas as well as corridors (mostly along rivers and streams) and stepping stones.

Positive elements in forest related biodiversity in Romania

Romania has a very high biodiversity, which is very well preserved compared to the situation in Europe in general. Romania has 5 biogeographical regions, the largest number in a European country: Pannonian, Alpine, Continental, Steppe and Black Sea biogeographical regions, two of which will be new ones in the enlarged EU.

* The views presented in this paper are those of the author and do not necessarily correspond to those of the publisher or the event organisers.

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In Romania there are huge areas of natural forests, as well as virgin and semi-natural forests on 250,000–300,000 hectares of the total of 400,000 hectares in the Carpathian Mountains. The Carpathians are the largest mountain range in Europe, of which about 55% lies in Romania. According to the official statistics, there are about 6,200 brown bears (*Ursus arctos*), 4,000 wolves (*Canis lupus*) and 2,000 lynxes (*Lynx lynx*) in Romania. The number of bears is at least twice their number in the EU 15. Even if the area of the Romanian Carpathians is only about 1.4% of surface area of Europe west of Russia, this small percentage is home for about 35% of the European wolves, 50% of bears and 30% of lynxes. Reintroduction projects for beaver (*Castor fiber*) and marmot (*Marmota marmota*) have been implemented successfully under the State Forest Authority. There are 58 species of trees and 118 species of shrubs in Romania. In the Romanian Carpathians there are large beech tree (*Fagus sylvatica*) forests which are close to the natural state. In Tarcau a huge spruce tree (*Picea abies*) was found in 1959: it was 62.5 meters tall, which is the tallest coniferous tree in Europe. There are many endemic species of flora and fauna, mostly in isolated limestone mountains, bogs and caves.

The official surface area of forests in Romania is 6,366 million hectares, covering 26.7% of the country. Of this 70% is deciduous forest and 30% is coniferous forest. Some experiments (mostly in theory) concerning integrated management of natural resources where efforts are being made to balance conservation and economic and social interests have been undertaken (for example, World Bank projects: "Forestry Development Project" with a total value of US$ 32 mill.). Some work has also been done on FSC certification (Forest Stewardship Council).

History and causes of the decline of Romanian forests

In the past significant fragmentation and reduction in the areas covered by forests has taken place, on both the global and European scale. Today the possibilities to restore the situation close to the natural state are limited, but there is a strong need to prevent further losses and to try to regain an ecological equilibrium. In areas deforested many hundreds of years ago there are now valuable semi-natural habitats, pastures and hay meadows with high biodiversity, which means that afforestation is not the appropriate way to preserve these values. In many regions the abandonment of agricultural land as a consequence of the low profitability of agriculture will offer new possibilities for afforestation or these areas will be covered by forest as a result of natural succession.

In the past changes in land use led to a loss of forested areas in Romania as well: the forested areas in the territory which is now Romania have decreased from a clear natural dominance of about 80% land coverage at the beginning of the historical times to 25–27% coverage today, which is less than the European average of 33%. Oak forests (*Quercus* sp.) have declined drastically because these were located on the lowlands and were thus much more affected by human interventions than the mountains: the share of forested area has decreased from 56% to 18.2%.

The fragmentation and decline of forested areas continues. Of the many factors influencing the Romanian forests today the most important is illegal logging and intensification of forestry. Human action is also reflected in the changing species composition of forests, introduction of alien species, air pollution, fast erosion in areas disturbed by human activities, and fires started by humans (voluntary or involuntary). As a result of the interaction between human and natural influence, strong storms (possibly resulting from climate change, also caused by humans) are destroying large areas of coniferous monocultures (monocultures often extend outside the natural habitats of these species). Natural fires, avalanches and natural erosion (for example, in Groapa Ruginoasa, Apuseni Mountains) may also be considered harmful from the utilitarian point of view, but these natural hazards are in fact part of the natural evolution of the ecosystem.

Some types of habitats, like riparian forests along the river valleys, were almost totally destroyed. In large areas of the Lower Danube but also in many other places in Romania where there were abundant and diverse riparian forests there are now large areas covered by stands of hybrid poplars. One important issue is genetic pollution. The best example is the black poplar (*Populus nigra*), a species from the riparian forests, which is losing its genetic (including phenotypic) identity due to hybridisation with Euro-American hybrid poplars planted extensively in Romania.

What is the situation now?

During the communist era the area covered with forests increased in general thanks to large afforestation (reforestation) programmes, but at the end of the communist era, there was a great deal of logging for export to deal with the accumulated foreign debt of the country. During the communist era the forests were owned by the State. After the changes in 1989, some areas have been returned to the former owners (or their successors). These new owners were attracted by the fast and substantial income, but they have also been afraid of losing their timber because of thefts in the night and even daytime. Because of this many owners decided to cut the trees on their own small forest estate, which resulted in a loss of forest on large areas. They were also afraid of losing their forests because of the instability of the political situation. Any changes could affect their rights to use their properties in a way decided by themselves. Usually these private owners have no scientific or practical knowledge on forest management and they have lost their traditional knowledge and skills to be able to manage these forests. They have not enough financial power to invest in forest protection, reforestation, etc, especially when the results of these activities can be expected only after 100–120 years. So, the only real option is to use the natural regeneration of the forest. If the clearcut areas are large, problems in the natural regeneration may appear, especially with beech trees (*Fagus sylvatica*), because this species can regenerate well only in the shade; in normal conditions in the shadow created by a beech forest.

Illegal logging is a serious problem in Romania. The general perception in Romania is that in illegal clearcutting there is some businessman behind it, but representatives from the state forestry sector, representatives of local authorities, police, and politicians are also involved. Reducing corruption is very high on the political agenda, but this is mostly theory, without clear practical results. Illegal logging is a way to survive, to collect firewood for heating homes and cooking, and to obtain some money for the desperate, poor people in timber-dependent rural communities. This has been even more obvious in the last 15 years when the income of rural communities has been very low, mostly because of the unemployment resulting from the closure of factories in the towns where these people used to commute to work.

The annual growth potential of the Romanian forests is now estimated at 16 million cubic meters and the exploitation is 14.3 million cubic meters (2002). The export value of timber and wood products is US$ 860 mill. (2002). This is only the official exploitation, while a lot of timber is being cut illegally. Another problem is that logging takes place in areas where roads allow the access into the forests, which means that in such areas the exploitation is stronger than it would be normally. At the same time, opening new forest roads is risky because, without a real capacity to control them, the only protection of the virgin, semi-natural or old-growth forests, a treasure of the Romanian Carpathians, would be broken.

The forestry sector is mainly interested in timber production and maximizing the financial income from the forests, using management and silviculture measures (species, felling system, clearcuttings, selection logging) with no regard to the other values of forests. Also, the level of general scientific understanding of biodiversity conservation within the forestry sector is low.

Old trees are considered harmful to the health of the forest, because they host many parasite fungi and provide reproduction ground for many species of insects. For example, many species of animals, like bats, owls, many singing birds, and many species of rare and protected insects need the existence of very old, partly decomposing trees for their life cycle.

In Romania large areas have been covered by spruce monocultures, many of these outside their natural areas. These forests are highly vulnerable to strong winds, which appear regularly in these climatic conditions. Windfalls are normal phenomena in such shallow rooted forests which consist of trees with decreased vitality and resistance because of the living conditions outside their natural range. In the recent past, there has been a strong decrease of oak forests, which have been affected by different human and natural phenomena. Natural phenomena like frost, strong winds, large quantities of snow, natural fire, different insects, viruses, bacteria or fungi, if combined by human impacts like pollution, illegal or legal over-harvesting, damage caused by recreation, hunting, mining, road and other infrastructure development, can strongly reduce the capability of the forest to adapt itself to the changing environment and to survive in the long term.

Management of the upper forest ecotone, with shrubs and sub-shrubs (*Pinus mugo*, *Juniperus* sp., *Alnus viridis*, *Sorbus aucuparia*, *Rhododendron myrtifolium*, small spruces, etc.) is important in the Carpathians. The upper limits of the forests in the Carpathians were lowered by about 150–250 metres under the pressure of extending pastures for summer grazing of livestock. With the reduction of the number of domestic animals in the current economic situation, the pressure is decreasing, permitting the natural succession and the spontaneous re-colonisation of these areas by forest and shrubs. However, this will result in the loss of very diverse habitats and, if climate change raises the temperatures, a process which is already in place, the forests will also cover the tops of many of the mountains in the Carpathians, which would lead to the loss of the rich diversity of alpine pastures. The question here is what should be done? Should natural succession be permitted, or is control necessary in the interest of the conservation of alpine meadow biodiversity?

When taking decisions which influence the future realities, the operators in the forestry sector should learn from the mistakes of the past and from the specialists in ecology, conservation biology and other related scientific fields. It would be better to implement "close-to-nature management", which is very far from the industrial forestry still dominating in Europe.

In the areas under intensive forestry many species are at the point of extinction or are already totally lost in large areas. They have been eliminated because they are not target species for this type of forestry: wild cherry tree (*Cerasus avium*), wild apple tree (*Malus sylvestris*), wild pear tree (*Pyrus communis*) and yew tree (*Taxus baccata*). The last one is also being destroyed by owners of livestock which also roam in the forests, because this tree is poisonous for the animals. Also fir tree (*Abies alba*) is less and less frequent in the Romanian forests.

Existing forests with low value from the point of view of conservation can be enriched by the introduction of valuable species, improving the species diversity as well as stratification of different layers inside the forest and ages within a certain tree species, resulting in a forest which is much closer to a natural one, with more natural processes in the ecosystem.

Afforestation projects in relation to biodiversity conservation

There are many examples of afforestation projects which have destroyed different habitat types because real knowledge and understanding of their biodiversity value and importance of their conservation has been lacking.

In Oltenia there were sand dunes with interesting biodiversity, but these native communities disappeared when the area was covered by afforestation with the alien species of *Robinia pseudacacia*.

In Dobrogea, near the Black Sea coast, there were afforestation projects using pine (*Pinus sylvestris*) which resulted in the loss of very valuable steppe biodiversity and acidification of the soil. These areas were very valuable for rare and endemic species, characteristic to limestone and loess habitats. The impact of the introduction of alien species is impossible to predict. Each species should remain in its natural range. Here we are concerned not only with species from other geographical areas, e.g. from other continents, but also with species from mountain areas in steppe regions. With afforestation in areas where certain tree species do not occur naturally, the natural habitat of other native species will be lost and the influence can be much more extensive due to e.g. the acidification of the soil and waters.

In abandoned agricultural areas that are far from forested areas only artificial afforestation can be considered, because there are no seed trees which could spread their seeds and re-colonise the area, i.e. regenerate the forests.

In afforestation projects, the focus should be on local sources of genetic material: local varieties, ecotypes and populations which are adapted to the local conditions and have a high value from the point of view of biodiversity conservation as they preserve intra-species genetic diversity important for long time survival of species in a changing environment. Without this genetic diversity within the species it is more probable that changes caused by such as climate change, pests, diseases, acid rain, alien invasive species, etc. will lead to the extinction of the species as species with low genetic variability are more vulnerable.

There is a LIFE Project implemented in Rodnei Mountains Biosphere Reserve and National Park where some areas are planted with Swiss stone pine (*Pinus cembra*), a species whose population in this area has been strongly reduced. The seeds are not from the Rodnei Mountains, but from the Calimani Mountains, where the ecotype of this species is different, adapted to volcanic stone and to existence within the forest, unlike that from the Rodnei Mountains, which is adapted to metamorphic stones and existence in the *Pinus mugo* shrubs area.

In afforestation projects, strictly protected areas (IUCN category I) from the same area should be considered as a model for the diversity and type of a forest which should be "elaborated" by the afforestation.

It is relatively easy to create forest coverage through afforestation, but the new forests are far from the natural ones in terms of the natural biodiversity of similar ecosystems, composition of species and genetic diversity inside the species, stability, etc. Even if the species used for afforestation are some local species or ecotypes of local origin, and even if there is the best willingness to rebuild the forest ecosystem using several species of trees and shrubs, including key species and rare or endemic ones, without continuity with a close-to-nature forests such reconstruction cannot be done through technical investments alone. It is necessary to create these "new forests" around or in continuity with the existing close-to-nature forests, or connected to these via continuous corridors or stepping-stones. From these old forests the species can colonise the "new forest", contributing to the establishment of valuable biodiversity and close to natural ecological processes.

The margins of the reconstructed forests should be non-linear to fit in the general landscape and have a more natural appearance, and they should also constitute a gradual link to the surrounding open ecosystems, from small plants to shrubs and to higher trees. In this way, an ecotone habitat with high complexity is reconstructed, a habitat used not only by a large number of species, but which protects the forest from strong winds that can easily damage it if the margins are sharp.

Wildlife management: what needs to be changed?

Poaching is very common in Romania, practised both by the very poor and by the very rich. Poaching is considered a crime of minor importance by the authorities, especially by judges. Because of the huge pressure due to poaching, some populations are on the verge of extinction. One example is chamois (*Rupicapra rupicapra carpatica*) in the Rodnei Mountains National Park and Biosphere Reserve: in 1989 there were about 600 individuals and now, in 2004, the most optimistic figure is that "only" 90% of the population has been lost. Also many birds are hunted illegally.

Even if Romania is a party to CITES (Convention on the International Trade in Endangered Species of Wild Fauna and Flora or the Washington Convention) game is transported to some neighbouring countries.

From the perspective of conserving the native biodiversity, one problem is the introduction of alien species for the hunters' benefit, e.g. *Phasianus colchicus, Ovis ammon,* as well as an experiment with *Capra ibex.* Genetic pollution may also be a problem for wildlife. For example, when wildcat (*Felis sylvestris*) populations are in contact with domesticated cats, they produce hybrids and thus pollute the gene-pool of the wild population.

So far wildlife management has been monopolized by an interest group which consists of foresters and hunters. There has been no cooperation between government organisations controlling wildlife management and civil society interested in biodiversity conservation. The official data is unreliable and the access to the information is very poor. Most of the data on the real abundance of the game populations according to which hunting quotas are established are unreliable: the numbers are overestimated in the interest of a bigger game bag. Money is a great temptation in the organisations involved in hunting, game management and quota establishment. To hunt down bear, a foreign hunter must pay 5,000–7,000 euros, while the average wages in Romania are about 150 euros a month. Even if brown bear and wolf are listed in Appendix II of the Bern Convention as strictly protected species and lynx is listed in Appendix III as a protected species, in Romania, a signatory to this convention, these animals may be hunted even at the moment under the pretext that their populations are too big.

In the process of EU integration the development of transport routes within the framework of the Trans-European Transport Networks, especially the expansion of the road network, is inevitable. If there is no integrated system of bridges (overpasses) and ecological tunnels, these motorways will have in the long run a very negative impact on the populations of large mammals.

UNESCO Pro Natura promotes the organisation of the first game population evaluation in cooperation with the local forestry and environmental Non-Governmental Organizations or NGOs (*Chamois Rupicapra rupicapra carpatica* counting in Rodnei Mountains National Park and Biosphere Reserve, November 2003). In the official data reported by the forestry sector in spring 2003, there were 114 chamois on the Maramures side of these mountains, but in autumn 2003, when the first counting in cooperation between foresters and environmentalists was realized, there were only 5 chamois. Using questionnaires and interviews (December 2003), we have investigated the attitudes and knowledge of local communities around the Rodnei Mountains concerning wild animals, population trends and wildlife management to get them involved in this issue. This was a national campaign on wildlife management issues, involving the Romanian TV and other media. We have also organized a NGO coalition for wildlife management. Even if we are against hunting, we have initiated a win-win approach, working with the State Forest Authority, Ministry of Agriculture, Forests and Rural Development and the National Hunters' Association on the protection of game populations.

What will have positive impacts on biodiversity conservation in the near future?

The EU's Gothenburg Council of Ministers in 2001 decided that the EU will "protect and restore habitats and natural systems and halt the loss of biodiversity by 2010." The EU again committed to this target of halting biodiversity decline in its Sustainable Development Strategy. The EC Biodiversity Strategy from 1998 and the Biodiversity Action Plans from 2001 are also important. The accession of Romania to the EU will raise the environment and biodiversity issues to a higher position on the political agenda. As part of the accession process, the adaptation of the national legislation to the "acquis communautaire" and setting up the administrative structures to implement it will contribute to nature conservation and environment protection. This will result in the implementation of EU's Birds Directive and Habitat Directive and designation and protection of Natura 2000 sites, forming a network representing 15–25% of the surface area of Romania (in the EU 15 about 18% of the total area is designated as Natura 2000 sites, constituting the European network of protected areas). The level of environmental awareness will increase. Hopefully the accession to the EU will result in less illegal logging, poaching and corruption.

Referring to Natura 2000, there are some governmental efforts for the implementation of the EU's Birds and Habitats Directives, but they are still quite insufficient. These Directives are transposed into the national legislation by Law No. 462/2001 regarding protected areas, conservation of natural habitats and wild species of plants and animals.

In Romania scientific data on biodiversity are scarce, irrelevant, not standardized, badly organized and scattered in different research institutions, and the availability of such data in general is very poor. There are problems in understanding the Birds and Habitats Directives; even most of the researchers do not understand that these directives will not solve all the biodiversity conservation problems, but they are just tools which can be used for conservation of some areas and species. There is not enough time for proper preparation of the national list of proposed sites of community importance (pSCI) by January 2007 (the supposed time of accession of Romania to the EU), based on real scientific evidence as the quality and quantity of even the best data available at present is not enough. The financial support for the preparation is also inadequate.

UNESCO Pro Natura is participating in scientific research and elaboration of the legal framework for biodiversity conservation. It has had projects on information management, public participation, stakeholders' involvement, partnership building with the relevant structures, elaboration of management plans, environmental education, law enforcement by rangers, as well as practical activities: signs, maps and indicative panels in protected areas.

UNESCO Pro Natura, Romania takes part in the Romanian Natura 2000 NGO Coalition (formed by about 30 NGOs) and it is also in its board. Now it is working on the implementation of a PHARE Access project of UNESCO Pro Natura, in cooperation with the Romanian Speleological Federation and the Romanian Ornithological Society – BirdLife Partner in Romania. In this project there are several training courses for NGO representatives, partnership development with relevant authorities, development and publication of a Natura 2000 toolkit, web proliferation on Natura 2000, photo exhibitions, etc.

What will have negative impacts on biodiversity in the near future?

In the process of integrating Romania to the EU, the general framework emphasises the intensification of agriculture, forestry, industry, transportation and tourism, as well as a more

consumption-oriented society. Competition on the common market will most likely produce more aggressive exploitation of natural resources and competition for these, which may even result in exploitation beyond the ecologically safe level, increased pollution, and transformation of natural landscapes into more artificial ones. The Structural Fund, Cohesion Fund and other EU instruments will speed up the economic growth and improve social welfare and social cohesion, which may also improve environmental protection. However, if these large funds with large-scale and long-term effects are invested in a harmful way to promote economic growth at the expense of the environment, they will have a negative impact on biodiversity conservation and they can undermine the possibilities for sustainable development, thus working against the environmental policy and legislation of the EU. The low "absorption capacity" of the EU funds by Romania and other acceding countries is the result of the poor skills in writing project proposals, weak financial possibilities to co-fund these projects, as well as the low capacity to manage large projects. If this is the case in general, for the part of environment and biodiversity conservation projects, the situation is even weaker.

Integration of sustainable development and environmental policy into other sectoral policies

It will be a great challenge to raise the living standard of a human population whose life style is far from the EU level, as well as to preserve the biodiversity which is much richer than the poor and seriously damaged biodiversity of the West-European wealthy societies in the EU 15. The EU's Sixth Community Environmental Action Programme and the EU's Sustainable Development Strategy stress the integration of environmental concerns into other policies. In Romania the Strategic Environmental Assessment Directive 2001/42/EC should be implemented through the accession, which means that the environmental consequences of each policy, plan and programme should be evaluated in the preparation phase and before their adoption. In the Strategic Environmental Assessment the stakeholders interested in environmental protection should be involved, together with those interested in social and economic issues. Theoretically, the strong inter-relation between environment and socio-economical systems and the need for mainstreaming environmental considerations in social and economical policies should be acknowledged, but this is not realised in practice. In Romania the integration of environmental policy into the other sectors is very limited, although environmental concerns should be incorporated into all policy sectors. Considering the implementation of the Environmental Impact Assessment Directive and Article 6 of Habitats Directive, projects should be scanned in a transparent and realistic Environmental Impact Assessment by independent experts. However, if the experts are selected and paid by the same economic structures which proposed the project and have interest in implementing it, there is an obvious bias in the Environmental Impact Assessment. So, there is a strong need to carry out the Strategic Environmental Assessment and Environmental Impact Assessment systematically and correctly if we really think that the negative environmental impacts of our activities should be minimised.

Relationship between the ecosystem approach of the CBD and FLR

Within the framework of the ecosystem approach of the CBD, there should be appropriate integration between the rural development policies and implementation, forestry sector

activities, agriculture, biodiversity conservation policies, water management policies, tourism, etc. This is not a scientific or a resource management problem, but a problem of combining these with social and financial issues. On the theoretical level, a forum should be opened where various stakeholders could work together in a participatory process of elaboration and implementation of forest management strategies, plans or projects. These stakeholders would work in their own interest while contributing to the general positive results of the activity in the interest of sustainable use of existing resources for the benefit of the whole community and the nature by sharing expertise, experience, knowledge and resources. Today there is no such forum.

Forest landscape restoration is closely related to the ecosystem approach of the CBD, but it is more clearly focused on restoring the landscapes in a certain area by reshaping forest structures and functions to a close-to-nature state. This is possible only by an open-minded approach, aimed at involving other sectors in a constructive debate. There is a need for cooperation between the representatives of different sectors to restore close-to-nature balance of the ecosystems in an area, for example, in a water-catchment basin, within the framework of sustainable development which benefits the human community and the conservation of biodiversity which is, after all, also for the benefit of humans.

What is the situation of the CBD and ecosystem approach in Romania?

The Rio Convention or the Convention on Biological Diversity (1992) is formally signed and ratified by Romania through Law No. 58/1994. Romania has a National Strategy and Action Plan for Biological Diversity Conservation and Sustainable Use of its Components (NBSAP) prepared by (then) the Ministry of Waters and Environment Protection (MWEP) in July 1996.

However, the CBD and these strategies and action plans are only known by some specialists. The key strategy for the implementation of the CBD, the "Ecosystem Approach", its 12 Malawi principles and the 5 operational guidelines and are relatively unknown (except for very few persons). At the same time, various elements of this are used under other approaches.

Communication, cooperation between stakeholders and public participation in decision-making in forestry issues in Romania

There is a strong need to integrate the regulations and ideas of biodiversity conservation into the forestry strategies and action plans as well as into the forest reconstruction projects. Awareness raising campaigns and educational activities are very important to gain public support for these activities.

The top-down hierarchy is still common and there is very little horizontal communication and cooperation among the different sectors. In forestry, water management, fisheries, etc. decisions are made top-down or under the control of small interest groups with high economic and/or political power, with no regard to stakeholder involvement in strategic planning, harmonizing and respect for different interests, concerns and aspirations of local people, equitable allocation of benefits, consensus with local communities or civil society and their involvement in the decision-making. Involving other parties would imply an acceptance of equal rights of everybody to influence the process. Because this may interfere with other interests and increase the risk of controversial situations, disputes and debates especially in complex issues with many

diverging interests, the common tendency is to avoid such situations. After half a century of communism, dictatorship and centralized economy, it is obvious that there is no tradition of planning together and managing conflicts in a friendly way.

In Romania there is not enough communication among the stakeholders. One major obstacle is the inflexible bureaucracy. There is very little cooperation and communication between scientific bodies, decision-makers drafting the laws and operators in ecosystem or natural resource management and management of protected areas. The acceptance of "learning by doing" and participatory approaches is very low higher up in the hierarchy (forest management, hunting, ministries, etc).

One deep problem in Romania is the low level of communication between the State Forest Authority and the environmental NGOs. In the environmental civil sector forestry is considered a closed and strictly hierarchical sector, with high financial power resulting from the use of the state forests for the interest of the structures and strong political influence as a remainder of the communist past of Romania.

Conferences, congresses, symposia and workshops on biodiversity issues are being held, but participants are usually from a specific sector (only from forestry, only from NGOs, only from states' water management structure, etc).

After the changes in 1989, the trend has been to open up institutions and to be more frank in declarations. One positive element is the introduction of the Biodiversity Information Management System of the Ministry of Environment and Water Management, a GIS based structure, in which biodiversity data are exchanged by research institutions. However, these data are not public.

In the civil sector, the MediuList, a very well functioning mailing list used daily by the environmental NGOs, is an efficient tool for spreading information and for working together on a higher level. The existence of a legal instrument such as the Aarhus Convention, signed by Romania and ratified by Law No. 86/2000, encourages participatory processes, but its implementation is still very weak. There is a Government Order (No. 1115/2002) regarding free access to information about the environment.

NGOs are free to present their views, concerns and ideas without being forced to be "politically correct". From the part of "conservationists", there is a need for more flexibility in considering socio-economical interests and finding synergies in natural and cultural heritage conservation taking into account of the long-term aim for better well-being of human as a central element in the conservation approach. NGOs working for environment protection in Romania on a non-profit basis need strong support in order to survive. The process of building a civil society in Romania is not an easy task. Empowering communities to deal with their environment in accordance with sustainable management, strengthening the capacity of local stakeholders and improving participatory processes is very important and useful for a democratic and ethic development and fruitful for the interests of conservation. Individual people also need a lot of capacity building to be able to participate in decision-making processes as people are not used to express their own ideas in the public due to the past hierarchical structures.

It should be mentioned that public participation consumes a great deal of time and resources, which means that it should be organized efficiently and there is a need for training on the methodologies for organising such processes. There are also problems regarding who should decide who is a stakeholder and should be involved and who is not a stakeholder. Who will facilitate the debate among different stakeholders; who will select that "external neutral moderator", and who will pay him and for all the other costs of these processes?

For real participation of NGOs in decision-making, there is a need to have proper access (transparent, timely) to relevant and accurate information regarding the policies, plans, programmes and projects in the early drafting phase of these documents. There is a need to

have clear deadlines for submitting comments and ways in which the participation in debates and meetings can be realized, and a clear framework for the adoption of changes based on these comments should be available. Financial support for capacity-building and basic functions of environmental NGOs should be available from the state budget. Their important role as non-partisan, independent think-tanks and representatives of the public interest, as well as in the dissemination of information, raising environmental awareness, research, etc. should be fully recognised

UNESCO Pro Natura has experience in organizing stakeholders' meetings, international conferences, workshops, training courses, and international study tours. UNESCO Pro Natura is an associate member in StrawberryNet Foundation and the manager of MediuList, the electronic network of Romanian environmental NGOs. The electronic tools promoted by us are ActionApps for user-friendly web publishing, web proliferation and web design, but we are also involved in the publication of hardcopies.

Research on biodiversity in Romania

Romania is a relatively large (total surface area 238,391 square km) and complex area from the geographical and biogeographical point of view and, because of financial reasons, the country has difficulties in carrying out real biodiversity research on such a large and complex area. Traditionally biodiversity research in Romania has mainly focused on species diversity, but in terms of conservation there is a need for more and better research on the interrelations between socio-economic and environmental processes, which are difficult to quantify and analyze from the scientific point of view. These complex issues call for teams of biologists, ecologists, sociologists and economists, which is still unusual in Romania. Research is not cheap and in the challenge of the economic transition from a centralised to a market economy, research in general has suffered a great deal in Romania. Research institutions are losing their important human resources, young people are not attracted to research because of very low and uncertain salaries, and there are no funds for research activities.

In many cases data produced by means of public funding are not accessible for the public. Biodiversity data from state financed research institutes is not accessible even for the Ministry of Environment. There are problems regarding the accuracy of data in publications, many data are old, not structured, and available only on paper and not in electronic form.

Conservation and international cooperation

Protected areas are very important for biodiversity conservation. However, small and isolated ecosystems cannot preserve biodiversity in the long term, because they are very sensitive to natural hazards and natural fluctuations in the ecosystem. Larger mammal species in small areas are losing their genetic variability due to inbreeding, and they are facing extinction in a fluctuating environment. This is why it is important to join together smaller units, protected areas or close-to-nature forests and larger areas acting as gene reservoirs, linking these core areas by linear corridors and stepping stones to achieve a coherent network of natural areas, which is more resistant to fluctuations and where migration, re-colonisation of lost areas by different species and gene flow between different populations or sub-populations can take place. This network of protected areas should be isolated from the hard human impact of the intensively used areas by buffer zones which are in-between conservation and intensive human interest.

The conservation of large units (mountain ranges, seas, international river basins) is often possible only on large areas through the so-called ecoregional approach, and many times this is possible only by international cooperation. The ecoregional approach is used in the Carpathian Convention, in the Convention on Black Sea Protection and Pollution Prevention (Bucharest Convention) and in the management of big river basins like in Danube conservation programmes. An ecoregion is a relatively large area, inhabited by distinct communities which shares the large majority of species, dynamics and environmental patterns and can function as an effective conservation unit. On the one hand, this type of ecoregional scale management is highly useful to preserve ecosystem structures, processes and functions in their evolutionary framework but, on the other hand, the management of such a big unit is often very difficult (financially, politically, etc.) to realise in practice and in most cases it remains mostly paperwork (strategies, action plans, conventions, conferences, discussions).

The Carpathians are the largest mountain range in Europe, of which more than 50% is located in Romania. The Carpathians are shared by 8 states: Austria, Czech Republic, Slovakia, Hungary, Poland, Ukraine, Romania and Serbia and Montenegro. These mountain areas are inhabited by approximately 18 million people. With a surface area of 209,000 square km, the Carpathians are home of large populations of wolves, bears and lynxes (the Alps are about 191,000 square km and the populations of large carnivores are 5–10% compared to those in the Carpathians).

The Convention for the Protection and Sustainable Development of Carpathians (Carpathian Convention) was signed in the Ministerial Conference in Kiev in May 2003. A Carpathian Network of Protected Areas should be established within the framework of the Convention. In the whole Carpathians there are now 85 large protected areas (National Parks, Natural Parks, Biosphere Reserves and Protected Landscapes), but even if 55% of the Carpathians are in Romania, there are only 15 large-scale protected areas in the Romanian Carpathians (10 National Parks – two of them also Biosphere Reserves – and 5 Natural Parks), representing only 17.6% of the total of 85. So, again, it is time for action in Romania.

In the utilisation of forests, in addition to direct utilisation of income-generating forest resources (timber, game, mushrooms, berries, etc.), there is a more complex issue concerning mechanisms to be able to generate income from the environmental services produced by forests (international market of CO_2 retention and storage, land stabilisation, clean water, hydro-regulating function, equilibration of water flow in the catchment areas of rivers to reduce floods and temperate effects of summer droughts, biodiversity conservation, etc). The utilisation of forests for tourism is also a complicated issue, mostly regarding the way how the income should be distributed among the stakeholders.

The Water Law (107/1996) is the main instrument regarding river basin management and waters. The implementation of the EU's Water Framework Directive has been started in two river basins in Romania. Formally, River Basin Committees have been established in Romania, but in reality they are totally dominated by the state company "Romanian Waters". River basins are not yet considered as functional ecosystems or complexes of ecosystems, but they are still under the control of the hydrotechnical engineering interest group. In this situation investments are made only in the construction of reservoirs, consolidation of riversides and embankments and technical protection against floods, instead of restoration of wetlands as a way to combine biodiversity conservation with flood reduction.

Romania has signed and ratified most of the relevant international conventions regarding biodiversity conservation. With thousands of pelicans, the Danube Delta, the Carpathians, bears, lynxes and wolves, Romania has a good image in terms of biodiversity. There are good Romanian specialists and we hope to have good opportunities for international cooperation in the future.

The level of participation of Romanian citizens in international processes concerning biodiversity conservation issues is in general quite low, due to the low understanding of international issues, under-representation of Romanian interests on the international arena and lack of understanding of the Romanian situation in the international sphere. Biodiversity conservation is often possible only through international cooperation. The use of natural resources and transboundary impacts (like air and water pollution) are a source of conflict between nations. Transboundary cooperation in environmental issues is also a way to know each other and to lay the foundation for much more extensive cooperation.

As a national environmental NGO with international activities, UNESCO Pro Natura participates in the IUCN family, including the "Environment for Europe" process. Within the UNESCO framework we have relations to practical cooperation mainly with UNESCO Etxea from Bilbao, Basque Country, Spain, and cooperation with NGOs, scientists and administrators from the neighbouring countries of Romania and from all over the world. We are active in the South-East European Environmental NGO Network (SEEENN) and in Central and East European Working Group for Enhancement of Biodiversity (CEEWEB). We take an active part in processes and organise fact-finding missions, exchange, conferences, congresses, workshops, symposia, research projects, educational activities, etc. and participate in these. We are working continuously to develop our local, national and international influence to promote biodiversity conservation and sustainable development in a real and concrete way.

Important documents in the sector include the Convention on Biological Diversity (CBD), Aarhus Convention, Bern Convention, Bonn Convention, Ramsar Convention, CITES, Espoo Convention, Helsinki Convention, Birds and Habitats Directives of the EU, Convention on Black Sea Protection and Pollution Prevention, (with a Black Sea Biodiversity and Landscape Conservation Protocol) Carpathian Convention, etc. However, they can only make a contribution to the biodiversity conservation if they are also implemented in practice.

Conclusions for managing dynamics and change in Romania

Human resources: There is a need to establish an independent interdisciplinary panel of specialists from honest, dedicated and reliable persons. Often there is a great difference between the reality accepted in informal discussions and the statements presented in a "politically correct" manner, in line with the interest of the institution concerned in official meetings and documents.

Reliable data: There is a need for standardized biodiversity data collection, clarification of the indicators used, monitoring schemes, data processing, use of GIS tools, clarification of spatial and temporal distribution patterns of species and better understanding of natural processes in ecosystems, establishment of the carrying capacity, modelling, development of different scenarios regarding socio-economic and environmental future, and coordination of these issues.

Vision, strategy, action plan: A "Strategic Vision" and a more solid National Sustainable Development Strategy, including an Action Plan, should be developed, together with a realistic Biodiversity Conservation Strategy, establishing clearly indicated time frames, responsible institutions and persons and stating clearly the source of the necessary financial resources.

Implementation: Centralized approach with general guidelines should be implemented locally by adaptive management.

In UNESCO Pro Natura, we are happy to contribute to the debate on forest landscape restoration and to participate in the networking activities related to this issue. Within this

field, our expertise is mostly in the policy analysis of Romanian forestry from the point of view of biodiversity conservation and public participation in forestry, as well as the issue of state, community and private forests in Romania from the point of view of degradation under human pressure and restoration for the well-being of humans and other species.

