Prospects for the market supply of wood and other Forest Products from areas with fragmented forest ownership structures

Task II

Case Study : Sweden

Confédération Européen des Propriétaires Forestiers

January 2010

Measurements used

m3sk – cubic meter standing volume (stem volume over bark from stump to tip)
m3fub – cubic meter solid volume excluding bark

For conversion to Euro the exchange rate of 31st of December 2009 has been used;
1 SEK = 0.0975 EUR
1 EUR = 10.2561 SEK

Introduction

The total land area of Sweden is 531 800 square kilometres (SCB, 2008) and productive forest land covers 56 percent of this area (Skogsstyrelsen, 2009). There are also a number of lakes and rivers (9 percent) as well, mountains (11.6 percent) and agricultural lands (8 percent). Gardens and lands with buildings cover 3 percent of the area. With a population of slightly above 9 million people the average number of inhabitants per square kilometre is 22, although this varies throughout the country from 4107 inhabitants per square kilometres in Stockholm to less than one in some of the more northern communes. (SCB, 2008) The amount of forest owners among the population is close to 4 percent.

The fact that Sweden has common access rights that makes it possible for everyone for example to pick berries or hike on others land is important and has an impact on the management of the forests.

The forests in Sweden consist mainly of coniferous species with a dominance of pine (*Pinus silvestris)* and spruce (*Picea abies*), but also deciduous trees such as birch (*Betula pendula* and *Betula pubescens*) and aspen (*Populus tremula*) are relatively common. The harvesting method most commonly used is high technological with a combination of a harvester and a forwarder.

For the purpose of this case-study, the Swedish definition for productive forest land is used. This defines forest as land suitable for timber production, which means that it produces at least 1 cubic meter per year in average over 100 years. Productive forest land must be above 1 hectare per management unit to be considered in the statistics. Forested land with an area below 1 hectare is considered as gardens or other land-use, not as forest. This definition is somewhat different from the FAO definition of forest that is a land area of at least 0.5 hectares with canopy coverage of at least 10 percent and a height of at least 5 meters when full-grown. (Forest Act 2008:662)

Swedish forests have been used for centuries and the first Forest Act was formulated in 1903. Forest Statistics also have a long tradition in Sweden and forest inventories have been performed since the start of the National Forest Inventory 1923-1929. Official statistics are also produced by Statistics Sweden, Swedish Environmental protection Agency, Swedish Energy Agency, Swedish Institute for Transport and Communications Analysis, National Chemical Inspectorate, Swedish Work Environment Agency and the Swedish Board of Agriculture. (Skogsstyrelsen, 2009)

The case-study is based to a large extent on the Swedish Statistical Yearbook of Forestry, which is published by the Swedish Forest Agency, but also on the input of qualitative interviews with a number of experts. The interviews were performed to a large extent via telephone, but also as a number of meetings in smaller so-called focus-groups at locations spread across the country.

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Task 1: Describe the case study region

1. What is the total forest cover in the region?

i) in percent of the total area?

Productive forest land covers 56% of the total land area. (Skogsstyrelsen, 2009)

ii) how did it develop during the last 10 years (approx.)?

Productive forest land covers 56% of the total land area. This percentage has varied between 55.5 and 58.1 since the first National Forest Inventory 1923–1929. In recent years the productive forest land area has decreased due to the establishment of many and to some extent large nature reserves. These areas are included in the land use class Nature reserves and land under military supervision (Skogsstyrelsen, 2009)

iii) what future development can be expected?

The expected scenario is no changes in the total productive forest land area. In the long run an increase may be seen as an effect of a climate change. (Anonymous 1)

2. What is the wood mobilisation in terms of annual increment?

i) how much is the annual harvest in cubic meters over bark?

The gross felling 2008 was 84.9 million cubic metres standing volume including bark. (Skogsstyrelsen, 2009)

The gross fellings have slowly increased since the 1950's when the harvesting level was around 60 million cubic meters standing volume including bark. Peaks correspond to storm events such as Gudrun in 2005. The increase in harvests correspond greatly with the increase of annual increment during the period. (Skogsstyrelsen, 2009)

ii) how much is the annual increment in cubic meters over bark?

The mean site quality on forest land was 5.5 m3sk per hectare and year.

The growing stock of the entire country, including dead and wind thrown trees, is estimated to be 3.0 billion m3sk of which 95% grows on productive forest land (tables 3.7–3.12). The distribution by tree species was Norway spruce 41%, Scots pine 38 %, birch 12 %, other broad-leave species 6 % and dead or wind thrown 3%. The growing stock has increased steadily since the 1920’s from a level of 1,760 million m3sk (figure 3.10). The increase has been particularly high in southern Sweden and for trees with a diameter above 25 cm. The standing volume per hectare of productive forest land was 133 m3sk per ha.

Annual growth is shown in table 3.13. Annual growth during the 1920’s was around 60 million m3sk per year. The current annual growth is around 120 million m3sk per year.

Standard error estimates are important for the National Forest Inventory results. The relative standard errors of estimates of forest area and growing stock in the entire country are slightly under 1%. Other errors (non-sampling errors) are difficult to quantify, but are important. Regular check measurements indicate that the total volume of growing stock is underestimated by about 1%.

Estimates are usually five years averages (2004-2008) and the information is based on the Swedish National Forest Inventory data (NFI). (Skogsstyrelsen, 2009)

iii) how did it develop during the last 10 years (approx.)?

The increasing growth since the 1970ties has ceased, and stabilization in 120 million m3sk is seen. (Skogsdata 2009, National Forest Inventory)

iv) what future development can be expected?

The current annual growth is around 120 million m3sk per year.

Standard error estimates are important for the National Forest Inventory results. The relative standard errors of estimates of forest area and growing stock in the entire country are slightly under 1%. Other errors (non-sampling errors) are difficult to quantify, but are important. Regular check measurements indicate that the total volume of growing stock is underestimated by about 1%. (Skogsstyrelsen, 2009)

3. Is there legal uncertainty regarding forest ownership?

i) is there an ongoing restitution process?

No, there is no ongoing restitution process.

ii) please describe the process?

Since there is no ongoing restitution process the process cannot be described.

4. How can the forests in the region be characterized?

i) average stock per hectare in cubic meters over bark?

The standing volume per hectare of productive forest land was 133 m3sk per ha. (Skogsstyrelsen, 2009)

ii) shares of coniferous/non-coniferous wood?

The distribution by tree species was Norway spruce 41%, Scots pine 38 %, birch 12 %, other broad-leave species 6 % and dead or windthrown trees 3%. (Skogsstyrelsen, 2009)

iii) shares of abandoned and/or unmanaged forests, and the role fragmented ownership plays in this?

There are parts of the forests that are not used or managed and that are not put away for natural protection. This can be consciously done or have economic or technical reasons. These forests are probably going to be harvested if the price for timber increases to a level that makes it worth putting in a harvesting effort in the area. Or if not, it could be considered for natural protection at a later stage. (Anonymous 8) The areas of unmanaged forest are small to non existent, are most often left unmanaged as a conscious decision, and will in most cases be managed after it is passed on to the next generation.

iii) describe the general topographic situation that may influence wood harvesting in the regions forests?

A large part of the Swedish forests are in the boreal climate zone and the main species in this region are pine and spruce. In southern Sweden the northernmost limit of the European deciduous forest covers a large area with species such as oak and beech. The region between the deciduous forest and the boreal one consists of the nemoboreal region that is dominated by pine and spruce, but has deciduous forest on more fertile lands. Along the Scandinavian mountain chain there is a region of alpine and sub-alpine forest. (Skogsstyrelsen hemsida)

There are currently 93 million cubic meters of hard deadwood on productive forest land in Sweden, not including protected areas. The target for 2010 of an increase of 40% from the 1998 value will be surpassed with a wide margin. Elk browsing damages appear to be decreasing but there is no clear trend. Even so nearly half of the Scots pines inventoried in the ÄBIN inventory 2004-2008 were affected by elk browsing. (Skogsstyrelsen, 2009)

iv) describe the tree age (class) distribution in the regions forests?

The proportion of forests older than 160 years has decreased.

Normal rotation ages are (approximately) 130 years in Norra Norrland, 120 years in Södra Norrland, 100 years in Svealand and 90 years in Götaland. (Skogsdata, 2009)

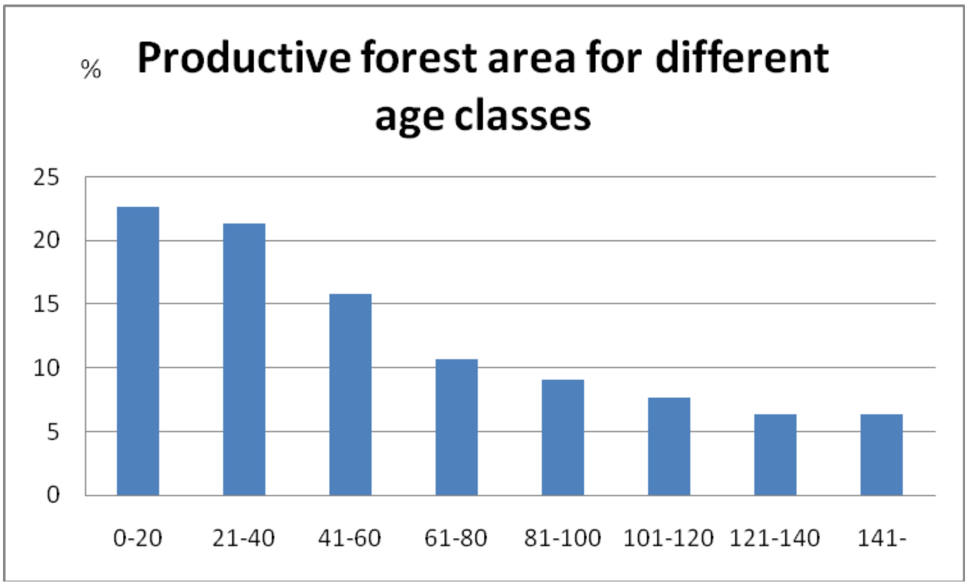

Figure 1. Productive forest area for different age classes. (Anonymous 1)

v) describe other factors (e.g. forest fire risk, accessibility for leisure, climatology and wildlife conservation) that may influence wood harvesting in the regions forests?

Approximately 10 percent of Sweden's land is protected by some kind of nature conservation legislation. About half of this is forest. Most of this land is in Northern Sweden.

About 3.2 percent of productive forest land is protected.

The total number of registered key habitats on private, public, company and state owned land is 81,900 objects. This equals a total area of 379,000 hectares.

About 1.2 million hectares of forest land is voluntarily set aside by the owners for conservation purposes.

National parks and nature reserves together comprise 4.2 million hectares (10.4 million acres), which corresponds to roughly ten per cent of Sweden's total land area. Of that amount, 684,000 hectares consist of forest land that is legally protected. In addition, habitat protection areas and nature conservation agreements account for nearly 48,000 hectares, of which over 43,000 hectares are productive forest land. Voluntary conservation areas comprise another 1.2 million hectares.

According to the Swedish Species Information Centre, there are nearly 4000 red-listed species in Sweden, of which roughly half are forest dwellers. As of 2007, the number of key habitats registered with the Swedish Forest Agency was ca. 82,000, comprising a total area of ca. 380,000 hectares. For some ownership categories, only a portion of key habits are represented in these statistics. On small-scale forestry holdings, some 52,000 key habitats had been registered with the Swedish Forest Agency as of 2007. They comprise a total of nearly 161,000 hectares, of which 135,000 hectares are productive forest land. That corresponds to ca. 1.1 per cent of all productive forest land within the category of small-scale forestry.

(Skogsstyrelsen, 2009)

5. What other factors may be important to describe the case study region in context to mobilisation from fragmented ownerships?

Forest and ownership of it has always been important in Sweden. To a large extent this is due to the fact that ownership of forest has been important for getting areas for cattle-grazing and to cover the need of wood supply to the household. Because of the need of owning wood the forest holdings are relatively large in the country. Only in the Dalecarlian region there are some areas that are really fragmented. (Anonymous 6 and 7)

In the Dalecarlian region 400000 hectares can be considered strongly fragmented. This corresponds to 1/7 of the Dalecarlian region and anout 1.7 percent of the total forest coverage of Sweden. About 100000 hectares of those are already planned for restructuring.(Sundin, 2003)

There are positive effects of having a gathered holding. In modern days there has been talk about the law regulating acquisitions, expropriations, the splitting of properties etc. There is a law regarding the splitting of forest holdings that make it impossible to split properties so that they have a lower production than 200m3sk/year unless there are special reasons. (Anonymous 13)

The reason for the stronger fragmentation in this region is the tradition to not give the land to the firstborn son, but to split it so that all children got one part. This soon led to complicated ownership structures. The Storskiftet was greatly slowed down in the Dalecarlian region and didn't start until the rest of the country was more or less finished. A law (laga skifte) was then introduced in 1932 that aimed at restructuring the land so that a more efficient forestry was possible. This was enforced by the 1972 real estate law that aimed at constructing self sustaining enterprises. The minimum size for a forest holding was put to between 40 and 50 hectares. This law was changed in 1994 so that the minimum holding is now 5 hectares. The change was made so as to make it more interesting for smaller forest owners to restructure their land into more efficient units. (Sundin, 2003)

Task 2: Describe the regional wood markets

1. What is the structure of the regional wood markets, in terms of ….?

1.1 … wood sellers (forest owners and companies)?

i) what is the number of forest owners? - distinguish ownership categories: - fragmented private forest ownership, - other non-inclustrial private, industrial private, public and forest operators (please define the categories used)? (describe categories if necessary)

Owners of Management units 2008 (Skogsstyrelsen, 2009)
State: 393
State owned company: 181
Other public owners: 328
Private owned companies: 2052
Private individuals: 234 858
Other private owners: 2106
Unknown: 55
All categories: 239 973

ii) average (of the last 5 years) annual selling volume in the region by category? (please specify m3 under bark or over bark) (add time series data if possible)

The net felling volume 2008 was 69.0 million cubic meters solid timber excluding bark. Previous years the net felling volume has been; 2004: 70.1, 2005:98.3, 2006: 65.0 and 2007: 78.2 million cubic meters solid timber excluding bark. (Skogsstyrelsen, 2009)

iii) the average annual selling volume by ownership category either by assortments? Assortments are at least: saw logs (incl. veneer logs), pulpwood (round and split), (fuelwood) OR by ownership category (fragmented private forest ownership) and buyer categories (sawmills, panel, pulp and paper mills, heating plants, private)?

