



International Institute for
Applied Systems Analysis
Schlossplatz 1
A-2361 Laxenburg, Austria

Tel: +43 2236 807 342
Fax: +43 2236 71313
E-mail: publications@iiasa.ac.at
Web: www.iiasa.ac.at

Interim Report

IR-01-039

Future Challenges to Ensure Sustainable Forest Management

Sten Nilsson (nilsson@iiasa.ac.at)

Approved by

Arne Jernelöv
Acting Director, IIASA

17 September 2001

Interim Reports on work of the International Institute for Applied Systems Analysis receive only limited review. Views or opinions expressed herein do not necessarily represent those of the Institute, its National Member Organizations, or other organizations supporting the work.

Contents

1. INTRODUCTION	1
2. FRAMEWORK OF THE SUSTAINABILITY CONCEPT	3
3. POLICY FRAMEWORK	4
4. FOREST LEGISLATION	5
5. CRITERIA AND INDICATORS	5
6. CERTIFICATION	8
7. INSTITUTIONAL FRAMEWORK	9
8. POLICY ISSUES FACING THE SECTOR	10
9. TRANSITION COUNTRIES	10
9.1 General Observations	11
9.2 Institutions or Institutional Framework	11
9.3 Policy Issues Facing the Forest Sectors	13
10. CHALLENGES FOR THE TRANSITION COUNTRIES	15
REFERENCES	16
APPENDIX	20

Abstract

This paper is based on a presentation at the international workshop “Forests and Forestry in Central and Eastern European Countries — The Transition Process and Challenges Ahead” held on 12–13 September 2001 in Debe, Poland. The workshop was organized by the Ministry of Environment, Poland; the Ministerial Conference on the Protection of Forests in Europe, Liaison Unit Vienna; the United Nations Economic Commission for Europe; and the Food and Agricultural Organization of the United Nations.

This paper presents a conceptual framework for sustainable development in the transition countries and the challenges ahead in achieving sustainable forestry in the transition countries.

About the Authors

Sten Nilsson is Counselor to the Director and Leader of the Forestry Project at IIASA.

Future Challenges to Ensure Sustainable Forest Management

Sten Nilsson

“Most established economic theory aims to explain marginal and incremental changes which is misleading on the context of sweeping and radical changes in entire systems. Moreover, conventional theory assumes the existence of underlying formal and informal institutional arrangements that are radically different from those prevailing in this region. But the failures and disappointments of initial efforts at transformation in parts of the post-communist world and the varied and ongoing problems in even the most successful cases have led most thoughtful reformers and analysts to back away from single-track assumptions. There is now much greater recognition that different paths of transformation and different destinations are likely to be generated by different histories (before and after the communist era); the different ways in which communism collapsed, and contrasting geography, social structure, ethnic composition, and cultural values” (Nelson et al., 1997:1–2).

1. INTRODUCTION

In order to discuss “Future Challenges to Ensure Sustainable Forest Management” I think it is important to outline my view and interpretation of sustainability and sustainable forest management.

At the 1992 United Nations Conference on Environment and Development, a number of forest principles were stated, one of which was: *“The subject of forests is related to the entire range of environmental and development issues and opportunities, including the right to socioeconomic development on a sustainable basis”*. Nilsson (1991), Seip (1996), Duinker et al. (1998) and Nilsson and Gluck (2001) discuss different concepts of sustainability. The concept that is most in line with the United Nations principle mentioned above is: *“increased human welfare and aggregated benefits from the forests”*. This also corresponds with FAO’s Strategic Plan for Forestry (FAO, 1997): *“to enhance human well being through the sustainable management of the world’s trees and forests”*.

This means that I regard the overall objective with *sustainable forest management* is to *increase the human welfare with production of wood, securing biodiversity, sequester greenhouse gases, etc., as a means to reach the overall objective.*

The sustainability concept is going, and will continue to go, through an evolving process over time due to changing societal values, changing socioeconomic conditions, changing political realities, etc.

In order to achieve sustainable forest management with the goal of improving human welfare, we have to address all aspects of human welfare across temporal and spatial scales that we can manage through our use of forests. This can be illustrated by a simplified matrix in which a set of indicators is used to evaluate the achievement of goals for a specific set of values for a specific geography (management unit, region, country) and time (short- to long-term) (Figure 1).

In this concept, the evaluation of sustainability considers the impact of management activities equally across human welfare aspects. These criteria are not only considered locally for current time scales but also “nested” across management scales (international, regional, local) and temporal (annual, mid- and long-term). Thus, we must operate with a three-dimension approach in which there is strong interaction and trade-off between the different spatial levels and the different aspects of sustainable forest management, all of which are influenced by time.

Our conclusion from the simplified Figure 1 is obvious: sustainability cannot be achieved by working with one or a few segments of the matrix. It is also obvious that fulfilling all aspects of sustainability, at all spatial levels and at all times, is a difficult task and is the platform for conflicts among stakeholders in forestry (Nilsson and Gluck, 2001).