Restoration of Forests with Special Function in Austria

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The wooded areas in Austria

3.2 mill. ha of Austria or almost half of the country (47%) is covered with woods. Due to decreasing farmer activities in distant zones, the forested area is increasing about 10 000 ha annually.

As indicated above Austrian nature and especially Austrian forest is characterized by its vast amount of different habitats. A total of 2.3 thousands ha is protected with nature conservation law in Austria. There are seven national parks and 33 wildlife parks and other protected areas, such as: nature reserve, landscape protection area, protected landscape area, and natural monuments.

A 'Man and Biosphere' named Hemeroby-study project under Prof. Grabherr shows the Naturalness of Austrian Forests and Forest Ecosystems. The result of the study is, that one quarter is nearly natural, 40% are moderately altered. Only one third is altered or artificial. Because the forest areas closest to the natural state were named hemerobic and artificial forest areas ahemerobic, the study is known as Hemeroby-study.

Forestry, forest maintenance and forest functions

To maintain the five forest functions, according to the Austrian Forest act, maintenance measures are to be undertaken. These forest functions are: production, protection, welfare, recreation and protection of biotopes. During the act of planning the maintenance measures it is necessary to be aware of the different functions of the forest. To maintain all functions in one forest area, careful planning and realisation is necessary and will be explained in detail. E.g. protection forest in Austria often has insufficient regeneration. Efforts aim at easing the influence of game and cattle grazing to the natural regeneration of forest. Also, special measures need to be planned after windthrow of protection and protective forests, as well as for the timberline, on the one hand in the alps, where short vegetation periods hinder the tree growth, on the other hand in the veld-like soils of the dry pannonic regions.

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Forest Landscape Restoration in Central and Northern Europe
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Future perspectives

Regarding the protection forests, the state, the federal provinces and the districts have worked out jointly a common strategy, known as *protection-forest-strategy*.

Common forestry maintenance concepts will be undertaken.

Forest-dialog: A platform was built in order to consider all interests concerning the forests. NGOs, legal bodies, private communities are invited to discuss forestry and add their point of view. The goal of this discussion platform is to establish an Austrian programme for the forests together with citizens and others, who are interested in nature and forests.

If we want to profit from the forest in one way or the other, it is not possible to leave the forest on its own, but our goal is to keep it as close to nature as possible.

Session 2: International and Regional Forest Policy Frameworks

Forest Restoration in International Forest Related Processes and Potential Synergies in Implementation

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Abstract

Forest are subject to a number of international commitments, including those expressed by the United Nations Forum on Forests and its predecessors, the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change and the Convention to Combat Desertification. These international commitments share a common concern for several forest-related issues, but also contain numerous gaps and overlaps, along with the potential for synergies but also conflict. Recent efforts at the global level, in particular the Global Partnership on Forest Landscape Restoration, have recognized forest restoration to be a potential area for synergy in the implementation of international obligations. In view of that, the paper gives an overview of major international forest-related commitments and describes how these address forest restoration and, to the extent possible, forest landscape restoration. It reviews co-operation between the forest-related agreements, including existing mechanisms and joint initiatives, and outlines a number of issue areas to promote further synergies in forest restoration.

Keywords: International commitments, synergies, co-operation, forest (landscape) restoration.

1. Introduction

1.1 Background and rationale

Forests are subject to a number of international commitments expressed by global conventions and processes. These international forest-related agreements developed over the last decades share a common concern for many forest-related issues. At the same time, they

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have been tackling problems in an ad hoc and segregated manner, resulting in a number of gaps and overlaps, along with the potential for both synergies and conflict. Recent efforts at the global level, in particular the Global Partnership on Forest Landscape Restoration, have increasingly recognized forest landscape restoration to be a potential area of synergy in the implementation of international forest-related commitments.

1.2 Objectives of the paper

The paper has been drawn up with the objectives to assess how forest restoration and, to the extent possible, forest landscape restoration are addressed by international forest-related conventions and processes, to examine existing co-ordination and collaborative activities between international forest-related processes, and to identify issue areas and means to create further synergies in addressing forest restoration at the international and national levels.

2. The concepts of forest restoration / forest landscape restoration

While there are internationally accepted definitions of the terms "forest" (notably the definition of the Global Forest Resource Assessment 2005) and "landscape" (e.g. the definition contained in the European Landscape Convention 2000), available literature indicates a lack of consensus about the meaning of the term "restoration". Usually, forest restoration connotes a transition from a degraded state to a former "natural" condition.

- In its narrowest sense, frequently termed ecological restoration in scientific literature, this requires a return to an ideal natural ecosystem with the same species diversity, composition, and structure as occurred before human intervention (Stanturf 2002). However, this can unlikely be achieved. According to Bradshaw (2002) there is a continuum from natural to managed forests, and while some forest areas are probably almost totally managed, it is arguable that there are no truly natural, virgin forests surviving in the world.
- Viewing forest restoration more broadly, it encompasses concepts such as afforestation, reclamation and rehabilitation. In this approach, the term forest restoration is often used to describe situations where forest land use and land cover are restored (afforestation or reclamation), as well as instances when an existing forest is rehabilitated (no change in land cover) such that structure or species composition are modified (Stanturf 2002).

During May and June 2004, forest restoration has been the monthly information and discussion topic at the Forest Web Portal of the Convention on Biological Diversity (CBD)[1]. The background information provided to facilitate the discussion draws a more distinct line between "forest restoration" and "forest rehabilitation".

- "Forest restoration" is described as involving the implementation of activities, practices, and tools for both halting degradation and for redirecting a human-disturbed forest ecosystem towards the structural and functional attributes typical of its native state. It is also pointed out that this implies that the main goal of forest restoration is to recreate the

1 See https://www.biodiv.org/programmes/areas/forest/portal/topic1/discussion.shtml

"original" forest that prevailed at a given place, given enough time and resources. This succession towards the original forest takes decades, even centuries.

- In contrast, "forest rehabilitation" involves the repair of a degraded forest site with the primary goal of raising ecosystem productivity for local use, for example, establishing agroforestry systems or forest tree plantations in degraded sites which usually take less than a decade to accomplish, returns key ecosystem functions (e.g. soil fertility, reduction of erosive rates, enhancing biodiversity), and generates on-site social and economical benefits.

Nevertheless, it is pointed out in the same background document that forest rehabilitation can be seen as part of an overall restoration strategy when applied over large spatial scales. Definitions of the terms reclamation, rehabilitation and restoration following similar rationales have also been made available by UNEP-WCMC[2].

Some methods for restoring degraded forest have been criticized for being too narrow in focus, concentrating on planting a few tree species that provide a limited number of goods and services. In the past two years, "forest landscape restoration" has emerged as an alternative approach for rehabilitating degraded forests. According to the project concept prepared by the Global Partnership on Forest Landscape Restoration,

> *"forest landscape restoration brings people together to identify and put in place a mix of land-use practices that will help restore the functions of forests across a whole landscape, such as water catchments. The aim of this approach is to benefit both communities and the natural world." (Pye-Smith and Saint-Laurent 2003)*

Since this approach has been proposed only recently, relatively little information is available about its meaning in more detail[3]. According to the Global Partnership on Forest Landscape Restoration, forest landscape restoration is not the reestablishment of pristine forests. Rather, it seeks to strengthen the relationship between rural development, forestry and other natural resource management and conservation approaches. A restored forest landscape might consist of areas that are protected for biodiversity conservation and watershed management, as well as productive use areas such as sustainably managed forests and farm lands (PROFOR 2004). Hence, forest landscape restoration shifts the emphasis away from simply maximising tree cover on individual forest sites to optimising the supply of forest benefits such as clean water, timber production and nature conservation within the broader landscape[4].

Taking into account the novel nature of forest landscape restoration and the fact that major international forest-related commitments have been negotiated already during the last decade, the paper in hand focuses primarily on forest restoration. More specifically, the broader conceptual view of forest restoration encompassing the concepts of afforestation, reclamation and rehabilitation has been used as an implicit reference for assessing if and how forest restoration has been addressed by existing international forest-related commitments and processes. Wherever possible, it has also been studied if these commitments also contain provisions for forest landscape restoration.

2 See http://www.unep-wcmc.org/index.html?http://www.unep-wcmc.org/forest/restoration/concepts.htm~main
3 Accordingly, one of the key thematic areas of the global Forest Landscape Implementation Workshop in 2005 will be the understanding of forest landscape restoration. See http://www.unep-wcmc.org/forest/restoration/docs/Announcementabridged.pdf
4 See http://www.unep-wcmc.org/forest/restoration/globalpartnership/mean.htm

3. Forest restoration in international forest-related processes

3.1 Decisions of the United Nations Conference on Environment and Development (UNCED) 1992

Rio Declaration and Agenda 21

The Rio Declaration sets out 27 general principles of sustainable development which apply to forestry as to other activities, such as the need for environmental protection to be an integral part of development (principle 4).

Agenda 21 is intended as a plan of actions to be taken globally, nationally and locally by organizations of the United Nations System, Governments, and Major Groups in every area in which human impacts on the environment (UN Department of Economic and Social Affairs 2003). It comprises 40 chapters, four of which are of particular relevance in the context of forest restoration.

- Chapter 11 "Combating Deforestation" is the "forest chapter" of Agenda 21. It addresses forest restoration as a means for sustaining forest resources and – in its Programme Area B "Enhancing the protection, sustainable management and conservation of all forests and the greening of degraded areas, though forest rehabilitation, afforestation, reforestation and other rehabilitative means" – sets out the objective "to maintain existing forests through conservation and management, and sustain and expand areas under forest and tree cover, in appropriate areas of both developed and developing countries, through the conservation of natural forests, protection, forest rehabilitation, regeneration, afforestation, reforestation and tree planting, with a view to maintaining or restoring the ecological balance and expanding the contribution of forests to human needs and welfare." (Chapter 11, para 11.12 lit. a). In this respect, the rehabilitation of degraded natural forests is identified as a management-related activity needed to restore productivity and environmental contributions to meet human needs for economic and environmental services (para 11.13 lit. b). In addition, the development of planted forests through ecologically sound afforestation and reforestation programmes, and the upgrading of existing planted forests are referred to as activities to increase the contribution to human needs and to offset pressure on primary/old-growth forests (para 11.13 lit. e).
- Chapter 10 "Integrated Approach to the Planning and Management of Land Resources" designates the broad objective of facilitating allocation of land to the uses that provide the greatest sustainable benefits and to promote the transition to a sustainable and integrated management of land resources which takes into account environmental, social and economic issues (para 10.5). Activities called for in Chapter 10 inter alia include to "adopt planning and management systems that facilitate the integration of environmental components such as air, water, land and other natural resources, using landscape ecological planning (…)" (para 10.7 lit. a).
- Chapter 12 "Managing Fragile Ecosystems: Combating Desertification and Drought" identifies afforestation and reforestation activities as means of combating land degradation in areas affected by desertification and drought (para 18.18 lit. b).
- Chapter 15 "Conservation of Biological Diversity" provides an implicit reference to forest restoration by calling upon governments to "Promote the rehabilitation and restoration of damaged ecosystems and the recovery of threatened and endangered species (para 15.5, lit. h).
- Other activities related indirectly to forest restoration are included in Chapters 13 ("Managing Fragile Ecosystems: Sustainable Mountain Development"), 14 ("Promoting Sustainable Agriculture and Rural Development") and 16 ("Environmentally Sound Management").

Forest Principles

Aspects of relevance to forest restoration are also reflected in the "Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management and Sustainable Development of Forests" (Anonymous 1992), in brief "Forest Principles", that have been agreed in 1992:

- Principle/Element 8 (a) states that "efforts should be undertaken towards the greening of the world. All countries, notably developed countries, should take positive and transparent action towards reforestation, afforestation and forest conservation, as appropriate."
- Moreover, "efforts to maintain and increase forest cover and forest productivity should be undertaken in ecologically, economically and socially sound ways through the rehabilitation, reforestation and re-establishment of trees and forests on unproductive, degraded and deforested lands (…)", according to Principle/Element 8 (b).
- And Principle/Element 8 (e) states that "Forest management should be integrated with management of adjacent areas so as to maintain ecological balance and sustainable productivity".

In addition, the role of afforestation and reforestation as means of providing renewable sources of bio-energy, and the contribution of planted forest to the maintenance of ecological processes, to offsetting pressure on primary/old-growth forest and to providing regional employment and development are highlighted in Principles/Elements 6 (a) and 6 (d) of the Forest Principles.

3.2 IPF/IFF Proposals for Action and the United Nations Forum on Forests

IPF Proposals for Action

The proposals for action of the Intergovernmental Panel on Forests (IPF) – as contained in the in the final report of IFF (United Nations Economic and Social Council 1997) – have been structured according to five broad categories with a number of related sub-elements.

- Sub-element B addresses "Underlying Causes of deforestation and forest degradation" (paragraphs 27–33). Overall, the proposals for action contained in this sub-element aim to enhance the understanding about underlying causes of deforestation and forest degradation and to formulate and implement effective policies and mechanisms to address these causes.
- Paragraph 46(g) contained in sub-element D "Fragile ecosystems affected by desertification and drought" builds a direct link to the Convention to Combat Desertification (see chapter 3.5) by specifically inviting the Committee on Science and Technology of the Conference of the Parties to Combat Desertification "to support research on appropriate plant species for use in arid, semi-arid and dray sub-humid land restoration, on rehabilitation of existing vegetation, on related water management techniques and on the potential for multi-purpose trees and the supply of timber and non-timber forest products".
- Also sub-element F addressing "Needs and requirements of developing and other countries with low forest cover" contains a number of proposed actions addressing forest restoration, emphasising the importance of avoiding to replace natural ecosystems of high ecological and cultural values with forest plantations (para 58 (b) (ii), the involvement of stakeholders in the regeneration and restoration of degraded forest areas (para 58 (b) (iii)), and the provision of financial resources, technology, information and know-how (para 58(c)).

Other proposals for action agreed upon by the IPF call for providing information about historical and underlying causes of forest degradation as well as about the multiple roles of forests in order to improve public understanding and decision making (paragraph 30 a) and to improve co-operation, co-ordination and partnerships with the involvement of relevant stakeholders (notably paragraphs 17 (i), 77 (c)).

IFF Proposals for Action

The proposals for action contained in paragraphs 64 and 129 of the final report of Intergovernmental Forum on Forests (United Nations Economic and Social Council 2000) are of particular relevance to forest restoration.

- Paragraph 64 (g) encourages countries, with the assistance of international organizations, donor countries and financial institutions and with appropriate participation of stakeholders, to "promote the maintenance and enhancement of forest resources through sustainable forest management practices, and promote the creation of new forest resources through the establishment of planted forests and other means, such as rehabilitation of degraded forests, taking into consideration their social, cultural and environmental impacts, and economic costs and benefits."
- Paragraph 129 urges countries to place rehabilitation of forests and trees in environmentally critical areas as a higher priority on national development agendas within the context of national forest programmes (lit. b); to use planted forests as options for rehabilitating degraded lands and as a basis for re-establishing natural forests (lit. c) and to engage in raising awareness of the ecological, social, cultural and economic roles that forests and trees might fulfil in such critical areas (lit. d).

Several IFF proposals for action reaffirm the importance of co-operation and partnership as well as the involvement of stakeholder in forest decision making and forest management (in particular paragraphs 64 (b), 66 and 140 a).

Resolutions of the United Nations Forum on Forests

The Multi-Year Programme of Work of the United Nations Forum on Forests (UNFF) sets out a number of thematic elements as subjects for consideration at different UNFF sessions (United Nations Economic and Social Council 2001). The Second Session of UNFF dealt, among others, with the thematic elements "Combating deforestation and forest degradation" as well as "Rehabilitation and restoration of degraded lands and promotion of natural and planted forests" (United Nations Economic and Social Council 2002). As a result of its deliberations on these issues, the UNFF adopted Resolution 2/2. Overall, this resolutions gives due emphasis to the need for broader participation at all levels. It also highlights the role of supportive and adverse economic and legal instruments. As one specific lesson learned, the resolutions highlights that the Convention to Combat Desertification can provide an important contribution to advance countries' work to rehabilitate and restore degraded lands and to promote natural and planted forests. The Collaborative Partnership on Forests is pointed out as a mechanism/forum through which such contribution can be made. Resolution 2/2 also contains a number of specific points regarding future action. For example, the resolution encourages countries and regions to organize co-operative activities to rehabilitate and restore the productive capacities of degraded lands and urges them to strengthen international co-operation.

Also, at the second session of UNFF, the ministers responsible for forests unanimously adopted a ministerial declaration and message from the UNFF to the World Summit on Sustainable Development (see chapter 4.6 below) in which they inter alia expressed their concern about the continuing high rate of worldwide deforestation and about forest and land degradation, and in which they committed themselves to work to reverse these trends (para 3 of the declaration) (CSD 2002). The ministers also stressed the need for the Forum to promote synergies with related UNCED conventions (para 9) and encourages effective co-operation and co-ordination among the Conventions and the Forum (para 12).

3.3 Convention on Biological Diversity

The Convention on Biological Diversity (CBD) addresses forests directly through its Expanded Programme of Work on Forest Biological Diversity, adopted by the Conference of the Parties (COP) at its sixth meeting in April 2002 in its decision VI/22 (CBD 2001–2004). In addition to this work programme, the CBD covers a number of issues directly affecting forest biological diversity and forest genetic resources, including property rights on, and access to, genetic resources, and equitable sharing of benefits arising from their use; as well as biosafety.

The Expanded Programme of Work on Forest Biological Diversity (FBD) contains three Programme Elements, namely (i) conservation, sustainable use and benefit-sharing; (ii) institutional and socio-economic enabling environment; and (iii) knowledge, assessment and monitoring. Twelve goals, twenty-seven objectives and about 130 activities are assigned to these three elements.

Forest restoration is addressed in Programme Element 1, goal 3, objective 1 of the Expanded Programme of Work on FBD. Objective 1 is to "Restore forest biological diversity in degraded secondary forests and in forests established on former forestlands and other landscapes, including in plantations". Three activities have been assigned to this objective, namely to:

a) Promote the implementation of systems and practices for restoration in accordance with the ecosystem approach[5];
b) Promote restoration of forest biological diversity with the aim to restore ecosystem services; and
c) Create and improve where appropriate international, regional and national databases and case-studies on the status of degraded forests, deforested, restored and afforested lands.

Progress in the implementation of the thematic programmes of work, including the expanded programme of work on forest biological diversity, was considered at the seventh COP of the CBD in February 2004 in Kuala Lumpur. As a basis, a synthesis of information contained in the voluntary reports on the implementation of the work programme was provided by the CBD Executive Secretary (CBD 2004). This synthesis report inter alia summarizes information submitted by the governments of Austria, China, Denmark, Estonia, Finland, Germany, Ireland, Sri Lanka, Sweden, Switzerland and the United Kingdom on the implementation of the objective of restoring forest biological diversity in degraded secondary forests and in forests established on former forestlands and other landscapes.

5 Action (a) points to the important aspect of the relation between the ecosystem approach of the CBD and practices for restoration. Reference can be made in this context to the background document "The Ecosystem Approach of the Convention and its relationship with the attributes of good forest (ecological) restoration practice" that has been published recently at the Forest Web Portal of the CBD at https://www.biodiv.org/programmes/areas/forest/portal/home.shtml

3.4 United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC) addresses forests in its decisions and work on land use, land-use change and forestry (LULUCF) in the context of the Kyoto Protocol.

Under Article 3.3 of the Kyoto Protocol, parties to the UNFFCC decided that greenhouse gas removals of Annex I Countries[6] through certain activities – namely afforestation and reforestation – are accounted for in determining compliance with national commitments to reduce greenhouse gas emissions. Conversely, activities that deplete forests, namely deforestation, are subtracted from the amount of emissions that an Annex I Party may emit over its commitment period. Credits arising from afforestation, reforestation and deforestation are restricted to those activities that are directly human-induced and that are initiated after January 1, 1990. Through Article 3.4 of the Protocol, Parties decided that additional activities can be added to this list in commitment periods after the first (i.e. after 2012), and in the first commitment period provided that activities have taken place since 1990. These additional activities comprise forest management, revegetation, cropland management and grazing land management.

With regard to forest restoration, activities for "reforestation" and "revegetation" are of particular relevance. Common definitions for "forest", "reforestation" and "revegetation" as well as for all the activities to be considered under Articles 3.3 and 3.4 were identified and provided as part of the so called Marrakesh Accords agreed at the seventh Conference of the Parties (COP) in autumn 2001 (UNFCCC 2002). The Marrakesh Accords also include rules for accounting of activities that can help meet emission targets.

At its most recent ninth session in December 2003, the COP reiterated that the decision 17/CP.7 applies *mutatis mutandis* to afforestation and reforestation project activities under the Clean Development Mechanism (CDM) and adopted modalities and procedures for such project activities for the first commitment period of the Kyoto Protocol (UNFCCC 2004). The CDM, defined in Article 12 of the Convention, allows Annex I Parties to implement projects that reduce GHG emissions in non-Annex I Parties and has the additional goal of assisting non-Annex I Parties in achieving sustainable development and contributing to the ultimate objective of the Convention. Under the CDM, Annex I Parties may use "certified emission reductions" generated by project activities in non-Annex I Parties to contribute to compliance with their emission commitments.

Through the accounting of activities under Articles 3.3 and 3.4 as well as through the inclusion of afforestation and reforestation project activities under the Clean Development Mechanism (CDM), incentives are provided for land-based climate-change mitigation. Suitably designed CDM forestry projects can significantly benefit local communities by supplementing and diversifying income, increasing access to forest goods and services, improving land productivity, developing the local knowledge base and local institutions and increasing the energy efficiency of using forest products. With regard to forest restoration more specifically, information available from IUCN's Forest Conservation Programme suggests that the restoration of natural forests can be certified under the Kyoto principles[7]. However, overall, there is still a considerable need for an improved understanding about the potential effects of climate change on both natural and managed forest ecosystems as well as about the current and potential mitigation of, and adaptation to climate change.

6 I.e. those countries listed in Annex I to the Convention, including most Central and Northern European countries.
7 See e.g. http://www.iucn.org/themes/fcp/experience_lessons/climate.htm

3.5 Convention to Combat Desertification[8]

The Convention to Combat Desertification (UNCCD) has the objective to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa (UNCCD 2004). "Combating desertification" for the purpose of the UNCCD "includes activities which are part of the integrated development of land in arid, semi-arid and dry sub-humid areas for sustainable development which are aimed at: (i) prevention and/or reduction of land degradation; (ii) rehabilitation of partly degraded land; and (iii) reclamation of desertified land" (Article 1b). Land degradation according to the UNCCD also includes a reduction or loss of the biological or economic productivity and complexity of and woodlands (Article 1f).

The UNCCD contains five regional implementation annexes that reflect the different priorities of the regions. The latest regional implementation annex to the UNCCD entered into force in 2001 and covers Central and Eastern Europe. With regard to forests, this annex identifies forest coverage losses due to climatic factors, consequences of air pollution and frequent wildfires as one particular condition of the Central and Eastern European Region (UNCCD, Annex V, Article 3, lit. e).

The UNCCD, and also the five regional implementation annexes, refer to National Action Programmes (NAP) are one of the key instruments in the implementation of the Convention. These NAPs should be developed in a consultative and participative approach, involving local communities and non-governmental organizations, and spell out the practical steps and measures to be taken to combat desertification in specific ecosystems. These NAPs are supposed to be strengthened by Action Programmes on Sub-regional (SRAP) and Regional (RAP) level. So far, four Central and Eastern European Countries have submitted NAPs.

3.6 World Summit on Sustainable Development

Ten years after UNCED, the World Summit on Sustainable Development (WSSD) was convened in August/September 2002 to assess progress in implementing sustainable development and to promote further action to address some of the most pressing concerns of poverty and the environment. The Summit adopted the "The Johannesburg Declaration on Sustainable Development" (Resolution 1) as well as the "Plan of Implementation" (Resolution 2). The latter document, which constitutes the main outcome of the Summit, contains targets and timetables to spur action on a wide range of issues, including forests. These are addressed in paragraphs 43 (a) to (i).

The Plan of Implementation recognizes the achievement of sustainable forest management (SFM) as an essential goal of sustainable development and identifies partnerships among interested governments and stakeholders, including the private sector, indigenous and local communities and NGOs, as an important means to achieve SFM. It does not contain any direct references to forest restoration.

3.7 Other international forest-related conventions

In addition to the ones described above, forests are addressed by a number of other global conventions, including the Convention Concerning the Protection of the World Cultural and

8 The full title of the Convention is the *United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa.*

Natural Heritage (World Heritage Convention), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and the Convention on Wetlands of International Importance (Ramsar Convention). However, these do not contain specific provisions regarding forest restoration.

4. Co-ordination and synergies between international forest-related processes at international and national levels

4.1 Synergies and co-ordination – definition and rationales

The Concise Oxford Dictionary defines "synergy" as "a combined effect … that exceeds the sum of individual effects". Such synergies are not created for their own sake, but need to be directed towards (a) specific goal(s) so that the combined effect can generate the intended benefits. In the given case, the specific goal is to promote forest (landscape) restoration by means of combined effects in the implementation of commitments expressed by international forest-related processes.

As demonstrated in Chapter 4 above, the commitments of all major Multilateral Environmental Agreements (MEAs) address forests. At the same time, these MEAs developed over the last decades have been tackling problems in an ad hoc and segregated manner (Nasi and MacDicken 2004; FIELD 1999; Velasquez 1999). This has resulted in a number of gaps and overlaps, along with the potential for both synergies and conflict. For example, although sustainable development requires addressing environment and development at the same time, most institutions still focus mainly on one or the other (Velasquez 1999).

The resulting strain on international and national capacities might be avoided by a greater level of co-ordination. Co-ordination can be defined as "the act of regulating and combining so as to produce harmonious results" (Webster's 1913 Dictionary). Co-ordination basically involves two concepts, namely causing parts to function together (concept of "order") and working together efficiently (concept of "equality").

Rationales for better co-ordination in international environmental policy making can broadly be summarized as follows (Kimball 1999, modified):

- promoting the efficient use of international and national resources (information, expertise, financial);
- avoiding fragmented sectoral initiatives and environmental impacts;
- ensuring that forest-related commitments accepted by governments in legally binding and non-legally-binding instruments do not contradict each other, and internationally agreed environmental laws and policies are mutually supportive;
- promoting environmental measures that both reinforce sustainable development and contribute to enhanced international trade and investment, securing a strong, integrated environmental regime vis-à-vis the global trade regime.

In recent years, a new co-ordination rationale has emerged. Increasingly, it is recognized that environmental problems themselves are inter-related – within ecosystems and between them. This recognition of "ecological linkages" also suggests a shift in the debate from the efficient use of agencies' resources towards advancing mutually supportive policies and programmes across sectors, based on an "ecosystem approach".

Forests are widespread, highly diverse ecosystems composed of long-lived organisms that are likely to be heavily impacted by global changes, such as biodiversity changes, climate change and desertification (Nasi and MacDicken 2004). The intricate relationships between forest ecosystems, climate, desertification and biodiversity are outlined e.g. in the background paper "Identifying and Promoting Synergies through Forests and Forest Ecosystems", prepared by Nasi and MacDicken for the Workshop on Forests and Forest Ecosystems in April 2004 in Viterbo, Italy. A comprehensive review of the various issues related to forest biological diversity and the links to global issues can be found in "Review of the Status and Trends of, and Major Threats to, Forest Biological Diversity" prepared by the Secretariat of the CBD (Thompson et al. 2002).

The ecological relationships between sustainable forest management, biodiversity, climate change and desertification are also quite explicit in the definitions agreed by the conventions and non-legally binding commitments.

- Biodiversity is defined by the CBD as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems".
- The UNCCD defines desertification as "land degradation in arid, semi-arid, and dry sub-humid areas resulting from various factors including climatic variations and human activities".
- For the purposes of the UNFCCC, climate change means "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".

4.2 Co-ordination between international conventions and processes

The need for better co-ordination has increasingly been recognized by the international forest-related processes. Collaboration is specifically mentioned in Articles 7.2(1) and 8.2(e) of the UNFCCC, Articles 5 and 24 (d) of the CBD and Articles 8.1 and 23(d) of the UNCCD. In addition, several declarations, conclusions and decisions encourage closer collaboration and more coherent management of the respective processes.

Mechanisms facilitating co-ordination and collaborative activities

These conventions and processes or related fora have established mechanisms facilitating co-ordination and collaborative activities:

- A Joint Liaison Group of the Secretariats and the officers of the relevant subsidiary bodies of the CBD, UNCCD and UNFCC was established in 2001. Its purpose is to improve the exchange of information, to explore opportunities for synergistic activities and to increase co-ordination among the three conventions and their secretariats, for the benefit of their respective Parties (Hoffmann 2003).
- Together with the establishment of UNFF, the Collaborative Partnership on Forests (CPF) has been formed in 2001 as an interagency partnership to support the work of the UNFF and to enhance co-operation and co-ordination on forest issues for the promotion and sustainable development of all types of forests. The CPF is a forum for co-operation

among 14 major forest-related international organizations, institutions and convention secretariats[9].

Joint initiatives on issues of common concern

To some extent, international initiatives have been established aimed at enhancing collaboration on specific issues of common concern and interest to international forest-related conventions and processes.

- In 2002, the CPF established a "joint CPF Initiative on Harmonizing and Streamlining Forest-related Reporting" and has established a Task Force on this issue. The task force has reviewed the existing forest-related reporting requirements and processes of major international bodies, identified obstacles and opportunities for reducing reporting burden and established a portal on forest-related reporting (www.fao.org/forestry/cpf-mar) (CPF 2003). Most recently, the Task Force has proposed the establishment of an on-line Information Framework for Forest Reporting[10]. With minor amendments, this proposal was endorsed by the CPF in May 2004 (CPF 2004).
- The "CPF Initiative on Harmonization of Forest-related Terms and Definitions" aims to achieve more consistency in the use of forest-related definitions, thus contributing to reducing reporting requirements and respective costs for countries, as well as facilitating communication and negotiation between international conventions, processes and instruments. So far, two expert meetings were convened in 2002 with the objective to foster a common understanding of forest-related concepts, terms and definitions to recommend options for harmonizing forest-related definitions. A third "Expert Meeting on Harmonizing Forest-related Definitions for Use by Various Stakeholders" is currently under preparation.
- Moreover, the clearing house mechanisms put in place by the conventions are useful tools of information sharing. The CBD has established a clearing house mechanism, using Internet technology, to facilitate access to information and technologies related to biodiversity[11]. Similarly, also the UNFCCC has developed a technology information clearing house (TT:Clear)[12].
- Finally, a number of publications related to co-operation and synergies have been prepared by, or under the auspices of international forest-related conventions and processes. A comprehensive list of documents has e.g. been compiled for the "Workshop on Forests and Forest Ecosystems: Promoting synergy in the implementation of the three Rio conventions" (see chapter 4.3 below)[13].

4.3 Action taken to enhance co-ordination and synergies in forest restoration

Only few actions have been taken to enhance co-ordination and synergies in the specific context of forest restoration.

9 Full list of CPF Members available at the CPF web-site at http://www.fao.org/forestry/site/2082/en
10 See Project Outline "Information Framework for Forest Reporting – An Initiative by the Collaborative Partnership on Forests (CPF) to streamline forest-related reporting to international processes and to reduce reporting burden on countries" by the CPF Task Force on Streamlining Forest-Related Reporting, available at the CPF web-site at http://www.fao.org/forestry/site/2082/en.
11 The Clearing House Mechanism of the CBD is located at https://www.biodiv.org/chm/
12 TT:Clear can be accessed at http://ttclear.unfccc.int/ttclear/jsp/
13 The list of background documents can be found at http://www.unccd.int/workshop/background.php

Relationship between IPF/IFF proposals and CBD Work Programme on FBD

The CBD has acknowledged the need to consider the linkages between its work and the work of the UNFF at the sixth meeting of the COP in 2002: Decision VI/22, through which the Expanded Programme of Work on FBD has been adopted, also contains a request to the Executive Secretary "to undertake, in collaboration with the Co-ordinator and Head of the UNFF, members of the CPF and other relevant bodies institutions and processes an assessment of the relationship between the IPF/IFF proposals and the activities of the Expanded Programme of Work" (paragraph 19(b)).

Following-up on this request, a note by the Executive Secretary has been published in November 2003 providing a report on the status of the preliminary work carried out by the CBD Executive Secretary in this assessment (CBD 2003). This report shows that, overall, ninety out of 130 activities within the Expanded Programme of Work showed some correspondence to a given IPF/IFF proposal for action, while the extent of such correspondence varied widely. This assessment also indicated that eight IPF/IFF proposals for action correspond to the three activities included in the Expanded Programme of Work addressing forest restoration. These corresponding eight proposals for action basically constitute all those IPF/IFF proposals that specifically address forest restoration. Hence, the assessment reflects a high level of potential synergies in implementation[14].

Workshop on Forests and Forest Ecosystems

During its first meeting held in 2001, the Joint Liaison Group established by the three Rio conventions agreed to hold a workshop to assess the inter-linkages between the conventions, and to identify and promote synergies concerning forests and forest ecosystems. This "Workshop on Forests and Forest Ecosystems: Promoting synergy in the implementation of the three Rio conventions" was subsequently convened in April 2004 in Viterbo, Italy.

The Viterbo workshop discussed ways and means for planning and implementing plans and programmes that coherently address the provisions of all three conventions regarding forests and forest ecosystems (Anonymous 2004). One of eight working groups formed at the workshop specifically dealt with forest landscape restoration. The working group endorsed the approach adopted by the Global Partnership on Forest Landscape Restoration and noted that restoration processes should remain demand driven, and not return to the top down-approach. The working group brought forward a number of suggestions specific to the theme (Table 1).

5.4 Issue areas to create further synergies

Information gathering, analysis and dissemination

Information gathering, analysis, and dissemination are essential for all forest-related conventions and instruments. At the same time, sharing of information is the first step in an effective co-ordination processes. Nevertheless, governments continue to face considerable

14 This is also reflected in the document "Implementing the Proposals for Action of the Intergovernmental Panel on Forests and the Intergovernmental Forum on Forests", published by Australia, PROFOR and the World Bank in May 2003.

Table 1. Suggestion of working group "forest landscape restoration" of the Viterbo workshop.

