BELGIAN SCIENCE POLICY

Scientific Support Plan for a sustainable development policy (SPSD II)
Part I. "Sustainable consumption and production patterns"

Feasibility of Forest Conversion: Ecological, Social and Economic Aspects

SUMMARY REPORT

Ecological teams:

Laboratorium voor Bosbouw, Universiteit Gent
An DE SCHRIJVER, Guy GEUDENS, Leen GIELIS & Jeroen STAELENS , prof. Kris VERHEYEN

Laboratoire d'Ecologie Végétale et Microbienne, Université de Liège
Frédéric DEGRAVE & Sandrine MALCHAIR, prof. Monique CARNOL

Sociological team:

Vakgroep Menselijke Ecologie, Vrije Universiteit Brussel
Karolien VAN DE STEENE, Ann VAN HERZELE, Lies VANDAELE, prof. Luc HENS

Economic team:

Centrum Milieueconomie en Milieumanagement, Universiteit Gent
Albert SCHRAM, Tom VERBEKE, prof. Jan Jaap BOUMA

February 2006

Final Report – Summary of results
'Feasibility of Forest Conversion: Ecological, Social and Economic Aspects'

INTRODUCTION

The FEFOCON research project addresses several aspects of the forest conversion of conifer plantations into indigenous broadleaved forest types in Belgium. Forest conversion of secondary conifer plantations on sites naturally dominated by broadleaves is generally agreed upon by forest policy makers in Europe as an important component of sustainable forest management and the concept has broad support among experts in forestry and nature conservancy. Nevertheless, the effects of a major tree species change on forest ecosystem functioning (biogeochemical cycling and biodiversity) should be considered with care before taking meaningful management decisions at large scale. Forests in Belgium provide multiple services to society, the value of each of which might be affected by forest conversion. The realisation of forest conversion in Belgium requires quite an effort from countless private forest owners and from the public forest service. Policy plays an important role in the conversion process.

This interdisciplinary research was conducted by two ecological teams, a sociological team and an economic team: the Laboratoire d'Ecologie Végétale et Microbienne (ULg), the Laboratorium voor Bosbouw (UGent), the Vakgroep Menselijke Ecologie (VUB) and the Centrum voor Milieueconomie en Milieumanagement (UGent). It aims to provide a scientific basis for forest conversion.

Our interdisciplinary team investigated the following features:
- An exploration of the general sylvicultural aspects of conversion management by all teams.

Ecological aspects
1. A comparison of start and end situation of conversion: conifer plantation and deciduous stand
- A quantitative literature review (meta-analysis) of published studies from all over the world that compare element deposition (input) and element leaching (output) between a conifer stand and a deciduous stand.
- A field study comparing element deposition and characteristics of soil nutrients between a Norway spruce stand, a beech stand and an oak stand in Wallonia, with emphasis on biological soil processes.
- A field study comparing litter decomposition of coniferous and deciduous tree species in Wallonia.
- An international literature review of studies on the effect of forest type (coniferous or deciduous) on species diversity of plants and animals.
- A case study of herbal layer diversity (mosses and higher plants) in pure stands of the main forest tree species on poor, non-alluvial sandy soils in Flanders, the characteristic sites of forest conversion.

2. A comparison of different conversion scenarios from a conifer plantation to a deciduous stand
- A field study comparing forest situations resulting from group cut and strong thinning in pine stands: element deposition (input) and element leaching (output).

Sociological and economic aspects
- A preparatory exploration of the current situation and policy towards private forest owners in Flanders.
- A preliminary typology of small private forest owners based on literature and expert judgement.
- A mail survey (1000 inquiries, about 300 respondents) and an analysis using the sociological Theory of Planned Behaviour model.
- In depth interviews with focus groups of small private forest owners.
- A Cost Benefit Analysis of conversion by small private owners using a Forest Rent model
- Economic game experiments with focus groups of small private forest owners to calibrate the results of the Cost Benefit Analysis.

Through a combination of theoretical analysis, the field studies and model analysis, the main objectives of this research project are as follows:
- Evaluate the ecological effects that can be expected from forest conversion in Belgium in terms of mitigation of eutrophication and acidification of forest ecosystems and the protection of biodiversity.
- Compare the ecological effects of different conversion management scenarios.
- Produce a typology of private forest owner types with emphasis on their behavioural intention towards forest conversion.
- Contrast private and societal costs and benefits of forest conversion.
- Produce scientifically justified recommendations to forest policy concerning forest conversion.

MAIN RESULTS OBTAINED

Short description of forest conversion in Belgium

Forest conversion is the sylvicultural process of changing the tree species composition from one dominated by conifers to one dominated by native broadleaves.

From 1850 onwards, large surfaces of degraded lands, marginal agricultural land and broadleaved forest were planted with conifer plantations. In Flanders 45000 ha of homogeneous Scots and Corsican pine plantations cover sandy soils (Kempen and Vlaamse Zandstreek) where naturally broadleaved forests dominated by oak, birch and beech would prevail. In Wallonia about 67000 ha of Norway spruce plantations grow on unsuitable sites and an additional 39000 ha on rather unsuitable sites. Naturally, broadleaved forests dominated by oak, beech, ash and black alder would grow here.