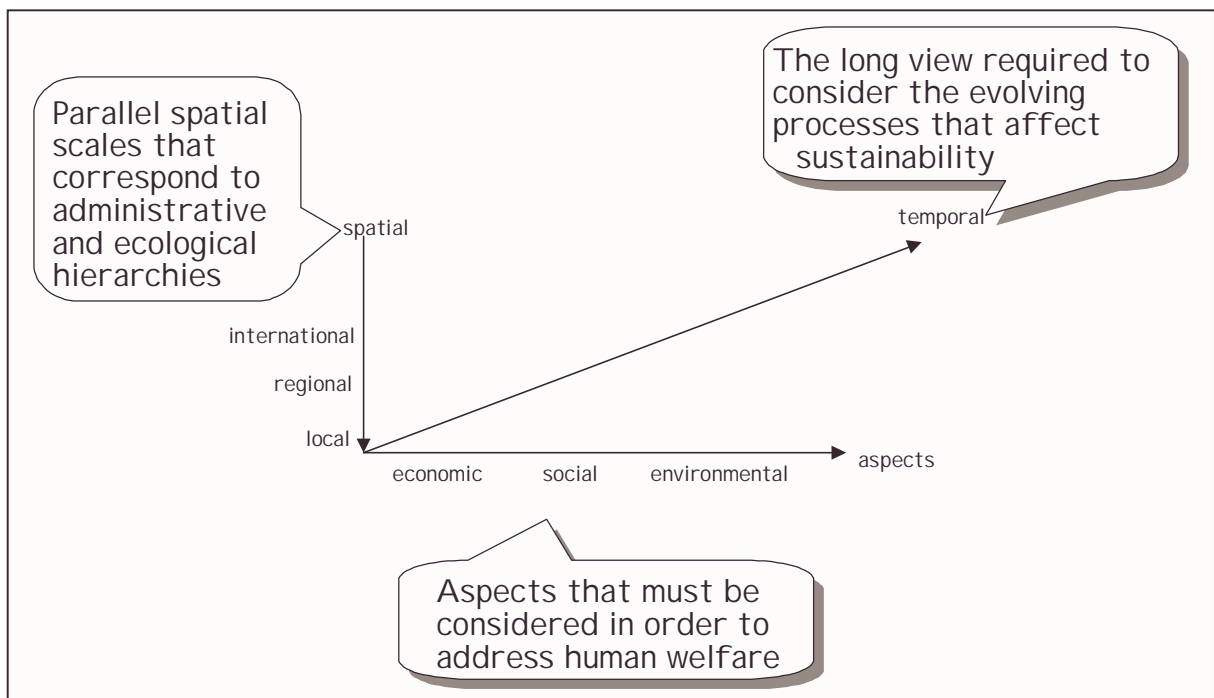


Figure 1: Three Dimensions of Thinking about Sustainability.

Source: Nilsson and Gluck (2001).

While the goals for forestry can be generalized into a reasonably common concept of sustainable forest management, as has been done on the international level in recent years, the physical characteristics of the forests as well as the driving forces underlying the current forest situation are diverse. This implies the necessity to use a variety of tools to progress towards sustainable forest management. It is also important to stress that forestry is only one sector of society, while the need for sustainability encompasses all aspects of our societies. There are many strong links between forestry and several other sectors; links that often have a direct impact on the management of forests.

Criteria and indicator processes as well as certification have been seen as major tools to reach sustainable forest management. However, reliance on these tools is likely to be insufficiently successful. There are strong indications that other means must be also utilized — and particularly so when balancing conflicts between different goals, both within forestry and between forestry and society as a whole. Today, such mechanisms are largely missing, which decreases the value of the concept of sustainability. Peck and Descargues (1995) and Solberg and Rykowski (2000) discuss that in many countries the forest sectors are small compared to the total economy of the countries but the importance of the sector is high from regional development and environmental points of view. Thus, policies implemented in other sectors are very important for the forest sector. The authors state that policies related to land-use, energy, environment, trade, transport, regional development, and the general economy heavily influence the functioning and potential of the forest sector. Few countries, if any, have yet managed to link forest policies with policies in other sectors of the economy to fulfill overall sustainability objectives of the society. It is of special importance to integrate forest policy development with the policies and strategies for rural development. This is an important issue for the future political agenda (Presidency of the European Community, 2001; Nilsson, 2001).

2. FRAMEWORK OF THE SUSTAINABILITY CONCEPT

Common opinions exist that criteria and indicators and certification will solve the sustainability problems in forestry. But, as stated above, this is not the case as a number of additional tools are required. In the following paragraphs I will discuss my idea on a framework of the sustainability concept in forestry, which is outlined in Figure 2.

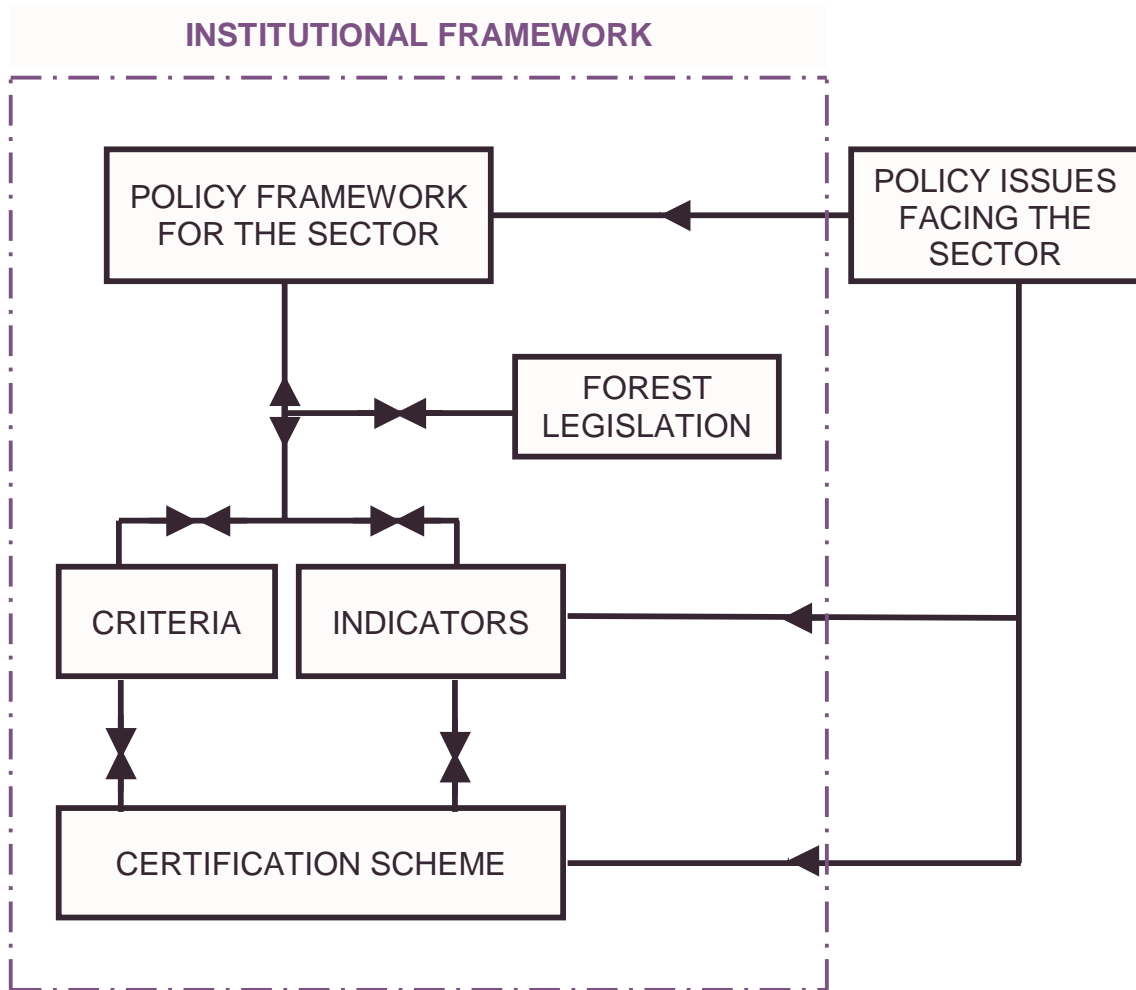


Figure 2: Framework of the Sustainability Concept. Modified from Nilsson (2001).

