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

Task II

Case study: Saxony/Germany

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1 Introduction

Within the project “Prospects for the market supply of wood and other forest products from areas with fragmented forest ownership structures” case studies are expected to be realised in eight European regions. Saxony/Germany was chosen as one of these representative regions. While the regional wood industry and its capacities have grown considerably in the last years, private forest ownership in this region is characterised by unfavourable structural and regional conditions and a strong influence of historical developments (expropriation, further fragmentation, lost tradition awareness). 97 percent of private forest owners hold estates smaller than 10 hectares, which is considered as the upper limit of size for the definition of fragmentation in this case study.

The Freiburg University, Institute of Forest Utilisation and Work Science, is responsible for investigations in Saxony/Germany.

Investigation of secondary data concerning wood markets and private forest ownership in the region started in October 2009. In consideration of a list of predefined detailed research questions important statistical information as well as survey data were compiled and analysed until November 2009 and complemented by further literature reviews until January 2010. Annual reports of the state forestry enterprise/forest administration as well as statistical yearbooks provided important quantitative data. Some research papers could be used for the characterisation of regional private forest owners.

These results were complemented by information given in expert interviews and by the implementation of a focus group session. Nine experts of the Saxon forest sector (i.e. forest administration, forest management cooperatives, forest owners association, forest service and forest operators, industry and related associations, forestry science) were interviewed between 10 November 2009 and 4 December 2009 (see list of interviews, section 8.2.). Some further experts were contacted via telephone and email for additional information (see list of further experts, section 8.3.). Also a focus group session was conducted with seven experts in Tharandt/Saxony on 14 December 2009 (see list of interviews, section 8.4.) and led to important information especially with regard to barriers of wood mobilisation and future developments of the regional wood market. As a result of all investigation steps a comprehensive image of Saxon forest owners and wood markets is represented in the following.
2 Overview

2.1 What is the total forest cover in the region?

2.1.1 Total forest cover in percent of the total area

Total forest cover of Saxony is 28.2 percent or 518,325 ha (per December 31\textsuperscript{st}, 2007; see SMUL 2008: 6).

2.1.2 Development of the total forest cover during the last 10 years (approx.)

Forest cover has increased from 26.3 percent in year 1990 to 28.2 percent at the end of 2007. Development of the forest cover of Saxony can be seen in the following table.

Table 1: Development of the total forest cover in Saxony

<table>
<thead>
<tr>
<th>Date</th>
<th>Total forest cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1st, 1990</td>
<td>26.3% 485,000 ha</td>
</tr>
<tr>
<td>December 31st, 1997</td>
<td>27.6% 508,882 ha</td>
</tr>
<tr>
<td>December 31st, 2002</td>
<td>28.1% 516,572 ha</td>
</tr>
<tr>
<td>December 31st, 2007</td>
<td>28.2% 518,325 ha</td>
</tr>
</tbody>
</table>

2.1.3 The expected future development of the total forest cover in the region

The long-term political target figure for Saxony’s forest cover is about 30 percent of the total surface area (see SMUL 2008: 12). A growing forest cover was primarily expected for the Saxon mining regions, but conflicts of interests (e.g. with organisations for nature conservation and recreation) and a dense population caused a decelerated afforestation in the last years (Weber 4/11/2009). Nevertheless, a further, but only slight increase of forest cover is expected for the near future. Afforestation projects will thereby concentrate on selected regions of Saxony as for example the area around Leipzig (see SMUL 2008: 12; Jung 30/11/2009).

2.2 What is the wood mobilisation in terms of annual increment?

2.2.1 The annual harvest in cubic meters over bark

Statistical data are only available for harvests and sales done by the state forestry (\textit{Staatsbetrieb Sachsenforst}) for state as well as non-state owned forests. As shown in table 3 these harvests amount to 1,351,000 cubic meters u.b. in total (average 2005 to 2008). Thereof ~200,000 cubic meters come from non-state forests. Since \textit{Sachsenforst} market only approximately 20 percent of all harvested wood from private forests.
(Schmieder 11/11/2009), the actual harvesting volume in private forests is considered to be \(~385,000\) instead of \(77,000\) cubic meters u.b. annually. Harvestings in community and church forests are estimated to be \(200,000\) instead of the recorded \(122,000\) cubic meters u.b.\(^1\) which corresponds finally to a total annual harvest of \(1,740,000\) \textbf{instead of \(1,351,000\) cubic meters u.b.} in Saxony. More details on the annual volume of harvests can be taken from table 2 and 3.

Due to storm \textit{Kyrill} (in January 2007) the 2007 annual harvest volume was necessarily very high. This was compensated by a lower harvest volume in the following year 2008. The 2005 annual harvest volume was also influenced by a storm event (\textit{Gudrun}) and thus characterised by a high percentage of forced cuttings.

\subsection*{2.2.2 The annual increment in cubic meters over bark}

The annual increment of Saxon forests is forecasted with \(9.4\) cubic meters per hectare including all tree species and all types of property (SMUL 2008: 18). This results in a total annual increment of \(4.4\) million cubic meters (SMUL 2008:19). The annual increment per hectare is highest in state-owned forests (\(10.2\) cubic meters) and somewhat lower for private and community forests (\(8.9\) and \(9.6\) cubic meters per hectare) (Freistaat Sachsen (BWI II) 2005: 44). An annual harvest volume of \(1,74\) million cubic meters per year means that only \(~40\) percent of the annual increment are used. Total volumes for increment p.a. as well as corresponding (partly estimated) harvest rates for all types of ownership can be taken from the following table:


table 2: Increment and harvest in forests of different ownership in Saxony

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State (Germany)</td>
<td>198.244</td>
<td>66.614</td>
<td>66.614</td>
<td>34%</td>
</tr>
<tr>
<td>State (Saxony)</td>
<td>1.837.554</td>
<td>1.085.182</td>
<td>1.085.182</td>
<td>59%</td>
</tr>
<tr>
<td>Community and church</td>
<td>448.087</td>
<td>122.203</td>
<td>203.672</td>
<td>45%</td>
</tr>
<tr>
<td>Private</td>
<td>1.954.439</td>
<td>76.992</td>
<td>384.960</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>4.438.324</td>
<td>1.350.991</td>
<td>1.740.428</td>
<td>39%</td>
</tr>
</tbody>
</table>

\*adjustments of harvest volumes are made since statistically recorded data concerning harvest volumes are estimated to be only 60\% of all harvests for community and church forests and only 20\% of all harvests for private forests

Albeit one could consider the harvest rates as quite low, \textit{Sachsenforst} states that harvests taking place in state and community forest are almost at the limit of sustainability. The main reason for this is seen in protective functions of forests which limit forest management and harvesting activities. High amounts of additional wood can thus only be mobilised in privately owned forests (SMUL 2008: 30).

\(^1\) Approximately 60\% of the Saxon community and church forests are permanently managed by the state forestry enterprise (SMUL 2008: 40).
2.2.3 Development of the annual harvest and increment during the last 10 years (approx.)

The last inventory of 2002 predicted increment rates of 9.4 cubic meters for Saxon forests. Since this (second) nationwide inventory was implemented in Saxony for the first time, no effective increment rates could be calculated. Such data will be recorded by the third nationwide inventory in 2011 and 2012. Focussing Germany as a whole it can be stated that the increment rates of the last years did exceed the rates of previous forecasts (or respective yield tables).

Annual harvest rates increased considerably during the last decade primarily in the state and private forest and slightly less in the community forest. Annual harvest volumes in the state forest were doubled within the period of 1993 and 1997 and increased by a further 20 percent within the following period to finally 905,000 cubic meters at the end of 2002. Harvests in private forests have threefold between 2003 and 2008. Considerable decreases of the harvest rates can be noticed for years 2006 and 2008. These breaks were caused by storm events in the years before. Regardless of these disturbances the rate of harvest has risen considerably in the last 10 years, albeit it is still only ~40 percent of the annual increment for all forest ownerships and ~20 percent for private forests.

Detailed information on harvest volumes can be taken from the following table:

Table 3: Development of the recorded annual harvest volume of different ownership categories

<table>
<thead>
<tr>
<th>Year</th>
<th>In total</th>
<th>Bundesforst (Germany)</th>
<th>Sachsenforst (Saxony)</th>
<th>Community and church forests*</th>
<th>Private forests**</th>
<th>All non-state forests</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>968.704</td>
<td>58.809</td>
<td>909.895</td>
<td>968.704</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2000</td>
<td>928.331</td>
<td>62.880</td>
<td>771.248</td>
<td>834.128</td>
<td>94.203</td>
<td>-</td>
</tr>
<tr>
<td>2001</td>
<td>1.083.680</td>
<td>59.458</td>
<td>905.950</td>
<td>965.448</td>
<td>118.232</td>
<td>-</td>
</tr>
<tr>
<td>2002</td>
<td>1.147.866</td>
<td>54.485</td>
<td>941.478</td>
<td>995.963</td>
<td>114.855</td>
<td>37.048</td>
</tr>
<tr>
<td>2003</td>
<td>1.243.724</td>
<td>60.326</td>
<td>996.709</td>
<td>1.057.035</td>
<td>131.768</td>
<td>54.921</td>
</tr>
<tr>
<td>2004</td>
<td>1.321.259</td>
<td>89.083</td>
<td>1.060.087</td>
<td>1.149.170</td>
<td>125.641</td>
<td>46.448</td>
</tr>
<tr>
<td>2005</td>
<td>1.441.678</td>
<td>76.725</td>
<td>1.163.789</td>
<td>1.240.514</td>
<td>133.517</td>
<td>67.647</td>
</tr>
<tr>
<td>2006</td>
<td>1.284.528</td>
<td>69.644</td>
<td>1.049.782</td>
<td>1.119.426</td>
<td>108.406</td>
<td>56.697</td>
</tr>
<tr>
<td>2007</td>
<td>1.716.331</td>
<td>72.985</td>
<td>1.384.775</td>
<td>1.457.760</td>
<td>159.546</td>
<td>100.025</td>
</tr>
<tr>
<td>2008</td>
<td>960.424</td>
<td>47.102</td>
<td>742.380</td>
<td>795.482</td>
<td>87.343</td>
<td>83.000</td>
</tr>
<tr>
<td>Average</td>
<td>1.350.740</td>
<td>66.614</td>
<td>1.085.182</td>
<td>1.151.796</td>
<td>122.203</td>
<td>76.992</td>
</tr>
</tbody>
</table>

*is estimated to correspond to ~60% of the total harvest volume
**corresponds to only ~20% of the total harvest volume

2.2.4 The expected future development of harvest and increment

For the future a rising demand for wood is expected. The present harvest rate in state as well as community forests is seen almost at the limit of sustainability (see SMUL 2008: 30). Increment rates will increase slightly in the next few years as it can be taken from the following table:

Table 3 Continued:

http://www.statistik.sachsen.de/21/10_06/10_06_02_tabelle.asp (25/10/2010)
Table 4: Increment rates (forecasts) in Saxony by ownership category (cubic meter per hectare and year)

<table>
<thead>
<tr>
<th>Forecast period</th>
<th>All forest ownerships</th>
<th>State forests (Saxony)</th>
<th>State forests (Germany)</th>
<th>Community forests</th>
<th>Private forests</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-2007</td>
<td>9,19</td>
<td>9,97</td>
<td>6,99</td>
<td>9,44</td>
<td>8,78</td>
</tr>
<tr>
<td>2008-2012</td>
<td>9,53</td>
<td>10,35</td>
<td>7,42</td>
<td>9,84</td>
<td>9,10</td>
</tr>
<tr>
<td>2013-2017</td>
<td>9,73</td>
<td>10,61</td>
<td>7,98</td>
<td>10,09</td>
<td>9,18</td>
</tr>
<tr>
<td>2018-2022</td>
<td>9,54</td>
<td>10,48</td>
<td>7,65</td>
<td>10,10</td>
<td>8,99</td>
</tr>
<tr>
<td>2023-2027</td>
<td>9,50</td>
<td>10,42</td>
<td>7,31</td>
<td>10,09</td>
<td>8,97</td>
</tr>
<tr>
<td>2028-2032</td>
<td>9,35</td>
<td>10,31</td>
<td>6,96</td>
<td>9,82</td>
<td>8,78</td>
</tr>
<tr>
<td>2033-2037</td>
<td>9,17</td>
<td>10,11</td>
<td>6,92</td>
<td>9,59</td>
<td>8,56</td>
</tr>
<tr>
<td>2038-2042</td>
<td>8,96</td>
<td>9,83</td>
<td>7,05</td>
<td>9,28</td>
<td>8,31</td>
</tr>
</tbody>
</table>

Nevertheless, increasing increment rates will not compensate the expected wood demand and will not permit considerably higher harvest rates in state and community forests in the future. A substantial additional harvesting in Saxony will only be possible by the mobilisation of wood from private forests (SMUL 2008: 30). However, at the background of the present age class distribution (see section 1.4.5.) higher total harvesting rates and thus wood supply can be expected in approximately 30 to 40 years.