Suggestions specific to the theme:
1. New projects in landscape restoration should capitalize on how the local populations feel about and understand project work relating to synergy.
2. Ways and means should be identified of promoting success stories in landscape restoration.
3. Focal points should be fully aware of other conventions' projects and activities in this area, particularly in low forest cover countries.
4. Institutional structure should be improved to support focal points' meetings on a regular basis.
5. At the national level, no restoration or rehabilitation project should be approved if aspects of synergy are not covered.
6. A similar determination should be made in terms of what synergy in landscape restoration means for sectors other than forestry
7. Opportunities to promote pilot project work in ecological zones, such as LFCCs, should be viewed as 'win-win' opportunities, particularly where conditions are environmentally poor.
8. CDM-based small pilot projects should be promoted as instruments for landscape restoration.
Additional suggestions:
9. An appeal should be made to donors to balance funding levels between the conventions as a way of promoting equity and synergy.
10. Stronger linkages should be made between the three conventions based on technical and scientific knowledge.
11. National and international level projects should be integrated and should avoid sectoral emphasis.
12. Concrete activities should take place at the local level, but should have impacts at the international level. At the national level the most important factor is the institutional interchange, with coordination and inter-connection of the focal points being the most important element. The GEF national focal point should be included in the discussion among focal points.
13. Utilization of existing opportunities and processes such as CPF should be promoted in order to maximize the opportunities of producing synergism.
14. Bringing together groups of experts from the three conventions should be considered, as these groups can provide good cross learning and serve as go-betweens for the focal points.
15. A set of criteria and indicators for synergy-based projects should be developed.
16. A checklist at the national level and/or regional level which can assist the donor community in evaluating synergy projects should be developed.

challenges in effective information management and, consequently, in fulfilling reporting requirements of international forest-related agreements. Forests constitute an area of physical overlap among the main Rio instruments with regard to information and reporting requirements (UNEP). Collaborative efforts in this area therefore offer considerable potential for synergies in information and reporting requirements, including the following aspects: harmonization of terms and definitions, establishment of commonality of data among instruments, identification of existing data and information, sharing of data and information with other institutions, identification of data gaps and development of plans to fill these gaps, capacity building for data integration and analysis (FIELD 1999).

Several international initiatives have been addressing aspects of information provision, sharing and dissemination. These offer considerable potential for enhancing co-ordination on forest restoration issues:

- The "Global Forest Information Service*"* (GFIS), which became a joint CPF Initiative in May 2003, aims to enhance access to all types of forest information for governments and

all types of stakeholders and hence to contribute to an improved understanding of forest related issues, to better decision-making as well as a to a more informed public engagement in forest policy and forest management at all levels. Experience gained with GFIS in Africa has also demonstrated that sharing of expertise and experiences among participating organizations enables mutual learning and supports more harmonized approaches to the provision and management of forest related information at a global scale. Overall, GFIS offers the potential to significantly enhance access to information about forest landscape information in general.

- With a particular focus on national reporting, the "Common Information Framework for Forest-related National Reporting to International Processes" under development the CPF Members aims to guide information management and reduce the reporting burden on countries in a long-term perspective. This framework should also include reporting on forest landscape restoration both, regarding action taken in relation to existing commitments and in relation to situations and trends. In the latter context, aspects of problem diagnosis and the identification of response options should be considered.
- The implementation of forest-related commitments is frequently confounded by a lack of definitions. So far, the ongoing "CPF Initiative on Harmonization of Forest-related Terms and Definitions" has focused on a rather limited number of terms and definitions. Consideration of terms related to the concept of forest restoration, including forest landscape restoration, would be beneficial.
- Finally, also the Joint Liaison Group provides opportunities to further facilitate information gathering, analysis, and dissemination. For example, the Viterbo workshop encouraged the Joint Liaison Group to discuss ways and means to facilitate the collection of case studies, success stories, methodologies and experiences and lessons learned by countries at national and local level on synergies between the three Rio conventions in SFM and forest-ecosystems related issues.

Scientific knowledge and advice

Also scientific and technological assessments are among the range of functions typically carried out by the procedures and institutions created by MEAs (FIELD 1999). Accordingly, subsidiary bodies were established under the Conventions, including the Subsidiary Body on Scientific, Technical and Technological Advice of the CBD, the Subsidiary Body for Science and Technological Advice of the UNFCCC and the Committee on Science and Technology of the UNCCD. In the context of UNFF, CIFOR, ICRAF and IUFRO are members of the CPF.

Overall, scientific assessments were key to informing the negotiating process for the Rio instruments (UNDP 1997). Science has also played a crucial role in promoting synergies between international agreements (e.g. Intergovernmental Panel on Climate). Nevertheless, the existing knowledge base about the characteristics of the earth system, the likely consequences of global environmental change, and about related policy options remains insufficient (see e.g. Biermann et al. 2004). In particular, there is a need to advance knowledge about the relationship between nature and humankind. As was pointed out by Nasi and MacDicken (2004), the holistic basis in which the relationships between climate change, desertification, biodiversity loss and forests fit together is very distant from the human institutions attempting to address the issues.

In the context of promoting synergies and co-operation among forest-related agreements, the main window for co-operation seems to be the provision of advice on cross-cutting scientific issues (Nasi and MacDicken 2004). The workshop in Viterbo strongly encouraged further work on collection, development and synthesis of traditional and scientific knowledge

for combating the problems addressed by the three conventions. Forest restoration was identified at the Viterbo workshop as an issue with high potential for synergy with regard to forest-related scientific and traditional knowledge (Anonymous 2004). The Working Group dealing with "forest landscape restoration" suggested that stronger linkages should be made between the three conventions based on technical and scientific knowledge (see Table 1).

Taking into account that forest landscape restoration as a concept has emerged only recently, there is also a need to further enhance the understanding of forest landscape restoration globally. Science could contribute significantly to further enhancing knowledge about essential aspects of forest landscape restoration and the inter-linkages between forest-related agreements on this issue.

Capacity development

All forest-related conventions and processes underline the need for adequate capacity. At the same time, lack of capacity continues to be a major, possibly the biggest, obstacle to the implementation of international forest-related commitments at the regional, national, sub-national and local levels. Frequently, capacities diminish from the national to the local level (UNDP 1997).

The "Millennium Development Goals", which target significant human development progress by 2015, create a critical framework for the outcomes of capacity development. Target 3 of the MDG is to ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling. At the same time, the regional distribution of primary age children not enrolled clearly reflects the significant imbalances in primary education. According to the Human Development Report 2003 published by UNDP, 37% of the global total of primary age children are not enrolled in primary education can be found in Sub-Saharan Africa and 35% in South Asia, while only 3% of these children live in Central and Eastern Europe and the CIS (UNDP 2003). In total, 114 million primary age children have not been enrolled in the year 2000. These figures also hint at the disproportionate overall capacities around the globe.

Capacities needed for co-ordination in the implementation of these agreements can be clustered in five broad categories: (a) capacities to manage forests on a sustainable basis, including forest restoration; (b) capacities to formulate, implement and evaluate policies; (c) capacities in forest research and development; (d) capacities in forest education; and (e) capacities for networking, communication and information exchange (Kleine et.al. 2004, adapted). All of these apply to the specific context of forest restoration and forest landscape restoration.

The need for capacity development was also recognized at the Viterbo workshop which concluded that mechanisms such as training and capacity building should support national forest programmes as a fundamental mechanism for synergy in many countries. Also, the institutional structure should be improved to support meetings of convention focal points on a regular basis (Anonymous 2004).

Participation in decision making and implementation

All international forest-related agreements note and encourage the important role of the broad range of stakeholders in effective development, implementation and planning of policies and in finding solutions to the problems addressed. They call for measures to increase public

understanding and awareness and ensure adequate participation in achieving the goals of the agreements.

Overall, public participation is today considered a core aspect of socially sustainable forest management (TemaNord 2002). According to Nasi and MacDicken (2004) the most important issue to keep in mind is that whatever mechanisms or process (for synergies and co-ordination) put in place, if they are not designed with adequate consultations, locally appropriated, they will not be implemented.

Participation can be defined as "activities that affect formulation, adoption and implementation of public policies and/or that affect the formation of political communities in relation to issues or institutions of public interest" (TemaNord 2002). Benefits of participatory, consultative processes include: better informed decisions; the use of local expertise and knowledge; satisfying the increased need for accountability, transparency and quality towards the public; the possibility to test policy decisions for later acceptance; minimising later complications of protest and political intervention; and the use of consultation to explain the rational for certain decisions (Brandlmaier 2004).

In the context of forest restoration strategies, consultative processes are inter alia required to ensure that all stakeholders are fully aware of the full range of possible alternatives, opportunities, costs and benefits offered by restoration; to engage all relevant sectors of society and disciplines, including the displaced and powerless, in planning, implementation and monitoring; to define boundaries for restoration operationally by all relevant stakeholders; to consider all forms of historical and current information, including scientific and indigenous and local knowledge, innovations and practices; and to ensure the acceptance of longer-term objectives of forest restoration (CBD 2004, modified)[15].

4.5 Means to create further synergies at the national and sub-national level

Ideally, defining environmental problems and linkages begins from the bottom-up (Kiball 1999). As was also acknowledge at the Viterbo workshop, national programmes and strategies pursuant to individual forest-related agreements provide key means for identifying issues relevant to more than one agreement at the national and sub-national levels, including forest restoration. There is an increasing understanding globally that such programmes should be seen as iterative, participatory and holistic processes.

A particular challenge in this respect is to streamline issue-specific national programmes and strategies, especially national forest programmes, national biodiversity strategies, national action programmes to combat desertification, poverty reduction strategies and national sustainable development strategies, and to set clear national priorities. Article 10.4 of the text of the UNCCD recognizes the linkage with other sectoral activities by pointing out a number of priority fields related to combating desertification that should be addressed in national action programmes (e.g. poverty eradication, sustainable management of natural resources, energy, etc.). The need to co-ordinate and streamline issue-specific national programmes and strategies has been acknowledged more explicitly in paragraph 28 of the Expanded Programme of Work on FBD addressing national implementation which "urges Parties and other Governments to incorporate relevant objectives and related activities of the programme of work into their national biodiversity strategies and action plans and national

15 Compare: Initial guidance: Attributes of good forest restoration practice and relevant indicators of progress, available at http://www.biodiv.org/programmes/areas/forest/portal/topic1/guidance.shtml

forest programmes and promote compatibility and complementarity between these plans/programmes and other related initiatives".

Accordingly, also the Viterbo workshop identified effective consultation and mutual co-operation between national programmes under the UNCCD, CBD, UNFCCC, combined with participation in national forest programmes and their analysis for elements of synergy among the conventions, as a suitable means to facilitate harmonized planning and implementation of the Rio Conventions. With regard to forest landscape restoration, it was concluded that "the national forest programme is a fundamental mechanism for synergy in many countries. To support these programmes, mechanisms such as training and capacity building, and the alignment of legal and policy objectives, should be considered." (Anonymous 2004)

In addition, to support such processes, more research is needed to understand how national planning processes for the implementation of international agreements could be mainstreamed into national development activities, taking into account inter-relationships among different international agreements.

6. Conclusions

Forest restoration is addressed by the commitments expressed by all major forest-related international conventions and processes, including Agenda 21 and the "Forest Principles", the Intergovernmental Panel on Forests/Intergovernmental Forum on Forests, the United Nations Forum on Forests, the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change, the Convention to Combat Desertification, and the World Summit on Sustainable Development.

Forest restoration is a topic offering a high potential for synergy for action. Areas where further synergies could be achieved at the national and international levels include: (i) information gathering, analysis and dissemination; (ii) scientific knowledge and advice; (iii) capacity development; and (iv) participation in decision-making and implementation. National programmes and strategies pursuant to individual forest-related agreements provide key means for identifying issues relevant to more than one agreement at the national and sub-national levels, but need to be integrated further.

Overall, efforts towards enhancing synergies and co-ordination need to be supported by further developing the common understanding about forest landscape restoration.

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List of Acronyms

CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CIFOR	Center for International Forestry Research

CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
COP	Conference of the Parties
CPF	Collaborative Partnership on Forests
FAO	Food and Agriculture Organization of the United Nations
FBD	Forest biological diversity
GFIS	Global Forest Information Service
ICRAF	World Agroforestry Centre
IFF	Intergovernmental Forum on Forests
IPCC	Intergovernmental Panel on Climate Change
IPF	Intergovernmental Panel on Forests
IUCN	The World Conservation Union
IUFRO	International Union of Forest Research Organizations
IUFRO-SPDC	IUFRO's Special Programme for Developing Countries
LULUCF	Land use, Land use change and Forestry
MEAs	Multilateral Environmental Agreements
NAP	National Action Programme
nfps	National forest programmes
PROFOR	Program on Forests of the World Bank
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP-WCMC	UNEP World Conservation Monitoring Centre
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
WSSD	World Summit on Sustainable Development

References

Anonymous 2004. Final report of the Workshop on Forests and Forest Ecosystems: Promoting Synergy in the implementation of the three Rio Conventions. 5–7 April 2004. Viterbo, Italy. http://www.unccd.int/workshop/menu.php

Anonymous 1992. Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management and Sustainable Development of Forests. In: Grayson, A.J. and Maynard, W.B. (eds.) 1997. The World's Forests – Rio+5: International Initiatives Towards Sustainable Management. Commonwealth Forestry Association. Oxford, United Kingdom.

Biermann, F. et al. (eds.) 2004. Proceedings of the 2002 Berlin Conference on the Human Dimensions of Global Environmental Change: Knowledge for the Sustainability Transition. The Challenge for Social Science. Global Governance Project. Amsterdam, Berlin, Potsdam and Oldenburg. 2004.

Bradshaw, R.H.W. 2002. What is a Natural Forest? In: Gardiner, E.S. and Breland, L.J. (eds.). Proceedings of the IUFRO Conference on Restoration of Boreal and Temperate Forests. Documenting Forest Restoration Knowledge and Practices in Boreal and Temperate Ecosystems. Pp. 26-27.

Brandlmaier, H. 2004. Advantages and limitations of environmental mediation and participation in complex political decision making processes on the example of the Regional Forest Agreements in New South Wales, Australia. Analysis of the NSW Regional Forest Forums prepared for the Diploma in Mediation. Vienna, Austria.

CBD 2004. Decision VI/22. Forest biological diversity. https://www.biodiv.org/decisions/default.aspx?dec=VI/22

CBD 2001-2004. Forest Portal. Convention on Biological Diversity, Montreal, Canada. http://www.biodiv.org/programmes/areas/forest/portal/topic1/home.shtml

CBD 2003. Forest Biological Diversity: Relationships between IPF/IFF Proposals for Action and Activities in the Expanded Programme of Work on Forest Biological Diversity. Note by the Executive Secretary. Subsidiary Body on Scientific, Technical and Technological Advice. Ninth Meeting. Montreal, 10-14 November 2003. UNEP/CBD/SBSTTA/9/INF/31.

CBD 2004. Thematic programmes of work: Progress reports on implementation and consideration of proposals for future action: forest biological diversity; biological diversity of dry and sub-humid lands; and agricultural biological diversity. Note by the Executive Secretary. Seventh Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity. 9–20 February 2004, Kuala Lumpur, Malaysia. UNEP/CBD/COP/7/11.

CPF 2004. International Forest-related Reporting: a Review and Comparative Analysis. Working Paper 1. CPF Task Force on Streamlining Forest-related Reporting.

CPF 2003. Towards a Common Information Framework for Forest-Related National Reporting to International Processes. CPF Task Force on Streamlining Forest-related Reporting. 06 December 2003.

CSD 2002. Ministerial declaration and message from the United Nations Forum on Forests to the World Summit on Sustainable Development. Note by the Secretary-General. Commission on Sustainable Development acting as the preparatory committee for the World Summit on Sustainable Development. Third session. 25 March – 5 April 2002. Item 1 of the provisional agenda. A/CONF.199/PC/8. 19 March 2002.

Department of Agriculture, Fisheries and Forestry, et al. 2003. Implementing the Proposals for Action of the Intergovernmental Panel on Forests and the Intergovernmental Forum on Forests. Department of Agriculture, Fisheries and Forestry, Australia, and Program on Forests (PROFOR) at the World Bank.

FAO 2004. Information Framework for Forest Reporting – An Initiative by the Collaborative Partnership on Forests (CPF) to streamline forest-related reporting to international processes and to reduce reporting burden on countries. Food and Agriculture Organization of the United Nations, Rome, Italy.

FAO 2002. Report of the Second Expert Meeting on Harmonizing Forest and Forest-related Definitions for Use by Various Stakeholders. Rome, September 11-13, 2002. Food and Agriculture Organization of the United Nations, Rome, Italy.

FAO 2001. Restoration of degraded sites. Unasylva 207. Food and Food and Agriculture Organization of the United Nations, Rome, Italy.

FIELD 1999. Synthesis Paper. Inter-Linkages: International Conference on on Synergies and Coordination between Multilateral Environmental Agreements. Foundation for International Environmental Law and Development (FIELD).

Gardiner, E.S. and Breland, L.J. (eds.). 2002. Proceedings of the IUFRO Conference on Restoration of Boreal and Temperate Forests. Documenting Forest Restoration Knowledge and Practices in Boreal and Temperate Ecosystems. Danish Forest and Landscape Research Institute. pp. 238.

Hoffmann, H. 2003. The Joint Liaison Group between the Rio Conventions: An Initiative to Encourage Cooperation, Coordination and Synergies. In: Work in Progress. A Review of Research Activities of the United Nations University. Volume 17. Number 1. United Nations University, Tokyo, Japan.

Kimball, L.A. 1999. Institutional Linkages among Multilateral Environmental Agreements: A Structured Approach Based on Scale and Function. Prepared for: Interlinkages. International Conference on Synergies and Coordination between Multilateral Environmental Agreements. The United Nations University, Tokyo, 1999.

Kleine et al. 2004. Capacity development: A contribution to the WFSE Publication on “Forests in the Global Balance – Changing Paradigms”. Draft. Vienna, Austria.

Nasi, R. and MacDicken, K. 2004. Identifying and Promoting Synergies through Forests and Forest Ecosystems. Background paper prepared for the Workshop on Forests and Forest Ecosystems. Convention on Biological Diversity, UNEP/CBD/WS-For-Syn/INF/1.

Pye-Smith, C. and Saint-Laurent, C. 2003. Introduction to Forest Landscape Restoration. In: Global Partnership on Forest Landscape Restoration. Investing in People and Nature. The World Conservation Union, WWF International, Forestry Commission of Great Britain.

PROFOR 2004. Economic Incentives for SFM and Landscape Restoration. A Workshop Summary. In: Innovative Financing for SFM. Volume 1, Issue 2. March 2004.

Stanturf, J.A. 2002. What is Forest Restoration? In: Gardiner, E.S. and Breland, L.J. (eds.). Proceedings of the IUFRO Conference on Restoration of Boreal and Temperate Forests. Documenting Forest Restoration Knowledge and Practices in Boreal and Temperate Ecosystems. Pp. 24–25.

TemaNord 2002. Have a good participation. Recommendations on public participation in forestry based on literature review and Nordic experiences. Nordic Council of Ministers. Agriculture and Forestry. Copenhagen, Denmark.

The Fridtjof Nansen Institute 2004. Yearbook of International Cooperation on Environment and Development. The Fridtjof Nansen Institute, Lysaker, Norway. http://www.greenyearbook.org/agree/atmosphe/unfccc.htm

Thompson et al. 2002. Review of the Status and Trends of, and Major Threats to, Forest Biological Diversity. CBD Technical Series No 7. Secretariat of the Convention of Biological Diversity. Montreal, Canada.

UN Department of Economic and Social Affairs 2003. Agenda 21. http://www.un.org/esa/sustdev/documents/agenda21/index.htm

UNCCD 1999. Review of Activities for the Promotion and Strengthening of Relationships with Other Relevant Conventions and Relevant International Organizations, Institutions and Agencies. Collaboration and synergies among Rio conventions for the implementation of the UNCCD. Note by the secretariat for the third session of the Conference of the Parties, 15-26 November 1999. Convention to Combat Desertification. ICCD/COP(3)/9.

UNCCD 2004. Text of the United Nations Convention to Combat Desertification. http://www.unccd.int/convention/text/convention.php

UNDP 1997. Synergies in National Implementation. The Rio Agreements. United Nations Development Programme. Sustainable Energy and Environment Division. New York, USA.

UNDP 2003. Human Development Report 2003. Millennium Development Goals: A compact among nations to end human poverty. United Nations Development Programme. 2003.

UNFCCC 2002. Report of the Conference of the Parties on its Seventh Session , Held at Marrakesh from 29 October to 10 November 2001. Addendum: Part two: Action Taken by the Conference of the Parties. Volume I. FCCC/CP/2001/13/Add.1. 21. January 2002. http://unfccc.int/resource/docs/cop7/13.pdf

UNFCCC 2004. Report of the Conference of the Parties on its Ninth Session , Held at Milan from 1 to 12 December 2003. Addendum: Part two: Action Taken by the Conference of the Parties at its Ninth Session. Conference of the Parties. FCCC/CP/2003/6/Add.2. 30 March 2004. http://unfccc.int/resource/docs/cop9/06.pdf

United Nations Economic and Social Council 1997. Report of the Ad Hoc Intergovernmental Panel on Forests on its fourth session. New York, 11-21 February 1997. E/CN.17/1997/12. 20 March 1997. http://www.un.org/esa/forests/documents-ipf.html#4

United Nations Economic and Social Council 2000. Report of the Intergovernmental Forum on Forests on its fourth session. New York, 31 January – 11 February 2000. E/CN.17/2000/14. 20 March 2000. http://www.un.org/esa/forests/documents-iff.html

United Nations Economic and Social Council 2001. United Nations Forum on Forests. Report on the organizational and first sessions (12 and 16 February and 11–22 June 2001). E/2001/42/Rev.1. http://www.un.org/esa/forests/documents-unff.html

United Nations Economic and Social Council 2002. United Nations Forum on Forests. Report on the second session (22 June 2001 and 4 to15 March 2002). E/2002/42. http://www.un.org/esa/forests/documents-unff.html

Velasquez, J. 1999. National Framework for Inter-Linkages: Bridging Problems and Solutions to Work towards the Further Implementation of Agenda 21. UNU/Global Environment Information Centre. Tokyo, Japan.

Ecosystem Approach and Ecosystem Management as the Fundaments of Forest Landscape Restoration Strategies

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Abstract

A conceptual basis for forest landscape restoration is presented. Restoration and landscape are defined. A synthesis of the principles used in restoration is given. Based on this we suggest making the difference between Forest Landscape Restoration (FLR) and Forest Restoration with a Landscape Approach (FRLA). Both are considered as elements of the broader concept of Integrated Landscape Management. The concepts of Ecosystem Management (EM) and Ecosystem Approach (EA) are introduced. Ecosystem Management is a technique based on sound science, which was developed during the two last decades in order to use natural resources and maintain the integrity of the ecosystems producing the resources. The Ecosystem Approach was developed during the last 6 years within the framework of the CBD and takes over some of the principles of Ecosystem Management. Both concepts have overlapping elements with Sustainable Forest Management (SFM). Globally, EM and EA are now guiding conservation and management of natural resources, including forest resources.

The paper demonstrates that many of the principles of EA are also included in restoration concepts. Recommendations are formulated to improve the implementation of EA in Forest Landscape Restoration. A 15-step procedure for Integrated Landscape Management, including FLR and FRLA projects is proposed.

Keywords: forest landscape restoration, integrated landscape management, ecosystem approach, ecosystem management.

1. Introduction

The landscape approach is considered today as an essential principle for managing biological resources. New management concepts like Ecosystem Management and the Ecosystem

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Approach are including the landscape level. Landscape is the main object of the emerging science called Landscape Ecology. Landscape as a whole can be damaged and restoration may be needed. This is also true for forest landscapes. Restoration, especially ecological restoration, has recently made important development.

Ecosystem Management (EM) is a technique based on sound science, which was developed during the two last decades in order to use natural resources and maintaining the integrity of the ecosystems producing the resources. Ecosystem Approach (EA) was developed during the last 6 years within the framework of the CBD (Convention of Biological Diversity) and takes over some of the principles of Ecosystem Management. Both concepts have overlapping elements with Sustainable Forest Management (SFM). EM and EA are now guiding conservation and management of natural resources, including forest resources. We think that both can be also applied for Forest Landscape Restoration.

The paper is a conceptual contribution. Its goals are to:

- synthesize the main ideas of forest landscape restoration;
- show that restoration is, with conservation and sustainable use, an element of Integrated Landscape Management;
- present the principles of Ecosystem Management and Ecosystem Approach;
- show possible implications of Ecosystem Approach in Forest Landscape Restoration; and
- propose a procedure for Integrated Landscape Management, including Forest Landscape Restoration.

2. Concept of Forest Landscape Restoration

2.1 Landscape and Forest landscape

The term Landscape has different meanings, depending on the viewpoint. In this paper, we use Landscape in the sense of landscape ecology (e.g. Gergel and Turner 2002; Schlaepfer et al. 2002; Turner et al. 2001; Burel et Baudry 1999; Farina 1998 and 2000; Forman 1997; Malanson 1993; Forman and Godron 1986) and we propose following definition:

> *Landscape is a dynamic geographical space, resulting from combined actions of human and natural driving forces, in general including several interacting terrestrial, aquatic or urban ecosystems, and which can be differentiated from neighbouring landscapes.*

A landscape can be classified in landscape types defined according to the dominant element (e.g. rural landscape, fluvial landscape, alpine landscape, urban landscape or forest landscape).

For us, a forest landscape is a landscape, which is mainly dominated by forest ecosystems, but including also other ecosystems. In Central and Northern Europe, forest landscapes often include agricultural and urban ecosystems, which interact with the forests.

Forest landscapes are complex ecological systems. They have a certain structure, include several interacting elements, are functioning through different human driven and biophysical processes and are fulfilling different economic, ecological and social functions for the human society. The quality of a forest landscape is its ability to fulfil its different functions.

A forest landscape needs restoration when it or parts of it are damaged and its quality is no more sufficient to cover human's needs.

2.2 Restoration as a part of Integrated Landscape Management

Restoration is a concept, which received intense attention during these two last decades. Scientists, managers and policy makers defined the word and used it for different purposes.

Like landscape, restoration can have several meanings. According to the Webster dictionary, restoration means a) reinstatement in a former position, rank, b) restitution for loss, damages and c) a representation or reconstruction of the original form or structure, as a building, fossil animal, etc. Lamb and Don Gilmour (2003) define, for the site level, ecological restoration as the re-establishment of the structure, productivity and species diversity of the forest originally present. If we would follow these definitions, restoration of forest landscape would mean reconstruction of the original form of the landscape. We immediately identify the first challenge: What is the original form of our forest landscape? In ecology, because of the dynamic nature of ecosystems and landscapes, the original form of a system is difficult, if not impossible to define. We therefore need a more realistic definition of restoration. Let us have a look at two other definitions, cited by Bradshaw (2002):

> *"Restoration is defined as the return of an ecosystem to a close approximation of its conditions prior to disturbance. (National Research Council 1992)".*

> *"Ecological restoration is the process of assisting the recovery and management of ecological integrity. Ecological integrity includes a critical range of variability in biodiversity, ecological processes and structures, regional and historical context, and sustainable cultural practices. (Society for Ecological Restoration 1996)".*

These last two definitions, even if different, are both useful. For the National Research Council, the original form is the situation prior to a disturbance. This situation is usually known in well monitored systems, but this may be not the case otherwise. For the Society for Ecological Restoration, the recovery of the ecological integrity is enough, independently of the original form of the ecosystem. The challenge here is to define ecological integrity. One way to solve these problems is to use reference systems, which should be imitated through restoration.

The approach to restoration of Hobbs and Norton (1996) is worth mentioning. They claim that different terms like restoration, rehabilitation, reallocation, reconstruction and many others are used differently or interchangeably depending on whose papers are read. Rather than argue over the meaning of particular terms, they present reasons for restoration activities:

- Restoration of highly degraded but localized sites such as mine sites;
- Improvement of the productive capability in degraded production lands;
- Enhancement of conservation values in protected landscapes and;
- Enhancement of conservation values in productive landscapes.

But what is landscape restoration? A landscape is usually a mosaic of different ecosystems, which can have different degrees of degradation. Hobbs (2002), in order to move from generalized guidelines to more specific recommendations, proposes four classes of landscapes, defined according to their degree of destruction of habitat:

- Intact landscapes, little or no destruction, with more than 90% of intact habitat;
- Variegated landscapes, with a moderate destruction of habitat (60–90% intact habitat);
- Fragmented landscapes, with a high degree of destruction (10–60% intact habitats);
- Relictual landscapes, with extreme destruction (less than 10% of intact habitat).

Table 1. Conceptual presentation of Integrated Landscape Management.

Integrated Landscape Management			
Type of ecosystem in the landscape	Type of activity		
	Sustainable use	Conservation	Restoration
Forests	x	x	x
Agricultural	x	x	x
Aquatic	x	x	x
Urban	x	x	x

Hobbs (2002) also pointed out, that most of the methodologies on ecological restoration centre on individual sites and ecosystems. Restoration at the landscape level has to include both restoration of individual ecosystems in the landscape, and the taking into account of landscape and regional-scale processes. Restoration at the landscape level is therefore not identical with restoration of individual sites. Lamb and Don Gilmour (2003) make the difference between landscape and site level. They define Forest Landscape Restoration as a process that aims to regain ecological integrity and enhance human well-being in deforested or degraded forest landscapes. As we can see this definition includes human needs.

For the purpose of this paper, we define landscape restoration as:

Landscape restoration is the set of activities aiming at the improvement of ecological, economic and/or social qualities of a landscape as a whole, including restoration of individual degraded ecosystems and taking into account landscape scale and regional processes.

We consider landscape restoration as one element of what can be called *Integrated Landscape Management*, the other elements being sustainable use of landscape resources and conservation of landscape elements of particular ecological, economic or social interest. Integrated Landscape Management can be defined similarly to Integrated Land Management (IDRC/UNCTAD, 1997), by replacing the word "land" by "landscape":

Integrated Landscape Management is a holistic approach that identifies the stakeholders and their needs; comprehensively evaluates options for people and nature to find ones that meet the needs of both on a long-term basis; and integrates solutions to human, economic, and environmental problems. Integrated Landscape Management includes management for sustainable use, conservation and restoration (see Table 1).

With these considerations in mind, we have to ask the question "What is Forest Landscape Restoration"?

Using our definition of forest landscape and landscape restoration, *Forest Landscape Restoration is a component of Integrated Landscape Management and can be defined as the set of activities aiming at the improvement of ecological, economic and/or social qualities of a forest dominated landscape as a whole, including restoration of individual degraded ecosystems and taking into account landscape scale and regional processes*. This definition puts the emphasis on the landscape as a whole, including other ecosystems. The weight of forest restoration activities will depend on importance and degradation of forests in the landscape.

In a more restrictive sense, we can be mainly interested in the restoration of forests in the landscape. In this case, goals and planning are focused on forests rather than on the landscape

as a whole. We suggest calling this *Forest Restoration with a Landscape Approach (FRLA), which can be considered, like Forest Landscape Restoration, with sustainable management and conservation, as a part of Integrated Forest Management.* In a similar way, we could define Integrated Agricultural Management or Integrated Aquatic Systems Management. The landscape approach would mean that, in our restoration strategy, we take into account the processes happening at the landscape level and the interactions between forests and neighbouring ecosystems.

2.3 Principles of Landscape Restoration

Several authors have proposed principles for restoration. We summarize here those presented by ITTO (2002), Lamb and Don Gilmour (2003), Hobbs and Norton (1996) and Wishant (1999, cited by Hobbs 2002). The ITTO and the Lamb and Don Gilmour principles include socio-economic components. The principles given by Hobbs and Norton and by Wishant are mainly ecological.

The ITTO guidelines for the restoration, management and rehabilitation of degraded and secondary forests are also useful for temperate and boreal forest landscapes. They contain the eight following main objectives:

- Attain commitment to the management and restoration of degraded and secondary forest landscapes;
- Formulate and implement supportive policies and appropriate legal frameworks;
- Empower local people and ensure the equitable sharing of costs and benefits;
- Employ integrated approaches to resource assessment, planning and management;
- Take an adaptive and holistic approach to forest management, emphasizing environmental and social values;
- Promote economic efficiency and financial viability;
- Guarantee participatory monitoring and evaluation as a basis for adaptive management;
- Utilize appropriate ecological and silvicultural knowledge and efficient management practices.

Under each main objective, a number of principles and under each principle a number of recommended actions are listed. In total there are 49 principles and 160 recommended actions.

Lamb and Don Gilmour (2003) suggest three actions for promoting forest landscape restoration:

- Raising public awareness of the extent and consequences of forest loss and degradation, as well as the potential for forest landscape restoration.
- Putting forest landscape restoration on the policy agenda at global, regional and national levels.
- Incorporating restoration into land-use planning and action.

Hobbs and Norton (1996) have identified a number of key processes in restoration that they consider essential for the successful integration of restoration into land management:

- Identify processes leading to degradation or decline;
- Develop methods to reverse or ameliorate the degradation or decline;
- Determine realistic goals for re-establishing species and functional ecosystems, recognizing both the ecological limitations on restoration and the socio economic and cultural barriers to its implementation;
- Develop easily observable measures of success;

- Develop practical techniques for implementing these restoration goals at a scale commensurate with the problem;
- Document and communicate these techniques for broader inclusion in land-use planning and management strategies;
- Monitor key system variables, assess progress of restoration relative to the agreed-upon goals, and adjust procedures if necessary.

Whisant (1999), cited by Hobbs (2002) provided a set of guidelines for landscape repairs, which include the following:

- Treat causes rather than symptoms;
- Emphasize process repair over structural replacement;
- Design repair activities at the proper scale;
- Design landscapes to increase retention of limiting resources;
- Design spatial variation into landscapes;
- Design landscapes to maintain the integrity of primary processes;
- Design linkages into landscapes;
- Design propagule donor patches into landscapes;
- Design landscapes to encourage animal dispersal of desired seed;
- Design landscapes to encourage wind dispersal of desired seeds;
- Design landscapes to encourage positive animal interactions.

I consider Whisant guideline no 1 "Treat causes rather than symptoms" as essential in FLR. A consequence of this guideline is the necessity to know the causes and this is not always easy.

The Society for Ecological Restoration has published guidelines for developing and managing ecological restoration (Clewel et al. 2000) and a primer on ecological restoration (SER 2002).

The mentioned principles should guide restoration activities. In this paper, they will be used as comparison with the principles of Ecosystem Management and Ecosystem Approach.

3. Ecosystem Management (EM)

Ecosystem Management is a kind of general basis for the sustainable use of biological resources and can be considered as the forerunner of the EA. Many definitions of Ecosystem Management have been proposed. Two good examples are the definitions provided by the Ecological Society of America and by Wood:

The Ecological Society of America (Christenson et al. 1996) states:

> *"Ecosystem management is management driven by explicit goals, executed by policies, protocols, and practices, and made adaptable by monitoring and research based on our best understanding of the ecological interactions and processes necessary to sustain ecosystem composition, structure, and function. Ecosystem management includes sustainability, goals, sound ecological models and understanding, complexity and connectedness, the dynamic character of ecosystems, context and scale, humans as ecosystem components, adaptability, and accountability".*

Because of its simplicity and its general applicability, we prefer the definition given by Wood (1994):

Table 2. Twelve basic principles that constitute the foundations of Ecosystem Management.