3. POLICY FRAMEWORK

Solberg and Rykowski (2000) recently made a literature review of forest policies in the ECA region and in some OECD countries and conclude: *“A long range of studies is found of various forest policy instruments, but nearly all of the studies only describe the instruments. Very few studies exist which analyze the effectiveness and costs and benefits of various instruments. Even less studies exist which evaluate alternative policy instruments”*.

In recent years, the FAO European Forestry Commission (UN, 2001) reports a lot of promising developments in the European forest policy frameworks (including the countries in transition). Examples of these developments are statements or modifications of broad policy objectives, national debates on forest policy issues, national forest programs, etc. There is a wide difference between countries in their approaches to the policy framework and methods of formulating forest policies, even when the content of the policies themselves is broadly similar (UN, 2001).

According to my view the policy framework should consist, in one way or the other, of the following components: Overall Societal Goals for the Forest Sector, Overall Forest Policies, Detailed Sector Goals for Sustainable Forestry, and Regional Detailed Goals. In the Appendix, I have used Sweden (National Board of Forestry, 2000) as an example to illustrate these components.

Bluntly expressed, the policy framework is the process where *we formulate what the society wants from the forest sector and forestry in the future* (Apsey *et al.*, 2000; Nilsson and Gluck, 2001). Within the sustainability concept, I think the policy framework is one of the most important components. It is in this component that society should have an intense debate on setting conflicting and balancing goals. Balancing of goals is required both within the forest sector and between forestry and society. To a large extent, this balancing act is missing today. There is a need to work with an objective oriented approach taking all of the relevant development trends into account within the policy framework.

In spite of positive reports (UN, 2001) on the progress of development of the policy frameworks in Europe, there are difficulties in identifying how many of these changes are implemented in reality and how much is a mere paper product. This requires detailed in-depth studies. There are also concerns on how consistent the different components of the policy framework are in reality and how holistic and participatory are the used approaches.

4. FOREST LEGISLATION

Forest legislation is a tool that tries to move development towards the goals set in the policy framework. Thus, there should be a strong link between the policy framework and forest legislation. In most countries, forest legislation is not sufficient in order to reach the objectives of the policy framework. To reach these objectives, forest political measures and voluntary actions by the forest owners beyond forest legislation are required.

5. CRITERIA AND INDICATORS

Over 150 countries are currently involved in one or more international process that aims at the development and implementation of criteria and indicators for sustainable forest management (Palmberg-Lerche *et al.*, 2001). The ultimate goal with this system is to promote improved forest management practices over time taking into consideration the social, economic, environmental, cultural, and spiritual needs of the full range of stakeholders in forestry.

The transparency concerning the actual state and trends of forestry that follows from open dissemination of the indicators is, in itself, a vital tool and has resulted in improved international forest reporting (Duinker, 2000).

As an entity, the focus on “criteria and indicators” may be quite misleading. Criteria are *a set of values*, while indicators are *a set of core data*. These are two very different concepts and I think it is important to see them as such.

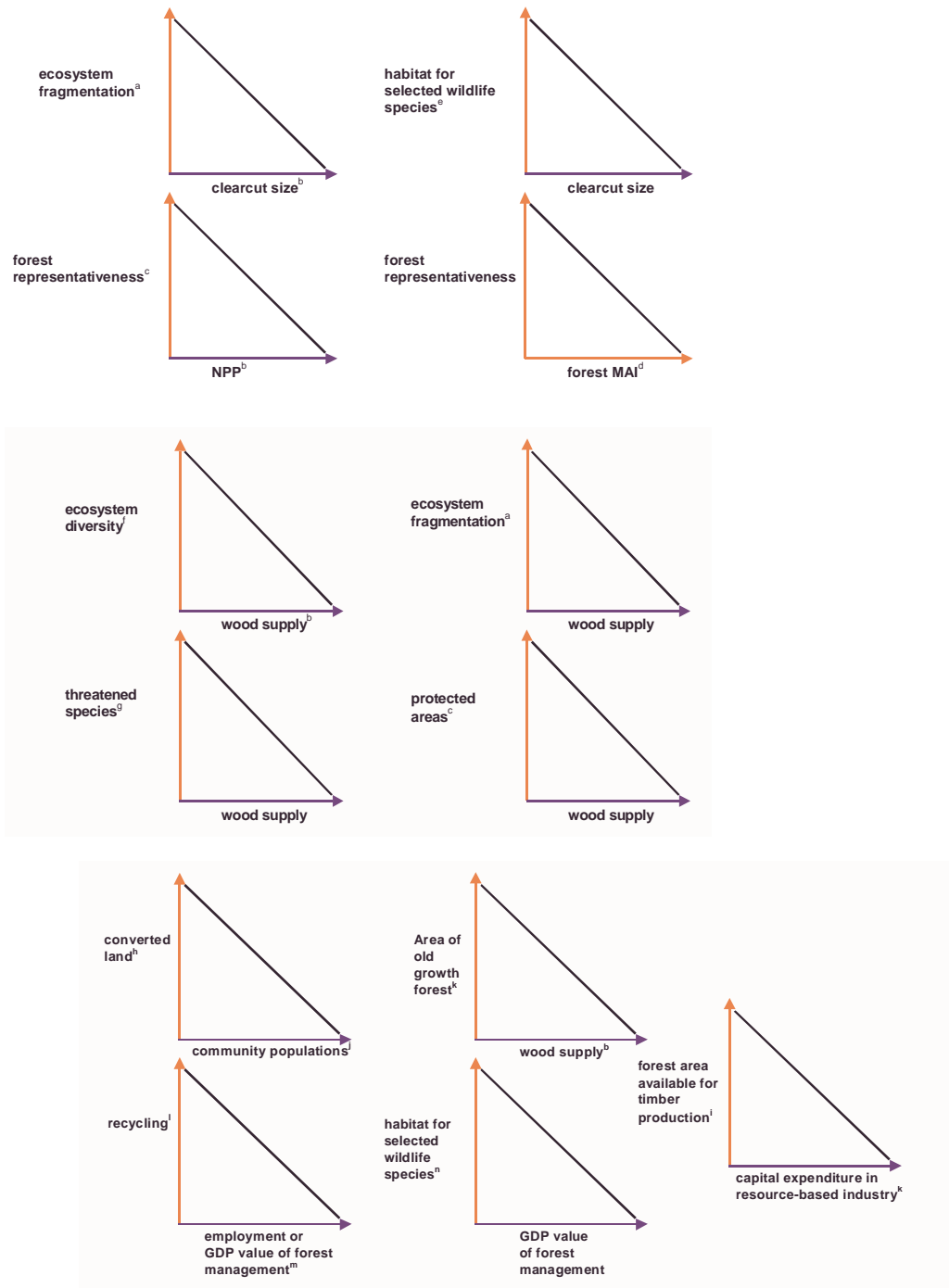
In spite of the positive experiences of criteria and indicators, there are a number of limitations to consider:

- The strict hierarchy of the system link individual indicators strongly with one single specific criterion.
- This may be misleading; a single indicator may constitute valid input also when applying other criteria.
- A major difficulty is that the quantitative indicators are not reasonably well defined, which causes confusion.
- Also, in many cases the qualitative indicators are so vaguely defined that they lose their meaning.
- Currently, there is an imbalance in the number and strength among economic, social, and ecological indicators.
- It is not demonstrated how and how much the current indicators contribute to sustainable management.
- There are substantial conflicts and contradictions among the current set of individual indicators (see Figure 3 with examples from Canada, Nilsson (2000a) and Nilsson and Gluck (2001)).

Duinker (2000) supports this in the form of technical problems and pitfalls with criteria and indicators and that they are all indicative of a lack of discipline in: “(a) *identifying and naming indicators*, (b) *classifying indicators*, (c) *evaluating indicator quality*, and (d) *applying indicators in the sense of generating useful data*”.

However, the major concerns deal with the linkage between the “criteria and indicator system”, the policy framework, and the sustainability concept. To focus solely on criteria and indicators is not likely to be productive from a sustainability point of view. In executing sustainable forest management, it is necessary to use all relevant values and data and *not only core sets*. Therefore, there is a *strong need to harmonize the current sets of national criteria and indicators with the national policy framework issues*.

In the future, it may be relevant to distinguish between three levels of indicators. The first is the international level, where the internationally agreed indicators are reported in a common format. The second is the national level. A third level, needed in the future, are indicators for regional or local conditions (Nilsson, 2000a). The two latter sets have to be linked with the issues of the national policy frameworks.



^a CCFM indicator 1.1.4; ^b From Ontario forest management planning manual; ^c CCFM indicator 1.1.3; ^d CCFM indicator 2.3.1; ^e From Ontario forest management planning manual — in particular those species requiring larger tracts of homogeneous habitat may be adversely affected by smaller harvest areas distributed over larger areas; ^f CCFM element 1.1; ^g CCFM indicator 1.2.1; ^h CCFM element 4.2; ⁱ CCFM indicator 5.1.2; ^j From Ontario forest resource assessment; ^k Duinker (2000); ^l CCFM indicator 4.4.1; ^m CCFM element 5.3; ⁿ CCFM indicator 5.1.5.

Figure 3: Trade-offs Between Sustainability Indicators. Examples from Canada.
Source: Nilsson and Gluck (2001).

6. CERTIFICATION

The original purposes of market-oriented certification are: (1) to improve the quality of forest management, and (2) to provide market advantage or improved access for products from sustainably managed sources (Bass and Simula, 1999). Certification of forest management is defined as an established and recognized verification procedure that results in a certificate on the quality of forest management in relation to a set of predetermined criteria based on an independent (third-party) assessment. Verification takes place through an audit. In assessing forest management quality, it is established whether the performance requirements, expressed as criteria and indicators (standards), are complied with in a defined forest area. The criteria are generally associated with sustainable forest management and may often consider various sets of internationally agreed criteria and indicators (Bass and Simula, 1999).

Most of the developments in forest certification have focused on market-oriented schemes. Despite the attention certification is receiving and the substantial promotion given to it, certification is still in its infancy. Many certification systems are under development but only a small number are operational. Schopfhauser (2001) estimates that there are some 70 systems in operation or being developed currently worldwide but only some 90 million ha is certified (Bourke, 2001).

Thus, there are reasons to see certification and the criteria and indicators system as complementary efforts with largely the same final aim — to promote the sustainability of forest management. However, their functions are markedly different. As illustrated earlier, criteria stands for core values, while up-to-date dissemination of results on indicators supply the status on core data. A certification standard constitutes an agreement between consumers and producers of forest products and/or services. I therefore see certification as a pure market instrument.

Contrary to many statements, the certification process in reality is not driven by demand from concerned consumers. It continues to be pushed, and in some cases forced, by environmental groups, retailers, city and regional councils, and forest owners who see the need to be able to prove their management in order to ensure access to some markets and/or get a market advantage over other suppliers.

The key to operate a certification system is the credibility of the system among the consumers. But to attain credibility in a market place is difficult. A minimum requirement is the broad involvement and acceptance of a standard by a wide group of stakeholders. Process-driven by governments or other single stakeholders may fail in this respect. Another key to credibility is transparency. With a strong market connection, there are obvious risks that any system may be reduced to a public relations tool only.

There are still many issues to be resolved with respect to certification. Bourke (2001) has identified some of these:

- What is the market for certified products?
- How will certification contribute to improving forest management where mismanagement is greatest?

- Will certification, intentionally or unintentionally, act as a non-tariff barrier to trade and discriminate against those unable or unwilling to become certified?
- How should wood from plantations and wood from areas being converted to other land uses be considered?

It is also important to point out that a large portion of forest products are used for auto consumption, and never reach any market. About half of the world's harvest is used for energy purposes and certification will have a limited impact on these volumes (von Mirbach, 1997). Therefore, the global impact of certification is limited.

A number of limitations with certification have been outlined by von Mirbach (1997). These are: (1) certification does not provide an effective mechanism for internalizing social and environmental costs, (2) certification will not change bad land use decisions, and will not correct policy failures, (3) certification tends to discriminate against small producers, (4) certification is not efficient in addressing broad-scale issues, and (5) certification does not address many of the underlying causes of forest degradation and deforestation.

Recently, the environmental non-governmental organizations (ENGOs) have started to question the certification and address what they regard as a series of ecological, social and economic myths used by supporters of forest certification (e.g., Barry, 2001; Freris and Laschefski, 2001). This development is not surprising. The ENGOs expected certification to be an important tool to protect forests but they now see the nature of the beast and that it is developing to what it was designed for, namely a market tool.

I think it is important to point out that most of the disputes over forest management are based on fundamental disagreements about values and there are limited possibilities that certification will solve these disputes.

My major concern about current certification is the same as for criteria and indicators, namely the missing link with the goals of the policy framework discussed above. *Certification systems without such links are likely to be a contaminating factor, since they may undermine the credibility of certification as such.*

7. INSTITUTIONAL FRAMEWORK

There seems to be consensus that the institutional framework constitutes a major bottleneck for the sustainable development of the forest sector in many countries (Ljungman, 1998; Carlsson *et al.*, 2000; Nilsson, 2000b). Reforms are therefore required in the forest administration and in the institutional framework. Ljungman (1998) claims that the main obstacle is the presence of powerful stakeholders with an interest in the status quo.

