

Memo: Report¹ on bus ticket no. A4

By: Leen Kuiper and Jan Oldenburger, Probos

Date: November 8, 2004

HOW TO GET MORE WOOD FROM THE DUTCH FORESTS?**Definition of the problem**

In general, wood harvest in the Dutch forests is much lower than the annual increment, resulting in an increase in the growing stock of 800,000 tons each year. At present, no extra wood is expected to become available from our woodlands for biomass-utilization. The wood is certainly there, but it doesn't come out of the forest. What is causing this? We have asked the forest owner and the forest manager!

Questions

Which categories of forest owners are most willing to increase their harvest and to provide (more) biomass?

Would it be possible to harvest more wood without jeopardizing the sustainability of the forest?

What is the forest manager's view on pre-commercial thinnings?

Which extra financial support is necessary to increase the amount of biomass to be extracted from the forest?

1. Approach

By a quick scan, consisting of interviews and E-mail consultations, an attempt was made to answer the above questions. The following public and private forest owners and experts have been contacted: municipalities (4x), private forest estates (4x), other public forest owners (2x) and consultants (2x).

- Mr. W. Klein Thijssink, Municipality of Ermelo
- Mr. J. Floor, Municipality of Arnhem
- Mr. van der Els, Municipality of Someren
- Mr. van den Born, Municipality of Ede
- Mrs. Berger – van Rijckervorsel, Estate de Wamberg
- Mr. van Boetzelaer, Estate Eijkenstein
- Mr. Vernhout, Estate Vilsteren
- Mr. Gelderman, Estate Beekvliet Gelre
- Mr. P.A.M. van Winden, Ministry of Defence, Department Buildings, Operations & Fields of operations
- Mr. H. Wanningen, Staatsbosbeheer, Corporate services
- Mr. C. Balemans, Forestry group The Netherlands North-East
- Mr. G. Borgman, Borgman Beheer Advies

2. Results

2.1 The municipality of Ermelo. The forest of the community of Ermelo is subject to multiple purpose management in which wood production is considered an important feature. The Woodstock forest inventory has shown that it is possible to harvest more wood from Ermelo's forest. The harvest level can and will be increased by 15% to reach an acceptable harvest level of 75-80% of the annual increment. Selling fibre wood to a bioenergy plant instead of selling it to the paper- or boarding industry is no problem for mister Klein Thijssink, i.e. if the prices are the same. The forest manager is not willing to consider the removal of branches and treetops from the forest, because it would be a step back in time. Should dead wood be harvested from the forest, according to Mr Klein Thijssink, it will decrease the soil quality and reduce the availability of nesting places for birds. At the moment, the first thinning

¹ Copying of (part of) this report is allowed only with proper citation. This report aims to provide a quick scan of the subject matter and should therefore be used as such. The contents do not represent the official view of the BUS nor of any of its affiliates, but are personal to the writer. The BUS accepts no liability for the use of this information nor for any consequences that may result from it.

in the forests of the community of Ermelo is done after 20-25 years, producing mainly fibre wood. It is possible to thin earlier, but mister Klein Thijssink does not see the advantage of pre-commercial thinnings. He thinks it will have a negative impact on the amount of dead wood, the birds and the forest soil.

2.2 The municipality of Arnhem. The municipality of Arnhem is harvesting wood only in order to improve the quality of the forest and not because of the revenues. Enhancing the natural values is the main steering factor in forest management. The community of Arnhem definitely will not consider to harvest more wood; not even with a financial support. Harvest operations are performed only if they are profitable and the wood is sold to the highest bidder. Selling his fibre wood to a biomass energy plant instead of selling it to the paper- or boarding industry is no problem for mister Floor. Harvesting branches and treetops is not an option for the community of Arnhem. The first commercial thinning in Scots pine stands is, depending of the soil quality, performed after 30 years. Earlier thinnings are considered only if they are commercially viable and if the wood quality of the standing trees are to be improved. However, it will not be done if the natural branch removal is influenced in a negative way. According to mister Floor a pre-commercial thinning can only be performed with a harvester, because otherwise the costs would be too high. During the first pre-commercial thinning the harvester makes felling tracks and removed badly shaped trees. Mister Floor agrees with the fact that an extra cubic meter of wood could be harvested from the forest without affecting the sustainability of the forest. However, it would not be profitable, because labor costs for this extra cubic meter of wood would be too high. Mister Floor is not in favor of trying to subsidize this.