Approximately 70% (100,000 ha) of the total Flemish forest land is owned by a rough estimate of 100,000 private forest owners. Of the homogenous pine stands in Flanders about 50% is privately owned. In Wallonia, the figure is 59% (290,000 ha) for an equal estimate of 100,000 private owners. Of the homogenous Scots pine stands in Flanders about 57% is privately owned (43% for Corsican pine), while 58% of Norway spruce forests in Wallonia is privately owned.

A great majority of forest managers agrees that a sylvicultural system based on even aged, 50-70-year-rotation pine monocultures is no longer appropriate in Flanders. Contrasting to the policy principle in Flanders, where all stands of non-native conifers are candidates for conversion to broadleaved forest, in Wallonia there is a shared judgment. On sites where a sustainable production can be expected, even pure coniferous stands are considered to be on their rightful place, if the manager respects some ecological considerations.

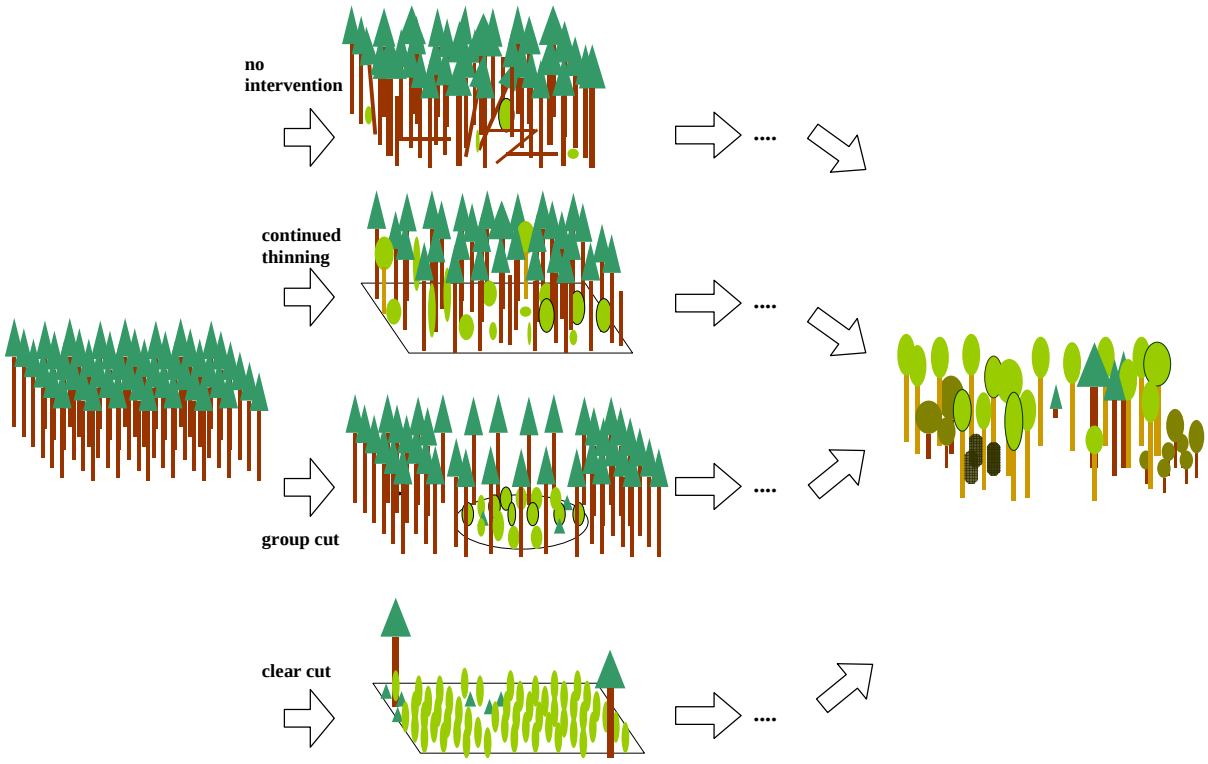

Figure 1: Start and end situation of conversion and different intermediate management scenarios.

Expected ecological impacts of forest conversion: comparison of start and end situation

Biogeochemical cycling: mitigation of eutrophication and acidification

A quantitative literature review was performed of published studies (19) comparing pure coniferous and pure deciduous stands (25) at comparable sites. The statistical test variable was the average ratio of a specific element flux in the coniferous stand over the flux in the deciduous stand. If the average ratio is significantly larger than 1, conversion of coniferous stands into deciduous stands will lower the flux (input = deposition or output = percolation) of that element. If large fluxes of an element are causing eutrophication or acidification (e.g. deposition and leaching of nitrogen and sulphate, leaching of aluminium), then conversion will mitigate these negative ecosystem processes.