Institutions or the institutional framework should be understood as “the rules of the game” in a society, not as organizational entities (North, 1990; Crawford and Ostrom, 1995). Thus, an institutional framework consists of those formal and informal rules that are de facto used by a set of actors. Institutions can be defined “*as the legal,*

administrative and customary arrangements for repeated human interactions, ... the prevailing institutional framework in a society consists of formal and informal rules” (Pejovich, 1998). This implies that the institutional framework of a society is composed of a large number of institutions. The aspects of the institutional framework are coordination between organizations, legislation, property rights, tenure policies, revenue policies, land-use policies, transparency, reliable information and data, etc. Stiglitz (1999) states: “*economic development and transition to something new is more a matter of institutional transformation than economic management*”. IIASA has carried out tremendous efforts in analyzing the institutional framework in Russia.¹ The lesson learned from these activities and from analysis of the Canadian situation (Apsey *et al.*, 2000) is that *there are limited possibilities to achieve sustainability without substantial changes in the existing institutional frameworks and the design of the institutional framework must be in harmony with the rest of the sustainability concept* illustrated in Figure 2.

8. POLICY ISSUES FACING THE SECTOR

The political, social, and economic conditions are changing rapidly. In order to cope with these changes the framework of the sustainability concept has to be adaptive and regularly revised in order to deal with these changes. *Without an adaptive concept with regular revisions, the existing Policy Frameworks, Forest Legislations, Criteria and Indicator Systems, Certification Schemes and Institutional Frameworks will be counter-productive from a sustainability point of view* (Nilsson, 2001). Solberg and Rykowski (2000) conclude that “*policy issues are often complicated and considerable uncertainty exists both regarding dose/response effects of policy means, goal specification, policy adoption, policy implementation, and future trends influencing the forest sector. In addition public and private objectives and preferences change over time and new knowledge is obtained. It is therefore important to follow an adaptive approach*”.

Thus, it is important to establish an efficient adaptive *mechanism for updating* the content of the framework for sustainability.

9. TRANSITION COUNTRIES

So far, this presentation is rather general and by that rather boring. But trying to be more specific about the current state of the sustainability framework in the transition countries is a dangerous path to walk. I can only argue that I have detailed updated knowledge about the situation in Russia and in some of the Baltic countries. Therefore, I have to rely on presented aggregated information. But, to really understand the status of the sustainability framework in the transition countries, detailed studies are required (similar to what IIASA has done in Russia). My source of information on a general statement on the status of the sustainability framework is the individual country reports at the European Forestry Commission meeting in 2000 (European Forestry

¹ The reports are available on the Internet: <http://www.iiasa.ac.at/Research/FOR/>.

Commission, 2000) and a review presented by Solberg and Rykowski (2000). And, as such, I am walking on very thin ice.

9.1 General Observations

Only about one third of the transition countries delivered national country reports to the European Forestry Commission last year. A qualified guess would be that the remaining transition countries have substantial work to do in order to come up with solid frameworks for policies and sustainability.

It is rather hard to get a concrete picture from the existing reports on if and how the developed frameworks are operating in the real world. This would require substantial in-situ work. From the reports, I get the impression that emphasis is so far put on the forest legislation and not the total picture according to Figure 2 with respect to the framework.

Regarding the institutions, the reports mainly discuss the organization of the institutions. As illustrated earlier in the text, the domain of institutions is much more than just the organization and responsibility of the institutions in the forest sector. The reports are missing the balancing of policies between forestry and other sectors of the society. Many other sectors and developments in the society outside forestry are influencing the development of the forest sector. There is not much mentioned in the reports on the implementation of criteria and indicators. In a similar way, it can be concluded that certification is in its infancy in the transition countries and some have chosen to go for Mandatory Forest Certification, for example Russia (Strakhov and Miettinen, 2001), which is not following the mainstream certification development.

9.2 Institutions or Institutional Framework

I have stated earlier in the paper that without an efficient institutional framework in a broad sense there are limited possibilities to reach sustainable development of the forest sector and sustainable forest management. However, as stated earlier, there are large difficulties to judge the efficiency of changes in the institutional framework without deep in-situ studies. From the many studies we have done on the institutional framework in Russia, I have picked one to illustrate the problem (Mabel, 2000). Despite nine years of sweeping reforms, meaning decentralization of the government's administrative and management responsibilities to the regions and the provincial state's broad legislation efforts to gain direct control over the territory's forest wealth under its jurisdiction, there is a diffuse system of power and multiple locations of state institutional authority that govern access, use and control over forest resources. Mabel (2000) concludes: *“despite the legislated disempowerment of the local state, the old institutions have largely persisted in their prior authority and continue to control the relationships of access and exploitation at the point of interaction with the forest users. What has emerged in practice, are multiple locations of authority manifested in multiple processes of authorization, overlapping jurisdiction, a flexibility and negotiability of terms at every level of decision making, and a labyrinth of relative power relationships that govern the process of participation. The consequent tensions among institutions*

has fostered an environment of political-economic instability in the forest sector". Vasenda (2001) has analyzed all our case studies on the institutional framework in Russia in order to answer the question: "Based upon existing theory of institutional change, what forms of change to the institutional framework must occur in order for the forest sector (in transition countries) to become both economically viable and developed in a sustainable manner?" She concludes that we lack a refined theory of institutional change in the transition countries.

Carlsson *et al.* (2000) and Vasenda (2001) illustrate some of the institutional problems in the Russian forest sector (see Table 1). Table 1 illustrates that the institutional problems are present at all levels in the society affecting the forest sector.

Table 1: Examples on Institutional Problems of the Russian Forest Sector.

Constitutional Level:

Contradictions and inconsistencies in legislation,
Unspecified, unclear property rights,
Draconian tax code,
Political instability.

Collective-Choice Level:

Artificially low timber prices,
High interest rates (penalize forest enterprises that lack working capital to support their activities during periods between production),
Increase in instances of barter,
Prevalence of corruption and criminalization,
Evolution toward a virtual economy,
Lack of investment in secondary wood industries.

Operational Level:

Increase in illegal harvesting,
Increased evidence of degradation and devastation of the forest,
High transaction costs,
Lack of funding for forest management operations,
Forest enterprises run at a loss,
Timber shortages.