1. Holistic view of the managed system (system perspective)
2. Sustainability of structure, functioning and functions of the considered ecosystems
3. Multiple objectives that consider ecological, economic and social requirements of the managed system
4. Landscape perspective (linkages and interactions with neighbouring systems, processes at landscape level)
5. Integration of spatial scales (site, landscape and region) and temporal scales (short-, medium- and long-term)
6. Participation of all stakeholders
7. Adequate monitoring, including data collection systems and data-bases
8. Adaptive management (based on monitoring and learning through management)
9. Based on sound science and good judgement
10. Decision-making in situations of uncertainty
11. Application of the precautionary principle
12. Good planning system

"Ecosystem management is integration of ecological, economic, and social principles to manage biological and physical systems in a manner that safeguards the ecological sustainability, natural diversity, and productivity of the landscape".

Ecosystem Management was discussed and analyzed in numerous publications (e.g. Christenson et al. 1996; Kohm and Franklin 1997; Schlaepfer et al. 2002; Schlaepfer 1997; Szaro et al. 1998; Johnson et al. 1999; Pirot et al. 2000; Meffe et al. 2002).

Based on an analysis of these publications and other papers, it is possible to identify twelve basic principles that constitute the foundations of Ecosystem Management (Table 2). It is worth noting that several of these principles have been adopted by both Sustainable Forest Management and the Ecosystem Approach.

4. The concept of Ecosystem Approach (EA)

The Convention on Biological Diversity (CBD) (http://biodiv.org) was one of the key outcomes of UNCED. The Ecosystem Approach (EA) is the CBD's framework approach for the fulfilment of its three objectives, i.e. the conservation, sustainable use and fair and equitable sharing of the benefits arising out of the utilization of genetic resources. The EA is not mentioned in the actual text of the CBD. However, the term was introduced at the first meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) (FAO 2003). At the second meeting of the Conference of the Parties (COP) of the Convention, which was held in Jakarta in November 1995, the delegates agreed that the EA should be the primary framework of action to be taken under the terms of the Convention. No definition of the EA was provided at this stage.

The first description of the EA and a set of twelve underlying principles (The "Malawi Principles") were developed at a workshop of experts held in 1998 (CBD 1998). These underlying principles were discussed and refined at a number of subsequent expert meetings and workshops and resulted in a definition of the EA approach (given in Table 3, together with the

Table 3. Definition of Sustainable Forest Management (MCPFE) and description of Ecosystem Approach (CBD).

Sustainable Forest Management
The stewardship and use of forests and forests lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems (MCPFE, 1993; FAO uses the same definition).
Ecosystem Approach
The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Application of the ecosystem approach will help to reach a balance of the three objectives of the Convention on Biological Diversity (CBD). It is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems (www.biodiv.org/programmes/cross-cutting/ecosystem/description.asp).

definition of Sustainable Forest Management adopted by the Ministerial Conference of Protection of Forests in Europe), twelve principles and five points of operational guidance (Appendix 1), as contained in Decision V/6 of the fifth meeting of the COP to the CBD. The EA principles were only adopted in 2000 and it is too early to judge the feasibility and medium-term and long-term effects of their application (FAO 2003). A number of recent case studies have been carried out to analyse the extent to which the EA principles are being adhered to in current practices and the lessons learned (e.g. Smith and Maltby 2003), rather than describing examples of attempts to apply the full set of principles and operational guidance points to a given ecosystem. Schlaepfer et al (2004) demonstrate that SFM and EA have common elements.

The German Federal Agency for Nature Conservation organised a workshop on the Isle of Vilm in October 2002 entitled "Further Development of the Ecosystem Approach". One key outcome of the Vilm Workshop is the clear emphasis on persistent problems around the EA. For example, it was stated i) that the overall concept and explanatory frame of the EA needs clarification; and ii) that there is a lack of guidelines for the application of the EA in the field.

Recently, the COP 6 requested the CBD secretariat to review the principles and guidelines of the EA, to prepare guidelines for its implementation on the basis of case studies and lessons learned, and to review the incorporation of the Ecosystem Approach into various programmes of work of the Convention (CBD 2003c). In particular, Annex 1 "Refinement and elaboration of the Ecosystem Approach, based on assessment of experience of parties in implementation" presents a rationale for each of the twelve principles, annotations to the rationale and implementation guidelines.

Several of the EA principles are similar to the mentioned restoration principles. For example:

EA principle 5 (Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the EA) does correspond to Wishant's guideline b (Emphasize process repair over structural replacement).

EA principle 7 (The EA should be undertaken at the appropriate spatial and temporal scales) is equivalent to Wishant's guideline c (Design repair activities at the proper scale)

Table 4. Recommended Principles and operational guidance points for the Restoration of Forest Landscapes, based on the CBD Ecosystem Approach.

Principle 1:	The objectives of restoration of degraded land, water and living resources are a matter of societal choices.
Principle 2:	Management of restoration activities should be decentralized to the lowest appropriate level.
Principle 3:	Restoration managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.
Principle 4:	Recognizing potential gains from restoration, there is usually a need to understand and manage the ecosystem in an economic context. Any such restoration programme should: (a) reduce those market distortions that adversely affect biological diversity; (b) align incentives to promote biodiversity conservation and sustainable use; (c) internalize costs and benefits in the given ecosystem to the extent feasible.
Principle 5:	Ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of restoration.
Principle 6:	Forest landscapes must be restored within the limits of their functioning.
Principle 7:	Restoration should be undertaken at the appropriate spatial and temporal scales.
Principle 8:	Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for restoration should be set for the long term.
Principle 9:	Restoration must recognize that change is inevitable.
Principle 10:	Restoration should seek the appropriate balance between, and integration of, conservation and use of biological diversity.
Principle 11:	Restoration should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.
Principle 12:	Restoration should involve all relevant sectors of society and scientific disciplines.

Five operational guidance points:
1 Focus on the relationships and processes within ecosystems;
2 Enhance benefit sharing;
3 Use adaptive management practices;
4 Carry out management actions at the scale appropriate for the issue being addressed, with decentralisation to lowest level, as appropriate;
5 Ensure intersectoral cooperation.

EA principle 11 (The EA should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices) is corresponding to ITTO main objective h (Utilize appropriate ecological and silvicultural knowledge and efficient management practices)

EA Principles 12 (The EA should involve all relevant sectors of society and scientific disciplines) is comparable to ITTO main objective a (Attain commitment to the management and restoration of degraded and secondary forest landscapes)

If adequately adapted all other EA principles can be relevant for restoration of forest landscapes.

5. Proposed forest landscape restoration principles based on the EA

Based on the presented EA principles, we propose a series of recommendations for the restoration of forest landscapes (Table 4). These recommendations and the corresponding comments are a reformulation of the EA principles in terms of FLR and adapted accordingly.

Comments to the proposed principles EA – FLR principles (based on CBD rationale and annotations to the rationale

Principle 1: The objectives of restoration of degraded land, water and living resources are a matter of societal choices.

A FLR project has to include considerations not only about forests, but also about aquatic, agricultural and urban systems. Its objectives are therefore a matter of societal choice, determined through negotiations and trade-offs among stakeholders having different perceptions, interests and intentions. This principle is closely linked to the Participation principle of Ecosystem Management.

Principle 2: Management of restoration activities should be decentralized to the lowest appropriate level.

Decentralized FLR systems may lead to greater efficiency, effectiveness and equity. Management should involve all stakeholders and balance local interests with the wider public interest. The closer management is to the ecosystem to be restored, the greater the responsibility, ownership, accountability, participation, and use of local knowledge.

Principle 3: Restoration managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

Management interventions in ecosystems, which have to be restored, often have unknown and unpredictable effects on other ecosystems. Therefore, possible impacts need careful consideration and analysis. This may require new arrangements or ways of organizations for institutions involved in decision-making to make, if necessary, appropriate compromises.

Principle 4: Recognizing potential gains from restoration, there is usually a need to understand and manage the forest landscape in an economic context.

Many ecosystems in the forest landscape provide economically valuable goods and services and it is therefore necessary to understand and manage FLR projects in an economic way. Frequently economic systems do not make provision for the many, often, intangible values derived from ecological systems.

Principle 5: Ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of restoration.

Ecosystem functioning and resilience depends on a dynamic relationship within species, among species and between species and their abiotic environment, as well as the physical and chemical interactions within the environment. The restoration of these interactions and processes is of greater significance for the long-term maintenance of biological diversity than simply protection of species.

Principle 6: Forest landscapes must be restored within the limits of their functioning.

There are limits to the level of demand that can be placed on an ecosystem while maintaining its integrity and capacity to continue providing the goods and services that provide the basis for human well-being and environmental sustainability. Our current understanding is insufficient to allow these limits to be precisely defined, and therefore a precautionary approach coupled with adaptive management, is advised.

Principle 7: Restoration should be undertaken at the appropriate spatial and temporal scales.

The driving forces of ecosystems, including those due to human activities, vary spatially and through time, necessitating management at more than one scale to meet management objectives.

Principle 8: Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for restoration should be set for the long term.

Time needs to be considered explicitly in formulating management plans. Because of the different time scales in ecosystem processes, it is necessary to consider short-, middle- and long term goals and actions.

Principle 9: Restoration must recognize that change is inevitable.

Ecosystems and landscapes are dynamic ecological systems. This dynamics is due to the change of composition, configuration, functioning and functions. A complex of uncertainties in the natural and human realm besets them. The ecosystem approach of FLR must utilize adaptive management in order to anticipate such changes.

Principle 10: Restoration should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Biological diversity is critical both for its intrinsic value and because of the key role it plays in providing the ecosystem and other services upon which we all ultimately depend. There has been a tendency in the past to manage components of biological diversity either as protected or non-protected. There is a need for a shift to more flexible situations, where conservation and use are seen in context and the full range of measures is applied in a continuum from strictly protected to human-made ecosystems.

Principle 11: Restoration should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

Ecosystems and landscapes can be viewed at various scales and from different perspectives, each yielding unique information and insights. Good FLR should therefore consider all relevant information.

Principle 12: Restoration should involve all relevant sectors of society and scientific disciplines.

Most problems of FLR are complex, with many interactions, side effects and implications and therefore should involve the necessary expertise and stakeholders at the local, national, regional and international level, as appropriate.

6. A 15-steps procedure for Integrated Landscape Management and Integrated Forest Management projects

Let us suppose that, based on first information, the need for either an Integrated Landscape Management project or an Integrated Forest Management project, as defined in Section 2.2., is accepted. The following 15-steps procedure (Table 5) resulting from knowledge presented in previous sections could be applied. We are aware that the proposed procedure, which includes also Forest Landscape Restoration, needs some explanation. We intend to do this in a next paper.

7. Conclusion

Forest Landscape Restoration is a concept, which needs to be clarified. We defined it as the restoration of a landscape dominated by forests. It is, together with sustainable use of resources and conservation of forest, agricultural, aquatic and urban ecosystems, one element of Integrated Landscape Management. It should be differentiated from Forest Restoration with a Landscape Approach, which focuses on the restoration of forest ecosystems and is a part of Integrated Forest Management, which is itself part of Integrated Landscape Management.

For us, Integrated Landscape Management means using the resources of the different ecosystems in the landscape and maintaining the productivity of the landscape as a whole. This includes:

Table 5. A 15-step procedure for Integrated Landscape Management and Integrated Forest Management projects.

Step no.	Action
1	Identify the spatial limits of the project
2	Identify the stakeholders, which should participate in the project
3	Decide on the participation methods
4	Develop a vision and fix the general objectives of the project
5	Evaluate how the principles of Ecosystem Management and Ecosystem Approach should be taken into account in the project
6a	If the project is an Integrated Landscape Management type, perform a SWOT analysis of the landscape as a whole (including its composition, configuration, fluxes, dynamics and interactions between the different ecosystems of the landscape) as well as the condition of all ecosystems in the landscape, including forest, agricultural, urban and aquatic ecosystems
6b	If the project is an Integrated Forest Management type with a Landscape Approach, perform a SWOT analysis and the condition of all forest ecosystems in the landscape, as well as the interactions between the forests and the other ecosystems
7	Identify and analyse the long term changes, which may affect the landscape (climate, social, economic and technological changes)
8	Identify and analyse the causes of the damaged elements
9	Identify and analyse the elements for *sustainable management*, those for *conservation* and those for *restoration*
10	Fix the objectives for all elements of the considered landscape, including learning objectives for sustainable use, conservation and restoration
11	Elaborate several solutions
12	Compare the solutions and chose one of them
13	Prepare the implementation of the chosen solution
14	Prepare a monitoring system
15	Prepare an adaptation system, which should allow to take into account the lessons learned

- Sustainable use of forests, agricultural systems, urban areas and aquatic ecosystems;
- Conservation of ecosystems with particular ecological, economic or social values;
- Restoration of damaged ecosystems;
- Integration of ecological, economic and social considerations, including recreation, cultural and spiritual aspects;
- Integration of the different spatial and time scales.

We believe that Integrated Landscape Management, including forest restoration activities, sustainable use of forest resources and conservation, should be based on the principles of Ecosystem Management and Ecosystem Approach.

The proposed systematic approach, including definition of vision and goals, can be a useful tool for planning and implementing Integrated Landscape Management and Forest Landscape Restoration.

References

Burel, F. and Baudry, J. 1999. Ecologie du paysage: concepts, methods et applications. Editions TEC & DOC. 359 p.

Clewell, A., Rieger, J. and Munro, J. 2000. Guidelines for Developing and Managing Ecological restoration Projects. Society for Ecological Restoration. (www.ser.org/)

Convention on Biological Diversity (CBD) 2003. Ecosystem Approach: Further Elaboration, Guidelines for Implementation and Relationship with Sustainable Forest management. UNEP/CBD/SBSTTA/9/8, 5 August 2003
Christenson, N.L.; Bartuska, A.M.; Brown, J.H.; Carpenter, S.; D'Antonio, C.; Francis, R.; Franklin, J.F.; MacMahon, J.A.; Noss, R.F.; Parsons, D.J.; Peterson, C.H.; Turner, M.G. and Woodmansee, R.G. 1996. The Report of the Ecological Society of America Committee on the Scientific Basis for Ecosystem Management, Ecological Applications, 6(3): 665–691.
Farina, A. 2000. Landscape Ecology in Action. Kluwer Academic Publishers. 317 p.
Farina, A. Principles and Methods of Landscape Ecology. 1998. Chapman & Hall. 234 p.
Forman, R.T.T. 1997. Land Mosaics: The ecology of landscapes and regions. Cambridge University Press. 632 p.
Forman, R.T.T. and Godron, M. 1986. Landscape Ecology. Wiley. 619 pp.
Gergel, S.E. and Turner, M.G. (eds.). 2002. Learning Landscape Ecology: A Practical Guide to concepts and Techniques. Springer. 316 p.
Hobbs, R.J. and Norton, D.A. 1996. Towards a Conceptual framework for restoration Ecology. Restoration Ecology 4(2): 93–110.
Hobbs, R.J. 2002. The ecological context: a landscape perspective. In Perrow, M.R. and Davy, A.J. Handbook of Ecological Restoration. Volume 1: Principles of Restoration. Cambridge University Press.
IDRC/UNCTAD 1997. On Solid Ground: Science, Technology, and Integrated Land Management. Panel on Integrated land Management of the United Nations Commission on Science and Technology for Development. International Development Research Centre (http://web.idrc.ca/en/ev-1-201-1-DO_TOPIC.html)
IITO – International Tropical Timber Organization 2002. ITTO guidelines for the restoration, management and rehabilitation of degraded and secondary forests. ITTO Policy Development Series No 13 Johnson, N.C., Mmalk, A.J., Szaro, R.C. and Sexton, W.T. 1999. Ecological Stewardship: A Common Reference for Ecosystem Management. Elsevier Science.
Kohm, K.A. and Franklin, J.F. 1997. Creating a Forestry for the 21st Century: The Science of Ecosystem Management. Island Press.
Lamb, D. and Gilmour, D. 2003. Rehabilitation and Restoration of Degraded Forest. IUCN, Gland, Switzerland and Cambridge, UK. 110 p.
Malanson, G.P. 1993. Riparian Landscapes. Cambridge University Press. 296 p.
Meffe, G.K., Nielsen, L.A., Knight, R.L. and Schenborn, D. A. 2002. Ecosystem Management: Adaptive, Community-Based, Conservation Island Press.
Pirot, J.-L., Meynell P. J. and Elder D. 2000. Ecosystem management: lessons from around the world. A guide for development and conservation practitioners. IUCN, Gland, Switzerland and Cambridge, UK. 132 p. (http://www.itto.or.jp/live/PageDisplayHandler?pageId=201)
Schlaepfer, R. 1997. Ecosystem-Based Management of Natural Resources: A Step Towards Sustainable Development. IUFRO Occasional paper no 6.
Schlaepfer, R., Gorgerat, V. and Bütler, R. 2004. Ecosystem Approach in Switzerland – State of Implementation in the Forest Sector. Laboratory of Ecosystem Management. Swiss Federal Institute of Technology, EPFL, Lausanne (unpublished).
Schlaepfer, R., Iorgulescu, I. and Glenz, Ch. 2002. Management of forested landscapes in mountain areas: an ecosystem-based approach. Forest Policy and Economics 4: 89–99.
Society for Ecological Restoration (SER) and Policy Working Group. 2002. The SER Primer on Ecological Restoration. (www.ser.org/)
Szaro, R.C., Sexton, W.T. and Malone, C.R (eds.). 1998. Ecosystem Management. Special Issue of the Journal Landscape and Urban Planning 40(1–3).
Turner, M.G., Gardner, R.H. and O'Neil, R.V. 2001. Landscape Ecology in Theory and Practice: Pattern and Process. Springer. 401 p.

Appendix 1. Principles ("Malawi Principles") and operational guidance points for the Ecosystem Approach (www.biodiv.org/programmes/cross-cutting/ecosystem/principles.asp)

Principle 1:	The objectives of management of land, water and living resources are a matter of societal choices.
Principle 2:	Management should be decentralized to the lowest appropriate level.
Principle 3:	Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.
Principle 4:	Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should: (a) reduce those market distortions that adversely affect biological diversity; (b) align incentives to promote biodiversity conservation and sustainable use; (c) internalize costs and benefits in the given ecosystem to the extent feasible.
Principle 5:	Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the EA.
Principle 6:	Ecosystem must be managed within the limits of their functioning.
Principle 7:	The EA should be undertaken at the appropriate spatial and temporal scales.
Principle 8:	Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.
Principle 9:	Management must recognize the change is inevitable.
Principle 10:	The EA should seek the appropriate balance between, and integration of, conservation and use of biological diversity.
Principle 11:	The EA should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.
Principle 12:	The EA should involve all relevant sectors of society and scientific disciplines.

Five operational guidance points:

1 Focus on the relationships and processes within ecosystems;
2 Enhance benefit sharing;
3 Use adaptive management practices;
4 Carry out management actions at the scale appropriate for the issue being addressed, with decentralisation to lowest level, as appropriate;
5 Ensure intersectoral cooperation.

Forest Landscape in the MCPFE Commitments and Activities

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The Ministerial Conference on the Protection of Forests in Europe (MCPFE), being a holistic, integrated process oriented towards promotion of sustainable forest management (SFM), inseparably addresses issues adequate to Forest Landscape Restoration (FLR), which is obvious due to the same subject of interest – forest. Since the First Ministerial Conference in Strasbourg the MCPFE has developed the set of commitments endorsed as ministerial declarations and resolutions that altogether represent the Pan-European concept of SFM. Their relevance and adequateness to the FLR is especially visible when reviewing the MCPFE tools elaborated by the Process in order to implement SFM, such as MCPFE Criteria and Indicators for SFM and the MCPFE Approach to National Forest Programmes in Europe. Both of these address the comprehensiveness of forestry and perceive forests also as a part of broader systems, such as landscapes.

Beside the general interrelation of the MCPFE and FLR, in the frame of the thematic actions undertaken by the MCPFE some directly addressing forest landscape have been proposed. Working on the MCPFE indicator – forest landscape is one of these actions. For the lack of proper modalities, as well as insufficiency of national data suitable for this indicator, no information on forest landscape has been reported by the MCPFE so far. In a view to facilitate relevant reporting the MCPFE indends to develop definitions and modalities for this indicator. The issue of the similar significance is forest classification. The MCPFE attempts to assist European countries in getting a better understanding of this issue, which is of the highest importance for reporting of numerous forest related features.

Another area common for the MCPFE and FLR is reforestation. The importance of this basic tool for forestry, rural development, climate change and other areas has been recognized. Elaboration of recommendations for site selection for afforestation and reforestation in the context of the UNFCCC (the action that has been undertaken by the MCPFE together with the PEBELDS Secretariat, IUCN and UNEP) can help to preserve multifunctional character of newly established forests and avoid possible conflicts.

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The experience gained by the MCPFE so far has proved that in case of problems of multi-sectoral nature co-operation is of basic importance. The achievements of the global initiatives on FLR, and especially their regional actions and these of the MCPFE should be mutually recognized and utilized in order to further development of sustainable development in Europe.

Pan-European Biological and Landscape Diversity Strategy and the Kyiv 2010 Target on Forest Biodiversity

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Abstract

The Pan-European Biological and Landscape Diversity Strategy (PEBLDS) presents an innovative and proactive approach to stop and reverse the degradation of biological and landscape diversity values in Europe. It is innovative because it addresses all biological and landscape initiatives under one European approach; and it is proactive because it promotes the integration of biological and landscape diversity considerations into social and economic sectors. The Strategy reinforces the implementation of existing measures and identifies additional actions that need to be taken over the next two decades. The Strategy also provides a framework to promote a consistent approach and common objectives for national and regional action to implement the Convention on Biological Diversity.

The Strategy was developed in consultation with governments, international agencies, and non- governmental organizations. The aim of the Strategy is to conserve and sustainably use landscape and biological diversity in the pan European region: a response to the Convention on Biological Diversity. The Strategy was submitted to the Environmental Ministers participating in the 3rd Environment for Europe Ministerial Conference in Sophia, Bulgaria in 1995 and was then endorsed by all 53 states of the pan European region as well as the European Commission.

The PEBLDS is also the mechanism that provides the biodiversity input to the Environment for Europe process since its adoption in Sofia in 1995. The most recent Environment for Europe Ministerial Conference was held in Kyiv in May 2003. The Ministers and heads of delegation endorsed the Kyiv Resolution on Biodiversity submitted by the Council of the PEBLDS.

The overall objective of the resolution is to halt the loss of biological diversity in the pan European region by the year 2010. The governments agreed to work towards this goal through concerted actions and a joint commitment to achieve key targets in the areas of:

- Forest biodiversity
- Agricultural biodiversity
- Ecological networks
- Invasive alien species
- Financing of biodiversity conservation

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- Biodiversity monitoring and indicators
- Public participation and awareness

Keywords: Pan European Biological and Landscape Diversity Strategy, Convention on Biological Diversity, Kyiv Resolution on Biodiversity, forest biodiversity.

1. Pan European Biological and Landscape Diversity Strategy

The PEBLDS was developed in consultation with governments, international agencies, and non-governmental organizations in the early 1990s. The aim of the Strategy is to conserve and sustainably use landscape and biological diversity in the pan European region: it provides a framework to promote a consistent approach and common objectives for national and regional action to implement the Convention on Biological Diversity. The PEBLDS also presents an innovative and proactive approach to stop and reverse the degradation of biological and landscape diversity values in Europe. It is innovative because it addresses all biological and landscape initiatives under one European approach; and it is proactive because it promotes the integration of biological and landscape diversity considerations into social and economic sectors. The Strategy attempts to reinforce the implementation of existing measures and identify additional actions that need to be taken.

The PEBLDS was submitted to the Environmental Ministers participating in the 3rd Environment for Europe Ministerial Conference in Sophia, Bulgaria in 1995 and all 53 states of the pan European region as well as the European Commission endorsed it. Since then, the PEBLDS provides the biodiversity input to the Environment for Europe process.

To address the commitment in 2002 of the Sixth Conference of the Parties to the Convention on Biological Diversity (CBD) to reduce the rate of loss of biodiversity by 2010 at all levels and the pledge to achieve by 2010 a significant reduction in the current rate of loss of biological diversity by the participants at the World Summit on Sustainable Development (WSSD), the European Ministers of Environment and heads of delegation of the States participating in the PEBLDS process committed to halt the loss of biodiversity in the pan European region by the year 2010 at the Fifth Ministerial Conference Environment for Europe held in Kyiv, Ukraine in May 2003.

The Ministers and heads of delegation agreed to 9 key targets in seven areas: forests, agriculture, ecological networks, invasive alien species, biodiversity financing, biodiversity indicators and monitoring, public awareness and participation. Reaching the key targets and the overall 2010 target requires a broad range of actions at the regional, national and sub-national levels. Actions at the national level should focus on the implementation of crucial elements of the national biodiversity strategies and action plans including tackling problems of a trans-boundary nature and participation in (sub) regional and international negotiations aimed at creating the right environment and incentives for biodiversity conservation.

At the regional level, the PEBLDS Council decided on a number of catalytic activities that highlight and address elements of the key targets that best can and should be undertaken under the direct umbrella of the PEBLDS, through concerted actions, regional cooperation and capacity-building, with the involvement of governments, non-governmental organizations, relevant stakeholders, and economic sectors. These catalytic activities are included in this strategy in each of the action plans prepared by the PEBLDS members, PEBLDS partners and the Joint Secretariat with a view to move from policy to action in the seven areas mentioned above. The action plans are the priority focus of the PEBLDS to ensure concentration of efforts and funding for the achievement of the 2010 targets. The

action plans take into account ongoing work in the pan European region and emphasise the achievement of results rather than the implementation of activities.

There are many international fora (PEBLDS, CBD, EU/EEA groups, Committees of the WTO, etc.) and instruments (Global Environment Facility, the UNEP/ECNC/IUCN/REC Biodiversity Service, the Environment Strategy for countries of Eastern Europe, Caucasus and Central Asia, 2010 Countdown Initiative, etc.) that exist to help PEBLDS countries to reach each of the targets. The European Community has made important progress in the implementation of the European Community Biodiversity Strategy and its Action Plans, of the Council Directives on the Conservation of Natural Habitats and of Wild Fauna and Flora and on the Conservation of Wild Birds, including the establishment of the Natura 2000 Network and of biodiversity actions under the Sixth Environmental Action Programme and Sustainable Development Strategy. The European Union's Message from the Malahide Conference (May 2004) contains priority objectives and targets for 2010 which are in line with the pan European objectives and key targets, and there are a number of activities in the action plans that should be carried out in collaboration and synergy with the European Community, particularly those involving the agricultural sector and ecological networks.

A major goal of the PEBLDS community is to increase awareness of the collaborative actions that need to take place at the regional level and, perhaps most importantly, introduce to stakeholders outside the PEBLDS community the regional commitments made within the CBD, WSSD, Environment for Europe and the European Union processes. A great number of stakeholders exist whose activities have an impact on biological diversity, yet they have not been given the opportunity to play their part in the conservation and sustainable use of biological diversity in the pan European region. The involvement of all stakeholders from all relevant sectors, including economic and production sectors, is vital to collectively address the root causes of biodiversity loss in the pan European region. It is also of critical importance that the entire PEBLDS community as well as other relevant stakeholders embrace and support, both financially and politically, the activities contained in the action plans to ensure follow up of the commitments made at the regional and global levels.

2. Forest Biodiversity Action Plan

The Ministerial Conference on the Protection of Forests in Europe (MCPFE) constitutes the high-level process for forest policy dialogue and co-operation in Europe, including forest biodiversity issues. 'Environment for Europe' is the high-level process for environment related co-operation in Europe. Within the ministerial process 'Environment for Europe', the Pan-European Biological and Landscape Diversity Strategy (PEBLDS) constitutes the co-ordinating framework for efforts to conserve biological and landscape diversity in Europe, including forest biodiversity.

PEBLDS has incorporated activities related to forest biodiversity in its first Action Plan (1996–2000) under Action Theme 'Forest Ecosystems'. PEBLDS also addresses the issue in its current Rolling Work Programme, which is now structured in line with the Strategic Plan of the CBD, with focus on the European situation through the co-operation of relevant European instruments and processes. The PEBLDS Joint Secretariat collaborates with the CBD Secretariat in the frame of a Memorandum of Co-operation to promote a consistent approach and common objectives for national and regional action to implement the CBD in Europe.

The European ministers responsible for forests have recognized the fact that the conservation and appropriate enhancement of biological diversity in all types of forests is an

essential element in sustainable forest management. The MCPFE has therefore tackled the subject since its beginnings in 1990 through commitments at the Ministerial Conferences and subsequently in the follow-up processes. The 2nd Ministerial Conference in 1993 in Helsinki explicitly adopted General Guidelines for the Conservation of the Biodiversity of European Forests in Resolution H2 in response to the forests related outcomes of the UNCED 1992, especially the CBD. In addition, biodiversity conservation was explicitly included in the Guidelines for Sustainable Management of Forests in Europe, adopted by the Ministers as Resolution H1. The MCPFE is co-operating with the CBD to contribute to the regional implementation of the decisions on forest biological diversity.

The joint 'Work Programme on the Conservation and Enhancement of Biological and Landscape Diversity in Forest Ecosystems 1997–2000', endorsed by both the Ministerial Conference on the Protection of Forests in Europe (MCPFE) and the 'Environment for Europe' process at their ministerial meetings in Lisbon and Aarhus in 1998, proved to be a useful tool for the collaboration on forest biodiversity issues between the Pan-European forest and environment processes. Based on these experiences, the decision-making bodies of the MCPFE and 'Environment for Europe'/PEBLDS highlighted the benefit of a continued co-operation. Therefore, both processes adopted a Framework for Co-operation.

As indicated in the previous section, the European Ministers participating in the PEBLDS process adopted the Kyiv Resolution on Biodiversity which contains a target on forests and biodiversity:

'By 2008, contribute to the implementation in the pan European region of the Forest Biodiversity Expanded Programme of Work of the Convention on Biological Diversity through, inter alia:

a) Implementation of the objectives and activities of the Framework for Co-operation between the Ministerial Conference on the Protection of Forests in Europe and the Environment for Europe/Pan European Biological and Landscape Diversity Strategy;
b) National Forest Programmes according to the MCPFE Approach to National Forest Programmes in Europe (adopted at the Vienna Conference in April 2003);
c) Application of the ecosystem approach.' (UNECE 2003:2)

The respective priorities of both processes in the conservation of biological diversity in European forests are the basis of the Framework for Co-operation and the action proposal on the implementation of the Kyiv target. Recalling the regional contribution of the MCPFE to global level initiatives and the Memorandum of Co-operation between the PEBLDS Joint Secretariat and the CBD Secretariat, the work under the action proposal should also contribute to the deliberation on and implementation of forest biodiversity related global activities.

The collaborative work will focus on Pan-European priorities in forest biodiversity conservation in the implementation of the Expanded Work-Programme of the CBD and the UNFF Multi-year Programme of Work and Plan of Action. The forest biodiversity related commitments of the Fourth MCPFE are an important basis for the selection of common themes and related tasks for co-operation. The specific themes and related tasks will especially contribute to creating synergies between the two ministerial processes and facilitate a joint regional contribution to ongoing global processes.

Pan-European contributions to the four following themes, which are global and Pan-European priorities at the same time, will assist in the achievement of the overall goal to halt the loss of biodiversity in the Pan-European region by 2010. All these themes refer to commitments made at the 4th MCPFE as well as the 5th Environment for Europe Ministerial Conference:

- The theme '*Ecosystem approach'* will contribute to the clarification of the relationship between the Ecosystem Approach and Sustainable Forest Management (SFM), building on the work achieved so far by MCPFE on SFM.

- The theme '*Protected forest areas'* will contribute to the global work on protected forest areas and simultaneously contribute to the general work on protected areas for CBD-COP7 (2004) by making a link between the concepts of protected forest areas and protected areas in general. In the Pan-European context, the work will build on existing work on protected areas of the MCPFE and current work on ecological networks.
- The theme '*Forest law enforcement with regard to biodiversity conservation'* is a global cross-cutting issue, which is also of Pan-European relevance and refers to the impacts of illegal harvesting and related trade and institutional capacity building.
- The elaboration of '*Recommendations for site selection for afforestation'* in the context of the decisions of the UNFCCC and its Kyoto Protocol, taking account of biodiversity interests, was identified as a fourth area of co-operation. This work will build on recent work by IUCN and UNEP, adapted to the European situation.

List of Acronyms

CBD	Convention on Biological Diversity
CEP	Committee on Environmental Policy
COP 7	7th Meeting of the Conference of the Parties to the Convention on Biological Diversity
ECE	Economic Commission for Europe
ECNC	European Centre for Nature Conservation
EEA	European Environment Agency
EU	European Union
IUCN	World Conservation Union
MCPFE	Ministerial Conference on the Protection of Forests in Europe
PEBLDS	Pan-European Biological and Landscape Diversity Strategy
REC	Regional Environmental Center
SFM	Sustainable Forest Management
UNCED	United Nations Conference on Environment and Development
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WSSD	World Summit on Sustainable Development
WTO	World Trade Organisation

References

UNECE 2003. Kyiv Resolution on Biodiversity, ECE/CEP/108, UNECE, Geneva, Switzerland. 7 p.

EU Policies and Instruments Providing Opportunities for Forest Restoration

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Abstract

While the concept of 'forest landscape restoration' is not explicitly mentioned in EU policies, a number of legal and financial instruments exist for the development, promotion and implementation of such activities. One of the goals of the Habitats Directive, a cornerstone of the EU biodiversity policy and a foundation of the Natura 2000 network, is to "ensure the restoration or maintenance of natural habitats and species of Community interest at a favourable conservation status". LIFE, one of the most important Community instruments contributing to the establishment of the Natura 2000 network, has funded very many projects that involve the restoration of forests and forest functions at a landscape level. The greening of the EU rural development policy provides further incentives and opportunities for such activities. While Community instruments provide considerable opportunities, it should be noted that Member State policies and priorities have a considerable influence on how these instruments are put to use, and they may constitute barriers to more widespread implementation of such measures. Important Community contributions include the support to forest projects in developing countries.

Keywords: forest landscape restoration, Natura 2000, Habitats Directive, rural development.

