Forest Research Crossing Borders

Chris Baines (ed.)

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Forest Research Crossing Borders – A Foreword

Chris Baines

Baines Environmental LTD

Those of us who attended the conference in Joensuu were left in little doubt that the future of forestry depends on the industry's ability to respond to two over-riding issues: globalisation and the emerging sustainable development agenda. Much of the conference discussion revolved around the influence that a more sustainable approach to such important issues as public health, water resource management, energy efficiency and nature conservation are beginning to have on forests and their management. Indeed Robert Flies made it abundantly clear that so far as future European Union support for forestry and its research needs was concerned, the link to issues of sustainability would be increasingly important, and undoubtedly reinforced in the EU Forestry Strategy.

Just as the role of national boundaries is being reassessed across the map of Europe, boundaries of other kinds are also beginning to be redefined. There is creative co-operation between partners from the commercial, state and voluntary sectors on a scale which would have been unimaginable less than twenty years ago. Indeed, the increasingly accepted concept of multi-functional forestry depends for its success, on breaking down the boundaries between previously segregated forestry and non-forestry interests.

The prime purpose of research should be to increase understanding. At a time of such challenging change, it must be tempting for researchers to keep their heads down and concentrate on gathering more and more data to add to the bulging archives of objective information. Tempting, maybe, but the conference was very clear that there are far more urgent research needs. There was a strongly held belief that we may in fact be suffering from information overload, and that the principal research need is to discover how best to make use of what we already know.

Foresters need research which can help them to anticipate the influences which sustainability and globalisation will have on their industry, but far from being apprehensive or defensive, there was a strong sense that the future fortunes of our forests should improve considerably in this new age of integrated thinking, since wooded landscapes can contribute to sustainable development in such a wide variety of positive ways. What is more, whilst all other corners of society are struggling with the "joined up" approach to social, environmental and economic management, forestry is particularly well placed to provide a useful model, since it already deals with dynamic systems in an integrated way and over long timescales.

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There was surprisingly little talk of technological research, either in the papers or amongst the delegates, but clearly technological innovation will continue to influence forestry. The industry's well proven ability to borrow and adapt technology from other, bigger research sources is a considerable strength. For example, the commercial market for mechanical and chemical innovation has always been far greater in agriculture than in forestry, but foresters have successfully adopted and adapted many agricultural products for sylvicultural purposes. The development of polymers, glues and resins was not generally motivated by the forestry industry, but these products have revolutionised the way we now use timber, as the laminated structural supports in the new building of Finnish Forest Research Institute adjacent to the conference venue in Joensuu so admirably demonstrated to delegates.

Geographical Information Systems serve to illustrate a point which many people at the conference were keen to make. GIS is transforming forestry, yet the technology had its origins in military research. The forestry industry's need is not for more research in to computerised mapping itself, but into its application. Clearly GIS is already being usefully applied to many of the forestry issues which are discussed in the papers that follow: the impact of climate change on forest ecosystems; the surveillance of unlicensed logging and illegal timber trading; the more holistic approach to water resource protection, flood prevention and whole river catchment management; pollution filtration by the urban forest, its effect on air quality and the resulting benefit to improved public health. GIS may have its origins in someone else's research output, but modern forestry would now be lost without it.

The links between forestry and technological research have existed for a long time. What the conference helped to expose was the urgent need for foresters to strengthen their understanding of the relationship between societal issues and forestry. Several papers, and much of the informal discussion, highlighted the powerful role that forests can play in benefiting people's quality of life. The improved health which comes from taking gentle exercise in the company of woodland wildlife or from living and working in leafy green surroundings is beginning to be better understood. However, the negative impact that insensitive harvesting, large scale mechanisation, centralised processing and manufacture can have on forest-dependent local communities is less well recognised and is the kind of social science related research which forestry needs.

This much broader definition of forest-related research confirms the need for foresters to strengthen their links with many other research communities – an important challenge for the EFI. The conference acknowledged that it is no longer sufficient to rely on improving communications within the dedicated forestry research community. Valuable innovation is just as likely to emerge from research in fields such as preventative health care, computer graphics, social welfare or industrial chemistry.

Forestry is bound to continue benefiting from external sources of research. However, that process could be considerably enriched if those who work in seemingly unrelated fields can be persuaded to consider forests differently. For instance, as health researchers seek new remedies for stress related illness, they must somehow be made more aware that birdsong, woodland wildflowers and the changing seasons are as relevant to their work as pharmaceuticals.

If foresters are to infiltrate the much wider research community they will need to invest in another kind of forestry research. The industry needs to increase its own understanding of political processes, public awareness-raising and effective communication. The fact that Finland's Prime Minister, Matti Vanhanen, was invited to open the conference shows that the European Forest Institute is well aware of the need for political patronage. The Prime Minister stayed to listen for a whole morning, which suggests that in the context of sustainable development, forestry can be politically compelling. First, though, there is a need to capture the attention of such opinion formers, and that in itself deserves much more research.

There is one critical change of attitude which foresters themselves need to address. Even within the heady environment of the conference, distinctions were frequently being drawn between the three supporting legs of sustainable forestry. There was a clear assumption that the social and environmental aspects of sustainability must somehow be viewed quite separately from the economics. This is a mistake! Politicians, policy makers, budget holders and the general public all must be persuaded that the social and environmental benefits of forestry are wholly integral to the economy.

This is where forestry may be well placed to influence thinking more widely. It is possible to show very clearly that the social and environmental benefits that come from sustainably managed forests are of very real economic importance. Rural woodlands, managed for public access and nature conservation, are a huge asset for the tourism and recreation industry. The urban forest delivers benefits for human health and well-being which in turn affect such major economic issues as absence from work, independence in old age and the cost of treating chronic diseases such as asthma and obesity. Forests protect river catchments and moderate rainwater run-off. As global climate change increases the risk of seasonal droughts and floods, this functional role will become highly valued in our more sustainable economies.

The papers which follow weave together an inspiring tapestry of insight, intuition and innovation. Collectively they make a convincing case for increasing the foresters' understanding of the influence which sustainable development and globalisation may have on Europe's forests. Every bit as exciting is the evidence that all over Europe there are key individuals in the forestry industry who are thinking about the positive role that Europe's forests can play in shaping the quality of life for more sustainable communities, both now and far in to the future.

Border-Crossing Issues in Forestry

Ten Years of Research Crossing Borders

Tim Peck

Chairman of the Board of the European Forest Institute 1993–1998

Introduction

More than one hundred years ago – to be precise, 111 years ago in 1892 – a small group of German, Austrian and Swiss forest scientists at a meeting of the Association of German Forest Experiment Stations in Eberswalde created a new organisation, the International Union of Forest Research Organisations or IUFRO. From small beginnings, IUFRO steadily expanded, until today it unites more than 15 000 cooperating member scientists in 700 member institutions from 100 countries all over the world. Its mission is to promote the international cooperation in scientific activities embracing the whole field of research related to forests and trees. This mission is being achieved with huge success, thanks to the dedication of the thousands of scientists actively engaged in its numerous working groups, the leaders of those groups and the office-holders. Probably the majority of the people in this room are involved in IUFRO activities in one way or another, and I salute them and, above all, the current president of IUFRO, Professor Risto Seppälä, and the retiring and in-coming Executive Secretaries, Dr. Heinrich Schmutzenhofer and Dr. Peter Mayer respectively.

IUFRO has very effectively provided a global umbrella for cross-border cooperation in forest research over a long period. There are other organisations, however, which are younger, more modest in scope and with different objectives, that are also serving the international forest and forest industries sector through their research activities. Today we are celebrating the tenth anniversary of one of those, the European Forest Institute. A decade ago, almost to the day, here in Joensuu the twelve founding members signed the document which formally created the EFI. Since then the Institute has expanded to its present complement of over 140 member institutions from 39 countries and has come to occupy an important niche in the European forest community. I would like to describe briefly why and how this has been achieved.

The origins of EFI

Right from its inception EFI has been fortunate in attracting the interest and support of people with vision. The very first of these, the man who conceived the idea of an international

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research institution for Europe's forests, was Mr. Matti Pekkanen, who at the end of the 1980s was the Managing Director of the Central Association of Finnish Forest Industries. He presented his ideas to the annual meeting of Finnish forest professors and forest industry in 1990. He believed that an international institute of this kind would result in valuable cooperation among scientists from different European countries and help, among other things, to bring greater consistency into international discussions, for example on forest policy.

Matti Pekkanen's idea attracted interest not only among the scientific community but also from the then Minister of Agriculture and Forestry, Mr. Toivo Pohjala. Ensuing discussions led to the establishment of a preparatory group of Finnish scientists and government officials to study the project in detail and to the recruitment of Professor Risto Seppälä as project leader. This choice proved to be inspired, given Seppälä's wide connections both within and outside the forest community. One of his principal tasks, which he achieved brilliantly, was to market the idea of a European institute to potential stakeholders, both within Finland and abroad.

Among the essential tasks of the preparatory group was to build on Matti Pekkanen's original idea by answering such questions as *why* establish a European institute, *what* would be its function, *how* would it operate, *how* would it be financed, and *where* would it be located. The most crucial of these was the why: why should such an institute be established. It is interesting to look at some of the reasons put forward at the time, the early 1990s:

- The increased international attention being given to forests, as evidenced by the first Ministerial Conference on the Protection of Forests in Europe, in Strasbourg 1990, and the United Nations Conference on Environment and Development, in Rio de Janeiro 1992;
- Concerns about the health and vitality of Europe's forests, and the apparent threat from air pollution;
- Moves to enlarge the European Union and increasing interest in forestry matters within the EU (despite the fact that forestry had been overlooked in the original Treaty of Rome);
- Criticism of forest management and forest industry practices by the increasingly vocal environmental lobby;
- The end of the Cold War, political, social and economic changes in eastern Europe, including the former USSR, and the impact of the transition towards a market economy in the countries concerned on the European forest and forest industries sector.

It was argued that there was need for an international institute, acting independently of any national political influence, which would provide high quality information on the forest and forest industry sector as a basis for policy and decision making at the European level. The institute had to avoid duplication of work with other bodies, whether national or international, and it would have to rely in its research largely on data collected by official national and international agencies. This did not exclude the possibility of working with those agencies to improve the quality of information.

It may be noted that two global issues that received considerable attention at UNCED in 1992 were not apparently specifically mentioned in the early discussions as reasons for starting a European institute, namely biological diversity and climate change. However, later on both figured prominently as priorities when the EFI's programme was being formulated.

It was concluded that the key role which such a institute could and should play would be to provide a framework within which researchers from national and other institutions would cooperate in tackling common problems, thereby creating a symbiotic effect and ensuring results were comparable between countries. And as Mr. Ernst Wermann, a former member of the Board of EFI, was to say later: "Forest political challenges for foresters, forest owners and forest industry of today are similar in different European countries. This is a good starting

point for successful cooperation – also for the science expected to provide knowledge as a basis for decision-making as well as advice for solving problems. The European Forest Institute was founded in order to promote this kind of trans-boundary research…The time was ripe for this initiative …".

Based on the recommendations of the preparatory group, the Finnish Government took the courageous decision to provide seed money to fund the setting up of the institute located in Joensuu. The choice of Joensuu was a difficult one, but factors in its favour included an enthusiastic city council, a dynamic forestry school at its University and a long forestry tradition based on the extensive forests in the Karelian region. On the recommendation of the Rector of Joensuu University, Paavo Pelkonen, Professor Risto Päivinen was appointed Acting Director, with the vital role of carrying the fledgling from the nest to the point where it could fly as a formally constituted organisation. Just as Risto Seppälä had been the right man at the right time to push forward Matti Pekkanen's original idea, so equally was Risto Päivinen the right man to carry through the following phase of establishment.

The importance of individuals

At this point I should explain why I am putting a lot of emphasis on the personalities involved. The truth is that, however great an idea is, it is unlikely to get very far unless it is embraced and put into effect by people of vision, courage and determination. It is has been the European Forest Institute's good fortune to have attracted a large number of such people throughout its existence. I wish there was time today to mention them all by name, but there is not. Instead I can strongly recommend you to read the just published book, which has been written by Kaisu Makkonen-Spiecker entitled "An Idea Becomes Reality – The European Forest Institute 10 Years", which mentions most of the key players in EFI's development. I wish to record my sincere thanks to Kaisu for allowing me to plagiarise her book in a shameless fashion in preparing this presentation.

Speaking of key personalities, this is the moment to mention Anu Williams (now Anu Ruusila) and Leena Roihuvuo, who joined the institute right at the beginning as bright young, enthusiastic and tireless assistants, on whom the efficient administration of EFI has been built, and who have acted as excellent examples for all those friendly and dedicated administrative staff who work at EFI Headquarters.

Selecting a Director

At the beginning of 1993 the Finnish Minister of Agriculture and Forestry, Mr. Martti Pura, invited a number of experts from Finland and other countries to join the Interim Board, the principal functions of which were to assist Risto Päivinen prepare for the formal launching of the organisation, including the drafting of the programme of work, and to select a Director. I felt immensely privileged to have been invited to join the Interim Board and to work with Paavo Pelkonen, its very able Chairman, and the other members on the exciting task of creating something totally new. With regard to the Directorship, 24 applicants had replied to the vacancy announcement, from whom we finally selected Professor Birger Solberg, from the Agricultural University of Norway. We felt that Birger fitted the job description almost perfectly and were unanimous in placing his name before the constitutional meeting of EFI

for confirmation. Part of that job description read: “The Director of EFI will be a person possessing leadership qualities and a proven capacity of the management of scientific research in a complex international environment. The candidate should have wide international experience and a distinguished background relating to forestry research…” It might almost have been written with Birger in mind, although I assure you that it wasn’t! Another point in Birger’s favour was that he was not Finnish, as the Interim Board felt that, with the institute to be located in Finland, it would be best for its international image, at least in its early years, to have a non-Finnish Director.

Over the following three years Birger more than justified the Interim Board’s confidence in him, proving to be the ideal person to lead the institute during its early years and a wonderful ambassador and salesman of the EFI concept. Under his leadership, the foundations of EFI were firmly established, providing a firm platform on which Birger’s successors, Ian Hunter, Fergal Mulloy and Risto Päivinen, have built up and consolidated the organisation.

The formal constitution of EFI

The key date in the European Forest Institute’s life was the 9th of September 1993, when the constitutive meeting was held in Joensuu and the Act of Constitution was signed by the twelve founding members (three *in absentia*) from ten European countries, namely the Czech Republic, Finland, Germany, Hungary, Norway, Poland, Portugal, the Russian Federation, Sweden and the United Kingdom. And so the EFI officially changed from being a Finnish project into a formally constituted international body. In addition to confirming the appointment of Birger Solberg as Chairman, the meeting appointed the members of EFI’s Board and approved its programme and budget.

Even before that, however, some research activities had been initiated, in order to get EFI on the map, so to speak. One of these was a study by Professor Kullervo Kuusela entitled “Forest Resources in Europe, 1950–1990”. This was published as the first of a series of EFI Research Reports which, together with the Proceedings of seminars and other meetings and Working and Discussion Papers, are an important means of disseminating the results of EFI’s work. To date, 15 Research Reports, 47 Proceedings and 32 Working and Discussion Papers have been published by EFI, not counting papers by EFI researchers published elsewhere. Other means of dissemination of results include the newsletter, EFI News (Leena Roihuvuo’s special baby), and more and more the internet.

Throughout EFI’s gestation and over the years since its birth, two elements have remained constant: the support and encouragement of the Finnish Government and in particular the Ministry of Agriculture and Forestry, notably the Ministry officials who have served on the Board, Pekka Patosaari and Anders Portin. The regular financing of a significant part of EFI’s budget by the Finnish Government, which has never sought to intervene in the running of the institute but on the contrary has encouraged it to manage its own affairs as an independent organism, has been absolutely vital. The other element has been the support of the City Council of Joensuu, notably Mayors Aaro Heikkilä and Juhani Meriläinen, City Clerk Heikki Soininen and Council member Kirsti Relander, and other bodies in the Karelian Region that have seen in the successful establishment of EFI a means of enhancing the international standing of their city and region. EFI owes a great debt to them, and through them to the people of Joensuu, Karelia and Finland.

EFI's main priorities

From the start it was envisaged that the EFI Headquarters in Joensuu would remain modest in size, with an optimum number of personnel of between 30 and 40, including administration staff. This was dictated by the size of the building and of the basic budget. This meant that the choice of projects had to be carefully restricted – a good thing in itself ensuring that research was kept within EFI's competency and mandate. It also meant that the role of Joensuu would be to some extent the coordination and direction of projects carried out on a consortium basis, involving groups of researchers and institutions, usually EFI members, in other countries. With regard to EFI's mandate, four priorities and programme areas were identified, each being managed by a senior researcher, the areas being:

- Forest ecology and management
- Forest products markets and socio-economics
- Policy analysis
- Forest resources and information.

Important research activities

Unfortunately there is no time to go into detail about EFI's research activities, but I may cite a few examples. The study "Growth Trends in European Forests", coordinated by Professor Heinrich Spiecker and involving 43 scientists from 12 countries, did more to put EFI on the map than any other activity. This was because it showed that many spruce forests in Europe had been growing faster in recent decades than before, a result which surprised many in the media, who had come to believe that European forests were in decline mainly as a result of air pollution. A lot of hard public relations work had to be done by Spiecker and others to persuade the media and public of the scientific validity of the study's results.

Another high-profile EFI study was entitled "Long-term trends and prospects in world supply and demand for wood and implications for sustainable development" carried out with finance from the Government of Norway and under the direction of Birger Solberg. It was prepared as a contribution to the *ad hoc* Intergovernmental Panel on Forests (the IPF) of the United Nations Commission on Sustainable Development and aimed at stimulating debate within the IPF and other forums on a range of policy issues, including integration of the forestry sector with other sectors, the fuelwood problem in many developing countries, the role of industrial plantations, and forest ownership issues. The study attracted the attention of policy and decision makers, not only in European but, because of its global scope, in other regions as well.

A major study was coordinated by EFI under the direction of Professor Michael Köhl and Risto Päivinen for the European Union and known under the acronym EFICS – European Forest Information and Classification System – and involved forest resource specialists from the 15 EU countries and some others. The object was to analyse the inventory methods and results in the countries concerned and to come up with recommendations about how they might move towards better harmonisation. No easy task, but the findings were accepted by the EU and demonstrated the capability of EFI to successfully lead a consortium and produce high quality scientific results.

I may also mention briefly the work of developing EFISCEN – the European Forest Information Scenario model – by Gert-Jan Nabuurs, Mart-Jan Schelhaas, Andreas Schuck

and others. EFISCEN models have been applied in a number of scenario analyses, notably in the latest of the European Timber Trends and Prospects studies by the Food and Agriculture Organization (FAO) and the United Nations Economic Commission for Europe in Geneva. In this particular application, EFISCEN is used to compare expected demand for roundwood in European countries with the sustainability of their forest resources.

Regional Project Centres

From the 12 founding institutions, membership of EFI has expanded steadily over the years to over 140 today from 39 countries, including several from other regions. Membership is well distributed throughout Europe, from east to west and north to south. And with this expansion came a new challenge: how to satisfy the research needs and aspirations of countries in different parts of the region. The solution adopted, after some hesitation because it was not envisaged when EFI was originally set up, has been to decentralise, by setting up Project Centres (PCs) operating with their own budgets but remaining under the general direction of EFI Headquarters. The principal objective is for each PC to undertake in-depth multi-national research on a problem of particular concern to a certain number of countries, but the PCs should also have a public relations function on behalf of EFI by, for example, making available in their areas the results of other EFI studies. At present there are six PCs:

- In Bordeaux, France, hosted by the European Institute of Cultivated Forests (IEFC), it is focussed on the sustainable management of plantations. There are partners from 4 countries;
- In St. Petersburg, Russian Federation, coordinated by the St. Petersburg Forest Technical Academy, it is carrying out research on ecological and economic aspects of forest resource modelling. There are partners from 3 countries;
- In Solsona, Spain, MEDFOREX (Mediterranean Forest Externalities) is coordinated by the Forest Technological Centre of Catalunya and the University of Lleida and has partners from 8 Mediterranean countries:
- In Copenhagen, Denmark, EUFORIC (European Urban Forestry Research and Information Centre) applies an urban forestry approach towards the planning and management of forest and tree resources in and near urban areas. It has partners from 3 countries;
- In Vienna, Austria, INNOFORCE (Innovation and Entrepreneurship in Forestry in Central Europe) is coordinated by the University of Vienna and aims to increase knowledge about the potentials and difficulties of entrepreneurship and innovation in forestry. It has partners in 7 countries;
- In Freiburg, Germany, CONFOREST is coordinated by the Institute of Forest Growth at the Albert-Ludswig-University, and is investigating the possibilities for changes in forest management towards ecology-oriented, site-adapted types of management. It has partners in 11 countries.

On the basis of the limited experience so far, this method of expanding EFI's research and networking capacity, which is highly dependent on the enthusiasm and willingness of the leaders and researchers in the PCs, has proved very effective.

Conclusion

Mr. Chairman, my time is running out, and I have been able to mention only some of the things which have brought EFI from a gleam in the eye of Matti Pekkanen to a flourishing international institute in the space of ten short years. What I have tried to do has been to emphasize the overriding importance of the people involved in this development: that it has been thanks to their vision, enthusiasm and belief in EFI's mission that made it all possible. Even so, I have been able to mention only some of the key personalities. I should have described the vital roles of Yves Birot and Fergal Mulloy, Chairmen of the Board of EFI and their past and present colleagues on the Board, and of Heinrich Spiecker and Fritz Mohren, Chairmen of the Scientific Advisory Board and their colleagues past and present. I should have mentioned the Programme Managers in Joensuu and all the scientific and administrative staff at Headquarters. And above all, I should have paid tribute to all the directors and scientists in EFI's members institutions, who have given their encouragement and support to EFI. As Heinrich Spiecker has said: "The symbiosis of EFI's scientific and administrative staff with the research potential of its members provides benefits to all and strengthens forest research on a European scale". If the members had ever seen EFI as a competitive threat rather than as a vehicle for international research cooperation and networking, it could never have taken off. But it did take off and has climbed very steeply, and is now flying very smoothly.

When things are going well, as they undoubtedly are at EFI, there is always a danger of complacency and this must be rigorously guarded against. I believe the mechanisms are in place to avoid this trap and to ensure that the next ten years are as productive as the first ten. There are many challenges ahead, such as the need to broaden the membership, the need to strengthen still further the dialogue with policy makers and decision makers, the need to identify and respond quickly to new research needs as they arise and, in particular, to take advantage of the institute's new international status, which will come into being this afternoon with the signing of the Convention, to mention just a few. I leave it to others to determine how these challenges should be met and in what direction EFI should develop. The only point I would make is that, in my opinion, EFI has probably reached an optimum size and that the emphasis should always be on improving the quality of its research and its services to members and clients, and not to increase the volume of its output.

I close by offering my sincere congratulations to everyone associated with EFI on its progress so far and my best wishes for the future.

Forestry Strategy for Europe

Robert Flies

Head of Sector for Forestry, DG Agriculture, European Commission

Introduction

You have asked me to inform you about the EU Forestry Strategy at an important period of time for the European Union. First, at a general political level, there are ten new Member States that will join the Union in 2004 and this will extent the EU deeper into eastern and southern Europe. Furthermore the decisions on the European Convention are expected to determinate the scope and content of all future Community actions in a clear and coherent manner.

Second, there is an event directly linked to the EU Forestry Strategy, a much less heralded but for us nevertheless significant action. By the end of this year, the Commission intends to submit to the Council and Parliament a report on the implementation of this strategy in form of a Communication. This implementation report will not only focus on the progress and failures of the last five years. The report also foresees to draw some conclusions from the experiences gained during this period and make some recommendations for the future.

How was this strategy coming into force?

Ladies and Gentlemen, let me shortly explain what this strategy is, by looking back to the period 1997–1998. Based on a legislative initiative from the European Parliament in 1997 and followed by a Commission Communication in November 1998, the Member States adopted on 15th December 1998 a Council Resolution on a Forestry Strategy for the European Union.

What are the main elements of this strategy?

The Council Resolution on an EU Forestry Strategy is structured into two main chapters. The first one represents a **general framework**, which starts from the activities and commitments

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made by the European Community and its Member States in forestry related to international processes (e.g. Rio and its follow up conferences, or the MCPFE). The general framework covers the forest policies of the Member States as well as the Community actions related to forestry. It emphasises the importance of the multifunctional role of forests and sustainable forest management and identifies the key elements of the Strategy:

- The principle of subsidiarity and the concept of shared responsibility, while recognising the role of Community measures in the implementation of the strategy;
- The implementation of international commitments through national or sub-national forest programmes or appropriate instruments developed by the Member States, and active participation in all forest-related international processes;
- The need to improve co-ordination, communication and co-operation in all policy areas of relevance to the forest sector, both within the Commission and with the Member States, and also among the Member States.

The second chapter addresses **the most important Community actions** concerning forests and forestry, including rural development policy (art.3,16), participation in UNFF and MCPFE (art.4); the forest protection measures (atmospheric pollution; forest fires; art.5,6), EFICS (art.7); the EU enlargement (art.8); biodiversity and Natura 2000 (art.11,12); climate change (art.13); forestry and forest-based industries (art.14); certification (art.15); and co-ordination (art.10).

What did the Member States try to achieve with this Resolution?

The principal aim of the Strategy was not to confer new tasks on the Community, but to ensure a more dynamic role for the foresters of the Member States by improving the co-ordination between their forest policies and those Community policies that have an impact on the forest sector. There have been concerns that the forest policy actors have not been enough involved in the decision making process and that they are obliged, at a later stage, to implement decisions without having had the opportunity to provide their forestry expertise beforehand.

Therefore, and without any intention to put the principle of subsidiarity into question, the Council adopted the EU Forestry Strategy. It was meant to put foresters in a better position to influence:

1. The increasingly complex array of Community legislation including, for example, competition rules, internal market and environmental policy directives, financial incentives for rural development or research, all of which may have implications for the forest policies of the Member States.
2. The growing tendency in policy-making to deal with issues that concern our natural or socio-economic environment through an approach that cuts across traditional economic sectors; such cross-sector political issues tend to blur established boundaries between traditional policy areas and can lead to overlapping responsibilities for the formulation and implementation of policy measures.
3. The need to strengthen the Community-internal co-ordination process and enhance the Community's expertise in dealing with matters relating to the forest sector.

Where are we at present?

I think it is fair to say that the Forestry Strategy, which has now been in place for over four years, has not fulfilled all expectations and objectives regarding the major challenges mentioned above. Also, since the introduction of the Strategy, a number of new developments related directly or indirectly to sustainable forest management, have occurred in the different Community policies and at international level.

World wide processes and initiatives, such as the World Summit on Sustainable Development and international institutions such as the World Trade Organisation, which can have a considerable impact on global trade and environment, play an important role in this respect.

Finally the enlargement of the Union will have a significant impact on forestry, both in the current Member States and in the accession countries.

The implementation report is an occasion to reflect on the achievements of the Strategy and the changes that have occurred in the last couple of years. Although the aim of the report is in the first place to summarise and assess the developments that have taken place since the Council Resolution was adopted in 1998, its conclusions are likely to have a bearing on the future policy debate in the forest sector. With enlargement around the corner, it is clear that this reflection must also address the relevance and importance of the strategy for the future Member States.

I hope therefore that the meeting today can provoke some helpful thoughts on how forest research can contribute to provide additional scientific evidence and justification in order to enable sound discussions about forestry policy issues in the framework of the implementation of the EU Forestry Strategy.

Where will we go?

Allow me to take the risk now and put forward some preliminary observations on the future of the Strategy. Afterwards we will see if you agree with me.

Observation No. 1: we will probably keep a decentralised approach to implement sustainable forest management and the multifunctional role of forests in an open market economy:

If the assumption is right that the approach we have currently in the Council Resolution will be maintained in the future, that is, to start from the activities and commitments in the international processes related to forests and forestry (UNFF, Vienna Declaration and Resolutions in the context of MCPFE), then we notice that **the basic elements** that were identified in 1998 are more or less identical to the orientations that the Community and the Member States have adopted in the meantime. In particular:

- Sustainable forest management and the multifunctional role of forests remain the overall principles for action;
- The emphasis on national forest programmes for implementing these overall principles is still valid; and the adequate consideration of global and cross-sectoral issues in the forest policies has become even more important.