2.3 Is there legal uncertainty regarding forest ownership?

2.3.1 The presence of a restitution process in the region

There has been a restitution process in the region beginning 1990, but it is almost fully completed. Legal uncertainty has ceased to exist.

2.3.2 Description of the restitution process in the region

While 38,342 hectares and thus 7 percent of the Saxon forest area were so called *Treuhandwald* per December 31st, 2002, there is only a residual total area of 3,395 hectares (0.6 percent) of *Treuhandwald* left per December 31st, 2007 (SMUL 2008: 14) that had to be privatized. Between 1992 and the end of 2007 90,844 hectares of the Saxon forest have been privatized with an average property size of 23.85 ha (SMUL 2008: 15).

2.4 How can the forests in the region be characterised?

2.4.1 The average stock per hectare in cubic meters over bark

The last nationwide inventory of 2002 recorded an average stock of 126 million cubic meters in total and 262 cubic meters per hectare for the forests of Saxony. The average stock in the (spruce-dominated) state forests and community forests accounts for 285 or 279 cubic meters per hectare respectively; in the (pine-dominated) private forests the

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3 *Treuhandwald* describes forest marked for privatisation after being expropriated and transitioned into public property during the land reform in the years after World War II in the Soviet zone of occupation
average stock amounts to 250 cubic meters per hectare (Freistaat Sachsen (BWI II) 2005: 37). The highest average stock per hectare within the private forest is thereby to find in forests with a property size smaller than 20 hectares (267 cubic meters per ha). As a result 75 percent or 31 million cubic meters of the stock of private forests is to find within the category of small private forest ownership (size < 20 ha) (SMUL 2008: 19).

2.4.2 The shares of coniferous and non-coniferous wood

One third of Saxon forests consist of Norway spruce, another third is covered by pine and larch and the remaining third consists mainly of non-coniferous wood (oak, beech, others). Details can be taken from the following diagram.

Figure 1: Shares of coniferous and non-coniferous wood in Saxony

2.4.3 The shares of abandoned and/or unmanaged forests, and the role that fragmented ownership plays in it

The share of abandoned or unmanaged forests of Saxony is not covered by any statistics. However, there are two possible reasons leading to abandonment of forests or lacking management. One is the legal necessity, which means that land is rededicated (e.g. for nature conservation), while the other motive for unmanaged forests is that owners are not interested in management due to economic reasons. SCHURR estimates the proportion of unmanaged forests due to rededication for 4 to 5 percent, while he considers economic reasons to determine a further 5 to 10 percent of forests to be unmanaged (Schurr 10/11/2009). SCHMIEDER estimates the share of unmanaged/abandoned forests to be single-figured. But he points out that the term “unmanaged” is considerably problematic since private forests that seem to be unmanaged could be managed just in an uncommon way, e.g. when the forest is intentionally left to its own for a long time period and managed only irregularly (Schmieder 11/11/2009).
2.4.4 The general topographic situation that may have influence on wood harvesting in the region’s forests

Saxony is situated in the eastern part of Middle Germany. The plains in the west and northwest are characterised by loamy soils and are thus intensively used for agriculture. These regions are consequently sparsely wooded, while the downs and the uplands in the south (Vogtland, Ore Mountains and Saxon Switzerland) are rich of (spruce dominated) forests. The share of forests is also relatively high in the lowlands of the north-eastern part of Saxony (pond landscape of Lusatia), where pines are dominating due sandy soils. The proportion of private forest ownership is especially high within this region.

Figure 2: Distribution of forests in Saxony

2.4.5 The tree age (class) distribution in the region's forests

The area-related average age of Saxon forests is 65 years (state 2002; Freistaat Sachsen (BWI II) 2005: 19). Only 15 percent of the forests are older than 100 years, while the third age class (41 to 60 years) is overrepresented with 23 percent (see SMUL 2008: 17). The distribution of age classes can be taken from the following graph. There are no differences in age class distribution between the various forms of forest ownerships (Freistaat Sachsen (BWI II) 2005: 19).
2.4.6 Description of other factors that may influence wood harvesting in the region’s forests

The Saxon forest law stipulates the recording and documentation of all protective and recreational functions that forests have. 1,335,891 hectares of Saxony’s forests have particular protective functions documented by a mapping (Waldfunktionenkartierung). This means that each hectare of the region has to fulfil approximately 2.6 protective functions regarding water, soil, air, nature, landscape, culture or recreation (SMUL 2008: 23). Designation of forest areas for specific functions is independent of forest ownership, which means that restrictions in forest management (or wood harvesting) concern state forest owners as well as private forest owners to the same extent. Limitations in management of protective forests, however, are not rigidly fixed, but dependent on the type of protection and specific management requirements.

2.5 What other factors may be important to describe the case study region in context to mobilization from fragmented forest ownership?

The demographic background seems to be quite important in context with forestry and wood mobilisation in the region. Since the 19th century Saxony is one of the most densely populated regions of Germany. However, between 1990 and 2003, nine percent of the Saxon population did migrate. Today, mainly the rural area is still characterised by a high rate of migration as well as a low birth rate and aging of the population.
3 Markets

3.1 What is the structure of the regional wood markets, in terms of wood sellers, industrial buyers, other market participants and (other) structural market factors?

3.1.1 The structure of the regional wood markets in terms of wood sellers

3.1.1.1 The number of forest owners

In Saxony forest owners can be divided into two groups: private and public forest owners. Industrial owners do not exist in any statistics. The number of private forest owners in the region is approximately 85,000 as published in the last report of the state forestry enterprise (SMUL 2008: 31). New analysis of the state forestry, however, assume the number of private forest owners (owner families) to be only 73,000 (Schmieder 11/11/2009)\(^4\). In addition to these ~73,000 private forest owner families, ~500 church-owned forest enterprises do exist, but are ranked among the Saxon community/public corporations forests. Public forest is owned by the state of Germany (one business organisation: Bundesforst), by the federal state of Saxony (one business organisation: Staatsbetrieb Sachsenforst) and by communities (~410 operations), public corporations (~950) and other public entities (26 companies) (Schmieder 11/11/2009)\(^5\).

3.1.1.2 The average annual selling volume in the region by category

Reliable reference can be made to sales completed by the state forestry (Sachsenforst) for state forests and on behalf of community, church and private forest owners. Comprehensive statistical data regarding the annual sales volume for all forest ownership entities in the region are not available.

Data is available in cubic meters under bark (Stat. LA 2005-2009a) as seen in the following table:

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\(^4\) Consequently, this figure will be used in the following report.

\(^5\) In the following forests from communities, public corporations, other public entities as well as church are collectively designated as “community forests”.
Table 5: **Recorded** harvest volume and sales volume by ownership category (cubic meters u.b.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Harvest volume</th>
<th>Sales volume*</th>
<th>State forests</th>
<th>Community, church and private forests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Total</td>
<td>Bundesforst</td>
<td>Sachsenforst</td>
</tr>
<tr>
<td>2003</td>
<td>1,243,724</td>
<td>1,123,815</td>
<td>60,595</td>
<td>944,395</td>
</tr>
<tr>
<td>2004</td>
<td>1,321,259</td>
<td>1,232,668</td>
<td>88,804</td>
<td>1,060,140</td>
</tr>
<tr>
<td>2005</td>
<td>1,441,678</td>
<td>1,354,156</td>
<td>73,657</td>
<td>1,161,670</td>
</tr>
<tr>
<td>2006</td>
<td>1,294,528</td>
<td>1,315,810</td>
<td>69,059</td>
<td>1,163,599</td>
</tr>
<tr>
<td>2007</td>
<td>1,716,331</td>
<td>1,624,211</td>
<td>72,225</td>
<td>1,372,873</td>
</tr>
<tr>
<td>2008</td>
<td>960,424</td>
<td>905,395</td>
<td>46,829</td>
<td>736,727</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>1,350,740</strong></td>
<td><strong>1,299,878</strong></td>
<td><strong>102,837</strong></td>
<td><strong>1,108,717</strong></td>
</tr>
</tbody>
</table>

*sales volumes are not available in the statistics for years 2007 and 2008 and were thus calculated under consideration of harvest volumes and by substraction of wood categorized as "nicht verwertbar" (not to utilize)

**only harvests/sales that were done by the state forestry enterprise are covered by statistics

SCHMIEDER states that approximately 20 percent of the harvest volume of private forests is marketed by the state forestry enterprise Sachsenforst (Schmieder 11/11/2009). The share of marketed wood for community forests is estimated to be approximately 60, since around 60 percent of these forests are permanently managed by the state forestry enterprise. At the same time the proportion of wood used for own requirements in (all) private forests is expected to be 25 percent (Homepage of Sachsenforst, 24/10/2009). This would mean an annual average sales volume of slightly less than 290,000 cubic meters for private forest owners. And – if no own use of communities is assumed – the sales volume for community forests would be approximately 200,000 cubic meters in average per year. All in all the actual annual sales volume of the region would result in an average of approximately 1,600,000 cubic meters p.a.

### 3.1.1.3 The average selling volume by ownership category and by assortments

Comprehensive statistical data regarding the annual sales volume for all forest ownership entities in the region is not available. Reliable reference can only be made to sales that were completed by the state forest enterprise (Sachsenforst) on behalf of community and private forest owners. However, only 20 percent of harvest volumes of private forests are marketed by Sachsenforst, i.e. a large proportion is sold without statistical recording (see also section 2.1.1.2.). SCHMIEDER points out that 20 percent of the marketed wood of private forest owners are sold as fire wood, while the rest is marketed as industrial wood (for pulp and paper or panel production) and sawlogs in equal measure. He furthermore estimates the proportion of fire wood to be higher in case Sachsenforst is not involved in marketing (Schmieder 11/11/2009).