1. Introduction

This paper attempts to briefly summarise the most important policy and financial instruments of the European Union (EU) relevant to forest restoration, especially at the landscape level. After reviewing the instruments currently in force, it provides an overview of the relevant new proposals at the Community level. The paper focuses on instruments which can effectively facilitate activities on the ground. Therefore, it does not consider those Community strategies,

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Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

action plans and other policy instruments which do not have direct implications on implementation on the ground.

2. Current policies and instruments

The term "forest landscape restoration" (FLR) is not known to Community law, and it is not mentioned in EU legal texts. However, activities that can be considered FLR are promoted and can be supported by a number of Community instruments.

2.1 Natura 2000 and LIFE

The Birds Directive (Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds), was the first major EU law to address the issue of nature conservation. While providing protection for all wild birds, the Directive requires Member States to take special conservation measures for the most threatened species and for migratory birds, including the establishment of an EU wide network of Special Protection Areas (SPAs) where birds and their habitats have to be maintained in a good conservation status.

The much more recent Habitats Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora) makes provisions for the protection of natural habitat types of Community interest, as well as species of Community interest. This is achieved, among other means, by the designation of Special Areas of Conservation (SACs).

The SPAs and SACs together form the Natura 2000 network of protected areas. These areas can provide a framework for the restoration of landscape functions at various scales. The implementation of Natura 2000 is supported, among other things, by the EU´s financial instrument for the environment (LIFE). LIFE was introduced in 1992 and its third phase (LIFE III) has been extended for 2005–2006 by Regulation (EC) No 1682/2004 of 15 September 2004 with a budget of 317 million euro. LIFE has been providing project co-financing in three areas, including LIFE-Nature, which is dedicated to nature conservation. LIFE-nature has co-financed hundreds of projects that include elements of FLR.

2.2 The Rural Development Regulation

The Community rural development policy represents one of the most significant funding instruments of the EU. The Agenda 2000 reforms follow the development seen in recent years: alongside the market measures and the elements of a competitive European agriculture, it recognises the varied needs of the rural world, together with the expectations of today's society towards the environment. The new rural development policy, now the "second pillar" of the Common Agricultural Policy, meets these needs.

Council Regulation (EC) No 1257/99 provides opportunities for Member States to fund measures related to FLR including support for afforestation and for the restoration of areas after disasters. In general, the "greening" of the Rural Development Regulation is a priority. It should be noted, however, that the realisation of the opportunities provided by the rural development regulation depends, to a significant extent, on the priorities of the individual Member States.

2.3 Other relevant instruments

Various other EU instruments can benefit or encourage FLR efforts in some way or another. As they are still under development or less directly related, they are mentioned only briefly.

Directive 2000/60/EC, or the Water Framework Directive (WFD) is aimed at the protection of all waters (surface and ground) in Europe in a holistic way, through measures that include the appropriate management of river basins. This approach, focussed on physical landscape elements (river basins), rather than administrative or political boundaries, bears resemblance to the aspirations of FLR. The strong interlinkages between forests and hydrology (like the crucial role of forests in the protection of river basins and the importance of hydrological factors for forests) may make this instrument highly relevant for FLR. It should be noted here that many of the restoration projects funded under LIFE-Nature have involved riverine forests.

The European Union Solidarity Fund (established by (EC) No 2012/2002) provides community assistance to Member States in the aftermath of major disasters. When such disasters affect forest areas (like an extensive forest fire or major storm inflicting significant damage), assistance from the Fund may be used for restoration. As this instrument is not aimed at ecological restoration, its relevance to FLR is entirely dependent on the circumstances of the disaster and the priorities of the relevant Member States authorities.

Not all Community instruments are confined to the geographical boundaries of the EU. The tropical forest budget line, set up under Council Regulation (EC) No 2494/2000, earmarks funds to support the conservation and sustainable management of tropical forests and other forests in developing countries, so as to meet the economic, social and environmental demands placed on forests at local, national and global levels. The Commission disburses around €35m from the budget line every year in support of projects, many of which involve forest restoration.

2.4 The role of the Member States

As it has been mentioned earlier, the above instruments represent only opportunities. Implementation is up to the Member States, and some countries may put more emphasis on certain activities than others. In particular, the lack of a common forest policy limits the Community involvement in related matters.

In addition to legal limitations, the complex nature of FLR, as well as the the infinite diversity of situations under which it may be applied, suggest that such efforts should be locally driven and well adapted to the particular circumstances and needs of the areas concerned.

4. Outlook for the future

As some of the instruments presented above will expire in the near future, this section aims to highlight the changes that can be expected on the basis of current legislative proposals. The "Financial perspectives 2007–2013" (COM (2004) 487) provides a framework for those proposals by outlining the Commission´s vision for the future of the Community budget for the post-2006 period. It proposes to simplify the current system of instruments by advocating "one instrument per policy area, one fund per programme". Furthermore, it intends to achieve a bigger impact from Community programmes by concentrating resources on a few major initiatives.

The proposed direction of rural development policy has been presented by the Commission in the Proposal for a Council Regulation on support for rural development by the European

Agriculture Fund for Rural Development (EAFRD), COM (2004) 490. It envisions broadening the range of eligible forestry measures by including

- afforestation on agricultural and not agricultural land
- establishment of agro-forestry systems
- Natura 2000 payments
- forest-environment payments
- restoring forestry production potential
- support for non-productive investments.

All of these can have implications for FLR.

The Commission proposes to replace the expiring current LIFE regulation with a new instrument ("LIFE+"), which would integrate, among other things, elements of the current LIFE programme and the Forest Focus regulation. Finally, the plans for the financing of the Natura 2000 network is outlined in the Communication from the Commission "Financing Natura 2000", COM (2004) 431.

Session 3: Forest Landscape Restoration in a Central and Northern European Context

Functional Forests in Multifunctional Landscapes – Restoring the Adaptive Capacity of Landscapes with Forests and Trees

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Abstract

The concept of multifunctionality is getting increasing attention in the process of defining and developing sustainable landscape management. Multifunctionality on the landscape level can be achieved by functional segregation (spatial combination of separate land units with different functions), or by functional integration (different functions on the same unit of land).

In earlier times the landscapes in Europe were used in a highly integrated way. Over the last 200 years, however, land use has mainly developed towards segregation. At present the typical European landscape is highly separated in different monofunctional units (agriculture, forests, cities). This development has lead to high productivity but at the same time to decoupling of ecological and social processes and to losses of natural and cultural values.

It is imperative to develop a higher degree of functional integration in landscape management. Thereby forests and trees can play an important role.

Under the over-all concept of landscape functionality, forest restoration activities are being discussed in relation to quality (what kind of forests?), quantity (how much forest?), and location (where in the landscape?). Close to nature forest management approaches will to a higher extend enable the integration of economic goals with conservation needs and recreational issues. Urban forestry and urban greening can play an important role for improving urban and peri-urban landscapes. Reinventing agro forestry in terms of "trees in the landscape" may contribute considerably to multifunctionality at the landscape level.

Keywords: Multifunctionality, landscape, forests, trees.

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Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

Introduction

Landscapes are open, complex systems in which ecological, economic, social and cultural processes interact. The values of landscapes are correspondingly manifold. The economic or instrumental values are not just related to agriculture, forestry or fisheries, but landscapes also deliver raw materials as well as different renewable resources (water, bioenergy). The natural or intrinsic values of landscapes are mainly related to the biological diversity, whereas the social values are connected to human habitation, recreational use as well as its cultural and artistic information. With regard to landscape functions, the complexity of functions is expressed by the term multifunctionality and the landscapes are addressed as multifunctional landscapes.

The identification of sustainable pathways for land use development will play a crucial role in future management of urban, peri-urban, and rural landscapes. Facing the multiple demands and understanding the complexity with which landscape functions interact, the identification of these pathways must depart clearly from a multifunctional point of view.

Multifunctionality on the landscape level can be achieved by functional segregation (spatial combination of separate land units with different functions) or by functional integration (different functions on the same unit of land). As shown in Figure 1 landscapes can be fully segregated into different mono-uses (natural forests, intensive agro- and ligni-culture, cities). They can be fully integrated with crops, trees, forest patches, meadows, human habitations intensively intermingled or, most common, exhibit a mosaic structure with a prearranged integration of different functions.

When multifunctionality is achieved through a mixture of mono-functional parcels, however, the question remains if we are dealing with real multifunctionality and to which extend the notion of sustainability is achieved. The monofunctional use is in general hampering the functional flexibility and thereby the adaptive capacity – an imperative issue when dealing with future generations needs and expectations. By managing forests and landscapes for future generations we are in essence dealing with uncertainties in terms of future perceptions, requirements and climate. Hence, the challenge for planning and management should be to develop landscapes with a robust functionality despite changes in ecological as well as social-economical settings.

The increasing call for multifunctionality has emphasized the need for flexibility in landscape management with respect to future outputs. The importance of adaptability is in respect to forest and trees underlined by their long production periods.

Land use in Europe in a time perspective

In Europe the use of the landscape has undertaken huge changes in respect to multifunctionality. The starting point was an integrated multiple use by local people with traditional, experienced based knowledge – as in most landscapes where small populations are struggling for life. Due to population growth the land-use developed into an uncontrolled “over”-use followed by resource depletion and loss of natural values and production potential.

Over the last 2 to 3 centuries this adverse development has been counteracted through landscape segregation followed by monofunctional use. The forests were separated from the landscape and developed exclusively to produce timber, trees on farmland were cut in order to intensify agricultural production, and human habitation was concentrated in cities isolated from nature and the production landscape. The fine-grained and heterogeneous land-use mosaic that had developed over centuries became more and more coarse-grained and homogeneous. This development, motivated to gain control of the landscape and its

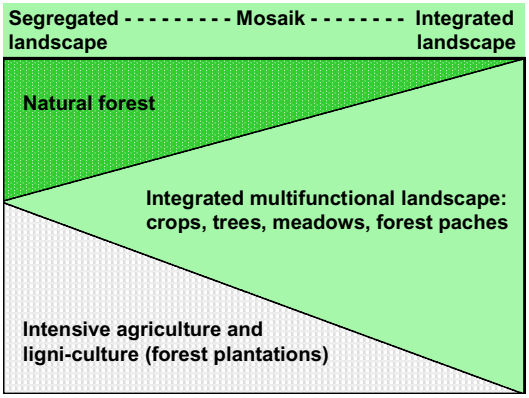

Figure 1. Landscape segregation and integration – a continuum.

resources, increased efficiency in terms of productivity. However, it was followed by decoupling of ecological and social processes and by losses of natural capital and cultural/ social values leading to an unsustainable development.

The present challenge is to facilitate a landscape development where ecological, social and economic goals are better integrated – both in the physical landscape and in the social context. In the process of realizing a higher degree of functional integration at the landscape level forests and trees can play an important role. How can forests be developed not only for their own values but also be an added value to the landscape and its inhabitants?

Forest restoration: What kind of forests?

Forests are in general multifunctional. They have significant economic and production functions. In addition they encompass a number of regulation and protection functions (biological diversity maintenance, nutrient and water cycling, CO_2-storage, climate regulation, soil protection) as well as carrier and information functions (human habitation and recreation, energy conversion, aesthetic/cultural/historic information). However, not all forests are multifunctional: the natural (non intervention forests) are deprived in production functions and the intensive managed plantations (ligni-cultures) comprise only limited ecological and social values. This raises the question: what types of forest are suitable in relation to functional integration in order to improve adaptability on the landscape level?

From a forest restoration viewpoint, silvicultural strategies are required to transform plantations and monocultures of the past into more diverse forests, with a high potential for biodiversity protection and contributions to environmental and social values by incorporating structural and functional features of natural forest ecosystems. This approach can be summarised by the term *nature-based silviculture.*

As a basis for nature-based silviculture, it is relevant to study the temporal dynamics and spatial interactions among tree species in forests close to the natural state. The disturbances and processes in natural forest ecosystems, which cause structural heterogeneity at both large and small scale are linked to regional characteristics of climate, soil, and species compositions. It is expressed as e.g. infrequent, large-scale storm disturbances, small and large-scale fire-driven disturbances in boreal ecosystems, and frequent, small-scale

disturbances in Central-European forests. Hence, models describing the region specific disturbance patterns in such natural ecosystems, should be used in the development of applied silvicultural methods. At present, coniferous plantations are being converted into mixed-species and broadleaved dominated forests in most European countries.

However, the debate about changing silvicultural practices is about more than technical, scientific and managerial matters. It points to the need for a continued discussion – within and between forestry ranks and other stakeholders (local people, conservationist etc.) – about the 'proper' use of forests and what constitutes a 'true' forest. Further, it underlines, that forest management must be able to adapt to changes in nature perception and its underlying ethics. This implies, that at the socio-political level forest management will call for improved transparency and participation.

Hence, common denominators for these new approaches would be: Closer to nature and closer to people.

How much forest?

Foresters in general find forests valuable and the more the better. There are, however, many landscape functions – first of all food production – where forests barely contribute, and several protection and social functions are only realized in an open landscape. Hence, forests should not only be seen as a value in it self, but supplementary as an added value to the landscape together with other land-use forms.

At the end of the 18th century there was a wide-ranging need of forests in Europe leading to a long lasting wood-crisis. During the following centuries huge forest restoration activities have consequently been conducted in most countries both through afforesting abandoned farm land and by rehabilitating degraded forests. Most regions in Europe have thereby increased the forest cover, and in many countries the forested area is still growing. Denmark has, as an example, launched a plan to double the forest area from 11 to 22% during this century. This plan will without doubt create more forest functions, but if it leads to a more functional and flexible landscape is highly questionable. The agricultural decline especially in mountain areas in Europe, is often followed by invasion of forest. This unintended increase in forest cover has huge consequences for biodiversity, landscape scenery, and landscape functions.

This leads to the question: how much forest is needed to support the general landscape functionality? During the past centuries the goal was to enlarge the forest area. Now the question of forest cover and landscape functionality is getting much more complex adding in the option of even reducing forest in some regions.

Forests in the landscape – where?

The contribution of forests to landscape functionality is not only an issue of how much forest, and what kind of forests, but also a question of where in the landscape.

Urban forestry and urban greening

Hitherto, most activities aiming at increasing the forest cover have focussed upon production issues in relation to alternative use of marginal agricultural land. The rapid increase of the

world's urban population has led to a major redistribution of people world-wide. By 2000 the proportion of urban dwellers had risen to 47% and is expected to reach 60% by 2030. In Europe, the percentage of the population living in urban areas is expected to raise from 73% in 2000 to 80% in 2030.

In our forest restoration strategies, we have to focus more upon forests and trees in relation to human settlements – to build up nature where people live.

The importance of urban forests as green infrastructure has from a forestry perspective been widely overlooked and, as a result, undervalued. The capacity of forests and trees in populated areas to limit energy use, improve air quality, reduce noise, increase water storage, maintain fragmented ecosystems, and positively affect the societal sense of well-being are increasingly being accepted. Thus, more communities are recognizing that vegetation, especially trees make up a green infrastructure with a potential to improve the urban landscape functionality including the quality of life.

Combining forestry in the urban landscape with more traditional urban greening approaches the strengths of both forestry and landscape architecture become apparent. Urban forestry and urban greening as a management approach include:

- incorporating different elements of urban green structures into a whole,
- developing long-term policies and plans for urban tree resources,
- connecting to different sectors, agendas and programmes,
- involving experts from natural as well as social sciences,
- developing partnerships between stakeholders,
- aiming at multiple benefits by stressing the economic, environmental and socio-cultural goods and services which urban forests can provide.

Trees in the landscape and agroforestry

Agroforestry provides an alternative land use option which for the last two centuries has been widely neglected in Europe, although trees on farms and in the landscape are contributing to multifunctionality by enhancing many landscape values. It makes use of the synergy between trees and crops, so that the available resources can be more effectively utilized. It is environmental benign (climate regulating, soil and water protecting, biodiversity enhancing, carbon storing), and it can create original landscapes that are attractive, open and favour recreational activities.

Trees in the landscape and agro forestry plots have a really innovative landscaping potential:

- in sparsely wooded areas by planting on arable land, and
- in heavily wooded areas by opening the existing forest.

There is, however, need for re-thinking since mixed land use systems combining trees and crops are not considered by current regulations in the EU and trees are generally considered as not compatible with cropping or grazing.

Conclusion

Forests and trees play an important role in increasing the multifunctionality of landscapes by integrating many landscape functions and by contribution to further functions together with other land-use forms.

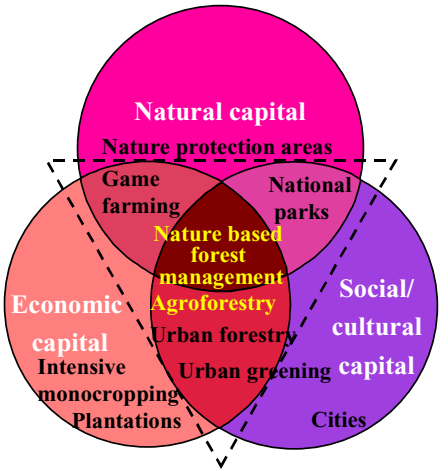

Figure 2. Different land-use forms and systems placed in the "sustainability-triangle". Note that nature based forest management, agro forestry and urban forestry/urban greening is situated where the natural, the economic and the social capital are overlapping.

In order to illustrate the "multifunctional capability" of forests and trees in the landscape different land-use forms are depict in the sustainability "triangle" (Figure 2). It is evident that forests and trees are predominantly present where the three "pillars" of sustainability – the economic, the natural, and the social/cultural capital are overlapping.

The contribution of forests and trees to landscape multifunctionality can be improved by:

- integrating nature into silviculture (nature based forest management)
- integrating forests and trees into human settlements (urban forestry – urban greening)
- integrating trees in the landscape (agro-silviculture)
- integrating people in the planning process (co-management)

The policy implications would be:

- develop incentives to promote nature based forest management
- abolish traditional "sectoral" laws (forestry, agriculture), basically aiming at landscape segregation and creating an integrated landscape legislation based upon the concept of sustainable development
- generate incentives to enhance the values of landscapes across ownership boundaries
- promote participatory planning approaches

The challenge is to both understand empirically how to restructure land use including how to restore forests in order to improve the adaptive capacity of landscapes and to develop the tools and methodologies necessary to deliberate on and gain "ownership" of the consequences.

Participatory Methods in Forest Landscape Level Planning

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Abstract

Social sustainability in management of publicly administrated natural resources requires good public participation methods which enables different views and goals to be taken into the planning process on the other hand and working systems to handle conflicting interests and to find out common largely accepted solutions on the other hand. Good function of these kinds of methods demand basic good information systems and effective use of public participation in co-operation. Increasing and often conflicting interests of natural resources should be managed together. To be able to create largely accepted solutions means wide collecting and delivery of information both in the planning process and in the implementation and follow up.

Metsähallitus runs planning processes and usually makes final decisions, implements the plan and will arrange that co-operation continues also in the future when plans are evaluated together with stakeholders and the public.

The public participation processes are usually at first designed by Metsähallitus specialists. In the first starting meetings the process is presented, discussed and changed if needed.

Both public and interest groups are involved from the very beginning of the processes. Several different techniques are used, so that people would have some possibility to participate; open houses, information access points at the agency's customer service offices, public meetings, written comments opportunities, commenting opportunity via paid phone, employees personal contacts with individuals, delivered brochures and participation feedback forms. Public participation is advertised in the media, news and articles dealing with the process and possibility to participate. The brochures and other material clarify simplified way the process and everyone is able to participate and affect the plan.

Nowadays co-operating groups representing local stakeholders play a key role in participation. These groups assess the current state of natural resources and their future management and use from different points of view. They also take a stand on the priority of various activities and various land use in the planning area during the planning period. The

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EFI Proceedings No. 53, 2005

role of Metsähallitus has become more to organise the planning process, meetings and discussions between large group of interests.

Keywords: Public participation, forest planning, social sustainability.

Metsähallitus

Metsähallitus is now a dynamic state enterprise with multiple functions. It is in charge of the sustainable and profitable management of 9 million ha of state land equal to 29% of Finland's land area. Additionally over 3 million ha of waters is taken care of. Due to historical reasons most of the state land is located in northern and eastern Finland. The work force of Metsähallitus is today 2100 employees and about 800 persons working for its contractors which are mainly family entrepreneurs. The total annual turnover was in 2003 about 245 million € and the net profit after taxes 69 million €.

The working environment is very challenging, because Metsähallitus is in charge of both commercial forestry and nature protection. Some of the great number of stakeholders have totally different expectations of the use and management of state forests and it can be seen that more and more expectations and new needs are coming up all the time. With participatory planning, transparency and hard work Metsähallitus tries to reach compromises and, thus, avoid largely conflicting situations.

Public participation has been important part of all Metsähallitus planning processes from 1995 when regional natural resources planning and landscape ecological planning were started. Public participation has been accomplished also in nature protection plans, recreation plans and real estate plans. Large amount of the stand level working plans have also been participated with interests.

Metsähallitus is a pioneer of landscape ecological planning (LEP) in Finland. Planning methods have been developed in collaboration with Finnish environmental authorities and research organisations. Landscape ecological planning was introduced in forests of Metsähallitus in 1996 and at the end of 2000 all Metsähallitus areas were covered with LEP.

Participatory planning and social sustainability

As the multiple use of forests increases, efforts are needed to reconcile conflicting objectives into solutions that have the broadest possible acceptance. In Finland, Metsähallitus compiles natural resource plans, i.e. land use plans for extensive areas, applying good, transparent participatory planning. Conscious effort is made to ensure public involvement. The involvement plan is discussed with the participants, and working groups are set up involving the participating interest groups. All interested parties are given the chance to express their views and make them part of the planning process right from the beginning. Support material for the planning is produced and communicated in a wide range of ways. Draft solutions are discussed with the participants. Furthermore, all feedback material is analysed and processed to serve the planning process.

The use of participatory planning is clearly expanding in various fields of society, both in Finland and internationally. In Finland, participatory planning was launched in forestry planning systems in the mid-1990s. A few cities and municipalities, such as Hämeenlinna (Hämeenlinna-Model 2000) and Helsinki, are active in employing public involvement for

their forest area planning. Participatory planning was also extensively applied in the drafting of Finland's National Forest Programme and regional forest programmes.

Participatory planning is a key way of improving social sustainability and even sustainability in general (e.g. Iyer-Raniga and Treloar 2000), because its aim is to take into account the varying goals, needs and values of different people. The Finnish discussion on the definition of social sustainability has often focused on the employment aspect alone. This, in my view, is a very restricted viewpoint. Social sustainability includes all conflicting human needs and possible answers to them. The World Commission on Environment and Development has produced an apt definition of social sustainability in its following statement: *Society must have a political system in place that enables effective public participation in decision making; at the same time, society must have such social systems which provide solutions for tensions caused by inharmonious development (World Commission… 1987)*. Thus, social sustainability can be achieved once we have functional systems for addressing conflicting objectives and functional practices for seeking and finding solutions for these conflicting objectives.

Good participatory planning

Based on a theoretical examination and previous experience of participatory planning (e.g. Strengthening Public Involvement 1993), I have defined the principles for "good participatory planning". The decision-makers and planners responsible for public issues have to offer all citizens and various interest groups the opportunity to participate in and influence public planning and decision-making, particularly in projects affecting their own scope of activities and living environment. A further principle is to enable the participation of all interested parties and individuals. Their involvement must occur at a sufficiently early stage to give the participants an opportunity to influence plans, and the materials and language used must be intelligible to the participants. Furthermore, different ways of involvement must be provided, along with the opportunity, when needed, for participation in the post-planning stages of implementation and follow-up. The participatory planning process has to be open, equitable, honest and co-operation-driven. The decisions made and the participants' impact on them have to be accountable (Wallenius 2001).

Principles of good participatory planning also suggests that participation should be used throughout the planning cycle, from the assessment of the initial situation through implementation to the setting of new goals. So far, the natural resource plans and public participation in those processes have been through initial assessment, planning, the actual plan and in some planning processes also implementation and the setting of new goals. The principles for implementation state that the plans will involve an interim assessment to be carried out in co-operation with the interest groups after five years, and the drafting of a new plan in ten years' time. The interim assessments involve comparing the implementation with the goals set and determining whether the goals need to be revised.

It is also a goal of good participatory planning that the opportunity for participation is provided at the very start of the project, so that participants will have a chance to influence the decisions. The main stress of participation in the Finnish natural resource plans precedes the actual planning process, so that most of the feedback is available to the process right at the start of the planning. Before planning starts, briefings are arranged for the media and interest groups, and rounds of public meetings and open doors days are held in the planning regions. The planning project and participation opportunities are explained in these meetings, along with the schedule and decision-making principles.

The planning area and the level of public participation in the natural resource planning is usually pre-determined by Metsähallitus before the process will start, so the participants do not have a say in these matters. One of the issues affecting the determined level of participation is the fact that Metsähallitus has statutory responsibility for the utilisation of the areas, and developing the planning system is more a matter of increasing the efficiency of information and good co-operation than redistributing power even though decision power has been widened via effective group work and the goal of commonly accepted plan. Working groups consisting of interest group representatives guides the work, seeking everyone's acceptance regarding the constituent solutions and the final plan. In this way the groups influence the constituent solutions and the final outcome. This also promotes negotiations and reconciliation concerning the solutions. The impartiality of Metsähallitus as a decision-maker can be called into question on the basis of its objectives which, governed by legislation and political decision-making, cannot be violated in the participatory planning processes.

A higher degree of participation can also be criticised, for instance, based on the difficulty of setting up planning groups of manageable size by a democratic process, when there are hundreds of interest groups. Work in the groups also requires a lot of time and commitment to long-term co-operation, mostly outside office hours, which may constitute a problem for participants.

In the natural resource plans compiled in Finland, information and communication goals are emphasised as general objectives of the participatory strategies. The objectives do not include a general democracy principle or compliance with participatory legislation, since these are not directly required in Finland, although the Finnish Constitution requires that citizens are heard in planning that affects them. Providing the opportunity for public participation is an independent decision by Metsähallitus. The need for public participation legislation has been debated from time to time in Finland, but it has not been deemed necessary so far. Many recent legislative reforms concerning environmental and land use issues have made reference to public participation, though. The development of actual legislation for public participation remains an interesting topic for the future.

The theoretical framework for participatory planning argues that participatory planning involves the entire organisation – not just individual employees. In the few studied natural resource plans, Metsähallitus personnel in the planning areas have been comprehensively involved in the execution of the project. This is indicated by the figures obtained before and after the execution of the plans: before, 35% of personnel stated they had not been doing participatory planning, but after the planning processes all employees stated that they had been involved at least in some participatory planning situation (Wallenius 2001).

Techniques used

The good participatory planning principle of giving everyone interested the opportunity to participate in the planning process, is achieved through extensive inventory of interest groups and broad communication. Metsähallitus project planners contact all potential groups in the planning area. The list of interest groups compiled by Metsähallitus is commented by the participating interest groups and further groups are added. The composition of each co-operation group is agreed at the initial meeting. The interest groups are also given the opportunity to comment on the proposed process plan and participatory plan.

In accordance with the principles of good participatory planning, the public involvement has been systematic and methodical. This can be concluded from the participatory and communication plans drafted in advance for planning processes. Efforts are made to guide public participation to focus on state-owned lands in the planning areas concerned, although

all comments were accepted and recorded. The direction of participation is guided by explaining the goals and objectives of the process point by point at all the public meetings and in the written materials provided.

Several public involvement techniques are applied. In the public participation research tens of different participation techniques can been found (e.g. Strengthening Public Involvement 1993; Loikkanen et al. 1999). The basic rule has been that all possible interest groups or private citizens who are interested should be able to participate. Because all people are not willing to talk in public meetings, don't have time to be in meetings, or are not able to do written comments etc., a group of techniques should be applied. In practice in Metsähallitus planning processes mostly used methods are group works, open houses, public meetings, and information meetings, but also written comments are received and welcomed.

Equal participation opportunities could have been supported by offering the participants a chance to have their travel expenses or meals covered. This has been discussed in the course of the projects, but has not yet considered necessary.

In future participatory planning projects, it could be worthwhile to consider a regional random sample survey as a form of public involvement. This could provide a more comprehensive view of the opinions of local residents than working with active participants only. Another technique worth trying is a feedback form requesting responses to project-related questions. A feedback form can steer attention to key issues in the project.

In the preparation and execution of information materials and presentations, special attention was paid to good intelligibility. Moderators at the public discussions strove to activate participants to comment. This was done to counterbalance the dominance of "opinion leaders" in the public meetings. The moderators were selected either from outside Metsähallitus, or based on non-controversial personality and good articulation.

All the feedback received was recorded on feedback forms, classified and copied to serve the working groups, Metsähallitus project groups and other participants. Feedback was thus used as background material in the work with interest groups. Summaries of the feedback comments were available for all participants, and they were mailed to those who had provided their contact information.

Critics of public participation

Much critics has been presented towards public participation process. The most commonly stated are as follows:

- Some people think that there are no such conflicts in the community which would need public participation. This is based on so called consensus practice in social theoretical interpretation. Interpretation means that conflicts are based on missing information or misunderstanding and there are no real conflicts where public participation should be used.
- Public participation is not considered as official democratic system and it does not have very much effect on official political decision processes.
- It is also said that people are not willing to participate or they are afraid of participating and also that people don't have understanding, time or interest to participate. People are also said to be selfish and looking only their own good.
- Participation is also making planning processes slower and more expensive. Participation is even increasing conflicts.
- Participation needs special skills and serious working and if not done effectively public will notice that and looses their interest.

- Public participation is mainly done as for propaganda or manipulation.
- Participation democracy will decrease the power of active and develop seeking groups in society. There will usually be compromises.
- Even though planning processes are well done and plans are largely accepted, the groups which have participated the process don't have to commit the final decisions in practice.
- Modern community is so full of different values that any kind of participation is not able to find common solutions.

Lessons learned

It seems that even where people live near state-owned lands administered by Metsähallitus (e.g. Kainuu region), only 1–2% of local residents take an active interest in the plans made for Metsähallitus lands. This constitutes a problem for participation: how to deal with the vast silent majority when forming a concept of the residents' goals and opinions in the planning region. In practice, the problem has been solved by including all those parties who show an interest after extensive communication. The same principle, of course, applies to any participation in public decision-making – you can only gain a say through participation. On the other hand, it would be possible to introduce a random sample survey or interviews of local residents, which would serve to guide the final decision-making.

It is usually difficult to say how much participants have affected the final plan because we don't have same planning process with and without public participation. We have examined feedback in some natural resources plans and found out that about 15% of feedback received is not implemented in the final plan. Largest group of that (15%) feedback are comments which are against the law, comments which demand machine work out of forest or comments which don't deal with state forests at all.

The number of comments received at public discussions and through the mail differs and there may be several reasons for this. If the distances in the planning area require more travelling to public discussions may explain that you get more written comments. It can also be seen that the classifiable content of the comments varies slightly according to participation form. Written feedback contains more comments regarding Natural Heritage Services and Forestry, while oral comments focus more often on recreation. These results may have practical implications for future participatory planning arrangements and analysis.

According to the principles of good participatory planning, various techniques allowing maximum participation should be used. If differences can be expected in the content of the feedback according to whether it is written or oral, the more important it is to employ a variety of methods to obtain as reliable a body of feedback as possible.

Another aspect is the nature of the feedback in relation to participation techniques. When comparing comments on nature conservation, mailed feedback comments are found to be more radical than those provided orally at the public meetings. The number of comments opposing conservation is also clearly higher in mailed feedback than in public discussions.

In analysing the feedback material, it is found that feedback material from the public contains detailed comments of a local nature that is difficult to classify and use in strategic level planning. Based on this result, we can question the wisdom of citizen participation in strategic planning in general. One option would be realising strategic planning solely as co-operation among interest groups, involving the public only by informing them on the results. Citizen participation would then be organised after strategic planning in landscape ecological and project level planning, which means that individuals would have a better opportunity to comment on more specific areas within these projects.

Citizen participation in planning even at the strategic level can, on the other hand, be justified in that it increases public awareness of the principles on which later detailed plans will be based. Citizen participation could also be boosted, for example, by forming citizen planning groups that would examine core issues. Another option could be a random sample survey in which the opinions of citizens regarding the objectives for the site could be studied. The results of the survey would be used as material for the planning groups.

References

Hämeenlinna-Model. 2000. Hämeenlinna City at Your Service. 19 p.

Iyer-Raniga, U. and Treloar, G. 2000. A Context for Participation in Sustainable Development. Environmental Management 26(4): 349–361.

Loikkanen, T., Simojoki, T. and Wallenius, P. 1999. Participatory Approach to Natural Resource Management. A Guide Book. Metsähallitus. Suomen Graafiset Palvelut Oy LTD. Kuopio. 96 p.

Strengthening Public Involvement. 1993. United States Department of Agriculture, Forest Service. A National Model for Building Long-Term Relationships with Public. 22 p.

Wallenius, P. 2001. Osallistava strateginen sunnittelu julkisten luonnonvarojen hoidossa. (Participatory Strategic Planning in the Management of Public Natural Resources.) Metsähallituksen metsätalouden julkaisuja 41. Edita Oyj. Helsinki. 346 p.

World Commission on Environment and Development. 1987. Our Common Future. Oxford University Press. Oxford, UK. 400 p.

Planting Forests in Deforested Areas of Central Russia

Svetlana Piskareva and Guslyana Kartyushova

Greenpeace Russia

Central and Southern European Russia lacks forests, which have been destroyed over the centuries. Afforestation helps to solve many environmental and social problems. Schoolchildren in the most deforested regions of central Russia are the main force of Greenpeace Russia afforestation program. They grow various trees' seedlings at school forest nurseries and plant them in the wild at gullies and on degraded agricultural lands, where they are relatively safe. Hundreds of schools are involved and thousands of trees planted as the first results of the program started in 2002.

The area of former forests converted to agricultural lands in Russia is about 115 million hectares. These areas can be found mostly in Central and Southern European Russia, in Southern Siberia, and in the Far East (Figure 1). The areas with rich soils and warmer climate were deforested first. In European Russia those areas were mostly covered by natural hardwood forests (dominated with ash, maple, lime, elm species), so this type of forest ecosystems was almost completely destroyed.

Our program of forest landscapes restoration is launched in the central regions of European Russia (Ryazan, Tula, Belgorod, Orel, Lipetsk regions).

The first wave of deforestation of the territory caused by a massive migration of Slavic and other farming tribes took place in the 5th–11th centuries AD and steadily continued later. The next wave of deforestation was induced by serfage cancellation and Land laws alterations in the 1860s. The last period of massive deforestation was provoked by the Revolution, the Civil War and the following decades when the environment was neglected. As a result, huge areas are now completely treeless, only 7–15% of mentioned regions territory are forest lands (with strongly modified biocenosis).