Table 1: Average ratio of element flux (kg ha^{-1} y^{-1}) in a coniferous stand over a deciduous stand under comparable site conditions (climate, soil and locality). a) element flux in water falling through the canopy onto the forest soil (stand deposition); b) element flux in water seeping from underneath the main rooting zone (percolation). For stand deposition the average ratio was calculated separately for stand pairs in regions with low and high atmospheric N-pollution (< or > 10 kg N ha^{-1} y^{-1} in open field precipitation).

a)

Stand deposition

Element	all *n*		low pollution *n*		high pollution *n*	
NH_4^+	*17*	1.35 *	*5*	0.83 n.s.	*12*	1.66 *
NO_3^-	*17*	1.50 *	*5*	1.27 n.s.	*12*	1.87 *
SO_4^{2-}	*24*	1.69 *				
Na^+	*10*	1.38 *				
Ca^{2+}	*20*	1.40 *				
Mg^{2+}	*12*	1.26 *				
K^+	*16*	1.01 n.s.				

* sign at 5% level

n = number of stand pairs

b)

Percolation

Element	all *n*	
NH_4^+	*5*	0.50 n.s
NO_3^-	*5*	2.76 *
SO_4^{2-}	*6*	1.11 n.s.
K^+	*6*	1.51 *
Ca^{2+}	*6*	1.15 n.s.
Mg^{2+}	*6*	1.18 n.s.
Aluminium	*5*	1.71 n.s.

* sign at 5% level

From the average ratios in Table 1, It can be inferred that forest conversion has a good potential to

- reduce the input of NO_3^- , NH_4^- and SO_4^{2-} input to forest stands (nitrate, ammonium and sulphate),
- reduce NO_3^- percolation to the ground water,
- reduce the loss of K^+ (potassium), a basic cation, to the deeper soil.

One of the main mechanisms is the lower capacity of deciduous trees to intercept dry atmospheric deposition, e.g. of an canopy-inert element like sodium, Na^+.

These positive effects are particularly promising in areas with current high levels of atmospheric N pollution (last column in Table 1a.) The sandy regions in Flanders, where most pine plantations grow, are an extreme example of this. But also the Ardenne region with most of the Norway spruce forests has a raised level of atmospheric N pollution, typical for the whole of Central Western Europe.

A comparison study of three homogeneous forest types (Norway spruce, beech and sessile oak) in Wallonia confirmed these general findings in literature. Soil conditions (acidity, base saturation) are better under the oak stand. The input (stand deposition) and soil solution content of NO_3^- are high in the Norway spruce stand. Due to acidic conditions, Aluminum and Mn^{2+} concentrations and mobility are higher under the Norway spruce stand than under the deciduous stands. This increased Aluminium availability could cause nutrient deficiencies and high Mn^{2+} concentrations could have toxic effects. Moreover, important Aluminium losses from forested watersheds could be responsible for the disappearance of aquatic organisms in rivers and lakes and might hamper the drinking water quality.

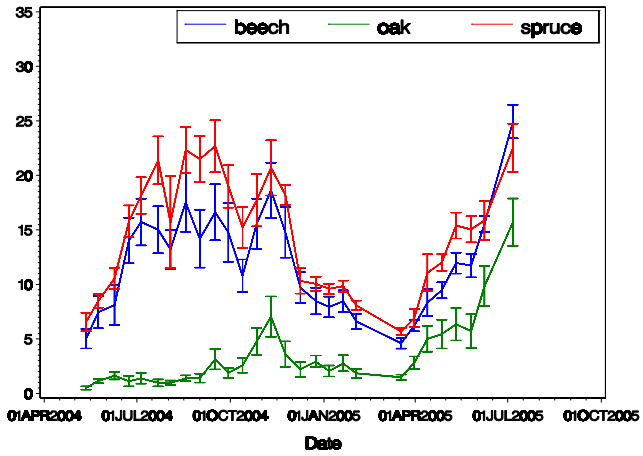

Figure 2: Temporal evolution of NO_3^--N concentrations in soil leachates.

Nitrification rates in the soil organic layer were influenced by forest type, with a lower rate detected under the oak stand. Year round, NO_3^--N concentrations in soil leachates were lower under the oak stand (Figure 2). The relatively light oak canopy allows the development of a dense herbal layer which can act as a competitor towards soil micro organisms for nitrogen. This would mean that an oak stand, through its canopy structure, has a indirect effect on soil processes. This highlights the importance of the stand structure, together with the dominant tree species. The stem density and the vertical structure (in layers) of a forest stand have also a major influence on the microclimatic conditions prevailing in the forest floor, and therefore on the development of herbal layers, microbial populations and decomposition of leaf litter. According to present knowledge, the augmentation of deciduous tree species like sessile oak and beech in Norway spruce forests will probably have positive consequences on soil as well as soil water quality:

- a substantial decrease of atmospheric deposition reaching the forest floor (N, S);
- a decrease of NO_3^-, aluminium and base cation losses with seepage water;
- a better litter decomposition: a moder-mull instead of a mor-moder humus form;
- a better cycling of nutrients, especially in the case of oak and other improving tree species (often secondary species);
- an increase in soil pH and soil fertility;
- a decrease in the biological NO_3^- production if converted towards an oak forest.