32.6 million cubic meters was sawlogs, 30.0 cubic meters was pulpwood, 5.9 million cubic meters was fuel wood, and other assortments accounted for 0.5 million cubic meters of the net felling volume 2008. (Skogsstyrelsen, 2009)

iv) the average (of the last 5 years) amount of wood that different ownership size categories within the fragmented private forest owners have sold to markets (if available)

Annual gross fellings during the period 2005-2007 was for private persons 55646000 m3sk and for private companies and other private ownerships 21280000 m3sk and for the state forest and other public forests 10240000 m3sk. (Skogsstyrelsen, 2009)

v) the average amount of wood that fragmented private forest owners (and different ownership size categories within this group - if available) have harvested for their own use (firewood, construction etc.)?

The fire-wood consumption in one and two household dwellings were during 2007 6,6 TWh. (Skogsstyrelsen, 2009)2008 the biofuels stood for 6.8 TWh. (Energimyndigheten, 2009b)

vi) indicate the development on the roundwood sellers market structures and explain any significant changes over the last approx. 10 years, as well as ongoing trends.

The number of potential round wood sellers should be equal to the number of private forest owners. This number is relatively stable. The number given in 1.1i above should be the total amount of potential round wood sellers.

1.2 … industrial buyers?

i) what is the number of industrial buyers in the region - distinguish industrial buyers categories: - sawmills, panel, pulp and paper mills and heating plants?

Sawmills with a production bigger than 10000 m3/year: 170 (2008) (skogsindustrierna homepage)

Panel producers:

Papermills: 43 (2008) (Skogsindustrierna homepage)

Pulpmills: 43 (2008) (Skogsindustrierna homepage)

Boardmills: 8 (2008) (Skogsindustrierna homepage)

Heating plants: Around 580-600 district heating plants (Energimyndigheten, 2009b) and 159 conventional thermal power stations (Statens energimyndighet STEM and SCB, 2005)

ii) how did the numbers develop during the last 10 years (approx.)? Distinguish industrial buyers categories (add time series data if possible)

Sawmills with a production bigger than 10000 m3/year: 260 (1990) and 207 (2000) (skogsindustrierna homepage)

Panel producers:

Papermills: (skogsindustrierna homepage)

Pulpmills: (skogsindustrierna homepage)

Board mills: 18 (1990) and 12 (2000)

Heating plants: the number of thermal power stations were 159 in 2002 (STatens energimyndighet STEM and SCB, 2005)

iii) what was the total average (of the last 5 years) annual buying volume by industrial buyer category and/or by assortments? (m3 o.b. or m3 u.b. - specify) (add time series data if possible)

The forest products industries consumption of wood fibre was 87.6 million m3fub (under bark) during 2007. Of that amount was 47.9 million m3fub consumed by the pulp and paper industry, 38.2 million m3fub by sawmills (which generated 12.7 million m3fub of by products for use in pulp and wood panel industries) and the wood panel industry consumed 1.2 million m3fub. (Skogsstyrelsen, 2009)

iv) how did the total annual buying volume by industrial buyer category and/or by assortments develop during the last 10 years (approx.)? (add time series data if possible)

The pulpmill industry has increased their consumption from 1997, when it was at 41155000 m3fub (solid volume excluding bark), to 47859000 m3fub in 2007. (Skogsstyrelsen, 2009)

Since 1990 the use of wooden bio-fuels have increased more than 5 times (Energimyndigheten, 2009b)

v) share of domestic and imported volume? (In case of entire countries "imported" means from outside the country, in case of regions "imported" means from outside the region - if possible to collect these data) Distinguish industrial buyers categories

Imports of forest products and forest industry products in 2008 were as follows:

Roundwood: 6.8 million m 3 solid volume excluding bark, of which 50 % was coniferous and 50 % broad-leaved.

Coniferous pulpwood accounted for 48 % of total imports, broad-leaved pulpwood for 43 %, coniferous sawlogs for 8 %, and broad-leaved sawlogs for 1 %.

Chips and particles: 1.7 million m 3 solid volume excluding bark, of which 81 % was coniferous and 19 % broad-leaved.

Wood residues, etc.: 1.0 million m3 solid volume excluding bark

Sawn and planed wood: 381,000 m3

Particleboard: 574,000 m^3

Fibreboard: 234,000 metric tons

Plywood: 192,000 m3

Wood pulp: 458,000 metric tons

Recovered paper: 841,000 metric tons

Paper and paperboard: 1.0 million metric tons

(Skogsstyrelsen, 2009)

vi) in case of pulp mills, panel mills and heating plants: share of sawmill residues?

The forest product industries accounts for the major proportion of bio fuel use through the burning of their own by-products. (Skogsstyrelsen, 2009)

Most of the industrial by-products are used within the plants for heating/drying/electricity production. Everything left over from production can be counted as by-products. A smaller leakage can probably be found, but it would not exceed 1%. (Anonymous 5)

vii) number of traders between forest owners and industrial buyer category by industrial buyer category? (With or without forest owner's associations and forest operators and forest management companies)

There are 0 or 1 traders between depending on if the industry buys directly from the forest owner or if the wood is bought from the forest owner association. The number of traders is one for about 60 to 70 percent of the bought volume. One step between is mostly for wood chips and pulp wood, whereas timber goes with one step. (Anonymous 7, Anonymous 6)

There are differences between situations. Sometimes there is one buyer between the forest owner and the industry and sometimes none. More often the industries try to decrease the amount of buyer/sellers between them and the forest owners. (Anonymous 12)

Between 0 and 1, this number is different for different companies. Companies with a large field operation that purchase directly from the forest owners will have 0 steps between them and the forest owner. If there is 1 step in between most is bought from forest owner associations or other sellers on the market. If there are swapping made there could be extra steps. (Anonymous 15)

viii) annual wood volumes transferred by regional traders between forest owners and industrial buyer category by industrial buyer category? (please specify whether with or without forest owner's associations and forest operators, forest management companies)

There is trading with timber bought so as not to get too long transports. If one has forest in one place and a mill in another and there is an owner with the forest close to the mill that has his mill where the first one has his forest there will be trading going on between them. (Anonymous 7, Anonymous 6) This trading is concerning quite small volumes. (Anonymous 12)

ix) indicate the development on the wood buyers market structures and explain any significant changes over the last approx. 10 years, as well as ongoing trends.

The industrial buyers have increased their advisory services and are working closer to the forest owners today and are following their demands, sometimes better than the forest owners associations that can be a bit conservative in their way of working. The buying regions have gotten less distinct borders the last five years, which means that more different industrial buyers are working in the same area and that the forest owners in those areas have more potential buyers for their timber. The middle sized sawmills are fewer but the smaller and the larger industries are still there.

Since the industrial buyers on the market are well known by the forest owners they trust in them and feel safe enough with them to be prepared to sell their wooden products to them. (Ingemarson, 2010)

1.3 … other market participants?

i) number of direct private buyers/consumers (mainly fuel wood, but not limited to it)

The number of one and two dwelling houses using biofuels such as firewood, pellets and wood by-products for heating was during 2008 345000, out of those only 240000 were completely using biofuels. The total amount of fire-wood use in smaller households was 6,8 million m3sk. Including pellets (470 000 tons) and wooden by-products (927000 m3) the biofuel use was 11,4 TWh during 2008. (Energimyndigheten, 2009b)

ii) availability and capacity (e.g. consider also their age structure, etc.) of harvest contractors or forest operators? (capacity in m3 o.b. or m3 u.b. – specify with or without forest owner's associations)

The number of available forest contractors was 3500 in the year 2008. (Anonymous 26) The mean age of the forest contractors is relatively high. The production of a team of harvest contractors varies with the amount of machines and the shifts done on them. If one harvester do 2 shifts this makes in the first thinning somewhere between 12000 and 15000 m3fub, in a second thinning between 25000 and 30000 m3fub, and in a final felling around 60000 m3fub. The production is dependant on the average sized stem in the stand. (Anonymous 27)

iii) indicate the development of other market participants and explain any significant changes over the last approx. 10 years, as well as ongoing trends.

One and two dwelling houses that used a combination of biofuels and electricity for heating were in 2008 345.000, in 2007 340.000 and in 2006 412.000. The households using only biofuels in their heating were in 2008 240.000 in 2007 235.000 and in 2006 they were 165.000. There has been an increase in the households using only biofuels for their heating. (Energimyndigheten, 2009a)

1.4 … other structural market factors?

i) What is average the average distance between different types of sellers (e.g. fragmented private forest ownerships) and different types of buyers? (km)

The average distance to industry differs throughout the country but the lorry transport are generally in average the same distance although the timber may be transported further by train.

There is an average of 79 km/ton of round wood (2007) domestic lorry transport. (Skogsstyrelsen, 2009) The average distance for transports of bio-energy assortments is 60-70 km. (Anonymous 20)

ii) What are average harvesting costs to forest road by ownership category? (excluding stumpage sales) (€/m3 o.b. or u.b. - specify)

Harvesting costs for forest depends on type of harvest. A thinning costs somewhere in between 130 and 140 SEK (12.7-13.7 EUR) where a harvesting operation cost about 85 SEK (8.3 EUR) (Anonymous 2) These numbers have regional dependencies so the numbers could be 90-95 SEK (8.8-9.3 EUR) for harvesting and 140-145 SEK (13.7-14.1 EUR) for thinning (Anonymous 3).

Summarised: Harvesting – 85-95 SEK (8.3-9.3 EUR), Thinning – 130-145 SEK (12.7-14.1 EUR)

To compare with the logging costs for the large-scale forestry where harvesting costs that in average are 69 SEK/m3sk (6.7 EUR) and thinning cost 134 SEK/m3sk (13.1 EUR) (Skogsstyrelsen, 2009)

iii) What are average transportation costs from forest to industrial buyer? (m3 o.b. or m3 u.b. - specify) (consider a difference also between ownership categories)

The average cost of transport is around 65-70 SEK/m3sk (6.3-6.8 EUR) for pulpwood and around 55-60 SEK/m3sk (5.4-5.9 EUR) for timber when transported on a lorry. (Anonymous 11)

iv) the approximate volume (if possible) of informal market segments (subsistence, supply to family members, neighbours, wood stolen from

forests or forest roads, etc.) not covered by wood supply statistics to be? What is the particular role of fragmented ownership in this market segment?

These market segments are extremely small (Anonymous 3) or nothing at all (Anonymous 2). Some forest owners take out wood for personal use, but this would not be market-segments. (Anonymous 2)

There are tries to access the volume of this segment, but the amount of wood stolen is next to nonexistent. Christmas trees stolen are very difficult to get a number on. (Anonymous 4)

According to a survey done in 2009 at least 13% (around 400.000) of the Christmas trees in Swedish households were stolen that year. Between 31 and 58% of the respondents to the questionnaire has stolen a Christmas tree at least once. Among the people stealing a Christmas tree every year most live in bigger cities. Around half of the Christmas tree thieves say that they take the forest owner into consideration when stealing the tree. This means that they try not to leave a big hole in a plantation or things like that. (Skogssverige, 2009) This survey could be indicative, but since it's not repeated several times yet it shouldn't be trusted too much. There could also be an underestimation of the amount of stolen Christmas trees if people that have been filling in the questionnaire do not want to admit that they have stolen their tree.

v) are informal market segment expected to expand or decrease? Why?

Wood furnaces in private homes could increase, but this wood will be taken from own forest and will therefore not be considered as an informal market segment. (Anonymous 2)

vi) How reliable do you think are statistics available on actual fellings in your region? If there is a systematic over-/underestimation, how well are small properties covered?

The statistics is based on sample which could be considered highly reliable. This is made as 3 preliminary surveys per year, and also one final the following year. There is no accounted systematic error, but the National Forest Inventory has a systematic error when it goes back from the industrial usage levels, these numbers are however not used in the official forestry statistics. Small owners are also covered by the statistics since the smallest forest holdings in the statistics are 1 ha. Areas of less than 1 hectare with trees are not considered forest. (Anonymous 4) The forest holdings in the statistics are taxation units and can therefore consist of several stands of less than 1 hectare, but the total area of the forest holding is more than 1 hectare. (Skogsstyrelsen, 2009)

vii) market information access by ownership category (information flows)?

The market information that a forest owner has access to is depending on his/her level of interest. There are price lists on the internet and in different magazines and newspapers. (Anonymous 2) Many persons read and follow the news given in papers, but forest owners are given slightly less information than professionals. The information available is however enough to build an opinion about the situation and the forest. (Anonymous 3) The access to market information is increasing steadily. Everything is on the internet now (Anonymous 12).

The problem is that the information is not always transparent enough and the will to read it is dependent on a lot of personal factors, such as economical dependency on the forest etc. One could say that the possibility to understand the information given is a square of the area of forest one person has. (Anonymous 2)

Owners of larger forest holdings could be considered to be more updated on the wood market. (Anonymous 11)

The information available is not always easy to understand. Since forest harvesting actions are not done on an every day basis by the smaller owner those cannot be updated continuously. The wood prices are given with a lot of extra things and bonuses which could make it difficult for the owner to access the actual price. (Anonymous 11) The use of internet probably follows the same pattern as in the rest of society, that the younger use internet to a higher extent, and therefore the internet based information could be considered less accessible for some of the owner categories. (Anonymous 12)

ix) wood quality requirements by buyer category? Do requirements and available quality differ?

The quality requirements differ between producers depending on the product produced. Qualities available in the right category will be possible to find on the market. In cases of extreme high quality such as veneer logs, this might be a bit trickier to find. (Anonymous 5)

2. What are typical wood sales methods/contract type/marketing channels in the region?

i) describe sales methods/contract type/marketing channels (e.g. standing, auction, long-term contract, ad-hoc on individual basis, etc.)?

Types of delivery:

The most common types of delivery within the forest sector are the following:

Own forest. Forest owned by an enterprise, from which it takes timber for its own use.