Carlsson *et al.* (2000) convincingly show from our case studies in Russia that informal constraints embodied in customs, traditions, and codes of conduct constrain the development possibilities towards sustainability in the Russian forest sector and that an "institutional deadlock" is at hand. There is also an apparent lack of trust in the society. In Table 1, three layers of institutional problems (or three layers of rules of the institutional arrangement) were identified and they have to be coordinated and, within the public authorities (the visible hand) and the market (the invisible hand), operate in harmony. This is not the case in Russia (Carlsson *et al.*, 2000).

Kallas (2000) has studied the transition of the institutions within the forest sector in Estonia. He confirms the impressive changes reported by the UN (2001) and in the

country national reports (European Forestry Commission, 2000). But he also presents a somewhat different picture. Kallas (2000) states that the policy formulation process has had its successes, such as approval of the National Forest Policy, reforms of the public forestry organizations, and empowerment of the stakeholder role within the society. However, forest policy implementation has brought only limited results in other components of the policy and sustainability frameworks. He also points out that private groups are already using methods other than participation in public dialogue for achieving their desired goals. Kallas (2000) states: “*having greeted the policy formulation initiative with much enthusiasm, the stakeholders, not being able to significantly influence the outcome, have not been supportive of the policy implementation. Misuse of participation makes the policy formulation process a pertinent example of how the violation of unwritten rules can trigger unwanted policy actions*”.

With the above discussion I have tried to illustrate that it is more or less *impossible to judge if the changes in the institutions presented in the national country reports (European Forestry Commission, 2000) will lead to policy success or policy failure*. The issue is much more complex than described.

In Section 8, I underlined the need for an efficient mechanism for revising policies and the policy framework. Kallas’ (2000) findings conclude that the institutional framework in Estonia is certainly *not allowing for the establishment of a self-enforcing policy revision process*.

The positive change of the institutional framework in Estonia (as discussed earlier there are a number of success components) also illustrates that in order to introduce changes and achieve results with respect to policies and the policy framework, *the initiative for the change must come from inside the organization whose operations are to be altered. Also the “right” leaders for the change have to be found* (Kallas, 2000). The same finding is continually occurring in IIASA’s case studies in Russia. This is further confirmed in the policy exercises we have carried out in some of our case study regions in Russia (Olsson, 2001).

The important lesson is thus, that the required changes in the policy, sustainability, and institutional frameworks *can only be done in a meaningful way by the people in the transition countries*. Outside experts cannot do it. The latter can only help in identifying problems in the existing frameworks. In addition, it can be concluded that the required changes *do not require huge financial resources but a substantial political will*.

9.3 Policy Issues Facing the Forest Sectors

The forest sectors of the transition countries have faced many difficulties during the last 10 years. Some of them are:

- Collapse of the domestic market for forest products.
- Difficulties in establishing pricing systems that reflect the real value of the forests and stimulate market development.
- Outdated institutions and legislations.

- Conflicts between central and local governments.
- Corruption and illegal harvest and trade.
- Privatization of forest industries with insufficient reinvestments.
- Disappearing governmental budgets for forest management.
- Restitution of forest land to owners with short-term profit maximizing behavior.
- Undefined balance between private and public, etc. (Solberg and Rykowski, 2000).

In order to achieve a sustainable forest sector and sustainable forest management in the transition countries it is crucial to achieve economically viable sectors. In order to do this there is a need in the future to take into account all issues influencing the competitive position of the forest sectors in the transition countries. This requires the earlier mentioned self-enforcing policy revision process.

The UN (2001) document on forest policies and institutions identifies some of the economic viability issues hampering sustainable forest management:

- Declining timber prices and forest profits;
- The environmental and social values are not valued at the market place;
- Forestry has a marginal role in the national economic planning;
- The transition process in the forest sector is determined by more general transition related factors in the transition countries; and
- Lack of infrastructure, etc.

However, there are very strong links between the issue of the institutional framework and the economic viability of the forest sectors. It can be described as a chicken and egg problem and in many cases there are difficulties in identifying what is the chicken, respectively the egg.

But there are also developments outside the forest sector in the transition countries influencing the economic viability or the economic competitiveness of the forest sectors in these countries. An example of these developments is the collapse of the domestic market for forest products in the transition countries. During the transition, the domestic markets for forest products have declined by a volume corresponding to some 80 million m³ of roundwood equivalents. In order to achieve economic viability in the forest sectors, it is of high importance to introduce relevant policies to get domestic consumption back on track. Another example is the increased supply from the Southern hemisphere driven by increased wood supply from plantations (Nilsson and Gluck, 2000).

Hazley (2001) has studied the cluster of forest-based and related industries in the Central and Eastern European countries (CEEC) (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia). As expected, there are not only huge wage differences between the CEECs and the EU 15 but also the productivity (value added per employee) is about three times higher in the

EU 15 on average. The CEEC forest-based and related products export to the EU 15 (in US \$) has increased by about three times during the transition period and the EU 15 export of the same products to the CEEC's has increased by about four times. The CEEC's share of the EU import is substantial in many products but with low value added products and high market value products have low market shares. The CEEC's are strongly competitive due to low prices in sawnwood products, wood panels, low-grade packaging papers, and furniture products.

Credit Lyonnais (2001) has recently released a study on the competitiveness of the Russian pulp and paper industry. The analysis shows that Russia has a substantial cost advantage for pulp and paper products to most markets due to currency depreciation, low wage costs, low wood costs, low historic capital costs, low gas costs, and low growth potential. But, at the same time, the Russian industry has to fight indigenous cost inflation, endemic over-manning, high costs of imports of input materials, lack of reinvestments, high oil/coal costs, Russian bureaucracy everywhere, lack of capital, taxes, remote locations, lack of infrastructure, limited integration, local politics, and labor problems. All of this hampers Russia to utilize its many advantages.

These two studies show that it is crucial for the transition countries to move towards higher value added products and to get rid of the hindrances for utilizing their existing cost advantages. This is necessary in order to reach economic viability — a prerequisite for sustainable development and sustainable forest management.

Therefore, it is of importance for the transition countries to continuously analyze their competitive position and the hindrances for utilizing existing cost advantages. These analyses should be reflected and translated into revisions of the policy, sustainability, and institutional frameworks. The revised policies should concentrate on eliminating the hindrances for utilizing existing cost advantages.

Also, these illustrations show that *huge potentials exist* in improving the conditions in transition countries *by implementing efficient frameworks* discussed in this paper.

This illustrates the need for transition countries to continuously do analyses on factors in and outside the countries' sectors affecting the economic viability of the forest sectors. To make this possible the transition countries probably have to develop new analysis frameworks in order to support the policy, sustainability, and institutional frameworks in an efficient way.