Besides of biodiversity, decline deforestation has many environmental and social consequences:

1. Large rivers have become shallow, and shallow rivers and streams disappear.
2. Water balance is affected, snow in spring melts too quickly causing soil erosion. Droughts and floods have become more frequent.
3. The soil fertility reduced, about 50 000 hectares of new gullies appear every year.
4. The life conditions, recreation possibilities for people have got and are still getting worse.

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

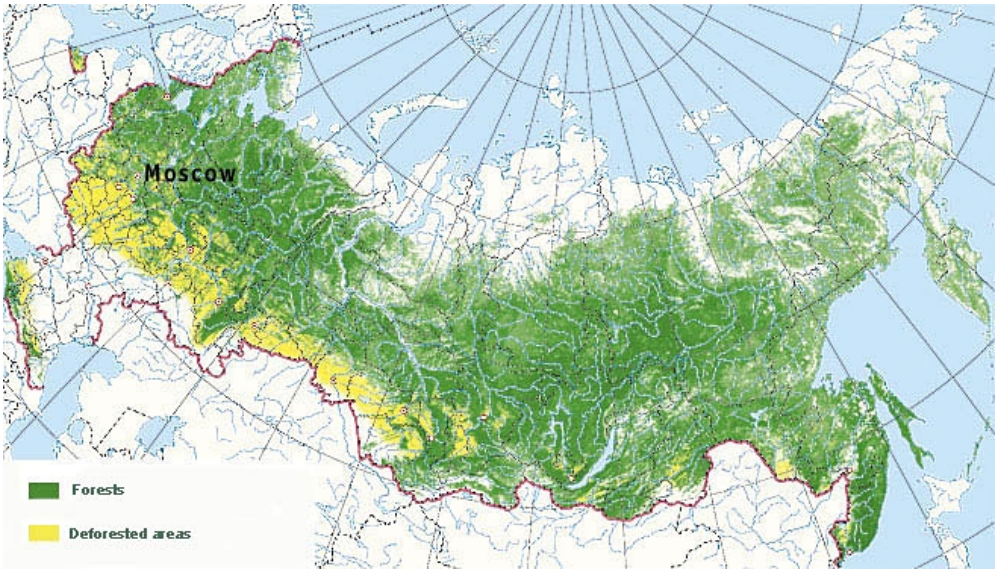

Figure 1. Deforested areas in Russia.

In the 1950–1970s, the USSR government attempted to solve some of these problems by planting 2 million hectares of "forest belts" (several rows of trees edging fields). Local people were often involved as cheap or free labour. That was not, of course, forest landscape restoration, but nevertheless useful work.

Currently the forest administration system is mostly weak and disorganized, and only few state forest services carry out afforestation work. The need for afforestation is obvious at least for many local communities, as they can easily see the decline of rivers and springs, erosion, droughts – but there are currently no state agencies that can effectively assist with afforestation.

At the same time there is a vast field for forest landscape restoration initiatives. At least 5–6 million hectares of converted forest land is represented now by areas with eroded soils and other "waste lands" that are not in use any more, most degraded lands can hardly be used for agricultural needs. Due to the economic and social situation (huge decrease of the rural population) a big part of arable land is now abandoned but under certain conditions it can be used for afforestation.

The Greenpeace Russia started the program of restoration forest landscapes in co-operation with schoolteachers and pupils for several reasons:

- Schools are the most active centers of rural communities and often teachers are ready to participate in forest restoration activities even if they do not get any additional resources for this.
- All rural schools traditionally have plots where they grow vegetables or flowers. It is much easier for rural schools to organize a forest nursery than for volunteers from cities. We chose schools in the most deforested regions, so they do not need to travel far to find suitable degraded landscape for afforestation.
- Apart from landscape restoration the program has a strong educational aspect. Our goal is not only to plant trees, but also to preserve existing and future forests. Unfortunately, local people are often a cause of forest and forest belts decline with chaotic wood cutting and forest fires are the main problems. We hope that a new generation of young people, who have taken part in afforestation activities will behave differently.

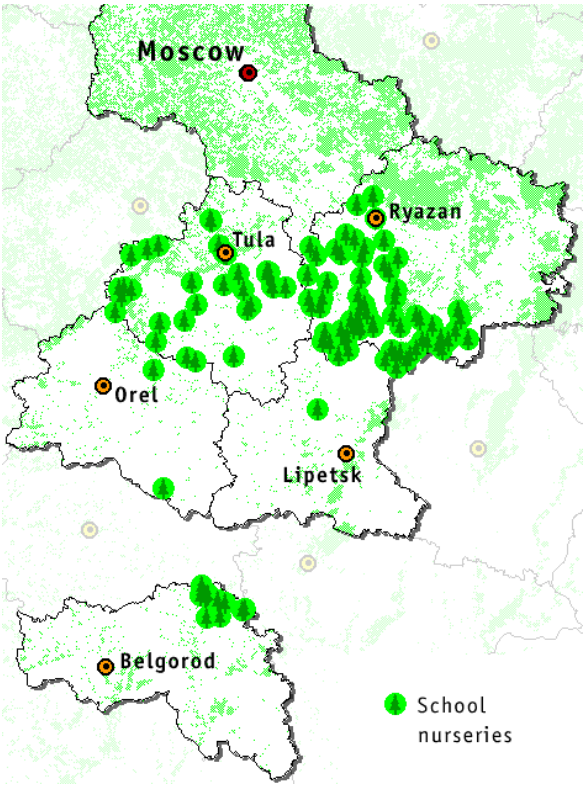

Figure 2. Participating schools.

The program started in the spring 2002. First we contacted the regional Departments of Education and obtained the detailed lists of schools. After that we contacted school directors and told about our plans. Those, who were interested, became the first participants of the program. Currently 142 schools participate in the program and have their forest nurseries (see also Figure 2):

- 89 in the Ryazan Region,
- 33 in the Tula Region,
- 17 in the Belgorod Region,
- 2 in the Orel Region,
- 2 in the Lipetsk Region.

"The Afforestation manual" for teachers and children (a 40-page illustrated book) was published, as well as other materials (planting calendars, posters, pins). We sent hundreds manuals also to schools, NGOs and local groups that are located too far to participate in the program but ready to develop their own initiative.

In spring, at the first time we visit a school where, afforestation group of schoolchildren (usually 10–20 persons) is gathered and we tell them about the problem of deforestation and ways to solve it. After that we, together with schoolchildren and teachers, set up a forest nursery of several thousand plants (dig the ground, sow seeds, plant seedlings). Seeds of pine, larch, spruce, oak, maple, alder, lime, birch, wild pear and seeds of other trees are sowed, 2-year-old pines and 1-year-old larches are planted at the nursery. After several hours of work

children are glad to receive small gifts: personal diplomas, pins, maps. At least for the first several seasons we supply school with seeds that cannot be collected locally.

During the summer children look after the nurseries and in the autumn we organize one-day tree-planting camps for schoolchildren, where they plant the seedlings in the wild (usually in the large gullies and other degraded lands, and on banks of rivers).

The advantage of such places is that no special permission for planting trees is needed. There is no risk that such lands will be ploughed up in future. We have to exclude only areas which are used as pastures.

The main idea is to restore tree canopy and woody vegetation continuity, and not to care too much about the field layer. The field layer and other "non-woody" parts of ecosystems can be restored (naturally or artificially, depending on situation) later – after the forest canopy is established.

In 2002–2003 we organized 25 tree-planting camps, where about 24 500 seedlings were planted. In 2004 there were 20 tree-planting camps (15 000 seedlings planted). Children from several rural schools participated in each camp, where the children could meet each other and feel part of the movement. Also 3 camps were organized for adult volunteers (14 000 seedlings planted).

The attitude to afforestation activities among local residents is positive. The partnership with regional and local departments of education help us a lot: they help to inform schools about events (as telephone connections are not always available), occasionally give buses to bring children to a camp, and invite media to the camps.

To keep children thinking about their work during winter, we have organized 4 exhibitions of children's drawings (2 in Ryazan, 1 in Tula, 1 in Belgorod). 357 boys and girls, participating the program, drew or painted their ideas on the theme "I want to grow a forest, because…"

The main problem we face is preservation of the planted trees. The threats are numeral: fire, cattle, haymaking, hares, stealing for personal needs (planting in the villages) etc.

In the beginning of autumn 2004 we tried to teach children not only to plant trees, but also to be responsible for their defence. The main anthropogenic threat is burning young trees in spring, when villagers put straw and dry grass in the fields on fire. They believe that it is necessary for fertilizing and easier ploughing, though it isn't true. Every school drew a poster "Don't burn grass and forest!" and demonstrated it in the camp; many children composed poems and songs. We developed a form of a survey, so that pupils can talk to their neighbours and learn whether they burn grass, why they do it, and whether they know about consequences of grass-fires. We also asked teachers and children to work out trees preservation measures for each kind of threat listed (altogether 12 threats). They send us their suggestions together with the survey.

Our experience seems to be replicable in most regions of Russia, Ukraine and other countries of Europe that need forest landscape restoration. Table 1 lists some species recommended for public afforestation of deforested lands of central regions of European Russia.

Table 1. Recommended species for public afforestration of deforested lands in the central regions of the European part of Russia.

	Advantages	Disadvantages
Scots pine	- there are seedlings in almost all big forest nurseries - fast growing tree is easy to grow - easy to store - at the age over 5–7 it can survive small grass fires due to rough bark	- many diseases - not competitive at the tall grass sites - often used as a Christmas tree by local people - high risk of damage by hares
Siberian larch	- fast growing tree is easy to grow - at the age of 5–7 it can survive small grass fires due to rough bark - easily survives New Year and Christmas, and also hares - no really hard diseases - no capacity for uncontrolled spread	- practically no seedlings in state nurseries of Central Russia - does not grow naturally in Central and Southern Russia - difficult to get seeds from the regions with similar climate conditions (south Siberia)
Common oak	- good increment in the first year - easily competes with the tall grasses - low damage from diseases - respected by most people - can be dispersed by birds for long distances	- not every year seeds are abundant - difficult to store seeds during the winter season, and seeds planted in autumn can be damaged by mice - long primary root makes replanting difficult
Elm (*Ulmus laevis*)	- the fastest growth during first years - good yield of seeds every year - easy transplantation	- can be damaged by Dutch elm disease (in future) - sensitive to soil richness and moisture
Lime (*Tilia cordata*)	- able to vegetative spreading - shade tolerant, able to form forest undergrowth	- low yield of seeds in most years - low germination rate of seeds, necessity to plant in autumn or specially prepare seeds during winter - sensitivity of seedlings to late spring frosts - sensitive to soil richness and moisture
Grey alder and silver birch	- fast growing - not sensitive to soil conditions - excellent yield of seeds every year - easy transplantation	- too small seedlings and slow growth during first 4–6 weeks - not respected (especially alder) – many people do not want to grow birch and alder, as they are considered as “waste species”
Poplars (*Populus nigra*) and willows (*Salix alba, S. fragilis*)	- fast growing - easy vegetative propagation - easy transplantation	- sensitive to soil moisture - not respected – many people do not want to grow poplars, as they are considered as “waste species”

Enhancing Biodiversity in Forest Landscape Restoration Projects

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Abstract

Forest landscape restoration is a planned process that aims to regain ecological integrity and enhance human well-being in threatened, deforested or degraded forest landscapes. WWF, in partnership with Lafarge, has for some years been undertaking forest landscape restoration projects. Based on the experience gained through these projects, this presentation examines the effectiveness of methods for considering biodiversity issues when carrying out quarry operations, including the development of new works and quarries. It also proposes a performance indicator for biodiversity. Examples of sites where biodiversity has been enhanced will be given, thus demonstrating how quarries can encourage great ecological value. The presentation is based on fieldwork carried out in the UK, France, Spain and Austria from July–September 2004.

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Restoration of Polydominant Spruce-Broadleaved Forests after Long-Term Economic Use in the "Island" Forest Tracts of Moscow Region, Russia

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Abstract

The analysis of history of forest tracts of the Natural Historical Reserve "Gorki" has shown considerable distinctions of floristic diversity of forest ecosystems formed on sites with different histories of human impact. Long-term economic use of forests has resulted in significant loss of taxonomical and structural diversity. The present-day distinctions of successional states of forests under similar ecotopic conditions are explained by different histories of land use. The largest changes in species composition occur in the forests growing on arable areas. Mainly pure birch stands are formed there with a scanty share of nemoral and boreal species. In the birch forests a renewal of typical forest species of trees, shrubs and herbs takes place, but it depends also on the distance to broad-leaved or spruce stands, which serve as seed sources. One of the ways to find a compromise between economic needs and nature protection requirements is to apply group-selective cutting aimed at imitating the natural mosaic structure of uneven-aged forests. In those forests that have lost the capability for natural restoration, experiments on reconstruction of gap-mosaics are conducted by combining gap felling with planting of species that occupied dominant positions in preagricultural forests (*Quercus robur, Fraxinis excelsior, Picea abies, Acer platanoides, Tilia cordata*).

Keywords: Land use history, succession, polydominant forests, restoration.

The current state of forest ecosystems and secondary succession processes were studied in "island" anthropogenic forest tracts of the Natural Historical Reserve "Gorki" (geographical coordinates: 55° 34' – 55° 29' North and 37° 45' – 37° 53' East; total area – 2.5 thousand ha.). Territory is located on the Moscow-Oka plain in the south part of Moscow region (Russia) within the limits of a polydominant spruce-broadleaved forest zone (Figure 1). The

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

Figure 1. Satellite image of anthropogenic landscape with "island" forest tracts.

cover loam soils are on a carbonate moraine, which acts as the substrate for soil formation. Forest stands have different histories of economic use but occur in similar edaphic conditions. Tree species composition and age structure of the forests are typical for middle part of European Russia.

At the moment, the "island" forest tracts are predominantly composed of stands dominated by birch (62% of forest area). Broad-leaved forests with prevalence of oak and lime cover about 14% of forest area. Each of forest tracts has unique pattern of forest types that is related to the peculiarities of past economic use of the land (Korotkov 1999).

The history of forest tracts was investigated based on contemporary maps from the 18th and 19th centuries (Figure 2). The analysis of history of economic use enabled us to divide the variety of current forest communities into two groups (Table 1): (1) forest formed as a result of repeated clearcutting on the lands and not disturbed by ploughing at the least during last 200–300 years; (2) forests arising as a result of regrowth on ploughed fields since the middle of the 19th century and then disturbed several times by clear cutting.

In the first group of forests that were cut many times on non-arable lands, mixed stands prevail with small-leaved and broad-leaved species, while the area of pure stands is insignificant. The analysis of tree species composition has shown that repeated clear cutting resulted in the maximum prevalence of two species: birch (*Betula pendula* Roth. and *B. pubescens* Ehrh.) and oak (*Quercus robur* L.). Mixed stands of a varied composition prevail on the area. The low relative density of lime (*Tilia cordata* Mill.) is accounted for selective

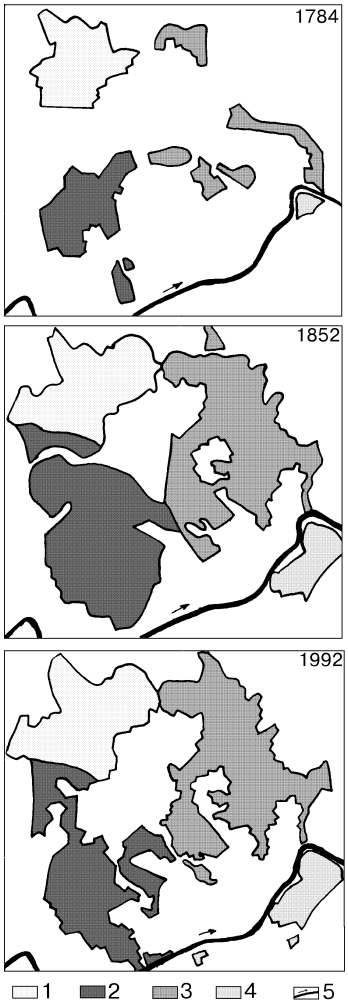

Figure 2. Change of area of "island" forests tracts in the 18–20th centuries. Forest tracts: 1: Korobovsky, 2: S'janovsky, 3: Bogdanovsky, 4: Kazansky; 5: Pakhra river. Source of data: 1784 – RSAAA, fund 1356, list 1, file 2366; 1852 – RSMNA, fund VUA, file 1380; 1992 – materials of forest inventory.

use of this species for large scale harvesting of bast in past centuries (Kurnaev 1980). At the moment lime is restoring its dominance by means of seed renewal. A characteristic feature of these forests is also admixtures of maple (*Acer platanoides* L.).

In the second group of forests growing on the former arable lands, more than 80% of area is occupied by monodominant birch stands with admixture of aspen (*Populus tremula* L.) and pine (*Pinus sylvestris* L.). The minor presence of nemoral broad-leaved species (oak, lime, maple) is peculiar.

The forests growing in former arable lands contain about twice as much area of stands with pine and spruce (*Picea abies* (L.) Karst.) as forests of first group. This is because plantations of coniferous species were established mainly on arable lands.

Table 1. The basic distinctions of forest stands with different history of economic use.

Forest formed as a result of repeated clearcutting	Forests on former arable land
Mixed stands of trees with different share of broad-leaved species (oak, lime) and small-leaved species (birch, aspen)	Prevail monodominant birch stands with admixture of aspen; forest cultures of pine or spruce occupy smaller area
Shade-tolerant nemoral (broad-leaved) species of trees, shrubs and herbs prevail	Light-demanding species prevail, participation of nemoral species of trees, shrubs and herbs is insignificant and depend from the distance to broadleaved stands (source of seeds)
Future development: mono- or oligodominant shady lime or maple-lime forests	Future development: Determined by opportunities of seed dispersal of forest species

Geobotanical description of 110 sample plots (100 m^2) were used for estimation of biodiversity of forest ecosystems. All variety of watershed forest communities represents demutation variants of one floristic association *Querco-Tilietum cordatae* (Laivinsh 1986 in Solomesè et al. 1990, quoted in Smirnova 2004).

The following characteristics (Zaugolnova 2000) were used:

- Species richness – total number of species of all sample plots;
- Species density – number of species in a 100 m^2 sample;
- Safety of potential flora – a ratio between the number of species in the existing flora of biotope and the number of species of potential flora, expressed as percentage. The potential flora includes all vascular plant species of which the ecological amplitudes of major environmental factors are related to the ranges of estimated biotopes on ecological scales (Tsyganov 1983, Zaugolnova 2000).

All parameters were calculated separately for each synusium (Table 2).

The estimation of ecological regimes on Tsyganov's (1983) scales has not shown essential distinctions between the investigated forest ecotopes (Korotkov 1999). Present-day distinctions of forest ecosystem biodiversity under similar ecotopic conditions are explained by different histories of land use (Korotkov 1999; Zaugolnova 2000).

The main results of biodiversity analysis are the following:

- Loss species and structural diversity of zonal polydominant spruce-broad-leaved forests after long-term economic use;
- The largest changes in species composition occur in the forests growing on former arable lands;
- In "island" forest tracts the direction of succession is determined by opportunities of seeds drift of and ecesis of seedling;
- In secondary birch forests natural succession is late because of seed deficiency and/or dense layer of shrubs.

For experimental work the most disturbed forests (secondary even-aged birch forests of Bogdanovsky district) were chosen. Main principles of forest landscape restoration experiments were:

- group-selective cutting aimed at imitating the natural mosaic structure of uneven-aged forests;

Table 2. Parameters of biodiversity of forest ecosystems with different histories of economic use.

Biotopes	Lime-oak forests on non-arable forest areas		Birch forests on former arable lands		
Forest tracts*	1	2	1	2	3
Number of sample plots	37	16	35	5	9
Species richness	82	81	102	69	80
Average (maximum) species density	22 (36)	30 (44)	33 (46)	35 (53)	43 (52)
Tree synusium					
Average (maximum) species density in all layers	4 (7)	4 (6)	6 (8)	6 (8)	8 (9)
Average (maximum) species density in tree layer	2 (5)	2 (4)	2 (3)	2 (3)	3 (4)
Species richness	12	8	12	9	10
Safety of potential flora, %	80	53	80	60	67
Shrub synusium					
Average (maximum) species density	3 (6)	3 (6)	4 (7)	2 (4)	7 (8)
Species richness	8	8	9	8	7
Safety of potential flora, %	50	50	56	50	41
Herb synusium					
Average (maximum) species density	15 (24)	23 (33)	23 (34)	27 (43)	28 (35)
Species richness	62	65	81	52	63
Safety of potential flora, %	44	47	55	43	41

* Names of forest tracts: 1: Korobovsky, 2: S'janovsky, 3: Bordanovsky.

- combining gap felling with planting of species that occupied dominant positions in preagricultural forests (*Quercus robur*, *Fraxinis excelsior*, *Picea abies*, *Acer platanoides*, *Tilia cordata*, *Ulmus glabra*, *U. laevis*).

The example of accommodation of gaps is shown on Figure 3. Size of gaps is 1200–2000 sq. m; distance between gaps 40–100 m, number of gaps 20, density of cultures 4000–9000 individuals per 1 ha (depending on methods of planting); cultures of next tree species: *Quercus robur*, *Fraxinis excelsior*, *Acer platanoides*, *Tilia cordata*, *Picea abies*; use seeds (oak, ash) and sapling (all species).

The main results of forest restoration are the following:

- Future source of seeds of zonal tree ediphicators is created
- Favorable conditions for the growth of tree undergrowth were created in the gaps.
- The number of species sharply increases in the gaps (from 35–40 species per 100 m^2 in birch forests to 50–60 in the gaps), the growth of species diversity is occurring mainly due to native species of light habitats.

Experience has shown the basic directions of works on restoration of degraded forest ecosystems:

1. Restoration of structural diversity (uneven-aged gap-mosaic) with using group-selective cutting or imitation of treefall gaps (Korotkov 1991). Size of gaps and spatial allocation are depended from ecological needs of tree species and distance of tree seed dispersal. Optimal size of gaps is 0.1–0.3 ha.

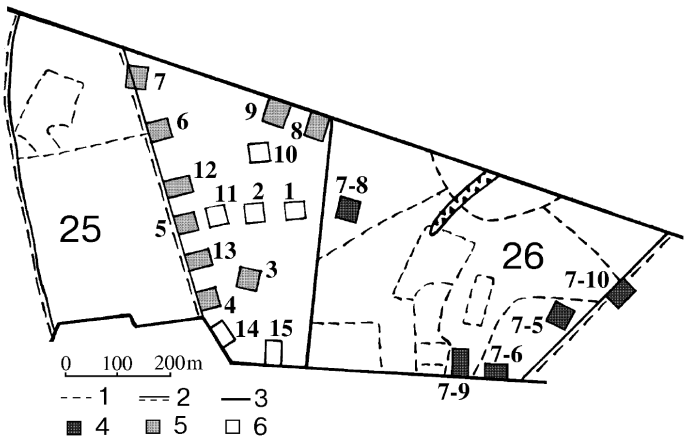

Figure 3. Example of allocation of experimental gaps. Legend: 1: border of forest subcompartment; 2: roads; 3: border of compartment; 4: gaps with sowing of oak acorns; 5: gaps with planting of spruce, ash, maple and lime, 6: gaps with oak saplings.

2. Restoration should be based on natural regeneration in combination with planting or sowing of missing indigenous tree species. Light felling should provide optimal ratio of the tree species and their successful growth. Restoration of the herb species with short radius of reproductive activity will be carried out by special reintroduction methods (Tikhonova et al. 1995).
3. Restoration of genetic diversity of tree species. Use heterogeneous seeds from local population of tree species.

Restoration of polydominant uneven-aged spruce-broadleaved forests will help to provide sustainable forest management, conservation of biodiversity and increase of forest ecosystems stability.

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References

Korotkov, V.N. 1991. New paradigm in the forest ecology. Biologicheskie nauki 8: 7–20. (In Russian).
Korotkov, V.N. 1999. Nature and Historical Reserve "Gorki". In: Smirnova, O.V. and Shaposhnikov, E.S. (eds.) Forest succession in protected areas of Russia and problems of biodiversity conservation. Russian Botanical Society, St-Petersburg. Pp. 106–150. (In Russian).

Kurnaev, S.F. 1980. Shade broad-leaved forests of the Russian plain and the Urals. Nauka, Moscow. 312 p. (in Russian).
Smirnova, O.V. 2004. East-European forests: history in Holocene and contemporaneity. Book 2. Nauka, Moscow. 575 p. (In Russian).
Tsyganov, D.N. 1983 Phytoindication of ecological regimes in the subzone of mixed coniferous-broadleaved forests. Nauka, Moscow. 197 p. (in Russian).
Tikhonova, V.L., Victorov, V.P. and Belovodova, N.N. 1995. Perspectives of population recovery of protected herbs species in the forest parks of Moscow and Moscow region. In: Agudina L.A. (ed.) Conservation and restoration of nature and culture complexes of Moscow region. Uliss, Moscow. Pp. 170–174. (in Russian).
Zaugolnova, L.B. (ed.) 2000. Estimation and Conservation of Forest Cover Biodiversity in Reserves of the European Russia. Nauchnyi Mir, Moscow. 196 p. (in Russian).

Metsähallitus Natural Resource Plan: Case Western Finland 2004–2013

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Introduction

Metsähallitus is a Finnish state enterprise. Its core operations are forestry and nature conservation, focusing on the well-being of the environment and of its customers. It administers and manages almost one third of Finland's area (12.4 million ha), including the natural resources – forests, shores, waters and soil resources. The duty of Metsähallitus is to manage and use these resources in an ecologically sound way while providing good economic and social benefit for Finnish society.

Natural resource planning is Metsähallitus' own planning process within the framework of legislation and state supervision. It is decided in this process which activities are to be carried out in the different areas and to what extent.

Stakeholders and citizens are invited to participate in the planning process. Co-operation groups representing local stakeholders play a key role in participation. These groups assess the current state of natural resources and their future management and use from different points of view. They also take a stand on the priority of various activities in the planning area during the planning period. Individual citizens also have access to the plans and they can express their views on them.

In the first phase the current state of natural resources, expectations placed by the operational environment and implementation during the previous period is assessed. In the second phase guidelines by the owner (the State of Finland), customer needs and stakeholder and citizen expectations are defined and documented. Then several scenarios for using the natural resources are build and analysed (opportunities, impacts, results). The best possible option (or combination of options) is chosen for implementation, guidelines for the best practices are defined and action programme is drawn. Flowchart of the process is presented in Figure 1.

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
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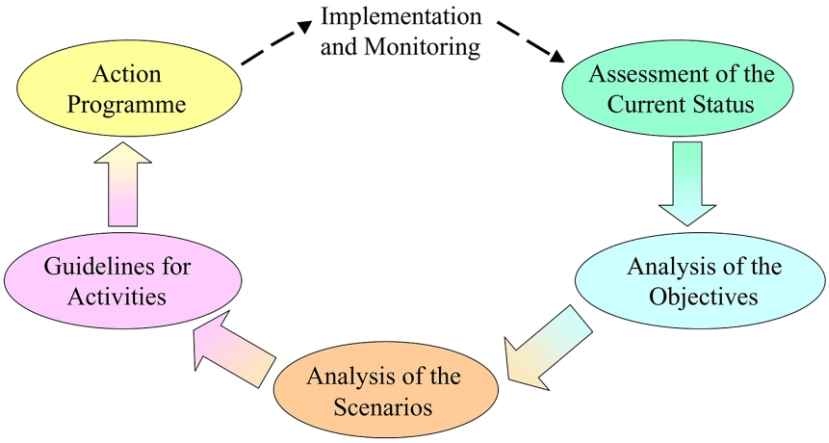

Figure 1. Flowchart of the process.

Case Western Finland

The land area administered by Metsähallitus in the Western Finland region is 465 000 ha. In addition there are 70 000 ha of inland waters and 2 mill. ha of sea (so-called public waters). The present land use is forestry (60% of the land area), nature protection (33%) and recreation (7%). The lands and waters administered by Metsähallitus represent 5% of the total area of the region.

The objective of the Western Finland natural resource plan is to ensure the sustainable and balanced use of the natural resources between 2004–2013. The outputs of the process are the detailed land-use plan, cutting budget and other essential targets concerning the natural resources managed by Metsähallitus in the Western Finland region.

The process was initiated in the summer of 2003 by assessing the performance during the previous natural resource planning period (1997–2003) and the outputs of the landscape ecological planning process between 1995–2001. In the assessment of the current status the present state of the natural resources was assessed from the various aspects of sustainability and the operating environment from the Metsähallitus point of view.

The expectations and aims of the stakeholder groups concerning the action of Metsähallitus and the planning process were mapped by means of analysis of the objectives. The alternative development of natural resources as well as economical and other issues is estimated by building various scenarios. In addition to the one modelling the present level of actions six other scenarios were built emphasising different land-use patterns and operational volumes. The scenarios will be evaluated and prioritised by the stakeholder groups in the autumn of 2004.

There are 3 mill. inhabitants in the planning region living in 220 municipalities. To guarantee the proper coverage and representation of participation the best means is to establish working groups from the stakeholder groups. The stake holder groups decided to establish three working groups representing local knowledge in the southern, central and northern parts of the region. Each working group has about 15 members representing various stake holder groups having interest in the activities of Metsähallitus. The stakeholder groups typically represent municipalities, regional authorities, forest industry, hunters, fishermen, ENGOs and nature tourism. Private people are given an opportunity to express their views in the public hearings in the autumn of 2004.

Working groups handle all central issues of the planning process, e.g. the viewpoints of the impact assessments, the indicators of the assessments, the number and the contents of the scenarios. The working groups assess whether the present level and direction of the actions result in the best future from their point of view or whether it is necessary to change the course and the contents of the action. The scenarios are assessed and evaluated against the objectives of the stakeholder groups belonging to the working groups. The aim is to reach a consensus within each of the working groups. Various voting methods can be used, too.

By the end of 2004 Metsähallitus will make the resolution concerning the land-use, cutting budget and other relevant policies concerning the planning region. The resolution is based on the evaluation of the scenarios and on the priorities of the working groups. The objectives set by the owner (the state of Finland) and the general operational context is taken into account, too.

Sowing the Seeds for Scotland's Woodland Future: The Scottish Forest Alliance – A Unique BP Project

Gordon Harvey

BP Exploration, UK

Introduction

BP's community involvement programmes in Scotland are aligned behind three strategic themes: Enterprise, Education and Environment. One of our flagship environment programmes is the *Scottish Forest Alliance (SFA*) – created and launched by BP, Forestry Commission Scotland, Woodland Trust Scotland and RSPB Scotland – and is having a positive effect on the environment in Scotland (www.scottishforestalliance.org.uk).

The Scottish Forest Alliance is unique in world conservation: a committed relationship between a global energy company (BP) and the public (Forestry Commission Scotland) and voluntary (Woodland Trust Scotland and RSPB Scotland) sectors that's designed to span a remarkable two centuries.

The objectives are:

- The regeneration and expansion of native woodlands in Scotland.
- To contribute to the UK targets for forests and woodland biodiversity.
- To promote social and economic gains for local communities and the wider population of Scotland.
- To evaluate, research and demonstrate the contribution of sustainable forest projects to carbon sequestration in Scotland.
- To contribute towards the mitigation of ongoing BP carbon dioxide emissions.
- To inform the development of UK and Scottish government policies on climate change.

As one of the largest native woodland regeneration programmes in Scotland's history, the pioneering initiative, launched in 2001, aims to regenerate Scotland's fragmented native woodlands and restore some of the rich diversity of flora and fauna which once flourished in them. Native woodland is one of the most biodiversity habitats we have and some 263 endangered species are associated with trees and woodland. But the project is also about people, and seeks to deliver significant benefits for tourism, recreation opportunities and local employment. In the biggest ever corporate commitment to the environment in Scotland, BP pledged £10 million to the SFA over ten years. Three years into the project, the £5 million

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

Figure 1. Project sites.

allocation to date has already enabled the Alliance members to attract additional match funding of £10 million and this is expected to double by 2010, bringing a total spend of £30 million in delivering the SFA vision.

The SFA's objectives align with the Scottish Executive's *Scottish Forestry Strategy* and commitments to deliver on biodiversity and conservation, all of which share the overarching aim of sustainability.

Currently there are ten diverse sites across Scotland being developed over a total area of around 60 square kilometres involving, so far, the planting or regeneration of 2.2 million trees with an expectation of 7 million in time. The sites have prompted more than 15,500 days of employment and received around 46,000 visitors per year.

Why did BP create the Alliance?

BP has clearly stated in its Group Policies –'What we stand for' – that it wants to be a successful business and a positive influence everywhere it has a presence: 'A good business should be both competitively successful and a force for good.'

The BP Brand values (Green, Progressive, Innovation, Performance) lay out the vision for how the company will operate, including 'demonstrating commitment to social responsibility' and 'demonstrating respect for the natural environment'.

Within Scotland, BP has a clearly defined Social Investment strategy, aligned with the group vision, which focuses our activities behind three strategic themes – the Three E's of:

Enterprise: we want Scotland to have a forward-looking, 'can do' culture.

Education: we want the potential of Scotland's young people to be fully developed.

Environment: we want Scotland's environment to be protected and enhanced, improving the quality of life and attracting both people and industry.

We believe that well-educated people, working in an enterprising culture with a good quality of life will underpin the future of Scotland and businesses like BP that operate in the country.

We believe strongly in working in partnerships to deliver our community programmes. The Scottish Forest Alliance involves us in working with the Forestry Commission, RSPB and the Woodland Trust. Through this partnership, both BP and the partners benefit from improved relationships and through sharing knowledge and best practice helping achieve all three strategic themes.

The engagement of BP employees, at all levels of the organisation, is also an integral part of our strategy. We encourage our employees to become active partners in the communities in which they live and work.

How the Alliance is managed

The Scottish Forest Alliance requires a large resource commitment to meet its objectives and to ensure the maximum value for money from the project. However, of equal importance to BP is the investment of the time and expertise of our employees.

A Steering Group drives the SFA with three sub-groups reporting into it – looking at Biodiversity, Carbon Sequestration and Communications. Each of these four groups has a representative of each of the four alliance members (BP, Forestry Commission Scotland, Woodland Trust Scotland and RSPB Scotland). The steering group also has two independent members. Each of the four BP representatives puts a substantial time commitment into the SFA – around one day per week each.

We encourage our employees to actively participate in our community investment programmes and the Scottish Forest Alliance offers numerous volunteer openings for all types of BP employees from scientists to engineers to office workers to technicians. SFA volunteer opportunities include:

- Tree planting and other practical tasks;
- Volunteer photography;
- Voluntary speakers;
- Web site maintenance;
- Ecological monitoring;
- Survey work;
- Information and communication;
- Leading site visits;
- Secondments;
- Drawing up specifications and contracts for site works;
- Developing public consultation techniques and materials;
- Producing communications materials for promoting the partnership within BP;
- Producing video record of progress and story of partnership;
- Organise/encourage an arts programme to complement project;

- Share project management skills;
- Phenology project; and
- Specific site based projects.