Delivery timber. Timber which the forest owner delivers by lorry, with or without the assistance of employees or contractors. In most cases, volume and quality are assessed upon delivery in accordance with the Timber Measurement Act as applied by the regional timber measurement councils. The amount of payment is determined by price lists.

Standing forest timber. Total price is determined prior to felling. Estimated volume is based on trunk diameter at chest height. The heights of a random sample of trees are also measured. After the trees to be felled are marked and their volume estimated, they are offered for sale, usually by tender.

Felling by purchaser. The purchaser carries out the felling, after which measurement and pricing are carried out in the same manner as for standing forest timber. The purchaser’s felling costs are then deducted from the gross price. The costs may be those actually incurred, or established by agreement in advance.

Delivery stumpage. The trees are sold as standing forest timber, but with a fixed net price per cubic metre of felled timber for each assortment category measured at a scaling station. This eliminates uncertainty about the volume of standing forest timber and costs for timber scaling in the forest. The agreed upon price applies to all assortments and tree species. Prices sometimes vary by assortment.

(Skogsstyrelsen, 2009)

ii) describe the importance of these sales methods/contract type/marketing channels in the region (percentage of sales methods of total sales)?

Delivery timber: 33%
Standing forest timber: 27%
Felling by purchaser: 26%
(Skogsbarometern 2009)

iii) sales methods/contract type/marketing channels by assortment (percentage of sales methods of total assortment sales)?

The buyer of the timber delivers it to the right place and sort out the different assortments once the timber is felled. This does not fall on the forest owner but the buyer organisation that sorts it to the place which makes the best use of it and gives the best price. (Anonymous 2)

iv) importance of the sales methods/contract type/marketing channels by ownership category (percentage of sales methods of total sales by ownership category - including if possible different categories of fragmented private forest owners)?

Most important of the methods is ”Felling by purchaser”. This amounts to about 90% of the fellings within the forestry associations. “Delivery stumpage” is the method most commonly used by the industry. (Anonymous 2)

Felling by purchaser is absolutely most common. (Anonymous 3)

The different sales methods are quite similar, but personal contact is appreciated by most forest owners. (Anonymous 3)

The difference between these answers and the percentages given under question ii could be due to the forest owners answering the survey in Skogsbarometern, as well as the perception of the interviewees.

v) explain why categories of fragmented private forest owners prefer some sales methods/contract type/marketing channels over others, that are not/hardly used.

Felling by purchaser:

No other form of purchasing is used by the association. It is the most transparent system which is built on a price list. This makes it possible to compare between different buyers. The forest owners appreciate this method. Methods with lesser transparency are less appreciated. (Anonymous 2)

This is the method promoted by the forest associations. The forest owners are on this track too. If a forest owner wants to sell by a different method they turn somewhere else. Some delivery timber exists. The felling by purchaser is important since it is possible to compare between operators on the market. (Anonymous 3)

The felling by purchaser is preferred since many forest owners do not have the equipment or knowledge needed for felling themselves. This service is also often connected to other silvicultural activitys such as for example planting, which makes it an attractive offer. There is also a tradition among the forest association members that one prefers to sell as felling by purchaser. One important part of this method is the clear and full accountancy of what is felled; instead of just getting the volume one gets it by assortments. (Anonymous 15)

vi) indicate the development of sales methods/contract type/marketing channels and explain any significant changes over the last approx. 10 years, as well as ongoing trends.

The felling by purchaser will increase since it is a transparent system and gives less risk and speculation. (Anonymous 2) There is an ongoing not decidedly marked increase of the felling by purchaser method. (Anonymous 3)

3. How are the wood sellers and buyers to be characterised?

3.1 forest owners' side

i) share of "organized" (e.g. in owners associations, loose groups, cooperatives, co operations, unions) and "un-organized" forest owners (all and - if possible by fragmented private forest owners)

About 50% of the Family Forest owners in Sweden are members in a forestry association. (LRF Skogsägarna, 2009)

ii) share of wood sales by "organized" and "un-organized" forest owners (all and - if possible by fragmented private forest owners) by assortments and/or buyer category

About 80 percent of the members in forest owner associations are faithful to their organisations and this amount of timber goes directly to the forest owner associations. The total amount of timber on the market from members in forest owner associations is across the country probably around a fourth of the total felling volume. (Anonymous 23)

iii) explain the types of organized forest owners associations in the region (loose groups, cooperatives, co operations, unions)?

The four biggest forestry associations are all under the umbrella of the forestry division of the Federation of Swedish Farmers, “LRF Skogsägarna”.

iv) how do these association work (by type of organisation)? Legal set-up, activities (including, but also beyond timber sales), who initiated them and why? Are they linked to special sales methods?

Among Swedish forest owners there is a long tradition of cooperation in forest owners associations. The first association was established almost one hundred years ago. Initially the main purpose was to give the forest owner a better position in the round-wood market by trading the logs together with fellow forest owners. In addition to this the cooperation gave increased political influence.

A forest owners association is a political independent organisation and membership is voluntary.

The most central role is to represent the forest owner in the round-wood market and make business agreements with the industry. In addition to the traditional assortment range the importance of bio-energy for heating-plants increases. The associations trade the round-wood and bio-energy produced by their members to various forest industries in order to ensure good prices and good sales conditions. The associations have qualified field staffs that provide logging and silvicultural services as well as forest management and economical planning.

In order to add value and secure access to the market the forest owners associations gradually involved in industrial activities. Today the associations control a substantial part of the sawmilling industry and one association, Södra, is a world leading producer of pulp.

To achieve best results on the policy making arena the four associations form " LRF Skogsägarna", the forestry division within the Federation of Swedish Farmers (LRF) (LRF Skogsägarna, 2009)

v) how is the degree/level of organization of forest owners expected to develop in future? How are for example the memberships in associations, cooperatives etc. expected to develop?

The memberships in associations have been experiencing an increase in numbers at the same time as associations in general have had a decreased membership level. The forest associations do not loose members in the same way as other associations have done. Now around 50 percent of all the forest owners are members in a forest association. (Anonymous 22)

vi) is there a trend towards increased cooperation between small/fragmented private forest owners?

There is no clear trend in this area, and the trends could be different for different areas of the country. After the storms in southern Sweden the participation in forest owner associations have increased a bit. (Anonymous 10) There is on the other hand a belief that there could be a possible future trend of a decrease of participation in forest owner associations. (Anonymous 12)

3.2 wood industry side (including forest operators)

i) share of "organized" and "un-organized" industrial buyers (by buyer type)

The Forest Industries are in the economical politics on behalf of the forestry. They also conduct the industry in certain negotiations with unions. As soon as one is employed one is member of an employer-organisation so on that level there is a high organisation. (Anonymous 5)

ii) share of wood bought by "organized" and "un-organized" industrial buyers (by buyer type) (add time series data if possible)

Since the majority of industries have cooperation in some sort of organization for lobbying this is data that is not in the statistics.

iii) types of organized industry associations (cooperatives, co operations, unions)?

The Forest Industries are gathering all the parties on the market for political lobbying. (Anonymous 5) It is not however an organisation that sets prices or aim at cooperation on other levels between companies. (Anonymous 6, Anonymous 7)

iv) how do these associations work (by type of organisation)? Legal set-up, activities (including, but also beyond timber procurement), who initiated them and why? Are they linked to special sales methods?

The Forest Industries is representing the member organisations/companies in the economical politics and employment politics as well as conducting a gathered lobbying and promotional activities for the member organisations. (Anonymous 5)

v) how is the degree/level of organization of industrial buyers expected to develop in future?

All companies in the country are organised in some way through sawmill associations or the Forest Industries, except maybe some smaller family owned units. This structure is expected to be kept in the future. For example the Wood Fuel Association is the umbrella for all the Wood Fuel Producers and their member producers have about 80 to 90 percent of the total sales (Skoggstyrelsen, 2009).

3.3 cross forest owners and wood industry associations

i) share of forest owners (by owner type) and industrial buyers (by buyer type) in cross forestry-industry associations

There are Forest Owner organisations that own industry, as well as industries that own forest, but they are considered forest owner associations and not cross-forestry-industry associations.

ii) share of roundwood sold/bought by cross forestry-industry associations (add time series data if possible)

Since there are no cross forestry-industry associations there is nothing sold by them.

iii) how do these cross forestry-industry association work? Legal set-up, activities (including, but also beyond timber sales), who initiated them and why? Are they linked to special sales methods?

There are no cross forestry-industry associations and the question can therefore not be answered.

iv) is there a trend towards more vertical cooperation or integration which involves also small owners?

There is cooperation between different forest associations but there are no clear trends as of developments (Anonymous 7, Anonymous 6)

The level of interaction/cooperation between forest owners and industries are increasing (Anonymous 12) Cooperation with industries from the forest owners has increased. Much of this is because the industries have more buyers now than before and also that some forest owners consider the forest owners associations as a bit conservative. (Ingemarson, 2010)

4. What is the general atmosphere of the relationship between forest owners especially fragmented private forest ownerships and the industry?

The general atmosphere is good and positive (Anonymous 9). The market-climate is not as hot now during the financial crisis as it was when the economy was on a higher point before it. (Anonymous 16)

The increase in competition in the North of Sweden has increased the prices there and in that way made the market climate more positive. (Anonymous 22) There is a hard competition on the market for buying the timber from forest owners. This gives many opportunities for selling. (Anonymous 3) It is good that the market is acting with the forces of a market economy. This is favourable for the forest owners since they get a better price for the raw materials they produce. (Anonymous 23)

After the regulations and measures to increase the harvests were taken away the atmosphere has become more positive and the amount felled has increased. (Anonymous 9) The subsidies for harvesting were not good, and taking them away has really improved the market climate. (Anonymous 16) The fact that subsidies are now only given to cultural and environmental measures improves the situation for the forest owner. (Anonymous 23)

The taxation system that is highly favourable for forest owners is also a part of increasing the positive feeling on the market. (Anonymous 9)

There is an existing trust between the sellers and buyers on the market because of the wood measurement law. (Anonymous 18) This trust comes from the fact that buyers on the wood market are stable. Forest owners can therefore sell the timber to them without feeling unsafe. (Ingemarson, 2010) The bio-energy assortments have given a new, added safety, to the forest owner on the market since this gives a diversification of the market. (Anonymous 3)

There is a loyalty among the private forest owners to the Forestry Politics and a large part of them want to use their forests. (Anonymous 25)

During a period people were a bit scared that some biologist would find key habitats on their properties which made them do hard thinnings instead of harvesting just as to destroy the biodiversity a bit. This has improved lately and people are not as scared anymore. (Anonymous 18)

5. How do wood prices and wood price changes influence the regional supply?

i) in context to forest ownership structure? Describe different reactions by ownership category and assortments

A better price has a positive effect quite directly (Anonymous 12). Price is however only one of the factors deciding the regional supply. The expectations on the market development also play a big part. (Anonymous 5, Anonymous 2, Anonymous 3) When the price is good the forest owner knows it. Higher price gives a clear effect on the wood market; the supply is highly dependant on the price. It is however better for the personal economy if one does the silvicultural operations necessary for the forest instead of following the price of the day. More continuity gives better revenue in the long run. (Anonymous 3)

The price is relatively decisive; if the prices are too low the forest owners stop harvesting. The market works on the forest owners since they can stop their harvests if the offered prices are too low. (Anonymous 10)

The decisions of the owners are decided not only by the market price but also by how big part of their private economy is needed from the forest land. (Anonymous 5)

If a forest owner has a larger forest area he/she will be more dependent on his/her land for income and will therefore be less affected by fluctuations in price. Smaller forest owners can be more affected by the market prices. (Anonymous 2)

ii) price developments during the last 10 years (approx.) (by assortment)? (add time series data if possible)

The price of timber was in average 398 SEK/m3fub (38.8 EUR) for pine and 376 SEK/m3fub (36.66 EUR) for spruce the first quarter of 2002, the first quarter of 2009 the same prices were 463 SEK/m3fub (45.1 EUR) for pine and 428 SEK/m3fub (41.7 EUR) for spruce. For pulpwood the same prices were 208 SEK/m3fub (20.3 EUR) for pine and 224 SEK/m3fub (21.8 EUR) for spruce in 2002 and in 2009 the prices were 296 SEK/m3fub (28.9 EUR) for pine and 309 SEK/m3fub (30.1 EUR) for spruce. The price for pulpwood of birch was in the first quarter of 2002 224 SEK/m3fub (21.8 EUR) and in the first quarter of 2009 303 SEK/m3fub (29.5 EUR). (Skogsstyrelsen, 2009)

iii) wood supply price elasticity's by ownership categories and/or assortments?

A smaller forest owner might be more dependent on the market and the price when deciding to harvest or not whereas the larger forest owners harvest no matter what since they are more dependant on the income from their forests. (Anonymous 15)

6. What is the role of forest authorities regarding fragmented private forest ownerships participation in the wood markets concerning …

i) guidance or control on harvests of fragmented private forest ownerships?

Traditionally the activities of the Forest Agency are mostly aimed at forest management, pest prevention and preventive measures. Some controls are aimed at harvesting operations. There is not too much control of forest owners, mostly just checks that the requirements of the law are fulfilled; how big the harvest outtake is etc. Field controls are made to see to that law requirements are fulfilled. (Anonymous 8)

The field controls are done in a relatively consistent way throughout the country. Most often it is the environmental consideration and the regenerations that are inventoried. The environmental parameters are more a question of judgement which makes those controls differ a bit according to region. It is mostly just bad management cases that are taken to court. Most forest owners are listening to the forest agency. (Anonymous 9)

ii) guidance or control on wood sales of fragmented private forest ownerships?

Some guidance is given to forest owners in books that are published during the years but no continuous activity. Discussions about a service to the forest owners on the internet where they could put up an ad telling that they are prepared to sell wood. The Forest Agency should have more advisory services than they have today. (Anonymous 8)

The control is mostly made trough the “law of wood measurement” where the forest agency have the responsibility to see to that the rules are followed whereas the society and the wood measurement associations are the ones implementing the law. Other things controlling the forest owner is the rule that not all of the property can be clear-cut at the same time. This rule is there to give future generation something too and the rule is well supported. (Anonymous 9)

iii) forest regulations?