I therefore assume that the general framework of the EU Forestry Strategy will not fundamentally deviate in the future from the existing one and that the basic line will be that the European Union recognises and acknowledges the different regional and national characteristics and particularities of the forest sector. This is reflected in a decentralised approach to forest policy in line with the principle of subsidiarity. The responsibility for developing forest programmes will probably continue to lay with the Member States and these programmes shall be formulated in compliance with the principles laid down in the relevant international processes, and in particular the 1st MCPFE Vienna Resolution. The forest based commercial activities will remain in the domain of the open market economy.

Observation No. 2: Forest policies of the Member States are increasingly influenced by a number of broader society and policy issues with the practical consequence that they will, in particular, be confronted with growing demands from the EU environmental policy:

A number of forest policy measures in the Member States emanate from the EU environmental policy. I limit myself to the following examples:

- **Nature conservation:** The implementation of the two EU Directives "Birds" and "Habitats" and the creation of the European Natura 2000 network of nature conservation areas has a considerable impact on the forest policies. Main items of discussion are at present stage the involvement of all stakeholders in the decision process and the EU co-funding possibilities for the management of protected areas.
- **Climate change:** The European Commission is closely involved in the many initiatives and bodies contributing to meeting the Kyoto targets and is considering specific actions to improve the contribution of forest related sinks to these global objectives.
- **Protection of soil against erosion and protection of water resources:** The implementation of the EU Water Directive, the preparation of the Soil Strategy and the forthcoming scheduled work on the Soil Monitoring Directives could have some implications for the forest policies of the Member States.
- **Monitoring of forests:** The Commission has proposed on 15 July 2002 a framework regulation concerning monitoring of forests and environmental interactions "Forest Focus". The proposed scheme is building up on the results achieved on the two previous forest protection measures and is intending to take into consideration new environmental monitoring needs such as biological diversity, climate change, carbon sequestration and forest soils.
- **Forest products:** The implementation of Community measures such as eco-labelling and EMAS may have significant impact on the production, processing and consumption of forest products in Europe.

Observation No 3: The EU has introduced several pieces of legislation to assist the development of forestry and its related activities in rural areas in the Member States and in the candidate countries; these are aimed at helping rural economies and maintaining the quality of the rural environment.

The EU rural development policy is an integrated policy taking into account both the socio-economic and ecological dimensions of rural areas. It is characterised by the following principles:

- **A territorial approach**, which recognises the interdependencies of policies in a given rural area;
- **Sustainable development**: the need to combine different interests and to achieve at the same time economic, social and environmental objectives in a long term perspective;

- **Regional diversity**: the acknowledgment of locally distinctive characteristics and priorities, problems and opportunities; and
- A **bottom up approach**, with an emphasis on the active involvement and participation of local communities.

The overall principles of the EU Forestry Strategy – multifunctionality and sustainability – are well reflected in the rural development policy, which transforms the 3 dimensions of sustainability into a coherent package of measures. A major objective of the rural development policy is to develop and maintain a sound economic basis in rural areas, which should enable and motivate forest owners, and especially owners of small and fragmented forests, to practice sustainable forest management and make long-term investments in a economically viable way. At the same time, the forestry measures are designed to contribute to global society issues, such as climate change and biodiversity.

The forestry measures represent 10–12% of the total contribution of the Agricultural Guidance and Guarantee Fund to rural development, that is, 4.7 billion • for the period 2000–2006. These funds are meant to facilitate and support the implementation of national and sub-national forest programmes in areas where there is a synergy between the forest programmes and the objectives of rural development. It is important to point out that, despite these impressive figures, the forest chapter of the Rural Development Regulation does in no way intend to establish a common forestry policy through the backdoor.

Observation No 4: The EU is actively involved in different international processes dealing with sustainable forestry; forestry issues such as illegal logging and certification are becoming discussion issues in the framework of international trade negotiations; the EU aims at enhancing the role of forest-related activities in its development co-operation programmes and continues to provide annually approximately EUR 30 to 40 million for forest related co-operation with developing countries.

These international forestry related debates take place in the context of different political processes and initiatives, which are carried forward in a parallel fashion, including world-wide co-ordination processes such as UNFF, world-regional approaches like MCPFE, or global thematic processes like WTO, CBD, CITES and UNFCCC. These international conventions and fora have generated a fruitful exchange on global forest themes.

The main weaknesses of some of these processes are that they either remain evasive in setting their targets, or that they are part of a broader policy domain, leaving the foresters with only a limited say in the determination of objectives and priorities. Furthermore, the forest policy discussions are often torn between national sovereign considerations and international solidarity objectives. When we describe these international initiatives, it will be important to take a clear position on:

- How the Community can provide an added value as regards active participation in these processes;
- How the international decisions, commitments, resolutions and recommendations can be implemented in the best way through Community and Member State policies;
- How we can deal in the most efficient manner with the trade & environment questions concerning forest products and services, including FLEGT and forest certification; and
- How we can reinforce actions for sustainable forest management in development co-operation policy, in line with the Commission Communication on Forests and Development (COM(1999)554).

Observation No. 5: Political problems become increasingly interdependent and the impact and linkages between forest policies and other policy domains is steadily growing;

The fact that public policies are complementary and have a considerable number of linkages among each other has far-reaching consequences for the way in which public authorities are able to steer political decision and implementation processes. The expectations of society are high and extent to new issues. People want politics to be transparent and responsive to their needs. People also demand more information on economic and environmental issues and active participation in policy formulation and implementation processes. The framework for forest policy is therefore increasingly influenced by, on the one side, global environmental issues such as climate change or the protection of biodiversity and, on the other side, specific social and economic needs and aspirations, which are mostly addressed at the local and regional level.

The question is how the EU Forestry Strategy can address these different impacts on forestry in a coherent and efficient manner by making best use of existing structures, such as the Standing Forestry Committee and the Advisory Committee on Forestry and Cork.

In this respect, an important additional step was taken at the end of 2001, when the Commission established a formal inter-service group to improve the co-ordination of forestry issues among the services responsible for the different Community policies. The experience with this inter-service group has been very positive. One could say that there has been a considerable associative effect and an increase in the joint organisational capacity of the relevant Directorates-General of the Commission. The establishment of this group has been beneficial in terms of optimising synergies and co-operation between different policy sectors. This is a pre-condition for finding efficient cross-sectoral solutions to the societal concerns with which foresters are confronted these days.

Ladies and Gentlemen, in many respects, the Forestry Strategy mirrors developments in the Member States, even where these are not formulated in explicit terms. Most Member States are in the process of promoting partnerships and co-operation between the different policy domains. They are developing national and sub-national forest programmes as a means of effective co-ordination, in the interest of ensuring a balanced decision-making process.

The important question to which we have not yet found a satisfactory answer is how to strengthen and improve co-ordination between the national and the Community level. What could we try to do in the implementation report in this respect is to assess gaps and inconsistencies in the existing co-ordination structures and highlight, if necessary, the lack of integration of forestry expertise in relevant decision-making processes.

Perhaps this could lead us to recommendations on how to improve the coherence between the Community forestry actions and the forest policies of the member States. In doing so, we also need to take into account the international processes and developments.

Concluding remarks

Ladies and Gentlemen, I have presented to you the main elements of the EU Forestry Strategy and a few key areas, which could be developed more in detail in the implementation report.

A coherent framework of Community policies with co-ordinated aims, strategies and instruments is essential to overcome complex problems and to develop more comprehensive solutions that correspond to the overall goal of sustainable development. Taking cross-sector policy impacts into account and approaching problems in a more integrative manner are key concepts for improving the effectiveness of public policies and administrative decisions and activities.

Forest research could thereby contribute in intensifying their analyses and studies on important society trends such as globalisation, internationalisation of environmental and

nature protection, privatisation and a changing understanding of the role of the state, increased democratic participation of stakeholders concerned, a growing influence of non governmental organisations in public decision making processes as well as the increase and diversification of society demand for forest goods and services. Investigations on cross-sector linkages in forestry have already been undertaken and need to be continued. Research could provide more quantitative data and qualitative analysis on the nature, structure and functioning of different policies and cross-sectoral linkages. Finally, we need more information about an efficient management of complex policy networks. There is a considerable interest to examine more consistently how co-ordinating mechanisms, – such as network management and inter-administrative co-ordination – can be improved.

The world is changing and governments at all levels are struggling to come to terms with these changes. We are looking at a dynamic process, and the opportunities and challenges that are associated with enlargement are part of this debate. The EU Forestry Strategy has proven to be remarkably visionary in its conception, in that its basic principles are as valid today as they were 4 years ago. There is no reason to believe that the framework it provides would not be able to accommodate the new issues created by enlargement and other policy developments.

Response to "Forest Strategy for Europe"

Esa Härmälä

President of Confederation of European Forest Owners, CEPF

For the private forest owner, forests are both a blessing and a strain. A blessing as there are only very few other resources bringing such opportunities in services and products for its owner and manager as well as for society. A strain as its management and usage generates so much pressure from other stakeholder groups at the local, national and international levels.

Society often draws no distinction between public and privately owned forests. Indeed, the brochure of this conference asks "What do we want from **our** forests?" Although this view is not only negative because it indicates public interest towards forestry, it has increasingly been leading to conflict situations. In these conflicts public demands have been different from the objectives of private forest owners, leading to restrictions and decreasing the private owners' income derived from marketable forest products. One of the challenges is how to successfully balance the private forest owner's goals and needs with global or national objectives.

If the private forest owner finally bears the costs of management decisions, in every dimension – economic, social, ecological and cultural – should this not be respected in policy and decision-making practices? Any kind of strategy having an impact on forests and forestry should be built through broad stakeholder participation, take into consideration the consequences to the forest owners as well as respect the property rights of the landowners. Policy formulation should guarantee mechanisms where private forest owners can have their opinions heard at the different levels of decision-making.

When designing the forest strategy for Europe there are some characteristics that should be kept in mind: An increasing portion of Europe's commercially exploitable forests are underutilised. The EU(25)'s 162 million hectares in forest area is increasing by approximately 0.2% per year. The increase in growing stock is even more – over 1% annually. Whereas the main reason behind this buildup in biomass is the underutilisation of forest resources, the economically viable forestry has also kept forest owners interested in investing in their forests and managing them sustainably. For their part, private owners have created a solid basis for the long-term, cross-generational, and sustainable development of forest resources.

The forest sector is one of the most important economic sectors within the EU today. The paper and forest cluster of the EU(15) generates an annual turnover of EUR 400 billion, provides employment for 3.5 million people and contributes 9% to the added value of the manufacturing sector. The EU is the second largest producer of paper and sawn timber and

Chris Baines (ed.)
Forest Research Crossing Borders
EFI Proceedings No. 50, 2004

third largest exporter of forest products in the world. There are no exact figures how these figures will develop after the EU enlargement, but forestry and forest-based industries will undoubtedly remain a key part of the economy, bringing employment and well-being especially to rural and semi-rural areas.

European forests are best described as multifunctional. Besides timber, forests provide a variety of other products and services. Forests produce water, wildlife, soil and recreational services, to name a few. Multifunctionality is possible because almost 90% of the EU(25)'s forests are semi-natural, and plantations play only a minor role in forestry. This is also a legacy we should treasure: Semi-natural or natural forests should not be replaced by intensively-cultivated, short-rotation plantations.

One of the characteristics is the large proportion of privately owned forests. The EU(15) is estimated to have 12 million small-scale non-industrial forest owners, or "family forest owners". In the future this figure will increase by approximately 3 million new owners, after restitution and privatisation. Private forest ownership will remain dominant and 65% of the forest area will also be privately owned in the future. The average size of the private holding will remain small, highlighting a need to establish strong co-operation between forest owners.

The future of European forestry is being increasingly affected by factors outside the forest sector and outside Europe. As the title of this conference indicates, we are crossing borders more than ever. In the last few years the role of the forest sector has changed to serve larger social issues. These issues include poverty alleviation, rural development, climate change, energy sufficiency and clean energy, and the sustainable use of natural resources. In this situation the forest sector and its professionals should be able to build capacity to understand larger social questions as well as work in close co-operation with other sectors.

The crossing of the borders is also taking place between countries and regions as we are facing greater pressure from global fora. International agreements and conventions will continue to shape a global policy framework, attempting to balance the differences between regions, developing broad co-operation and an international dialogue on forests. Though development of this form of international policy is obvious, many tend to forget the impact that a globalising forest industry has on forestry and society. The perspective and future vision of forest-based industry is less domestic than a decade ago, which also influences its role and responsibilities in society.

Big changes, also in the forest sector, are taking place in Central and Eastern European countries. To be able to manage forests sustainably, it is essential to restructure the conditions for land ownership and finalise the restitution and privatisation of forests. Though state ownership of forests remains strong in the new member countries, there is an urgent need to develop forestry in private forests as well. If this development is neglected, there is a possibility that the potential economic and social benefits of sustainable forest management will not be fully utilised. It is also unreasonable to deny the rural population an opportunity to utilise the resource they naturally and culturally possess to improve their social and economical well being. We do not have to go far to realise this, just a little over 500 kilometres south to the Baltic States.

The main challenge for the future is, however, to keep forestry profitable. Profitable forestry is necessary to keep forest management sustainable, ensure future investments in forestry and forests, and create a basis for multifunctional forestry. In Europe family forestry has established a good basis for profitable forestry, as private owners have seen the cross-generational value of the forests and made investments for the future generations. We have several examples around the world of what happens if forestry is not economically profitable – forests are destroyed. Use it or lose it is still a relevant statement.

The forest strategy for Europe should therefore emphasise the role of European forestry as an economic sector and as a driving force behind sustainable development, especially in rural

and semi-rural areas. In the last few years decision-makers in Europe, especially within the EU, have eliminated one of the fundamental pillars of sustainability – the social-economic pillar. The economical use of forests, production and employment have not had the focus they should have. Strategy should support the means and measures to strengthen the profitability of forestry and ensure future private investment for forestry.

To maintain and enhance the economic viability for forest ownership, further efforts are needed to develop the full market potential and value of non-marketable products and services. An adequate valuation of externalities is needed to serve as a basis for mechanisms to compensate forest owners for providing non-marketable benefits to society. Functional and effective markets for diversity of forest products and services, including energy wood, should be created.

Wood should be considered a key raw-material when implementing sustainable development practices in Europe. The strategy should emphasise the need to initiate a promotion of forest products as a renewable resource. Production, marketing and the consumption of wood and other forest products and services should be actively promoted as a means for improving the economic viability of forest management, taking advantage of new market opportunities.

Forest strategy should be able to face the cross-sectoral challenge of sustainable forest management and the linkages of the forest sector with, for instance, agriculture, mining, energy, transport, trade and tourism. Policy makers, market actors and other stakeholders must be aware of the impact that these sectors and policies have on the forest sector, and initiate a dialogue with their representatives. Analysis is needed from the other sectors as well: Policy makers in other sectors should explicitly consider the consequences of their decisions for the forests and forest sector.

One concern of the future EU is that there is no legal basis or mandate for institutions to deal with the European forest and forestry sector in a holistic way, including socio-economical issues. When restructuring the EU, a possible policy framework should provide the EU with measures to support forestry operating conditions and operations in a way that continues to respect national competence and the principle of subsidiarity. Possible regulations concerning forests or forestry should support the enforcement of national legislation as well as implementation of the national forest programmes as a primary policy tool. Above all, the forest policy should not lead to a harmonisation of the national forestry regulations and measures within the Community.

Research, innovations and know-how are essential elements of the strategy. Forest research should support a balanced approach on the complexity of forests and their management. In the last few years the scientific world also seemed to follow ‘fashionable’ issues, forgetting the long-term and diverse commitment forests and forestry require. Long-term comprehensive research, assessment and monitoring cannot be replaced by one or two-year long, unilateral studies. Capacity-building at several policy levels and within different segments of society, including forest owners, is essential to be able to implement sustainable forest management.

European forests and their potential provide room for policy-makers to design and implement socially, economically and environmentally balanced policy options. As we all are well aware, the choices that are made in forest management today will have an impact on that forest resource for at least 100 years to come. Therefore, policies and strategies for forest management should not strive the short-term trends, but be scientifically and politically justified taking into consideration all the aspects of sustainability.

Forest management in Europe has, and will hopefully have in the future, continued to work toward achieving the optimal combination of forest products and services. In decision making the private forest owner also recognises and respects the needs of society. Multifunctionality directs the everyday choices of forest owner. Respect is also needed from decision-makers.

Respect for the long-term and cross-generational nature of forestry as well as for the property rights of the landowners. Family forestry has been a solid basis for sustainable forest management in Europe and an institution worth treasuring and strengthening.

Responsibility and Performance – The Role of European Forests in Welfare Creation

Björn Hägglund

Deputy CEO of Stora Enso International

Chris Baines (ed.)
Forest Research Crossing Borders
EFI Proceedings No. 50, 2004

What is welfare?

Relates primarily to the individual

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- Economic resources
- Health
- Work, meaning of life
- Clean environment
- Access to nature, culture etc.
- Long-term values such as preservation of species, cultural heritage
- etc.

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Scope of Speech

To discuss how the European forests contribute, now and for the future, to the welfare of the European citizens.

Idea of Speech

Starting with a factor-by-factor discussion, concentration on the drivers, trying to sum up the discussion in a holistic, forward-looking view.

Demand of forest outputs

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- Wood for industrial products, timber, board, paper etc.
- Fibre for energy production
- Jobs
- Ecological functions (carbon sequestration, oxygen production, water conservation etc.)
- Biodiversity
- Social values

Some of these outputs support each other, others are competitive. In monetary terms, the industrial use of wood is by far the most important and is normally the basis of forest management

Generally it is difficult to get forests without monetary outputs under any kind of management, including preservation

Forest industry development

Trends - Global

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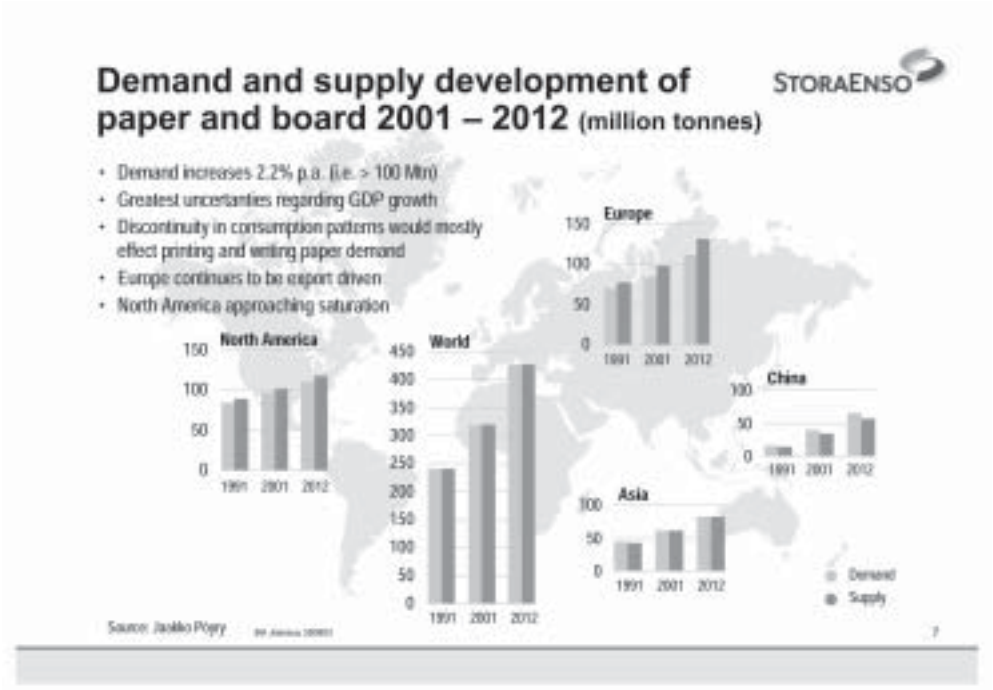
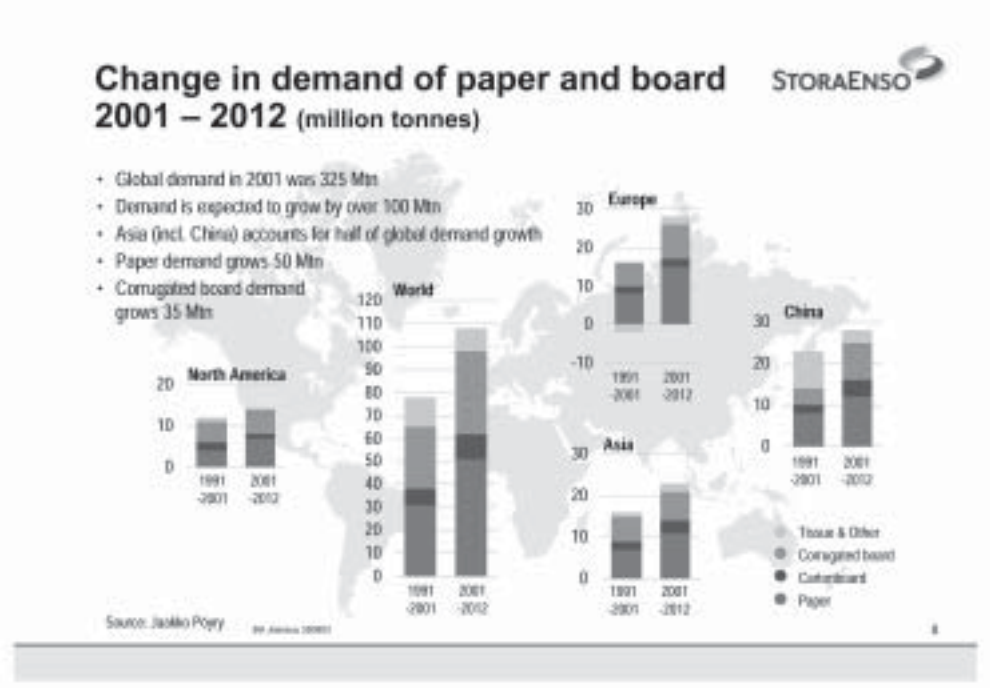
- Demand increases with GDP as well as demographic factors
- Largest growth in Asia, lowest in North America (saturation)
- Different growth for different products (fast: packaging in Asia; slow: newsprint in North America)
- Conventional solid wood products are slowly replaced by more customised and engineered products
- Companies increase in size through consolidation
- Mills increase in size because of scale economy – this leads to more transports, both inputs and outputs
- Fibre sourcing moves slowly towards more plantations in the Southern Hemisphere and more recovered paper


Demand and supply development of paper and board 2001 – 2012 (million tonnes)
STORAENSO
• Demand increases 2.2% p.a. (i.e. > 100 Mtn)
• Greatest uncertainties regarding GDP growth
• Discontinuity in consumption patterns would mostly effect printing and writing paper demand
• Europe continues to be export driven
• North America approaching saturation
North America
World
Europe
China
Asia
1991 2001 2012
Demand
Supply
Source: Jaakko Pöyry


Change in demand of paper and board 2001 – 2012 (million tonnes)
STORAENSO
• Global demand in 2001 was 325 Mtn
• Demand is expected to grow by over 100 Mtn
• Asia (incl. China) accounts for half of global demand growth
• Paper demand grows 50 Mtn
• Corrugated board demand grows 35 Mtn
North America
World
Europe
China
Asia
1991 -2001
2001 -2012
Tissue & Other
Corrugated board
Cartonboard
Paper
Source: Jaakko Pöyry

Trends

Paper and board - Europe

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- European demand follows GDP. Increased demand from Eastern Europe
- Production capacity is geared for export, too big for Europe only
- The industry is dominated by companies with Nordic origin
- The general standard of the European forest industry mills is high
- New capacity is built in Eastern Europe
- Subsidies might become a serious problem for the industry
- Russia has a large potential for forest industry development
- High wood costs are a competitive disadvantage in the existing industry
- Current development might lead to a structural rationalisation among the smaller and older mills

Trends

Paper and board - Local

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- The localisation of a mill is determined by the competitiveness of product at market offered by different sites. Wood costs and logistic position are important site-specific characters
- Once the investment is made, the relation to the surrounding environment is normally long-lasting
- The amount of jobs created in and around a mill is normally decreasing, however, many of them are outsourced thus creating new structures and income streams in society
- The negative environmental impacts of a modern mill in terms of emissions are minimal

Wood products business

STORAENSO

Longer term business drivers and trends

- **Consolidation in the global wood products industry continues**
  - Key drivers – access to capital and competitive raw material, synergies of total wood assortments
  - Future M&A potential limited in Western & Eastern Europe – global opportunities?
- **Greenfield investment activity moving to Eastern Europe and Southern Hemisphere – in Western Europe & North America only modest capacity increase**
  - Rapid capacity build-up in Russia and Eastern Europe driven by Western European companies – however, longer term potential seriously resource constrained unless forest management regimes changed (especially Russia)
  - Oceanian plantations maturing and industry developing, building the pressure mainly on Asia Pacific markets – still capacity constrained short to medium term
  - Supply pressure from Latin America increasing only after 2020 when larger areas of plantations mature

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Wood products business

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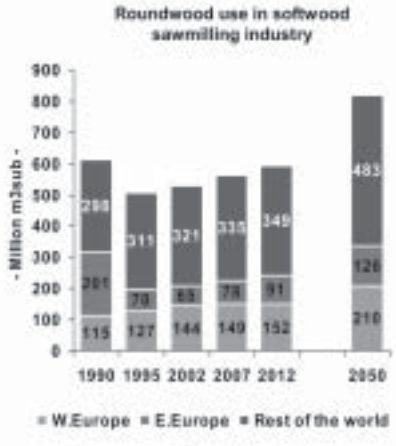
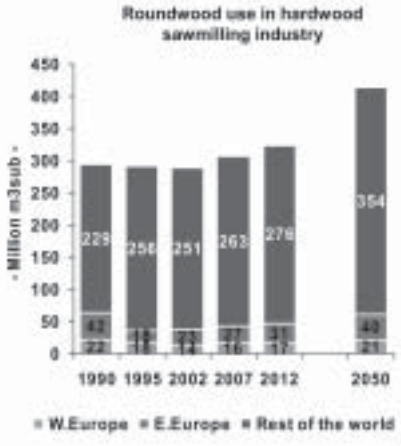
Production forecasts and impact on wood demand





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Source: RISI, SET

Wood costs

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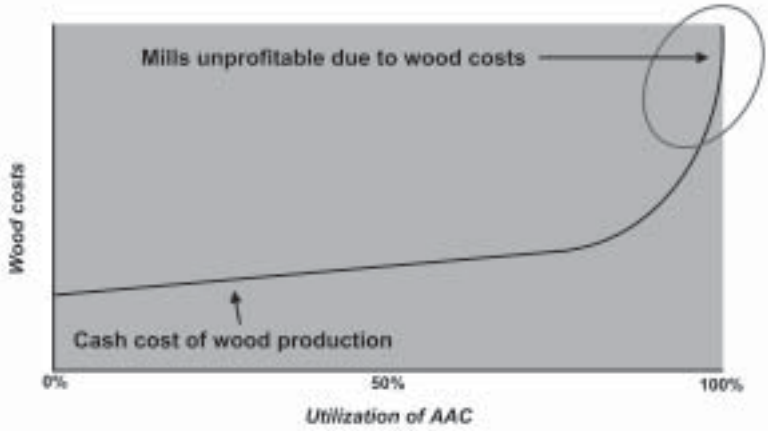

Breakdown of mechanical pulpwood cost at mill in Q3/2002

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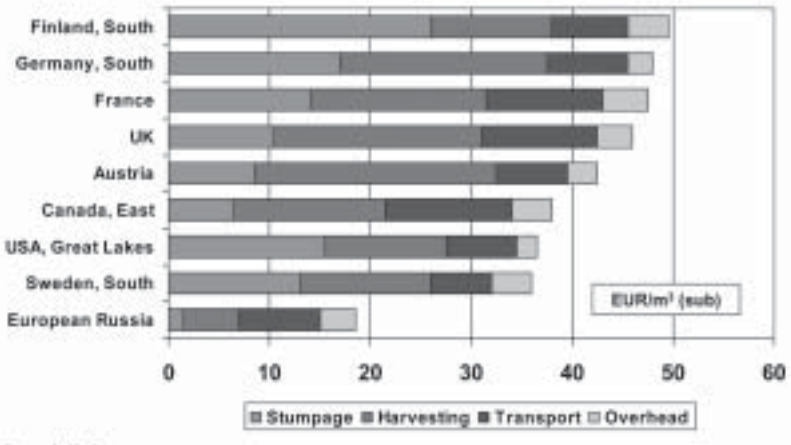

Source: Jaakko Pöyry

Net annual increment vs. yearly fellings
Europe

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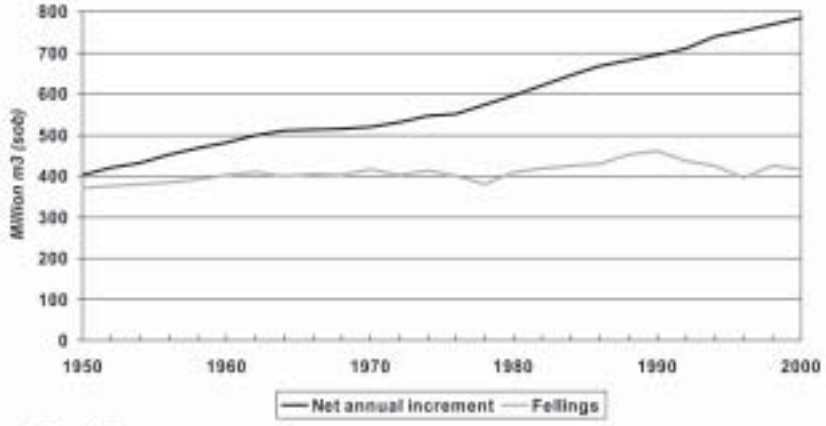

Source: CEPI

Why?