The following table gives an overview of the recorded sales volumes by ownership category and by assortments:

---

6 http://www.smul.sachsen.de/sbs/3520.htm (24/10/2009)
Table 6: **Recorded** sales volume by ownership and assortments (cubic meters u.b.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Assortment</th>
<th>Volume</th>
<th>In total</th>
<th>State forests</th>
<th>Community and private forests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Bundesforst (Germany)</td>
<td>Sachsenforst (Saxony)</td>
<td>in total</td>
<td>Community (+ church) forests</td>
</tr>
<tr>
<td>2006</td>
<td>In total</td>
<td>1,315,810</td>
<td>60,090</td>
<td>1,014,510</td>
<td>1,163,599</td>
</tr>
<tr>
<td></td>
<td>Sawn wood</td>
<td>807,904</td>
<td>14,994</td>
<td>666,822</td>
<td>701,616</td>
</tr>
<tr>
<td></td>
<td>Industrial wood</td>
<td>354,794</td>
<td>31,929</td>
<td>280,990</td>
<td>312,629</td>
</tr>
<tr>
<td></td>
<td>Wood for energy</td>
<td>107,432</td>
<td>10,167</td>
<td>82,162</td>
<td>92,329</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45,680</td>
<td>11,899</td>
<td>33,609</td>
<td>36,625</td>
</tr>
<tr>
<td>2007</td>
<td>In total</td>
<td>1,624,211*</td>
<td>72,225</td>
<td>1,551,986</td>
<td>1,772,973</td>
</tr>
<tr>
<td></td>
<td>Sawn wood</td>
<td>1,165,181</td>
<td>36,024</td>
<td>901,279</td>
<td>1,077,203</td>
</tr>
<tr>
<td></td>
<td>Industrial wood</td>
<td>349,844</td>
<td>25,804</td>
<td>263,806</td>
<td>299,610</td>
</tr>
<tr>
<td></td>
<td>Wood for energy</td>
<td>109,189</td>
<td>10,397</td>
<td>75,564</td>
<td>85,961</td>
</tr>
<tr>
<td>2008</td>
<td>In total</td>
<td>955,303*</td>
<td>46,829</td>
<td>868,989</td>
<td>736,727</td>
</tr>
<tr>
<td></td>
<td>Sawn wood</td>
<td>550,739</td>
<td>15,238</td>
<td>435,622</td>
<td>433,860</td>
</tr>
<tr>
<td></td>
<td>Industrial wood</td>
<td>270,864</td>
<td>22,516</td>
<td>192,299</td>
<td>214,815</td>
</tr>
<tr>
<td></td>
<td>Wood for energy</td>
<td>83,703</td>
<td>6,076</td>
<td>61,976</td>
<td>68,052</td>
</tr>
<tr>
<td>Average</td>
<td>In total</td>
<td>1,266,550</td>
<td>62,714</td>
<td>1,023,836</td>
<td>1,091,966</td>
</tr>
<tr>
<td></td>
<td>Sawn wood</td>
<td>841,275</td>
<td>23,085</td>
<td>694,574</td>
<td>717,560</td>
</tr>
<tr>
<td></td>
<td>Industrial wood</td>
<td>328,167</td>
<td>26,760</td>
<td>249,407</td>
<td>273,418</td>
</tr>
<tr>
<td></td>
<td>Wood for energy</td>
<td>100,108</td>
<td>8,880</td>
<td>73,234</td>
<td>82,114</td>
</tr>
</tbody>
</table>

* sales volume is not available in the statistic for years 2007 and 2008 and thus calculated under consideration of harvest volumes and by substraction of wood categorized as "nicht verwertbar" (not to utilize)

### 3.1.1.4 The average amount of wood that different ownership size categories within fragmented private forest owners have sold to the market

Only quantities of wood that are marketed by the state forestry enterprise Sachsenforst are recorded, but not published separately (Schmieder 17/1/2010). Although no statistical data or reliable comprehensive studies are available, some estimations exist for the wood use of (small) private forest ownership in the region.

For the region of Bautzen in eastern Saxony (where private forests are concentrated) Schurr found that ~3 cubic meters per year are harvested by enterprises with a size smaller than 10 hectares; approximately 50 percent of these 3 cubic meters are marketed (mainly as fire wood, but also as sawlogs)⁸ (Schurr 10/11/2009). A share of 50 percent for marketed wood is also estimated by the participants of the focus group session (14/12/2009) for private forest sizes below 10 hectares. A harvesting rate of 1.5 to 2.0 cubic meters in fragmented private forests (Focus group 14/12/2009) would mean a total harvest volume of 156,000 to 208,000 cubic meters and 78,000 to 104,000 cubic meters for the wood market per year.

Apart from these Weber found a share of own requirements/fire wood use of more than 80 percent for forest sizes below 5 hectares and more than 75 percent for forest holdings smaller than 10 hectares (Weber 2008: 34), which in turn means a share of marketed

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⁸ Schmieder also assumes a harvesting rate of 1.5 to 2.5 cubic meters p.a. (or 3.0 to 3.5 cubic meters in case of a membership forest management cooperatives) for private forests in Saxony (Schmieder 11/11/2009).
wood between 20 and 25 percent at maximum for ownerships smaller than 10 hectares. In a study of 1999 KöPF identified ~20 percent of small private forest holders that sold sawlogs and fire wood (Köpf 1999 cited by Schurr 2006: 249).

The following table is an attempt to summarize the given estimations and provide a comprehensive overview of the wood use (volumes) of private forest owners:

Table 7: Calculation of annual harvests, sales and own requirements in private forests (wood volumes)

<table>
<thead>
<tr>
<th>Private forests in Saxony</th>
<th>Harvest volume, sales volume, own requirements [cubic meters p.a.]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvest volume (statistics)</td>
<td>78,992</td>
</tr>
<tr>
<td>Harvest volume adjusted</td>
<td>384,960</td>
</tr>
<tr>
<td>&gt;&gt; thereof: fragmented</td>
<td>156,000 to 208,000</td>
</tr>
<tr>
<td>Sales volume</td>
<td>288,720</td>
</tr>
<tr>
<td>&gt;&gt; thereof: fragmented</td>
<td>78,000 to 104,000</td>
</tr>
<tr>
<td>Own requirements</td>
<td>96,240</td>
</tr>
<tr>
<td>&gt;&gt; thereof: fragmented</td>
<td>78,000 to 104,000</td>
</tr>
</tbody>
</table>

Calculation principles:

"~20 percent of harvests in private forests are market by state forestry enterprise" (and thus statistically recorded)

<table>
<thead>
<tr>
<th>Harvest volume adjusted</th>
<th>Calculation principles:</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;&gt; thereof: fragmented</td>
<td>&quot;25 percent of harvests in private forests are used for own requirements&quot; (i.e. 75 percent are sold)</td>
</tr>
<tr>
<td>Sales volume</td>
<td>&quot;~1.5 to ~2.0 cubic meters are annually harvested in ownerships &lt; 10 ha&quot;</td>
</tr>
<tr>
<td>&gt;&gt; thereof: fragmented</td>
<td>44.2 percent of the total private forest area (234,959 ha) are ownerships &lt; 10 ha = 103,852 ha</td>
</tr>
<tr>
<td>Own requirements</td>
<td>50 percent of harvests are used for own requirements&quot; (i.e. 50 percent are sold)</td>
</tr>
<tr>
<td>&gt;&gt; thereof: fragmented</td>
<td>&quot;25 percent of harvests in private forests are used for own requirements&quot;</td>
</tr>
</tbody>
</table>

3.1.1.5 The average amount of wood that fragmented private forest owners have harvested for their own use (firewood, construction etc.)

There are no data available regarding the own use of fragmented private owners, but as described in the previous section estimations for own requirements range from 50 percent (Schurr 10/11/2009, Gerold 11/11/2009, Focus Group 14/12/2009) to 80 percent (Weber 2008: 34) for forest ownership below 10 hectares. At an estimated harvest rate of ~1.5 to ~2 cubic meters per hectare and year (Focus group 14/12/2009) an average amount of 78,000 to 104,000 cubic meters would be marketed per year. SCHMIEDER however states that estimations of averages are quite difficult due to heterogeneity of private forest ownerships (Schmieder 11/11/2009). Also SCHURR points out that the "the average is always wrong" (Schurr 10/11/2009).

3.1.1.6 Indication of the development on the wood sellers market structures and explanation of any significant changes over the last approx. 10 years, as well as ongoing trends

The state forest enterprise Sachsenforst has been the wood seller with the largest impact in the region. More than 80 percent of (recorded) harvested wood come from state-owned forests (see figures at section 1.2.3.). Since no transformations are expected or forecasted for Sachsenforst significant changes in the structure of wood sellers markets of the region are not expected in the near future. This statement also applies for the development of community forests, even though their share on wood markets is substantially smaller.
Some mentionable developments concerning wood sellers market structures, however, existed through privatisation of forests in the last years. 90,844 hectares of the Saxon forest have been privatized with 3,811 contracts between 1992 and 2007. This led to an increase in the average size of forest property from 2.2 hectares (SMUL 2003: 13) to 2.8 hectares (SMUL 2008: 31) to 3.2 hectares today (Internet information of Sachsenforst per 24/10/2009)\(^9\). While private forest entities smaller than 10 hectares amount for 62 percent of the Saxon private forest area at the end of year 2002 (see SMUL 2003: 39), only 44.2 percent did so at the end of year 2007 (see SMUL 2008: 30). This can be seen as a clear improvement of market structures in the region, albeit no conclusions can be derived regarding the owners’ increased activity on the market\(^10\). The restitution process is almost fully completed. At the same time interest for private forest property has risen mainly during the last few years due to the price increase for wood and energy.

At present the interest in ownership of forests is high. In contrast to former years the large majority of forest owners keep their estates and is not willing to sell it (Schulz 2/12/2009). To what extent these private forest owners will become active in wood markets will strongly depend on economic developments (i.e. more efficient forest management by higher wood prices vs. more intensive use for fire wood due to higher prices for energy). The trend to an increasing interest in forest ownership is expected to continue. An improvement of the forest property structures (i.e. buying or exchange of forest areas) will strongly depend on political encouragement.

3.1.2 The structure of the regional wood markets in terms of industrial buyers

3.1.2.1 The number of industrial buyers in the region

Only approximate figures can be given with regard to the number of industrial wood buyers in the region. The 2008 statistical yearbook of Saxony lists 83 undertakings within the wood manufacturing sector (without furniture production) and 64 enterprises within the paper sector (Stat. LA 2009b: 248) regardless of their activities in wood buying. Richter estimates the number of saw mills with a buying volume of > 10,000 cubic meters a year in the region at five while the number of saw mills with a volume of < 10,000 cubic meters annually is expected to be approximately 60 (Richter, 10/11/2009). Operators of mobile sawmills are very difficult to record and thus not included. In the study of Weber 48 active wood purchasing enterprises and 94 further mills with a relatively small sawing volume (< 1,000 cubic meters p.a.) are taken into account for the analysis of wood supply and demand for Saxony (Weber 2008: 54). The most important sawmill in the region is Klausner\(^11\) in Kodersdorf/Saxony, but wood is also bought by large sawmills outside of Saxony as for example Klenk in Baruth/Brandenburg.


\(^10\) As mentioned before the increase in average size is mainly the result of the restitution process in the region. This process led on the one hand to purchases of forest land by some “new” forest owners in the first years and resulted on the other hand in a pure calculation effect (since larger properties were privatized).