A litter decomposition study showed highest nutrient contents in litter from secondary forestry species (*Salix caprea, Sorbus aucuparia, Alnus glutinosa*, *Betula pendula*) as compared to the main forest species (*Quercus*, *Picea*, *Fagus*) growing on similar soils in the Walloon region. Different rooting pattern and nutrient acquisition mechanisms may explain these differences. The nutrient-rich species also decomposed more rapidly and released the highest amounts of the more frequently limiting nutrients (Ca, Mg, K). The major amount of these nutrients was released during the first year of decomposition. The introduction of secondary forest species on poor soils may therefore be a potential management tool for maintaining/improving the nutrient status of these sites. Besides the nutrient content of the litters, their actual impact on soil fertility will also depend on the management scenario chosen, in particular with regard to the percentage of broadleaved trees and their spatial distribution.

As a conclusion, the mitigation of the environmental problems of eutrophication and acidification of forest ecosystems is a valuable additional argument for forest managers to convert coniferous forests.

Biodiversity: sustaining a more diverse community of plant and animal species

The general conclusion from a literature review is that conversion will probably improve species diversity or at least keep it at the current level, because (i) the biological potential of the main indigenous deciduous tree species - especially oak, willow and birch - is superior as compared to conifers, especially Norway spruce and (ii) in our regions the indirect effects of deciduous tree species on the site characteristics favour more diverse plant and animal communities (acidification, litter quality, light conditions, eutrophication by atmospheric deposition). But the actual outcome in the field depends strongly on several "confounding" factors, other than the dominance of indigenous deciduous trees in the stand. These concern among others the land use history, the management, forest succession. Many of the pine and Norway spruce stands in

Belgium were planted on heathlands or marginal farmlands, where at the moment of afforestation, specialized forest plant species were largely absent. Since these specialized species are slow colonizers, the species diversity may strongly depend on the distance to ancient forests, irrespective of conversion towards deciduous forest stands.

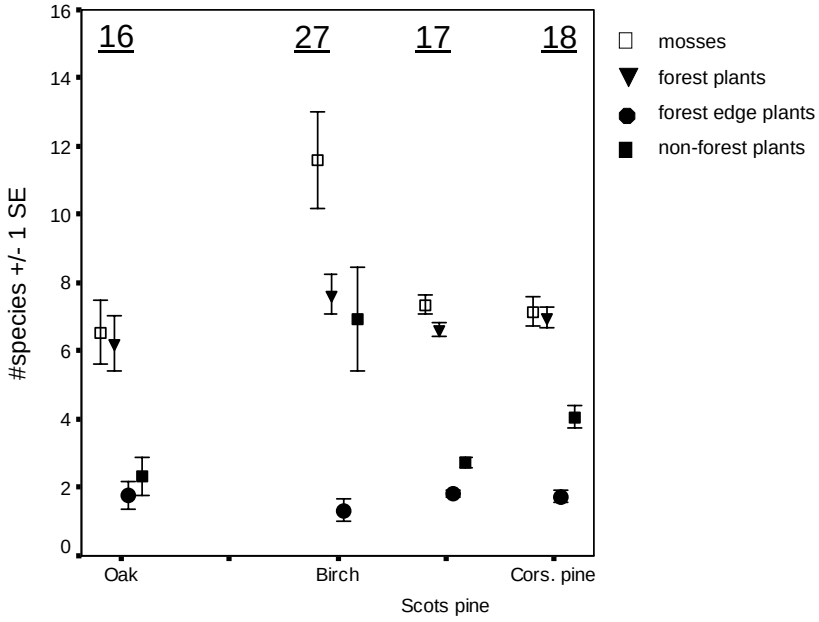

Figure 3: Average number of species in vegetation plots under pure stands (80%) of indigenous oak, birch, Scots pine and Corsican pine on poor, non-alluvial sandy soils in Flanders. Total number underlined, number of species of mosses, forest plants, forest edge plants and non-forest plants as indicated by the symbols.

A case study for forests on sandy soils in Flanders confirmed that no unequivocal distinction can be made for the herbal species diversity between broadleaved and coniferous forest stands on these sites. However it confirmed that there are important differences in plant species diversity of the herbal layer between homogeneous Scots pine, Corsican pine, indigenous oak and birch stands (Figure 3). The average number of forest plants and forest edge plants seems comparable between the four tree species, but under birch these numbers are combined with a higher number of non-forest plant species and of mosses. Both oak and birch stands also have characteristic, associated plant and especially moss species, which are more frequent and/or more abundant than in forests dominated by the other three tree species. These specialized plant and moss species add much to the nature value of forests. Both pine forest types lack such characteristic species. As a target species for the conversion of pine plantations in Flanders, especially birch exhibits good potentials for improving plant diversity.