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- Higher yield in production processes
- More value-added products
- Lower global wood prices
- Less people economically dependent on their forests
- Collapse of Soviet Union
- Wood and pulp imports
- Paper recovery
- More resistance towards production forestry

European wood resources today

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Million m³ (sub)

- Wood growing stock in Europe is estimated at 35,000 million m³ (sub) (including western Russia)
- Coniferous forests dominate, with a total of 23,000 million m³ (sub)
- Non-coniferous stock is estimated at 12,000 million m³ (sub)
- Total growing stock has increased steadily
- European part or Russia has about 11,000 million m³ (sub), 31 % of the total

Source: SEFC

Industrial wood consumption

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Million m³ (sub)

- Major wood consumers are Finland, Sweden, Russia, and Germany
- Softwood industry dominates

Source: SEFC

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Sustainable forestry

BIODIVERSITY

The main focus in Western Europe

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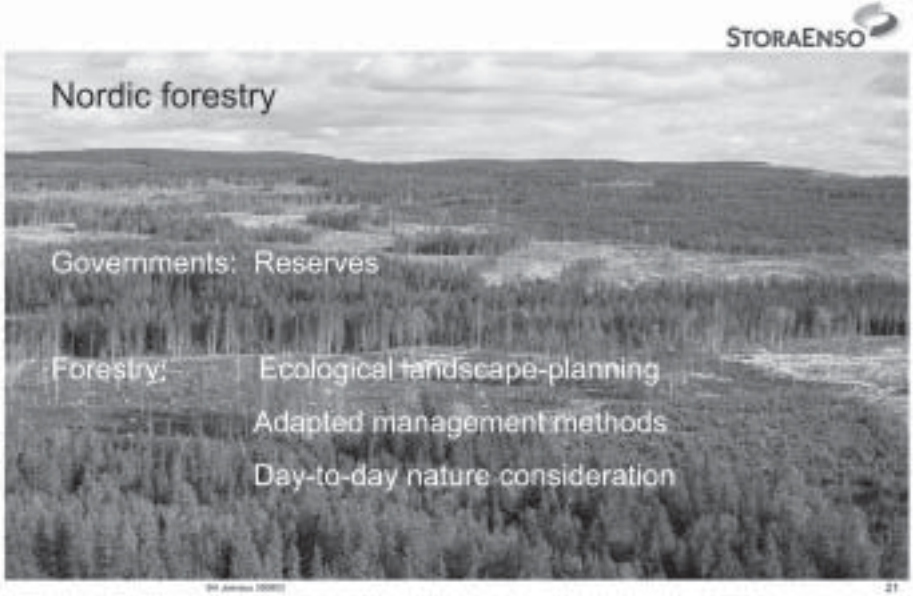
Continental forestry

Nature oriented forestry



Corporate Social Responsibility

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- Coming with globalisation
- Securing that wood bought has a fully acceptable background concerning for example
  - ownership
  - the way it is bought
  - UN human rights, ILO rules etc. respected at underlying operations
  - transparency and communication

Effects of considering non-industrial values

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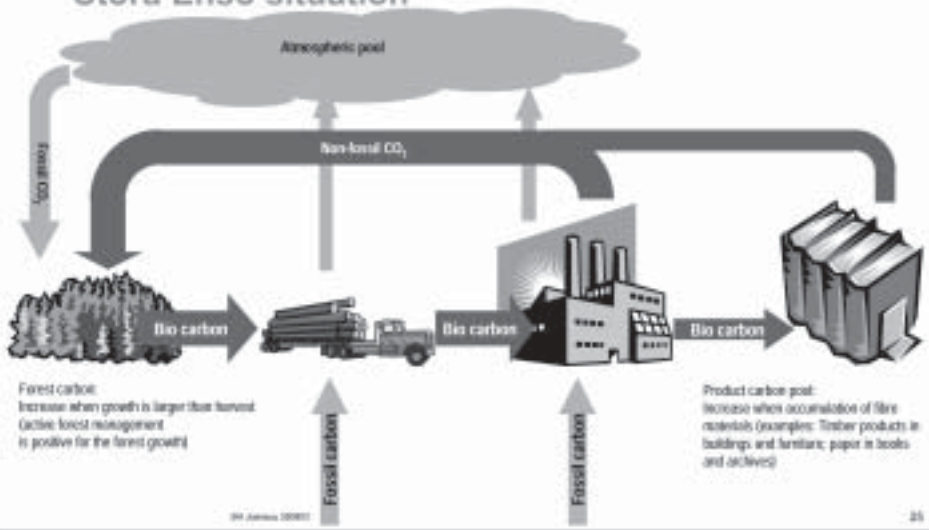
- Examples:
  - Forest areas set aside as nature reserves
  - Smaller stands
  - Less and smaller clear-cuts
  - Longer rotations
  - Less plantations, more natural regeneration
  - More broadleaves
  - More uneven-aged forests
  - Higher game populations

The total effect on AAC is at least 10% excl the larger areas set aside as reserves

Bioenergy and carbon sequestration

Stora Enso situation

STORAENSO



Consequences of global warming mitigation

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- Emission trading systems are developed on European and North American (CCX) basis
- Forests are at least to some extent identified as sinks for CO2
- The position of the forest industry relative to other material producers should strengthen
- The demand on bio-fuels including different types of wood will increase, maybe significantly

What can we realistically expect? (1)

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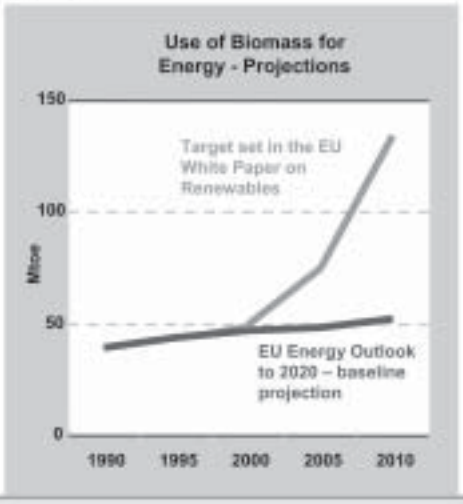
Biofuel demand projections vary greatly

- The EU White Paper has set the agenda for political discussions and initiatives in EU countries
- Full implementation of the EU White Paper proposals would mean **an annual increase of up to 130 - 160 million m3 in wood use in the EU**
- Other projections by the EU, US Dept. of Energy, and the IEA foresee a much more moderate increase.
- **Actual demand increase will depend on country level factors and EU policies.** These include biomass resources, energy policies, fiscal and tax measures, direct subsidies, etc.



What can we realistically expect? (2)

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- It is very unlikely that the dramatic increases in the use of wood as fuel which are indicated by some EU sources will take place in reality because
  - the price of wood will increase to unrealistic levels
  - existing industrial structures will suffer heavily
  - the environmental pressure on the forest resources will increase dramatically

Drivers for future development

STORAENSO

- Demand of forest products
- Increased gap between potential and actual forest utilisation in parts of Europe
- The emerging possibilities to improve and develop the industrial structure of Russia and Eastern Europe
- Global warming
- Needs of preservation created by increased environmental pressure
- Social responsibilities
- Urbanisation and increasing population concentration demanding more dedicated areas for recreation and other social purposes

Well-fare creation

STORAENSO

- Nobody can seriously predict the balanced view of the future needs of the European population
- The better the economy of the individual, the more emphasis will politically be put on the non-economic values of the forest and vice versa
- The industrial development will probably be rather undramatic, but increased input prices in combination with subsidies for new mills could be very detrimental for the weaker part of the existing structure
- Russia and ex-Eastern Europe will increase wood use significantly
- The bio-fuel component might potentially cause the most significant changes in European forest usage
- The environmental aspects will be considered more deeply in areas where forestry is intensified. In areas under heavy population pressure, the restrictions on forestry will gradually increase in order to promote social and recreational forest values

Response to "Responsibility and Performance – The Role of European Forests in Welfare Creation" – WWF Outlook on Environmentally Responsible Forest Management in Russia

Elena Kulikova

WWF Russia

WWF Russia's Forest Program is a part of the global Forests for Life Program, which was developed by WWF to conserve forests through protection, sustainable management and, where necessary, reforestation. The Russian Program has specific goals as follows:

- to develop systems of protected forest territories;
- to work to prevent illegal logging and illegal trade in timber;
- to implement responsible ecological policies and work for international certification in FSC-system forest management for Russian timber producers;
- to demonstrate sustainable management in model forests;
- to take part in the development of forest legislation in support of modern national forest policy.

The forests of Russia are of great national and international importance and it is vital that Russia's forests are managed in a sustainable manner. This is important for local social, economic and environmental reasons, and also because they are also crucial to maintaining the planet's ecosystems and biodiversity.

Forests of Russia – wealth and poverty

Russia accounts for 22% of the total world forests and about 21% of the world's timber resources. Despite such huge forest resources, the country possesses only 3% of the World's timber trade, ranks 1st in the World for the amount of round wood trade, and has the lowest stumpage fee in the World.

Profit from forest management per 1 ha is 10–15 times less, for example, than in Scandinavian countries. The forest sector is not in a position to secure a significant national economic role.

Chris Baines (ed.)
Forest Research Crossing Borders
EFI Proceedings No. 50, 2004

WWF Russia considers the extensive style of management and exploitation of Russian forests as the principal problem. Examples include the on–going pioneer “mining” of pristine forests massifs, decreasing biodiversity of commercial forests and increasing proportion of aspen and birch in boreal forests (up to 30–40% of total area). About 2 mill. ha of commercial forests are destroyed by forest fires every year. Another big problem is illegal logging. Up to 35% of timber export from Russia to Europe has illegal or “unknown” origin. The loss from illegal logging and trade to Federal and regional budgets equals 1 bill. USD per year.

What to do?

WWF Russia is implementing a number of approaches to demonstrate ways how forests can contribute to economic, environmental and social aspects of national welfare.

a) Concept of High Conservation Value Forests (HCVF)
This concept is quite separate from definitions of particular forest types (e.g. primary, old growth) or methods of timber harvesting (e.g. industrial logging). It is focused on the more general values that make a forest important.

By identifying these key values and ensuring that they are maintained or enhanced, it is possible to make rational management decisions that are consistent with the maintenance of important environmental and social values. The HCVF approach is increasingly being used for mapping, landscape management and conservation, and for decision–making processes related to forest resources, and purchasing policies.

b) Towards Environmentally Responsible Timber Business
A recent WWF survey shows that just 33 Russian forest companies are responsible for 50 million m^3, or 43%, of all harvesting and processing of timber in Russia (this is apart from the contribution of forest management units (so called leshozes) of the Ministry of Natural Resources of the Russian Federation). Just 10 companies make up 30 million m^3, or 25%, of the commercial trade. Thus, it is clear that just a few companies have an enormous influence on the Russian timber industry. WWF’s goal is to build partnerships with commercial forestry, in order to formulate and implement more ecological policies amongst companies in the field of forest management

Forest Certification as an Indicator of Civilized Business
WWF supports implementation in Russia of a voluntary forest certification system designed by the Forest Stewardship Council (FSC). This voluntary international certificate is a guarantee that certified forest products, sold on world market, are obtained without harm to forest ecosystems.

Association of Environmentally Responsible Timber Producers of Russia
The Global Forest and Trade Network (GFTN) was created in 1995 under the aegis of WWF with the aim of improving forest management and linking certified forest products and markets. Itow involves more than 860 companies linked to18 local Forest and Trade Networks which are active in almost 30 countries.

The Russian GFTN member is the Association of Environmentally Responsible Timber Producers. It was founded in April 2000, as an initiative of WWF Russia, in order to connect foreign buyers who want to purchase FSC certified timber and products with Russian producers and manufacturers. Corporate members of the Association strive for long-term

transparent forest business practices based on responsible forest management. The goals of the Association are to facilitate the development of FSC certification and sustainable forest management in Russia, to exclude illegal and other doubtful wood from trade, to match supply and demand by facilitating the marketing of members’ timber and products to suitable markets.

c) Model Forest – A Demonstration of Sustainable Forest Management

New approaches to forest management are being developed in what are known as WWF’s model forests of the Pskov region and Republic of Komi. At the present time, productivity of commercial forests in European Russia is decreasing, and at the same time, flora and fauna is also declining in the wake of logging operations. Model forests demonstrate how to preserve habitat areas for plants and animals, maintain a highly productive forest and keep a substantial profit margin at the same time.

The Pskov Model Forest

Economically sound and sustainable forest planning and management was developed for the first time in Russia in the Pskov Model Forest. The agreed standards define the allowable volumes of logging and rules for timber harvesting and reforestation that will allow for sustainable use over the course of hundreds of years. In addition, profits from the forest are expected to increase eight to tenfold. There is also a special nature conservation plan for forest management, developed and approved by the public, for protection of flora and fauna.

The Priluzye Model Forest

New regulations for forest management in northern European Russia plus new regional legislation on sustainable forest management were developed in 2002 in the Priluzye Model Forest in Komi region. Parts of the recommendations were included in the ecological section of the project Forest Policy of Russia prepared by the Union of Timber Producers of Russia. In September 2002, through an agreement with the project’s donor the Swiss Agency for Development and Cooperation (SDC), WWF handed management of the Priluzye Model Forest project over to the regional organization Silver Taiga.

Globalization and Sustaining Forests: Good, Bad or Indifferent?

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Once there was a Danish king, named Knud, who had achieved considerable power and influence, so much so that he decided that he would demonstrate his power so all could see.[1] He stood in front of the incoming tide and ordered it to stop its advance. More modest and wet, he thankfully retreated from the advancing ocean waters before it claimed his life. His Kingdom was never the same.

Such is globalization, an advancing force that, as with the tide, cannot be stopped by political leaders. The issue is whether the world will benefit or be damaged by the economic, social and environmental forces of globalization. In particular, will an international trading and financial system that is expanding beyond the control of policymakers and governments consume the natural resources of the planet? Or can globalization be turned into a force for sustaining forests that like the tide, no one can stop? As with King Knud, the issue will ultimately turn on governance, both internationally and nationally.

It is well understood that the stakes for survival of the world's forests are high. Millions of poor depend directly on forest resources for their livelihood. Forests indirectly support the natural environment that nourishes agriculture and the food supplies for half the population of the developing world and constitute a major source of wealth and revenue for many governments and private companies. Furthermore forests hold as much as 46 percent of the world's terrestrial carbon stores. But rates of deforestation are high and many believe that the rapid growth of globalization could accelerate the loss of forest resources in developing

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1 Knud was king not only of Denmark but Sweden, Norway and England. Although probably best known for the folly of the tide, he was able to flourish trade, art and law, spreading Scandinavian culture. He did penance for the wrongdoings of his Viking forefathers, building churches and making generous gifts. He had a great respect for human rights. In this sense, he was a force of globalization during the 11th century. As a side note, the tide eventually turned partially vindicating him. Like the tide, globalization will also likely ebb and flow. But as with the point of land that King Knud allegedly stood on which is now covered by the sea, globalization will steadily advance through these to and fro flows.

2 Probably one of the earliest episodes of globalization was the expansion of the Roman Empire. Capital flowed, trade expanded and migration became an economic force.

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countries. Global integration is already a powerful force affecting every aspect of our lives through the integration of markets, the lowering of trade barriers, faster communication and cheaper transport, rapid capital flows and intense pressure on migration. Decisions taken by policymakers in Europe, China or even Sudan have repercussions elsewhere, some devastating to people's lives others positive, raising incomes and providing new opportunities. Globalization produces winners and losers, both between countries and within them. The effect of this global integration on natural resources, especially forests, is not well understood. What is known is that the pace of globalization is outpacing global and national policy.

The purpose of this paper is to explore the linkages and pressures on forests created by globalization and to relate them to whether forests in developing countries can be sustained. The paper will conclude with a series of policy recommendations.

What is Globalization?

Globalization is usually considered to be constituted by related events: the international movement of capital, expansion of trade, the international migration of labor, the expansion of corporations across borders, the internationalization of civil society, the implanting of new technologies, cultural penetration, and loss of sovereignty in decision-making. And it is not a new phenomenon (see Box 1). Although history reveals many episodes of globalization – from the European discovery of North America to the expansion of the Ottoman Empire[2] – modern globalization is generally associated with three waves:[3]

- **From 1870 to 1914** when exports to world income doubled, foreign capital flows more than tripled; 60 million people migrated from Europe alone; and south-south labor flows were substantial, perhaps exceeding those of Europe.
- **From 1950 to 1980** when the OECD economies surged and integrated through trade; social welfare expanded but developing countries remained stuck in primary exports; poverty grew, rich/poor gap expanded as growth rates diverged between the inward-looking developing countries and the more outward-oriented OECD countries;
- **From 1980 to the Present** when the Third Wave of globalization swept both developing and developed countries and openness and export led growth became the dominant model of development.

This Third Wave of globalization is different than any previous globalization both in scale and intensity. *Capital movements* are both larger – reaching nearly $250 billion in 1996 to emerging markets alone, dwarfing official development assistance (ODA) – and more rapid – with $20 billion per day in flows.[4] *Labor migration* is less as governments attempted to close borders to foreign labor but remittances become more important – $70 billion to developing countries – and make the difference between fiscal survival and collapse for many countries. *Communication* becomes even more rapid and complex with the IT revolution, extending the market and enhancing transparency for many corporations and providing a profound and rapid organizing tool for civil society. *Multilaterism* becomes stronger with the adoption of international conventions, intervention in conflict by the United Nations, the strengthening of the Bretton Woods institutions – the IMF, the World Bank and the WTO – expansion of regional blocks and deepening of the European Union with the acceptance of a common

3 See The World Bank Policy Research Report, Globalization, Growth, and Poverty for greater detail on the three waves of globalization.
4 Private capital movements alone. Source: IMF data

Box 1: Globalization, is it really new?

- Capital? Major movements of capital in 19th century; gold in 15th and 16th century
- Labor? 10% of world population migrated between 1850 and WW I (less than 2% now)
- Trade? By 1815, Britain possessed a global empire. In 1797, North America received 57% of British exports and 32% of its imports.
- Transnational Corporations? West Indies Company (1602);East India Company (1600)
- Civil Society? The Church in 15th to 20th century
- New technologies? Industrial revolution
- Cultural Penetration? Africa and Latin America colonization; conversion to Christianity
- Loss of Sovereignty? Colonization
- Powerlessness – serfs under Feudal society, the rise of capitalism

currency and the consequential weakening of the nation state. And *environmental and natural resource constraints* begin to bind as ozone depletion, carbon emissions and climate change, scarcity of clean water, loss of forest resources and biodiversity become international issues, resulting in new conventions and protocols to attempt to coalesce nations into common actions. The room for error has diminished substantially in the Third Wave. Failure in one financial market could lead to collapse of the international financial banking system and the failing environment lead to conflict over water rights and strains between the EU and the United States over carbon emissions that carried over into foreign policy in other areas. Environmental goods – whether the atmosphere, forests or water – become more scarce and therefore more costly at the margin. Furthermore, hard-nosed policy decisions by the Bretton Woods institutions could result in economic collapse as in Argentina or trade conflict between major OECD countries. As the Third Wave of globalization integrated the world, financially, economically and environmentally, fault lines emerge between major OECD countries and between the developing and developed world. These strains carry over to conflict between generations – in OECD and some middle-income countries, with an older generation more content with a world without wars and increasing prosperity and a younger generation, feeling increasingly alienated, powerless and fearful of global economic forces that they can barely understand or control.

The Actual and Potential Forces of the Third Wave of Globalization

The Third Wave of Globalization has unleashed forces in the world's economy that have already demonstrated both positive and negative results. The further outcomes of this Third Wave will largely be determined by international and national policies. The issue is whether current policies and institutions adjusted at the margin will be sufficient or whether major, new and bold initiatives will be required to revamp both international and national governance.

The Third Wave has already produced some positive outcomes. For the first time in recent history, the number of poor has declined – in the 1990s by 120 million. This is a remarkable feat but has to be contrasted against the estimated billions of people who still live in poverty and the many nations and peoples left behind by globalization. Nevertheless, for the first time in modern history, the trend line of poverty has been turned downward and all signs are for it

to continue to decline. This reduction is the result of income growth largely stimulated by trade, which expanded at an annual rate of average 6.4% throughout the nineties and reached $6.3 trillion in 2000.

As part of this expansion of trade has come the globalization of corporations and industries. The supply chain for manufacturing extends over many countries; it is difficult to identify the "nationality" of corporations as Board rooms and corporate headquarters display managers and decision-makers from various nationalities and not only from the firms country of incorporation. With this expansion comes a greater degree of accountability. International or transnational companies come under greater scrutiny not only on their financial dealings but also in their social responsibility. Companies such as Nike, Exxon and Nestle are vulnerable to public opinion and the value of their 'goodwill' in their balance sheets. Long term survival of these corporations depends on a complex interweaving of good corporate governance, national and international relations, consumer and civil society opinions, and of course the bottom-line of profitability. Furthermore, the transnational corporation becomes a driving force for reducing barriers to trade, including tariffs, as their market and inputs are not alone domestic but international. They also provide discipline on governments as poor economic management or an unfavorable investment climate can drive corporations to more favorable locations.

Although labor migration under the Third Wave remains limited compared to previous periods, globalization does still provide opportunities. Despite immigration policy that favors skilled labor, migration is principally driven by unskilled and semi-skilled labor, escaping from poverty in their country or region, and leaving marginal and often important ecological regions. Whether legal or illegal, these workers fill an important rung of the labor force of OECD countries. Their children are motivated to excel, when opportunities for high quality education are offered. They have witnessed the "immigration tax" that their parents have paid for providing them a better economic life. The remittances from these workers flow into new investments and improved housing in their countries of origins and buffer the external accounts of developing countries. Their motivation and willingness to take on the jobs rejected by others renews nations. Without this immigration, many countries may face a bleak economic future. European nations have currently ratios of workers to retirees of five to one. By 2015, the ratio will be 3 to 1 or in some countries 2 to 1. What will happen to them? It is basically unsustainable. Migration is here, as it has been, and is a blessing – economically and culturally.

A unique characteristic of the Third Wave is the proliferation of international agreements, especially in the area of the environment. Impelled by the Rio Summit of 1992, a series of conventions have blended countries together to achieve common outcomes for global environmental goods. These agreements were reaffirmed in the Johannesburg summit of 2002. However, most of these agreements hold any teeth – they are expressions of good intentions. One agreement – the Kyoto protocol – appears to be an exception. It has motivated national policies toward reducing or sequestering carbon in the atmosphere and generated a market in trading carbon. Two significant holes in the agreement persist – the adoption by the United States, the world's largest emitter of carbon and the developing countries, especially China and India, which are quickly becoming major producers of carbon in the atmosphere. Despite the weakness inherent in these international agreements, they in themselves have stimulated debate and the awareness of the public to environmental issues. Also they offer the potential for accountability of nations in their treatment of global environmental goods.

Another phenomena of the Third Wave of globalization are the growth of eco-labeling and certification. Although still an insignificant part of the market, these 'green' products have grown significantly, estimated to constitute about $300 billion in international trade. The

trading of carbon and the voluntary adoption of eco-labeling are promising developments in managing better the world's environment.[5] They increasingly reflect the power of individual actions and demands in achieving common objectives, especially when governments appear unable or unwilling to act.[6]

Countering these positive forces of the Third Wave are actual or potentially negative outcomes. Because of the interconnection of nations through trade and financial markets, actions of one country can spillover and effect other economies. For example, the logging ban in China likely accelerated deforestation in other countries such as Indonesia. Agricultural subsidies and protection in OECD countries has caused harm to farmers in developing countries. And these actions are not without consequences to human welfare. Subsidies and protection do not just affect the economies of nations but also kill children. The expansion of cotton subsidies pushed cotton farmers in Africa into deeper poverty, and with it increased malnutrition and death. While with one hand, OECD countries give financial aid to developing countries; they take it back through tariffs and confiscating production from their poorer neighbors. Agricultural subsidies in the OECD countries of over $300 billion per year steal the livelihoods of some of the poorest inhabitants of the earth. Tariffs collected by industrial countries likely range about $20 billion a year.[7] Economic imperialism, normally associated with the First Wave of globalization, exists today during the Third Wave, but in a more subtle form, through protectionism and harmful subsidies.

But in a world of international finance, developing countries have irresponsibly borrowed. The first crisis of excessive borrowing hit during the beginning of the 1980s with the Latin American debt crisis. Since then there have been several incidents of near financial collapse. Contagion of financial crisis to neighboring countries in a globalized economy can cause economic collapse elsewhere. The East Asian financial crisis of the late 1990s had the potential to spillover into other financial markets. Even without the actual spillover, all developing countries paid a price through higher interest rates on their borrowing and lower private investments by foreign companies. This risk premium of financial crisis has become an expensive component of capital flows to developing countries.

In the recesses of this Third Wave of globalization is another threat to the potential benefits of a more integrated and mutual dependent world – social conflict and terrorism. More than thirty poor countries of the world are coming out of or are in conflict. The toil on lives and futures are uncountable. Children as soldiers, and terror that permeates lives from the Middle East to the airports of the OECD countries, places enormous human and financial costs. But there is no retreat. Commerce and travel needs to continue – shipments of goods and finance and the meeting in person of business people – are the lifeblood of this Third Wave. For each 1% rise in the costs of trade from security cost world GDP $75 billion per year or one and half times all foreign assistance to developing countries.[8] These costs added to the additional costs of the difficulty in securing visas, in travel and in migration mean that this estimate on trade alone grossly understates the cost of worldwide security let alone conflict that now plagues many parts of the world.

But is this necessarily an outcome of globalization? Certainly the ability to finance war and terrorism has increased with the electronic flow of financial resources and rapid movement of

5 Although eco-labeling has spread to many products, coffee and wood products are two of the most notable and important for developing countries – both because of their economic significance but also because of their sensitive relationship with the environment

6 With carbon trading, this market has developed even in countries where there is no legal or policy obligation to meet international targets on carbon emissions. Although these purchases could be regarded as the purchase of call options against future price rises in carbon, much of these purchases are purely motivated by environmental convictions or the purchasing of goodwill by corporations as part of their business plans under social responsibility commitments to their shareholders, customers and even employees.

7 Recall that official development assistance is only about $50 billion a year. This figure is only a gross flow – the net flow is much lower if consultant contracts of OECD firms for technical assistance and repayment of debt are taken into account. Adding in tariffs paid for by developing countries and the cost of lost sales due to protection of OECD countries quickly dwarfs the amounts of official development assistance. The rich nations are effectively taxing the poor, this at the same time, OECD countries are increasing the conditionality of their aid flows.