10. CHALLENGES FOR THE TRANSITION COUNTRIES

Based on the discussion in this paper, I will summarize the challenges for the transition countries to ensure sustainable forest management in the future:

- To establish a holistic framework, somewhat in line with Figure 2, as a Sustainability Concept.
- To make major efforts in setting the objectives/targets for the future development of the forest sector with respect to ecology, economy, and social

aspects. These objectives should accordingly be implemented in the developed Sustainability Concept.

- To introduce a mechanism to balance conflicting objectives between forestry and the rest of the societal demands and within forestry.
- To use a variety of tools within the Sustainability Concept in order to reach sustainable forest management.
- To harmonize the other components of the sustainable frameworks with the intentions expressed in the policy framework.
- To develop an Institutional Framework that is in line with the rest of the Sustainability Concept. Major efforts have to be allocated to this issue.
- To establish an adaptive self-enforcing policy revision process. And,
- To establish an analytical framework for analyses of policy issues to include in the policy formulations.

But as illustrated in the presentation, the way to success on sustainable forestry is more an issue of human behaviors than issues of trees and forests.

By moving in this direction the transition countries will have a great opportunity to secure sustainable forest management.

REFERENCES

- Apsey, M., D. Laishley, V. Nordin and G. Paille (2000). The Perpetual Forest: Using Lessons from the Past to Sustain Canada's Forests in the Future. *The Forestry Chronicle*, **76** (6), pp. 29–53.
- Barry, G. (2001). Serious Concerns Regarding Forest Certification. Forests.org Inc. Available on the Internet: <http://www.forests.org/>.
- Bass, S. and M. Simula (1999). Independent Certification/Verification of Forest Management. Paper presented at the World Bank/World Wide Fund (WWF) Alliance Workshop, 9–10 November, Washington DC, USA.
- Bourke, J. (2001). Forest Certification — Current Status and Recent Developments. Paper presented at the Forty-second Session of the FAO Advisory Committee on Paper and Wood Products, 27 April, Food and Agriculture Organization of the United Nations (FAO), Rome Italy.
- Carlsson, L., N.-G. Lundgren and M.-O. Olsson (2000). Why is the Russian Bear Still Asleep After Ten Years of Transition? Interim Report IR-00-019. International Institute for Applied Systems Analysis, Laxenburg, Austria. Available on the Internet: <http://www.iiasa.ac.at/Research/FOR>.
- Crawford, S.E.S. and E. Ostrom (1995). A Grammar of Institutions. *American Political Science Review*, **89** (3), pp. 582–600.
- Credit Lyonnais (2001). Russian Pulp and Paper Industry. Credit Lyonnais Securities Europe, London, UK.

- Duinker, P.N. (2000). Criteria and Indicators of Sustainable Forest Management in Canada: Progress and Problems in Integrating Science and Politics at the Local Level. Keynote paper presented at the International Conference on “Criteria and Indicators for Sustainable Forest Management at the Forest Management Unit Level”, 21–25 March, Nancy, France. European Forest Institute, Joensuu, Finland (in press).
- Duinker, P.N., S. Nilsson and M.E. Chipeta (1998). Forestry for Sustainable Development and Global Fiber Supply. *Unasylva*, **49** (193), pp. 3–10.
- European Forestry Commission (2000). EFC Country National Reports. European Forestry Commission, 9–13 October, Rome, Italy. Available on the Internet: <http://www.unece.org/trade/timber/docs/tc-58/efc-reports/efc-reports.htm>.
- FAO (1997). FAO’s Strategic Plan for Forestry. Food and Agriculture Organization of the United Nations (FAO), Rome Italy.
- Freris, N. and K. Laschefski (2001). Seeing the Wood from the Trees. *The Ecologist*, **31** (6).
- Hazley, C. (2001). EU Enlargement and Finnish Forest Industry: A Special Emphasis on the Packaging Industry. Discussion Paper 761. The Research Institute of the Finnish Economy, Helsinki, Finland.
- Kallas, A. (2000). The Estonian Forest Sector in Transition: Institutions at Work. Interim Report IR-00-073. International Institute for Applied Systems Analysis, Laxenburg, Austria. Available on the Internet: <http://www.iiasa.ac.at/Research/FOR>.
- Ljungman, L. (1998). Economic Issues in Forestry. Paper presented at the Asia Development Forum, March, Food and Agriculture Organization of the United Nations (FAO), Rome, Italy.
- Mabel, M. (2000). The Flexible Domestic State: Institutional Transformation and Political Economic Control in the Khabarovsk Krai Forest Sector. Interim Report IR-00-037. International Institute for Applied Systems Analysis, Laxenburg, Austria. Available on the Internet: <http://www.iiasa.ac.at/Research/FOR>.
- National Board of Forestry (2000). Goals for Sustainable Forestry. National Forest Sector Goals. National Board of Forestry, Jönköping, Sweden (in Swedish).
- Nelson, J.M., C. Tilly and L. Walker (eds.) (1997). *Transforming Post-Communist Political Economies*. National Academy Press, Washington DC, USA.
- Nilsson, N.-E. (1991). Forestry for Sustainable Development. Statement at the ITTO Council, May, International Tropical Trade Organization (ITTO), Yokohama, Japan.
- Nilsson, S. (2000a). Challenges for the Boreal Forest Zone and IBFRA. In: S.G. Conard (ed.), *Disturbance in Boreal Forest Ecosystems: Human Impacts and Natural Processes*. International Boreal Forest Research Association 1997 Annual Meeting Proceedings, 4–7 August, Duluth, Minnesota, USA. General Technical Report NC-209, US Department of Agriculture, Forest Service, North Central Research Station, St. Paul, Minnesota, USA.