Policy must however avoid the glorification of an intensively mixed stand of indigenous deciduous trees and shrubs. Creating this stand type in all current secondary conifer plantations would have a homogenizing effect that could be detrimental to specific plant and animal species.
Priority zones for conversion, e.g. on more buffered soil types and close to ancient woodland sites, must be defined. Maintaining biodiversity also implies the preservation of conifers as individual trees, groups or even large stands in an otherwise converted broadleaved forest. In order to have a differential choice and to reach conversion goals, a combination of different management scenarios are needed.

Expected ecological effects of different conversion management scenarios between start and end situation

Choosing a different scenario of conversion (see Appendix Forest Conversion Scenarios) implies a specific sequence of stand development phases, each with its own vertical structure. Apart from the tree species in the regeneration, this vertical structure has an important effect on the input of atmospheric deposition and the losses of base cations and aluminium with seepage water (Figure 4). The promotion of deciduous tree species for the regeneration (i.e. conversion) seems to be the best choice, although in certain development phases this can imply temporarily higher input of atmospheric deposition. For example, birch regeneration under a pine shelterwood has a very fast height growth rate in the first 10-20 years, as compared to Scots pine. It seems that even in such a phase, the nitrate and cation losses with seepage water are lower in broadleaved regeneration. See SWB in Figure 4 : throughfall deposition is high and comparable with CP, but soil percolation at 0.45 m is very low for nitrate and base cations and moderate for Aluminium) .