8 World Bank, Global Economic Prospects 2004.

goods, especially natural resources such as diamonds and tropical timber. Similarly the benefits of securing power have increased as proven in many African countries. The ability to move money offshore and the ease with which economic rents can be extracted from international commerce have increased with globalization. Also the sense of alienation that comes from rapid change and the loss of cultural roots are also contributing factors. High levels of employment especially among the young, especially in the Middle East and Africa, and the inability to bring peaceful political change have fueled radical and often violent movements. Globalization cannot be held entirely to blame but it is difficult to argue that it has not been a contributing force.

Another potentially threatening outcome of the Third Wave of globalization is the environment. Rapid economic growth while providing many benefits also means more consumption of energy and other goods. Soon the middle class of developing countries will exceed that of developed countries and demand many of the same goods that are currently enjoyed in the OECD countries. The consumption of energy – especially for automobiles and heating and cooling – will increase, along with many of the undesirable side effects, including carbon emissions. Water will be demanded at higher levels putting strains on ecological systems, including rivers and aquifers. In addition, as trade expands the difficulty of any one country regulating environmental consequences will become more difficult. Trading rules under the WTO do not permit countries to inhibit imported goods because of the way that they were produced. And to compete, countries cannot unduly add to production costs through environmental restrictions.

With globalization also comes the integration of enterprises through merger and purchase. Small corporations find it more difficult to compete in a globalized world where economies of scale can make the difference between survival and bankruptcy. However this is not a hard rule of trade or globalization. Taiwan through the development of small and medium enterprises has been able to compete effectively on world markets. Likewise China has been able to do the same supplying major international firms with products for marketing or inputs into manufacturing. Nevertheless, the merger and integration of many enterprises does warrant monitoring. Whether competition will suffer is something that will need scrutiny. So far it would be hard to argue that competition has suffered but the merger and consolidation of enterprises are continuing. What is clear is that countries that cannot or will not provide a conducive investment climate, including the needed infrastructure and security, will miss out on foreign direct investment and the complementary technology it brings and ultimately fall farther behind in economic growth.[9]

The Effect on Forests of Globalization

These positive and negative forces of the Third Wave of globalization are playing themselves out in the forest sector with largely net positive effects. The reduction of poverty worldwide initially puts pressure on forests as incomes increase fuel wood consumption and feed into agricultural expansion. But with higher incomes and increased opportunities in urban areas as a result of globalization people migrate out of marginal and forest areas. Investment in agriculture with higher incomes leads to more intensification rather than expansion. Eventually a sort of Kuznets curve results with higher incomes resulting in increased

9 Another threat is the interference in political processes of nations by multinational firms. It appears that this has not been a recent major issue. Corporations have found opportunity elsewhere if politics move against them. Their mobility has been one of their principal assets.

forestation.[10] The issue is whether the initial deforestation results in irreversible damage to soils, watersheds and biodiversity. The growth of international demand for forest products as incomes rise can put increased pressure on forest resources. Depending on how forests are managed, this can result in better environmental outcomes than more brutal clearing for agriculture or local needs. Higher timber prices can open the opportunity for sustainable forest management by making it more profitable and encouraging international firms with responsible policies entering into forest production in the country. Much however depends on local policies and regulation. There is no substitute for good governance.

The trade in externalities either through carbon markets or even parks offers another positive force to conserving forests. Carbon trading has become a growing market reaching 200 million tons with a value of about $500 million.[11] Likewise, large non-government organizations like Conservation International and the Nature Conservancy have been able to establish parks in many countries. The international flow of funding for these conservation areas is in the billion of dollars and its potential has only been touched. Similarly, the growing market for eco-labeled products and certified wood also offers hope for better forest management. Without a globalized market, these attempts to greening the wood industries would have little chance of success. Although certification has spread rapidly in Europe and in temper forestry, it has barely touched tropical forestry. This may change as global green funds seek investment opportunities. The World Bank's revised forest strategy and policy is built around sustainable forest management with certification being one of the key guiding principals. Although it is too early to tell, the initial signs are encouraging. Without a global market and funding, it would have been impossible for these efforts at sustainable forest management to have materialized. With the Kyoto Protocol and the opening up of forestry as an eligible sequestering means for carbon, it is likely that the rapid growth of carbon trading will continue. The World Bank has just launched a bio-carbon fund to help encourage the growth of carbon trading in forests and rural areas.

Concentration of the forest industries at this stage of globalization does not appear to be a problem. Forest corporations still remain relatively unconcentrated with the top 10 percent of firms only processing 20 percent of wood. The top 50 firms only have 40 percent of the industrial wood market. Although consolidation is taking place as investment costs for mills increase, it is unlikely that concentration will be much of an issue in the near term. What will be an issue for many firms is the political and economic stability of countries that they invest in. The long term and large amounts of investment required for modern and clean industrial wood production means that stability will be of paramount importance to these firms.

Although controversial in results, recent studies by CIFOR seem to explode the myth that oil wealth, generated from globalization, is destructive to forests. The effect of the so-called Dutch disease whereby exchange rates appreciate with inflows of oil wealth appears to counteract any cutting of forests by petroleum exploration and production. As with the any generalization on the effects on forests, caveats to this conclusion are needed. Much depends again on how governments manage the inflows of oil wealth and how modern are the techniques of exploration and production. Also the opening of roads into virgin forests can bring settlement and agricultural expansion. Nevertheless, CIFOR has explored in depth five case studies of oil wealth and forests and found that indeed oil wealth has helped to protect forests, essentially by appreciating the exchange rate and reducing the external demand for forest products.

10 A Kuznet curve is a U-shaped relationship between forest cover and income. At lower levels of income deforestation occurs but as incomes rise reforestation dominates. For instance, Europe and the United States have more forest cover now than a hundred years ago through the expansion of private investment and publicly managed forests.

11 Since the inception of the Kyoto Protocol in 1996.

As these and other examples point out, the forces of globalization are not necessarily negative to forests if managed well. But corruption and poor and weak governance give little hope in many countries that forests will be managed well. The temptation to illegally exploit forest resources for private gain is a major factor in deforestation. Corruption is not only a legal issue for governments but also a financial one. The World Bank estimates that the governments of developing countries because of illegal logging lose between 10 and 15 billion dollars per year of revenues and forest resources. The capture of these revenues would go a long way in closing budget deficits and funding needed infrastructure and health and educational services. Illegal logging is a tragedy both in terms of the environment but also in terms of the viability of governments. Increased scrutiny from a globalized world could potentially check this tragedy, but it will take political will. So far that will is still in its infancy.

Another threat to forests is a direct result of the globalization of finance. The accumulation of debt and irresponsible borrowing has resulted in deforestation. A documented example of this is the pulp and paper industry of Indonesia where a combination of subsidies and irresponsible borrowing lead to deforestation. Likewise countries pressured by large debt are tempted to encourage forest exports. Devaluation as a result of unsustainable debt can result in increased deforestation. However, the jury still remains out on the significance of this force in deforestation. Some theoretical work indicates that devaluation may not result in increased forest cutting. Also in many forested countries the major market for forest products remains domestic and not international.

One major threat to good forest management in developing countries is the spread of OECD subsidies into forest products. As forest industries in Europe and North America face increasingly costly wood supplies, imports from developing countries are likely to increase. Already large investments in plantations and factories are taking place around the world, particularly in Russia, Brazil, Chile and China. These investments will result in increased production, which could cause OECD nations to protect their forest industries as they have agriculture. This protection could have many disguises – through hidden subsidies on investment or the spillover of agricultural subsidies on set asides, environmental protection and control of illegally cut timber. Such protection would not only hurt poorer countries as OECD agricultural subsidies have already, but also be a deterrent for responsible forest industries to invest in developing countries. The net effect of OECD subsidies could not only be higher prices for OECD consumers but the encouragement of unsustainable logging and industries in developing countries.

Another threat to forests is from climate change literally fueled by globalization. Although more carbon in the atmosphere should encourage tree growth, the variability of climate between droughts and floods could destroy forests, either through fires or erosion. The building of carbon markets as already stated could be a positive force in further preserving growing forests and in encouraging new plantings. Forests around the world could be conserved through a combination of carbon trading, increased sequestering of carbon and less climate variability and warming.

International Policy Challenges and Implications

It is clear that globalization is here to stay. Terrorism and political instability could slow its growth but, as with King Knud's tide, the forces are too strong. To manage globalization well, is the challenge faced by international bodies and national governments. The growth of multilateralism lends some hope to this effort. The spread of international conventions

whether for biodiversity or desertification offer some encouragement that governments will come together and work in harmony to dealing with environmental issues, some of them exacerbated by the growth of globalization. But most if not all these conventions lack teeth. They depend primarily on goodwill. A possible exception is the Kyoto Protocol, which has resulted in specific national targets but still is incomplete in its acceptance. The recent World Summit on Sustainable Development offered lofty aspirations in important natural resource areas including forests but it is still to early to see concrete actions. And frankly the world has been diverted by the threat of terrorism and growing fiscal deficits. It is not clear at this time if world leaders will return to the texts of the Monterey and Johannesburg summits soon and turn intentions into actions. But it appears not and, if so, the multilateral approach through summits and international conventions will have run their course and new approaches will be needed. These approaches will need to be bold and depend largely on market incentives. Finding these new bold approaches is a substantial but necessary challenge for political leaders. It will probably take increasing crisis to drive such bold initiatives.

Another area of international action is with the architecture of the financial system. The current financial institutions – the IMF and the World Bank – were designed in different times to meet different needs. The IMF was built to reinforce fixed exchange rates and the World Bank to reconstruct Europe. Each institution has evolved to take on new roles – the IMF to bring countries back into macroeconomic balance – the World Bank to help in the fight against poverty in developing countries. Neither institution was designed to nor could deal with the substantial problems facing the world's economy and financial system. The IMF has limited resources to counter the tremendous flow of capital in world markets. The World Bank's lending program of around $17 billion per year is paltry when compared to the needs (net transfers were actually negative in 2002 as repayments exceed disbursements). Furthermore, several banking crisis in developing countries from Latin America to East Asia have barely been contained. Miscalculation without bold intervention could have precipitated an international banking crisis with unknown consequences. Many developing countries remain burdened with heavy debt and substantial needs. A recent effort by the IMF to promote a national bankruptcy scheme similar in concept to ones that orderly allow corporations to restructure failed to win OECD endorsement. And remarkably the two world's most powerful currencies – the Euro and dollar – moved against each other by more than 20 percent in a six month period.[12] Although severe economic cycles have been largely contained in OECD countries, developing countries still experience severe booms and increasing busts. The collapse of once prosperous and middle-income Argentina illustrates to all the precariousness of national economies. Of lesser visibility to the world community, many poor countries suffer from the consequences of commodity price instability. Currently coffee and cotton have devastated the economies of both African and Latin American countries.

The answers to the redesign are not easy. Many would not wish to tinker with a system that appears to have reasonably worked since the end of World War II. But what was once acceptable and wise may not be so anymore. The issue is not when a serious reexamination will take place but when. Unfortunately, this is unlikely to occur until there is an international financial crisis that threatens the livelihoods of rich and poor nations alike. The sweeping benefits of globalization to persist will need a more stable financial architecture where the low probability event of a world financial crisis can be better avoided and the needs of the

12 One of the perplexing challenges of the Bretton Woods participants was to find an anchor for the world's currency. Having rejected directly gold as the anchor they settled on the dollar fixed to gold. In 1971, the US essentially left the fixed relationship between the dollar and gold. Since then the dollar has been the anchor of the financial system with exchange rate fully or partially based on the dollar. The movement of the euro and dollar and the growing debt burden of the United States may send a signal that eventually the dollar will be challenged as the anchor to world currencies.

developing countries in managing their debt burden and development can be better addressed.

Along with examining the international financial architecture, there is an acute need to increase the amount and improve the quality of research on the effects of globalization on the environment and natural resources, including forests. Although this research will need to be country-based both for measuring results and for ownership, much can be done to coordinate research better internationally and seek synergies between research and policy institutions. This of course is easier said than done. One innovative approach to coordinating research is the challenge program being implemented with the CGIAR system. This program sets objectives for research and then competitively asks for proposals that emphasize collaboration between research centers and other bodies, including the private sector. The incentive of these Challenge Programs along with their importance has not only brought collaboration but additional financial resources as sponsors can see a clear benefit at the global level of these research programs. Although coordination has transaction costs, the efficiencies and scale effects of joint research can overcome these costs.

Finally, the international community is going to have to find a suitable approach to integrating environmental considerations into trade without creating protection. As with other standards, bringing environmental standards into trade will need international agreement and a dispute settlement process, which only the WTO can offer. Although setting environmental standards on trade is potentially dangerous as protection could emerge, it is necessary under globalization where one country's actions can impact so many other countries, including the world's climate and ecosystems. Standards on forest trade will be necessary at some stage to avoid unilateral actions by nations that could be, in fact, camouflaged protection.

National Policy Challenges and Implications

Globalization is leaving behind many countries and peoples of the world, potentially smoldering social and civil conflict. Those left behind suffer from many deficiencies including lack of infrastructure – electricity, roads, ports and telecommunication – necessary for participating in international trade. But most also suffer from policy errors, the largest of which is not to have embraced trade as an engine of growth. Protection in many if not most developing countries remains high. Most importantly the divergence of tariff rates from low 5 to 15 percent to prohibitive rates on other products and commodities creates tremendous domestic distortions. Global models of trade liberalization produce tremendous benefits of further lowering of trade restrictions. For developing countries, these benefits are manifested from principally own trade liberalization and not from developed country liberalization. Yet the focus of much of the developing world is to get access to developed country markets and not on their own trade policies. Much can be done to generate more south-south trade if developing countries are willing to reduce their own trade restrictions. This is true of not just manufactured and agricultural products but also for forest products.

First cousin to trade restrictions is subsidies, which cannot exist without trade barriers. These subsidies, as with protection, distort trade and economies. In agriculture alone, OECD subsidies top $300 billion a year. Energy subsidies also distort markets, not only for energy products, but downstream to final products produced in part by energy. These subsidies interact nationally and internationally in complex and sometimes not well-understood ways with forests. But what appears to be clear is that these subsidies distort not only trade but contribute to environmental destruction, whether through pollution of ground water, overuse of irrigation, or through climate warming. Forests are often at the mercy of these larger forces that are fueled by subsidies.

Good governance has been a catchall phrase for capturing an extensive set of failures in public administration. Promoting good governance is not easy nor the methodologies well understood. What is known is that good governance has been the deciding factor for the development of many countries. In a globalized world, good governance is a necessary condition for long term foreign direct investment and hence technology transfer and growth. Poor governance usually attracts investments seeking a quick profit based on buying influence. It does not lead to sustained investment. This is nowhere more true than with the forest sector where poor governance has led to unsound exploitation of forests. Unsustainable logging is a plague on the global environment and is either a reflection or cause of general corruption in the economy. To produce good governance requires first of all and most importantly transparency. When all decisions are open to scrutiny then illegal activities, including corrupt practices, will be exposed to all.

A necessary element of good governance is a strong civil society providing both monitoring and bringing voice to the desires of the poor and weaker members of society. Although international NGOs can be an important force in this monitoring and feedback, they are handicapped by an international political agenda that must answer to many constituencies, including sometimes from governments that fund their activities. Domestic NGOs have the advantage of local knowledge and a smaller focus. Their disadvantage is in mounting international campaigns against activities of developed countries or international financial institutions. A working partnership between international and domestic civil society can provide a balance between influence and local knowledge.

Of underrated importance in the future of globalization is international migration. Certain regions of the world will never be able to support their populations. Migration is a means by which poverty can be reduced in these regions. However, immigration has been viewed as costly to recipient countries and the flow of labor has been restricted. Also, with terrorism as a threat, many countries have made it more costly and difficult to immigrate. Through providing relief from the pressures of excess labor (along with adding financial flows through remittances) in developing countries and adding new perspectives and energy to the labor force in developed countries, international migration is a win-win situation. It is important to the future of both developing and developed countries that international migration not be unduly restricted if the full benefits of capital movements induced by globalization are to be realized.

Part of the threat of globalization is to the structure of society and cultural heritage. Globalization brings with it the values of mainly the industrial countries, particularly the United States. City centers in terms of stores and even language are beginning to resemble each other. Starbucks, McDonalds and even now Wal-Mart are becoming part of the fabric of every developing country. Under this rapid change and invasive cultures, it is important that countries invest in their own cultural heritage. Conserving cultural sites and heritage is as important as preserving forests and precious ecological areas. But culture is often ignored until it is too late. Youth in particular become rootless drifters under the influence of global cultural values. It is important that national policies and expenditures treat culture as an investment in society, both in its stability and its continued growth.

What is Needed for Forests to Prosper under Globalization

For forests to prosper under globalization, the first priority should be on dealing with *governance and illegal activities***.** This is not a moral statement but an economic one. The World Bank has estimated that between $10 to 15 billion are annually lost because of illegal logging and failure to collect taxes on large economic rents. The pilfering of forest resources

not only destroys precious environments but steals from the financing of other important national goals such as improved health care and better education. To put this in context, the World Banks lending program is in the $17 billion range and net transfers are about $ 2 billion.[13]

Trade in timber products needs to be expanded. If the international market remains thin, then the policies of one or two countries can undermine the conservation efforts of another. Also it will be very difficult to have certification of sustainable logging become universal unless trade is expanded. Furthermore, international trade will bring into play more responsible investors into forest production.

Global and local *markets for the externalities* offered by forests must be built. The Prototype Carbon Fund promoted by the World Bank and the recently approved Bio-Carbon Fund are examples of providing international markets for global externalities. It can make the difference in the profitability of sustainable logging practices. Likewise buying and trading of conservation rights can bring increased resources for protecting national forests. Local markets for watershed and forest protection such as developed in Costa Rica can also encourage better management of precious forest areas.

Financial accountability and management transparency are being called for in many companies whose equity is traded in the stock market. This type of accountability and transparency needs to be extended to forest industries, not only to provide investor confidence, but also to promote better relationships with civil society. Activities that are hidden can fuel corruption both inside and outside the corporation. When dealing with forests, the general public through the externalities and the irreversibility of many activities, has the right to know – to have full disclosure beyond that required of companies operating in less sensitive areas. The standards for environmental and social responsibility must be higher for forest industries.

As stated earlier, *more research* is needed especially on the effect of policies both in the forest sector and outside of it. To better manage forests, the impact of exchange rate movements, regulation and pricing policy needs to be understood. Furthermore additional research is required on sustainable forest management, especially in the tropics. This research is going to require increased funding and better collaboration between research organizations, governments, NGOs and private industries.

Final Words …

As this paper has attempted, globalization must be viewed in historical perspective. No better way than ending with a quote:

> *The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery upon his doorstep; he could at the same moment and by the same means adventure his wealth in the natural resources and new enterprises of any quarter of the world, and share, without exertion or even trouble, in their prospective fruits and advantages.*

13 From 1997 to 2002. In FY2002, net transfers were actually negative at –3.3 billion as repayments exceeded disbursements. In this context, a $10 to $15 billion loss in revenues is indeed very significant to some developing countries.

John Maynard Keynes offered these words in “the Economic Consequences of the Peace”, published in 1919.

The rest is history.

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Response to "Globalization and Sustaining Forests: Good, Bad or Indifferent?" – Does Global Change Hamper Sustainable Forest Management? Good, bad or Indifferent Globalization

Pekka Patosaari

Coordinator and Head of the UNFF Secretariat

Thank you for giving me this opportunity to give my comments on the issue of global change. It gives me great a pleasure to be here with you on this occasion of the 10-year anniversary of the European Forest Institute. May I also congratulate you for adopting the Convention and becoming a truly international organization.

I take this opportunity also to congratulate Odin for his excellent overview on the process of globalization and its obvious and not-so-obvious effects on forests. I agree with most of his explanations and conclusions. Nevertheless, since I am given this opportunity, I will try to briefly express my own beliefs and experience on the topic.

Distinguished Participants, Ladies and Gentlemen, as we all know by now globalization is a force the whole mankind has to reckon and live with. It is here to stay and only thing we could and should do is to manage it so that it works for us. Not against us.

I agree with Odin and other scholars who have been closely studying the globalization process that it is not a recent phenomenon but with the rapid growth of modern technologies and other socioeconomic forces it has suddenly became a fact of life affecting almost everybody in the planet.

The most powerful forces driving globalization are faster telecommunication, cheaper transport systems, Internet revolution, integration of markets, rapid capital flows and expanding international trade, and human migration.

It is also true that everybody is NOT happy about globalization or the benefits from it. Globalization certainly produces both winners and losers; stakes are rapidly changing because it is a very dynamic process. Cultural penetration plays a role, but also our ability to tolerate and benefit from the rapid change. The scale and speed the movement of capital is enormous – daily capital movement at the level of US$ 20 billion is a huge figure.

Forests are a unique natural resource with a very significant transboundary and global economic and environmental dimensions that make decisions on its management difficult and they are seldom without controversies.

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Considerable progress towards sustainable forest management policies has been made, but at the same time, we have to recognize the enormous challenge in translating the political achievements into the actions on the ground, worldwide. Governments, Intergovernmental organizations, civil society and the scientific community all have critical roles in making this happen. Destruction of forests has to be stopped; forests must be managed sustainably; and distribution of benefit from forests must be made in fair and balanced manner.

Odin said he had had less inspirational time in a UNFF meeting. I wonder what meeting he had in mind, since it is critical to recognize that any success of international efforts is first and foremost dependent on our ability to mobilize political, financial, scientific and technical support for sustainable forest management.

- Many of the global forest related problems are beyond the controls of individual states. Nor are individual countries capable of capturing all the benefits from sustainable forest management in their countries, some such benefits transcending national borders, thus lacking incentives of acting alone.
- Global change has multifaceted impacts on forests, ranging from purely economic consequences to non-economic ones, such as in the field of social policy, health and the protection of the environment, including areas touching on societal and cultural values.
- Although globalization is not only trade-driven, it is clear that international trade is one of the main driving forces. Thus, it is important to carefully consider implications of international trade on sustainable forest management.
- Trade in carbon is a possibility – but still to be tested.
- All countries, particularly developing countries, need to participate more effectively in the global economy so that they can reap the benefits of further trade liberalization. The emphasis should be on trade and development linkages and, in particular, on new market access opportunities for the forest products from developing countries. However, developed countries also have a responsibility and should, therefore, act accordingly at their own level.
- It is critically important to identify sustainable investment opportunities in SFM, to improve revenue generation and collection by the sector, as well as to create enabling environment and to develop concerted strategy how to use public financing, as well as to catalyze increase in the private investments.
- Sustainable forestry faces competition from other sectors over the scarce resources. How to attract new investments for SFM is a vital policy question. And we need better governance and less corruption – forestry and the whole forest sector must act in a socially responsible way.
- Investments do not only mean transfer of capital, but also transfer of technical innovation, management skills and experience, at low cost. Knowledge is one of the essential ingredients of economic growth – with sound institutional and legal conditions it can also improve the opportunity for SFM. This should include cultural investments. We have to respect our own heritage. UNFF will discuss and take political stand on forest-related social and cultural issues at its next session, in May 2004.

And finally, the global change provides opportunities for developing countries to acquire new and environmentally sound technologies, learn, imitate and adopt better practices from developed countries, among other gains that international trade and capital flows might offer. However, the benefits of this change are not evenly distributed among countries, or among sectors.

Global change must show a way of improving incentives for sustainable forest management, which in turn also must clearly demonstrate its crucial role in alleviating the social and economic conditions of millions of people living in or around forests.

Forests in the Pressure of Global Policy Making

David Kaimowitz

Director General, CIFOR

As you all know, this event marks the 10th anniversary of the European Forestry Institute. CIFOR and EFI are practically twins. We were both born in the same year and both share a common belief in combining science and dialogue to address the problems of the world's forests. So when Risto Päivinen asked me to come and join in this celebration of EFI's first decade I immediately said yes.

This seminar comes at a crucial time for the international discussions about forests. In many ways both EFI and CIFOR are products of the 1992 Earth Summit in Rio de Janeiro. Back then global concern about forests was at an all time high. The headlines were full of reports about burning forests, acid rain, and the extinction of huge numbers of plants and animals. Tens of millions of people were joining conservation organizations and there was a strong sense that the world needed to act urgently or it could face catastrophic results.

Faced with such an outpouring of concern the world's governments felt compelled to act. In 1985, they launched the famous Tropical Forest Action Plan. Six years later the World Bank adopted a new forest policy and the G7 launched a major program to save the rainforests of Brazil. By 1991 international assistance for forestry projects was five times higher than it had been in 1978.

One of the main topics at Rio itself was whether to adopt a global forest convention. That attempt failed but the summit did approve a set of forest principles and created the Global Environment Facility, which became a major new source of funding for forest projects.

Since that time, however, forest issues have gradually lost the high level of political and public attention that they had in the days of Rio. Last year's second World Summit on Sustainable Development in Johannesburg did not have a whole lot to say about forests. There are fewer forestry projects these days, less students are studying forestry, and private contributions to conservation organizations have also gone down.

To really get into the causes of this declining interest in forests would take much more time than I have in this talk. It could well be the topic of an entire seminar. But a few of the factors are probably worth noting. In general, it is hard to keep the attention of the public and the press about any topic for more than a few years. Forestry problems are complex and trying to solve them with simple solutions such as planting more trees and building more fences has not had much success. In general, the forestry community has been poorly equipped to make its case, and has suffered from both weak data and poor public awareness.

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But perhaps the most important reason that forests and forestry have lost appeal in global policy circles is because most policymakers tend to think about forests only in terms of industrial production and conservation. They don't realize that forests are also extremely important when it comes to addressing extreme poverty, health, violent conflict and corruption, and the need for greater local democracy. Those are the issues that are currently at the top of the international development agenda; and if we want to be relevant these issues must be at the top of the forestry agenda.

The fact of the matter is that forests and trees are tremendously important for many of the world's poorest people, and there is an urgent need for governments to take action to improve poor people's access to forest resources and the benefits they can provide. The World Bank recently estimated that some 240 million people currently live in forested regions in developing countries. Those regions are generally among the poorest and the people that live there depend heavily on the forests to survive. In 62 of the Least Developed Countries, wild meat and fish provide more than 20% of the protein people consume. Something like two billion people still get most of their energy from fuelwood and charcoal. Small farmers and pastoralist rely on forests, brush and fallows to maintain the fertility of their soils and feed their cattle.

For most poor people that use forests, trees, and wild animals these provide only one of their sources of income, but without that source of income most of them could hardly survive. Several studies have shown that it is precisely the poorest and most vulnerable families that depend on forests and wild resources the most. In times of drought, war, and economic crisis many people seek refuge in the collection of forest products.

There are also cases where forests can offer new opportunities and a way out of extreme poverty. It is true that these cases are much more limited and will never solve the problems of hundreds of millions of people. Even so, in many situations we can make markets work for forest communities and offer better incomes from these activities.

The international community is working hard to reduce rural poverty in developing countries. But those efforts have practically ignored the role of forests. That has to change, and those of us involved in forestry research have to help. Our research can, indeed must, provide hard evidence about how forests can contribute to reducing poverty and what works and what doesn't, and we must make sure that those lessons get heard by policy makers and opinion leaders.

The same applies when it comes to healthcare. Healthcare gets a lot of attention these days, but policymakers almost always think about it in terms of medical doctors, clinics, and expensive drugs. But most of the world's poorest people have little access to that kind of medicine and that is not likely to change any time soon. Those people rely mostly on medicinal plants and animals to heal themselves. In fact, an estimated 2 billion people rely on medicinal plants and animals as one of their primary source of health care. We need to make sure that they continue to have access to cheap sources of those products; and once again we need good research to identify where the problems and solutions are and let people know.

Many of the most serious health problems in developing countries are related to the lack of clean water. Here again, government planners tend to think in terms of expensive potable water systems, but forests also have a role to play in keeping dirt, garbage, pesticides, and feces out of the water. We need more research that measures these type of economic and health benefits that forests provide by keeping people's water clean.