\(^11\) The sawing volume of Klausner is of approximately 70 percent of the total sawing volume of all Saxon mills (Weber 2008: 59).
Kronospan is the only regional wood buyer of the panel industry in Saxony. There is some impact on the Saxon wood market due to panel producers outside the region as for example Classen in Baruth/Brandenburg.

In the pulp and paper sector the Saxon enterprise Kurprinz GmbH Großschirma played a certain role as regional wood buyer. However, the corporation closed at the end of year 2009 due to insolvency (VOP 7/1/2010). Two important (however not regional) pulp mills are Zellstoff- und Papierfabrik Rosenthal from Thuringia and Zellstoff Stendal from Saxony-Anhalt that are influencing the Saxon wood market due to their high demands on industrial wood.

In addition to the mentioned industrial wood buyers there are 21 heating plants in the region (state November 2007; Weber 2008: 75). There are, however, “not many heating plants with a consumption of more than 50,000 tones (annually)” at present in Saxony (Gerold, 11/11/2009).

3.1.2.2 Development of the number of industrial buyers during the last 10 years

Consolidation processes, a policy of industrial settlement and increasing importance of renewable resources have been the main trends of the last decade regarding the development of industrial buyers in the region.

Especially in the saw mill industry the number of buyers decreased due to closings of smaller businesses. While 120 sawmills with a capacity of 425,000 cubic meters annually existed between 1989 and 1999 (Slotosch et al. 2000, cited by Weber 2008: 55) it is presently estimated that approx. 65 sawmills exist in the region (Richter 10/11/2009). At the same time capacity has risen substantially (today estimated at 1.6 million cubic meters p.a.). This development was mainly influenced by the start-up of enterprise Klausner in 2005 (capacity ~70 percent of the total Saxon saw mill industry). 90 percent of the capacity of the saw mill industry is represented by three mills (Weber 2008: 58).

The Saxon panel industry is (and has been) represented by the only enterprise Kronospan that started in year 1992, while the only Saxon buyer of the pulp and paper sector has been the enterprise Kurprinz GmbH Großschirma until the end of the year 2009. Industrial buyers of the energy sector are still of lower importance. Nevertheless, their number as well as capacity is increasing as it can be seen by the start-up of two large pellet producers in year 2008 and 2009. Additionally, there is a (unrecorded) number of industrial buyers outside of Saxony that influence the region’s wood market (most important are Zellstoff- und Papierfabrik Rosenthal, Zellstoff Stendal, Klenk, Kronopol, Stora Enso Zdirec).

3.1.2.3 Total average of the annual buying volume by industrial buyer category and/or assortments

In the study of WEBER several estimations are made regarding the capacity and processing amounts of the regional wood industries:

Addition of time series data if possible
last 5 years
Table 8: Buying volumes of industrial buyers (cf. Weber 2008)

<table>
<thead>
<tr>
<th>Wood buyer category</th>
<th>Capacity</th>
<th>Demand (2006)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sawmill industry</td>
<td>1.600.000</td>
<td>1.300.000</td>
</tr>
<tr>
<td>Panel industry</td>
<td>1.200.000</td>
<td>1.080.000</td>
</tr>
<tr>
<td>Pulp and paper industry*</td>
<td>?</td>
<td>10.000</td>
</tr>
<tr>
<td>Heating plants</td>
<td>?</td>
<td>700.000</td>
</tr>
</tbody>
</table>

*not relevant anymore

Unfortunately, no official statistics exists regarding the annual buying volume by industrial buyer categories for the region.

3.1.2.4 Development of the total annual buying volume by industrial buyer category and/or by assortments during the last 10 years

Due to consolidation processes, a policy of industrial settlement and increasing importance of renewable resources buying volumes have risen considerably during the last decade. While the annual buying volume of the Saxon saw mill industry is specified with 425,000 cubic meters for the period of 1989 to 1999, capacity is estimated with 1.6 million (Kramer and Möller 2006, cited by Weber 2008: 52) and processing amount with 1.3 million cubic meters per year (Weber 2008: 54) at present. For the panel industry data can be presented for Kronospan, the only and largest buyer of the region, for the period of 2000 to 2006:

Table 9: Annually processed wood by Kronospan

<table>
<thead>
<tr>
<th>Amount of processed wood (in cubic meters) of enterprise KRONOSPAN</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>588.800</td>
<td>626.100</td>
<td>703.100</td>
<td>896.400</td>
<td>984.400</td>
<td>1.008.700</td>
<td>1.083.300</td>
</tr>
</tbody>
</table>

The annual buying volume of the pulp and paper sector was influenced by purchases of the Saxon enterprise Kurprinz GmbH Großschirma and by activities of enterprises outside of Saxony (e.g. Papier- und Zellstofffabrik Rosenthal in Thuringia and Zellstoff Stendal in Saxony-Anhalt). Data can be represented for the development of buying volumes of the Saxon enterprise:

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15 Addition of time series data if possible
16 The mill closed at the end of year 2009 due to insolvency.
Table 10: Annually processed wood by Kurprinz GmbH Großschirma

<table>
<thead>
<tr>
<th>Amount of processed wood (in cubic meters) of enterprise KURPRINZ GMBH</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
</table>

No detailed data of the last years are available for industrial buyers of wood for energy purposes (heating plants, pellet production etc.) as it is the case for official statistical information as well as time series in general.

3.1.2.5 The share of domestic and imported volume

There are no comprehensive data for the region available, and interview partners emphasized the difficulty of estimations because flows of wood (raw as well as manufactured wood) are very complex and thus difficult to define for the particular region. Industrial buyers of Saxony on the other hand are not willing to release their internal data concerning sources of purchased wood. However, Kronospan, one of the largest industrial buyers of the region, uses domestic wood at a share of ~20 percent. A similar share can be expected for Klausner, the largest saw mill of the region. In case of industrial buyers with a lower buying volume a higher share of domestic wood use can be expected. The only regional buyer of industrial wood for pulp and paper with a buying volume of ~10,000 cubic meters (2006) for example used only wood from Saxon forests.

3.1.2.6 The share of sawmill residues in case of pulp mills, panel mills and heating plants

In general it can be assumed that the share of residues of sawmills is about 40 percent (von Geibler 23/11/2009). Considering a volume of 1.3 million cubic meters p.a. (Weber 2008: 54) this would mean an amount of circa 500,000 cubic meters of residues. Kronospan, the only and the largest buyers of the panel industry in the region, uses residues from sawmills by a proportion of 10 to 15 percent (see Weber 2008: 57-58). The share of sawmill residues (wood chips) of two large pulp and paper mills around Saxony is stated with 62 percent (Zellstoff- und Papierfabrik Rosenthal in Thuringia) and 20 percent (Zellstoff Stendal in Saxony-Anhalt) (Suess 11/1/2010). The share of sawmill residues that is used by heating plants (as well as pellet producers) is expected to be very high (Mixdorf 13/1/2010).

3.1.2.7 The number of traders between forest owners and industrial buyers by industrial buyer category

No official data are available regarding the number of traders. Interview partners emphasize that estimations especially in case of wood traders are not possible (Gerold*1 and Schmieder*2, 11/11/2009). However, there are 29 forest management cooperatives in the region from which 3/4 are active in wood trading*2. The number of (harvesting) forest enterprises is stated with approx. 150*2 to 200*1 (thereof circa 40 consulting engineers*1), additionally there exist several (mobile) sawmills.

*1 Distinction of industrial buyers categories
3.1.2.8 The volume of annual wood that is transferred by regional traders between forest owners and industrial buyers by industrial buyer category

Albeit the fact that no data is available, it is estimated that a very high share is marketed with the help of dealers, forest management cooperatives, the state forestry enterprise or several harvesting companies. In general, VON GEIBLER emphasizes the important role of the state forestry enterprise Sachsenforst for wood transfers between private forest owners and wood industry (von Geibler 23/11/2009). SCHMIEDER estimates that only 15 to 20 percent of wood is marketed by private forest owners directly (Schmieder 11/11/2009). RANSCH/SCHÖNBACH see the proportion of marketed wood from private forest owners that is dealt through a third party between 70 and 90 percent (Ransch/Schönbach 10/11/2009). RICHTER also estimates the share to approximately 85 percent (Richter 10/11/2009). Nevertheless, GEROLD states that only few forest ownerships sized below 20 hectares use the help of third organisations for wood sales (Gerold 11/11/2009).

3.1.2.9 Indication of the development on the wood buyers market structures and explanation of any significant changes over the last approx. 10 years, as well as ongoing trends

As stated in section 2.1.2.2., consolidation processes, a policy of industrial settlement and increasing importance of renewable resources have been the main trends of the last decade. The wood market in the region has been considerably influenced by the start of enterprise Klausner in year 2004 whose capacity of sawlogs processing is 1.2 million cubic meters per year and thus similarly high as the one of Kronospan, the largest mill of the Saxon panel industry. At the same time several smaller enterprises mainly of the sawmill industry closed down their business as it can be seen for the only Saxon wood buying enterprise of the pulp and paper sector Kurprinz GmbH Großschirma. Kurprinz GmbH, whose capacity has been ~10,000 cubic meters in the previous years, closed at the end of 2009. Since the importance of wood for energetic purposes has risen during the last years, also the number of buyers of energy wood has increased and several projects for energetic wood use are being planned at the moment. These developments are expected to continue. Beside local and regional buyers of energy wood the importance of trans-regional heating plants is assumed to significantly increase in the next years. The significance of traders (cooperatives, forest operators, dealers) between forest owners and industry is also supposed to rise. A further consolidation process and policy of industrial settlement is, however, scarcely to be expected. Instead the increasing importance of very small mobile saw “mills” and the giving up of local small and medium-sized enterprises of the sawing industry sector in the region is seen as rather possible. (Focus Group 14/12/2009)

3.1.3 The structure of the regional wood markets in terms of other market participants

3.1.3.1 The number of direct buyers/consumers

Approximately 660,000 households in Saxony use wood and coal for their domestic fuel (Weber 2008: 67). However it cannot be derived how many of these households are in
fact supposed to use wood and to buy it directly from forest owners. SCHMIEDER states that approximately 100,000 cubic meters of fire wood are sold directly by the state forest enterprise annually. Another 100,000 cubic meters of fire wood are assumed to be directly marketed by other forest owners. SCHMIEDER thus estimates the number of direct buyers to be around 2,000 (Schmieder 11/11/2009). Unfortunately, no statistical recording on the number of direct buyers/consumers exists.

3.1.3.2 The availability and capacity of harvest contractors or forest operators

The number of harvest contractors and forest operators in Saxony is approximately 110 excluding forest owners associations (Schmieder 11/11/2009). The present capacity is estimated with 1.75 to 1.9 million cubic meters per year (without forest owners associations). Thereby the consequences of storm Kyrill in January 2007 did strongly influence the development of the availability and capacity of harvest contractors and operators in the following years; i.e. after a capacity of 2.1 million cubic meters in 2007 a high number of machinery sales and insolvencies have occurred until today (Sachse 7/12/2009).

3.1.3.3 Indication of the development of other market participants and explanation of any significant changes over the last (approx.) 10 years, as well as ongoing trends

Only few data are available regarding other wood market participants in the region. However, the number of forest operators decreased during the last years from ~200 (SMUL 2003: 27) to ~110 today (Schmieder 11/11/2009). At last, storm Kyrill had a large influence on the number of operators and the harvesting capacity. While the number of operators and the capacity increased after the storm it decreased in years 2008 and 2009 due to insolvencies and sales of harvesting machinery. This process is expected to continue. The number of operators is assumed to further decrease in the near future. SCHMIEDER formulates it as process of “shrinking to healthiness” (Schmieder 11/11/2009).