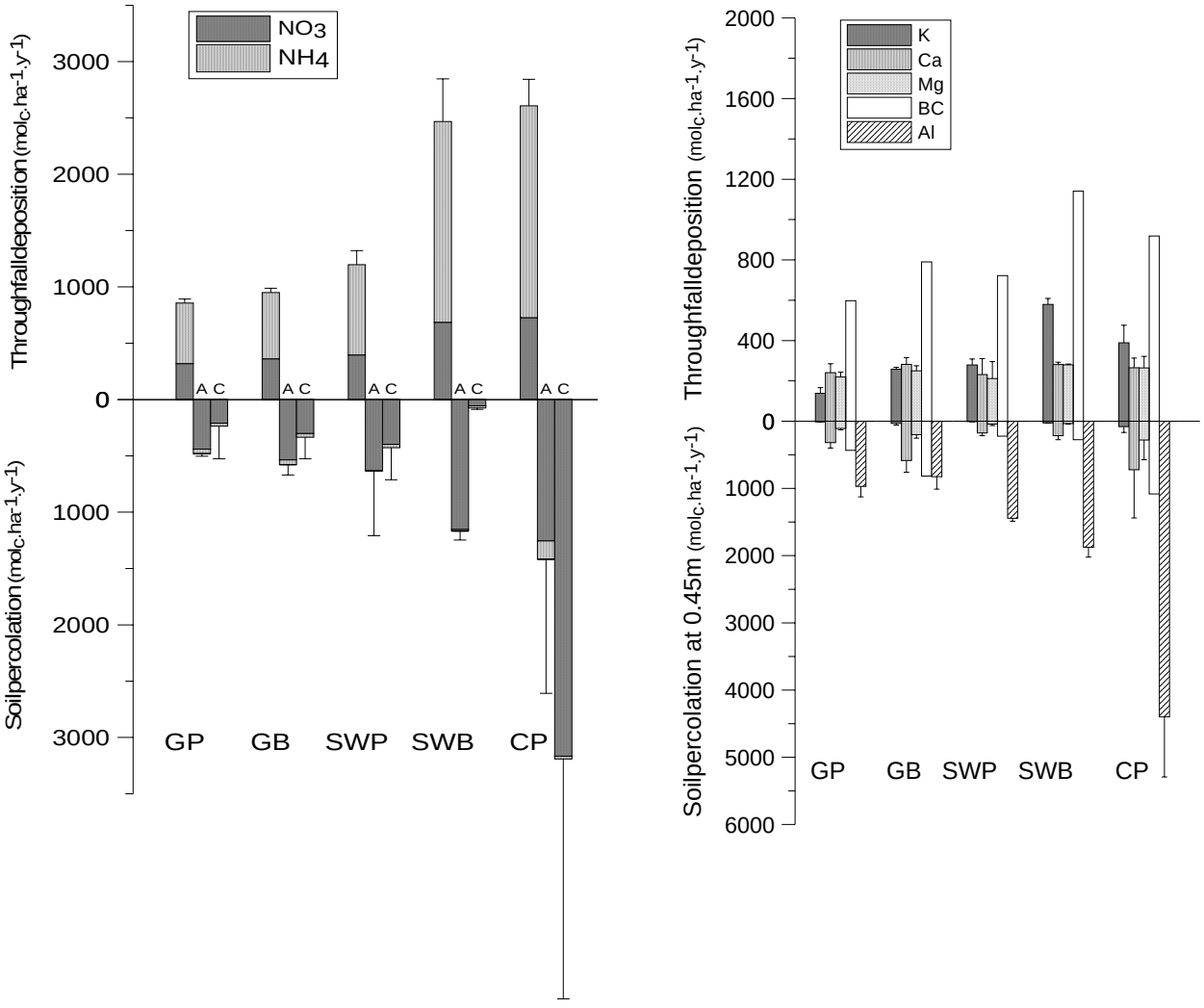

Figure 4: Throughfall deposition and soil percolation in the group cutting with pine (GP), group cutting with birch (GB), shelterwood with pine (SWP), shelterwood with birch (SWB) and the control plot with Scots pine (CP) a) at 0.15 and 0.45 m depth (A and C) of nitrate and ammonium and b) at 0.45 m depth of base cations K^+, Ca^{2+}, Mg^{2+} and (only percolation) Aluminium

Social feasibility of forest conversion: the attitude of private forest owners

Different types of forest owners

Based on literature, expert judgement and the analysis of the inquiry, we distinguished three general types of (small) private forest owners of pine forest in Flanders.

ECONOMISTS

Economists are often carrying out management activities promoting conversion. Economists who are not busy with management strategies favouring conversion at the moment can be easily be encouraged to work out such activities with policy instruments that convince them of the benefits of it. Economists in general have good contacts with the forest group. This may play a central role in supplying them with more information about several conversion aspects, practical help and optimal use of subsidies. Simplifying the subsidy structure should be commissioned to enhance transparency and build up trust among forest owners. From the economical point of view it's important that the recreational subsidy should be redesigned because it is hardly used in its actual form. There is no balance between the (small) subsidy and the extra costs caused by increasing recreation and public access. Raising the awareness of owners about existing subsidies and rules can improve progress towards forest goals.

RECREATIONISTS

Recreationists are often not carrying out management activities that favour conversion. They have a rather negative intention towards conversion, because they dislike changes in the forest scenery and wildlife habitats. They really believe conversion stands for neglect and damage to the cultural heritage landscape. We have good reasons to believe that conversion is possible in forests of recreationists in the long term, but persuasiveness and caution is needed to convince them of the benefits. There is a great need for information to increase their knowledge about (conversion) management. An important step will be to convince them of the benefits of the forest group, about which they are sceptical. By communicating clearly their goals, the forest group can take away the recreationists' fears. Recreationists are the owner group that is most likely to buy more forest in the future, although preferably adjacent to their actual property. Moreover, they are least likely to hand over management of their forest (or sell it) to the government. They are strongly opposed to interference in the management of their property, possibly because many of them have a holiday cottage in it or the forest is an extension of their garden.

PASSIVE OWNERS

Passive owners often don't manage their forests at all, so forest conversion is not a concern for them. Furthermore, there is no an indication that they would perform conversion management in the future. Obviously their passive attitude makes rational management difficult. They rather want to sell their forest or handle over the management to the forest group, especially when the forest group has been active for several years and is locally acknowledged. Providing management information to passive owners is useless. The creation of a well-organised forest real estate market with recreationist owners and the government would be more efficient. A parallel option is the forest group taking over all management activities.

Forest groups

Although quite young, the forest groups already have a great influence on private forest owners. They will play a crucial role for the conversion of private and public conifer forests in the future. Key factors are highlighting the free choice of the owner and providing information through personal contact. A clear communication can take away most owners' fears concerning the rigidity and cost of management (plans). The most effective promotion of conversion management by the forest group is (i) helping economists with good technical management, (ii) cautiously, but steadily convincing recreationists of the benefits of forest (conversion) management and (iii) be a trustworthy and complete manager of the forests of the passive owners or inform them about the demands side of the estate market. The current specifications of the forest groups and their capacity do not allow the latter task. It is moreover not certain that such tasks are compatible with a forest group that must be trustworthy to the recreationist and the economist. Forest policy should consider extending the definition and capacities of a forest group, or finding other policy instruments to accomplish the management of the passive owners' forests, whether or not after buying these forest estates, which seems to be a cost-effective instrument that should continue and not be scaled down. The reasons for non-participation of owners lies rather in the conditions and inflexibility of the policy measures than in a lack of trust among forest owners.

Depending on the conversion goals and priorities in a certain area, the resources allocated to extending the coverage of the local forest group should be determined, in comparison to targeting the large owners.

Scenery and wildlife habitats of the forest (profile diagrams)

The scenery of the forest and the existence of certain animals seem to be a great concern for forest owners, especially for recreationists. In order to take away uncertainty about the future evolution, it would be very useful to convince private forest owners of the benefits of conversion by showing them diagrams of the different development phases they will encounter. This may contrast the evolution in the different management scenarios chosen, inclusive of a non-intervention scenario. By looking at such diagrams (on posters or even on a computer screen), forest managers and owners confront this with their own mental images and experiences. The implementation of new management paradigms, such as is forest conversion is to many managers/owners, will become easier. And it will also be easier to formulate conversion goals within a certain time frame, for example 33% of the pine forests converted within 20 years. A possible next step, which is being proven in forest complexes where forest groups are active for 5-10 years,would be that the changed scenery examples could be shown and discussed in real.