There is guidance given on what the law says. The principle is that advices are given on two levels. Firstly on what the law demands but also advise to forest owners regarding the political goals of the forestry sector that are set after discussions with representatives from forest owners representatives. The advisory service is of the greatest importance for new forest owners. (Anonymous 8)

There are rules limiting the forest owner in the area that can be clear-cut, the age at which a stand can be harvested and the obligatory regeneration of the forest. The forest laws are balanced and the latest governmental inquiry didn’t suggest any changes, only some marginal adjustments. There are also the law of wood measurement that is important for the forest owner when selling his timber. (Anonymous 9)

iv) wood trading regulations?

The law of selling and buying applies but mostly the wood measurement laws. These are put in place to protect the seller, who in the case of forest rawmaterial is often to be considered as the weaker party. (Anonymous 8)

The wood measurement law is directly working in this field. Indirectly there is the knowledge base with statistics and the demand that the harvests today are put in relation to the sustainability of harvests. The balance of supply and demand makes the outtake of wood products sustainable. (Anonymous 9)

Before harvesting the only requirement is to send in a notification for to the Forest Agency. If nothing is heard from the Agency within due time the harvest operation is legal. This gives a lessened administrative burden that makes it easier for the forest owner. (Anonymous 9)

v) forest or wood related taxes?

Information about forest taxation is given in a brochure printed once a year. The brochure is also possible to download from the forestry board homepage. More information about taxation is not given but the brochure is considered to be enough. (Anonymous 8)

During the first five years after acquiring the forest property the owner is entitled to harvest for a value of up to 50 percent of the cost of buying the property without getting taxed on the revenues. (Anonymous 25) The taxation rules and the possibility to take out the revenues from the forest on a periodic basis is important (Anonymous 3)

vi) forest or wood related subsidies?

Forest owners are given help with applying for different subsidies and filling in the forms if needed. Different subsidies are available for different parts of forestry and different forest measures. (Anonymous 8)

The amount of subsidies is shifting with the politics, but they are generally small and aimed at environmental measures rather than production measures. The subsidies that are in place today are given to advisory services, knowledge development and competence development. The general opinion is that subsidies shouldn't be given to production since the wood market should be a market that works according to market rules. (Anonymous 9)

7. What is the role of stakeholders with interests in forestry (e.g. chambers of agriculture and forestry, forestry NGOs, environmental NGOs) concerning barriers and support in …

i) harvest activities of fragmented private forest ownerships? (by type of organisation)

In the Northern Sweden the Sámi people have an indirect influence on the forestry(Anonymous 6). In Northern Sweden there are the always present reindeer herder organisations. There is a continuous debate between the landowners and the hunters as to the game populations. (Anonymous 16) The reindeer herding grounds cover about half of the surface of Sweden (SCB, 2008). The forest act declares that within these areas special care must be taken towards the reindeer herding when harvesting (Skogsvårdslagen §21).

ii) wood sales of fragmented private forest ownerships? (by type of organisation)

The stop of sales from key habitats has been introduced after influences from environmental organisations such as for example the Swedish Society for Nature Conservation. PEFC and FSC have increased in area. (Anonymous 16)

iii) overall framework conditions relating to harvests/wood sales of fragmented private forest ownerships?

The frameworks affecting the forest owners are the forest law and the environmental law are important as well as The Swedish Act concerning Ancient Monuments and Finds. There are also agreements to not sell wood from key habitats. (Anonymous 16)

The ratio between company forest and private forest is not to be changed, which means that the companies cannot buy large forest holdings from private forest owners unless they sell forest to the same group at the same time. There is also the property law saying that you cannot split a forest holding so that it cannot produce 200m3/ha/year. (Anonymous 22)

The Forest Act puts the Environmental goal equal to the production.

This makes the Swedish Forestry sustainable on the long term regarding the environment. (Ingemarson, 2010)

The stakeholders having a direct effect on the forestry are the forest associations and the forest industries. Other indirect stakeholders can be seen from hunter association, the Swedish Society for Nature Conservation etc. (Anonymous 9) Many forest owners are today members of these different organisations (Ingemarson, 2010)

8. How are the wood markets in that region most likely developing in the future?

i) regarding prices (by assortments)? Reasons for changes (by assortments)

The development in the long term will be positive. On the short term the decrease in building has a negative effect. (Anonymous 12)

There will be an increased demand on bio energy assortments which will increase the demand on wood and increase the prices on the market. There will be an increased volume of wood available on the market in this scenario. (Anonymous 5)

The value of the deciduous trees will increase whereas spruce might not increase as much. A more differentiated forest management will lead to a broadening of forest products and more products coming from the forest. Even smaller forest owners are participating in increasing the amount of deciduous trees. (Anonymous 10)

The price development is dependant on how the market for HWP and energy develops. There is a difficulty in seeing an upward trend for mechanical pulp and if it goes lower it will be harder to get products on the market, which will be visible on the producer side. Sulphate pulp has a broader spectrum of products so it’s more difficult to see clear trends there. (Anonymous 15)

ii) regarding supply (by assortments)? Reasons for changes (by assortments)?

The general development will be positive. (Anonymous 12) Bio energy assortments are politically run and the politics can affect which assortments are available. New nature reserves and other forms of nature protection will give increases in the amount of restrictions. The increase in annual increment as well as harvesting operations that is going on now could be affected by the closing down of mills, but if other mills increase their production and wood use this might not be the case. (Anonymous 7, Anonymous 6)

With more deciduous timber in the forest the assortments of deciduous trees will develop and increase. Since the woodprices are set on the world market there might be difficulties as a forest owner. (Anonymous 10)

iii) regarding demand (by assortments)? Reasons for changes (by assortments)?

There will be a generally positive development (Anonymous 12). The amount of bio energy taken out in harvesting operations is increasing. The demand for it is increasing as well as the availability of this special assortment. (Anonymous 7, Anonymous 6)

iv) regarding their structure? Changes in numbers/size of suppliers and buyers. Reasons for changes

Market decisions are difficult to predict. There is an increased interest in the forest among forest owners. (Anonymous 7, Anonymous 6)

There is a possibility that there will be a bit higher number of owners but it can be neglected because of its miniscule proportions. The amount of buyers in the energy sector could increase. (Anonymous 5)

There might be a change in structure with fewer buyers/industrial units, but the profile will not change. (Anonymous 12)

The amount of consolidations might increase and there will be fewer and bigger actors on the market. More and more actors have realised the value of being in charge of the whole product chain instead of just producing the raw material, there is a tendency to increase the degree of refinement. (Anonymous 10)

There are fewer and larger production units. On the energy side there are more production facilities, and larger producers are highly interested so the actual companies might become fewer. (Anonymous 15)

v) regarding imports? (In case studies of entire countries "imported" means from outside the country, for case studies of regions "imported" means from outside the region - if possible to collect these data)

The import will probably increase when the world is coming closer (Anonymous 12).

An increase in the local production of raw material will lead to a decrease in the imports. (Anonymous 15)

The imports are connected to the overall market situation where high demands increase the imports. Regarding energy wood assortments this is more unpredictable. (Anonymous 5)

The imports are hard to predict since they are depending on exterior factors. Now the imports are decreased from Russia, but they could increase again should Russia decide to export more. This increase in import from Russia could affect other imports that today are higher such as from Scotland and Norway. (Anonymous 7, Anonymous 6)

If the demand doesn't change the raw material could be difficult to find on the local market. Now there is a demand on knot-free wood which means that a certain level of import is necessary for deciduous wood raw material. (Anonymous 10)

vi) regarding exports? (In case studies of entire countries "exported" means to outside the country, for case studies of regions "exported" means to outside the region - if possible to collect these data)

There could be a possible increase in the export of bioenergy assortments. (Anonymous 5)

The same difficulty exists here as with the imports. The external market factors are important and the market of the day decides which is the best option. (Anonymous 7, Anonymous 6)

We are now exporting relatively well since we do not have the Euro. Fewer and larger actors on the industrial side gives an increase in exports, which makes the export demand bigger than Sweden can handle right now. (Anonymous 10)

The exports will probably increase as well as the imports. (Anonymous 12)

Export is quite low now, but there could be an increase in the export of bio-energy assortments. (Anonymous 15)

vii) regarding forest authorities and interest representations?

The Forest Agency will still be there. (Anonymous 15) The interest organisations are increasing in number and they are better at their lobbying activities than before. Regarding the forestry agency the local representatives are important, but their advisory services are of lesser importance today than before. (Anonymous 7, Anonymous 6)

9. What other factors may be important to describe the wood markets relating to the harvest level/mobilisation and fragmented forest ownership?

The long and good tradition of educating forest owners is still strong, but may need new channels to reach new types of owners.

The certification systems that are available today are a way to increase the level of environmental consideration among the forest owners. This can be used of the forest owners to increase their influence on the environmental area. (Ingemarson, 2010)

That there are entrepreneurs available for different silvicultural activitys is important for the forest owner to be able to do silvicultural activitys on their properties. It is also important that the forest is not situated too far from the industrial units. A longer distance from the industrial unit makes it less attractive for the industrial buyer to perform fellings there. (Anonymous 18)

Task 3: Describe the private forest owners

1. Describe the structure of forest ownership in the area in terms of forest resources:

1.1 Indicate the:

i) overall distribution of ownership categories in terms of forest land in hectare

The ownership classification of forest land is:

- 50 % Private persons
- 25 % Forest companies
- 6 % Other private
- 17 % State forest
- 1 % Other public

Forest land area (in 1000ha) 2005;
Physical persons : 10,855
Estate of a deceased person: 203
Municipalities and county councils: 319
Church: 33
Company Forest: 8,866
State: 631
Others: 1,418

(Skogsstyrelsen, 2009)

ii) the share of private forest ownership,

50% of the forest land is owned by private persons.

In 2007 the number of forest owners amounted to 335.805.

In year 2008 there were 329,300 forest owners, of whom 124,241 (38 %) were females and 201,178 (61%) were males. The number of forest entities was 239,973, of which 160,120 (67 %) were locally owned, 47,741 (26 %) were owned by non-residents and 15,801 (8 %) partly by non-residents.

(Skogsstyrelsen, 2009)

iii) the share of fragmented private forest ownership thereof.

All forest owned by private persons have been considered in the study since information about the smallest forest owners or specific information about the Dalecarlian region have been considered insufficient.

iv) Indicate the development and explain any significant changes over the last approx. 10 years, as well as ongoing trends.

There is an increase in the amount of small scale forest owners living offsite (Lidestav and Nordfjell, 2002). There is at the same time a decrease in the number of forest owners that are farmers (Ingemarson, 2004). The proportion of female forest owners is also increasing (Lidestav, 2010).

1.2 Indicate the:

i) distribution of ownership size categories within the group of fragmented private forest owners (number of owner and size forests land by category).

Size of forest land	Owned by physical person
ha hectare	1 000 hectares
1-9	356
10-19	631
20-49	2,024
50-99	2,553
100-399	4,188
400-999	794
1000-	308
Total	10,855

(Skogsstyrelsen, 2009)

ii) Indicate the development and explain any significant changes over the last approx. 10 years, as well as ongoing trends.

There is an ongoing trend where the number of forest holdings of less than 100 hectares decreases at the same time as the group with 100 to 400 hectares increases. (Eriksson, 2008)

1.3 Indicate the:

i) volume of the annual increment (m3 over bark) in fragmented private forest ownerships

Average annual increment across the whole country for individuals is 6.3 m3sk/year. (Skogsstyrelsen, 2009)

ii) annual wood fellings (m3 over bark) of fragmented private forest owners (of the last 10 years)

The average is around 4 million m3sk. This number has been relatively fixed the last 8 to 10 years. The amount of fellings might increase a little, mostly on private lands the last years. (Anonymous 2) When the market is good the fellings are close to the annual increment. When the market is bad the fellings are not even close to the annual increment. The fellings are dependent on the market and is generally less than the annual increment. (Anonymous 3)

iii) describe differences between different ownership size categories within that group of fragmented private forest owners, if applicable.

An owner with a larger holding might be more inclined to harvest since they are more dependant on their forest for income. If the owner has bought the property there will be a need to harvest to cover the cost of the investment. If the property is smaller there will be a lesser need for income from the forest. (Anonymous 13) Owners of larger forest holdings are generally more active per areal unit than smaller owners. The activity is however bigger in southern Sweden than in Northern Sweden regardless of holding size. (Eriksson, 2008) The definition of a large property varies throughout the country. (Anonymous 13) Larger holding sizes are generally situated further north. (Eriksson, 2008)

iv) indicate the development and explain any significant changes over the last approx. 10 years, as well as ongoing trends.

The felling volumes from private forest owners have been relatively stable the last years. It could be expected to continue being so in the future. The forest ownership structure is also relatively stable with the trends of an increased amount of forest owners living off-site and sharing their forest with several other owners.

1.4. Describe:

i) whether, and if so why, significant shares of the annual increment of fragmented private forest owners forestland can not be mobilised for principled reasons (e.g. nature protection sites, ban forests, etc.).

On small-scale forestry holdings, some 52,000 key habitats had been registered with the Swedish Forest Agency as of 2007. They comprise a total of nearly 161,000 hectares, of which 135,000 hectares are productive forest land. That corresponds to ca. 1.1 per cent of all productive forest land within the category of small-scale forestry. ”Key habitat” is a qualitative concept that is applied to forest habitats in which red-listed species have been or can be expected to be observed.

200.000 hectares are voluntarily set aside by individual forest owners. (Skogsstyrelsen, 2009) Since land put away as natural reserves is not considered as productive forest land, the thing that would be not possible to mobilise would be the minimum 5 percent of the volume that the forest owner has to leave as natural care-taking at each felling. (Swedish Forest Act)

ii) Indicate the development and explain any significant changes over the last approx. 10 years, as well as ongoing trends.

There has been quite a big increase of the protected area parts of the country. This is disturbing the forestry to an extent in those parts. Key habitats, reserves and Natura2000 areas make it more difficult to harvest. Some communes have a lot more put away for reserves than others. (Anonymous 3) The largest increase in protected area in the country was during the period 1999 to 2000. This depended to a large extent on the reclassification of “Domänreservat” to natural reserves. (SCB, 2008)

2. What is the level of fragmented private forest owners' participation in wood markets?

2.1 Describe (if applicable) the main factors that:

i) induce or prevent different ownership size categories of fragmented private forest owners to participate in wood markets.