Ever since the terrible bombings of the Twin Towers in New York on September 11th the world has given much more attention to the problem of violent conflict. If one looks around the world, one finds that many of the violent conflicts are taking place in mountainous and forested regions. Just think about Aceh in Indonesia, Mindanao in the Philippines, northern Myanmar, Nepal, central and northeast India, Liberia, Sierra Leone, the Democratic Republic of the Congo, and Colombia – to name just a few.

It is no coincidence that so many conflicts occur in the forests areas of these countries. They tend to be poor, remote and neglected. In such circumstances it is relatively easy for private armies, bandits, drug dealers, and smugglers to move into these areas and fill the vacuum left by weak national governments. Valuable resources such as land, minerals, petroleum, and timber provide both the means and the motive for armed conflict. This implies that improving the governance of forested regions is a key element in addressing the broader problem of violent conflict.

Nor is violent conflict the only major governance problem in forested regions. If there is any one single forestry issue that has captured international attention in the last few years it is probably illegal logging and widespread corruption in the forestry sector. The World Bank estimates that tax evasion by forestry companies cost governments between $10 and $15 billion dollars each year. In many tropical and transition countries illegal forestry activities are the norm, rather than the exception. This is not just bad for forests. It can also lead to a general break down in the rule of law, which make it much more difficult for serious investors to operate and for countries to achieve long-term economic growth.

In some ways the problem of illegal forestry activities is closely related to that of violent conflict. The high value of timber resources located in remote areas with weak government presence clearly contributes to both. On top of that, many existing forestry laws and regulations are simply too complex and difficult and expensive to comply with.

This whole area of forest governance is another topic where we still have a great deal to learn. There are lots of case studies and anecdotes about violent conflicts and illegal logging, but very little rigorous research that would allow us to design more effective and equitable approaches to address these problems.

In summary, one key way to increase the visibility of forests and forestry issues within the global policy agenda is to show how these issues relate to the topics that are already high up on the international agenda, such as extreme poverty, healthcare, violent conflict and corruption. To do that is going to require a great deal of research, both to demonstrate the relative importance of the contributions that forests can make and to help design appropriate policy options.

That being said, however, I would like to stress that studying these newer topics and helping to raise their profile does not mean we should abandon such fundamental topics as how to conserve biodiversity, how to avoid climate change by using forests as carbon sinks, and how to produce forest products most efficiently with the least environmental impact. Those topics still have a major role to play in any global forest agenda and any forestry research institute.

Here also research must help to set the policy agenda – raising new issues, measuring the effects, questioning myths, designing management tools, and learning from experience to make better policies.

Without any doubt there will always be a place for such forest research that matters, that makes a difference. Our challenge as research institutions is to deliver that kind of research. In its first ten years the European Forestry Institute has already moved a long way in that direction. No doubt that the next ten years will be even better.

Response to "Forests in the Pressure of Global Policy Making"

Gérard Buttoud

INRA/ENGREF, France

I do not know whether many comments could be made in reaction to David Kaimowitz's speech related to global policy-making, except for saying that we of course support his clear and clever statements. But please let me address some issues derived from what he said, and concerning mainly the European situation.

First, as David Kaimowitz said, it's true that EFI is a product from the international dialogue on forest. Without all these discussions which took place in the beginning of the 1990s at the world level, EFI would probably not have been constituted. EFI is a real output from the forest dialogue.

But when you look at how the discussions have been going on at the pan-European level since then, EFI – like CIFOR – has also played an important, although indirect and sometimes hidden, role in bringing its input in the process itself.

So, we have been obviously inside this global policy making process in forestry since the beginning… And really, this international dialogue has changed a lot of things in the way forestry research is conceived now.

Firstly, networking has become a real keyword. This is one of the two major objectives of the EFI strategy to promote research in networking among members and also non-members. Today, this new way to carry out research has made a lot of progress in Europe, and this is one of the strong outcomes from EFI's activities. These two examples will further illustrate the matter:

- the mapping of forest at the pan-European level;
- the co-operation between Western and Eastern countries (the latter confronted to big policy changes and facing huge challenges, also for research organisations); this co-operation has been strongly strengthened at EFI (more should still be done, because it is a real priority).

So, this is the first change: networking.

The second change is the introduction and discussion of new concepts, such as sustainability, multifunctionality and biodiversity. These are very broad, and often unprecise concepts,

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which need to be discussed more in depth, at a large level, involving a lot of scientists from various fields of research. On adaptive management, ecosystem management, and also criteria and indicators, some further research may be needed at the European level. On this matter, a lot is still to be done, in order not to have the decision makers using such wordings as a sort of alibi.

The third change is the fact that now most of the forestry research in Europe are linked with managers and decision-makers. As for the research, the international debate on forests has brought some important changes in forest policy making in general (for instance, passing from regulation to contract, changing the levels of decision making, promoting participatory processes, linking expertise and communication in decision making). In this changing framework, more than before, decision-making may need inputs from scientists. New developments in forestry research will necessarily be based on a full co-operation between research institutions and bodies in charge of forest management. The combination of theoretical and empirical studies is a necessity now. The same as for the promotion of forums associating and involving different participants is progressing, and EFI takes its part of the impulse.

Regarding these three aspects, EFI has done a lot, even if more should probably be still done for the future. However, the international dialogue of forest is also a product of a broader process which is the globalization itself. And from this viewpoint, the forest research in Europe may be confronted with at least two major challenges we have to face:

1. *Should we consider the forest as itself?* It was the case in Rio, but not in Johannesburg, as David Kaimowitz said. Now, if we look at the ongoing discussions, the main challenges are much broader than the forest issue itself – they are, for instance, the conservation of the environment as a resource for the future generations, also the mastering of the evolution of the rural land use and utilities, or the change in the governance of the resources. To address such broad issues, the conventional approach of forestry is suspected to be too much sectoral, too much specific. In the next future, we, the forest scientists, together with the forest managers and decision-makers, will be under a high pressure, from the international processes, from the EU also, to be more open minded. Because of the globalisation, the time may be now to look at the forest from outside, and not only from inside… Probably forestry research has a lot to say in order to explain the complicated mechanisms of environment and land-use dynamics (just because of the long term and multifunctionality). And this may be a big challenge for the future of EFI, of course, how to be less sectoral.

2. *A second challenge of globalisation is that we should be aware that forest is not the same everywhere*. The globalisation of the discussions about forestry does not mean that the same actions should be carried out in any forest. This is evident, everybody is conscious of that, expressed as it is now, but it may be repeated even here, even in a provocative way: the Scandinavian model of forestry is not the unique model in forestry in Europe. Considering the differences between the Eastern and Central forests, the Mediterranean ones, and even the Russian one, EFI should promote a diversified forest management. This is more difficult to do than to say, of course. But still keeping in mind the example of the recently published forest map, please do not conclude that the best forests and foresters are located where it is green, and that the bad ones are where it is only greenish…

We should not forget that globalisation gives a framework, it does not provide a model! Models have to be built up later on, based on real problems.

Panel Discussion:
Forests in Focus of Cross-Sectoral Challenges

International Cooperation in Sustainable Forest Development

Libor Jansky
United Nations University

Since the mid-1990s, the United Nations University has been developing a long-term international partnership in forest, biophysical, socio-economic and policy research and related sciences with several partners worldwide. It started with collaboration within the framework of the World Forest, Society and Environment (WFSE) Research Programme (Metla, EFI, UNU). The mission of this programme is to conduct globally relevant research and human capacity building in forests, society and environment in support of sustainable forest management and the well-being of people. Then, UNU has organized a major conference on The Value of Forests – Forests and Sustainable Development, held in Tokyo in October 2000, where the multiple values of forests were highlighted in promoting sustainable development. Presently, UNU is paying attention to information and knowledge sharing activities, networking and capacity building directed at assisting developing countries, especially through the new partnership under memorandum of understanding between UNU, EFI and European Forest Science Academic Network – SILVA Network.

Cooperation includes areas such as sustainable management of natural resources including forest, land, water, climate, and activities like the mutual support of research, training programmes, scientific exchanges, fellowships, the joint organization of seminars, workshops and other meetings, and the joint preparation and distribution of publications, as well as other appropriate activities. Through this new partnership we are promoting, implementing the demand-driven, integrated capacity building efforts in the transitional world, without which the Millennium Development Goals will not be achieved.

The current joint initiative on "Training and Research Capacities for Forestry Policy Development in Countries with Economies in Transition" tries to examine the state-of-the-art and challenges for forest research and higher education in the countries with economies in transition, and analyze the possibilities of research and education to contribute to forest policy development processes in those countries. Based on the findings of the thorough evaluation and analysis of the current situation in the region and in each country, recommendations will be made regarding specific actions to be taken.

The concept of NFPs is an outcome of the international consensus and efforts towards the establishment of a solid institutional framework and guidelines for the forest-sector-based

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development. It is targeted to all countries that deal with forests directly or indirectly through various forms of protection and utilization. NFPs constitute a programmatic component of the action agenda for sustainable forestry development that has been promoted under the auspices of the United Nations Forum on Forests (UNFF), the Intergovernmental Panel on Forests and the Intergovernmental Forum on Forests (IPF/IFF). The establishment, implementation, monitoring and evaluation of NFPs are strongly encouraged for all countries as a framework for promoting sustainable forest management. The decade-long process of designing NFPs has been supported by a number of organizations acting in forest sector development in different parts of the world, including major international organizations such as FAO, ITTO, and the World Bank, as well as major bilateral donor agencies.

Today, NFP is recognized as a major framework for coordinating policy development towards sustainable management and conservation of forests. One of the main principles of the NFP processes is to contribute not only to the forestry sector, but also to the overall sustainable development strategies. Therefore, it requires integration into each country's overall socio-economic development plans. In other words, by facilitating development of the intellectual, human and institutional capacity, NFPs aim to embody an enabling environment for sustainable forest management as well as for forest-based economic development. Thus, the IPF/IFF urge countries – particularly developing states and countries with economies in transition – to include capacity building as an objective of their NFPs. It is also stressed that with particular attention should be given to training, extension services, technology transfer and financial assistance from developed countries. The joint initiative taken by UNU, EFI and SILVA Network to facilitate the incorporation of forest research and education in the framework of NFPs in transition states, is very much in line with this internationally proclaimed objective.

Cross-sectoral Issues in Forestry – International Forest Policy and the Role of UNFF

Pekka Patosaari

Coordinator and Head
Secretariat of the United Nations Forum on Forests

Forests at the cross-roads

- Multiple benefits and constituencies
- Conflicting demands
- Linkages with other sectors:
  - agriculture, energy, water, health and tourism
- Linkages with other issues:
  - meeting human needs, economic development and poverty reduction
- Multiple dimensions:
  - local, national, trans-border and global
  - multi-generational

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Forestry is an international issue

- Alarming rate of deforestation and forest degradation
  - threats to livelihoods
  - economic
  - social and cultural
  - environmental
- National sovereignty and right to development

Forests on international agenda

- Growing international trade
- Biological diversity
- Carbon sequestration
- Wildlife habitat
- Watershed forests
- Forest fires
- Human health

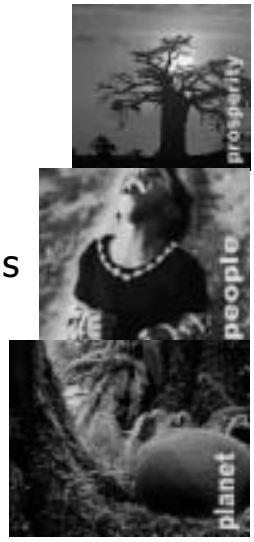
Global forest policy is instrumental

- 40 + International organizations and 20 + agreements related to forests
- No single international institution or instrument has a mandate or capacity to address all aspects of forest policy at all geographic scales

Global forest policy supports cross-sectoral approach

- SFM not in isolation but for sustainable development
- NFP as a tool for cross-sectoral consideration and coordination
- Forest management brings the balance between utilization of resources and conservation, to meet the needs of different stakeholders

United Nations Forum on Forests



- Post Rio policy dialogue through IPF and IFF to the establishment of UNFF
- Promote the global agenda on forests and mobilize political commitments to it
- The United Nations Forum on Forests is the key intergovernmental mechanisms to facilitate and coordinate the implementation of sustainable forest management

Collaborative Partnership on Forests

CPF members support UNFF

- 14 Member organizations
- Support implementation of IPF/IFF proposals for action
- Provide expertise & advisory services to UNFF
- Assist UNFF in monitoring, assessment & reporting on forests

Impact on national policies and practices

- National forest policies are no longer isolated from international forest policy dialogue
  - National, regional and global dimensions
- International trade and certification
- Criteria and indicators for sustainable forest management

"Forest policy is a good indicator of a nation's commitment to sustainable development"

Forests in the Focus of Cross-Sectoral Challenges – Introductory Note

Oudara Souvannavong

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I would like to thank the organisers for inviting FAO to participate in the present seminar, celebrating the 10th anniversary of EFI. Please let me convey to you the warm congratulations of Dr. Hosny El-Lakany, Assistant Director-General, Forestry Department of FAO. He expresses his apologies and regrets for not being able to participate in this event. FAO, Agency responsible for forestry in the UN System, attaches a great importance to research as producer of the knowledge necessary to sustainable forest management. This central role of research is reflected in the recent re-organization of the Forestry Department of FAO, where the group supporting research, education and extension was transferred from the Forest Resources Division to the Forestry Policy and Information Division.

It is interesting that the theme of our discussion was changed to "forests in the focus of cross-sectoral challenges" from the initial, more traditional one "cross-sectoral issues in forestry. We are invited to consider forests and forestry in a broad context: "How forests and forestry are affected by cross-sectoral issues?" but also "How forests and forestry contribute to meeting global cross-sectoral challenges, such as poverty reduction and food security?".

Forests, forestry and foresters do have a role in addressing cross-sectoral issues. A recent example of recognition that forestry can play a central role in cross-sectoral programmes was, at global level, the entrustment of the coordination of the International Year of Mountains (2002) to the Forestry Department of FAO. This activity involved actors of all sectors at local, national, regional and global levels.

However, because of the still predominant sectoral approach, the contribution of forest and forestry is often ignored or underestimated by other sectors. For example, it is some times difficult to convince pure agronomists that, in most cases, food security can not be ensured only with more fertilisers and more irrigation, that forests and forestry not only have an essential role in ensuring long term system sustainability but also directly contribute to the food supply and income of millions of people around the world. There is a need to better assess, and raise awareness on, the contribution of forest and forestry to meeting global challenges such as food security, poverty reduction, clean water supply, etc. Less knowledge is available on these subjects, because relatively less research has been devoted to these "non-traditional" forestry issues, which are also difficult to study. For example, in many countries,

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the assessment of the contribution of tree and forest resources to people's livelihood is very difficult because of the informal, some times even illegal, character of activities involved.

There is a need to harmonise national strategies to address global issues and implement international agreements at national and local level (poverty reduction, environment, biological diversity, climate change, forests, etc). Foresters and the forestry sector should increase and improve their participation to provide the effective contribution that is needed from them in this process. A few years ago, ICRAF launched a slogan that "The future of trees is on farm". I would suggest that the future of foresters is also outside forests (foresters also have a role outside forests).

Research Providing Solutions to Emerging Needs

The Role of Research in the MCPFE

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Abstract[1]

The MCPFE is an international policy-making platform on forest policy in Europe. 44 European countries and the European Community elaborate common views on forest policy issues and commit themselves to actions at periodic Ministerial Conferences. In addition, 41 observers representing various civil society groups, international institutions and scientific organisations contribute significantly to the work of the MCPFE. The Resolutions of the Ministerial Conferences form the basis for forest-related policies in European countries and the European Community.

The MCPFE's working modalities allow easy access, facilitate broad and open consultative processes and contributions from various stakeholders, including from forest science. Forest science has used this opportunity and has contributed with its competence to forest policy deliberations and implementation of political commitments in the past. For the coming years, new opportunities arise with regard to the follow-up work of the 4th Ministerial Conference on the Protection of Forests in Europe, held in Vienna in April 2003.

Keywords: forest policy; forest science; MCPFE

1. Introduction

The Ministerial Conference on the Protection of Forests in Europe (MCPFE) as a policy platform for Europe has succeeded in establishing a consistent forum for dialogue on forests and their management in Europe. Since 1990 it has taken major steps towards sustainable development. With its main characteristics, i.e. the long-term commitment at the highest

1 This paper is based to a large extent on a paper delivered at the international IUFRO Workshop: The Forest Science/Policy Interface in Europe, Africa and the Middle East held in June 23–27 2003, in Copenhagen, Denmark.

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political level across Europe as well as the collaborative and flexible approach, the MCPFE has become the most important forest policy making entity in Europe.

The MCPFE involves 44 European countries, the European Community and, in addition, 41 observer countries and international organisations, including organisations of the scientific community, notably the International Union of Forest Research Organizations (IUFRO), the European Forest Institute (EFI), the International Institute for Applied Systems Analysis (IIASA), the International Plant Genetic Resources Institute (IPGRI) and the United Nations University (UNU) (Table 1).

The MCPFE is able to flexibly respond to and address urging issues and concerns of forest and environmental policies which are placed on the political agenda. Policies and actions are then developed in a joint effort, based on the consensus principle.

The voluntary and non-institutional nature of the MCPFE leads to political commitments at Ministerial Conferences of the European countries and the European Community. The decisions taken at Ministerial Conferences then form the basis for the related follow-up work.

2. Ministerial Conferences 1990–1998 and the input of the scientific community

2.1 Strasbourg 1990

The First Ministerial Conference on the Protection of Forests in Europe was held in Strasbourg in 1990. Against the background of the problems of forest degradation, the Conference was attended by 30 European countries and the European Community as well as by several intergovernmental organisations. The MCPFE served as a common European platform for collaboration before the institutional changes took place in Central and Eastern European Countries.

Cross-border protection of forests in Europe and tackling the problem of forest dieback was at the core of the political decisions in Strasbourg. Six resolutions were agreed upon (Table 2). These “Strasbourg Resolutions” focused particularly on technical and scientific co-

Table 1. European countries, Observer countries and Observer organisations.

European countries (45) Albania, Andorra, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, European Community, Finland, France, Georgia, Germany, Greece, Holy See, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Monaco, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Serbia and Montenegro, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom
Observer countries (13) Australia, Brazil, Cameroon, Canada, Chile, China, Ghana, India, Japan, Republic of Korea, Malaysia, New Zealand, USA
Observer organisations (28) CEI Bois, CEPF, CEPI, COPA, Council of Europe, EFI, ELO, ENFE, EOMF, FAO, FECOF, Greenpeace International, IFBWW, IIASA, ILO, IPGRI, ITTO, IUCN, IUFRO, Montreal Process, UEF, UNDP, UNECE, UNEP, UNFF, UNU, USSE, WWF International

Table 2. Strasbourg Resolutions (MCPFE 2000a).

S1	European Network of Permanent Sample Plots for Monitoring of Forest Ecosystems
S2	Conservation of Forest Genetic Resources
S3	Decentralised European Data Bank on Forest Fires
S4	Adapting the Management of Mountain Forests to New Environmental Conditions
S5	Expansion of the EUROSILVA Network of Research on Tree Physiology
S6	European Network for Research into Forest Ecosystems

operation across Europe in order to provide necessary data and information for common measures concerning European forests.

The Strasbourg Resolutions and their implementation are examples of the interlinkage of science with policy. On the one hand, existing programmes like the International Co-operative Programme on the Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests) have been lifted to the political level through Resolution S1, and on the other hand many new initiatives where started, e.g. the European Network for Research into Forest Ecosystems (EFERN), through the adoption of Resolution S6 to gain knowledge on ecosystem aspects of forests. These research programmes and scientific networks have provided knowledge and contributed to the implementation of MCPFE commitments, some continuously over the last 13 years (MCPFE 2003a). Their work has had considerable impact on further decisions regarding forests through the knowledge base provided, not only for the MCPFE but also for a wider audience of the science and policy community (Ministry of Agriculture and Forestry Finland 1995; Liaison Unit Lisbon 1998c,d; MCPFE 2003a).

The international co-ordination of the implementation of the Strasbourg Resolutions where partly also in the hand of scientific organisations and experts which provided the continuos influence of the scientific information to the political debate e.g. Resolution S2 is co-ordinated through the International Plant Genetic Research Institute (IPGRI), S5 through the University of Oulo, Finland and S6 through the Swedish University of Agricultural Sciences.

2.2 Helsinki 1993

The Second Ministerial Conference in Helsinki was driven by the decisions of the United Nations Conference on Environment and Development (UNCED) 1992 in Rio de Janeiro with regard to the concept of sustainability. This marks also a slight shift towards a more policy oriented direction of the MCPFE. In addition to 37 European countries and the European Community, several organisations from the private sector, the international forestry community and environmental NGOs as well as the scientific community participated in this conference (Ministry of Agriculture and Forestry Finland 1993b).

The General Declaration and the four Helsinki Resolutions reflect Europe's approaches to global environmental issues, namely promotion of sustainable forest management, conservation of biological diversity, strategies regarding the consequences of a possible climate change for the forest sector, and an increasing co-operation with countries in transition to market economies (Table 3).

At the Helsinki Conference the European countries also agreed on a common definition of sustainable forest management (SFM) reflecting the global sustainable development discussion: "Sustainable management means the stewardship and use of forests and forest 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,

Table 3. Helsinki Resolutions (Ministry of Agriculture and Forestry Finland 1993a).

H1	General Guidelines for the Sustainable Management of Forests in Europe
H2	General Guidelines for the Conservation of the Biodiversity of European Forests
H3	Forestry Co-operation with Countries with Economies in Transition
H4	Strategies for a Process of Long-Term Adaptation of Forests in Europe to Climate Change

economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems." (Helsinki Resolution H1; Ministry of Agriculture and Forestry Finland 1993a)

Again the aspect of integration of all European partners played an important role – the resolution on co-operation with Countries with Economies in Transition (CITs) helped to initiate hundreds of projects between Eastern and Western European countries (MCPFE 2003a).

The interface with the scientific community was maintained through the participation of IUFRO in the Helsinki Conference. In general, the Helsinki Resolutions gave a political view on sustainable forest management leading to a series of implementation steps for the subsequent years. Most notably, the development of the Pan-European Criteria and Indicators (C&I) for SFM was conducted with the involvement of a scientific advisory group.

Ultimately, the C&I have been shaped according to the policy debate within the MCPFE. The impact of scientific knowledge to the formulation of the pan-European C&I has still been important. A similar path of development applied to the formulation of the Pan-European Operational Level Guidelines (PEOLG) for SFM. The policy debate leading to the Third Ministerial Conference in Lisbon has profited from the scientifically elaborated proposals both of the C&I and the PEOLGs, as it helped shaping and deepening a common and more detailed understanding of the concept of SFM in the European context.

Finally, also the implementation work of the Resolutions H4 is linked to science through the co-ordinating role of IUFRO.

2.3 Lisbon 1998

The Third Ministerial Conference, held in Lisbon in June 1998, focused on the relationship and interaction between the forest sector and society and socio-economic aspects of sustainable forest management. 36 countries and the European Community signed two resolutions (Table 4). Observers from various civil society groups including the scientific community represented by EFI and IUFRO (Liaison Unit Lisbon 1998b) participated in the Conference and also had the possibility to state their experiences in the preparation process of the Lisbon Conference. Due to its participatory approach all groups have the opportunity to be involved in the debates of the MCPFE on the same grounds as the country representatives.

The topics emphasised by Resolution L1 were rural development issues, public participation, education, training and gender issues, valuation of goods and services as well as wood and its relation to substitutes. An important contribution to the elaboration of Resolution L1 was provided by the FAO/ECE/ILO Team of Specialists on Social Aspects of Sustainable Forest Management through the report "People, Forests and Sustainability". This group was comprised of various experts in the field, including scientists.

Additionally, the C&I and PEOLG – as result of the Helsinki follow-up work – were confirmed by the ministers through Resolution L2. Furthermore, a co-operation with the

Table 4. Lisbon Resolutions (Liaison Unit Lisbon 1998a).

L1	People, Forests and Forestry – Enhancement of the Socio-Economic Aspects of Sustainable Forest Management
L2	Pan-European Criteria, Indicators and Operational Level Guidelines for Sustainable Forest Management

Ministerial Process "Environment for Europe" was established by endorsing the joint pan-European "Work-Programme on the Conservation and Enhancement of Biological and Landscape Diversity in Forest Ecosystems 1997–2000" – in short the "Biodiversity Work Programme" (Liaison Unit Lisbon 1998b).

The pan-European implementation of the commitments of the Lisbon Conference was done through the MCPFE Work Programme. The structure of the Work Programme followed the three aspects of sustainable forest management – the ecological, economic and socio-cultural dimensions – and deals with them in a comprehensive way.

The Work Programme contained 41 actions involving international scientific and technical institutions and organisations working in the field of forestry, to facilitate the implementation work of the actions on a pan-European scale (MCPFE 2000). This co-operation, included the Food and Agriculture Organization of the United Nations (FAO), the United Nations Economic Commission for Europe (UNECE), the United Nations Environment Programme (UNEP) and several NGOs.

Research institutions such as IUFRO and EFI played an important role in the implementation work of the Lisbon Resolutions, either as focal point for implementing actions of the Work Programme or through their contribution to the implementation of other actions. Examples include the implementation of the Biodiversity Work Programme, the work on the improvement of the pan-European indicators for sustainable forest management and the elaboration of the MCPFE approach to nfps (MCPFE 2003a):

- Research organisations and researchers in their personal capacity have participated in a series of workshops concerning the Biodiversity Work Programme and have facilitated its implementation.
- The development of the MCPFE Approach to National Forest Programmes in Europe was done in parallel to the COST Action E19 "National Forest Programmes in a European Context". Mutual reports and participation in the discussion of the MCPFE working groups and COST E19 meetings facilitated the input of scientific knowledge into the policy debate. The demand for knowledge by the policy group in return provided stimuli to the work of the members of COST Action E19.
- The improvement work of the Pan-European Indicators for SFM was guided by an advisory group composed of experts representing the technical and scientific knowledge of European organisations (including EFI) with regard to data collection and analysis. Their proposals can be regarded as the key input elaborated together with the Liaison Unit Vienna for a series of workshops and expert level discussions in the preparation of the Vienna Conference.

IUFRO, EFI and IPGRI have also contributed actively in the deliberations and preparations for the Fourth Ministerial Conference in Vienna in 2003. Recently two further international scientific organisations have become observers in the MCPFE process, namely IIASA and UNU.

3. The Living Forest Summit in Vienna 2003

The Fourth Ministerial Conference on the Protection of Forests in Europe – the Living Forest Summit – was held from 28 to 30 April 2003, in Vienna, Austria. Ministers and high level representatives of 40 European countries and the European Community signed the Vienna Living Forest Summit Declaration and five Vienna Resolutions (Table 5). 24 observer organisations and institutions – including IUFRO, EFI, IIASA, IPGRI and UNU – as well as 4 observer countries also participated in the Conference and contributed actively to the multi-stakeholder dialogue (MSD). The MSD provided another opportunity for the scientific community to highlight the important relation of scientific knowledge and policy formulation especially with a view to the implementation of the commitments of the Vienna Conference.

The Vienna Living Forest Summit Declaration emphasises the multiple benefits which has to be taken into account for a future-oriented forest policy. In this respect co-ordination and partnerships with other sectors leading to shared responsibilities are highlighted. The main commitments made through the Vienna Declaration aim at benefiting rural livelihoods and urban societies, building strong partnerships, tackling global challenges and putting commitments of the MCPFE into action through measures and activities defined in the Declaration.

Vienna Resolution 1 aims at involving all interested sectors and groups in a dialogue by highlighting various means and approaches for the future. Through this resolution also the "MCPFE Approach to National Forest Programmes in Europe" as an instrument for optimising this objective has been adopted.

The promotion of the use of wood as an environmentally sound and renewable resource as well as the use of non-wood goods and services are highlighted through Vienna Resolution 2. Furthermore, the promotion of innovation and entrepreneurship, the enhancement of workforce know-how as well as workforce safety are main commitments of this resolution.

Vienna Resolution 3 gives increased attention to the cultural for forest policy making. The promotion of the assessment of historical and cultural sites, securing property rights and land tenure arrangements and the promotion and the communication of the social and cultural dimensions are central commitments of this resolution.