3.1.4 The structure of the regional wood markets in terms of other structural market factors

3.1.4.1 The average distance between different types of sellers and different types of buyers

A total average distance between sellers and buyers cannot be stated for the region due to heterogeneity in processing volumes of buyers. While mills with low processing volumes will find an adequate amount of wood in closer areas, enterprises with a high capacity have to buy a considerable amount of wood from far away. Wood prices in context with transportation costs will determine the average distance. Therein wood prices do strongly depend on the occurrence of calamities or the necessities of harvesting of specific areas (Sachse 7/12/2009), which means that the average distance can fluctuate considerably from year to year. SACHSE does not expect any differences between sellers. However, VON GEIBLER states that especially smaller sawmills do often have long-term

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18 Consideration e.g. of the age structure >> capacity in cubic meters over or under bark; specification: with or without forest owners associations
relationships to forest owners or forest management cooperatives in the closer neighbour-
hood which facilitates their wood procurement (von Geibler 23/11/2009). A good indication
for an average distance could be the half distance between two similarly sized mills
(Richter 10/11/2009), which would mean ~150 to 200 kilometres for very large wood
processing enterprises as Klausner and Kronospan (Richter 10/11/2009, von Geibler
23/11/2009), and 10 to 50 kilometres for smaller companies (Gerold 11/11/2009, Richter

3.1.4.2 The average harvesting costs to forest road by ownership category (excluding
stumpage sales)

Average harvesting costs are lowest in state forests and highest in private forests (Sachse
7/12/2009). Differences exist mainly due to tendering procedures for harvestings in state
forests that partly result in price dumping. Lower prices can additionally be offered by
forest operators due to larger (state) forest areas.

Prices for harvestings with Harvester and Forwarder on normal sites lie between 8.50 and
13.00 Euro per cubic meter in state forests and between 14 and 17 Euro in private forests
(Sachse 7/12/2009). In case a cable logging system is necessary (mountainous terrain),
prices are ~35 Euro per cubic meter of wood at forest road (Gerold 11/11/2009).

3.1.4.3 The average transportation costs from forest to industrial buyer20

Average transportation costs are specified with 7 to 9 Euro per cubic meter of wood at a
distance up to 50 kilometres, 9 to 11 Euro at a distance of 50 to 100 kilometres and 11 to
13 Euro at a distance of 100 to 150 kilometres. Differences in the types of ownership are

3.1.4.4 The approximate volume of informal market segments not covered by wood
supply statistics21 and the particular role of fragmented ownership in this segment

Only estimations can be made regarding this issue, since comprehensive statistical
recording on wood supply from private and community forests for Saxony does exist, i.e.
neither harvesting volumes nor sales volumes are precisely known. As SCHMIEDER form
Sachsenforst states only ~20 percent of all harvests in private forests are covered by
statistics (Schmieder 11/11/2009). With regard to informal markets it is estimated that
approximately 25 percent of wood harvested in all private forests is used for own
requirements (mainly as firewood). This would correspond to an amount of
approximately 96,000 cubic meters p.a.

The share of harvested wood that is not sold to the market is estimated with
approximately 50 percent (corresponding to ~78,000 to 104,000 cubic meters; see section
3.1.1.4 and 3.1.1.5.) for fragmented private forest ownership. There are also indications
that the sales rate of small owners (< 10 hectare) is lower than 50 percent which would
emphasize that subsistence, supply to family members and neighbours play a particular
role in fragmented private ownerships in the region. WEBER (2008) for example found a

19 Richter also estimates ~20 kilometers as average distance for smaller mills.
20 Consider a difference also between ownership categories
21 E.g. subsistence, supply to family members, neighbours, wood stolen from forests or forest roads etc.
rate of more than 75 percent for own requirements in ownerships below 10 hectares and KÖPF (1999) investigates that only ~20 percent of small private forest owners sold wood to the market. Thefts of wood from forests or forest roads can be found (in state forests to lesser extent than in other forests); the amount is nevertheless negligible (one percent of the sales volume at maximum (Schurr 10/11/2009, Schmieder 11/11/2009)).

3.1.4.5 *Expectations regarding the development of informal market segments* 23

Informal market segments are expected to rise. There is already a trend that informal market segments do increase (Schurr 10/11/2009). The main driver for this development is seen in risen prices for energy and sustained (re)construction of heating facilities in private households using wood and wood products.

3.1.4.6 *The reliability of statistics that are available on actual fellings in the region and the covering of small properties in case of systematic over-/underestimation*

There are no reliable statistics available on fellings or wood sales. This was emphasized by all interview partners (Richter 10/11/2009, Schurr 10/11/2009, Ransch/Schönbach 10/11/2009, Weber 4/12/2009). Only in case state forestry enterprise Sachsenforst is involved in fellings or in marketing in private or community forests, harvested volume is recorded. This means that only a small part of actual fellings (SCHMIEDER: 20 percent) is covered by statistics, while for the remaining harvested volumes no official data exists regarding sales or own requirements. Additionally, small enterprises (< 20 ha) are not considered by the nation-wide inventory. This leads to a deplorably unconsciousness of the activity and structure of fragmented private ownerships. On the other hand, covered and published statistical data are recognized as veracious by the majority of interview partners.

3.1.4.7 *The market information access by ownership category (information flows)*

Three ways of market information flow are seen as mainly relevant for private forest owners: information flow via internet, by publications of the forest owners association and information through contacts to forest rangers, forest management cooperatives and buyers of the mills. However, only little information on wood markets is available via internet (Schurr 10/11/2009). Additionally only a small part of private forest owners is expected to generally use internet information extensively due to a high average age of owners (Schulz 2/12/2009). The forest owners association (*Sächsischer Waldbesitzerverband*) provides some market information via internet and by its publication that is send to forest owners four times a year. However, information on prices that were published there is often not up to date (von Geibler 23/11/2009). Most important access to high quality market information is seen through direct contacts to state forest rangers, forest management cooperatives and the mills’ buying agents. Therewith information flow due to assistance of forest rangers is seen of highest relevance. In this context SCHMIEDER emphasizes that market transparency is not given for the majority of private forest owners, and state forest enterprise Sachsenforst as well as forest management cooperatives have a monopoly of information access (Schmieder 11/11/2009).

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23 Are they expected to expand or decrease and why?
3.1.4.8 The fulfilment of wood quality requirements

Requirements of wood quality are fulfilled to a large extent. RICHTER states there would be a process of mutual adaption regarding the expectations of sawlogs quality (Richter 10/11/2009). This is also emphasized by VON GEIBLER, who furthermore reports that “outdated” assortments would nevertheless be accepted by the mills owing to fairness (von Geibler 23/11/2009).

3.2 What are the typical sales methods/contract types/marketing channels in the region?

3.2.1 Description of the sales methods/contract types/marketing channels in the region

Sales of assortments and stumpage sales are the two types of sales methods that are relevant in the region. Sales of assortments can be managed by contracts before cuttings (preliminary contracts) or after cuttings (contracts on individual basis or auction). Contracts before cuttings can be concluded between industrial buyers and the state forestry enterprise Sachsenforst (large and long-term master agreements that guarantee a specific amount of wood supply) and also on a more individual basis between industrial buyers and other forestry organisations as for example forestry groupings (forest management cooperations, forestry union), forest operators, dealers or individual private, church or community forest owners. Contracts for assortment sales after cuttings can be concluded between forest owners and industrial buyers, dealers or forest operators on an individual basis. Additionally, an auction that manages sales between individual forest owners and individual buyers for high-quality timber is organised by Sachsenforst annually. Contracts on stumpage sales are made between forest owners and forest operators/dealers or between forest owners and mills directly. The following figure summarizes the existing sales methods and contracts in the region:
Wood sales can be initiated by the state, community, church or private forest owners (consultation of the forest rangers, forest management cooperatives, forest operators, dealers or buying agents of the mills) and in turn by the forest rangers, cooperatives, forest operators, dealers and buying agents who guide the forest owner.

### 3.2.2 Description of the importance of these sales methods/contract types/marketing channels in the region (percentage of sales methods of total sales)

Percentages of sales methods of total sales or statistical recording in general are not available, but the share of assortment sales is expected to be considerably higher than the proportion of stumpage sales (von Geibler 23/11/2009). Master agreements between the state forestry enterprise and industrial buyers are the most important contracts in the region; its share is estimated to be approximately 70 percent of all contracts. Individual contracts are of medium to low importance (Richter, Ransch/Schönbach 10/11/2009). Thereof the share of individual contracts that were closed before cutting is assumed to be higher. The importance of auctions for high-quality wood is very low. Only ~1,000 cubic meters are sold by this method per year.
3.2.3 Sales methods/contract types/marketing channels by assortments
(percentage of sales methods of total assortment sales)

Official data do not exist, but master agreements are assumed as being most important for the sale of all assortments except firewood (Ransch/Schönbach 10/11/2009). Mainly coniferous wood is expected to be sold on a basis of master agreements (Richter 10/11/2009). In most cases individual contracts are assumed to be closed for assortments of smaller volumes as for example for coniferous wood (Richter 10/11/2009) or firewood (Ransch/Schönbach 10/11/2009). Industrial wood (for pulp and paper) as well as wood for energy purposes (including firewood) is also bought by stumpage sales to some extent.

3.2.4 Importance of sales methods/contract types/marketing channels by ownership category (percentage of sales methods of total sales by ownership category)

Schmieder states that approximately 20 percent of harvested wood from private forests is marketed by the state forestry enterprise and thus related to master agreements (Schmieder 11/11/2009). Considering a wood use of 50 percent for own requirements (Schurr 10/11/2009, Gerold 11/11/2009, Focus group 14/12/2009) this would mean that 30 percent of harvested wood are marketed by individual contracts and stumpage sales. Also 20 percent of wood from community forests is marketed by Sachsenforst and thus on the basis of master agreements. Therefore a relatively high proportion of individual contracts for assortment sales as well as stumpage sales must be realised in private and community forests. As stated in section 2.1.2.8., the share of wood that is dealt through a third party is expected to be relatively high. This would mean that individual contracts on wood sales of communities and private forest owners are realised not only by the forest owners themselves but also by third institutions as for example forest management cooperatives, the forestry union, forest operators and dealers. Unfortunately no official recordings are available regarding the percentages of sales methods by ownership category.

3.2.5 Explanation why categories of fragmented private forest owners prefer some sales methods/contract types/marketing channels over others that are not/hardly used

There is no documented evidence that fragmented private forest owners of the region prefer specific sales methods. However, it can be expected that small private forest owners prefer stumpage sales over assortment sales since they will get money relatively fast and do not have to pay forest operators and thus to finance the cuttings in advance (Ransch/Schönbach 10/11/2009). Schurr estimates a relatively high share of “illegal” wood sales by fragmented private forest owners due to the necessary bureaucratic efforts in case of legal (or respective commercial) wood sales (documentation, taxes etc.) (Schurr 10/11/2009).
3.2.6 Indication of the development of sales methods/contract types/marketing channels and explanation of any significant changes over the last approx. 10 years, as well as ongoing trends

Sales methods and contracts have not changed considerably during the last 10 years. Master agreements by the state forestry enterprise have been dominating wood sales in the region. This is expected also for the future.