The level of prices and the level of competition influence the forest owners. Areas with more actors on the market and a higher level of competition often give higher prices for the timber. This is connected to the structure and the existence of local industries. Even the competition between the pulp-sector and the energy-wood buyers are important. The prices are also depending on the level of mechanisation and the amount of competing entrepreneurs in the area. (Anonymous 9)

ii) Briefly explain the major chains of cause and effect.

The private forest owners' participation on the market is based on a lot of different factors, namely the price given for their raw material as well as their knowledge about their forest and forestry in general. The price is dependant on the competition in the region as well as the forest measure applied. A thinning gives a smaller income than a final felling, both depending on the smaller volume and the higher logging-cost. If a forest owner does not know that it is time to perform a silvicultural activity this might make him less active. Also the misinformed forest owner might think that he saves the forest biodiversity by not performing any silvicultural activitys although this might actually decrease the very same biodiversity that they are aiming to preserve.

iii) Can increasing participation of small private forest owners in the wood market be expected for the future? If yes, what would be the main drivers (general trend, market, mobilization measures etc)?

There is no clear trend to any direction. There is already a quite high interest and the level of harvest has increased the latest 10-15 years. This cannot happen without the forest owners being active on the market. What can happen is that forest owners that are not depending on their forest for income might keep their forest for recreational values such as hunting instead of for timber production. If the level of knowledge of forest is low this can influence the owner more if they are not depending on the income from the forest since they then don't feel the need to learn anything. (Anonymous 9)

Increases in the revenue for the forest owner would probably increase their activity, as well as an increase in the level of knowledge among the forest owners.

For future new forest owners to be better prepared for the take-over of the forest from the older generation it would be a good idea to increase the amount of forest activities where also children could participate, so as to start and give an interest already at an early stage. (Anonymous 21)

3. Characterising fragmented private forest owners

3.1 fragmented private forest owners-typologies based on socio-demographic variable, owners' values, attitudes, objectives, behaviour etc.:

i) If available (e.g. from studies, survey), describe typologies of fragmented private forest owners that are available for your region AND that seem to provide relevant information as regards the effectiveness and efficiency of (potential) measures for wood mobilisation targeting fragmented private forest owners (concentrate on things relevant for wood mobilisation from fragmented forest ownerships);

Ingemarson (2004) divides the forest owners into categories with different goals with their forestry and different structural differences.

The traditionalist has a forest property within the range of 25-99 ha and is in average 57 years old. The duration of their ownership is quite long and most of them want their children to inherit.

The economists grow up on their forest estates and inherited their forest from their family. The income from their forests is large and half of them have a forest management plan.

The conservationists have small estates and live far away from their forests. They are also younger than the other groups and have acquired their forest holdings by buying them not too long ago from their families

The passive forest owners are older and have a small forest holding that they visit less than 10 times a year. Few of them have a management plan and most expect their children not to inherit the forest.

The optimists have a long duration of their ownership and grew up on the countryside. They have a large proportion of their income from their land and have a higher forest knowledge than the other groups. This is the group with the fewest women.

The environmentalist generally buys a forest holding for keeping it for environmental purposes and for taking environmental responsibility. He/she is generally well educated and lives far away from the forest holding.

ii) Explain how and why the typologies/types are relevant for this project (Please clearly indicate references from which typologies are taken).

The different typologies explained above can be reached in different manners to increase their participation on the market. Since the typologies of forest owners are different and behave in different ways they have different needs. For getting them to understand the forest market and the forest measures they need to be approached in different ways. The forest owner typologies can help when assessing different methods of working with forest owners. By knowing the forest owner typology the way of informing and contacting a forest owner can be optimized by the forest advisors.

3.2 Please indicate, if possible:

i) the volume of wood potential of fragmented private forest owners-types as described in 3.1, in terms of previous differences (of the last 10 years) between harvestable annual increment and actual fellings (m3 o.b.) ("what theoretical potential for mobilization by fragmented private forest owners-type?"). (please keep section 2 Question 1.4 sub-questions v – vii regarding informal markets and data reliability in mind)

The area held by private forest owners that is given under question 1.1i (private persons + estate of deceased persons) was multiplied with the annual increment on private forest land 86.3 m3sk, question 1.3i). The total was 69665400 m3sk. From this number the actual fellings were deducted, which gave a remainder of 14019400 m3sk. This gives that 80 percent of the annual increment is felled annually.

3.3. Characterise fragmented private forest owners in the case study region as regards the following aspects and, whenever possible, try to relate these characterisations to ownership size categories (see 1.2 --> e.g. indicating "what is the share of full-time farm-fragmented private forest owners" by category);

socio-demographic aspects:

- farm-forest owners vs. non-farm forest ownership (also distinguish full-time vs. part-time farmers) with or without agricultural/forestry socialisation (e.g. grew up on farm)

In year 2008 there were 329,300 forest owners, of whom 124,241 (38 %) were females and 201,178 (61%) were males. The number of forest entities was 239,973, of which 160,120 (67 %) were locally owned, 47,741 (26 %) were owned by non-residents and 15,801 (8 %) partly by non-residents. (Skogsstyrelsen, 2009)

The owners with an ownership between 50 and 399 hectares are more often farmers than the owners with smaller or larger holdings. (Lidestav and Nordfjell, 2002)

- living "next door" to their forests vs. absentee/non-resident forest owners (far away from their forests)

The number of forest entities was 239,973, of which 160,120 (67 %) were locally owned, 47,741 (26 %) were owned by non-residents and 15,801 (8 %) partly by non-residents. (Skogsstyrelsen, 2009)

One out of four forest owners live more than 30 km from their forest. Half of the forest owners live on their land. (Skogsbarometern, 2009)
Resident forest owners wish to a higher extent than non-resident forest owners that one child shall take over the forest property. They are also to a much larger extent self-active in their forestry (working themselves in the forest). When it comes to tax-declaration off-site forest owners are more active. (Lidestav and Nordfjell, 2005)
Compared with non-residential owners the on-site forest owners invest a higher share of their sales revenue in their forests (Lidestav and Nordfjell, 2005)

- education in forestry and agriculture - no such educational background

Only a small part of the private forest owners have forest education and today fewer of them have grown up in a forest management environment than historically. Even though the level is low there are a lot of forest owners reading magazines about forestry and that are highly engaged in their forests, so low education is not always connected with a low activity. (Anonymous 21)

The level of knowledge within the forest owners as a group is connected to the level of off-site owners. The practical knowledge of silviculture is decreasing at the same time as more owners are better at buying services. This means that there is a shift in the knowledge base from being able to do things yourself to being able to buy services. (Anonymous 9)

Knowledge about forestry is mostly the result of self-studies and own experience, as well as from the father. Forest-days are also an important resource of knowledge. (Lidestav and Nordfjell, 2002)

The new forest owners have a wide variety of different educational backgrounds. These forest owners are prone to understand the forest as a small private enterprise and this can be used to create economic activity on their forest property. (Anonymous 21)

- owners' capacities available for forest management: knowledge, machinery, manpower (time available)

Close to 40% of the forest owners asked in Skogsbarometern 2009 says that they work more than 20 days a year in their forests. (Skogsbarometern, 2009) According to Lindroos (2005) at least two thirds of the forest owners are performing work on their own property to some extent.

The owners that work in their forests are to a greater extent younger men living on the property, farmers and members in a forestry association. Planting is the activity most often done by the forest owners on their properties. This is followed by pre commercial thinnings, fellings and lastly forwarding. (Lindroos, 2005)

According to the owners the knowledge is lower among the smaller owners. (Lidestav and Nordfjell, 2002)

- share of family income derived from forests and derived from agricultural Production

Only 5% of the forest owners asked in Skogsbarometern 2009 get the main part of their income from their forests. (Skogsbarometern, 2009)

- membership in forest owner cooperatives and forest owner interest groups

The forest owners association had 106.000 member companies with a total forest area of 6.3 million hectares at the end of 2007. Due to changes in the methodology the figures are not comparable between years. (Skogsstyrelsen, 2009)

- sectoral reachability: regular receiver and user of forest sector information (e.g. publications by forest owner organisations, professional journals)

The papers fill a function and are well received and have an important role of spreading information. Internet is more difficult. (Anonymous 9)

SkogsEko is a newspaper published and sent out to all forest owners. There are also other papers and magazines and almost all organisations and companies have their own information sent out.

- other socio-demographic characteristics relevant as regards wood mobilization?

Male owners have a somewhat larger average forest holding than women forest owners (Lidestav and Nordfjell, 2005)

In a survey made by Eriksson (2008) men was found to in average have 10m3sk more volume on their forest holdings than women. Men are also shown to be generally more active than women. Owners that have recently got their forest holdings are also generally more active than other owners. (Eriksson, 2008)

Women as a group have a higher appreciation for housing, firewood, berries/mushrooms and recreation than the male owners, although they live on their properties to a lesser extent. (Lidestav and Nordfjell, 2005)

- expected trends of socio-demographic characteristics relevant as regards wood mobilization?

There is a continuous increase in off-site forest owners and also a trend with fewer farmers. There is also a strong trend towards an increased woman ownership of forests. The international climate and market have an influence that goes all the way down to the private forest owners. (Ingemarson, 2010)

Forest owners are expected to continue to work in their forests but with a lower amount of time per owner. (Lindroos, 2005)

There is a trend that the group of traditionalist-forest owners decrease and that the groups of passive and environmentalist forest owners have increased in numbers. (Ingemarson, 2010)

ii) Attitudes towards forests, forest management objectives, forest management behaviour:

- Describe the major attitudes of fragmented private forest ownership towards their forests: e.g. forest as a work place and regular source of income, ownership as family tradition/in heritage, as a form of investment, a reserve for times of need, forest as a habitat/nature/site of nature protection, a site for own recreation, hunting site, etc.

All the above mentioned is important for the private forest owner (Anonymous 2)

The resources that the forest owners' value most highly is according to Lidberg and Nordfjell (2002) are the possibility for recreational activities and fuel wood. These two are followed by housing. The forest incomes and the possibility to upkeep contact with family and friends as well as the connection to the heimat were equally rated in the study.

The feeling of ownership and the pride of owning forested land is probably most important (Anonymous 2, Anonymous 3, Anonymous 16). The importance of owning increases with increased rootlessness (Anonymous 25). It is fun to have forest on ones own. (Anonymous 3) The forest gives the owner a connection to the "heimat" and the relatives still living there. Even if you have economy as a main goal with your forestry the family is still highly important, others may have the forest mainly for family reasons and the economy just comes with it. (Anonymous 14) The feeling of ownership is important to many forest owners. The feeling of closeness that the forest owner has to their forest and their heimat is also important. (Anonymous 18)

Of course the economics of the forest is also important (Anonymous 3) Economy is in almost all cases the most important (Anonymous 2) There are those who want to have an even economical outcome of their forestry and those who use the forest as an investment. (Anonymous 16)

The thing most forest owners think is the most important is to have a well managed forest. (Anonymous 16) There is generally a high interest for ones forest and one wants it to be taken care of properly. (Anonymous 2) It is common to want to leave a well managed forest to the next generation. (Anonymous 16)

Some have the forest for other things such as recreation and recreational hunting as well as natural protection, but these three are mostly a bonus of the first two. (Anonymous 3) Recreation and natural protection can possibly be rated a bit more important for off-site forest owners. (Anonymous 2) Buyers of forest often have hunting rights as an important part of their ownership. (Anonymous 16)

The forest owners connected to the PEFC certification are generally more interested in their forestry. Most of the forest owners see their forest as an investment. There is also a feeling of inheritance and family, but not as strong as in other countries. (Anonymous 19)

- Describe guiding management objectives of fragmented private forest ownership: economic vs. non-economic goals, e.g. to derive maximum income, to reserve growing stock for times in need, to keep protecting nature, to conserve forests for next generation, etc.

Most owners have an economical approach to their forest. The core values of Swedish forestry are silviculture, natural protection and recreation. (Anonymous 2)

The goal of ones forestry is not always clear for the forest owner. They don't really know what they want with their forest, they have thought about it but not formulated a goal for their forest. Most often they want economy and then some natural protection. (Anonymous 3)

There are owners who have their forest for economical reasons and forest owners who own forest for more sentimental reasons. There is certain thought about "things should be as they always have been" which is a reason for management, as well as the neighbour harvesting could influence you to harvest on your own land. (Anonymous 14)

It is not very common to have thought through goals as a forest owner. The green businesses in general are better than the forestry sector in this regard. The overall management goal of the society is given by the forestry law which puts production and environment as equal. (Anonymous 16)

The objectives with ones forest is to some extent influenced by what hobbies the forest owner has. There is mostly a feeling of what one wants to do, but this is often not put on paper as a clear goal-picture. Women often think about the next generation. (Anonymous 18) Aesthetics are important for the forest owners and if an operator damages a stand so that the owner sees deep tracks or think the stand looks ugly the forest owner might change operator for the next silvicultural activity (Anonymous 23)

The forest owners seeing their forests as an investment have productivity and ecology as goals. They can be a bit sceptic about outtake of bio-energy assortments since this can lead to a decrease in the forest productivity on the long term. (Anonymous 19)

- Describe the fragmented private forest ownership attitudes towards forest management service organisations, such as forest owner cooperatives, harvesting companies, silvicultural services, interest groups, forest authorities (major incentives/pros and barriers/cons to join in or to delegate forest work)

There is a good climate among different actors on the Swedish forest market even though there is big competition. There is also a good relation to the Forest Agency, probably better than in other countries. The good market spirit makes the forest owners positive. (Anonymous 2)

Generally the forest owner association has a good place among the forest owners, but some individual forest owners prefer working with companies. The forest owner associations generally have a good contact with the forest owners in the region. (Anonymous 3) For a small forest owner it is important to be able to have a long relation with ones forest advisor. (Anonymous 18) When an advisor changes organisation the forest owner often follow. The person is more important than the organisation. (Anonymous 23)

Most forest owners do not really ponder which contact they have but tend to use the same one throughout their ownership and this is not a conscious choice. The most economically interested sell to the one giving the best price at a certain occasion.