2.3 The municipality of Someren. Wood production is important in the forest of the municipality of Someren. The management is performed according to the principals of nature-oriented forest management (geïntegreerd bosbeheer). According to mister van der Els already the maximum amount of wood is harvested in the forest of the community of Someren. An extra financial incentive would not change this. Mister van der Els doesn't see any problems if his fibre wood would go to bioenergy plants. The highest bidder gets it. Mister van der Els has objections against the removal of branches and treetops from the forest, because it will reduce the amounts of dead wood. However, after explaining that only thick dead wood has a significant advantage for biodiversity, mister van der Els thinks that it might be an extra source of income. The production of high quality wood (a branch free part of the stem of 8 to 10 meter) is one of the aims in forest management of the community of Someren. For this reason the first thinning is performed after 20 to 25 years. An extra financial incentive to perform pre-commercial thinnings would not result in a change in management. Mister van der Els supports the idea that an additional cubic meter of wood could be harvested from the forest without impacting the sustainability of the forest, but he does not think it is feasible, because one cubic meter of wood is too small an amount.

2.4 The municipality of Ede. Wood production is not important in the forests of the municipality of Ede, because wood is only harvested in order to increase the nature values of the forest. Increasing the harvest level, therefore, is no option. Selling his fibre wood to a biomass energy plant instead of selling it to the paper- or boarding industry is no problem to the forest manager, Mr. van den Born. Harvesting branches and treetops is no option in the forest of the community of Ede. The age at which the first thinning is performed is 20-25 years. Pre-commercial thinnings are not considered at present. The yield from first thinnings could be used for biomass purposes, i.e. if at least the harvesting costs are being covered. This would imply that the wood from precommercial thinnings should be sold together with wood from commercial thinnings, otherwise it would not be viable to perform these pre-commercial thinnings. Mister van den Born agrees with the fact that one extra cubic meter of wood could be harvested from the forest without affecting the sustainability of the forest.

2.5 Private estate de Wamberg. Wood production is very important within the estate de Wamberg, which has a forest area of 90 hectares. The production forest is harvested with a cutting cycle of 6 years. If an extra financial incentive would become available, the current harvest level could be increased. If the same amount of money is paid, mrs. Berger - van Rijckervorsel doesn't see any problems if her fibre wood would go to the energy plant. It would not be a problem either to harvest

branches and treetops, because this has been done in the past. No precommercial thinnings are performed at the Wamberg, because only a small part of the forest consists of young forest stands.

2.6 Private estate Eijkenstein. The private estate Eijkenstein consists of 140 ha of woodlands in which wood production is considered very important, but the nature values are also taken into account. At the moment thinnings are performed regularly and according to mister van Boetzelaer it is not necessary to increase the harvest level. A financial incentive to increase the amount of harvested wood would, will have a negative impact on the aim of the subsidy for nature conservation and is, therefore, not to be recommended. Selling his fibre wood to a biomass energy plant is no problem for mister van Boetzelaer, i.e. if the same amount of money is being paid. According to mister van Boetzelaer the marketpotential for energy wood is still insufficient for small freights of wood. Harvesting branches and top wood is no problem for mister van Boetzelaer. However, he has a problem with such a harvest if it would imply more heavy machinery in the forest, because these (heavy) machines may damage the soil and the paths. Pre-commercial thinnings are not performed, because they do not deliver revenues. However, Mister van Boetzelaer would consider to do pre-commercial thinnings if being subsidized. In the past volunteers performed these management activities, but they are no longer available. Mister van Boetzelaer agrees to the fact that more wood could be harvested from the forest without a negative impact on the sustainability of the forest ecosystem. However, the resistance and resilience of the forest against storm damage should be kept in mind.