3.3 How are the wood sellers and buyers to be characterised?

3.3.1 Characterisation of the forest owner’s side

3.3.1.1 The share of “organised” and “un-organised” forest owners

Approximately 2,080 forest owners (community, church and private) were organised in forest management cooperatives (Forstbetriebsgemeinschaften) at the end of year 2008 (Internet information Sachsenforst, 23/10/200925). Considering a number of ~73,000 private forest owners, 1,386 owners of communities and public corporations and ~500 church owners (Schmieder 11/11/2009) this would mean an amount of ~75,000 owners and thus a organisation share of 2.8 percent. Saxony has thus the lowest proportion of organised forest owners in comparison to other federal states of Germany (Schurr 2006: 289). At the same time approximately 17 percent of the area of private, church and community forests is organised in forest management cooperatives (47,780 ha at the end of 200826). The number of cooperatives was 28 at the end of 2008 and is 29 at the end of 2009. Approximately 3,500 forest owners (representing a forest area of 75,000 ha) are members of the Saxon forest owners association (Sächsischer Waldbesitzerverband) who stand up for the interests of private forest owners at the policy level (Schulz 2/12/2009). Data concerning fragmented forest owners are not available. However, SCHURR states that “cooperatives do not reach the very small private forest owners in Saxony” (Schurr 2006: 303).

3.3.1.2 The share of wood sales by “organised” and “unorganised” forest owners by assortment and/or buyer category

No statistical recordings are made for wood sales of “organised” forest owners or rather forest management cooperatives, but it is generally estimated that the share of “organised” wood sales is very high (~80 percent); however, “organised” is understood here as being marketed by several organisations as state forest enterprise Sachsenforst, forest operators as well as forest management cooperatives (Ransch/Schönbach 10/11/2009). SCHURR found that the majority of harvested wood of forest management cooperatives is marketed by the state forestry enterprise (Schurr 2006: 306). Concerning assortments it is estimated that ~50 to 60 percent of sawlogs (stems) from private forests

24 in owners associations, loose groups, cooperatives, co-operations, unions; for all private forest owners and – if possible – by fragmented private forest owners


27 for all private forest owners and – if possible – by fragmented private forest owners
are marketed in an “organised way”, while ~5 to 10 percent of cut-offs/sawlogs and 5 to 10 percent of industrial wood (including wood for pellets) do so (Schmieder 11/11/2009).

3.3.1.3  Explanation of the types of organised forest owners associations in the region

The Saxon forest owners association (Sächsischer Waldbesitzerverband) with 3,500 members and a corresponding area of 75,000 ha represents the policy interests of private and community forest owners of the region (Schulz 2/12/2009). Regarding forest management and wood marketing the following organisations exist in the region: On the one hand 29 forest management cooperatives (Forstbetriebsgemeinschaften) with ~2,100 members serve for a more efficient forest management of private and community forest areas. On the other hand, one forestry union for collective marketing of wood from private forests exists in the region (Forstwirtschaftliche Vereinigung) since 2005.

3.3.1.4  Description of how these associations work (by type of organisation)

The Saxon forest owners association is the representation of interests of private forest owners in the region. It is led by a managing director and an executive committee. As representation of interests the main fields of work are information, advice and coordination of the members as well as public relations and lobbying. Forest management cooperatives are specified by the German and Saxon forest law and aimed at an improved management of associated forest areas of community, church and mainly private owners by overcoming structural disadvantages (small areas, unfavourable shape of forest areas etc.). Organisation and realisation of fellings, primary conversion and skidding as well as mediation of harvesting operators and settlement of wood sales are seen as the main tasks for the majority of the existing 29 cooperatives (see Schurr 2006: 308). Other tasks of cooperatives as road construction and maintenance, procurement and operation of forest machines and utensils or the execution of young forest stands, soil improvements or stand tending of stands are described by forest law (Bundeswaldgesetz § 17). Only few Saxon forest management cooperatives have managing directors employed on a regular basis, most cooperatives are led by honorary managers (Schurr 2006: 308). This fact is owed to relatively small areas of responsibility of most forest management cooperatives (19 of 29 cooperatives manage areas smaller than 1,200 ha) and thus low harvesting volumes. Since its foundation in 2004, a forestry union (Forstwirtschaftliche Vereinigung) as (private law) cooperation of nine forest management cooperatives is active in marketing of wood from private as well as community and church forests. Like forest management cooperatives this union is initiated by forest law (Bundeswaldgesetz § 37, 38), but on a voluntary basis. The forestry union is managed by an executive committee and two managing directors.

3.3.1.5  Indication of the future development of the degree/level of organisation of forest owners

Since 1992, when the first forest management cooperatives were founded, the number of cooperatives has risen to 29 in year 2009. At the same time the number of forest owners being organised in these cooperatives has also increased to a specific level. However, for the last few years the number of members has been constant, while the organized forest

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28 Legal set-up, activities (beyond timber sales), initiators, links to special sales methods etc.
29 How are (e.g.) the memberships in associations, cooperatives etc. expected to develop?
area is still increasing\textsuperscript{30}. This trend is expected to continue. Organized forest area will increase, while the number of members will be relatively constant. The number of cooperatives is not expected to increase to any large extent (Weber 4/12/2009). Particularly for very small private forest owners (forest area < 1 ha) no changes in the level of organisation or structure are assumed (Schmieder 11/11/2009), a positive future development concerning the cooperation of fragmented private owners is generally not seen (Weber 4/12/2009). The idea of attracting a number of small forest owners to a “nucleus of crystallisation”, i.e. a relatively large forest area of one owner (e.g. a community) with a steady wood flow within the cooperative, is emphasized as a model of success for an improvement of forest owners’ organisation in the region (Schmieder 11/11/2009, Gerold 11/11/2009, Schulz 4/12/2009). SCHURR investigates (by interviewing cooperatives’ staff) that forest management cooperatives in the region have to become larger to survive (Schurr 2006: 308).

3.3.1.6 Is there a trend towards increased cooperation between small/fragmented private forest owners?

As already stated in section 2.3.1.5., no trend towards an increased cooperation between small/fragmented private forest owners is seen or expected for the future in the region (Ransch/ Schönbach 10/11/2009, Schmieder 11/11/2009, Weber 4/12/2009).

3.3.2 Characterisation of the wood industry side

3.3.2.1 The share of “organised” and “unorganised” industrial buyers (by buyer type)

Industrial buyers are only “organized” in regional or national associations representing the interests of the specific industries in politics. (The share for this kind of organisation of industrial buyers can be estimated to be almost 100 percent.) Organisations for joint businesses (e.g. wood procurement) do not exist in the region (Richter 10/11/2009, von Geibler 23/11/2009).

3.3.2.2 The share of wood bought by “organised” and “unorganised” industrial buyers (by buyer type)\textsuperscript{31}

As stated in section 2.3.2.1., organisation of industrial buyers exists only as representations of interests. Almost all wood would thus be bought by “unorganised” buyers.

3.3.2.3 The types of organised industry associations (cooperatives, co-operations, unions)

There are a number of regional and national associations of wood industry. However, these associations are not aimed at joint business activities, but to represent the policy interests of their members. Two important associations of the sawmill sector are the national BSHD (\textit{Bundesverband Säge- und Holzindustrie Deutschland}) and VSH (\textit{Verband der Säge- und Holzindustrie in Sachsen e.V.}). Members of the BSHD are the

\textsuperscript{30} The number of forest owners in cooperatives was 2,267 at the end of 2002 and 2,080 at the end of 2007, while the organized area was 18,870 ha at the end of 2002 and 47,780 ha at the end of 2007.

\textsuperscript{31} add time series data if possible
very large sawmills as for instance Klausner or Klenk, while smaller regional sawmills are organised at VSH. Enterprises of the panel industry are organised in the VHI (Verband der Deutschen Holzwerkstoffe). Enterprises of the pulp and paper sector are members by the VDP (Verband Deutscher Papierfabriken) and also of the VOP (Verband Ostdeutscher Papierfabriken) with a focus on eastern Germany. In the sector of wood for energetic purposes the DEPV (Deutscher Energieholz- und Pellet-Verband) and BBE (Bundesverband BioEnergie e.V.) play an important role as representations of interests.

3.3.2.4 Operating principles of these associations (by type of organisation)

Wood industry associations as mentioned in section 2.3.2.3. are aimed at the representation of interests in politics. Thus, advice, coordination and information of members, public relations or respective communication and lobbying are typical fields of work.

3.3.2.5 Expectations regarding the future development of the degree/level of organisation of industrial buyers

There are no future changes expected regarding the organisation of industrial buyers (von Geibler 23/11/2009). Foundations of cooperations for wood procurement (purchase) are assumed to be unlikely for the next years (Focus Group 14/12/2009).

3.3.3 Cross forest owners and wood industry associations

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


3.3.3.2 The share of wood sold/bought by cross forestry-industry associations

Since there are no cross-forestry-industry associations in the Saxony, there is also no share of wood that is sold or bought by such associations.

3.3.3.3 Operating principles of these cross forestry-industry associations


3.3.3.4 Is there a trend towards a more vertical cooperation or integration which involves also small owners?

A trend towards a more vertical cooperation or integration that involves also small owners is not expected. Moreover, political promotion of a more vertical cooperation and integration in Saxony exists just for a relatively short time. A scientific study for the

32 add time series data if possible
33 legal set-up, activities (beyond timber sales), initiators, links to special sales methods etc.
determination of background information regarding the cluster of forests and wood ("Cluster Forst und Holz") in the region was conducted in years 2007 and 2008. Afterwards an initiative was started that is aimed at practical implementation of vertical cooperation and integration within a model region. Small forest owners are, however, not considered explicitly (Gerold 13/1/2010).

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

The general atmosphere of the relationship between forest owners and industry is assessed as being strained (Schulz 2/12/2009) and of rather functional character (von Geibler 23/11/2009). While on the one hand industry is interested and aware of (small) private forest owners, wood processing mills are often seen as a threat (von Geibler 23/11/2009) or are not seen at all due to unawareness of forest owners (Richter 10/11/2009). Forest owners that are interested in wood harvesting and marketing actively consult their forest ranger or the forest management cooperative and do not contact industrial wood buyers (Weber 4/12/2009). Especially in case of fragmented forest owners it is stated that there are no direct contacts, no relationship and thus no atmosphere between these and the wood industry (Ransch/Schönbach 10/11/2009, von Geibler 23/11/2009, Weber 4/12/2009).

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

3.5.1 Wood prices and wood price changes in context to the forest ownership structure

Wood prices in the region are extensively influenced by large (and long-term) contracts (so called “Rahmenverträge” or master agreements) of the state forestry enterprise Sachsenforst with large industrial buyers of sawlogs and industrial wood. Considering this and the volumes of wood that are sold by Sachsenforst it can be stated that state forestry enterprise “is making the prices” (Schurr 10/11/2009).

Private forest owners react as the most flexible of all ownerships concerning wood sales. In case of high wood prices a number of private forest owners are willing to harvest and sell wood. They quickly stop selling wood when prices fall or do not sell in case of low prices. One exception is made by (larger) private forest owners that have to repay loans for forest purchases. These forest owners have to harvest constantly and relatively independent on wood prices (Ransch/Schönbach 10/11/2009). Harvests in state forests are done independently of wood prices as well. Since Sachsenforst has to fulfil and compensate the demands on wood supply of contracts also in times of low prices even an inverse behaviour can be observed (higher sales volumes in case of low prices since there is only few wood from private forests) (Schurr 10/11/2009). Behaviour of community

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34 Describe different reactions by ownership category and assortments
and church forest owners is dependent on management agreements. In case no management agreements (contracts) with Sachsenforst exist, behaviour is similar to the reaction of private forest owners (only few wood sales in case of low prices), therewith church forest owners are expected to react more price sensitive than community forest owners (Ransch/Schönbach 10/11/2009). In case state forestry enterprise is managing church or community forests harvests and wood sales are also realised when prices are low.