There are forest owners choosing the forest owner association mostly because it is an association. (Anonymous 14)

There are forest owners who are faithful to their association and see them as a support and an opportunity. There are also others that go for the highest price offered at every opportunity. The added value that is appreciated differs between types of forest owners. (Anonymous 16)

Some forest owners experience a lack of trust in their forest advisor and are not sure if the advisor gives them advices that are in their best interest or the interest of the advisors company/organisation. (Anonymous 21)

The forest Agency has been seen positively by the forest owner until about 10 years ago. The positive opinion of the forest owners have largely been because the agency has had mainly an advisory mission. Today the Forest Agency is more of a law enforcer together with the heavily weighing environmental goal has got the forest owners to experience a bit of disappointment. Before the Forest Agency did a lot of educative efforts that today are upheld by the project "Kraftsamling Skog". (Anonymous 16) Kraftsamling Skog aims at increasing the profitability for the private forest owners by increasing the annual increment. This goal is achieved by increasing the knowledge about forest among the forest owners through different methods such as advisory services, study circles, publications, web page, shorter courses, meetings etc. Kraftsamling Skog is a project run during the period 2007 to 2010 by LRF and the forest owners associations. (LRF, 2010)

Forest owners are loyal to the forest politics and they want to produce (Anonymous 25)

There is a general dislike towards Agencies, and forest owners also complain a lot about forest associations and their actions. This is rather stupid since the majority understand that these are helping and they like the assistance they get from them. The scepticism is generally larger towards companies than forest associations. There is also a broad support for environmental organisations, mainly the Swedish Society for Nature Conservation. (Anonymous 19)

- What are the main sources of information as regards forestry matters for the fragmented private forest ownership (professional journals, cooperatives, forest owner interest groups, forest authorities, forest management companies, nature conservation interest groups and authorities, educational organisations, forestry education, science and training centres, ... etc.)

There are different publications, magazines and newspapers only for forestry. There is also information available on the internet and in information aimed directly at forest owners in different pamphlets and brochures. (Anonymous 2)

Market information is distributed in several papers, information pamphlets and magazines. Forest owners have access to price lists and they should have enough information to know and feel the market developments. (Anonymous 15)

The member newspapers are important sources of information for forest owner association members. Newspapers in general are a largely used source of information. Women forest owners trust their forest advisor to a large extent. There share of forest owners getting their information from the internet is still low. There is a high share of information received from neighbours, family and friends. (Anonymous 16)

Most forest owners read newspapers and information pamphlets. The forest owner organisations have a good contact with the individual forest owners and can contact them and tell them that they need to do something on their land or that the market situation is good for them to harvest now. This trust is important for many forest owners. (Anonymous 3)

The ones that have contact with a buyer get their information from there, but also from the forest agency. A person needs to have a basic knowledge to be able to access all the information available. Often forest owners ask their neighbours for advice about where to turn and what measures to do in the forest. Information is also given on different meetings and excursions. (Anonymous 14)

One generation ago forest owners often inherited knowledge from previous generations. Today forest owners often live off-site and they often use several sources of information before taking a decision in their forest. If you have less knowledge the advisor has a greater influence on the forestry decision. (Anonymous 18)

Decisions are made on the information that one has access to. This is in many cases acquired from older generations. Much information also comes from the forest advisor and to feel a safety and trust for them is important for the forest owners. Other information is mostly gathered from papers and magazines. (Anonymous 17)

Women have as a group less practical experience of forestry than other forest owner groups and they are often using several different sources of information and listen to advice to a high extent. Women are often well represented at events about forest economy. Their activity on the production events is lower. Internet is often used, especially the portal “Kunskap direkt”. To meet a forestry advisor is highly valued. One uses magazines, papers and internet when one has extra time. When the time for a specific action comes the forest owner talks to someone they know or an advisor about it before implementation. (Anonymous 18) Kunskap direkt is an internet based knowledge portal with the aim at being the internet based forestry advisor. The project is run by SkogForsk together with LRF Forestry division and the Swedish Forestry Board. The portal gives you possility to discover different management methods, play games, watch movies and do calculations on your own forest.

Internet is one source of information that is increasingly used by forest owners. Forest organisations are a bit behind in this and should work more on improving their internet information. (Anonymous 21)

Since there is a high mean age among the forest owners this can make it difficult for them to grasp changes in media reporting about forestry issues. (Ingemarson, 2010)

- What about fragmented private forest ownership themselves working in their forest vs. commissioning forest work to third parties (to whom? companies, relatives and neighbours,...)

A lot of the work in the forest is done by third parties, it is often not even possible to do by the forest owners themselves without risk of danger. (Anonymous 19)

There can be some planting and pre commercial thinnings done by forest owners themselves. Especially the pre commercial thinning is diminishing in area. The offsite owners do less work on their properties. Most work in the forest is done by professionals, but 15-20 % of the work is still done by the owners themselves. (Anonymous 2)

There is a very low self work level in harvesting, a little bit higher in thinnings. Most work done by the forest owners themselves are planting and pre commercial thinnings. There is a pride in doing something in ones forest which is important for the work level of the forest owner. Often the forest owners over-estimate their efforts. The active planning and the decision making is a work that by some is not valued as work. (Anonymous 16)

Offsite forest owners generally do less work on their properties than onsite ones. About 20% of the forest owners are very good at working in their forests and do most of the work themselves. The percentage is dependent on time available and education and knowledge of the forest owner. The ones working themselves become fewer. This makes the knowledge about ones land a bit less solid among the owners. Practical experience from planting and pre commercially thinning gives the owner a solid knowledgebase. (Anonymous 3)

If one of several owners live closer to the forest property it is likely that the ones living further away are doing less work in the forest and that the responsibility for the management of the forest holding lies on the owner that lives closest. (Anonymous 14)

- What are possible reasons for non-management of private forests?

Some forests are not managed in an optimal way and sometimes the thinnigs are done a little bit too late which gives a decrease in production. There are also large areas that are not pre-commercially thinned at the right moment. (Anonymous 3) However most forest is managed or it is left without management after a conscious decision to do so from the forest owners side (Anonymous 8)

The fact that the forest owners are not economically dependant on their forests is a big part of non-management. Also the forest properties with many owners might be less active in their forestry if the owners cannot agree on the management. (Anonymous 16) The biggest obstacle is the low knowledge, and also that forest owners sometimes believe that they do not have the right knowledge or enough of it. To start learning can feel impossible to overcome for some. (Anonymous 18)

There is a lack of knowledge. When the forest owner doesn’t know what to do he/she doesn’t dare to do anything and is not aware of the economy that lies within tending to ones forest. (Anonymous 2) That there is no clear goal set for the forest and no knowledge of how the forest owner wants to tend it. There is the knowledge that something needs to be done, but not what needs to be done or why. The ones that have worked on their property mostly have a better overview of this. (Anonymous 3)

No interest in management. This lack of interest could be based in a lack of knowledge or maybe a lack of time. Forest owners are not as dependant on their forest for their income as they have been historically and the attitude that “if I’m doing nothing, at least I’m not doing anything wrong” could be something that they are thinking. (Anonymous 14) The forest owner has not got the time or the knowledge to do anything. (Anonymous 19)

Forest owners who buy forest as an investment often care more about the increases in land value than getting incomes from the forest. (Anonymous 21)

There is also the “environmentalist forest owner” (as described among typologies of forest owners) who does not manage the forest because they think this is best for the forest, even though this can destroy the very values they are trying to preserve. (Ingemarson, 2010)

- Other factors relevant in terms of attitudes, objectives and behaviour?

It is important that the forest owner realise that the forest can give him/her something and that the owner is thinking about management. Not only keeping it for the future but realising that the management of the forest will give more to future generations than it does without management. There is also a need to see the forest as a kind of company that has to give a revenue and also that you need to invest in it for getting a better revenue in the future. The interest for the forest increases with the value of the forest and there are many values that are related to each other. (Anonymous12)

The dependency the forest owner has on the forest for personal economy. If the forest owner has a job the dependency decreases and the forest owner might decide to “save” in the forest instead of using it to its capacity. (Anonymous 2)

Many forest owners feel that they lack a forest advisor that they can trust to work in the forest owners’ interest instead of that of the buying industry. Another thing that might prevent a forest owner from felling is the view that society has on clear-cuts as something ugly. And in some cases the individual forest owner might hesitate because of what the neighbour might think. This viewpoint could be changed by establishing a more dynamic view on forestry. (Anonymous 21)

The forest owners do not want any more subsidies since they want to work according to market rules. There is some money to get from the Rural Development Program, but the forest owners see the paper work that goes together with the subsidies and want to avoid this. One would rather get paid for the raw material one produces instead of getting subsidised. (Anonymous 18)

- Any expected trends regarding relevant factors?

One trend is the increase in off-site forest owners. The age of becoming forest owner has increased a bit towards becoming older after the new taxation rules. Especially off-site forest owners say that their children don’t want to take over the forest. The high mean-age of the forest owner doesn’t seem to decrease. At the same time owning forest seem to be a bit “hip”. (Anonymous 16)

There is a clear trend towards an increase in female forest ownership (Ingemarson, 2010). This is a group that often is low in activity not only because it is an area dominated by men, but also since they in many cases are less active. (Anonymous 21)

There is a trend towards a more passive ownership where the forest owners use third parties for more and more of the work on their properties. (Anonymous 19) There is a decrease in the interest for forest associations. This although more people should participate as members in forest associations since being a forest owner off-site and with less time for forestry the forest owners need advisory services more. (Anonymous 15)

There is a hope that more forest owners will ask for services and develop a kind of goal picture about their forestry. (Anonymous 3)

4. Why is there a certain level of motivation to actively participate in forestry?

4.1 Starting from the forest owners typologies as reported to 3.1 and the fragmented private forest ownership characteristics reported under 3.3., point out those characteristics that are of central importance as regards wood mobilization:

i) What are significant factors (cf. 3.1. and 3.3!) that explain why fragmented private forest ownership exploit or not exploit the sustainable harvesting potentials of their forests?

The prices are decisive as well as the existence of a forest management plan and the household economy. (Anonymous 10) The wood market price and the personal need of money are deciding if the forest is harvested or not. (Anonymous 19)

Personal needs, prices and also the need of management are all influential on the harvesting decision. Forest management measures on other parts of the forest holding might have an influence for example there could be a need of timber outtake to cover the cost of a pre-commercial thinning somewhere else on the holding. Personal economy is very influential on outtake of timber, and often underestimated. The taxation is also influencing and for smaller owners this could be a hindrance but there are possibilities to get help. (Anonymous 11)

The fact that taxation on forest incomes is favourable plays an important role. (Anonymous 9) The fact that the average forest holding has a size of 40 to 50 hectares also plays an important role. There is more economy in the forest with a larger holding. (Anonymous 23)

Less administration could increase activity in the same way as more administration could suffocate the activity that exist today (Anonymous 9)

A new plant material with a higher productivity can induce some forest owners to fell their forest and regenerate it because it increases the revenues in the long run (Anonymous 23).

ii) Please describe and explain (cause and effect) these factors in general

If there is a high price of the timber and one has full grown forest and a need for money, then the forest owner will harvest, otherwise he might wait for even better prices, as long as the forest is still growing and looks nice.

If the owner has no knowledge concerning forestry or his/her forest this might decrease his/her activity.

iii) Please describe expected future developments of these factors

With an increased amount of forest owners that are not dependant on the forest for their income the influence of other values of the forest properties are going to increase. An increased amount of “environmentalist forest owners” could be expected, as well as more people owning forest as a way of keeping contact with their heimat, or for hunting or other recreational purposes. An increased marked competition as well as a general increase in the knowledge about forest is needed to induce these owners to harvest. There is also a need for an increased acceptance of silvicultural activitys among the non forest owning part of the population.

4.2 Also discuss the factors described under 4.1. from the perspective of:

i) Which incentives could be strengthened and which barriers could be overcome in the short-, medium- or long-term? (NB.: Overall research question: "measures for wood mobilization")

Since the market in the region is well structured, well organised and have a good competition level between different clear and well-known actors there are good basic conditions for wood mobilisation. (Ingemarson, 2010)

One should wonder if wood mobilisation is the way to go since many forest owners put other goals before economy. Maybe it would be better for all parties if the silvicultural methods got more diversified instead on concentrating only on producing more. There is also a public that is interested in the management of forests that they do not own. (Anonymous 21)

5. What other characteristics of fragmented private forest owners are important to understand their reactions to (potential) measures that aim at mobilizing wood from their forest lands?

i) Please indicate factors and EXPLAIN cause and effect, as applicable: What factors, how do the impact on wood mobilisation / (potential) measures for mobilisation, relevance for all or specific categories of fragmented private forest owners; relevant in general or only under specific circumstances (which, e.g. in certain market conditions) etc.

The passive forest owner is of the general opinion that if he does nothing he will do nothing wrong. This is based on a low knowledge-level and a lack of engagement in the forest owning. To get him/her more active contact must be taken with him/her to make the forest owner participate in educative activities. After they learn a bit about their forests they are often showing a high level of activity. To reach them it is necessary to use channels of information that they are familiar with, such as television.

The economist will work according to market and will become more active if there is more competition on the market and also if he/she has a forest management plan or someone managing the forest holding for him/her.

The multi-purpose forest holder will demand a competent advisor that takes all the different aspects and different values of the forest into consideration. Alternative silvicultural methods are important.

The traditionalist will continue to manage the forest according to family traditions and see to that the forest is well managed for the next generation.

The environmentalist needs to be made aware of the fact that just saving the forest without management can destroy some of the environmental values it holds. Since they are well educated it is necessary that the forestry advisor has a good knowledge-level and also that the advisor is prepared to make adapted forest management plans.

(Ingemarson, 2010)

Task 4: Describe the wood mobilisation in the region

1. What are measures for wood mobilisation from fragmented private forest ownership in the region?

i) what are they, explain?

There are no measures for wood mobilisation in the region. Historically there have been some, but they are not considered needed. The only measure that could be somewhat connected to the forestry is the transportation support, but this is possible mostly for sawn wood. (Anonymous 8)

ii) who is implementing them? Who is taking the initiative?

Since there are no measures regarding wood mobilisation no one could be said to be taking initiative.

iii) which are successful or not? Why?

The forced harvest measure that was used during the 1980’s was deemed unsuccessful as it made the forest owners lazier.

This measure came after an energy crisis and was made so as to force harvests on private land by saying that half of the harvestable forest needed to be harvested within a certain time period. This didn't succeed, forest owners waited to get the paper that they needed to cut instead of harvesting at the optimum moment.