Vienna Resolution 4 identifies policy planning and implementation in line with the conservation of forest biological diversity, combating illegal harvesting and related trade, further developing protected forest area networks, restoring biological diversity in degraded forests, promoting native tree species and preventing negative impacts of invasive alien species, monitoring the development of forest biological diversity as key issues for Europe. In addition, the "MCPFE Assessment Guidelines for Protected and Protective Forest and Other

Table 5. Vienna Declaration and Vienna Resolutions (MCPFE 2003c).

Vienna Living Forest Summit Declaration	European Forests – Common Benefits, Shared Responsibilities
Vienna Resolution 1	Strengthen Synergies for Sustainable Forest Management in Europe Through Cross-Sectoral Co-operation and National Forest Programmes
Vienna Resolution 2	Enhancing Economic Viability of Sustainable Forest Management in Europe
Vienna Resolution 3	Preserving and Enhancing the Social and Cultural Dimensions of Sustainable Forest Management in Europe
Vienna Resolution 4	Conserving and Enhancing Forest Biological Diversity in Europe
Vienna Resolution 5	Climate Change and Sustainable Forest Management

Wooded Land in Europe" – also elaborated with strong scientific input before the Vienna Conference – were adopted through this resolution. Furthermore, the "Framework for Co-operation between MCPFE and Environment for Europe/PEBLDS" on key issues of forest biodiversity was adopted through this Vienna Resolution 4.

Finally, Vienna Resolution 5 recognises the need to further promote the concept of sustainable forest management in the context of the continued debate on climate change and forests to ensure the multiple benefits of forests in the long run. Promoting the use of wood as an environmentally sound and renewable resource and as the alternative to non-renewable products is highlighted in this respect.

4. Future research needs related to the MCPFE

The Living Forest Summit in Vienna in 2003 marks the beginning of a new working cycle for the MCPFE process. As a next step another MCPFE Work Programme has to be elaborated for the implementation of the commitments made in the Vienna Resolutions. This Work Programme, which will be elaborated over the course of the next months, will focus on the topics outlined in the resolutions. In practically each of these the research community is directly addressed to contribute with specific actions.

With a view to the future opportunities of the scientific community in the follow up work of the Vienna Conference the following issues could serve as starting points for further work:

Vienna Resolution 1
- Evaluation of the application of nfp approaches
- Analysis of overlaps, gaps and inconsistencies between forest sector and related sectoral policies
- Identification of approaches to and mechanisms for inter-sectoral co-ordination

Vienna Resolution 2
- Market-based provision of new forest products and services
- Valuation of the full range of benefits of forests
- Competitiveness and entrepreneurship in the forest sector, inter- and intrasectoral collaboration
- Trends in quantity and quality of forest workforce

Vienna Resolution 3
- Cultural dimension in forest policies and programmes
- Identification and collection of data on forest-related cultural sites related
- Role of the forest-related socio-cultural dimension in sustainable development

Vienna Resolution 4
- Relation of the ecosystem approach to sustainable forest management
- Impact of illegal harvesting of forest products and associated trade on forest biodiversity
- Input for a pan-European understanding of forest types

Vienna Resolution 5
- Incentives for the use of wood as renewable resource and sustainable consumption
- Inventory, monitoring and reporting of changes in carbon stocks in forests and forest products
- Impact of climate change on forests and on their goods and services

- Potential scope and methods of carbon sequestration in forests and forest products and of benefits and costs and mechanisms to share them

The scientific community furthermore has an important role to play not only in the implementation of policy commitments but also in identifying future issues, providing input to the on-going policy debate and in evaluating the output and outcomes of policies.

Experiences made over the years by the MCPFE in collaborating with technical bodies such as UNECE/FAO shows that streamlining of timing, co-ordination of work and collaboration on specific actions brings benefit to all partners involved in terms of quality of decisions taken, efficiency of work and progress that can be made in implementation. This model of co-operation could also be applied more and more to the work of the scientific community with the MCPFE in the future.

Taking account of the participatory working modalities of the MCPFE the opportunities for research organisations and scientists are quite high. Although the policy decisions do not translate all scientific information directly into actions this information proved to be a valuable base for the MCPFE work so far.

5. Conclusions

This review of the role of research in the MCPFE demonstrates that forest science has played an important role in the past.

The knowledge on forest ecosystems was significantly increased through the implementation of the decisions of the First Ministerial Conference in Strasbourg facilitated by the scientific community. Many programmes and organisations have been established through this Conference and will continue to operate.

The resolutions adopted at the Helsinki Conference recommended a series of procedures which lead to implementation of the protection and sustainable management of forests in European countries. The elaboration of the C&I for SFM and the PEOLG as follow up activities of the Helsinki Conference leading also to the Lisbon Conference has been based on scientific expertise, scientific input was also given to the elaboration of Resolution L1.

With the MCPFE Work Programme on the follow-up of the Lisbon decisions the scientific community could facilitate the implementation of various actions. Finally, scientific expertise was important in the preparation of the Vienna Conference in many respects, most notably regarding the work on biodiversity issues, nfps and indicators for SFM.

The MCPFE process and its work proved to be fruitful and mutually stimulating for the scientific and the policy community in the past. For the implementation of the commitments of the Vienna Conference many opportunities exist to significantly contribute to the work of the MCPFE again. Furthermore, the policy decisions to be made in the coming years could be facilitated through an even increased collaboration of the scientific community with the MCPFE.

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List of Abbreviations

CITs	Countries with Economies in Transition
C&I	Criteria and Indicators for Sustainable Forest Management
GCC	General Co-ordinating Committee
EFI	European Forest Institute
EFERN	European Network for Research into Forest Ecosystems
FAO	Food and Agriculture Organization of the United Nations
ICP Forests	International Co-operative Programme on the Assessment and Monitoring of Air Pollution Effects on Forests
IIASA	International Institute for Applied Systems Analysis
ILO	International Labour Organization
IPGRI	International Plant Genetic Resources Institute
IUFRO	International Union of Forest Research Organizations
MCPFE	Ministerial Conference on the Protection of Forests in Europe
MSD	Multi-stakeholder dialogue
NFP	National Forest Programme
NGOs	Non-Governmental Organisations
PEBLDS	Pan-European Biological and Landscape Diversity Strategy
PEOLG	Pan-European Operational Level Guidelines for Sustainable Forest Management
SFM	Sustainable Forest Management
UNCED	United Nations Conference on Environment and Development
UN/ECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNU	United Nations University
UNEP	United Nations Environment Programme

Response to "The Role of Research in the MCPFE" – Research Needs in the Pan-European Process: The Role of EFI

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Abstract

The Ministerial Conference on the Protection of Forests in Europe (MCPFE) and the European Forest Institute (EFI) have their common roots in the international and European deliberations on forests. Both institutions are potential congenial partners: The MCPFE benefits from the scientifically based knowledge on European forests, the provision of which is the main purpose of the EFI. In particular, scientific expertise, as well as interdisciplinary and socio-economic research has been required by the pan-European forest policy process. However, during the past 10 years the EFI did not become the monopoly forest research institute of the MCPFE due to high competition in forest research. The strengths of EFI have been in networking and forest information systems. Future challenges could be interdisciplinary research at the European level, as well as the development of effective approaches for disseminating knowledge.

Keywords: European forest policy dialogue; forest policy research; interdisciplinary research; dissemination of knowledge

Common roots

The preparations of the UN Conference on Environment and Development (UNCED) in 1992 which go back to the mid-1980s, as well as the deliberations of the first Ministerial Conference on the Protection of Forests in Europe (MCPFE) in 1990 in Strasbourg emphasised the need for forest research in which crosses national borders. In 1993 the European Forest Institute (EFI) was been established as an independent European research institute. The visionary founders of

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EFI expected knowledge-based information on the use of forest resources in Europe as the basis for political deliberations. According to Article 2 of EFI's Bylaws, the purpose of EFI is "to undertake research on forest policy, including its environmental aspects, on the ecology, multiple use, resources and the health of European forests and on the supply of and demand for timber and other forest products, and to prepare forecasts of future development of the European forest resources and their utilization." The 10th Anniversary of EFI is a welcome opportunity to assess whether the EFI has become the main contributor of scientifically based knowledge to the pan-European forest policy dialogue.

Products of forest policy research

Forest policy research aims at illuminating the consequences of alternatives so that forest policy makers can know what they will obtain and what they will give up when they select a particular course. In accomplishing this goal, the products of forest policy research can be data, ideas, or arguments (Weiss 1991). Data help policy makers do what they wanted to do (e.g. number of urban forest owners, monetary value of forest recreation). Ideas shape people's assumptions about what is important, what needs to be done, and what solutions are likely to achieve desired ends (e.g. sustainable forest management, national forest programmes). Arguments support an advocacy position, legitimatise specific interests (e.g. forests as a part of natural heritage, impact of climate change to forest management). In EFI's work programme, data, ideas, or arguments may be produced. If scientific expertise is already available it can be provided by consultation.

Scientific expertise

The pan-European forest policy dialogue within the framework of the MCPFE from its inception has had much trust in scientific expertise and research. The Strasbourg resolutions S2, S3, S4 and S6 launched European networks on biological and ecological research which are still in force. All of the other resolutions of the Strasbourg, Helsinki, Lisbon and Vienna Conferences supported research, often interdisciplinary research, for facilitating the accomplishment of the resolution's goals. In many workshops of the Liaison Unit of MCPFE, the expertise of experts was utilised, however, without establishing a permanent group of scientific advisors such as the Intergovernmental Panel on Climate Change (IPCC) for the climate change deliberations and the Subsidiary Body on Scientific and Technological Advice (SBSTA) for implementing the Convention on Biological Diversity.

Since its establishment in 1993, EFI has contributed much to the work of the MCPFE, particularly in the provision of data concerning the management and conservation of forests in Europe. Due to its dense network of forest researchers working at universities and forest research institutes, EFI is an invaluable source of expertise if a certain area is summoned by the MCPFE. Though EFI research programmes widely correspond to the issues of the pan-European forest deliberations, it did not become the main or even unique complementary research institution of the pan-European process. One reason might be that the forest research situation in Europe is highly competitive; the Liaison Unit of the MCPFE is better off not to become dependent upon one research institution. Another reason is that in most cases, scientific advice and not research is required by the forest policy dialogue, which exceeds the capacity of the EFI researchers. Furthermore, the topics to be negotiated by the MCPFE may

change in the future so that it may be difficult for the EFI to keep pace. At any case, the complementary relationship of the MCPFE and EFI has been discussed for a long time. The pros and cons of intensifying the partnership could be the topic of a joint workshop in the future.

Interdisciplinary research

Since sustainable forest management in the sense of the Forest Principles has been the main goal of forest policy since the Rio Summit in 1992 to where interdisciplinary research is high on the forest research agenda. It requires the integration of natural and social sciences. In trying to make natural and social sciences more compatible, many barriers have to be overcome. The natural and social sciences' disciplines differ in many respects, for example in the units of analysis, metaphors for thinking of phenomena, and methods. Interdisciplinary research of at least two disciplines requires one to overcome these barriers and to agree on a common conceptual framework that targets common theory building. For the integration of various disciplines, different approaches have been proposed (Stewart and Schroeder 1997, Rossini and Porter 1978). At any case, it is a cumbersome endeavour and requires not only the capacity of collaborating scientists to communicate, but also analytical and theoretical links between different scientific disciplines, common problem definitions, conceptual frameworks and methodical standards, as well as organisational preconditions allowing for a suitable working basis (i.e. sufficient resources, information exchange, ample time etc.) (Conrad 2002).

A further development of interdisciplinary research towards the application of the research results in practice is transdisciplinary research. This means the inclusion of practitioners (forest managers, civil servants) into the research process. By involving practitioners in the research process one expects to facilitate the implementation of the research results. However, the opposite can be true if powerful political actors impede research, and if the results jeopardise their interests (Krott 2001).

Though not explicitly formulated in its bylaws, interdisciplinary research is also a challenge to the European Forest Institute. How else can research on forest policy, explicitly including its economic and environmental aspects and targeting of the provisions of relevant information for policy-making and decision-making in European countries be undertaken? EFI has already rendered outstanding services to the European forest information and communication system, as well as to the geographical integration of European forest research institutes. The better integration of its programme areas under an umbrella project of European significance could be a challenge for the next decade.

Socio-economic research

Many of the resolutions of the MCPFE, in particular those of the Lisbon and Vienna conferences, refer explicitly to the enhancement of socio-economic research on sustainable forest management, including the formulation, implementation and evaluation of national forest programmes, the assessment of a full range of goals and services (L1), inter-sectoral policy co-ordination (V1), as well as the promotion of innovation and entrepreneurship among all relevant stakeholders (V2). The call for socio-economic research was also endorsed by the multi-stakeholder dialogue of the MCPFE in Vienna 2003. Obviously policy

makers expect support from social scientists for making knowledge-based decisions on sustainable forest management. This trust is an obligation; it was also fostered by EFI's efforts in this respect.

But how can socio-economic research be intensified? Which research funds can be approached? We know that the 6th Framework Programme of the European Union is a small productive source for forest research for the years to come. One has to seek other sources. The existing Regional Project Centres or new Topic Centres of the EFI could be one of them. Other options to be examined are sponsoring, all kinds of supranational co-operation and the like. The international status of EFI may facilitate the activities of the EFI in that direction.

Dissemination of generated knowledge

Finally, research is worth nothing if the results do not reach potential users. Thus, the dissemination of generated knowledge by way of publications, exchanges of experts and students, professional contacts, educational workshops, seminars, conferences, training courses and other forms of education is of utmost importance and repeatedly demanded by the MCPFEs (e.g. H3, V2). The EFI has done an excellent job in that respect in the past and nobody doubts that this shall continue in the future. To disseminate scientifically based knowledge in concurrence with the resolutions of MCPFE could be an additional worthwhile task of the EFI. In this context, knowledge is certainly decisive concerning which mechanisms of knowledge dissemination and their purposes are superior. There is some empirical evidence that funnelling knowledge into the minds of people is less successful than the dissemination of knowledge by networks (Pregernig 2000). Research on effective and efficient mechanisms of knowledge would be another challenge for the EFI's future work programme.

Potential congenial partners

The MCPFE and EFI are potential congenial partners: the MCPFE as a high-level platform for the European forest policy dialogue may benefit from research in the policy formulation, implementation and evaluation processes. According to its Bylaws, the EFI undertakes research in European forest policy in close co-operation with other research areas where biological, physical and information sciences, as well as economics are applied. The present co-operation was more of a multi-disciplinary mode than interdisciplinary or transdisciplinary one as required by the MCPFE. Furthermore, the MCPFE reiterates the importance of the dissemination of knowledge. Both aspects, interdisciplinary research and the development of effective approaches for disseminating knowledge could be new challenges to the EFI in addition to its merits in networking and forest information systems.

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Better Information for Good Governance of Forests

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Abstract

Data and information have little value if they are not used, and used properly. They should, however, be considered only as first links in a chain that aims at generating new knowledge and know-how. The amount of information on forests is increasing so rapidly that we can speak about information overpopulation. Therefore, instead of putting emphasis on the amount of new information, the research community should pay more attention to the quality and relevance of data they collect. More socio-economic information and knowledge is, however, needed, and the importance of basic research must not be underestimated.

The existing information on forests should be better utilized. This means that more attention has to be paid to interface between the research community and the users of research results. Access to existing information is not well organized. On the other hand, information providers often do not find appropriate fora for presenting their findings, which then remain inaccessible to others. To help to address these problems, GFIS, Global Forest Information Service, is under construction. Although GFIS is based on metadata, which allows information providers to retain full ownership of their information, the main challenge in building it is connected with ownership and information sharing issues.

Keywords: information; knowledge; science-policy interface.

1. Information in the know-how chain

Information revolution is changing the way we live, how we work and do business, how we educate our children, study and do research, train ourselves, and how we are entertained (G7 Information Society 1995). Consequently, the concept of Information Society is used to describe today's world.

But what does the word information really mean? Often "information" and "knowledge" are used as synonyms but they are not. As depicted in Figure 1 they are both part of a chain

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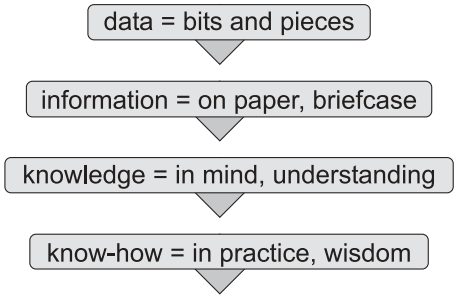

Figure 1. The know-how chain.

that aims at generating know-how (Seppälä 1998). This chain begins from basic or raw data, unorganized bits and pieces, which very often are in the form of numbers and digits. Organizing and refining data results in information. Information can be, for example, in the form of time series. Only when information is processed - often through methods of scientific research - and only when we learn to understand the connections and interlinkages between separate pieces of information we can end up with "knowledge". Knowledge involves synergy in which the whole is more than the sum of its parts.

The difference between information and knowledge can be illustrated as information being on paper, or on a computer screen, or in a briefcase, and knowledge being in the head or in the mind. A research report full of revolutionary results can be very rich in its information contents but does not add anything to general knowledge if it is not read and understood. In this case the chain is cut and information is converted to knowledge only in the head of the author of the article, hopefully at least there.

In addition to being able to answer to the question "what", knowledge has also answers to the question "why". When knowledge is supplemented with skills and wisdom it may be converted to know-how. In addition to being able to answer the questions "what" and "why", know-how also implies an ability to answer the question "how". Know-how may lead to products, either concrete or abstract. In the best case these products are new innovations.

2. Do we always need more information?

Knowledge and know-how are not born without a sufficient information and database. Consequently, it is often complained that there is not enough information available to generate new knowledge and know-how. Research organizations tend to explain that their limited resources cause the lack of information and more money is needed to create the necessary data. This is only partially true. Very often the real reason for the lack of adequate information is that existing resources are not wisely allocated and are not used efficiently. If more resources are given to poorly organized organizations having misdirected and inefficiently used resources it might result in more data and information but not the information that is needed to generate the required knowledge and know-how.

There are, of course, several examples of that important information is still missing. For instance, data on forest resources are too incomplete and inaccurate in most countries. A serious obstacle in creating new knowledge is, however, that we do not fully utilize the

existing information, which means that it is not always necessary to collect new data. One can, slightly caricaturing, argue that the best way to advance creating new knowledge would be to stop collecting new data for the next few years and concentrate resources for compiling, analyzing and synthesizing existing data and information. This might require even less money than we now use to create more information, but definitely, it would require much more the use of our brains and intellectual capacity than what is needed in producing new data. However, for many of us thinking is difficult – routine actions, such as collecting data, are much easier to carry out.

3. Science/policy interface: from data and information to knowledge and know-how

The poor use of existing information is not only the problem of the scientific community. Too often the users of research results are not sufficiently aware of the information research has already produced. There is less a problem of the lack of information than the lack of implementation. If what we already know were implemented properly, this would be a major step forward.

The decision-makers and other users of research results tend to see that the problem of the insufficient use of existing information is mainly the fault of the research community. The users blame researchers for not working on relevant projects, which would supply the information they need right now. The decision- makers also criticize researchers that their results are not always reliable and they give conflicting information on and answers to definite issues. If this leads to a situation in which policy-makers are given a possibility to decide which information to accept as scientifically credible, we are likely to suffer from both poor policy and poor science (Solberg 1997). Finally, the users of research results blame researchers that their language is not understandable to them.

As for the researchers, we tend to criticize the user community: our clients do not understand and do not even want to understand what we say and are not basing their decisions on the best available scientific information. This is really often true, especially if our results and advice are not in line with the thinking and values of our clients. This in fact, is the very difference between the research community and the user community: we researchers tend to stress facts, while the decision-makers tend to focus more on values. If we researchers want to get our message through we must learn how to deal with values. In addition, we have to remember that research is only one policy instrument among several others.

4. Also basic research is needed

In many countries there has been a visible reallocation of resources used in forest research. Based on the current result-oriented short-term thinking, applied research has begun to overrun basic research. Although forest-related basic research is made also outside the traditional forest science, neglecting it will in the long run lead to a situation in which also applied research suffers because our ability to react to rapidly changing research needs will weaken.

Knowledge and fundamental understanding can develop also without directly aiming at applications. An important part of new knowledge and theories have been unraveled by people who were moved simply by intellectual curiosity and desire to discover new

knowledge for its own sake. The so called quartile economy is not very supportive of this kind of intellectual curiosity because there is a risk that so called blue thoughts will never lead to applications or will lead to them only a good deal later. However, know-how and innovations can be best born in an environment in which applied research has a continuous interaction with basic research.

5. More emphasis on socio-economic information and knowledge

Traditionally, forest research has been strong in biophysical sciences. They will be important fields also in the future but today's problems in the forest sector require more socio-economic and policy-oriented research. The share of research allocated to these areas is, however, still insignificant. The situation has not improved in recent years (Bystriakova and Schuck 1999).

One can only guess why the amount of socio-economic and policy research is so small in forest science. The dominance of natural sciences has not perhaps left enough room for other disciplines.

This unbalance is reflected also in the academic forestry education, which has not been able to increase its production of high-quality forest economists and forest policy scientists to meet the demand. One possibility to improve the situation is to increase communication and collaboration with scientists who are outside the traditional forest science disciplines. There are many general economists and social scientists, who are looking for interesting applications for their theories and methods. If we can get an increasing number of these often very highly qualified scientists interested in forestry problems, we can gradually both increase the quantity and rise the quality of socio-economic and policy-oriented forest research. This would improve considerably our knowledge and understanding of the forest sector and its functioning.

The dominance of empirical natural sciences has had an impact also on the use of research resources. Establishing experiments, measurements, and, in general, collecting as much data as possible have been some kind of preconditions for a good research practice in forest science. It has not been very certain and not always even considered important that the exiting costly data and information were fully utilized before rushing to collect more new data.

6. Global Forest Information Service: a tool for a better information management

The amount of information is increasing so rapidly that we can speak about information overpopulation (Koski 1998). This also applies to forestry, and the problem is less in having more information than how to find the most appropriate information for the task at hand. Often, it is relatively easy to find local information but finding information generated by other organizations can be difficult. In recent years, the Internet has evolved a very efficient way of disseminating information, especially across traditional borders, whether they are disciplinary, administrative, or national (Saarikko et al. 2000).

The very rapid growth of the Internet has increased access possibilities but at the same, it has created problems, such that any single search engine is unlikely to access all relevant information (Lawrens and Giles 1999). Also language barriers can impede search efforts. The proposed solution to these problems is the development of an Internet-based metadata service to provide co-coordinated, worldwide access to forest-related information.

The seeds for such a service were planted in 1992 when Agenda 21 recognized the value of electronic media in supporting information sharing and providing access to information sources. It took, however, several years before the work, suggested in Agenda 21 was initiated. The International Consultation on Research and Information Systems in Forestry (ICRIS), an intersessional meeting to support the Intergovernmental Forum on Forests (IFF), took place in 1998 and recommended to the IFF to "endorse and promote the development of a Global Forest Information Service to enhance access to all forest-related information". The IFF accepted this recommendation in 2000 and urged international organizations, donor countries and financial institutions to enhance access to forest-related information and to work with IUFRO in exploring possibilities for a global forest information service.

IUFRO established in 1998 a Task Force to develop a strategy for, and implement, an Internet-based metadata system that will provide coordinated worldwide access to forest information. This was the first concrete step towards building GFIS. The next step was to create a Special Programme at the IUFRO Headquarters in 2001 to develop the technical system design and associated software as well as mobilize metadata for GFIS.

The global nature of GFIS requires the widest possible partnership. Therefore, a GFIS Consortium has been recently established. Members of this consortium are major information providers, which may also serve as GFIS Regional Centers. A GFIS Steering Committee, consisting of those organizations willing to make substantial contributions to GFIS, will guide the strategic direction of the GFIS Consortium. In addition to IUFRO, the members of the Steering Committee are currently CIFOR, EFI and FAO.

A special GFIS Management Unit is being established to take care of developing and maintaining the GFIS system as well as managing and coordinating day-to-day GFIS activities. Currently, this unit is located at IUFRO Headquarters in Vienna as a IUFRO Special Programme that should be replaced by the Management Unit by the end of October 2003.

GFIS is an Internet gateway to forest information resources from around the world. GFIS is unlike most other information services. Its difference is that it provides users with the ability to search information in multiple formats, such as maps, datasets, web resources, journal articles, books and other information relevant to their needs, simultaneously in a single search. This means that GFIS represents a remarkable step towards better information for good governance of forests.

Rather than being a single, large database accessing all information, GFIS is intended to be a network of different forest-related databases. In other words, GFIS is based on metadata, i.e. information about data. This means that participating organizations do not contribute their original data. Instead, they provide the means that GFIS can use to describe the data and information held within individual organizations. GFIS partners can expect that knowledge of their information and organization will be promoted to scientists, decision makers, managers and others interested in the world's forests. The participating organizations can also become the center of activity in linking information providers and users. This human network sharing information and expertise will be the real benefit of GFIS (IUFRO 2003).

7. Knowledge is power

In setting up such a system as GFIS the technical problems can be solved fairly readily, given sufficient financial resources. The experience has already shown that it is the political and institutional problems that are most difficult (Innes 2003). In many cases, the information exists but the owners of the information are not willing to share it with others. This reflects

the fact that the ownership of information and knowledge means power. Therefore, a considerable amount of resources has to be devoted to increase the co-operation and improve collaboration and understanding between organizations, countries and different stakeholders to improve access to existing information and knowledge.

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Response to "Better Information for the Good Governance of Forests"

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I would like to thank the organisers for giving me the opportunity to comment on this keynote, which certainly is an important contribution to the seminar. Technical and policy information is an essential component of the mandate and programme of FAO. In forestry, information is provided through the publication and dissemination of:

- Periodical global reports such as the State of the World Forests (SOFO), the Forest Resources Assessment (FRA) and Yearbook of Forest Products;
- Technical reports, guidelines and field manuals to inform on, and promote the implementation of sound approaches and techniques in different areas of sustainable forest management;
- Newsletters to facilitate information sharing on issues and activities on different themes and subjects such as non-timber forest products and forest genetic resources;
- Last but not least, an international quarterly forestry review, Unasylva.

Most publications are available in two or three languages. some are in five languages. Information is also published on the internet, and most documents are now available on line.

In the recent re-organization of the Forestry Department of FAO, information was given even more attention, within the new Forestry Policy and Information Division. Information is also an important component of the National Forest Programme Facility, which is hosted by FAO.

I would like to thank and congratulate Professor Risto Seppälä for his excellent presentation on the importance of information for sound policy and practice in sustainable forest management, the Global Forest Information Service (GFIS) that was launched, progress made and difficulties encountered in efforts to make this idea a reality.

I support the global assessment made in the presentation and would like to submit 4 points of comments.

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Do we need more information?

I agree that a considerable amount of information remains to be used to generate knowledge and know-how in sustainable forest management. However, in the light of discussions, in the present seminar, on the contribution of forests and forestry to addressing cross-sectoral global challenges, I would suggest that (i) new information and knowledge may be needed in areas like social and economic issues or non wood forest products, (ii) available information may need to be treated taking into consideration additional objectives, concerns and approaches, and (iii) knowledge may need to be packaged and adapted to suit the needs and ability of a broader array of users.

Science/Policy interface

The paper very well presented the issues in information flow from Science to Policy. However the Science/Policy interface should work two ways. An effective flow of information from Policy to Science is essential for the relevance of Research and its results. The information flow and feed back from Policy to Research also needs attention.

Need to improve information for more effective research

The paper well stressed the need to improve the information of users of research results, both policy makers and practitioners, in sustainable forest management. However, experience in supporting forestry research in developing countries suggests that it is also necessary to improve the information of the scientists, for more effective research.

In many countries, research is too isolated/far from the main users, and researchers are poorly aware of global issues. This situation has a negative impact on the relevance of research priorities and programmes.

There is a lack of communication/information among researchers, institutions and countries that negatively impact on the definition, design and implementation of research programmes (duplication, repetition, dispersion of efforts).

At least in developing countries, there is a need to develop the capacity of forestry research institutions and networks to get, produce, treat, organise, disseminate and exchange information. Capacity building should be part of the GFIS projects in developing regions, as it is the case in Africa, where FAO is assisting participating countries in this regard, in collaboration with IUFRO-SPDC.