3.5.2 Price developments during the last approx. 10 years (by assortment)\textsuperscript{35}

The last decade was characterised by decreasing prices especially for sawlogs. However, prices for industrial wood increased slightly, while prices for fire wood rose considerably especially in the last few years. Price developments in detail can be taken from the following table\textsuperscript{36} and graph:

Table 11: Development of prices of different assortments (Euro per cubic meter)

<table>
<thead>
<tr>
<th>Year</th>
<th>Sawlogs (stem timber)</th>
<th>Sawlogs (tree sections)</th>
<th>Industrial wood (long)</th>
<th>Industrial wood (short)</th>
<th>Fire wood</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>59</td>
<td>41</td>
<td>21</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>1997</td>
<td>64</td>
<td>45</td>
<td>17</td>
<td>15</td>
<td>13</td>
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<tr>
<td>1998</td>
<td>69</td>
<td>49</td>
<td>19</td>
<td>19</td>
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<td>1999</td>
<td>73</td>
<td>53</td>
<td>19</td>
<td>21</td>
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<td>2000</td>
<td>70</td>
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<td>2001</td>
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<td>2002</td>
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<td>2005</td>
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<tr>
<td>2006</td>
<td>57</td>
<td>46</td>
<td>27</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>2007</td>
<td>61</td>
<td>56</td>
<td>40</td>
<td>33</td>
<td>33</td>
</tr>
</tbody>
</table>

Euro per cubic meter

\textsuperscript{35} add time series data if possible

\textsuperscript{36} Prices for years 1996 to 2002 are prices of wood from state forests; prices for years 2003 to 2007 are prices of all forest ownerships in Saxony.
3.5.3 Wood supply price elasticity's by ownership categories and/or assortments

There is a tendency that wood supply is price-inelastic in the region. This is valid especially for state forest ownership. On the other hand there exists price elasticity for small private forest owners (see also section 2.5.1.).

3.6 What is the role of forest authorities regarding fragmented private forest ownerships participation in the wood markets concerning guidance & control on harvests and wood sales, forest management & wood trading regulations and wood-related taxes & subsidies?

3.6.1 Guidance and control on harvests of fragmented private ownerships

Forest authorities give guidance on harvests through free advices by forest rangers (i.e. forestry extension) and by training and education (e.g. courses for the use of chain saws) of private forest owners (Schurr 10/11/2009). Additionally private forest owners can call for occasional or permanent assistance by the state forestry enterprise. Thereby execution of tasks related to harvests is offered for a fee (e.g. 50 EUR/ha for marking stands, 2 EUR/cubic meter in case of organisation and supervision of cuttings, wood classification and timber inventory; see SächsPKWaldVO 2003). In case of permanent assistance the fee per hectare is lower for small private forest owners than for large-sized ones.

All three kinds of support are fixed in the forest law of the federal state. Forest authorities do not have control on harvests of private owners. The only restriction is given by the Saxon forest law that prohibits clear cuts of an area larger than two hectares. Likewise

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37 The annual fee for permanent assistance of forest areas below 30 ha is stated with 5 EUR/ha, while the fee for permanent assistance of forest areas larger than 1,000 ha accounts for a range between 22.91 and 28.63 EUR/ha (Finckenstein/Westphal 2002, cited by Weber 2003).
cuttings that result in a stocking degree of less than 0.4 are restricted. Concerning guidance and control on harvests by forest authorities, fragmented private forest owners are not considered in particular.

### 3.6.2 Guidance and control on wood sales of fragmented private ownerships

Guidance on wood sales is also given via free forestry extension, by fee requiring occasional or permanent assistance (e.g. wood classification and timber inventory, wood sales etc.) and by training and education of private forest owners. There is no control on wood sales of private forest owners by forest authorities (Schurr 10/11/2009). Fragmented private forest owners are not particularly considered with regard to guidance and control on wood sales by forest authorities.

### 3.6.3 Forest regulations

Forest regulations are present in the form of the national forest law (*Bundeswaldgesetz*) and the more specified Saxon forest law (*Landeswaldgesetz*). Fragmented private forest owners are not considered in particular by both regulations (Weber 4/12/2009).

### 3.6.4 Wood trading regulations

Wood trading regulations do not exist in Saxony. The only definition with respect to wood trading is a general agreement concerning the classification of roundwood ("Rahmenvereinbarung Rundholz") at the level of Germany, which does not consider fragmented private forest owners in particular.

### 3.6.5 Forest or wood related taxes

There are no forest- or wood-related taxes that consider fragmented private forest owners in a specific way. Apart from (the single payment of) inheritance tax, liability for (regular) taxes exists concerning real estate tax and in case of wood sales regarding sales tax/VAT and income tax. Some specifics for small private forest owners exist indirectly through the exemption from real estate tax in case of a purchase price for forests below EUR 2,500. VAT for wood sales can be reduced from 19 to 7 percent, but it is not dependent on the size (or fragmentation) of forest estates. Payment of income taxes is also relevant when financial support was received. However, due to low marketed volumes taxation of income from wood sales does only have low importance for small/fragmented private forest owners. Only in exceptional cases income from wood sales exceeds the annual tax allowance of EUR 670 for individuals and EUR 1,340 for couples.

### 3.6.6 Forest or wood related subsidies

Financial subsidies for forest owners are granted by the federal state of Saxony with financial support of the federal government (Germany) and the EU via the programmes of GAK (*Gemeinschaftsaufgabe zur Verbesserung der Agrarstruktur und des Küstenschutzes*) and ELER (EAFRD; *European Agricultural Fund for Rural Development*). In general supporting payments are made for afforestation, for the introduction of site-adapted tree species, for the construction and maintenance of roads and bridges in forests, for the promotion of natural structures and species diversity as well as for mobilisation of wood due to forestry groupings.
There is no specific consideration of fragmented private forest owners in context to forest and wood related subsidies or as SCHURR states “financial subsidies (are) not anymore aimed at supporting smaller ownerships” (Schurr 2006: 293). To some context relevance for fragmented private forest owners is given regarding financial support of forestry groupings in the region. In case of a membership in a cooperation that meets the conditions for financial support, fragmented private owners can participate in an additional payment of 2 Euro per cubic meter of marketed wood (“Mobilisierungsprämie”, mobilisation bonus programme). Another 0.20 EUR per cubic meter are paid in case wood is marketed by a forestry union (in case of an annual marketing volume of 20,000 cubic meters). More detailed information on this mobilisation premium is given in section 5.1.3.

3.7 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 harvest activities, wood sales and the overall framework conditions related to harvests & wood sales of fragmented private forest ownerships?

3.7.1 The role of stakeholders with interest in forestry concerning harvest activities of fragmented private forest ownerships

There is no information that stakeholders with interest in forestry consider harvests and wood sales of fragmented private forest owners in a specific way. Several interview partners mentioned the forest owners association as a forestry NGO to be the only relevant stakeholder concerning fragmented private forest owners. However, the forest owners association only gives information regarding harvests or wood marketing to forest owners or liaises to forest management cooperatives, forest operators or wood buyers (Ransch/Schönbach 10/11/2009, Schulz 2/12/2009, Weber 4/12/2009).

3.7.2 The role of stakeholders with interest in forestry concerning wood sales of fragmented private forest ownerships

As stated in section 2.7.1, no information exists concerning regional stakeholders with interest in forestry that direct specific attention to harvest activities or wood sales of fragmented private forest owners. The only relevant organisation is the forest owners association that gives information on harvests and wood sales and liaises to forest management cooperatives, forest operators or wood buyers (Schulz 2/12/2009).

3.7.3 The role of stakeholders with interest in forestry concerning the overall framework conditions related to harvests & wood sales of fragmented private forest ownerships

The Saxon forest owners association is participating in negotiations at higher policy levels and campaigns for more favourable conditions (e.g. regarding wood prices) for the forest owners of the region. Public relations as well as information and training of forest owners

38 “Förderung … überhaupt nicht mehr auf eine Unterstützung kleineren Eigentums ausgerichtet”
39 i.e. a minimum marketed volume of 1.5 cubic meter per hectare and 4,000 cubic meters per year in total and (since year 2010) proof of certification of FSC or PEFC
are seen as further tasks of the organisation. There is no information that framework conditions relevant for fragmented forest owners are especially considered. However, SCHULZ states that the forest owners association is working to reach and involve a higher number of small private forest owners (Schulz 2/12/2009). Beside forestry NGOs, environmental NGOs are similarly not considering fragmented private forest ownerships in a specific way. In general the potential of conflicts between Saxon environmental NGOs/nature conservation and forestry in Saxony is lower than in other regions of Germany. This is mainly because two large organisations of the region (Landesverband Sächsischer Heimatschutz and BUND) accept the ideas of forestry and behave cooperatively (Weber 4/12/2009).

3.8 How are the wood markets in the region most likely developing in the future?

3.8.1 The expected development of prices (by assortments) and reasons for changes

Prices are expected to rise in the next years (Richter 10/11/2009, Ransch/Schönbach 10/11/2009, von Geibler 23/11/2009, Weber 4/12/2009). Reasons for such development is seen in a growth in the number and capacity of heating mills as well as individual energy wood users (households) and in a higher capacity and utilisation of the sawmill industry (von Geibler 23/11/2009). Similarly, production and thus wood use of the pulp and paper as well as panel industry will increase and thus lead to a higher demand, while on the other hand wood resources in the region are limited. However, the increase of wood prices is expected to be rather moderate for all assortments, and to be distinctively higher for fire wood as well as wood of low qualities than for sawlogs (Ransch/Schönbach 10/11/2009, von Geibler 23/11/2009).

3.8.2 The expected development of wood supply (by assortments) and reasons for changes

Except for a higher (theoretical) wood supply in approximately 30 to 40 years due to the distribution of age classes in (see section 1.4.5.), total wood supply is expected to remain more or less at today’s level in case there will not be a considerable change in the policy concerning wood mobilisation from private forest ownership (Richter 10/11/2009, Ransch/Schönbach 10/11/2009, von Geibler 23/11/2009, Weber 4/12/2009). A change in the proportion of offered assortments will thus strongly depend on the prices for specific qualities. Against the background of the last development of prices for energy wood, an increasing supply of wood for energetic purposes is very likely. Success of wood mobilisation (influenced by policy and risen wood prices) is assumed to be compensated by an intensified use for own requirements/informal market segments in private ownerships due to high prices for energy (Richter 10/11/2009, Ransch/Schönbach 10/11/2009). VON GEIBLER also points out that the occurrence of calamities will have influence on the wood supply in the region since it can “mobilise small private ownerships”

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40 Sachsenforst states that the harvest rates in state as well as community forests are today close to the limit of sustainability (SMUL 2008: 30)
Case study Saxony

(von Geibler 23/11/2009). Since fragmentation is assumed to stay at the same level as today, supply is not expected to be influenced by rising property sizes.

