

IMACFORD Task B1

Regional workshop “Research needs for the sustainable management of cultivated forests” Consultation of the forestry-wood chains actors in Aquitaine

27/28 February 2003 – ENITA, Bordeaux - France

- Main points of discussion

Appendix

1. Workshop programme
2. Participants

The participants have expressed a great interest in a regional consultation between the forestry-wood sectors actors and the scientific community on research priorities for the sustainable management of cultivated forests.

In spite of a more important representation of scientists in comparison to representatives of the forestry-wood sectors (the list of participants is available in annex), three main outputs have been highlighted by the participants: (i) the identification of end-users expectations for research, (ii) the facilitation of knowledge and technology transfers between the actors of the forestry-wood sectors, and (iii) the setting of an inter-professional frame of communication on the development of forestry with the Society and the media.

The participants have demanded the regular organisation of conferences and consultations between the whole forestry-wood chains actors, the scientists and the Society.

Some specific research needs have been highlighted by the participants.

The context of the forestry-wood sectors in Aquitaine (Lesgourgues, CRPF) can be summed up:

- Important impacts of the storm (December 1999) on the regional forestry-wood chains.
- Globalisation of the wood markets.
- Integration of the sustainable development concept into regional forestry decision making.

1. Research needs expressed by the forestry and wood sectors – context and expectations

11. Silviculture

The regional sandy forest ecosystem of Aquitaine need to be better understood in terms of potentiality to sustain intensive forest production scenarios. The comprehension of the limits of productivity of the forest ecosystem will help the regional forestry sector to assess the sustainability of the current forest management scenarios and practices regarding essential ecological criteria (soil, water, health).

From a better knowledge of the ability of the regional forest ecosystems to support forest production, technical guidelines for soil and water protection would be useful outputs of the regional forest growth models for the forest managers (Lesgourgues, CRPF). In addition, the identification of adequate fertilisation practices for maritime pine in Aquitaine (what, how, how much, when) has to be improved.

The low profitability of the regional forest production systems, the emergence of new demands for forest products and services from the society and the effects of global change, implies the need to analyse the opportunity of a diversification of forest management scenarios for maritime pine. Forest growth models could assess the ecological and economic viability of the new forest regimes. For instance, in the context of the emerging market of carbon credits, the opportunity to store carbon in the regional forests has to be evaluated and adequate silvicultural scenarios need to be proposed (carbon sink scenarios).

Opportunities for the deployment of broad-leaves species in the current maritime pine forest have to be evaluated as well (Lesgourgues, CRPF). Studies on the profitability of broad-leaves species and their fulfilment of non-wood services under several forest management scenarios have to be continued in Aquitaine.

1.2. Tree breeding and biotechnologies

In order to have a better control of the quality of reproductive material used in Aquitaine (in the context of the implementation of the European directive 1999/105/CE on the commercialisation of forest reproductive materials), reliable and cheap non destructive tests need to be developed in order to identify the provenance areas of forest plants (Alousque, DRAF).

The regional industrial sector and the Society claim homogeneous and reliable wood products (Chantre, AFOCEL). Strategies for the genetic improvement of wood quality traits are being conducted in Aquitaine (3rd generation of genetically improved maritime pines in preparation). Taking into account the increasing risk of catastrophic climatic events in the climate change context, the conservation and the improvement of adaptability traits represents a major issue in the tree breeding programmes.

1.3. Biodiversity

Conserving biodiversity in forest is becoming a relevant issue in Aquitaine since the implementation of Natura 2000 network and the development of the European forest management certification process PEFC. Nevertheless, remarkable habitats and relevant species have to be better inventoried and characterised for their sustainable management (Sardin, ONF). Indicators of biodiversity in forest have to be elaborated as well as the methodologies for their periodical assessment.

1.4. Risk management

FOREST HEALTH

Considering the socio-economic importance of the forestry-wood chains in Aquitaine, the set up of a regional network to monitor forests pests and diseases dynamics has been demanded. How will the European directive "Forest Focus" comply with its objectives at the regional level?

The current strategy to eradicate forest pathogens in Aquitaine is based on the systematic use of chemical pesticides. For the protection of biotic threats, the development of an economic and ecological friendly biotic control approach is needed. Biological control methods have to be proposed and developed in Aquitaine (Alousque, DRAF).