We believe that encouraging employees in this manner delivers benefits for the individuals, the communities and the business. It is a clear win-win situation with benefits for the community being mirrored by the benefits of staff development. Staff are encouraged to become involved through the advocacy of the management and involvement in community work, including environmental programmes.

The three SFA partner organisations (Forestry Commission Scotland, Woodland Trust Scotland and RSPB Scotland) also commit substantial resources. They put forward suitable pieces of land for appraisal by the SFA Steering Group. If a piece of land is approved to become an SFA site, and receives the necessary funding to regenerate it as native woodland, that organisation commits resource to manage that land to an agreed set of conditions for a 200-year period (the time period deemed necessary to fully establish a native woodland and its associated biodiversity). The organisation also commits to a defined community consultation and involvement procedure.

Communication and dialogue

Through the partnership, both BP and the partners bring different and complimentary knowledge and skills to the SFA and both benefit from improved relationships and through sharing knowledge and best practice. Partner organisations are fully engaged in evaluating and tuning the SFA and BP receives coverage in the publications of these partners.

All SFA sites go through a defined community consultation and involvement process allowing the recipient communities their say and their views are used to tune ongoing activities. An example of how this can change initial ideas is at our Woodland Trust sites in the Ochil hills (Glen Sherup and Glen Quey), where a path through the land linking two small villages was kept in place and the summits of the hills were not planted so that the skyline would not be altered. These decisions were taken to respect the wishes of the neighbour communities.

Information on community programmes is reported internally and externally through BP's Internet and Intranet websites, group publications, staff briefings and through the media. This information demonstrates in a highly visible way that BP in Scotland is 'living' the brand values of the BP group.

We freely share knowledge and experience of SFA with anyone who has an interest and SFA has publishes articles in specialised forestry publications. This is particularly so with the policy makers and decision formers who may wish to use tree planting for a variety of purposes.

The *Communications* subgroup looks directly at how knowledge is shared and how the target audiences are addressed. To the end of 2003, the following communications achievements had been delivered:

- 15 Awareness Events held at SFA sites plus 1 at the Scottish Parliament;
- 15 Press Releases issued;
- 63 newspaper articles with a combined circulation of over 4 million;
- 4 television and 1 radio articles;
- 17 magazine feature articles;
- 19 single organisation in-house magazine articles;
- 4 magazine adverts;
- 2 mentions in site-specific literature;

- 8 mentions in annual reports;
- 7 external events attended;
- 4 sets of information boards carrying acknowledgement; and
- 1 major award won.

This subgroup also maintains the SFA Internet website (www.scottishforestalliance.org.uk) which provides information on all our activities.

Business benefits

We believe that our three E's strategy will benefit both Scotland and businesses like BP that operate in Scotland. We all want well-educated people, in an enterprising culture with a good quality of life to underpin both the future of the nation and of companies like BP that operate here.

We have a particular concern for demonstrating respect for the natural world: we want Scotland's environment to be protected and enhanced, improving the quality of life and attracting both people and industry. The Scottish Forest Alliance is one of our flagship environment programmes and fits very well with this concern with three of the stated objectives being:

- The regeneration and expansion of native woodlands in Scotland.
- To contribute to the UK targets for forests and woodland biodiversity.
- To promote social and economic gains for local communities and the wider population of Scotland

The SFA *Biodiversity* subgroup is using the SFA lands to carry out baseline biodiversity studies and to do research into how biodiversity changes through tree planting or regeneration. The methods they will use must be robust and repeatable over the 200 years of the project.

BP as a company has a concern about climate change and three of the stated objectives of the SFA demonstrate this concern. These are:

- To evaluate, research and demonstrate the contribution of sustainable forest projects to carbon sequestration in Scotland.
- To contribute towards the mitigation of ongoing BP carbon dioxide emissions.
- To inform the development of UK and Scottish government policies on climate change.

The SFA *Carbon* subgroup is carrying out research into carbon take-up of native woodland on the SFA lands. Through its commitment to monitoring and predicting the uptake of carbon dioxide from the atmosphere by the trees on its sites, the SFA will contribute significant understanding to the debate on climate change mechanisms. The SFA is pioneering a research programme that is already providing new information on effective baseline monitoring.

Working in this environmental area with the SFA partners, enhances the reputation of BP in Scotland and demonstrates that we are living the Brand values defined by the BP Group. Working with communities in a positive way improves their opinion of BP as a company. Endorsements from our partners, media articles and awards all help to enhance company reputation. Articles on the SFA have appeared in all the major Scottish broadsheet newspapers and a whole range of specialist forestry publications. The Scottish Forest Alliance won the Hollis Award for Environmental Sponsorship in 2002 and the Scottish Business in The Community Award as Business of the Year 2004, in part, due to its work with the SFA.

Our partner organisations in the SFA appreciate the participation of BP employees, often stating that it is what the people bring to the table, that really makes the difference.

Society benefits

BP wants to have a positive influence in the countries in which the company operates. We believe that the Scottish Forest Alliance environmental programme delivers benefits, not only for the neighbouring communities to the SFA sites, but also for the nation as a whole and hence has that positive influence. We work in partnership with the communities and with our three partner agencies in the design and delivery of the SFA vision.

Benefits to Scotland

Only one percent of Scotland's land area is populated by native woodland of ancient origin. Unlike exotic commercial plantations, a native wood comprises species that naturally colonised Scotland after the last Ice Age. These woods are a visually stunning mix of trees, shrubs, plants and associated wildlife which perfectly complement the geography and climate of whatever part of Scotland they grow in. They can be anything from dense alder forests on the shores of lowland lochs, or the gnarled and weather-beaten Atlantic oakwoods along the West Coast, to classic Caledonian Scots pine forests in the Highlands, or birch scrub reaching beyond the tree line towards the summit of hills and mountains.

The SFA's objectives align with the Scottish Executive's *Scottish Forestry Strategy* and commitments to deliver on biodiversity and conservation, all of which share the overarching aim of sustainability.

So far we have achieved:

- 10 sites currently in the SFA project from Huntley to Skye to the Ochils.
- 60 square kilometres under development.
- 2.2 million trees planted or regenerated from an eventual total, so far, of 7.6 million
- 15,700 days of employment
- 462,000 visitors per year
- 38 kilometres of paths out of a total of 92kilometres
- 2,300 lifelong learning visits

Biodiversity

The SFA's mission to revive some of the country's native forests and coax back the original wildlife and vegetation has claimed some early victories for biodiversity.

The first green shoots of success in what is by definition a naturally slow-moving process are beginning to show themselves around the projects. The recording of these has been possible only due to careful groundwork laid by project staff in the form of baseline monitoring across all the sites. These studies enable those involved in the SFA over future decades to gauge the effectiveness of the overall project in maintaining and improving biodiversity.

Case Study 1: In the grassy upland area of the 383-hectare Glen Quey project, in the Ochils, the removal of grazing animals from the site has encouraged diverse varieties of vegetation to flower and flourish. Around the newly planted trees a variety of heathland species, such as heather and blaeberry, are now adding hues of pink, purple and white to the hills and setting seed for future growth. In time, this will provide ideal cover for birds such as

the black grouse, one of the red-listed endangered species in the UK. The increase in vegetation has brought an explosion in the vole population, which unfortunately like to feed on the bark of young trees. However, nature is also providing the answer to this problem. Project staff report a sharp increase in numbers of birds of prey, particularly kestrel, short-eared owl and sparrowhawk, and have installed perching posts for them on the open ground. As the new woodland establishes itself, some of the raptors will seek other wide-open spaces, while it's hoped that other rare woodland bird species, such as song thrush and spotted flycatcher, will move in on the territory.

Case Study 2: Birch woodland on Skye's Kinloch Hills estate is home to a population of wood ants – thought to be one of only two island populations in the UK. One of the objectives in the restoration of the birch woods is to stabilise and make the colony more robust. The site's icon species is a pair of golden eagles, but as yet there is not enough food to support further pairs. However, as the restored moorland becomes more established, it will provide enough cover and food to support other species that, in turn, will become prey for the eagles.

Benefits to local communities

Engaging with local people of all ages is a key activity in ensuring the sustainability and success of the SFA projects - and there is no shortage of enthusiasm in their response. Neighbouring communities recognise that the development of new native woodland brings a raft of benefits, from aesthetic and recreational pleasure, to economic gains from tourism and jobs creation but it is important that their individual needs and ideas are taken into consideration at the earliest stage.

During the planning process, local people are widely consulted and great care is taken to address and resolve any issues and concerns they may have. Their early feedback usually reflects excitement at the prospect of witnessing the regeneration on their own doorstep of native woods with the highest biodiversity value and containing the rarest and most threatened species in Scotland.

This consultation process has been carried out by every SFA project, but since different communities will have different needs and views, each project has developed its own approach to engaging with its neighbours, often in a variety of ways.

Case Study 1: The Kinloch Hills project on Skye aims to plant hundreds of thousands of native trees over five years and to offer a suitable habitat for the black grouse to return to Skye. The tree planting has been staged to allow five neighbouring nurseries time to grow the required trees from locally gathered seed. While two of the nurseries were already established, the remaining three croft-based businesses have developed as a direct result of the project, their owners having diversified from sheep farming into horticulture with the aid of pump-priming funding from the SFA. Project staff have provided training in tree nursery management, and have also formed links with four local schools, Kyleakin, Sleat, Broadford and McDiarmid Primary Schools, each of which has established a small tree nursery. Parents who have also been trained in planting, watering and weeding techniques are mentoring the children. Both children and adults will have the chance to plant out the young oak and hazel saplings as part of a major community planting exercise at the project site during 2004. This will be repeated over the next four years.

Case Study 2: A new organisation, the Rothiemurchus and Glenmore Community Association, has gained a valuable insight into the attitudes of local people to their natural environment and to a range of social issues affecting them as individuals, as a result of

funding by the Glenmore project. The group gained professional training to conduct a community survey that has not only provided information about people's needs and ideas in relation to their local SFA project, but has also highlighted important focus areas in terms of village planning, transport, housing, business and employment. Project funding also acted as a seedcorn to attract further local, national and European funding for a new 3km footpath linking the village of Glenmore to the car park at the foot of the Cairngorm Funicular Railway. The Allt Mor Trail, which leads through prime, pristine native woodland, brings major benefits to the area in terms of sustainable tourism, and is also popular with local people for walking and sponsored outdoor events.

In Conclusion

BP's commitment to the Scottish Forest Alliance is making a difference in so many areas. The ability of our projects to positively influence simply grows and grows with aspects we had never even thought of demonstrating the worth of the venture. We will strive for ever more from the projects and will make sure we use the remaining funds in the same way. However, this is only the start as many of the benefits wont be seen for a generation. Whilst the effort being put into the Scottish Forest Alliance in this generation will see some success it is to the future generations that we will leave the legacy of the sites. Our children and their children will be the true beneficiaries of this unique project.

The Finnish National Urban Park (NUP) Concept as Part of Sustainable Urban Planning

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Abstract

This paper will discuss the Finnish National Urban Park (NUP) concept as a tool for preserving mixed natural and cultural values in the urban structure or in proximity to them while there is a trend to create more compact and sustainable towns/cities. The special character of Finnish urban structure and Finnish NUP concept within renewed Land Use and Building Act are shortly explained. The experiences about the NUP concepts role and function as part of planning process in some Finnish municipalities are also discussed.

Keywords: National Urban Park concept, urban planning, sustainable city, mixed natural and cultural values, ecological corridor, infill building.

1. Introduction

Urbanization occurred later in Finland than in the rest of Europe. The postwar era in Finland was characterized by the rapid and radical modernization of urban settlements often to the detriment of older buildings in town and city centers (Hemer 2004). The radical, deliberatist urbanism of the 1960s and 1970s saw cities extending into the formerly agricultural and forested land which surrounded them. Urban settlements sprang up as a result, leading to the fragmentation of surrounding natural areas, especially forest landscapes (see Gauzin-Müller 2002). These negative changes in urban environments in Finland were possible because of the planning and building legislation dating to the late 1950s, created as a framework for postwar reconstruction and new development (see e.g. Ministry of the Environment 1999c).

Finland as well as the whole world is today facing a rapid urbanization process. It is estimated that about half of the global population will live in cities by the year 2005. Coupled to this rapid urbanization process there have been dramatic changes in spatial development throughout

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EFI Proceedings No. 53, 2005

Europe (Schantz 2004). Today we are building much more compact towns and cities than 30–40 years ago (Gauzin-Müller 2002). Infill building as part of planning more compact urban settlements has in Finland raised common concern about how to preserve cultural and natural heritage with biodiversity both inside urban structure and in proximity to towns, cities and other urban settlements (Koskiaho 1997).The Finnish Urban Park concept within renewed Land Use and Building Act can be viewed as one attempt to solve this problem.

2. Natural elements as part of the urban structure of Finnish towns and cities

Finland could be described as a country with the settlement structure that is sparse in European terms, but covers the whole country fairly evenly. The only extensive areas of completely uninhabited wilderness are to be found in the far north (Ministry of the Environment 1999a). Finnish towns and cities, compared to European ones, are relatively small and sparsely built-up. It is characteristic to Finnish towns and cities that their structure is formed by built environments and natural elements existing side by side. In Finland there are only a few real cities. It is typical that even in city centers in Finland there are still today rudiments of natural ecosystems, for example islets of taiga forests. Also patches of ancient bedrock with the age of billion years and eskers, the formations of the latest Ice Age, can still be the dominant elements in town landscape (Flander 1998). Most of Finnish towns and cities are situated by see, lake or river. As the result, it is common that the urban fabric is outlined by green and blue spaces and structures, which together can act as an important ecological corridor from town centre to surrounding natural or rural areas. For example from the market place of Helsinki, in the hearth of the capital of Finland, can be seen rocky islets and islands covered by forests, which are part of a larger archipelago reaching far to the open waters of Baltic See (Flander 1997).

The identity of Finnish towns and cities is formed by the harmonious combination of diminutive scale built milieus and natural elements. There is no use to separate the cultural elements from the natural. It is the combination of the both milieus or elements which is worth preserving. If you loose one of those elements you have a risk to loose much of the identity of a town as well (Flander 1997, Sukkari 2000).

In town planning there is common trend to build more compact towns and cities. As result of this the infilling of the sparsely built parts of Finnish towns has grown dramatically from the 1990s till now. Land-use has become much more effective both inside urban structure and in the proximity to it. New residential areas and office quarters are built so effectively and densely that there is no more space for natural elements. Rock formations are vanishing in many places because they are blown up and used on place for foundations of buildings and road constructions (Flander 1998).

The shore line or bays of sea or lake, which are very important from the point of biodiversity and recreation are filled by building new residential areas with the flats with views to sea and lake to get higher prices. Also underground constructions have grown during recent years (Kotkansalo 2004).

Mainly because of the diminutive scale and the direct physical linkage of natural and built elements the structure and the landscape of Finnish towns is in many way very sensitive for the above mentioned changes caused by infill building. An inadequate spatial planning control can lead to uncontrolled development pressure, fragmentation of ecological corridors and loss of habitat diversity. Good urban planning is thus an important element in protecting and improving the environment and in prudent and rational use of natural resources (Ministry of the Environment 1998).

3. National urban park (NUP) concept in Finnish legislation

The national urban park (NUP) concept was actually used for the first time in Sweden in 1994, when the Swedish Parliament decided to establish the green area and cultural landscape of Ulriksdal-Haga-Brunnsviken-Djurgården in the municipalities Stockholm, Solna and Lidingö, as a National Urban Park (Schantz 2002). The first and till now the only Swedish NUP was established by a special law.

The Finnish interest in the Swedish NUP concept can be viewed against a background of the active national and local discussion about the impacts of the infill building on the urban fabric and biological and cultural diversity of Finnish towns and cities. The urban development of faster growing cities was not considered to be ideal from the point of the preservation of their high natural and cultural values. On the other hand, smaller towns, not being able to compete by urbanism with faster growing cities, had become more aware of the importance of their high environmental quality as a competitive instrument.

The Finnish NUP is part of the Land Use and Building Act, which came into force 1.1.2000, and that is why an insight in the general objectives of that Act is of value. The first section in the first chapter states that:

> *The objective of this Act is " to ensure that the use of land and water areas and building activities on them create preconditions for a favourable living environment and promote ecologically, economically, socially and culturally sustainable development".*
>
> *The Act also aims "to ensure that everyone has the right to participate in the preparation process, and that planning is high quality and interactive, expertise is comprehensive and that there is open provision of information on matters being processed".*

The intention of a national urban park is stated in section 68 in chapter 9:

> *"A national urban park may be established to protect and maintain the beauty of the cultural or natural landscape, historical characteristics or related values concerning the townscaping, social, recreational or other special values of an area in an urban environment."*

What is notable in the Finnish legislation, is that the NUP decision is always dependent on the initiative of the local authorities and that the NUP area is formed by the plans made by a municipality. The decision to establish a national urban park is made by the Ministry of the Environment. The decision will sooner or later be followed by a management plan drawn up by the local authority in cooperation with the regional environment center. The management plan must be prepared in interaction with the parties on whose circumstances the matter may have substantial impact. The management plan is approved by the Ministry of the Environment. Regulations concerning the national urban park must be taken into account in planning the areas of the park and in other planning and decision-making affecting the area (Suomen säädöskokoelma 1999).

4. The criteria for national urban parks

Special criteria for the identification of potential NUP areas in municipalities have been prepared in the Ministry of the Environment. Criteria for national urban parks are following:

I Breadth of content
National urban parks should contain natural areas important for the preservation of urban biodiversity, cultural milieus — including buildings — important for an understanding of national history or of that of the city itself, and parks and green areas of architectural or aesthetic significance.

II Extent and contiguousness
The parkland or green areas in national urban parks should be extensive and contiguous enough to allow one to walk through them from one part of town to another.

III Ecology and continuity
National urban parks should facilitate an ecological corridor overlay process that will contribute to species movement and interaction and create direct links with natural areas outside the city and the surrounding countryside.

IV Urban centrality
National urban parks are part of the urban structure. They should begin in the core centre of the city or its immediate vicinity.

5. Situation in Finland and concluding remarks

Sustainable development rejects the expansion of towns and cities in favour of the reclamation of urban identity and culture through redevelopment of the existing town and city: renovation of older districts, regeneration of former industrial and military areas and docklands etc. (Gauzin-Müller 2002). In town planning in Finland there is common trend to build more compact towns and cities. This can, indeed, be argued both by economical and ecological arguments. There are, however, serious risks to loose important natural and mixed natural and cultural values, if infill building in urban settlements and in proximity to them will be carried out too one-eyed. New urban policies include more careful site-specific urban planning, more compact urban design and better management of green spaces and urban landscapes. Each city or town is unique. In order to improve environmental conditions it is important that cities and towns can learn from each other and that local experiences and approaches can be exchanged. Local approaches can be complemented by policies at higher level (Deelstra 1993).

The NUP concept of Finland is aimed to serve a strategic instrument for to find out, if there are larger entireties with high mixed natural and cultural values stretching from town/city center to rural and forest areas or archipelagos. From the point of sustainable development and for many other reasons it would be wise to leave this kind of entireties out of infill building for preserving “the story of a town” for future generations.

Today there are altogether three national urban parks in Finland. Preparation of the first NUP began in the city of Hämeenlinna in 1997 (Figure 1) (Välimaa 1997, 1998, 1999) soon after the proposal for a new Land Use and Building Act had been made by the Building Legislation Committee. The NUP of Hämeenlinna was established in January 2001. It was followed by the decisions about Heinola and Pori national urban parks in May 2002. Furthermore, in several towns and cities active discussion about the matter has taken place or is still going on in connection with the preparation of master plans by municipalities. Feedback from local authorities, especially from land use planners, environmental sector and inhabitants of a town or city has been surprisingly positive.

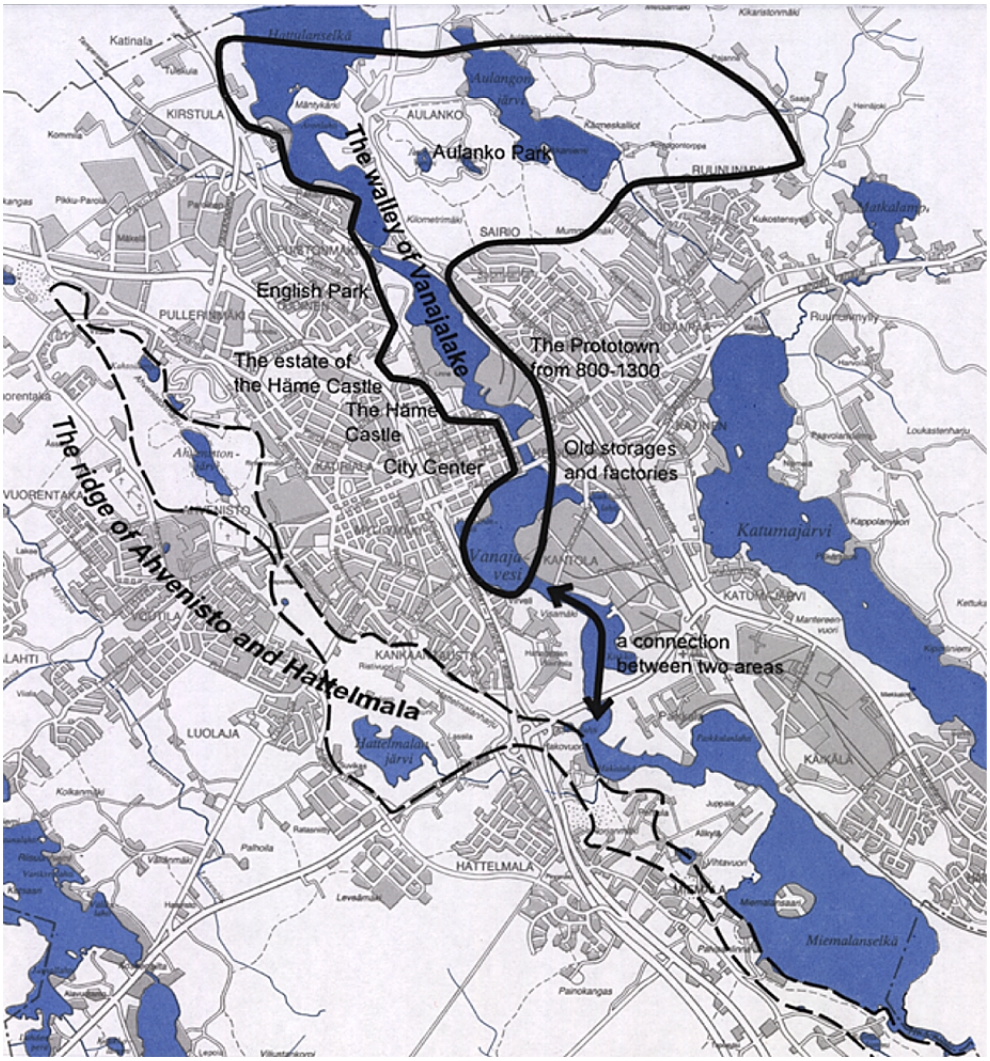

Figure 1. The National Urban Park in Hämeenlinna. The starting situation on planning in 1997 by Jaakko Välimaa, chief masterplanner of Hämeenlinna. Used with the courtesy of The City of Hämeenlinna.

The criteria for the identification of potential NUP areas have been broadly used in urban planning to find out critical boundaries for infill building in a larger scale. As the result of the nature of the NUP legislation, co-operation and partnership between local authorities, state environmental centers and Ministry of the Environment has become more active in the urban planning sector. In NUP preparation process the Ministry of the Environment is not only a decision making authority, but it has also an important consultative role.

The preparation process of a NUP area has also proved out to be a good and practical learning forum for local authorities, politicians and inhabitants of a municipality.

References

Deelstra, T. 1993. The Quest for Sustainability in Urban Development and Design. In: Rautsi, J. (ed.). The European City Today. The Helsinki Round Table on Urban Improvement Strategies. Ministry of the Environment, Finland, City of Helsinki. Kajoprint Oy. Vantaa. Finland. Pp. 9–27.

Department of the Environment 1980. Urban renaissance. A better life in Towns. England. 127p.

European Commission 1998. First report on the implementation of the Convention on Biological Diversity by the European Community. Office for Official Publications of the European Communities. Luxemburg/Germany. 95 p.

Flander, J.-P. 1997. Can biodiversity prevent a city from infill buiding? (Luonnon monimuotoisuus esteenä eheyttämiselle?). In: Koskiaho, K. (ed.). Challenge for consolidated planning (Eheyttävän suunnittleun haasteet). Pp. 34–39.

Flander, J-P. 1998. Cliff formations in cities (Klippeformationer I byerne). In: City Nature in Nordic countries (Bynatur I Norden). TemaNord 1988:561. Pp. 71–74.

Gauzin-Müller, D. 2002. Sustainable architecture and urbanism. Birkhäuser. Italy 256 p.

Hemer, O. (ed.) 2004. A Future for the Past. Historic Cities in Development. Sida. Stockholm. Sweden. 48 p.

Koskiaho, K. 1997. Collage of the Consolidated Planning Seminar. In: Koskiaho, K. (ed.). Challenge for consolidated planning (Eheyttävän suunnittelun haasteet) Pp. 7–18.

Kotkansalo, P. 2004. Detailed local plan and building permit for underground construction-procedure in Finland (Maanalaisen kalliorakentamisen kaavoitus- ja lupamenettely). MTR Julkaisut, No. 2. Finnish Tunnelling Association, Connect Oy, Finland.158 p.

Land Use and Building Act (132/1999) 1999. In: Suomen säädöskokoelma (Finnish legislations) No 132–155.

Ministry of the Environment 1999a. The Built Environment in Finland. Helsinki. Finland. 51 p.

Ministry of the Environment 1999b. Finnish Environmental Legislation. Finnish Land Use and Building Act (132/1999). Helsinki. Finland. 42 p.

Ministry of the Environment 1998. National Action Plan for Biodiversity in Finland. Vantaa. Finland. 127 p.

Ministry of the Environment 1999c. Reform in the Land Use Planning System. The New Land Use and Building Act of Finland. Helsinki. Finland. 13 p.

Schanz, P. 2002. The National Urban Park – an Experiment in Sustainable Development (English summary). In: Holm, L. and Schanz, P. (eds.). National stads parken – ett experiment I hållbar utveckling. Formas. Stockholm. Sverige 2002. . 263 p. + 21 maps.

Schanz, P. 2004. The Formation of Natural Urban Parks – a Nordic contribution to sustainable development. Manuscript. 4 p.

Sukkari, R. (ed.). 2000. Historical European Towns – Identity and Change. Kaleva. Oulu. Finland. .224 p.

Välimaa, J. 1997. The National Urban Park in Hämeenlinna. The starting situation in Hämeenlinna. City of Hämeenlinna. 4 p.

Välimaa, J. 1998. National Urban Parks in Finland – Hämeenlinna as an example (Nationalstadsparker I Finland – med Tavastehus som exempel). In: City Nature in Nordic countries (Bynatur i Norden). Pp. 52–56.

Välimaa, J. 1999. A national urban park in Hämeenlinna. In: Monuments and Sites in Finland. Häyrinen, M., Kairamo, M., Mattinen, M. and Tuomi, T. (eds.). Yliopistopaino.Helsinki. Pp 150–151, fig. p.148).

Evaluating Potential Protection Areas by Means of Multi-Attribute Priority Analysis for the Central Karelia Herb-rich Forest Network Pilot Project in Eastern Finland

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Abstract

Nature-value bargaining is a new tool in voluntary biodiversity protection and it is currently undergoing field testing in Finland. According to its basic idea, the seller of biodiversity values (a private landowner) first contacts the buyer (local authorities engaged in biodiversity protection) and states that s/he would be willing to offer a certain area to be set aside. The landowner should also be able to define his/her price demand for setting aside a certain forest area. So far, the assigned conservation contracts have been temporary (lasting for 10 years). One problem in defining the price demand is that the owners do not know the actual biodiversity value of their potential protection areas. On the other hand, the biodiversity protection authorities should be able to select protection areas that together yield the best cost-benefit ratios to the biodiversity protection network. In this paper, we present an application of multi-attribute priority analysis called "Forest Star" for supporting the decision problems described above. The "Forest Star" model is currently undergoing testing in the Central Karelia Herb-rich Forest Network pilot project in eastern Finland. In the project, the model consists of three criteria: (i) main herb-rich forest type and threatened species, (ii) spatial characteristics and (iii) complementary characteristics. Each criterion is defined more accurately through several sub-criteria, which, in turn, are specified by using sub-priority models. The additive aggregation rule is used for calculating the biodiversity value of each area, and the biodiversity values are explained to the landowners to facilitate their price-definition processes. In this step, the priority values describing the quality of the stands for protection are categorized into five classes of stars. For example, a poor area for biodiversity protection gets one star and an ideal object for protection gets five stars. When the local authorities evaluate the landowners' offers, the model is augmented with a fourth criterion

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

describing the authorities' attitude towards the land owners' price demands. This makes it possible to strive to achieve the best cost-benefit ratio of the protection network.

Keywords: decision support models, nature value bargaining, voluntary biodiversity protection.

1. Introduction

In Finland, the so-called Metso protection program report (Etelä-Suomen, Oulun läänin länsiosan… 2002) clarified the protection needs of forests located in southern and western Finland. The report did not set a specific goal for the forest area that should be protected. Instead, it suggested the use and testing of new voluntary protection tools, particularly among Finnish non-industrial private forest owners, and also in state-owned forests. In the case of private forests, the proposed tools were (i) competitive bidding, (ii) transactions focusing on sites possessing significant nature values, or nature value bargaining, and (iii) joint network projects on forest biodiversity. In competitive bidding, forest owners can offer parts of their forest areas to be permanently set aside, whereas in transactions focusing on sites possessing nature values and joint networks of forest biodiversity, the areas are mainly proposed to be set aside temporarily. In all the three cases, the suitability of the areas offered to be set aside is evaluated by using certain common main criteria (Etelä-Suomen metsien… 2003).

The use of voluntary protection tools can be seen as a new opportunity for the forest owner. In addition, their use can also benefit society. From society's point of view, one drawback related to these tools may be in that the cost of acquiring a meaningful network of protection areas becomes higher than the alternative cost of actually purchasing these lands (or even better land areas). It is very probable that the protection of all the best areas is not possible by means of voluntary tools. However, it may be possible to form a reasonably good protection area network, which, if necessary, can be augmented by adding to it areas that are protected by means of traditional instruments.

This paper focuses on nature value bargaining (NVB) where society buys nature values from private forest owners by entering into temporary protection contracts with them. So far, the time period of temporary protection contracts has been 10 years. According to the basic idea of the NVB, the seller of the biodiversity values (a private landowner) first contacts the buyer (local authorities engaged in biodiversity protection) and indicates that s/he would be willing to offer a certain area to be set aside. The landowner should also be able to define his/her price demand for protecting the forest area. On the other hand, the biodiversity protection authorities should be able to select protection areas that together yield the best cost-benefit ratios to the biodiversity protection network.

The main promises of NVB are cost-efficient augmentation of the present ecological network and improved social acceptability of biodiversity protection on private lands. Cost-efficient protection in NVB can be striven forward because some forest owners obviously have their own biodiversity goals (or other goals that correlate positively with biodiversity goals) that result in compensation that is lower than when compared to the direct cutting income losses that the protection of the forest may cause. Improving social acceptability is related, for instance, to the higher number of forest owners, who induced to take part in and earn money through biodiversity protection.

The traditional tools of biodiversity protection typically proceed according to the top-down approach, where the biodiversity protection authorities search for valuable areas to be protected and initiate negotiations about protecting certain forest areas. The NVB process of

this study follows an integrated process of top-down and bottom-up processes: the forest owners actually initiate the process, although the criteria for valuable areas are told beforehand to the forest owners. In general, the integrated process may find better acceptance than the top-down process among forest owners. However, the traditionally used top-down process and the NVB process of this study have different aims, and thus they should not be seen as substituting one another. Instead, these processes should be used in complementing one another.

So far, the NVB approach has been applied in the pilot project in south-western Finland. According to the first experiences obtained, the acceptability of NVB has been good and forest owners have actively participated in it (Gustafsson and Nummi 2004). The forest owners and their interest groups have demonstrated positive attitudes towards NVB. However, in the pilot project in south-western Finland, no market-driven prices for protection contracts were applied because the forest owners were not able to define their price demands for biodiversity protection.

This paper presents an application of multi-attribute priority analysis called "Forest Star" to supporting both the buyers' and the sellers' decision problems in connection with NVB. "Forest Star" produces information about the biodiversity values of potential protections areas for forest owners. The forest owners can take this information into account when defining their price demands. Furthermore, when evaluating the forest owners' offers for biodiversity protection, the model is augmented with a sub-model describing the biodiversity protection authorities' attitude towards the owners' price demands. This endeavours to achieve the best cost-benefit ratio for the protection network. The "Forest Star" model was developed for the Central Karelia Herb-rich Forest Network pilot project in eastern Finland. However, it can also be applied in other similar projects.

2. Central Karelia Herb-rich Forest Network pilot project

The use of voluntary protection tools is new to all forestry and biodiversity protection actors (financiers, local authorities, forest owners and others) in Finland. Therefore, several pilot projects testing their practical feasibility, forest owners' willingness to participate in the programs, and their ecological, economic and social effects were launched in Finland in 2003 and 2004. These pilot projects are located in different parts of the target area of the Metso programme and they focus on different biodiversity objectives. While the pilot projects underscore the importance of tests concerning the functioning of the new tools, traditional tools for protecting forest biodiversity based on current forest and nature protection laws are also applied in the most valuable areas.

The pilot project of the Central Karelia Herb-rich Forest Network is managed by the Forestry Centre of North Karelia, and it is one of four ongoing projects for testing the functioning of the joint network projects on the theme of forest biodiversity. The other organizations involved in the project are the local Environment Centre, local forest owners cooperatives and the Finnish Forest Research Institute. The total area of the herb-rich forests on the potential network area covers about 842 ha.

It was decided in the project-planning phase that the activities will concentrate on the area where Central Karelia's herb-rich forests are mostly located. In addition, the local authorities defined, in accordance with the common main criteria, the biodiversity objects to be sought after.

The ecological goal of the project is to develop and maintain the nature values of the most eastern herb-rich forest network in Finland. Good quality of the herb-rich forest network is striven towards by connecting the new protected patches of protected herb-rich forests to

previously protected forests. Different protection tools are utilized in this task, but the most important experiences in this respect will result from the NVB experiment.