- Nilsson, S. (2000b). International Cooperation for Sustainable Development of the Russian Forest Sector. In: *Final Report and Proceedings of the Expert Seminar "Sustainable Development of the Forest Sector in Northern Europe"*, Petrozavodsk, Russia, 12–13 October 1999. The Barents Region Forest Sector, Initiative of the Barents Euro-Arctic Council Working Group on Economic Cooperation. ISBN 951-0708-858-2.
- Nilsson, S. (2001). Forest Policy, Criteria and Indicators and Certification. Interim Report IR-01-024. International Institute for Applied Systems Analysis, Laxenburg, Austria. Available on the Internet: <http://www.iiasa.ac.at/Research/FOR>.
- Nilsson, S. and M. Gluck (2000). Sustainability and the Canadian Forest Sector. Interim Report IR-00-050. International Institute for Applied Systems Analysis, Laxenburg, Austria. Available on the Internet: <http://www.iiasa.ac.at/Research/FOR>.
- Nilsson, S. and M. Gluck (2001). Sustainability and the Canadian Forest Sector. *The Forestry Chronicle*, **77** (1), pp. 39–47.
- North, D. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge University Press, Cambridge, UK.
- Olsson, M.-O. (2001). Institutional Problems of the Forest Sector in the Republic of Karelia. Preliminary Report of the International Policy Exercise, Petrozavodsk, Russia, 30 November–1 December 2000. Internal Paper. International Institute for Applied Systems Analysis, Laxenburg, Austria (unpublished).
- Palmberg-Lerche, C., F. Castaneda and M. Wikie (2001). Criteria and Indicators for Sustainable Forest Management. Paper presented at the Forty-second Session of the FAO Advisory Committee on Paper and Wood Products, 27 April, Food and Agriculture Organization of the United Nations (FAO), Rome, Italy.
- Peck, T.J. and J. Descargues (1995). The Policy Context for the Development of the Forest and Forest Industry Sector in Europe. *Forstwissenschaftliche Beiträge der Profession Forstpolitik und Forstökonomi*, No. 14, Swiss Federal Institute of Technology, Zürich, Switzerland.
- Pejovich, S. (1999). *Economic Analysis of Institutions and Systems*. Kluwer Academic Publishers, London, UK.
- Presidency of the European Community (2001). EU Statement on Criteria and Indicators of Sustainable Forest Management of All Types of Forests and Implications for Certification and Trade. Swedish Presidency of the European Community, 13 March, Stockholm, Sweden.
- Schopfhauser, W. (2001). CEPI's Comparative Matrix of Certification Systems. Paper presented at the Forty-second Session of the FAO Advisory Committee on Paper and Wood Products, 27 April, Food and Agriculture Organization of the United Nations (FAO), Rome, Italy.
- Seip, H.K. (1996). *Forestry for Human Development: A Global Imperative*. Scandinavian University Press, Oslo, Norway.

- Solberg, B. and K. Rykowski (2000). Institutional and Legal Framework for Forest Policies in ECA Region and Selected OECD Countries — A Comparative Analysis. Forest Policy Review and Strategy Development: Analytical Studies/Issues Paper. The World Bank, Washington DC, USA. Available at: <http://wbln0018.worldbank.org/essd/forestopol-e.nsf/HiddenDocView/67671574F784E625852568B9007309B5?OpenDocument>.
- Stiglitz, J.E. (1999). Whither Reform? Ten Years of the Transition. Keynote address at the World Bank “Annual Conference on Development Economics”, 28–30 April. The World Bank, Washington DC, USA.
- Strakhov, V. and P. Miettinen (2001). The Mandatory Forest Certification Scheme as a Tool for Sustainable Forest Management in Russia. Interim Report IR-01-022. International Institute for Applied Systems Analysis, Laxenburg, Austria. Available on the Internet: <http://www.iiasa.ac.at/Research/FOR>.
- UN (2001). Forest Policies and Institutions in Europe 1998–2000. Geneva Timber and Forest Study Papers, United Nations (UN), New York, USA and Geneva, Switzerland.
- Vasenda, S. (2001). Waking the Russian Bear: Institutional Change in the Russian Forest Sector. Interim Report IR-01-013. International Institute for Applied Systems Analysis, Laxenburg, Austria. Available on the Internet: <http://www.iiasa.ac.at/Research/FOR>.
- von Mirbach, M. (1997). What Forest Certification Can’t Do and What it Shouldn’t Try to Do. Paper presented at the 1997 Annual General Meeting of the Canadian Institute of Forestry, October, Prince George, British Columbia, Canada.

APPENDIX

Illustration of the Policy Framework based on Sweden as an example.

OVERALL SOCIETAL GOALS FOR THE FOREST SECTOR

The Sector shall contribute to:

- Economic Growth;
- Full Employment;
- Regional Balance;
- High Quality Nature and Environment; and
- Remain an Important Export Sector.

GOALS OF THE FOREST POLICY

ENVIRONMENTAL GOAL	PRODUCTION GOAL
<ul style="list-style-type: none">• The natural production capacity of forest land shall be maintained.• The biological diversity and genetic variation of the forest shall be secured.• Species naturally belonging to forests shall have habitats for survival under natural conditions in vigorous populations.• Threatened species and nature types shall be protected.• The cultural aesthetic and social values of the forests shall be safeguarded.	<ul style="list-style-type: none">• The forest and forest land shall be utilized efficiently and very responsibly for a favorable yield.• The management of forest production shall create degrees of freedom with respect to utilizing the yield.

Detailed Sector Goals for Sustainable Forestry

- Forests are a renewable resource. The forests should be managed so that they sustainably produce multiple values.
- In the management of the forests the possibilities for multiple use should be secured.
- Forest management shall be practiced in a manner that reindeer pasture is not hindered from access to forest land.
- Forest management shall be practiced in the whole country.
- Wood production should be dominated by coniferous species, but with a higher extent (volume) of deciduous species in the future.
- Forest management should result in wood production that makes a higher sustainable harvest level possible in the future compared with the current harvest level (to be quantified).
- The area of valuable and other deciduous species, as well as volumes, should be larger compared to the current situation.
- Forest management measures should be adjusted to site conditions and the natural and cultural values of a specific forest.
- The reforestations should have a density, quality and species distribution, which sequester the potential productivity of the forest soil and generate the conditions for high quality production. Seeds and seedlings of suitable origin. Natural as well as genetically improved material to be used.
- The young forests should have a species distribution, density, and quality that they efficiently utilize the soil productivity and generate a solid economic growth.
- Pre-commercial and commercial thinnings should be carried out at the right time, in the right manner and to a satisfactory extent.
- Forests in thinning ages should, for the soil conditions, have suitable species distribution and density.
- Damage on growing forests by insects, game and fungi should be limited.
- Forest management measures should be carried out in such a manner that negative impacts on the hydrology of the forest soils are minimized.
- The forest road network should be designed so that forest transportations can be carried out efficiently but at the same time, has limited negative impacts on the environments of nature and culture.
- The wood value should be taken care of and wood losses minimized.
- The utilization of the forests should be managed so that the natural production capacity is maintained, leakage of nutrients should be limited, and harvest of biomass should not harm environmental values.
- General nature and culture considerations should be made to a satisfactory extent.
- The forests should be managed from a forestry, historical, cultural, and ecological perspective. The ecological capacity of the forest ecosystems should be maintained or improved.
- Forest management in sensitive nature environments shall be carried out so that environmental values are maintained or improved.
- The extent of the forest land set aside as undisturbed protected areas for environmental reasons or are managed to protect and improve environmental values should be larger than today.
- Valuable cultural environments should be maintained and made visible.
- Forestry should contribute to human needs of high quality of the adjoining environment, recreation, and rich inspirations in forests and nature. The aesthetic values should be maintained.