FOREST FIRES

Fires do represent a major threat for the 1 million hectares of maritime pine forest in Aquitaine. Nevertheless and until now, no scientifically-based methods (prevention strategies) and tools (models for the understanding of forest fires behaviours) have been developed in the particular context of southwest Atlantic forests (Pinaudeau, SYSSO).

CLIMATE CHANGE

Since December 1999 storm, climate change phenomenon represents a relevant issue for the regional forestry sector.

In order to characterise the risk associated to forest activities, climate change needs to be better understood in terms of its impacts on forest ecosystem functioning (autoecology), forest productivity and tree-forest-landscape stability to extraordinary climatic events (Bosc, INRA). Silvicultural scenarios integrating risk and economic profitability have to be defined and evaluated (Lesgourgues, CRPF).

Considering the changing political and climate context, an analysis on crisis operational management scenarios needs to be conducted.

1.5. Socio-economic aspects

The forestry-wood chains strongly contribute to the regional income, mainly because of its intensive silviculture. Nevertheless, several studies on the perception of forests conducted at the regional level have shown that most of the citizens do not perceive the economic function of forests as the major one. Considering the increasing awareness of the Society for the sustainable development concepts, the regional forestry sector has to better communicate on its activities (Alousque, DRAF). Strategies to train communicants for the forestry sector and to get closer to the non-professional actors have to be defined and implemented. Research has to further describe the mechanisms of social representation of forests and forestry activities.

Research also needs to better describe the socio-economic mechanisms guiding forest owner decision making. For instance, the comprehension of the sociological processes that conduct the private forest owners to integrate the abiotic risks and the protection of the forest ecological components into their practices could lead to the development of guidelines of sustainable management practices.

In addition, an analysis of the forestry sector organisation would lead to the identification of the criteria to increase the employment in forestry (Picard, IDF).

Considering the low mid-term profitability of forest activities and the increased and diversified demands for forest services emerging from the Society (biodiversity conservation, soil and water protection, recreation, etc.), funding mechanisms based on a public participation to encourage the private forest owners to enhance multifunctionality and non-market services of forests have to be defined (Picard, IDF). In addition, a market for carbon credits will be opened by 2008 and it may constitute another opportunity for forest managers to diversify their income and to allocate funds to the fulfilment of new forest services demands (biodiversity, recreation, etc.). The economic and energetic viability of the “carbon-sink scenarios” need to be assessed (Bosc, INRA).

At the macroeconomic level, the people in charge of the political and economic decisions for the forestry-wood chains need a scientific basis to objectively understand the evolution of the wood and non-wood products markets (Capes, PEFC Aquitaine).

Since December 1999 storm, the opportunity to think again the wood sales conditions between the forestry and the wood sectors has emerged. Wood stock platforms were built. Their efficiency in the optimisation of the forestry-wood chains logistic on the one hand, and in the economic enhancement of wood quality for the whole forestry-wood chains actors on the other hand is being evaluated (Lesgourgues, CRPF). Cost studies need to be conducted.

The storm also highlighted the question of the limit of the forest insurance systems in a climate change context (Picard, IDF). Research needs to provide the sociological and economical elements to answer to the question: Is it still possible to insure forests, and how?

1.6. Sustainable forest management

At the regional level, in order to assess the progress towards sustainability and the impact of the forest management practices in terms of forest surface and quality, biodiversity, forest health, climatic and fire risks, the forestry-wood chains require a global forest survey system based on scientifically-based indicators (Lesgourgues, CRPF).

2. Research needs expressed by the scientific community – research programme opportunities

2.1. Forest modelling and inventories

In order to better understand forest ecosystem functioning, to integrate the scientific results at regional/national scale or to identify adequate forest management practices, scientists and forest managers need complex process-based and empirical models able to take into account both current and future “natural” (e.g. climate change) and “anthropic” parameters (e.g. demands for new forest services and products) and to provide diverse, reliable and practical outputs (Tomé, ISA).

In term of inputs, the forest models have to integrate the changing “natural” parameters like climate, site characteristics, abiotic risks, forest species natural dynamics, biodiversity, as well as the parameters that can be directly modified by humans like silviculture regimes, genetic pool and biotic risks.

To achieve the objective of multiple and reliable inputs for the appropriate functioning of forest models, forest inventories have to provide new data on trees (biomass, tree mensurations, wood quality) as well as data on forest stands (biodiversity, carbon, landscape, forest status). Forest inventory methodologies and costs have to be further explored (Gallay, IFN).