The quality of the network may also be improved by taking the protection goals into account when drawing up management plans for forests located within the network's operational area, particularly for forest areas located next to previously protected areas. In addition to herb-rich forests, special attention is paid to maintaining and restoring the nature values of sun-drenched hillsides (located close to herb-rich forests). Furthermore, other kinds of valuable habitats (e.g. forests including large amounts of decayed wood) may be protected within the limitations of the project budget and the established common criteria. During the project, it may be, and it is hoped, that forest owners' co-operation will result in smaller networks (groups of protected herb-rich forests) within the larger area.

Information about the target biodiversity objects, action plan, timetable and the financial instruments to be used will be distributed to owners through various dissemination channels. At least in one sub-area within the protection of herb-rich forest, a regular forest-planning process will be ongoing. The ongoing planning process will be utilized so that potentially promising areas can be pinpointed and inventoried more accurately. The forest-planning consultant, who in his/her everyday work interacts with forest owners, is an important person in the sharing of this information. The Forestry Centre may also pinpoint potential areas by means such as the GIS approach (Store and Nikula 1998, Kangas et al. 2000), do search operations by accessing the forest-stand database, and by using the knowledge of people involved in the local organizations. Based on the information thus obtained, the Forestry Centre will be able to contact forest owners, including those living away from their forest property and therefore unlikely to learn about the project otherwise.

In the case of this Central Karelia Herb-rich Forest Network pilot project, the protection contracts will most probably be made for a 10-year period and the entire compensation sum will be paid to the owners immediately after the buyer and the seller have signed the protection contract. The forest owners should decide a) whether to make an offer or not, and b) the amount of the compensation they expect. The buyer (local authorities involved in biodiversity protection) selects the forest areas to be included in the protection network. The selection of the areas in the pilot project will be carried out so that a large number of offers from forest owners is collected first, and suitable areas are then selected from among them.

3. "Forest Star" model

The decision hierarchy of the "Forest Star" model is based on the common criteria (Etelä-Suomen metsien… 2003) formulated to be used in the pilot projects of the Metso programme. In the "Forest Star" model, however, the general criteria have been modified so that they better correspond to the local conditions. For example, some insignificant criteria have been excluded from the model. In addition, the weights of the criteria and the sub-priority functions have been specified by an ecologist, who has been working with herb-rich forest protection issues for several years in the area of North Karelia. The three criteria and sub-criteria that describe them more accurately are presented in Figure 1.

Both continuous sub-priority functions and discrete sub-priorities were applied in the "Forest Star" model. The forms of the continuous sub-priority functions (Figure 2) were defined graphically. These sub-priority functions actually defined the relation of marginal sub-priority and the value of the corresponding criterion. The minimum sub-priority value was fixed to be 0 and the maximum value was fixed to be 1. When applying discrete sub-

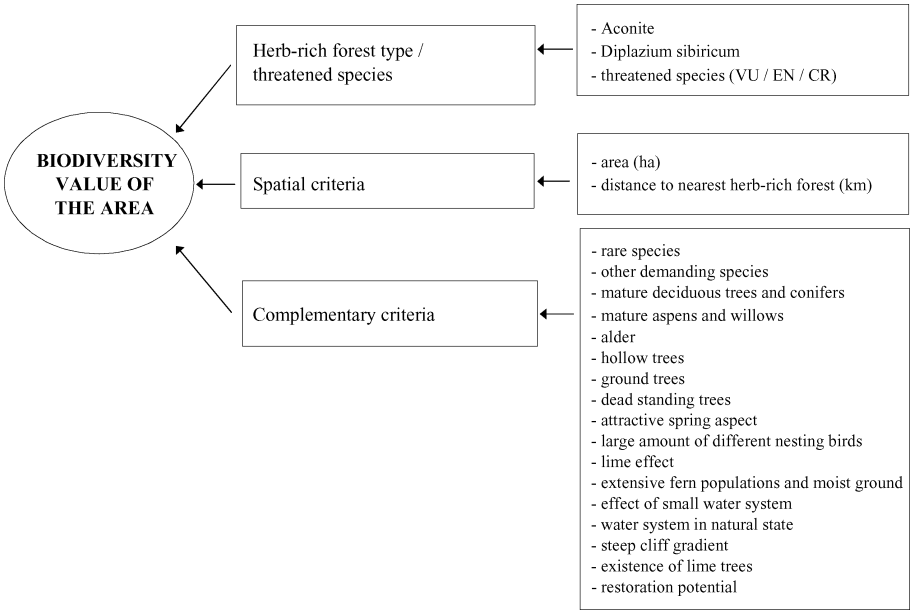

Figure 1. The decision hierarchy of the "Forest Star" model. The sub-criteria "threatened species" consists of vulnerable (VU), endangered (EN) and critical (CR) species.

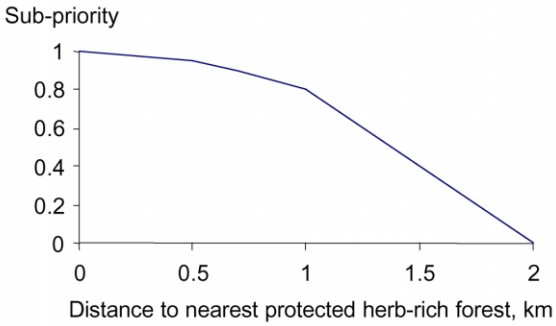

Figure 2. An example of the continuous sub-priority function.

priority values, the desirable characteristics were either absent (0) or present (1) in the area under consideration. The weights of the sub-criteria and criteria were defined partly by using pairwise comparison techniques (e.g. Saaty 1980) and partly they were set directly. Additive aggregation rule was used for calculating the biodiversity value (priority) of each offered forest area.

The priority value produced by the "Forest Star" model is not useful to the forest owner. S/he cannot compare it to the priority values of other areas. Therefore, the model's result has to be explained to the owner in a more understandable form. This is why the priority values describing the quality of the stands for protection are categorized into five classes designated

Table 1. A preliminary description of the star ratings.

Star rating	Priority	Description
*	≤ 0.100	The area possesses only modest biodiversity values.
**	≤ 0.200	The area possesses moderate biodiversity values. It includes some of the desired herb-rich forest characteristics.
***	≤ 0.300	The area is fairly suitable for protection. Typically, both the forest structure and the vegetation possess desired herb-rich forest characteristics.
****	≤ 0.400	The area is very good with respect biodiversity values. It possesses several desirable herb-rich forest characteristics.
*****	> 0.400	The area is of excellent value for protection.

by stars (Table 1). For example, a poor area in terms of biodiversity protection gets one star and an ideal object for protection gets five stars.

In addition to the star rating, the important characteristics found in the forest stand are explained in more detail to the owner both graphically (Fig. 3) and verbally. The forest owner can also be informed about the characteristics that are missing from the area.

The above-described model will be used when the ecological quality of the forest area is defined for the forest owner and the biodiversity protection authorities. The model will be augmented with the fourth main criteria before the local authorities start to use the model. The fourth criterion describes the authorities' attitude towards the cost of protection (i.e. the price demand of the owner). This is done either through a decreasing sub-priority function (the higher the price, the lower the sub-priority) and/or by including an additional multiplicative part (too high a price demand results in the rejection of the forest area) in the otherwise additive priority model. In this way, the "Forest Star" model provides the global priorities for the offered areas and ranks of the offered areas simultaneously with respect to their quality and cost.

4. Discussion

As such, the "Forest Star" model ignores the spatial relations of herb-rich forest patches protected in the NVB process. In principle, spatial relations could be taken into account by applying heuristic optimization algorithms in constructing the protection network (e.g. Siitonen et al. 2003). It was, however, less risky to launch development work with a robust and simple model in a new kind of planning problem. The structure and characteristics of the "Forest Star" model were kept very simple, which we think can promote its practical usability. However, spatial relations are not totally ignored in the project because spatial aspects related to previously protected area are included into the "Forest Star" model. Furthermore, so called agglomeration bonus (Parkhurst et al. 2002) will be paid to those forest owners, whose forest areas will be selected for protection during the pilot project, if these areas meet the distance criterion, i.e. if they are located close to each other. By doing this, the forest owners are encouraged to engage in co-operation in clustering their protection areas.

The "Forest Star" model describes the biodiversity value of the potential protection area offered by the forest owner. However, it does not indicate which would be the actual price demand based on the forest owner's holding-level forest management goals. In addition to the information contents produced by the "Forest Star" model, the forest owner's price definition process can be supported by calculating the pure economic impacts of biodiversity protection at the stand level (Kurttila et al. 2004a) and/or by calculating the minimum price demand,

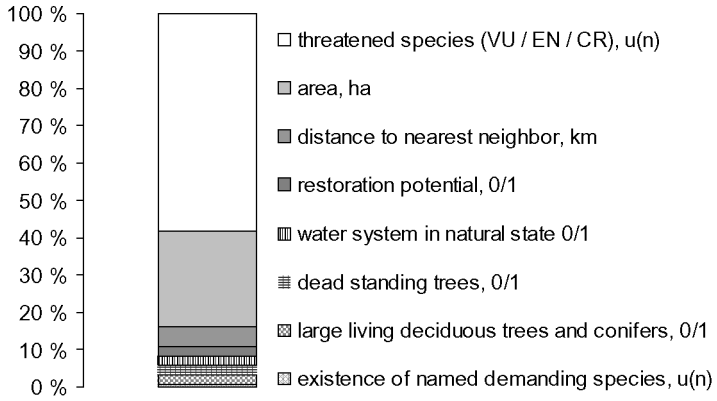

Figure 3. An illustration of the factors and their relative importance that are valuable in the forest area under examination. In the legends of the figure, u(n) indicates use of continuous sub-priority functions and 0/1 indicates use of discrete sub-priorities.

which does not endanger attaining the forest owner's holding level goals (Kurttila et al. 2004b, Pykäläinen and Kurttila 2004). The latter approach takes substitution rates related to consequences of different forest treatments on different stands into account at the level of the entire forest holding.

The priorities and sub-priorities of the "Forest Star" model are static. This means that it is impossible or difficult to try to achieve a protection area network that includes enough areas from different kinds of herb-rich forests. One possibility to solve this problem would be to develop several models. Also, the cost criteria of different models could be adjusted during the selection process so that all herb-rich forest types would be sufficiently represented in the protection area network.

References

Etelä-Suomen metsien monimuotoisuusohjelman luonnonsuojelubiologiset kriteerit. 2003 Suomen ympäristö 634. Ympäristöministeriö. 72 p.

Etelä-Suomen, Oulun-läänin länsiosan ja Lapin läänin lounaisosan metsien monimuotoisuuden turvaamisen toimintaohjelma. 2002. Ympäristöministeriö, Suomen ympäristö 583. 56 p. [http://www.ymparisto.fi/palvelut/julkaisu/elektro/sy583/SY583.pdf]

Gustafsson, L. and Nummi, T. 2004. Luonnonarvokauppa vuonna 2003. Luonnonarvokaupan kokeilun vuosiraportti. Lounais-Suomen metsäkeskus. 15 p. + annex.

Kangas, J. Store, R., Leskinen, P. and Mehtätalo, L. 2000. Improving the quality of landscape ecological forest planning by utilising advanced decision-support tools. Forest Ecology and Management 132: 157–171.

Kurttila, M., Pykäläinen, J. and Leskinen, P. 2004a. Supporting forest owners' decision making in voluntary biodiversity protection. Manuscript.

Kurttila, M., Pykäläinen, J. and Leskinen, P. 2004b. A utility-theoretical approach to defining the forest landowner's minimum price demand for a biodiversity object. Manuscript.

Parkhurst, G.M., Shogren, J.F., Bastian, C., Kivi, P., Donner, J. and Smith, R.B.W. 2002. Agglomeration bonus: an incentive mechanism to reunite fragmented habitat for biodiversity conservation. Ecological Economics 41: 305–328.

Pykäläinen, J. and Kurttila, M. 2004. Interactive method for supporting forest owners in biodiversity protection decisions. Manuscript.

Saaty, T. L. 1980. The Analytic Hierarchy Process, McGraw–Hill, New York. 287 p.

Siitonen, P., Tanskanen, A. and Lehtinen, A. 2003. Selecting forest reserves with a multiobjective spatial algorithm. Environmental Science and Policy 6: 301–309.

Store, R. and Nikula, A. 1998. Paikkatietojärjestelmät alue-ekologisessa suunnittelussa ja tutkimuksessa. Metsätieteen aikakauskirja – Folia Forestalia 3: 470–475.

Discussion Summary

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Opening presentations

One of the main points made was the importance of participatory planning in forest landscape restoration (FLR). Participatory planning emphasises the process of negotiation with and participation of a wide range of stakeholders. This element is important because people's needs change over time, and consequently the functions demanded from the landscape. As FLR emphasizes the restoration of forest functions within a landscape, the essential questions are: which functions should the landscape fulfil, and for whom?

Evolution of Forest Landscapes in Central and Northern Europe

The evolution of forest landscape and the relation between different landscape functions in Central and Northern Europe was introduced through a range of examples. The tensions that can exist between the various functions were highlighted through an example illustrating the tensions between the protective function of forests and other forest functions like hunting and recreation. In such cases communication with the local community (including forest owners) is essential. Participants considered criteria and indicators for sustainable forest management a valuable tool for monitoring and assisting decision making; in order to assess the performance of a forest's functions one needs to be able to measure them, the resulting information can then be used to inform management decisions.

The shift in ownership – privatization – of forests in some of the Eastern European countries has had a huge impact on the forest landscape, with problems such as clear-cutting and poaching needing to be addressed. Forest owners may seek to maximise their income as quickly as possibly through unsustainable clear-cutting and without securing regeneration, thereby endangering the forest ecosystem. Exposing poaching and unsustainable practises through the media can highlight these issues, thereby making governments more inclined to intervene. A good communication process with the local population can increase interest in sustainable forest management and lead to concerted action to tackle unsustainable practices.

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

International and Regional Forest Policy Frameworks

The main question under this theme dealt with the way in which forests can contribute to the landscape. It was stressed that one should not only cooperate with local stakeholders, but also with other sectors (e.g. agricultural and urban sectors) because of their influence on the landscape, and explore the possibilities for the integration of sectoral plans and policies.

With regard to international and regional forest policy frameworks it was stressed that it is essential to know what information exists before starting the dialogue. For that purpose a good overview of what has been collected and what is being done under the various relevant conventions is needed, because there is already some overlap in the various conventions. Another consideration here is the question of which scientists and other stakeholders should participate in the dialogue.

Furthermore, it was recommended that experiences in FLR (case-studies) should be taken as examples, which can be presented at international meetings as well as to local stakeholder groups. The lack of clear definitions of concepts related to FLR was raised. Definitions were perceived to be very relevant, a clear understanding of the scope of FLR was seen to be important especially with the increased interdisciplinary use of concepts and definitions. However, terminology should not be used as a constraint and maintaining the flexibility of the FLR approach was considered essential.

Forest Landscape Restoration in a Central and Northern European Context

One of the questions raised under this theme was the integration of landscape functions; which one should be preferred, fully segregated or fully integrated landscapes, or is there a middle ground? In general preference was given to integrated, multi-functional landscapes. However, one of the problems with integration of landscape functions is the fact that there are economic and political barriers; a highly specialized economy has lead to a highly segregated landscape, and policy-making takes place in different ministries. Improvement is, however, taking place, e.g. policy making is becoming more integrated. In addition – partly because of decreased wood prices – besides direct economic values, other landscape values are becoming more important from an economic point of view.

As regards public participation, it was mentioned that there are some difficulties in getting people interested in FLR exercises. Furthermore, an assessment and selection of possible stakeholder groups is necessary for setting up a good participatory process.

Instead of re-establishing a certain former structure of a landscape, a better approach over time would be the re-establishment of primary processes that shape the landscape. Furthermore, it should be realized that forests are not always the best solution in landscape restoration; other types of ecosystems (e.g. meadows, peat-lands) should not be forgotten. Also here it was stressed again that one should think about the functionality (and future functionality) of the landscape.

The carbon sequestration function of forests was also brought under the attention, although it was commonly agreed that reforestation can only provide a contribution to combating climate change, and is not the solution. Furthermore, when planning reforestation, one should be aware that it is important to use local genetic material, if possible, thereby increasing the naturalness of the landscape. Apart from that, taking into account that local people's needs regarding the landscape change over time, and keeping options for change open, should be kept in mind when planning and managing landscapes.

Conclusions

The issues raised by a series of excellent presentations on a cross section of the various aspects of FLR were considered in two working groups. In drawing together the outputs of the working groups the moderator of the final session summarised the key issues as follows:

- The advantage of the FLR approach is its flexibility. This flexibility can however make it difficult to understand what the FLR approach is and for which purposes it could be used. Therefore it was considered important to provide a better description of the approach that would facilitate its promotion amongst wider audience.
- Case studies can be used as a communication tool to illustrate FLR in practice.
- The presentations and discussions highlighted the importance of participation and the variety of ways this could be undertaken. In particular partnerships have demonstrated promising results in obtaining higher level commitment from those involved.
- In the promotion of FLR there is a need to consider various incentives and the role of education and advice.
- FLR provides a useful means to deliver on a range of international and European commitments on forests, thus emphasising the importance of making the links to the various processes,
- Before embarking on new research programmes, an overview of research related to FLR would be useful. Relevant research topics to be considered include planning and valuation.

Working Group Session

Working Group Session, WG 1

Moderator: Stewart Maginnis, IUCN
Rapporteur: Jaroslav Ungerman, Ecological Centre, VERONIKA, Czech Republic

1. FLR has many dimensions (ecological, social, economic, cultural)
2. FLR is an evolving concept
3. Functionality of the landscape is the criteria
4. Flexibility (needs change à future, every area is different and dynamic, land tenure changes)
5. Incentives
6. Education and advice
7. Avoid over-defining FLR, demonstrate through case-studies
8. Possibilities for incorporation into European processes

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

Working Group Session, WG 2

Moderator: Jeff Sayer, WWF International
Rapporteur: Elena Kopylova, IUCN

The following themes were suggested for the discussion:

Theme 1: Restoration of degraded forest areas and functions

- How FLR is different or similar to other approaches?
- How "restoration" should be interpreted in the Central and Northern European context?
- What are possible problems and challenges of FLR exercises?

The workshop began by reviewing the participants understanding of the basic concepts of FLR. This led us to agree on the following "explanations" of some of the terms in use at the meeting.

The Working Group was concerned about the different interpretation of terms and was trying to find common grounds and be explicit. Active debate took place around the terms "restoration", "forest landscape" and "degraded forests". What do we call "restoration" and who decides upon how a landscape should look like in a hundred years? Currently, we do not actually plan the management of the whole landscape, we just think what kind of forest values we want to maintain. Some sceptic remarks were voiced about the scale of a landscape level restoration as it can be very local and mosaic. Forest landscapes are very different in different parts of Europe. E.g. if you take a photo of a typical Finnish landscape – it will be only forests, but if you photograph Scottish landscape – you will see huge forest plantations in an open moorland. Most of the Working Group members felt comfortable with the fact that forest is only an element of a landscape. It was also agreed, that foresters have to look outside the forest, e.g. by considering the effects of forestry to other ecosystems and working professionally with other land users and sectors of the society.

Thus, the Working Group came up with the following definitions and descriptions:

A forest landscape is a landscape, which is characterized by forest ecosystems, but also includes other ecosystems. In Central and Northern Europe, forest landscapes often include agricultural, urban and aquatic ecosystems, which interact forests.

Forest restoration means not only returning to "original" or "natural" environment, but includes the following range of activities:

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

- Rehabilitation in the sense of improving ecosystem functions;
- Remediation, change, modification to improve the state of the forest;
- Enhancement in the sense of enriching the forest;
- Reclamation of urbanised lands or industrialised lands;
- Afforestation;
- Reforestation.

Landscape restoration is the set of activities aiming at the improvement of ecological, economic, social and cultural qualities of a landscape as a whole. It includes restoration of individual degraded ecosystems and takes into account landscape scale and regional processes.

Forest landscape restoration (FLR):

- Focuses on restoring forest functionality, that is goods, services and ecological processes that forests can provide at the landscape level;
- Is a flexible package of site-based techniques and recognises that managers have to prioritize management objectives at the site level (management objectives are e.g. timber, biodiversity, game, water protection, carbon sequestration, recreation etc; techniques can vary from pure ecological restoration through blocks of plantations to planted on-farm trees)

As for the relationship of FLR with other approaches, the participants agreed that other concepts like ecosystem management (EM), ecosystem approach (EA) and sustainable forest management (SFM) are useful for forest landscape restoration. FLR could provide a tool/approach to implement national forest programme at the landscape level.

Theme 2: Participatory methods in forest landscape level planning

- Who benefits from forest landscape restoration?
- How to involve different stakeholders?
- Role of private sector in FLR exercises?
- In which scales FLR can be used?

The Working Group discussed various topics coming to a conclusion that forests have become a social concern due to growing diversity of society's interests in forests. Public involvement is part of a broader societal and institutional context. A role of private owners was discussed and everybody agreed that forest owners' participation is clearly essential for balanced development of forest policies, practices, and legislation. The group talked about including other players into a planning and inviting local people for cooperation. If the landscape is of a certain value to a community, it has to be included into the planning process. Local people must be involved although it was noted that their interest in this involvement varies and is conditioned by the extent of environmental awareness in communities concerned. They should be informed and motivated. Due time has to be given for them to react as well as clear instructions to act. They will become our partners if they know what do we do and how they have to be motivated. Better information flows and higher environmental concerns can change the attitudes of local people. Although a view "the more players are involved, the more complicated it becomes" was voiced, encouraging voluntary participation of different stakeholders was agreed to be a mean to increase mutual understanding among various interest groups and values in forests. It will also help to avoid and/or manage conflicts in the use of forest resources.

Theme 3: Most urgent research needs for further development of FLR

- What could be common research themes in Central and Northern European context?

After having discussed the range of the above-mentioned issues, we came to the following fundamental questions:

- Why do we need to restore?
- Do we understand well enough the cause and the effect of the forest degradation?
- Do we do enough to try to understand?
- What do we want from the forest?

The common understanding of the Working Group was that quite a substantial knowledge already exists in forestry and the professionals are perfectly "equipped" with information, data and experience. A great deal of relevant research has already been conducted and this must not be re-invented. We just need to apply these tools!

The Working Group suggested putting accents to the following topics (do not start any NEW research, do not "reinvent the wheel" before an analysis of existing research):

- Valuation of forest functions (biodiversity, water resources, carbon sequestration etc.) is necessary as a basis for environmental payment schemes;
- Research is needed on planning processes / methods are needed for different situations (different ownership structures, ecological circumstances, urban environment etc.)?
- Landscape dynamics are not sufficiently researched (different components in the landscape and how they interact);
- Urban ecology aspects;
- Ownership issues and tenure;
- Subsidy schemes (payments for environmental services) need to be tested and new methods for their payment developed.

Theme 4: Strengthening the linkage between practical forest landscape restoration activities and regional/international policy processes

- What are the best ways to feed the outcomes into international processes?
- How the regional/international policy processes could support FLR initiatives?
- How forest landscape restoration should be promoted in Central and Northern Europe?
- What are possible partnership arrangements for FLR exercises?

As for the promotion of the FLR, the Working Group got the following key points to based upon:

- FLR should not reinvent the wheel – it is an additional measure to address problems of dysfunctional landscapes;
- "Look outside Forestry!" – the weakness of some international processes is that they are too sector-based;
- Clarity is needed on the problem being addressed (fragmentation, biodiversity loss, forest degradation);
- We do have the information; we just have to apply it!

Programme

6 October 2004

Opening of the Workshop

Moderator: Anders Portin, Ministry of Agriculture and Forestry, Finland
Rapporteur: Gerben Janse, European Forest Institute, EFI

9.00 – 9.15 Welcoming Remarks
Aarne Reunala, Ministry of Agriculture and Forestry, Finland

9.15 – 9.45 Opening Presentations

9.15 – 9.30 Lessons and Challenges of FLR – a WWF Perspective
Jeff Sayer, WWF International

9.30 – 9.45 Forest Landscape Restoration: A National Perspective of a Global Partnership
Mike Dudley, Forestry Commission, UK

9.45 – 10.05 Introductory Presentation: What is Forest Landscape Restoration?
Stewart Maginnis, IUCN

10.05 – 10.20 Questions and Discussion

Session 1: Evolution of Forests Landscapes in Central and Northern Europe

10.50 – 11.05 Background Paper: Evolution of Forest Landscapes in Romania
Peter Lengyel, UNESCO Pro Natura

11.05 – 11.15 Questions and Discussion

11.15 – 11.30 Restoration of Forests with Special Function in Austria
Fritz Singer, Ministry of Agriculture, Forestry, Environment and Water Management, Austria

11.30 – 11.40 Questions and Discussion

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

Session 2: International and Regional Forest Policy Frameworks

11.40 – 11.55 Background Paper: Assessment of Synergies between International Forest Related Processes
Alexander Buck, IUFRO

11.55 – 12.10 Ecosystem Approach and Ecosystem Management as Fundaments of Forest Landscape Restoration Strategies
Rodolphe Schlaepfer, Laboratory of Ecosystem Management, Swiss Federal Institute of Technology (EPFL), Switzerland

12.10 – 12.30 Questions and Discussion

12.30 – 13.00 General Discussion

14.00 – 15.15 Case study: The National Urban Park of Hämeenlinna. The park includes different habitats under the state, municipality and private ownership. The case study will be presented during a walk around the Aulanko area.

Hosts:
- *Jere Rauhala, Metsähallitus, Finland*
- *Ari Väänänen, Metsähallitus, Finland*
- *Timo Tuomola, City of Hämeenlinna, Finland*
- *Jukka-Pekka Flander, Ministry of the Environment, Finland*

15.45 – 17.00 Background Papers: European Forest Policy Frameworks

15.45 – 16.00 Forest Landscape in the MCPFE Commitments and Activities
Roman Michalak, The Ministerial Conference on the Protection of Forests in Europe (MCPFE) Liaison Unit, Warsaw, Poland

16.00 – 16.15 Pan-European Biological and Landscape Diversity Strategy
Ivonne Higuero, The Pan-European Biological and Landscape Diversity Strategy (PEBLDS)

16.15 – 16.30 EU Policies and Instruments Providing Opportunities for Restoration
Zoltan Rakonczay, DG Environment, EC

16.30 – 17.00 Questions and Discussion

Session 3: Forest Landscape Restoration in a Central and Northern European Context

17.00 – 17.15 Background Paper: Functional Forests in Multi Functional Landscapes – Improving the Adaptive Capacity of Landscapes with Forests and Trees
J. Bo Larsen, Forest and Landscape, Denmark

17.15 – 17.30 Background Paper: Participatory Methods in Forest Landscape Level Planning.
Pauli Wallenius, Metsähallitus, Finland

17.30 – 17.50 Questions and Discussion

17.50 – 18.00 Briefing on the Working Groups

Moderators of the groups:
Stewart Maginnis, IUCN
Jeff Sayer, WWF International

7 October 2004

Session 3 to Continue

Moderator: Mike Dudley, UK Forestry Commission
Rapporteur: Gerben Janse, European Forest Institute, EFI

9.00 – 11.40 Case studies

9.00 – 9.15 Restoration Activities of Greenpeace Russia
Svetlana Piskareva, Greenpeace Russia

9.15 – 9.30 Enhancing Biodiversity in Forest Landscape Restoration Projects
Eva Haden, Swiss Federal Institute of Technology Lausanne (EPFL)

9.30 – 9.45 Experimental Work on Restoration of Polydominant Spruce-broadleaved Forests after Long-term Economic Use
Vladimir Korotkov, All-Russian Research Institute for Silviculture and Mechanization of Forestry, Moscow, Russia

9.45 – 10.15 Questions and Discussion

10.45 – 11.00 Metsähallitus Natural Resource Plan: Case Western Finland 2004 – 2013
Petri Heinonen, Metsähallitus, Finland

11.00 – 11.15 The Scottish Forest Alliance
Gordon Harvey, The Scottish Forest Alliance, UK

11.15 – 11.40 Questions and Discussion

Working Group Session

11.40 – 12.30 Working Groups

WG1:
Moderator: Stewart Maginnis, IUCN
Rapporteur: Jaroslav Ungerman, Ecological Centre, VERONIKA, Czech Republic

WG2:
Moderator: Jeff Sayer, WWF International
Rapporteur: Elena Kopylova, IUCN

13.00 – 14.50 Working Group Session Continues

14.50 – 15.30 Plenary Session: Presentations of Working Group Results

Rapporteurs:
Jaroslav Ungerman, Ecological Centre, VERONIKA, Czech Republic
Elena Kopylova, IUCN

Discussion

Final Session: Conclusions

15.30 – 16.30 Conclusions based on each of the above sessions
- Understanding forest landscape restoration in Central and Northern European context
- Promoting forest landscape restoration in Central and Northern Europe
- Improving links between forest landscape restoration at the ground and international/regional policy discussions (including feeding the outcomes into UNFF, CBD, UNFCCC, UNCCD, MCPFE and PEBLDS).
- Further research needs on forest landscape restoration

Closing Remarks

8 October 2004

Field trip to Evo

Workshop:

Forest Landscape Restoration in Central and Northern Europe

6–8 October 2004
Hämeenlinna, Finland

List of participants

1. Aho Markku	Ministry for Foreign Affairs, Finland
2. Buck Alexander	International Union of Forest Research Organizations (IUFRO)
3. Dudley Michael	Forestry Commission, United Kingdom
4. Flander Jukka-Pekka	Ministry of the Environment, Finland
5. Haden Eva	Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland
6. Harvey Gordon	BP Exploration, United Kingdom
7. Heinonen Petri	Metsähallitus, Finland
8. Higuero Ivonne	United Nations Environment Programme, Switzerland
9. Häggman Bjarne	Forestry Development Centre Tapio, Finland
10. Itkonen Raimo	Metsähallitus, Finland
11. Janse Gerben	European Forest Institute
12. Jylhä Lea	Central Union of Agricultural Producers and Forest Owners (MTK), Finland
13. Kallonen Seppo	Metsähallitus, Finland
14. Karjalainen-Balk Leena	Ministry of the Environment, Finland
15. Kopylova Elena	IUCN Office for CIS
16. Korotkov Vladimir	All-Russian Research Institute of Sylviculture and Mechanization of Forestry, Russia
17. Larsen J. Bo	Forest & Landscape, KVL, Denmark
18. Lengyel Peter	UNESCO Pro Natura, Romania
19. Maginnis Stewart	IUCN
20. Martinmaa-Koivisto Päivi	Forestry Centre Häme-Uusimaa, Finland
21. Michalak Roman	Ministerial Conference on the Protection of Forests in Europe (MCPFE)
22. Pajari Brita	European Forest Institute
23. Piskareva Svetlana	Greenpeace Russia
24. Portin Anders	Ministry of Agriculture and Forestry, Finland
25. Pykäläinen Jouni	University of Joensuu, Finland

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

26. Päivinen Risto	European Forest Institute
27. Rakonczay Zoltán	European Commission
28. Rauhala Jere	Metsähallitus, Finland
29. Reunala Aarne	Ministry of Agriculture and Forestry, Finland
30. Røsberg Ingvald	Norwegian Forest Research Institute, Norway
31. Saares Sini	Ministry of Agriculture and Forestry, Finland
32. Sayer Jeffrey	WWF Int.
33. Schlaepfer Rodolphe	Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland
34. Singer Fritz	Ministry of Agriculture and Forestry, Environment and Water Management, Austria
35. Tukia Harri	Finnish Environment Institute, Finland
36. Tuomola Timo	City of Hämeenlinna, Finland
37. Ungerman Jaroslav	Ecological center VERONICA, Czech Republic
38. Wallenius Pauli	Metsähallitus, Finland
39. Veltheim Taina	Ministry of Agriculture and Forestry, Finland
40. Väänänen Ari	Metsähallitus, Finland

Introduction to Organisations behind the Workshop

Ministry of Agriculture and Forestry, Finland

The Ministry of Agriculture and Forestry and its administrative sector in Finland aims at creating and maintaining inter alia conditions for ensuring the sustainable and diversified use of renewable natural resources and for securing the quality of commodities obtained from these, as well as conditions for rural businesses and recreational activities in the countryside. The Ministry is responsible of Finland's forest policy with the objectives of promoting conditions favourable for wood production and the use of forest resources, safeguarding the diversity and recreational value of forests, and developing rural areas. The priorities have been set out in the National Forest Programme 2010 adopted in 1999. Promoting Finland's interests in international forest policy has become increasingly important.

Forest organisations subject to the Ministry of Agriculture and Forestry are the 13 regional Forestry Centres, Forestry Development Centre Tapio, Finnish Forest Research Institute Metla and Metsähallitus, which governs the state owned forests.

Ministry of the Environment, Finland

The Ministry of the Environment is responsible for nature conservation policies including biodiversity issues, land use planning, nature and landscape conservation and management, and for the promotion of the sustainable use of natural resources. Organisations with duties in forest conservation under the Ministry of the Environment are the Natural Heritage Services of Metsähallitus and the Finnish Forest Research Institute Metla which manage the state owned protected areas, the Regional Environment Centres, which are responsible for the regional implementation of forest conservation, and the Finnish Environment Institute.

European Forest Institute – EFI

European Forest Institute (EFI) is an independent and non-governmental research body conducting forest research at the European level. EFI is an international association guided by its members which form an extensive researcher network across Europe and beyond. Currently EFI has over 141 members from 39 countries. Main fields of research are:

Taina Veltheim and Brita Pajari (eds.)
Forest Landscape Restoration in Central and Northern Europe
EFI Proceedings No. 53, 2005

- Forest ecology and management
- Forest products markets and socio-economics
- Forest policy analysis
- Forest resources and information

The concept of forest landscape restoration is not a new idea. It builds on a number of existing rural development, conservation and natural resource management principles and approaches, bringing them together to restore multiple forest functions to degraded landscapes. Forests are addressed by several international and regional conventions and policy frameworks. Forest landscape restoration could make their implementation on the ground more visible.

The Global Partnership on Forest Landscape Restoration (FLR) was launched in March 2003 by IUCN, WWF and the Forestry Commission of Great Britain. It is a network of governments, organisations, communities and individuals who recognise the importance of forest landscape restoration and want to be part of a co-ordinated global effort.

In contribution to the global partnership, the Ministry of Agriculture and Forestry of Finland, in co-operation with the European Forest Institute and with financial support from the Ministry of the Environment of Finland organised an Expert Workshop on Forest Landscape Restoration in the Central and Northern European Region. The workshop took place in Hämeenlinna, Finland on 6–8 October 2004. These proceedings compile the papers and presentations from the workshop.

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