Barriers and recommendations to solve them

As important as convincing forest owners of management activities that favour conversion, is the solving of the numerous barriers and problems owners face. Many forest owners are now not concerned with conversion because they have other things to deal with. Owners of all types face the following problems: expanding recreation resulting in rubbish and vandalism, high costs, inappropriate and obscure legislation, lack of knowledge, need of help. Owners formulate the following solutions to these problems:

- Liberalize the forest legislation so that it becomes clear and transparent and an owner can manage without wondering if his strategy is allowed or not.
- Provide higher financial interventions to decrease the high management costs (more subsidies or better information about the different existing subsidies). An example: decrease the waste deposit costs for rubbish collected by forest owners when they bring it to a recycling unit. The subsidy for public access doesn't work.
- Distribute more information about forest management.
- Do NOT ignore the problems associated with the increasing forest recreation.

Besides these general problems, there are specific barriers for each type of owner.
Economists face problems with (i) the difficulty to reach their forest, (ii) their high age, (iii) the public access to their forest. They want permissions to improve the private (!) forest roads. Apart from other benefits and services, they expect the forest group to arrange accessibility plans at forest complex level for them and the other forest users.

The main concerns for the recreationists are (i) a lack of technical knowledge, (ii) a lack of time for management and (iii) vandalism in and around holiday cottages. They think they need more (costless) help than the forest group can offer. They ask more surveillance in the forest with public access and a restriction of public access to a limited number of forest complexes, e.g. those with a low natural value. A very good solution for their specific situation would be the parallel distribution of problem-specific information by the local government as well as by the forest group.

Passive owners are concerned with the negative effects of forest recreation. They feel a pressure to open up all the forests to the public, while in fact they prefer not to. A good and frequent cleaning service would already help a lot and, like the recreationists, they believe in better surveillance, e.g. by forest rangers.

For all the types of owners it seems to be very important in a first step to start from the own experience that forest owners have with their forests and to solve their first concerns. In a second step they can be encouraged to work out good forest (conversion) management. The economists, and some of the recreationists, will be the first group that can be informed with conversion management by the forest group.

Government

All forest owners have the strong impression that the forest authority, that is Bos & Groen, does not take into account the problems associated with forest recreation when implementing the general forest policy of encouraging recreational use of the forest.

The government should make a critical reflection about the actual forest legislation. The opinions and concerns of the (small) private forest owners have clearly not been integrated so far and there is a lack of transparency. An important step towards a transparent policy is a clear terminology: terms should have only one meaning, an exhaustive explanation must be given and terms must be used consequentially in all policy documents and in legislation (Van Woerkum 2000). The fact that the need of forest conversion is stressed in policy documents, while it is hardly mentioned in the recent advice of the Hoge Bosraad is not a satisfactory situation (Bossenverklaring, Van Langenhove & Spaas 2003). The expectations of the government towards forest owners should be crystal-clear and the link with other policy instruments as forest groups, subsidies and legislation should be explained.

Government should implement two changes in its current attitude towards forest owners: 1° improve the negative 'image' of the forest authority and 2° stop considering private forest owners as a problematic group, inferior to the public forest owners and managers, but stress their positive societal role and the services they deliver to the public.

'Image-building' of the government

Even without encouragement from the researchers' side, the forest owners in the FEFOCON focus groups expressed a very negative image of the authorities in general and of the forest authority in particular.

As Van Woerkum (2000) points out, government institutions often use 'instrumental thinking' for policy building, which means that they take up the working field as "to be influenced" and strive for a pointed aim with certain instruments. From the moment these instruments cause tensions, citizens don't accept the policy of the government and they build up a negative image. If this evolution is not recognized, this image becomes worse and citizens begin to think that policy makers are 'against them (Van Woerkum & Aarts 1998).

From our findings, we think that an 'image-research' is urgently needed for the government organisations working out and implementing forest policy, that is AMINAL and the local authorities. This will give clues for improving the image. At this moment the negative image is a barrier, a handicap for the real concern: implementing good forest policy in all forests.

Important components of this problem are given by Van Woerkum (2000: 27-):

- *the gravity of the problem:* Forest owners have to be convinced of the urgency of good (conversion) management. A lot of them do like pine plantations and do not see a species change as an aim for their forests.
- *Is it necessary that there is government intervention?* Government should know the limits of interference in owner's decisions.
- *effective instruments:* To accept the forest policy it's necessary that forest owners see the benefits of the conversion activities promoted by the government.
- *realistic and practical instruments:* Many technical management activities that the government supports, are not possible for forest owners in practice, e.g. because of the high costs.
- *fair instruments:* Owners will only accept policy instruments when they find them fair. e.g. efforts towards conversion should be balanced between all owners (public and private) and also restrictions should be balanced.