GFIS – “Knowledge is power”

Political and institutional problems are presented as the most difficult in the establishment of GFIS. However, we should note that the objective of main information producers is to reach their target publics as well as possible, and not to “keep the information for themselves”. They should welcome GFIS, which should be an efficient tool to enhance their impact. If information providers are cautious, it may be because they feel that, at this stage of development, the GFIS policy and principles are not clear enough, in particular concerning

authorship and ownership, that the procedures are not transparent enough. It is essential to define GFIS policy and transparent procedures with all stakeholders. From the early experience of GFIS, I suggest that technical options are not neutral and can be a “political” issue. I agree that technologies are not a limitation. They can do everything, including, potentially, tasks beyond what is agreed, thus the suspicion of some potential partners. The definition of transparent GFIS procedures should be governed by objectives, policy and principles agreed by GFIS partners, not by technologies.

I would like to close these comments by confirming the support and collaboration of FAO in efforts to establish GFIS on a sound basis, in relation with the mandate of the Organization in forestry information.

Panel Discussion: Forthcoming Research Needs

How to Respond to Emerging Research Needs in Europe?

Aigar Kallas

Estonian State Forest Management Center
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What do we want from our forests?

Representing public forest managers, organization like ours is often viewed as the one who should know the exact answer to the above question. Defining our mission as a good governor of forest, providing for increased social wealth by enhancing, or where relevant, preserving forest values, we are to respond to what the user wants from the woods. But the user is not us, the user is the public. And it is their woods they want to best use. So, it is for us to first find out what the public needs, and then ensure its provision.

It has become increasingly obvious that the conventional methods of research do not provide with the tools adequately assessing public desires. It is not only that maximizing the consumer welfare, counted in cubic-feet of lumber or pounds of gold, is the true approximation of the social well-being. It is also the producer's – the forest's – health that is needed to take into account when bettering the social wealth.

What kind of research does it imply?

A multi-dimensional complex of values that the forest provides requires a top-level scientific expertise to first know what exactly, and then advise how exactly those values can be enhanced. Therefore, what we really need from the science is to adequately:

1. assess the contribution of each value dimension to social welfare, also the change in provision of one to the drop or up of the others;
2. translate the public needs to the practice in the way that the most efficient solution to the service providers, as well as consumers, can be developed.

Once again, the multitude of values, often times conflicting, sometimes substituting to each other, complicates the task. Then again, that is why we are calling for the science to help out.

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How should research be organized to best respond to the needs?

No doubt, science is a powerful tool. In the hands of those that want to use it for the better cause, it can do much good. But this sword also has the other edge. The society, trusting scientists as the source of truth, is clearly dependent on its results. We all know, the results of any scientific research can turn out wrong. And if the wrong results turn into unwanted, even harmful desires from the public, it can do a lot of harm to the society, both to the producer as well as to the consumer herself. There are two solutions to it:

1. keep the science independent, let it have a status of an observer and analyst, not a decision-maker;
2. keep the science open to the users – drop the borders.

Research Needs Related to Forests

Paul-Antoine Lacour

CEPI, France

Introduction

The European P&P industry, which provides directly around 260 000 jobs and generates a turnover of 74 billion euro, is represented at EU level by CEPI, the Confederation of European Paper Industries.

Due to the multi-functionality of forests, each stakeholder identifies research needs according to his/her own interest. Among all these research needs, those addressing the competitiveness of forest areas are particularly important because:

- Forest products (pulp and paper, timbers, etc.) directly contribute to the sustainability of our society, due to, for instances their renewability, their recyclabilty, and their particular role in carbon sequestration.
- Forest products are under the fierce competition of other materials, certainly with a different profile as regards sustainable development. It is therefore critical that forest products are elaborated in competitive price conditions with respect to other products.
- So far, the management of forests, which delivers recreational and environmental services, is to a very large extent paid by the sale of forest products.

In this context, increasing the competitiveness of forest and wood supply requires that three types of research fields are investigated. These three fields are forestry, wood supply chain and socio-economics.

Forestry

Improvement of silvicultural schemes

The objective of research is to develop forestry models taking into account, in proper ways, the various roles of forests, in order to meet different economic, social and environmental needs.

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Specific fields of research are, for instance:

- Identification and dissemination of SFM schemes adapted to various contexts (plantation and regeneration techniques, thinning, impact of SFM schemes on annual increment, biodiversity and soil fertility etc.).
- Improved means to manage abiotic risks (windfalls, forest fires etc.), to prevent and cure diseases and pests. This is all the more necessary if climate change negatively affects forests.
- Assessment of the interactive effects of site, silviculture and genetics on forest resource.
- Analysis of the requirements of forest certification on forest stands.

Better assessment of forest resources

Forest is a renewable resource, permanently changing and diverse with respect to wood species, age classes, growing stock, accessibility, etc. It is critical for wood users to have a clear knowledge of present and future resources. This knowledge is a key driver of companies' strategies concerning investments, products etc.

Specific fields of research are, for instance:

- Development of inventory methods with a higher reliability (consistency of inventories at EU level etc.).
- More accurate and user-friendly resource mapping (use of Geographical Information System and satellite etc.).
- Development of modeling tools and studies providing output with respect to future wood availability (impact of climate change etc.).

Improvement of tomorrow's trees and wood

Forest-owners and industrial users of wood are looking for trees with improved characteristics (higher annual increment, resistance to diseases and stress etc.). Some industries, using wood as raw material, are also interested in improved fibre properties. Hence, research developments are needed to meet these objectives, so that tomorrow's forest resource is better adapted to users' needs than current resource.

Specific fields of research:

- Tree breeding (traditional and based on biotechnologies).
- Systems for producing regenerative material (for example, somatic embryogenesis).
- Better understanding of wood and fibre properties in connection with genetic mechanisms.
- Sound assessment of biotechnologies (risk assessment, social acceptance, cost/benefit analysis etc.).

Supply-chain

Identification of the bottlenecks along the wood supply chain

It is critical for the pulp and paper industry (and other forest-based industries) to be able to use in the long-term wood with proper characteristics, regarding both volume and quality. The

objective of the research carried out under this item is to identify the bottlenecks in wood supply and suggest means to overcome them.

Specific fields of research:

- Identification of factors (technical, economical, social, regulatory) restricting an increased wood supply.
- Strategies and policy proposals for overcoming supply limitation.

Innovation/optimisation along the wood supply chain.

Between forest stands and mills, a lot of resources are lost along the supply chain. The use of advanced technologies and improved organisational systems could improve the efficiency of all actors, whilst improving the environmental performance of the supply chain. The objectives are to develop logging technologies and methods as well as logistic systems, in order to make the supply chain more efficient with respect to costs, income and ergonomic conditions of the actors along the chain, and environment.

Specific fields of research are, for instance:

- Advanced logging operations (improvement and ergonomic conditions of on-board computers, increased flexibility, less capital-intensive systems, user-friendly systems etc.).
- Advanced transport systems (optimisation of vehicles, GPS, use of Geographic Information Systems etc.).
- Use of EDI (Electronic Data Interchange) along the supply chain, bar-codes etc.
- Energy efficiency of logging and transport operations.

Policy analysis and socio-economics

Analysis of the policy impacts on forest and forestry

Over the past few years, national and international forest policies have been subject to substantial changes, in order to take into account new economic, social and ecological demand. In addition to forest policies, other regulatory fields (energy, environment etc.) have a substantial impact on forest and forestry. The objectives of research are to provide sound assessment of policy impacts on forest, forestry and the competitiveness of the forest-based industries.

Specific fields of research:

- Evaluation of forest policies.
- Evaluation of policies (energy, environment etc.) impacting forest, forestry and the forest-based industries.
- Benchmarking (comparative studies) of policies impacting the forest sector (national, European and global prospectives to be considered).

Better understanding of forest socio-economics and markets of forest products

The supply of and demand for pulpwood and other forest products and services depends on the economics of the forest sector. Therefore, it is important to have accurate and up-dated

analyses of this sector, both from an economic (modelling) and socio-economic (behavioural science) point of view.

Specific fields of research:

- Global benchmark of the competitiveness of forest areas.
- Economic analyses of the forest and forest sector (economic based assessment of the benefits of forests, potential of the forest sector to support rural economies, employment etc.).
- Modelling of wood and wood product markets (in European countries, but also in non-European regions) taking into account exogenous parameters (transport costs, energy prices etc.) as well as new policies and regulations.
- Interaction between forest management and forest owner behaviour and goals, design of better support systems for small woodland owners.
- Perception/attitude of various stakeholders (local and national authorities, environmental NGOs, citizens/consumers etc.) towards forest, forest products and the forest sector. Consumers' attitude toward wood, wood-based products and competing materials (substitution of products, impact of certified products).

Support by Forest Science to European Biodiversity Policies

Tor-Björn Larsson

European Environment Agency

Forest is a repository of a major part of the European species. Furthermore, forests and other wooded land largely make up the natural and semi-natural ecosystems in Europe. Also the traditional cultural landscape comprise forest and other wooded land, and the area is increasing as marginal areas are abandoned. Because of this forests are important in any general European nature protection and biodiversity policy as well as being subject to specific sector policies.

The target to reduce the loss of biological diversity was globally endorsed by the Johannesburg Summit in 2002, where the participating countries agreed to take actions to achieve significant progress by 2010, among others by:

- promoting sustainable use of biological diversity, including sustainable tourism;
- reversing the current trend in natural resource degradation;
- promoting conservation of ecosystems, World Heritage sites, endangered species, hot spot areas and other essential areas, development of national and regional ecological networks and corridors; and
- controlling invasive alien species.

In Europe the ambition is even higher: 'Halting the loss of biodiversity by 2010'. This target is ambitiously stated in the EU 6th Environment Action Programme (and reinforced with a wider pan-European coverage by the Fifth Ministerial Conference "Environment for Europe, Kiev 2003). Behind this target is an analysis by the European commission identifying the main categories of pressures to biodiversity, the subsequent negative development of Europe's biodiversity and finally a multi-track approach to necessary policy instruments to achieve the target. The following main categories of pressures are recognised to be of major importance:

- pollution from transport, industry and agriculture;
- changes in land-use and over-exploitation of natural resources; and
- non-native species, incl. GMOs.

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It is obvious that research is needed to support actions to meet the '2010 biodiversity target' and beyond. The complex issue of biodiversity must be conceptualised, including how to more precisely identify the major biodiversity components to be taken into account and to formulate operational targets balanced against societal needs.

Several of the bullets listed under the above major policy declarations could as well be headings in a biodiversity research agenda! Forest science has a potential role in addressing these issues, but to a considerable extent new approaches are necessary. For instance, sustainability is by far not a new concept to forest science but the perspective must be widened from the wood resource to encompass all aspects of biodiversity. The social aspects and the needs of local communities must also be given greater attention.

The European commission DG Research has inaugurated a forum, the European Platform for Biodiversity Research Strategy (EPBRS)[1] as 'a forum for scientists and policy makers to ensure that research contributes to halting the loss of Biodiversity by 2010'. The EPBRS recommendations are e.g. implemented in the EU RTD framework programme (in the present 6 FRP in the thematic priority 'Sustainable development, global change and ecosystems').

The EPBRS meetings have since it was created in 1999 been hosted by the country being the the EU Presidency, thus the meetings have been held two times a year. The host country identifies for each meeting a separate main theme for further discussions among the delegates, that are further supported by preceding wider e-conference. Below is cited some examples of the research issues relevant to forest science to be found in the EPBRS declarations:

1. The Danish EPBRS meeting (October 2002) on the theme 'Auditing the Ark – Science based Monitoring of Biodiversity, examples of priority actions:
   - develop a core programme of biodiversity monitoring across Europe,
   - develop and assess appropriate scientifically sound and rigorous monitoring methodologies of biodiversity,
   - analyse research and information gaps in monitoring programmes,
   - encourage as part of best practice the science based monitoring of effects of policies and actions on biodiversity,

2. The Belgian EPBRS meeting (December 2001) on the theme 'Scientific tools for biodiversity conservation: monitoring, modelling and experiments' agreed that 'the management of ecosystems as a contribution to conservation policy must be based on sound scientific understanding of:
   - the needs, values and goals of human society, whether local, national or European, and especially those of stakeholders in managed areas;
   - how humans influence and are influenced by ecological processes in managed areas;
   - how the agencies and individuals with responsibility for the managed areas interact, work and take decisions;
   - how the structure and methods of organisations can be adapted to become more effective in ecosystem management.'

3. The Swedish EPBRS meeting (June 2001) on the theme 'Biodiversity of Freshwater and Forest. Science in support of the Ecosystem Approach' declared that 'The forest-water ecotone, the riparian zone, and related groundwater are all understudied ecosystems. The interactions between them are not clearly understood, though they have important implications for biodiversity conservation and sustainable use of the biological resources

1 http://www.bioplatform.info/

in the forest-water ecotone. The taxonomy and systematics of many groups of organisms in the ecotone is far from complete. Furthermore, there is considerable room for improvement in the methodologies to assess or monitor habitat quality in this ecosystem, or to identify ecosystems with low resilience.'

4. The French EPBRS meeting (December 2000) on the theme 'Biology of Invasions' declared that 'the following three key issues have high priority for European research:
   - develop methods and techniques to recognise and characterise organisms that may be invasive and ecosystems that may be particularly vulnerable to invasion; and develop predictions of invasive behaviour and ecosystem vulnerability to invasion.
   - improve monitoring methodology to detect potentially problematic invasive organisms early; to track invasions; and to evaluate their ecological and socio-economic impacts, and, where appropriate, to control them.
   - develop multi-disciplinary scientific support for appropriate policy on prevention, management for control, and legislation, public awareness and information.'

As shown above the European commission have an active and multi-facetted discussion on the biodiversity research needs. This is not only aiming at the EU RTD programme as such but also at inspiring the Member States national research programmes in line with the objective of creating a 'European Research Area (ERA)'[2]

Finally, as a personal comment, I would like to add that from a policy point of view the issues are often much wider than could be addressed in a single research project (this should be obvious from the introductory bullets). The policy issues may also not be directly 'researchable'. It may not be feasible that the user side in detail identifies the research topics (users often have a more or less direct influence on the funding at programme level). It is better to consider the scientists as a pool of experts in a certain area to consult whenever necessary, making the precise formulation of the research projects an 'in-science' activity.

2 http://europa.eu.int/comm/dgs/research/index_en.html

Forthcoming Research Needs from the Perspective of Mediterranean Forests

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Abstract

Different research priorities related to Mediterranean forests are identified and presented in a matrix. The gaps identified demand a multidisciplinary approach in which a growing weight for social sciences is recognised. The shift from direct to indirect forest management requires increasing social science skills in forest education and research.

Keywords: Forest research, natural resources and social sciences, Mediterranean forest.

1. Introduction

Mediterranean forests are characterised by a high number of social demands that show clearly their cross-sectorial nature (Buttoud 1998). Clear examples of that are e.g their mountainous orography, contrast of long droughts and heavy rainfall, erosion and floods, rich and unique bio-diversity (see European Parliament 1998), high population density and increasing leisure demands.

In fact, Europe's share of boreal and temperate forests is generally rather modest, whereas most of the world's forests under Mediterranean climate are located precisely around the Mediterranean Sea and in the EU. As a consequence of the Europeanisation process, the different regions of Europe show clear specialisation trends, which in the case of the Mediterranean coasts, are linked to the tertiary sector (tourism, residence). Due to this, quality of life is one of its key competition factors defined between others by the shape of forests, landscape and nature.

Traditionally, forest research has been strong in countries with profitable forestry and long traditions of forest management. Both aspects explain the lesser scale of development in Mediterranean countries in the past. The growth in social demands over the past 2 or 3

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decades have not improved the economic performance of Mediterranean forests as this process has been related to cross-sectorial elements. In fact, as a consequence of this process, forest research has even been effectively weakened, as the pre-existing capacities were not prepared for such broad, extensive and intensive research demands. The fact that the formal research output on Mediterranean forests has increased over recent years should not distract our attention from the fact of its scattered and isolated character.

Co-operation in Mediterranean forest research has normally been limited to national networks or vertical networks with other European research institutes located in boreal and temperate areas. On the contrary, horizontal co-operation in the Mediterranean region has been rather exceptional, despite recent positive examples (EFI project centres: e.g. MEDFOREX).

Forest related research capacities in Mediterranean region have rather different performances. Whereas the basic natural science is well developed, applied forest sciences and especially social sciences are clearly underdeveloped. Some exceptions in applied sciences are linked to afforestation as well as watershed and erosion control. The existing capacities in basic natural sciences are only exceptionally integrated into applied forest research.

2. Main research needs for Mediterranean forests

Table 1 lists the main research needs for Mediterranean forests, including the disciplines and the most relevant open research questions.

3. Conclusions

Whereas some of these identified issues are common to the rest of the continent and to a high degree to other developed countries, others (in *italics*) are rather specific to the Mediterranean or at least require a specific research scope.

Nevertheless, it can be stated that the main current research needs related to Mediterranean forests are cross-sectorial issues that require multi-disciplinary approaches. Intra-disciplinary research is much further developed than inter-disciplinary knowledge.

Social sciences are indeed an emerging discipline reaching much further than the traditional economic knowledge (policy, government, sociology, public services, etc.). In fact, sociology is perhaps the paradigm of the emerging disciplines despite coming from the antipodes of conventional forest science. The shift from direct to indirect forest management as one of the main forest challenges is probably one of the reasons behind this substantial change (see Figure 1).

The traditional orientation of forestry on the offer side – logical under a mono-product orientation with a higher demand than the resource can sustainably supply – has to adapt to the new circumstances where the demand is much more complex and in general free ridded. This asks, as in the rest of economic sectors, giving priority to the demand side rather than the supply side.

Despite this, the main demands for social science research require joint research with natural sciences rather than specific isolated social science research (see Table 1 and Buttoud 1998).

Table 1. Main research needs related to Mediterranean Forests.

Issues	Disciplines related	Open research questions
Climate, atmosphere, CO_2 balance	Forestry, meteorology, physics, biology, chemistry	CO_2 balance of forests (stock changes), soil and organic layer balances, forest fires, use of forest products, etc.
Forests, water and soil	Forestry, soil science, chemistry, hydrology, civil engineering	Optimisation of forest cover and management for water cycle (quantitative and qualitative), indicators, restoration techniques, forest fires and soil protection
Bio-diversity and land & forest management	Forestry, biology, agronomy, economy, sociology	Optimisation of forest and agricultural practices for bio-diversity, inventory of (potential) hot sites, easy observation techniques, indicators
Rural development	Forestry, economy, agronomy, sociology, tourism, marketing, civil & industrial engineering	Benchmarking, braking & favouring factors, entrepreneurship, emerging developing factors
Tertiarisation of rural areas & marketing of recreational services	Tourism, marketing, forestry, agronomy, economy, sociology, law	Marketing of recreational services and non-wood products, social and legal barriers, infrastructures, know how requirements
Evaluation of environmental assets of forests and investment decision support methods	Economy, forestry, sociology, finance, law, mathematics, statistics	Optimisation of capitalisation under low interest rates, new long term investment financial products, contrasted mapped evaluation of forests as environmental assets, basic indicators for accurate evaluation
Internalisation of output of environmental services	Law, forestry, economy, sociology	Inventory of existing & possible mechanisms and their expected efficiency, trial studies, social acceptance
Holistic wildland fire fighting	Forestry, engineering, information technology, physics, biology, agronomy, land use, GIS, geography, history, archaeology, sociology	Fire patters in low disturbance forests, intensity and environmental effect of fire, dry fire fighting techniques, decision making support systems
Land owning and user rights and sustainable performance	Law, forestry, agronomy, see & fishing, sociology	Comparative analysis of different ownership and user rights and their effect on preservation of natural resources, key basic differences, benchmarking

Table 1. Continued.

Issues	Disciplines related	Open research questions
Values of forests by rural population, forest owners or urban population	Sociology, statistic, forestry	Dynamic evolution of social perception, social groups, spatial evolution, comparative analysis of effects of PR in forestry incl. benchmarking
Land use policies	Forestry, agronomy, geography, GIS, urban & landscape planning, architecture, sociology	Functional planning, optimisation of land use options, minimisation of impacting uses, risk reduction, driving forces, historical evolution
Urban forestry	Forestry, sociology, landscape, marketing, law, biology, pedagogy, economy	Economic value and efficiency of urban forests (buffer zones), optimisation for educational and recreational uses, contractual management
Public forest services in "*crisis*"	Policy, law, economy, sociology, forestry, public projects & management	Comparative studies in the forest sector and overall, key elements of success and failure, design of options and expected pros and cons including efficiency, trial design

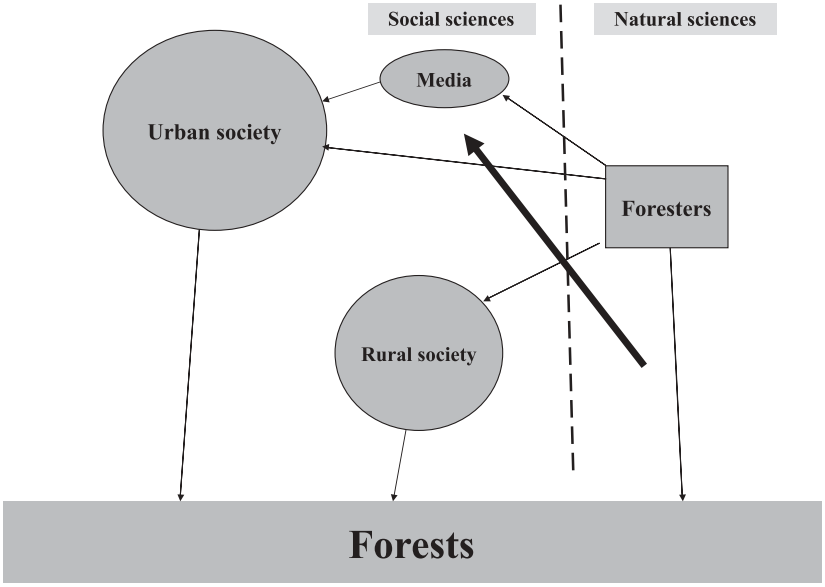

Figure 1. Shifting from natural to social sciences due to increasing importance of indirect forest management in forest sciences

Neither the study plans in forestry, nor the existing research skills are ready for this change. Competition in research even strengthens existing capacities rather than favouring facing up to the identified knowledge gaps.

These changes are embedded in one of the key debates in Europe concerning the future of land stewardship. Should Europe follow the divisional approach driven by market and conservation group pressure (North American model) or should Europe keep the traditional multifunctional use of its countryside, formed mainly by fields, pastures and forests, and adapt this to the new conditions. How shall it be maintained if the socio-economic reasons that permitted it in the past have disappeared?

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Challenges and Opportunities – Forest Research and the 6th FP

Pierre Valette

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European Commission Research

Forests in Priority 6.3 "Global Change and Ecosystems"

Specific Programme (2002-2006)

Area V: Strategies for sustainable land management including coastal zones, agricultural land and forests

Objectives

"Development of strategies and tools for sustainable use of land" with emphasis on (….), forests"

"Integrated concepts for the multipurpose utilisation of (…) forests resources" and the integrated forestry/wood chain in order to ensure S.D.

"qualitative and quantitative aspects of multifunctionality of (…) forestry"

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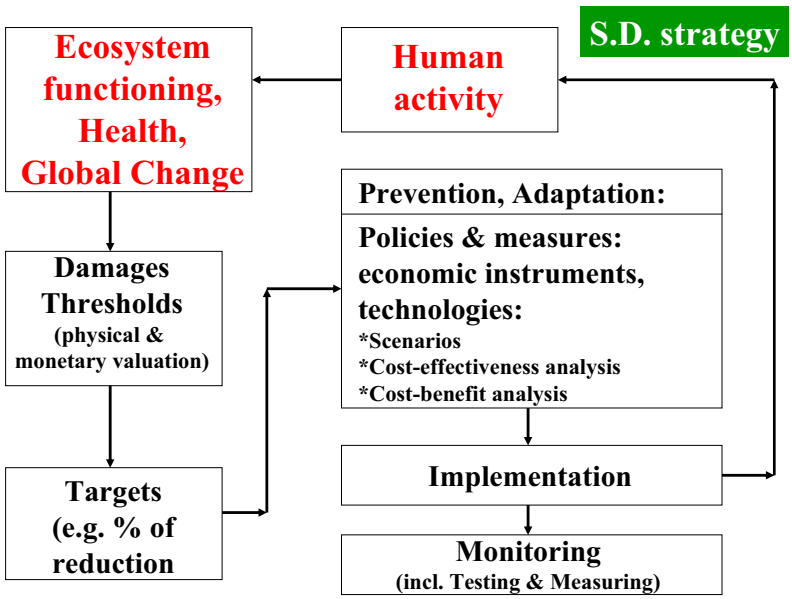
Research will focus on

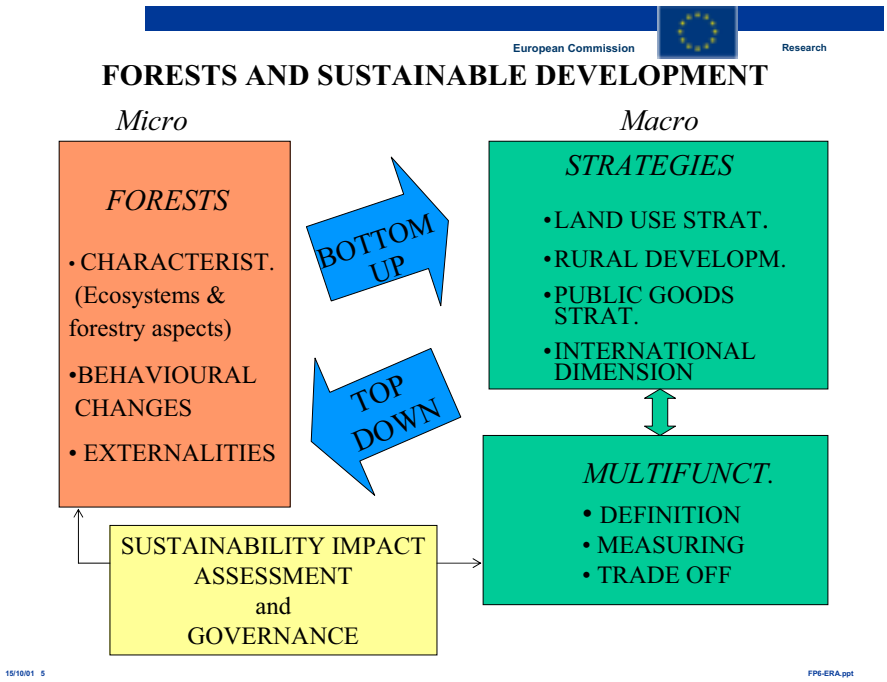
"Positive and negative externalities under different production systems"

"Sustainable forest management considering regional specificity"

"Strategies for sustainable management and multipurpose utilisation of forest resources"

"Cost-efficiency of new environmental-friendly processes and recycling technologies within the integrated forestry/wood chain"

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• EXTERNALITIES
BOTTOM UP
TOP DOWN
STRATEGIES
•LAND USE STRAT.
•RURAL DEVELOPM.
•PUBLIC GOODS STRAT.
•INTERNATIONAL DIMENSION
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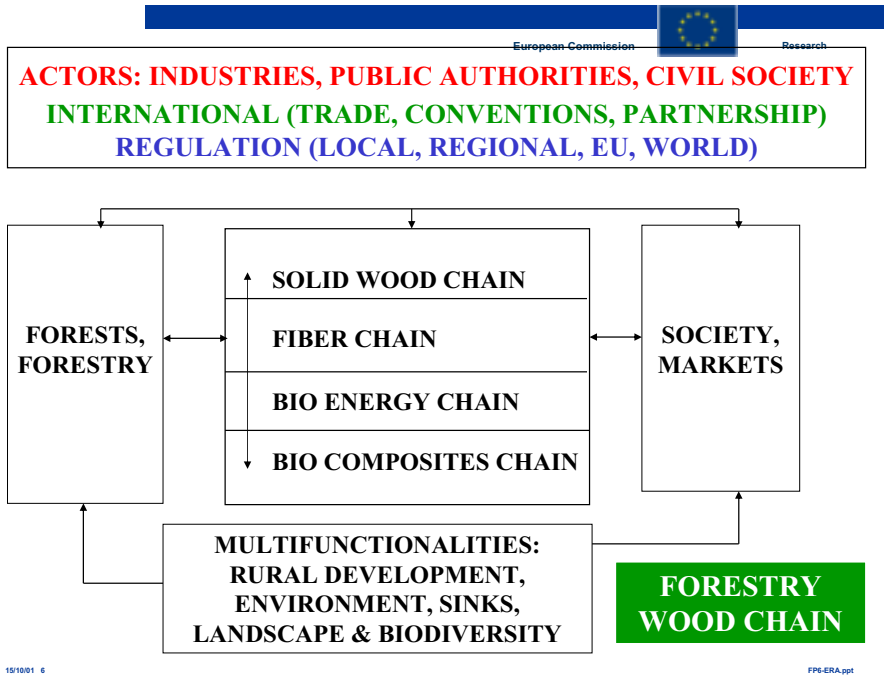
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Research
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REGULATION (LOCAL, REGIONAL, EU, WORLD)
FORESTS, FORESTRY
SOLID WOOD CHAIN
FIBER CHAIN
BIO ENERGY CHAIN
BIO COMPOSITES CHAIN
SOCIETY, MARKETS
MULTIFUNCTIONALITIES: RURAL DEVELOPMENT, ENVIRONMENT, SINKS, LANDSCAPE & BIODIVERSITY
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To summarize

- True integration of disciplines (not a compilation): natural and life sciences, economics, technologies, social dimension.
- Environmental dimension (global and local) taking into account economic and social aspects.
- Quantitative economics, including economics of externalities and multifunctionality (at the micro and macro levels). Development of tools and accounting frameworks.
- Planning and links with other policies process should be subject of governance

Plenary Discussion: How to Respond to Emerging Research Needs in Europe?