2.7 Private estate Vilsteren. The rural estate Vilsteren has a forest area of 400 ha. This is less than half of the total estate. Wood production is important in forest management. The forest is divided into parts with different accents (wood production, culture, nature and recreation). Once in every 5 years the amount of wood that has to be harvested according to the accent in a certain part of the estate is determined. In certain parts of the estate more wood could be harvested from the perspective of wood production, but this is not done because it is not necessary for the accent in that part of the forest. Selling his fibre wood to a biomass energy plant instead of selling it to the paper- or boarding industry is no problem for mister Vernhout, unless the prices are the same. According to mister Vernhout it does not seem to be reasonable to harvest branches and top wood from the forest, because the estate is on poor sandy soils. The estate has its own employers, which makes it possible to perform the precommercial thinnings. An extra financial incentive is not necessary to perform them. Next to this mister Vernhout indicates that the relevance of this subject is reduced, because forest management is changed to nature-oriented forestry (geïntegreerd bosbeheer).

2.8 Private estate Beekvliet Gelre. Wood production is important in forest management of the estate Beekvliet. The forest consists of 10 hectares of alder (elzenbroekbos) and 50 hectares that are owned by Natuurmonumenten, but they do not manage the forest. The thinnings on the estate are behind schedule. This is mainly due to the low wood prices. A financial incentive would certainly help to stimulate the harvest. Selling his fibre wood to the biomass energy plant is no problem for mister Gelderman. If commercially viable the harvest of branches and treetops would not be a problem either. Pre-commercial thinnings will certainly be considered if the revenues from energy wood would pay the costs.

2.9 Ministry of Defence, Department of Buildings, Operations & Field operations. Wood production is not important in the woodlands of the Ministry of Defence. Harvesting more wood is possible if the harvesting operations will be financed, under the condition that they would not negatively influence the military function and the nature values of the forest. The Ministry of Defence doesn't see any problems if their fibre wood would go to a bioenergy plant. Removing branches and top wood and performing pre-commercial thinnings is no problem, as long as the sustainability of the forest ecosystem is not affected. According to the Department BO&F one extra cubic meter of wood could be harvested from the forest without negatively affecting the sustainability of the forest. According to the Department of BO&F the possible damage to the soil and vegetation caused by the harvesting activities is of greater concern to the sustainability of the forest ecosystem than the amount of wood harvested.

2.10 State Forest Authority, Corporate services. Each year, ‘Staatsbosbeheer Dienstverlening’ asks their forest managers to indicate from which objects they expect to yield energy wood. The energy wood is mainly derived from pre-commercial thinnings, especially from those stands in which the quality of the wood is bad. The wood is skidded to the forest road, where it is being chipped. The trees are sometimes stored along the forest road for a while in order to reduce the moisture contents. Energy wood is also derived from forests that are being converted. The wood that is being removed from heather and other types of reserved natural areas is also sold as energy wood.

According to SBB Corporate Services precommercial thinnings are no longer performed by SBB managers., because they cost money. If nevertheless, a forest manager wants to do a pre-commercial thinning, he has to pay for it himself. The forest managers of SBB earn between 0 and 3 euro per cubic meter of standing volume.

The policy of SBB is to look for a value-added utilisation of the wood before it is used for energy purposes. Mister Wannigen indicates that the demand for industrial fibre wood has increased recently, which is due to the lower quality requirements for the delivered wood by the board industry. It is now possible e.g. to deliver the wood in different lengths and also temperate hardwood is accepted. The wood from pre-commercial thinnings can go to a new OSB plant in Belgium and the forest owner will still earn a few euros for his wood.

The branches and top wood are only harvested if a calculation shows that this can be done cost efficiently. If the calculation indicates that the harvesting operation will cost money, the operation is only performed if the forest manager pays the deficit.

2.11 Forestry Group North-East. As a consultant this Forestry Group is involved in forest management planning within the framework of FSC group certification. From these management plans it can be derived that most private forest owners frequently harvest less than would be possible. The forestry group advises to harvest 70% of the annual increment. Consequently, most private forest owners indicate that they will increase their harvest in the near future. This illustrates the needs to inform forest owners about the benefits of increasing harvest levels. In order to facilitate this awareness process, the writing of forest management plans should be subsidized, for instance by the provinces or municipalities. If forest owners would get higher revenues for their wood, more wood would likely be harvested. At present, the diameter at which the top of the stem is cut off frequently is 12 cm, although it should be no more than 8 cm. According to mister Balemans it would be a step back in time if branches and top wood would be harvested. For this reason he doesn’t think it’s a good idea. With proper financial incentives pre-commercial thinnings and coppice management will certainly stimulate the production of biomass for energy purposes. Mister Balemans agrees with the fact that harvesting more wood is possible without jeopardizing the sustainability of the forest.