The one thing that can be said to be successful is the law that gives you possibility to distribute the income from the forest to when you need it so as not to get taxed too severely. Also the law that facilitates transfer of forested land to the next generation is important.

iv) if available please indicate approximate costs of the taken measures and the funding sources?

Since there are no measures, there are no costs for them.

v) are there any estimates of the effectiveness of measures in terms of additionally mobilised wood supply?

The measures used historically have all been considered non-effective. There are therefore today only the market forces, which seems to be working better.

vi) are measures for wood mobilization expected to be increased or intensified in the future?

After the tax reform in the 1990's that eased life for forest owners there seem to be no need for additional measures. (Anonymous 8)

vii) What are currently the main new instruments which are being discussed and why?

There are no additional wood mobilisation measures discussed.

viii) What are the lessons learned from the past?

There were regulations in the 1980’s that forced forest owners to harvest if the amount of old forest was too high on the property and that half of the full grown forest had to be harvested within a certain time. The experience from this was that the

Forest Agency wasn't well thought of and that the actual fellings decreased. This measure was stopped later. (Anonymous 9)

Subsidies are not well thought of among the forest owners, and they don't want to get stuck in some bad circle of subsidies. (Anonymous 18)

2. What are barriers for wood mobilisation from fragmented private forest ownership in the region?

i) what are they, explain?

There could be some barriers, but personal decisions are most important. All the factors affecting forest owners' personal decisions are there. (Anonymous 8)

3. Which of the factors described earlier (in sections 2 and 3) have the strongest impact on wood mobilisation from fragmented private forest ownership in the region?

i) what are they, explain?

The price is the one factor that has the greatest effect on the market according to earlier answers. The other important factor is the need for private economy and the knowledge of the need for management. The will to put timber on the market is also depending on personal management reasons, and if there is a management plan available for the forest.

ii) how do they work?

A forest owner is more inclined to harvest if the price for the timber gives a good price on the market. This is also affected by the need of income from the forestry in such a way that if the forest owner does not need money directly he/she might wait until the market can give him/her a better price for the raw material they produce. The existence of a management plan increase the knowledge the forest owner has about his/her own forest and can help them in their decision making. A good knowledge base for taking a decision is important for the forest owner as well as a good contact and a trust for the buyer/forest advisor.

4. What other factors may be important regarding wood mobilisation from fragmented private forest ownership?

The mean distance to road is about the same all over the country and doesn't have too big influence on the decision to harvest. But if you have a property with a low increment and a long distance to road this might be a hindrance since it's not economically viable to harvest. The distance to a road can have greater negative influence if you have a small forest holding and have to pass several neighbouring properties to get the timber out to the road. The hindrance is in that several forest owners must cooperate and this might be hard, as well as the possibility that the timber buyers are aware of this and tend to avoid this sort of forest holdings when buying their timber. (Anonymous 13)

If there is no road this could be considered like an infrastructural issue that could complicate the harvesting because of transport across neighbouring lands.

(Anonymous 8) There is always a possibility to get timber out, but sometimes it takes some discussion (Anonymous 23)

The distance to road should be of lower importance since 75 percent of Swedish forested land is within 500 meters from a road. There are only 300000 hectares of productive forest land that are situated at a distance greater than 2 kilometres to a road. (SCB, 2008)

It is important for the wood buyers and the sellers of forestry services to adapt to the increased importance of “soft” values. (Ingemarson, 2010)

Discussion and Conclusions

The study showed that there is no need for extra measures in the studied region since the market in the region is already functioning well.

The fellings on private lands are today around 80 percent of the annual increment in private forests. And one could discuss if there is a need to mobilise more.

The laws prohibiting the splitting of forest properties into units smaller than those that could have a production of at least 200 cubic meters per hectare and year are of course an important factor when it comes to fragmentation. This results in larger forest properties that have greater economic importance for the individual forest owner. The economy of the forest property is, as mentioned above, an important factor behind the decision of felling. If the forest owner cannot get a profit out of his forest it becomes less interesting for him/her to manage it properly.

The study shows that the reasons behind the decision of a forest owner to harvest or not is often depending on the market price of timber, but also other, more intangible things such as for example the overall feeling of the market, personal economy and external influences such as for example a neighbour harvesting. With an increase in price, many of the now standing forests would be harvested since there would then be a good enough economy to make it viable.

The competition on the market was found to be sufficient since there are many actors on the market. An increased competition is already on its way since the borders between different regional buyers have started to deteriorate and they cover “each others” areas, where they before had a tendency to keep only to their specific region. There is also an increased demand for bio-fuel assortments which contributes to an increased competition in some assortment categories.

The market competitors are well-known to the forest owner and this gives the forest owners trust in the actors on the market. There is a sort of safety that the operators will be there long enough to fell and pay for the timber. The competition on the market is also an incentive that makes the buyers of timber contact the potential sellers in different ways so as to access their raw-material. This helps the inactive forest owner in a way since he/she does not need to actively search for someone to sell the timber to. This is probably something that increases the overall activity of the forest owners that would otherwise just leave their forests unmanaged.

Another important factor adding to the security for the private forest owner is the wood measurement law that gives a fair and impartial measurement of his/hers raw material. This safety is important for the forest owner to decide upon a silvicultural activity. Another important factor is that there are many forest advisers coming from different competitors and the Forest Agency that can help the forest owner in taking decisions.

A large proportion of the forest owners in Sweden are members of forest owner associations and this is expected to remain equally high in the future. The strongest tendencies among forest owners are the increase in women forest owners as well as an increase in the off-site forest owners. The increaes in both categories cannot be said to create more problems than before since the off-site forest owners tend their forest as good as or in some cases better than on-site forest owners. Women forest owners can have owned forest for a long time together with their husbands, which doesn't show in the statistics since they are not the main owner. This could mean that they already have a good knowledge base. However both these group is important to target with educational efforts since they do not have the same background as many on-site or male forest owners.

As described above there are many different reasons that are behind the decisions and the activity level of the individual forest owners. These reasons are in many cases difficult to access, and even so, if they want to keep the forest for the next generation or for other personal or recreational purposes, one has to respect that since it is their land.

Different things are mentioned in the answers to the assessed case-study questions as reasons to why the market is functioning well in the region. Among the most important ones mentioned are the taxation rules, the good market climate and the relatively liberal forestry laws.

The strongest opinion among the forest owners seems to be against subsidies and increased regulation. As an important part of forest owners are also farmers they have seen the impact that the subsidies have had on agricultural activities. Forest owners value the independence that they have in their silvicultural activities. An increased amount of paper-work is not something the forest owners would receive with open arms. Subsidies or increased regulation could also have a negative impact on the market as a whole.

The one thing that could increase the wood mobilisation in this region would be an increased knowledge among the forest owners about how to best manage their forests. There are already today a large number of forest owners that have a management plan for their forests, which is known to increase their knowledge about their forest property as well as their activity. It would however be good if even more forest owners had access to a forest management plan for their forests. The forest owners should also be informed about different economic and environmental values that could be increased by different types of management. For doing this there is a need of forest advisers that are aware of the different management possibilities and that also can know which management method is best suited for every forest owner's needs and goals.

The main effort needed seems to be not on harvests, but instead of pre-commercial thinnings and other silvicultural activities performed before harvesting. In this case, the thing that seems to have the best impact is increased knowledge among the forest owners about the importance on pre-commercial thinnings for future revenues from their forests. This is already done by the project Kraftsamling skog. Since this project ends after 2010 this would leave a gap where the forest owners for a while wouldn't get the same back-up support. After an evaluation of Kraftsamling skog a new knowledge project would probably be needed to fill the gap. Kraftsamling skog aims at increasing the annual increment among private forest owners. This is done mainly through education and using the already existing potential. An increase of annual increment would mean an increase in the income for the forest owners as well as the profitability of sending a machine to a smaller holding for the harvesting operation. Increasing the increment in the forests is probably the best way of increasing the volume of wood coming out from the forest.

Activities within forestry must be made easier to access for women forest owners since this is the group of owners that increase the most. Educative and training efforts should be made specifically targeting this group. This is already done to some extent though women forest owners networks. The off-site forest owners are also increasing but are managing their forest holdings to the same extent as on-site forest owners.

The educative effort should be aimed not only at the forest owners themselves, but at society as a whole so as to increase the acceptance of the importance that forest owner activities have for environment and economy. This effort would have to be done in a broader variety of public media.

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Focus Groups

Participants in Focus groups held the 6th (Falun) , 12th(Växjö), 13th (Stockholm) and 14th (Umeå) were:
Anonymous 3, 6, 7, 9, 16, 18, 22, 23, 24

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Fact sheet of the case studies results

Fact sheet of the case studies results

		Austria	Sweden	England (UK)	Rhone-Alpes (France)	Hungary	Estonia	Saxony (Germany)	Catalonia (Spain)
1.	**What is the total forest cover in the region?**								
	i) % of the total area?	*47.2 %*	*56.00%*	*8.4%*	*37%*	*19%*	*48,9%*	*28 %*	*63.51%*
	ii) How did it develop during the last 10 years (approx.)? (change % per annum)	*+0.4*	*Varied between 55.5 and 58.1 since 1923*	*+0.6%*	*+2%*	*+0,2%*	*n/a (2005 to 2007 - 2,5%)*	*+0,05%*	*+0.75%*
2.	**What is the wood mobilisation in terms of annual increment?**								
	i) Harvest in percent of the increment?	*60,1%*	*71%*	*39%*	*40%*	*50%*	*57,9%*	*~40%*	*24%*
	ii) How did it develop during the last 10 years (approx.)? (change % per annum)	*-11,3%*		*NA*	*-7%*	*-1,0%*	*NA*	*++ (NA)*	*4.14%*
3.	**Is there legal uncertainty regarding forest ownership? (yes or no)**	*No*	*NO*	*No*	*No*	*No*	*Yes*	*No*	*No*
4.	**What is the structure of the regional wood markets, in terms of ….?**								
4.1	**…buyer/seller ratio? (number of seller per buyer)**	*1:78*	*1:235*	*NA*	*1:1000*	*1:11*	*NA*	*1:450*	*is difficult to tell, some sellers are categorized as forest service companies (all types)*
4.2	**…other structural market factors?**								
	i) Average distance between different types of sellers (e.g. fragmented private forest ownerships) and different types of buyers? (km)	*NA*	*Lorry 79km/ton of roundwood 60-70km/ton of bio-energy assortments*	*NA*	*100-300 km*	*under 100 km*	*NA*	*Small: 10-50 Large: 150-200 km*	*80km*
	ii) Harvesting costs to forest road by ownership category? (excluding stumpage sales) (€/m³ o.b.)	*SSFOS 37.44 €/m³ PFO 21.95 €/m³ AFF 24.40 €/m³*	*Around 9 € for harvesting and 13 € for thinning*	*9.99 EUR/cum*	*20€/m³*	*10-15€/net m3*	*16€/m³*	*€9-13 (st.), €14-17 (pri.)*	*33 €/m³*
	iii) The informal market segments (subsistence, supply to family members, neighbours, etc.) in % of total market? (if no data is available please indicate whether or not it is considered to be a relevant segment or not)	*20%*	*Very small*	*Relevant*	*40-50%*	*10-15%*	*10%*	*25% (all pr.), 50% (frag.)*	*Very small*
	iv) Are informal market segment expected to expand or decrease? (expand, stable or decrease)	*constant*	*Stable*	*Expand*	*Expand*	*Stable*	*Stable*	*Expand*	*Decrease*
	v) Do wood price changes influence the regional supply by private forest owners (yes or no)?	*Yes*	*yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
5.	**Typical wood sales methods in the region?** (e.g. standing, auction, long-term contract, ad-hoc on individual basis, etc.) Please name the most important one or two!	*forest-roadside*	*Delivery timber 33% Standing forest timber 27% Felling by purchaser 26%*	*Negotiation, Ad hoc*	*Individual Ad-hoc*	*Ad-hoc Standing-on stock*	*Ad-hoc*	*Individual ad hoc., long-term*	*33% Auction, 50% individual contract and 17% forest owner associations with technical administration*

	Austria	Sweden	England (UK)	Rhone-Alpes (France)	Hungary	Estonia	Saxony (Germany)	Catalonia (Spain)
6. How are the forest owners to be characterised?								
i) % share of "organized" forest owners by number (Forest management organisations e.g. in owners associations, loose groups, cooperatives, co operations – NOT only political organisations!)?	*37%*	*50.00%*	*NA*	*5%*	*78%*	*5%*	*2.8% (cooperatives), 4,6% (own. association)*	*1% (respect all owners)*
ii) % share of "organized" forest owners by forest area (Forest management organisations e.g. in owners associations, loose groups, cooperatives, co operations – NOT only political organisations!)?	*21.9%*	*50.00%*	*NA*	*10%*	*78%*	*7% of total forest area, 20%of private forest*	*17% (cooperatives) 32% (own association)*	*37%*
iii) % share of roundwood sales by "organized" forest owners (Forest management organisations e.g. in owners associations, loose groups, cooperatives, co operations – NOT only political organisations!)?	*18,8*		*Na*	*25%*	*34%*	*NA*	*NA*	*74%*
iv) Most frequent types of organized forest owners associations in the region (loose groups, cooperatives, co-operations or unions)?	*Co-operations*	*Forest owners associations*	*Loose groups*	*Forest associations Cooperatives*	*Business companies*	*Associations (based on ngo law)*	*Cooperatives*	*Forest owners associations*
v) Is there a trend towards increased cooperation between small/fragmented private forest owners (yes or no)?	*Yes*	*unclear*	*Yes (slow)*	*Yes*	*Yes*	*Yes*	*No*	*Increased*
6.2 Are there cross forest owners and wood industry associations in the region? (yes or no)	*Yes*	*no*	*Yes*	*No*	*Yes*	*No*	*No*	*No*
7. What is the role of forest authorities regarding fragmented private forest ownerships participation in the wood markets?								
i) On harvests of fragmented private forest ownerships? (guidance, control or none)	*Control*	*Some controls*	*Guidance/ control*	*Control*	*Control*	*Control, Guidance*	*Guidance (Control)*	*Control*
ii) On timber sales of fragmented private forest ownerships? (guidance, control or none)	*None*	*Only through the measurement law*	*Guidance/ control*	*None*	*None*	*Non*	*Guidance*	*None*
8. Structure of forest ownership in the area in terms of forest resources:								
i) % share of private forest ownership by forest area?	*80.6%*	*50.00%*	*82%*	*72%*	*44%*	*33%*	*45%*	*88%*
ii) % share of fragmented private forest ownership by forest area?	*49.4%*	*50.00%*	*NA*	*40%*	*4%*	*70,7% (from private forest) 23% (from all forest)*	*20% (<10ha)*	*31.22%*
iii) How did the share of fragmented private forest ownership develop during the last 10 years (approx.)? (change % per annum)	*-15% (1999-2007)*	*same*	*NA*	*-1,5%*	*n.a.*	*NA*	*-0.8% abs.(rel. to total area)*	*NA*
iv) Harvest in percent of the increment in fragmented private forest ownerships	*46.2%*	*80.00%*	*NA*	*NA*	*50%*	*59%*	*(est. < 20%)*	*NA*
v) How did the harvest in percent of the increment in fragmented private forest ownerships develop during the last 10 years (approx.)? (change % per annum)	*-12.5% (1999-2007)*	*Approximately the same, higher after Gudrun*	*NA*	*NA*	*n.a.*	*NA*	*NA*	*NA*