In term of outputs for the models, forest managers and the people in charge of landscape planning need to simulate and to assess in an ecological and socio-economic changing context the impacts of their choices on forest ecosystem components (soil, water, biodiversity), forest productivity (wood quantity and quality, non-wood forest products), and microeconomics (profitability of the forest scenario).

One practical challenge lies in transferring the information from detailed scientific models to empirical forest growth models that can be easily used in forest management models. The development of forest growth models in association with GIS will provide decision support tools for forestry practices as well as for policy making.

2.2. Wood quality and wood products

The main discriminative factor of a broader commercial use of wood products lies in the natural heterogeneity of the material. Wood quality improvement represents a key issue for the economic development of the forestry-wood chains.

In that context, fundamental research activities are currently focused on the comprehension of the processes leading to the formation of wood properties (genetics, site and climate). The results have to be integrated into silvicultural scenarios models in order to identify the forest management regimes and the silvicultural techniques that better enhance wood quality (Castéra, LRBB). Those regimes and techniques would have to be transferred to the forestry sector.

In addition, the forestry-wood-end-products chains need to further integrate the new demands for wood quality emerging from the Society and the markets in their decision making processes. Research has to improve the environmental credibility (low environmental impacts of industrial processes and wood treatments) and the structural reliability of wood products (stability of qualitative parameters in time) by the development of specific tools and techniques.

Moreover, marketing studies would help the wood sector to analyse the relations between the wood products and their markets. Tools are needed to overpass the technical, sociological or economic constraints of the accession of some wood products to the market (e.g. Engineered Wood Products).

2.3. Competitiveness of the forestry-wood chains

To enhance the competitiveness of the forestry-wood chains at the regional level, the relations between the wood properties and the industrial processes need to be optimized (Chantre, AFOCEL).

In order to reduce the important costs of log transportation, the industrial opportunities of the regional forest resources need to be further evaluated (e.g. mixes of forest tree species for pulp making). To achieve this objective, methodologies and tools to assess wood quality have to be developed (*in vivo* and at the entrance of the factory).

To achieve an adequate territorial management of the regional wood resources (in quantity and quality), logistic tools also have to be developed. For instance, GIS would be useful for the wood sector to optimize the costs of transport.

For the forest contractors as well, the forest operations need to be optimized. To achieve cost reductions, a better adequacy of the harvesting machines and techniques to site characteristics is required (slopes, soil humidity). Good security conditions for the forest workers also have to be further analysed and improved.

CONCLUSIONS OF THE WORKSHOP

Within the presentation of their research needs or during the group discussions, the representatives of the forestry and the industrial sectors have shown a great interest in the role the evolution of the economic, social and climate contexts have on their activities.

The several end-users expressed their needs for new tools (forest models, logistics) and decision making systems (decision support tools for forestry and industrial development) to integrate into their practices the new demands emerging from the markets and the Society for a qualitative wood production and the achievement of multiple use of forests. They have also demanded technical recommendations in order to properly manage and monitor their forests (e.g. regarding biotic control or soil and water conservation) and their factories in accordance to scientifically-based indicators and guidelines. The forestry-wood sector also expressed expectations for further socio-economic data and new microeconomic models in order to be able to adapt their managerial strategies within a changing context (climate change, internationalization of the wood markets, new societal demands).

To contribute to the achievement of end-user's expectations, research has to identify, describe and predict the mechanisms influencing forest ecosystem functioning, forest productivity, wood quality formation, societal demands, market expectations, forestry-wood chains organisation and economic profitability.

Improved knowledge and technology transfers are required in order to compare the scientific knowledge and tools available on the one hand, and the needs and experiences of the end-users on the other hand, and to propose adequate operational tools for the development of the forestry-wood sectors. In that perspective, the organisation of intersectorial thematic workshops would be useful.

A hierarchisation of research priorities (Pinaudeau, SYSSO) in Aquitaine could be summed up as below (for further details consult the list of research needs priorities):

- To improve the protection of forests against biotic and abiotic factors.
- To increase the competitiveness of the regional forestry-wood chains.
- To evaluate the sustainability of the silvicultural and industrial practices and to mitigate their negative impacts on the forest ecosystems.