'Negative images' are often the result of a lack of interaction between the forest owners and the government. Van Woerkum (2000) and Van Woerkum & Aarts (1998) formulate preconditions for communication and negotiation with an interactive approach:

- Flexibility of government institutions towards problem solving in the field.
- Transparency: not only the general aims, but also the intentions in the field and the procedures should be clear. E.g. is private forest ownership encouraged in a certain forest complex or does the government want to buy it up to extend a public forest.
- The media are very good to give information to the forest owners but also for interactive debate.

- The theme must be accessible for forest owners.

Forest owners are NOT a problem, they play a positive societal role.

In their communication, forest authorities should stress the positive societal played by private (and public) forest owners. Especially economists and recreationists know the role they play for the basic environmental quality (water, air, landscape, biodiversity) and for the forest recreation, but never get the impression that the government or the general public recognise their role. It would be a good idea to honour the (small) private forest owners for their efforts towards society. We suggest to choose the small private forest and its owners as the topic of the 'Week van het Bos" in one of the following years. Curiously, for more than 20 years this event has been successfully used by the forest authority to introduce various forest policy aspects to the general public, but always from the perspective of public or even domanial forests (only covering 30 or a bit over 10% of the Flemish forest area). This approach does however not mean that the situation of the private forests has to be propagated as ideal. It will only help to bring both partners, government and private owners, to a joint level, after which progress can be made with forest management and more specifically conversion. And maybe this can lead to the incorporation of social benefits into the private decision making of the forest owners instead of only responding to incentives, the way most forest owners act nowadays.

Economic feasibility of forest conversion: financial stimuli for forest owners

Current financial policy instruments

Although the current forest policy in Flanders is commendable because of its goal-specific subsidy instruments, its low transaction costs, and its enlightened participatory approach through the forest groups, a large majority of owners still does not practice sustainable forest management. The following recommendations can be formulated:

- If the current style of detailed and specific forest policies is maintained, a complete forest land register census should be drawn up so that effectiveness of the policy can be increased and locational aspects can be taken into account. This is both the case for Flanders and Wallonia.
- The policy instruments are in place, but goals are vague and only qualitative. It is probably most cost effective to target in the short term the relatively few large owners (estates larger than 10 ha) for conversion management. Most of these belong to the economist group (VLINA 2001) and can be approached well by the forest groups. Forest groups should however communicate more clearly about their goals so as to take away fears that management plans are too rigid and costly to execute.
- A comprehensive study on simplifying the subsidy structure should be commissioned to enhance transparency and build up trust among forest owners.
- Raising awareness about existing subsidies and rules, can improve progress towards forest policy goals.
- The recreational subsidy should be redesigned, because it is hardly used in its actual form. The owners do not feel a balance between the (small) subsidy and the extra costs involved. From the sociological research the clear problems associated with public access to forests (rubbish etc) need to be solved, through surveillance, cleaning services and accessibility planning at forest complex level.
- Although not enough data on forest land values are available to draw statistically valid conclusions, the government programme for buying up forest land should continue and not be scaled down. It is probably the most cost-effective instrument sustaining private forest ownership, although it is not specific and thus not directly promoting conversion.
- A small study on compensating owners who have converted aggressively should be carried out, in order to avoid negative forest rents for these owners.

A shortlist of policy recommendations from the FEFOCON research

Promote forest conversion, it is good for the forest ecosystem! – Forest conversion certainly mitigates eutrophication and acidification (lower N input and N output, lower acidifying input, lower losses of cations to the deeper soil and ground water, increased nutrient input through litter, improved litter decomposition) and it probably improves biodiversity as compared to the situation in homogeneous conifer stands.

Consider several conversion management scenarios (including the promising group cutting scenario) and develop an optimal combination of scenarios to reach the conversion goals. These goals must be defined in terms not only of share of deciduous species, but also of desired quantities of each species and of desired horizontal and vertical forest structure.

Take private owners seriously in their diversity – (At least) three divergent types of private forest owners need to be addressed properly by forest policy: economists, recreationists and passive owners. As an example, the distribution of any information must be differentiated to reach each type properly.

Honour small private owners for their societal role; do not consider them as a problem for good forest policy.

The forest authority must (re)build its image among private forest owners.

Policy must take away obscurity and uncertainty in legislation for private (and public) forest owners. The policy instruments to sustain recreational use of private forests by the public should be reconsidered: individual subvention is inefficient: the associated inconveniences must be taken seriously and be tackled at forest complex level. These are now barriers to good management practices like conversion.

The strength, but also the limits of the forest groups in Flanders, must be considered by the forest policy. Raising the number of owner's participation in forest groups is a first priority. But other policy instruments, like the buying-up of forest land from the passive owners should be fully considered.

An urgent tool for good forest policy in private forests in Belgium is a forest land register.