	Austria	Sweden	England (UK)	Rhone-Alpes (France)	Hungary	Estonia	Saxony (Germany)	Catalonia (Spain)
9. **Describe the structure of fragmented forest ownership in the area by number...**(if information is available only for certain sub-regions please indicate by *)								
i) % share of Non-farm forest ownership?	*33% (all private forest owners*	*NA*	*NA*	*75%*	*n.a.*	*60-70%*	*all PFO: 91-92% area, 96% owners*	*perception of increasing*
ii) % share of Non-resident forest owners? (e.g. more than 15km or 30min away)	*6% more than 20km (all private forest owners)*	*26.00%*	*NA*	*35%*	*n.a.*	*NA*	*all PFO: 85% (30min distance)*	*perception of increasing*
iii) % membership in forest owner cooperatives (Forest management organisations e.g. in owners associations, loose groups, cooperatives, co operations – NOT only political organisations!)?	*37%(all private forest owners)*	*50.00%*	*NA*	*3%*	*n.a.*	*NA*	*NA*	*few of the total*
iv) % secondary education in forestry and agriculture?	*13.8% (all private forest owners)*	*Small part*	*NA*	*NA*	*n.a.*	*NA*	*all PFO: 43% (1999)*	*few of the total*
v) % tertiary education in forestry and agriculture?	*4.5% (all private forest owners)*	*NA*	*NA*	*NA*	*n.a.*	*NA*	*all PFO: 8% (1999)*	*very few*
vi) Major attitudes of fragmented private forest ownership towards their forests (e.g. income, family tradition, investment, etc.)?	*Staves1 highest priority (1) sustainability (2) own use (3) tradition (4) free time (5) investment (6) hunting (7) income (8) working place all private forest owners*	*Production, recreation, income, feeling of home etc.*	*Hobby owner, family, tradition, sporting, investment*	*Family tradition*	*Family inheritance*	*NA*	*ALL PFO: Tradition/heritage, Asset, Own require. (1999)*	*The family's patrimony, Aesthetic model, Risk of forest fire, the financial situation of the landowner*
iii) Guiding management objectives (e.g. derive income, reserve growing stock, etc)	*Staves1 highest priority (1) maintaining capital (2) increasing profit (3)selling the forest (4) abandoning forestry private forest owners lass than 10 ha*	*Economy, environment and recreation*	*Biodiversity, timber, sporting, production, amenity*	*Pass on quality forest*	*n.a.*	*NA*	*ALL PFO: own requirements, reserve stock (1999)*	*Economic and sentimental*
iv) Important incentives to join in or delegate forest work?	*NA*	*Time, easier to hire someone*	*NA*	*Forest associations Massif development plan*	*No*	*NA*	*NA*	*Is difficult to delegate the property in the hands of another company, family tradition.*

		Austria	Sweden	England (UK)	Rhone-Alpes (France)	Hungary	Estonia	Saxony (Germany)	Catalonia (Spain)
10.	**What are measures for wood mobilisation from fragmented private forest ownership in the region?**								
	i) Owner associations / Community Forestry (yes or no)	*Yes*	*yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
	ii) Forest service companies/Forest management services(yes or no)	*Yes*	*yes*	*Yes*	*No*	*No*	*Yes*	*No*	*Yes*
	iii) Communication / Advertisements (yes or no)	*Yes*	*yes*	*Yes*	*No*	*No*	*Yes*	*Yes*	*Yes*
	iv) Forest Management Grants / Subsidies (yes or no)	*Yes*	*No*	*Yes*	*Yes*	*No*	*Yes*	*Yes*	*yes (aid to improve)*
	v) Advisory services by authorities (yes or no)	*No*	*Yes to some extent*	*Yes*	*Yes*	*No*	*Yes*	*Yes*	*Yes*
	vi) Training/ or educational programs by authorities (yes or no)	*Yes*	*No, by forestry associations*	*Yes*	*Yes*	*No*	*Yes*	*Yes*	*Yes*
	vii) Legal framework to prevent further fragmentation (yes or no)	*No*	*yes*	*No*	*No*	*No*	*No*	*No*	*No*
	viii) Others (yes or no)	*Yes*		*No*	*Yes*	*No*	*No*	*Yes*	*Yes (improving demand)*

	Austria	Sweden	England (UK)	Rhone-Alpes (France)	Hungary	Estonia	Saxony (Germany)	Catalonia (Spain)
Structural features Please summarise (using bullet points or keywords) the principal structural factors that have been identified as explanatory to the fragmented forest owner's participation in wood markets in your region? Distinguish owner related factors (e.g. capacities of the owner) and external factors (e.g. regulations)?	Owner related: Traditional and non-traditional forest owners with different social backgrounds Number and share of non-traditional forest owners seem to be growing as a result of the ongoing structural change in the agricultural sector Private small scale forest owners with lacking knowledge in forestry External: Strong impulse for the debate came with the intensified use of wood biomass from the forest for energy production which on the one side offered a new market for the land owners Wood biomass a new competition for the material to the pulp and paper and panel industries Public issues are not strongly debated, such as the possible degradation of the sites through a loss of nutrients, or the positive contribution of forestry and the forest industry to rural development Austria is a mountainous country which often implies high logging costs, and it is a developed country, which implies high salaries for forest workers Fragmented structure of the small forest ownership (<200ha)	Owner related: Economy and market prices Owners goals External: Regulations of wood measurement Feeling of security and stability of the market actors	Owner related: **Barrier**: lack of owners forestry knowledge/capacity **Barrier**: not the owners' principle or significant income revenue **Barrier:** lack of local woodland owner networks **Engagement**: woodland projects and cooperatives External: **Barrier:** regulatory system perceived as overly bureaucratic and time consuming **Grants:** EWGS (management planning), RDPE (capital grants), RHI (demand driver)	Owner related: Education of forest owners Action for grouping External: Guidance and coordination work	Owner related: Own use, Limited wood volume External: High VAT, strict regulations	Owner related: Small size (average 10 ha) of ownership does not have economic efficiency. Small size is result of the restitution of farm-related Forests to new owners, who by large are not farm-related. Missing systems to increase fragmented owners c-operation (local association main focus is training, information), wood trading systems established very recently. Wood market dominated by major pulp and saw mills in Finland, Sweden: for them Estonia is a market with secondary importance (used when their local market cannot match the demand). Owners are not managing the supply, but rather following the buyers (inc sales methods) External: Taxation rules: private physical persons cannot deduct forest management costs from sales income before paying income tax. This reduces wood trading profitability. Truck weight limit of 41 tons: modern, fully loaded truck weight is ca 60 tons. Poor forest road network Ageing community, mostly living in cities, poorly linked to their estates	Owner related: Average PFO property size of 3.2 ha; high degree of fragmentation Lacking information concerning forest management and wood marketing, Boundaries of estates are sometimes unknown, Other than economic owner's objectives External: Small areas result in small amounts of wood (problem for marketing, negligible income-effect) No publication of (open access to) owners' addresses for other owners/industry etc. Problems of infrastructure (existence and condition of roads; shape of properties) Low degree of organisation/cooperation between forest owners (partly influenced by historical developments)	Owner related: Many forest owners have agricultural tradition; Accessibility; low-value wood External: Prices, markets, regulations, fire risk,

	Austria	**Sweden**	**England (UK)**	**Rhone-Alpes (France)**	**Hungary**	**Estonia**	**Saxony (Germany)**	**Catalonia (Spain)**
Forest owners Please summarise (using bullet points or keywords) the most relevant fragmented forest owner's management-related attitudes, objectives and behavioural intentions influencing participation in forest product markets in your region?	Own wood use (subsistence) of the Austrian small scale forest owners is very high and the level is similar among all sizes of small scale forest ownership (<200ha) Trend in forest management goes away from the bread tree spruce to mixed wood because – discussion about climate change Private small scale forest owners often are not educated or trained for forest management A large part of private small scale forest owners do not have economic-oriented goals for their forest property Forest care is an important goal in the small forest owners milieu	Knowledge-level Economy Will to have a well managed forest	Biodiversity Hobby owner Tradition Self-sufficiency for timber Amenity (e.g. sporting) Landscape	To assure family inheritance, symbolic good to pass on to the next generation To save money for time in need To preserve nature To have social relation through their forest No objective, disappointment	No cooperation attitude	Forest as a source of income. Mainly additional income to daily jobs Forest as a future investment, additional income to pension Ownership as a driver for social value. Family link and tradition. The ownership received in the process of restitution relates the current owners in a meaningful way to their grandparent, who lost forcefully the ownership Potentially large numbers of owners have not thought through the objective of the ownership. The land was received more as largely unexpectedly through restitution, but ownership has not found a role in the owners' life.	"New" forest owners – though only small in number and area - are rather economically interested (i.e. in wood marketing); Others have mainly multiple objectives: fire wood use, "having" an asset , "live" tradition, spending leisure time, enjoy nature (small forest land as an "allotment")	Most of the Catalan forest owners are aging old, and therefore there is less motivation for performing forest operations and management Owners of new acquisition consider the forest owned as: second residence, investment on patrimony and leisure
Actual behaviour Please summarise (using bullet points or keywords) the most prevalent and actual fragmented forest owner's management behaviour in your region?	Small scale forest ownerships (<200 ha) in Austria show a strong positive supply reactions towards wood price signals In case of more traditional small scale forest owners and based on the supply behaviour from the past the wood reserves aren't predominantly located in the fragmented private forest ownership because the annual felling rate per ha in this group is higher than in the other ones	Harvest according to price given and market Use of advisory services	Lack of management due to poor knowledge Lack of management due to economic returns	To cover cost To maintain reserve of biodiversity To pass on to next generation To get an income	Urban owners are not interested in the ownership Countryside owners want to use the forest for own.	Minority of owners are actively managing their ownerships, majority are passive owners The dominant sales method is ad hoc sales, with pragmatic aim hit to the highest price; long-term contracts are rare The use of contractors is increasing, logs are sold as assortment, pulpwood as cutting right Wood has important role as raw material for the owner and his family (own use for energy, construction) Owners receive and expect to receive financial support from state for the forest management	<u>Management</u> in most cases: for fire wood use (own requirements, neighbours and friends); in case wood/timber should be sold to the market to derive some income: stumpage sales (forest operators, industry) or assortment sales with the help of the state forestry enterprise	Low yields Little interest in the property,

	Austria	Sweden	England (UK)	Rhone-Alpes (France)	Hungary	Estonia	Saxony (Germany)	Catalonia (Spain)
Which sorts of policy measures (to facilitate participation in forest product market) would the fragmented forest owners in your region be more responsive towards?	Forest management plan "light" There is a lack of financing of further actions that would require more personnel that approaches and supports the forest owners	Knowledge increases in different ways Public opinion important	Reduction in bureaucracy Quicker response period to felling licence applications Drivers to increase and (and therefore price for timber), e.g. RHI & the Wood Fuel Strategy for England	Extension of massif development plans which are a local program to implement grouped actions with CRPF guidance and coordination Forest association is a model to develop to increase wood mobilisation on the long term	Less admin National incentives maintained Open land market Enhanced Taxation on SMEs Lower VAT on forest products Investments into energy SMEs	Improve data collection on fragmented forest owners (create system, rather than project) Provide incentives for fragmented forest owners wood trade (no taxation on income received from sales, no other burdens like road restrictions), Support and develop forest owners economic co-operation/consolidation, Support for investments to reduce logging costs/route to the market (support road construction investments) Support for silvicultural investments (pre-commercial thinning, young stand treatment) Support for programs that increase forest owners and stakeholders awareness on forestry as well as on wood mobilisation	**Information/Training and advice (by state forest rangers)** - concerning management, harvesting operations, prices and marketing; - should be existent for a long time period for trust building **Subsidies** - indirect: see above (advice, information, training) and via direct infrastructural help (road building) - direct: infrastructure	Mobilisation of the demand / technological innovation Promote associated management Knowledge increases.
What other factors may be important to describe the fragmented forest owners in your case study region?	Chamber of Agriculture advices the private small scale forest owners and initiated together with forest owner cooperatives a network of "wood mobilisers" (Waldhelfer), which has successfully pushed the harvest activities in Austrian small scale forests. The "wood mobilisers" are a part of forest services for wood supply provided by the chamber for fragmented private forest ownership Austrian forest authorities in Austria primarily have a supervising or control and not a guidance function regarding harvests of fragmented private forest ownership	Most of the forest owners are not dependant on their land for income, but still wants to manage their forest well	Heterogeneous profile Multiple objectives	Wood mobilisation is dependent on many factors on the surface area of ownership but also species, fertility of soils, local economy, accessibility are very various in the region and may impact strongly on the wood mobilisation.			Low degree of organisation Fragmentation is expected to continue due to heritage and further partition Willingness to sell the property is presently decreasing (wood energy becomes more important) Road construction is often difficult to organise because of the number and shapes of small forest properties	Many owners depend on resources from outside the property. Little forest tradition, much knowledge and culture have been lost due to the abandonment of the rural areas and the traditional activities