2.12 Borgman Beheer Advies. Mister Borgman was asked to estimate the exploitation costs of a pre-commercial thinning, which amount to about 15 to 20 euro per m³, based on a harvested volume of 35 to 40 m³ per hectare, at an age of 30 years. A pre-commercial thinning in a Scots pine stand of 15 years produces 10 to 12 m³ of wood. Preferably, precommercial thinnings are performed together with commercial thinnings in order to compensate the costs.

According to mister Borgman, pre-commercial thinnings for energy purposes should be viable from a financial perspective. The price paid for energy wood chips is 30 euro per metric ton at the gate of the energy plant. (Two cubic meters of coniferous woodchips go into one metric ton).

According to mister Borgman, the establishment of three to four additional bioenergy plants would solve the problem of finding an outlet for the wood from pre-commercial thinnings, if these energy plants will pay the cost price of the wood. According to mister Borgman the bioenergy producers will import shiploads of cheap biomass from Chile if the price of biomass in the Netherlands is too high. The biomass price is further kept low by the low prices for energy wood from abroad.

3. Conclusions

- 1) If forest managers will get then same price, they do not have any problems with their fibre wood going to bioenergy plants instead of going to the paper- or board industry.

- 2) The willingness of forest managers to increase their harvest levels mainly depends on the role of wood production in forest management and on the type of forest owner. Private forest owners will be more willing to increase their harvest (provided they get an extra financial incentive) than public forest owners, such as local communities, ministry of defense, state forest service. Hence, the most effective strategy to enhance biomass yields from Dutch woodlands is to focus on private forest owners.
- 3) Forest managers who aim at the conservation of natural values of their woodlands will not be inclined to harvest more wood, unless the natural values of their forests clearly benefit from it.
- 4) The removal of branches and treetops is not considered a viable option, because it is seen as a step back in time. Forest owners have just got used to the idea that they should leave the branches and treetops in the forest to enhance biodiversity. It will be difficult to convince them with an opposite message.
- 5) An increase in pre-commercial thinnings is conceivable, but this will only happen with the proper financial incentives.
- 6) The costs of pre-commercial thinnings (excluding the costs for chipping or shredding) amount to 15 to 20 euro per m³, when assuming 40 m³ of wood is being harvested per hectare on average. The current price for wood chips at the gate of the energy plant is about 25-30 euro per ton of fresh chips (i.e 12-15 euro per m³ of solid stem wood). Thus the harvesting costs still exceed the price that is being paid for the wood chips, making it very unrealistic to happen without incentives (in the order of 20 euro per m³).
- 7) Many private forest owners are harvesting less wood than they could. A better exchange of information (forestry extension) and a financial incentive for making forest management plans would help changing their attitude.

4. Follow up?

A number of questions still remain unanswered:

- How many private forest owners, owning more than 5 ha of woodland, which are currently registered at the Bosschap, could be stimulated to harvest more wood? How much extra energy wood would become available from these private forest owners?
- Which financial incentives are needed in order to enhance pre-commercial thinnings?

A follow-up is proposed, focusing on private forest owners which are actually harvesting far less wood than the sustainability of their forest holdings would allow. Probos suggests to divide this follow-up study into two phases:

- (1) Analyse the available HOSP (Houtoogststatistiek en prognose) database to see if it could yield more detailed information on forest owners which currently are harvesting less wood than they actually could harvest. E.g. the category of private forest owners may be divided into a group of forest owners that own less than 100 ha of woodlands and a group of owners that owns more than 100 ha.
- (2) Check the results of phase 1 (HOSP database) by a substantial number of telephone interviews with relevant categories of forest owners. In this way, representative information about the harvest level of the 'most promising' forest owners is derived. In addition, the willingness of forest owners to harvest more wood as well as the incentives needed, will be assessed.

To carry out such a follow-up, Probos estimates that an amount of 6000 euro will be needed (i.e. 3000 for phase 1 and 3000 for phase 2, including reporting).