How to Respond to Emerging Research Needs in Europe?

François Houllier
INRA, France

Introduction

Other speakers have dealt with the various challenges and research needs addressed to the scientific community in the field of forestry: (*i*) the global environmental changes (e.g. climate, air pollution and atmospheric deposition, land use, biological invasions) and the subsequent questions related to the biodiversity (its origins and evolution, its organization and the spatial and dynamic interactions among its components, its role in biosphere functioning, as well as its uses and conservation), to the role of forest ecosystems in the global biogeochemical cycles, and to the means by which forestry and the related industries might contribute to mitigate global warming; (*ii*) the changes in the expectations of our societies – which have become urban in developed countries, and are losing their rural ties in the developing countries – towards forests, with an increasing aversion to 'natural risks' and an increasing demand for public goods and services (e.g. recreation, air and water quality, land rehabilitation, slope stabilization), and the subsequent requests to develop information systems, to assess the value of these non – or not yet? – commercial goods and services and to design procedures for solving the potential conflicts among the various stakeholders; (*iii*) the need for improving the competitiveness of the forest-wood industry cluster, and the subsequent requests to produce, label and trace homogenous and well-defined products issued from heterogeneous timber resources, to develop more efficient means of producing energy, and to enhance the natural durability of wood products.

Here, I choose to focus on the 'natural dynamics' of science and more precisely on a few, and by far not exhaustive, aspects of *how* the scientific community can address these research needs by crossing several types of borders and by making the best use of recent scientific and technological developments. Because of my personal background, these examples of responses are mainly related to the field of forest ecology and management.

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Crossing geographic borders: the need for comparative approaches

Industrial competitiveness, biodiversity, climate change, multifunctional and sustainable forest management have become internationally agreed mantras, or catchwords. For the scientific community, it would be, however, misleading and counterproductive to consider, or to let consider, that the underlying processes and scientific and technological issues are similar everywhere in the world. For example, land use changes do not follow the same path, at the same time, in tropical and European countries: in the former, the loss of biodiversity is often driven by deforestation, forest degradation and/or fragmentation, whereas in the latter, it is the extension of forests on former agricultural land that sometimes threatens the survival of plant and animal species which are associated to certain traditional types of agriculture. Similar differences occur, among as well as within continents, if we consider the regional variations in the impact of climate warming on forest ecosystems, or the potential development of bioenergy. A systematic analysis of what these international mantras mean in the various parts of the world is therefore necessary (e.g. see the work achieved by IPCC to regionalize its climatic projections and their possible consequences), both to identify some generic scientific questions (e.g. the role of biodiversity in the functioning of ecosystems) and to properly focus research on regionally relevant topics (e.g. the adaptive diversity of tree phenology [respectively of tree water economy] in zones where temperature [respectively rainfall] changes are most likely to occur).

Combining global issues and crossing disciplinary boundaries: integrative biology for understanding and managing tree adaptive diversity, and for improving wood quality

Choosing tree species and genotypes that are adapted to local site conditions or have ‘good’ wood properties has been a longstanding goal of the tree breeding programmes, which started in the second part of the 20th century and have been heavily relying upon quantitative genetics and large long-term experimental networks. Climate change (e.g. the likely increase of water stress in European temperate and Mediterranean regions) and the concern for biodiversity are major reasons for continuing such programmes and focusing them on the adaptive diversity of trees with respect to water and heat stresses. The recent developments in genomics and ecophysiology, combined to the existence of the above mentioned experimental networks, provide new means for addressing this ‘classical’ question in both natural and breeding populations. Similarly, the combination of genomics, biotechnology and physiology should provide new means to address the need to improve the competitiveness of wood (at least, in intensively managed planted forests). Two fields of application are likely to be considered: fibre quality in relation with wood formation, and natural wood durability in relation with the biochemical processes involved in heartwood formation.

Linking biodiversity components and ecosystem functioning: towards new experiments, monitoring systems and models

The focus on biodiversity and the recognition that its various components are interacting with each other inside forest ecosystems, as well as with other terrestrial ecosystems, generate new needs in terms of modelling and of long-term experimentation and monitoring. Indeed, most existing ecosystem experiments and models fail to take the spatial, dynamic and multidimensional nature of biodiversity into account. For example, a lot of existing long-term experiments address ‘simple’ questions such as the effect of silviculture on forest growth; similarly, we have a strong capacity to build empirical and process-based growth models for simple stands, but we still lack models that address the ecological complexity of a mosaic of

forest stands; many forest biodiversity studies are still fairly descriptive and focus on assessing the impact of various types of disturbances on the number and frequency of species. On another hand, in simpler ecosystems, such as microcosms and grasslands, recent experiments and models are investigating the role of species diversity in the functioning of these ecosystems (e.g. their productivity or their resistance to disturbance); the extrapolation and 'adaptation', from microcosms and grasslands to forests, of such approaches of functional biodiversity are now needed. There is thus a global need to design various types of new experiments (e.g. local heavily instrumented sites for studying ecosystem functioning, or well-designed observation systems at the landscape level for exploring the interactions among biodiversity components and of these components with various types of disturbance) and to elaborate new models which account for the spatial dynamics of interacting individuals and species within heterogeneous ecosystems and landscapes. These are challenging tasks that require the collaboration of various disciplines such as functional and community ecology, system analysis and applied mathematics.

Crossing forest hedge and mobilizing information technology: towards landscape information systems

In many countries, 'landscape' is emerging as a relevant scale for managing ecosystems. Although this is not (or not yet?) a very well-defined concept, it is clear that a landscape covers a substantial area (from a few to many km^2), is made up of a mosaic of different types of ecosystems (e.g. cultivated land, grassland, forest, aquatic ecosystems), and most often includes human settlements, and that its present organization and dynamics are, at least partially, the product of historical factors and human activities. Simultaneously a wealth of knowledge and tools is becoming available for various biophysical processes (e.g. plant or animal population and community dynamics, transfer of water and nutrients in soils and rivers within watersheds) and for analyzing and modelling the dynamics of landscape components (e.g. multi-agent systems for representing human activities, forest growth models and GIS for predicting forest resources, landscape simulators for visualizing the aesthetic value of plants in urban or rural contexts). In this context, there is an increasing need to design landscape information systems. A key activity in that area would consist in developing generic open-source software platforms, or shells, that have the capability to articulate or couple—but not to integrate in a single tool, because this would be unrealistic and not efficient—various types of models and databases that are, or will be, available (similar simpler platforms have already been successfully developed in the more classical field of forest dynamics, growth and yield).

Assessment of the consequences of the global environmental changes: the need for coupling scenarios, growth models and empirical data

As emphasized by Mohren (2003) in the recent special issue of Forest Policy and Economics, the exploration, projection and prediction of the consequences of the environmental changes will increasingly require the coupling of scenarios (e.g. of land use and forest management practices, of climatic conditions, as well as of wood demand), of process-based growth models, and of various types of empirical data and knowledge (e.g. the detailed information collected in networks of highly instrumented long-term experimental sites, as well as the large databases generated by operational national inventories and the existing yield tables). Although process-based growth models have been under development for about twenty years in cultivated forests, they still exhibit some weakness in predicting growth over long time periods and, more important, there is still a lack of such models for heterogeneous forest stands (i.e. for those very stands, either uneven-aged or mixed, that will

be favoured by near-to-nature silviculture). There is therefore a strong need to jointly refine such models and extend our databases. EFI has specialized neither in growth modelling, nor in generating the empirical data that are required, but it has a strong experience in coupling global scenarios with models and data: it is likely that this networking capability will increasingly be needed.

Bridging the gaps between the higher education and research systems

In several European countries, the forest research and education system has kept a strong emphasis on technical matters, and remained fairly distinct from the general scientific and academic system. In a context characterized by the European homogenization of academic programmes and by global issues which are mostly not specific to forestry, there is clearly a pressure for enhancing the relationships between the forest higher education system and the forest research system and, also, for developing stronger ties of these systems with other disciplines. It is indeed likely that the skills and competences – e.g. in information technology and applied mathematics, integrative biology and ecology, human and social sciences – required by the current and emerging research needs, will not be found only within the realm of the sole existing forest and research organizations.

Conclusion

This sample of potential responses to emerging research needs in forestry is, by no means, exhaustive. However, it illustrates that the need of better experimental data, of renewed modelling approaches, and of a better coupling between these two facets of research will increase in the coming years. It also illustrates that both the needs and the associated responses cannot be confined to the sole forest scientific and academic community. As a consequence, the links with ‘basic’ and human sciences, with other ‘applied’ research fields and with the global university system will clearly be as important as, or even more important than, our capability to further develop European and international networking among the existing forest organizations.

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How to Respond to Emerging Research Needs in Europe? – An Introductory Note

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There are a number of emerging research needs rooting from the international commitments towards sustainable development, and especially related to climate change and protection of biological diversity. These mega-trends in research have been reflected by the European Union in formulating the European Research Area and the 6th Framework Programme. The same issues can be found in the 5 Resolutions of the 4th Ministerial Conference for Protection of Forests in Europe. The concept of sustainability is enlarging, the Helsinki resolutions consisted of 20 quantitative indicators of sustainability, 10 years later, the ones in Vienna already 35.

The challence for the scientific community is to

a) identify the research needs linked to political processes but also in the light of recent new information obtained by research
b) arrange the most cost-effective response to the needs without damaging the ongoing research agenda too much.

In the following, I will concentrate in three points regarding the question of responding to the needs, especially what we could do as members of EFI.

First, we need to further strengthen our networking. EFI can offer 144 member institutions and their scientific capacity, the regional/thematic project centres and the four collaborating research programmes. EFI has a dynamic research strategy which ca be refocused as necessary on emerging needs. The new international status of EFI will form a good platform for pooling the resources within forest research network.

Second, being successful in fulfilling our mission presupposes evolving partnership arrangements with all important stakeholders, actors, policy processes, institutions and organisations in forest and related sectors.

I will repeat here the proposal made by EFI on behalf of Scientific Community at 4th MCPFE summit in Vienna to build a new European partnerships across the stakeholder and institutional borders, such as Collaborative Partnership on Forests (CPF) facilitating to implement and co-ordinate actions deliberated at UNFF process. This European solution could contribute to MCPFE-process by strengthening the knowledge base in preparatory phases as well as in implementing the commitments made and monitoring the progress towards SFM.

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Third strategic tool available is EU 6th Framework Programme in developing European Research Area. In this context we should employ and enhance our network towards true interdisciplinary and cross-sectoral approaches, as is the aim of 6th FP. Inter-disciplinary thinking calls again for the crossing borders over scientific paradigms and narrow traditional discipline-based expertise. We should learn more on that how to throw nets into waters unknown for us, forest scientists. Here we must come out from forests to fields, waters and air, meet big urban cities and rural people.

How to Respond to Research Needs in Europe?

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Russian forests cover about 8 million km^2, and over 25% of the global forest standing volume is concentrated in Russia. 22% of the forests are located in the European part of Russia. The role of this huge territory is important in the sustainability of natural environment of Europe and for the development of European forest complex including forest industry, ecological and social aspects of the European community perspectives. Currently, international investments on forest lands are increasing, especially in forest harvesting, pulp and paper industry, establishment of woodworking enterprises and international enterprises in bioenergy sector, in the market of non-wood products, and less in ecological and scientific tourism business. One of the key activities is estimating the volume and dynamics of the resource base, and risk assessment. Such problems always arise in the forest sector when ecological models and scenarios are created. The purpose of forest scenario modelling is to evaluate multiple management options and to answer on questions relating to a particular development path of a given forest. Forest scenario planning can reduce uncertainty in management outcomes by anticipating the future in a systematic way, thus reduce the likelihood of unexpected events. It can also improve the chance that future developments will agree with specified objectives. But why the using of database and risk assessment in the Russia Federation is problematic? Some of the reasons are discussed below.

Resources databases are often not representative or correct, and need to be verified or/and added for the creation of work models and real scenarios. For instance, forest lands under intensive using located nearly to boundaries with Finland and China or in regions with high density of habitants have serious pressing of illegal cuttings. Official statistic (All Russian Research … 2002) shows an increase in the volume and number of violations during 1996–2001 (Figure 1). The share of illegal harvesting is increasing from 0.39 to 0.82% from actual harvesting (final felling) (Figure 2). Other sources (WWF, IUCN, expert estimations) assess illegal cutting as 12–40% of the volume of final felling. In spite that Russia has a very good forest inventory system the data has to be verified every year. Models and scenarios for the resource base changes must include risk analyses of the factor – unplanned losses of wood.

Another one example is linked with the situation when basic information is not representative. Such situation is illustrated on the example with forest pest outbreaks and

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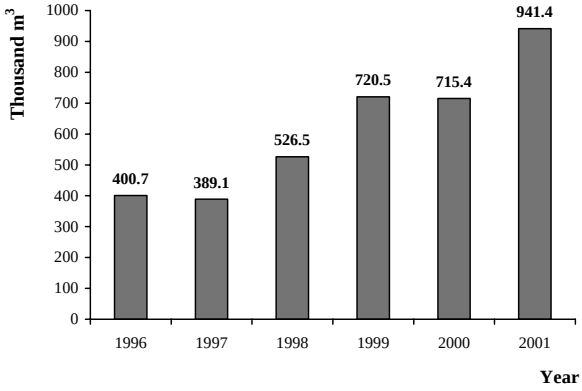

Figure 1. Volume of illegal harvested wood (Source: All Russian Research Institute of Silviculture and Mechanization of Forestry, Puskino. Moscow region 2002)

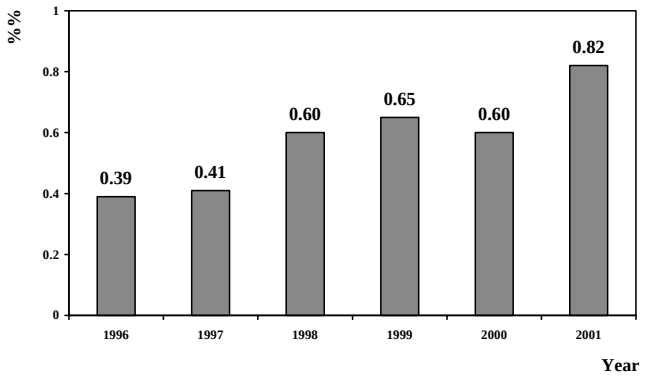

Figure 2. The chare of illegal harvesting from actual harvesting (final felling).

spreading of diseases. There are official statistics managed by Ministry of Natural Resources of Russia Federation reflect forest health including forest areas damaged by fires, pest and diseases, and industrial pollution, quantity of fires, mortality of forest stands from different factors and other indicators (All Russian … 2002; Russian Center of … 2002). Generally speaking existing systems of forest health monitoring lead to a distortion of the actual situation (Selikhovkin 2000; Selikhovkin and Kozlov, 2000). For instance, the comparison of information on pest outbreaks using official data sources (data of Federal Forest Service of Russia Federation) and other available data sources is tedious, time consuming and often leads to unsatisfactory results. As an example: Main outbreak species for the Komi Republic, Arkhangelsk, Murmansk, Karelia and Leningrad regions are *Bupalus piniarius* L. *(Geometridae) Diprion pini* L. *(Tenthredinidae) Neodiprion sertifer* Geoffr. *(Tenthredinidae),* as well as bark beetles and wood bore insects. The area with extensive outbreaks have taken place involving the above species and species groups accounted to 26 740 hectares during

1977–1994 based on officially available data. The verification of these data based on published data and other data sources yielded four times higher area, more than 108 467 hectares (Selikhovkin 2000).

Risk assessment is a principal question also for forest sector development. Risk types can be divided to groups of risks and by forestland (area) levels. Ordinary political, economic, social, ecological and natural risks are mentioned, but there are not clear delimitations between the groups. Risks integrated on general levels, global, continental of country (in case with Russia), could be assesses in contests of global model like Carbon Balance or Political and Economic Risks of Countries with in Transition Period. The process is important for general decisions for investment vectors, but the much more important scenes of main activity in forest sector now is becoming regional level, forest parts of subjects of Russian Federation. Risk Forest scenario modelling on regional level without accounting for possible risks may produce unreliable or even wrong paths of forest sector development and cause erroneous economic, social and ecological decisions. Risk analysis, risk evaluation and risk management are formal procedures for quantifying, evaluating and managing risk within a given hazard domain. Applications of risk analysis in forest scenario planning are rare that is why more emphasis needs to be placed on hazard prediction. Main instrument of evaluation of multiple management options is modelling based on risk evaluation (Gadov 2000).

If we are coming into the forest sector of Russia, assessment on regional level has some specific difficulties, often in unrespectable fields. For instance social problems may be principal for development of forest business. Forest lands now in many districts of Karelia, Arkhangelsk region, do not have workable habitants. In Soviet period demography policy and alcoholism formed depressed populations in small settlements included small cities of the regions up to unregenerate condition. It means that planning of plant tourist enterprises or other business activity creations needs to analyse very attentively social and health structure of population.

Sanitary felling in fact generally is oriented to getting of wood and now often looks like as industrial felling. The problem is very serious for protected and reserved forest areas. It means that risk assessment for ecological forest resources has to include estimation of potential of abnormal sanitary felling.

Other aspects are linked with necessity to verify and replenish database about key risk factors of concrete region discussed before.

In the way there when we are providing research for developing of forest complex in Russia on regional levels, there are two general research tasks linked each other – (i) verification and replenishing of information including forest inventory data, forest health condition, level of effects of disturbance factors, human population structure and others needed in concrete situation; (ii) forest risk assessment based on verified and added information. There different ways of solving of the tasks. St. Petersburg Regional Project Center of EFI (PROCES) is realising a group of projects by the way of EFI scenario modelling like “Economic evaluation and implementation strategy of forestry scenarios for the European part of Russian Federation” and “Forest Resource Scenario Modelling for the European Part of Russia”. The results of the projects were presented in different conferences and publications (Alekseev 2000, 2001; Lyubimov et al. 1999). On the other hand an experience of the forest risk factor investigations has been carried out in frameworks of IVth Framework “Environment and Climate” Programme of the European Commission, project BASIS (Barents Sea Impact Study, BASIS is supported by the Environment and Climate Programme of the European Commission, contract nr ENV4-CT97-066637) and INCO-COPERNICUS Grant “Economic and Ecological Sustainable Management of the wood area in North West of Russia” (1998–2000). Teams of PROCES members worked on the projects for a main output: assessment of hazard factor roles for forest sustainability in North-West

Part of Russia. The main studied factors were fires, forest pest outbreaks, diseases spreading, storms (strong winds) and industrial air pollution effects.

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How to Respond to Emerging Research Needs in Europe: Trends Affecting Forest Research and Strategies to Face Them

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There are several visible trends that affect forest research and create major challenges for it. Many of them are connected with research funding. For example, national public funding of traditional forest research institutions is decreasing in most countries although at the global level, investments in research and development have been growing. This contradiction is partly explained by an increase in international funding, but it is true that forest research has already lost part of its ground to other disciplines.

Another clear trend in funding is that the share of public funding is decreasing so that today in the OECD countries already two thirds of investments in research are from non-governmental sources. As business cycles are stronger in the private than in the public sector this means that fluctuations in the total funding of research have become stronger than earlier.

The growing share of private funding is partly causing a business-like environment also in academic and other non-profit research organizations. The business rules of private funding are increasingly used in public sector. In many cases this has led to a very result-oriented short-term thinking. Consequently, long-term basic research and also the quality of research are in danger.

Neglecting basic research will in the long run lead to a situation in which also applied research suffers because our ability to react to rapidly changing research needs will weaken. It is understandable that industry and other private funders want to invest mainly in applied research, but this means that the role of public funding in basic research should be stronger than it is now.

Globalization is one of the megatrends of our time. It has not yet influenced forest research in the same way as it has affected forest industry. The globalization of research has, however, started, and national research institutions will no more have protected home markets and they have to be prepared for international competition.

The competition will be visible not only between national institutions. More and more forest research, especially in new priority areas, will take place outside conventional forest research centers. We can even say that we who work in these conventional centers have lost our monopoly on forest-related research.

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Although there is an obvious competition on research resources between forest researchers and those outside the traditional concept of forest research, the forest research community should not consider these outsiders only as competitors. As an essential part of our future strategy we should create more collaboration with researchers and institutions who are interested in forest-related problems but who do not belong to our old forestry family. This is important alone therefore that outsiders often posses skills and knowledge that are essential in solving novel problems but which we insiders do not have.

More collaboration and networking is needed also inside the conventional forest research community. When resources available for research are becoming scarcer, it is important to increase efficiency by avoiding overlapping work. In many cases joint research and division of labor between neighboring countries is very cost-efficient because climatic, economic and other conditions are often similar. EFI and IUFRO are good examples of organizations that catalyze these kinds of joint efforts, and intercountry collaboration is a precondition in most EU projects.

When the concept of sustainable forestry meant more or less only the sustainable use of timber resources, it was sufficient that forest research focused mainly on the biophysical aspects of forest management. They will be important also in the future, but today's problems in the forest sector require more socio-economic and policy-oriented research. The share of this research must be quickly increased because it is still almost insignificant.

It is often complained that there is not enough data and information to generate new knowledge and know-how. This is only partially true. The real problem is that we do not fully utilize the existing information. Research results must be communicated effectively to forest policy makers and managers. This is really a vital element. We have to create mechanisms and structures, which make sure that scientific information is used in policymaking and forest management at all levels. This presupposes that we researchers work with relevant problems and try seriously to translate our scientific information to the knowledge and know-how of policy makers. If we do not succeed in improving interface between researchers and the users of research results the budget cuts the conventional forest research community has experienced in most countries will continue.

Closing Address

Fergal Mulloy

European Forest Institute

As this Seminar celebrating the tenth birthday of the European Forest Institute draws to a close we inevitably think of the past decade as one of profound change in respect of Global and European forestry and the impact such changes are having on forest research.

The well known Irish writer, Dean Jonathan Swift, better known for his work "Gulliver's Travels" once said over two hundred and seventy years ago that, "*vision was the art of seeing the invisible*". When the concept of establishing the European Forest Institute first flashed across the mind of Matti Pekkanen in 1990 few would have described him as seeing the invisible. Nor could anyone have perceived the changes that the 1990s would bring to the role that forestry plays in global environmental issues. Matti Pekkanen and those he convinced, were indeed the visionaries who saw the invisible. By their conviction, foresight and fortitude they pursued the need for a new organisation to meet the new forestry era that had already begun to creep above the horizon.

Our keynote speakers and panellists alike have charted the global and European changes that marked these past ten years. We have seen how the political and economic boundaries of Europe are extending, and that Forestry (if we have not realised it already), is a society issue. The positive and negative effects of globalisation were made clear. The role that forests have in helping fulfil the basic human rights of rural communities in tropical countries was detailed. The tropical rural poor need forests and people must be seen to be as important as the butterfly.

In the decades following the two major European conflicts of the twentieth century the emphasis focused on sustaining wood yields. This focus was brought about by those conflicts and, more often than not, ignored environmental and social values. In his 1949 a book entitled the "Coming Age of Wood", Egon Glesinger, then a prominent figure in the embryonic Food and Agriculture Organisation classified cellulose as the "noble molecule". His book was arguably the first acknowledgement in modern times of the existence of many unseen technical values for forests and wood. Many of these values have yet to be fully realised and still remain as a challenge to forest and wood scientists for decades to come and will undoubtedly will emerge as future gems of a developed society.

Today fifty-four years later, different challenges present themselves to forest scientists. No longer is sustainable forest management synonymous with sustainable yield. Except within the context of climate change and carbon sequestration, no longer is optimising wood

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production receiving the same degree of urgency as it once did in spite of the fact that in many parts of Europe yields have been increasing as a result of external factors. While forest scientists always understood the multiple value of forests, these values were, in the main, sub-dominant to wood market values. Foresters now ignore these other values at their peril as our keynote speakers and panellists repeatedly mentioned.

In the past foresters spoke to foresters about forestry within a hall of mirrors. There were no windows opening out to the broader environmental, social or political landscape. To forest researchers and foresters alike, forest problems were only solvable by foresters. Today forest research is opening windows to new vistas and our research disciplines are open to all domains that contribute to a better knowledge base of how forestry can serve the community. This seminar in particular endorsed that perspective.

A feature of change in public perception is that forestry is too important to be left only to foresters. A change that commenced in Europe with six resolutions of the first Ministerial Conference on the Protection of Forests in Strasbourg in 1990, demonstrated, perhaps better than any other single event, the political importance of forest protection. Political concern that was first sparked by forest decline and widespread forest fires in the 1980s manifested itself in those first resolutions. Indeed much of national government support for forest research was generated by public concern about the health of Europe's forests. As the 1990s progressed, it became evident that Europe was obliged to follow the sustainability agenda initiated by the Rio summit of 1992 as well as embrace the changing political landscape and its impact upon the international wood trade.

The three ministerial conferences since Strasbourg have placed sustainable forest management, biodiversity, climate change and environmental and social issues firmly on the political agendas of Europe although it was noted during the seminar that funding to support research on these topics does not always match the need.

This seminar has laid the foundations for much relevant research topics that would be folly to ignore. Many of these topics can only be pursued by crossing boundaries as the theme of this seminar suggested. Not all boundaries however are political; neither are they cultural. They all however involve the crossing of psychological boundaries, opening up our minds to the aspirations of others and recognising the necessity of greater co-operation and pooling of financial resources that together brings harmony and greater scientific achievements. Closer co-operation and co-ordination is now the norm with many nationally funded research programmes and virtually all internationally funded programmes

We must continue to build bridges that span knowledge gaps across intellectual boundaries. We must continue to seek research partners across discipline boundaries and bridge public information gaps concerning the true value and role of forests and their externalities. Most of all, we must foster, and hold firm, our research integrity and standards and ensure that public confidence in our work is neither compromised by public opinion nor isolated by irrelevant research cul de sacs.

In conclusion I express our sincere thanks to all participants, our keynote speakers, panellists, moderators and commentators and speakers from the floor. I thank our poster presenters and all others who worked to add value to the tone and content of the seminar. To our Director Risto Päivinen, our organising committee and all our EFI staff who spent the past year, and many sleepless nights agonising over various aspects of the seminar I offer the sincere gratitude of all who participated. Their attention to the smallest detail eliminated disaster and their introduction of new seminar concepts, such as the bazaar, has earned them our special admiration. yet another greatly successful event.

We owe a particular thanks to each of our ten sponsors. Without that support running this event would not have been an option. To you and all the people of Joensuu, a sincere thank you for your support, welcome and friendship.