3.8.3 The expected development of demand (by assortments) and reasons for changes

As stated in section 3.8.1., future wood demand is expected to be higher than today and thus to rise in the next years. Thereby demand on wood for energy purposes (fire wood, fuel wood) is assumed to increase considerably due to growing industrial capacities (heating mills) as well as increasing requirements of private households (Richter 10/11/2009, Ransch/Schönbach 10/11/2009, von Geibler 23/11/2009). Increasing capacities in the wood processing sector will also result in a higher demand for wood (Geibler 23/11/2009), i.e. sawlogs as well as industrial wood. In this context WEBER points out that development of demand must also be seen in international context and refers to a global “hunger for resources and energy”, which will also influence the regional wood market and lead to conflicts between users of wood for energy purposes and wood for processing (Weber 4/12/2009). Detailed forecasts or figures for the regional demand are not available. Some forecasts are however made by MANTAU for the German level under consideration of the global economy crisis that is expected to slow down the trend of an increasing demand. MANTAU states considerable differences in the availability of hardwood and softwood, meaning that the annual demand on softwood approximates the annual increment while hardwood demand corresponds to only a small share of increment (Mantau 2008). Regarding demands for wood procurement and energy purposes following forecasts are made:

Table 12: Development of wood demand in Germany (cf. MANTAU 2008)

<table>
<thead>
<tr>
<th>Demand (GERMANY) - forecast 2012 (Mio. cubic meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demand 2008</strong></td>
</tr>
<tr>
<td>Wood procurement industry</td>
</tr>
<tr>
<td>thereof: sawmills</td>
</tr>
<tr>
<td>Wood for energy purposes</td>
</tr>
<tr>
<td>thereof: domestic fuel</td>
</tr>
<tr>
<td>In total</td>
</tr>
</tbody>
</table>

41 The previous increase of the average size of private forest properties from 2.8 to 3.2 ha must be seen as a result of the privatization process. New forest owners that were beneficiaries of the restitution process but not interested in their property sold their land to interested owners/neighbours. Additionally, since mainly larger forests were privatized there is a simple "calculation effect".
3.8.4 The expected development of the market’s structure and reasons for changes

The number of wood buyers of the wood procurement sector is expected to decrease due to lasting consolidation processes and closures of small enterprises (Richter 10/11/2009). The same development is expected for the structure of traders and forest operators (Ransch/Schönbach 10/11/2009). The sector of energetic wood use is assumed to be principally established in the region (Mixdorf 13/1/2009), which means that the number of large energy wood buyers will not increase considerably anymore. So the number of buyers is assumed to decrease in total, while capacities, capacity utilisation and sales are expected to rise for all sectors (Weber 4/12/2009).

The number of suppliers is expected to increase slightly. The main reasons for this development are seen in inheritances (Weber 4/12/2009) and thus further partition of estates after a period of an increasing average private property size due to the restitution process and also in rising interest (also of small forest owners) in marketing due to higher wood prices (Richter 10/11/2009). At the same time the number of forestry groupings (forest management cooperatives) is estimated to grow and thus “consolidation” processes will also be existent at the forest owners side (von Geibler 23/11/2009). However, considering the development of the last years (with an increase in numbers of forest owners cooperatives and of organised forest areas, but a constant number of members), it is unlikely that these processes will lead to a decreasing number of suppliers in the region.

3.8.5 The expected development of wood imports

Wood imports are expected to remain at today’s level. However, there are no comprehensive data available on the present volume of imports for the whole region, which complicates any estimations (Richter 10/11/2009, Ransch/Schönbach 10/11/2009, von Geibler 23/11/2009). VON GEIBLER states that wood prices (and hence calamities) are decisive for imports as well as exports. Fluctuations in the import rate must therefore be expected, whereas the total amount of imported wood will be stable in the long term (von Geibler 23/11/2009).

3.8.6 The expected development of exports

Relying on the experts’ view, no considerable increase or decrease of wood exports is expected. RICHTER assumes a slight increase in wood exports within the coming decade through developments of the wood market in Eastern Europe (Richter 10/11/2009). VON GEIBLER expects fluctuations in the export rate due to calamities (or wood prices respectively), but a rather constant development of exports in total (von Geibler 23/11/2009).

3.8.7 The expected development of forest authorities and interest representations

Future development of forest authorities and interest representations in Saxony is difficult to assess. Concerning forest authorities a further reduction in staff is assumed and seen as very problematic for wood mobilization of fragmented private forest ownerships by the
majority of interviewed experts. WEBER states that forest authorities are suffering from a loss of respectability as a consequence of staff reduction and prejudices against officials (Weber 4/12/2009). This is also relevant for the near future.

Regarding the development of interest representations in Saxony there are visibly many essential problems. Relationship between interest representations is often dominated by distrust, although a coordinated policy and collaboration would be imperatively necessary for the region (Weber 4/12/2009). The forest owners association is rather seen as a platform of information than an organisation that represents the policy interests of its members. However, SCHULZ points out that the importance of the said association has increased during the last years (Schulz 2/12/2009). Against this background it must be stated that the position of interest representations of the region is characterised by weakness. This must also be assumed for the future if no considerable changes will take place.

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

The majority of interviewed experts emphasized that forest rangers (administration) play a key role for the flow of raw wood from fragmented forests to the wood industry. This is mainly due to access to owners’ addresses, contacts and agreements/contracts with the wood industry and knowledge concerning forest management. Since forest rangers are contacted by private forest owners not only in case of an interest in harvesting and wood marketing but also for other issues as nature conservation or water protection (Schurr 10/11/2009) impulses regarding wood mobilisation can be given on several occasions. However, the number of administration staff has been decreasing within the last years and forest districts have become larger. Consequently forest rangers increasingly fail to advise small owners and it is even recommended to refrain from active guidance to fragmented private forest owners because of high costs. Since advisory service is a key factor for wood mobilisation this development is seen very critically.

As forest owners’ addresses are not open to the public there is only a slight chance for compensation due to impetus by forest management cooperatives, forest operators, the wood industry or others. Nevertheless, some organisation (state forestry enterprise, forest management cooperative, forest operator etc.) that is pooling wood for harvesting and marketing activities is an absolute necessity in case of fragmented private forest owners.

Wood prices are mentioned repeatedly by the interviewed experts as drivers for forest management and wood marketing in fragmented private forests (Schurr 10/11/2009, von Geibler 23/11/2009 et al.). However, the regional wood industry does not (yet) has the willingness or possibility to pay extra for wood that is (expensively) mobilised in fragmented private forests. A sharing of costs for mobilisation efforts would nevertheless be reasonable.
4 Forest Owners

4.1 Description of the structure of forest ownership in the area in terms of forest resources

4.1.1 Indication of the overall distribution of ownership categories, the share of private ownership, the share of fragmented private forest ownership, and its development

4.1.1.1 The overall distribution of ownership categories in terms of forest land in hectare

Private forests represent the largest part of Saxon forests. 45 percent or about 235,000 hectares out of a total 518,325 hectares of forests are private (see Figure 6). 19.9 percent of the total Saxon forest area (or 44.2 percent of the privately owned area) belong to fragmented private forest owners (sizes < 10 ha). Second biggest are the (federal) state owned forests of Saxony with 201,451 hectares, followed by community forests (40,919 ha). Church owned forests account for 11,350 hectares and state (Federal Republic of Germany) owned forests for 26,296 ha. Only small parts of forest are still embodied as “Treuhandwald”, i.e. forests which were expropriated from 1949 on and are given back to former owners or sold to other private persons after Germany’s unification in 1990 (via the Treuhandanstalt agency).

Figure 6: The distribution of ownership categories (SMUL 2008: 14)
4.1.1.2 The share of private forest ownership

235,000 hectares or 45 percent of Saxon forests belong to 73,000 private forest owner families. These owners hold forest estates of different size as shown in figure no. 7 and discussed in the following chapters.

Figure 7: The share of private forest ownership (SMUL 2008: 30)

4.1.1.3 The share of fragmented forest ownership thereof

The term “fragmented forest ownership” used in this study was defined by the size of the analysed estates of up to 10 hectares. It can be summarized that 97 percent of the private forest owners and nearly half of the private forest area (44 percent) belong to the category of fragmented forest ownership.

Table 13: The share of private forest ownership (SMUL 2008: 30)

<table>
<thead>
<tr>
<th>Property size</th>
<th>Share of private forest owners 2007</th>
<th>Share of private forests (by area) 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 ha</td>
<td>56.4%</td>
<td>6.6%</td>
</tr>
<tr>
<td>1-5 ha</td>
<td>34.1%</td>
<td>25.7%</td>
</tr>
<tr>
<td>5-10 ha</td>
<td>6.4%</td>
<td>11.9%</td>
</tr>
</tbody>
</table>

4.1.1.4 Indication of the development and explanation of any significant changes over the last approx. 10 years, as well as ongoing trends

Restitution (privatisation) of forests was an ongoing process of the last two decades. The BVVG - Bodenverwertungs- und -verwaltungs GmbH - was the responsible organisation for privatisation.

In 2002 62 percent of private forests belonged to the category “smaller than 10 hectares”, while 44 percent did so in 2008 (see figure below). The main reason for this development
is seen in privatisation of larger forests (Schurr 2006: 3-215). This could be regarded as an ongoing trend, though with lower speed because only few larger forests remain to pass into private hands.

Table 14: Changes in the structure of private forest owners and related areas

<table>
<thead>
<tr>
<th>Share of private forest owners 2002</th>
<th>Share of private forest owners 2007</th>
<th>Share of private forests (by area) 2002</th>
<th>Share of private forests (by area) 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 ha</td>
<td>54.0%</td>
<td>16.0%</td>
<td>6.6%</td>
</tr>
<tr>
<td>1-5 ha</td>
<td>38.7%</td>
<td>33.5%</td>
<td>25.7%</td>
</tr>
<tr>
<td>5-10 ha</td>
<td>5.1%</td>
<td>12.5%</td>
<td>11.9%</td>
</tr>
<tr>
<td>In total</td>
<td>97.8%</td>
<td>62.0%</td>
<td>44.2%</td>
</tr>
</tbody>
</table>

4.1.2 Indication of ownership size categories within the group of fragmented private forest owners, and its development

4.1.2.1 Indication of the distribution of ownership size categories within the group of fragmented private forest owners (number of owners and size of forest land by category)

About 56 percent of private forest owners hold forest estates smaller than one hectare representing 6.6 percent of the total area of private forest estates of the region (see table 11). Another 34 percent own forests of sizes between 1 and 5 hectares equalling 26 percent of the total area. Regarding all privately-owned forests up to 10 hectares, it can be summarized that 97 percent of the private forest owners and nearly half of the private forest area (44 percent) belong to the category of fragmented private ownership.

4.1.2.2 Indication of the development and explanation of any significant changes over the last approx. 10 years, as well as ongoing trends

The development of private forests’ size categories in Saxon history can be best demonstrated with the following figure. Before the restitution process started in the early 1990s fragmentation was highest (red dashed line). Forest privatisation led to an increase in average size of forest ownership (2000 green dashed line; 2002 dark blue dashed line). The 1925-line shows the situation in year 1925. At that time forest ownership below 10 hectares accounted for one third of the total private forest area, while the share of the forest ownership category smaller than 1 hectare was below 10 percent (Schurr 2006).
The partitioning of forests because of inheritance is an ongoing process which further aggravates the trend of fragmentation. The distribution of forests amongst children is preferred against other options as transferring forest estates in its entirety. WEBER mentioned a generally low interest of the Saxon forest policy to implement effective instruments for an improvement of the structure of private forest ownership (Weber 4/12/2009).

On the other side there are processes which diminish fragmentation: 1.) Smaller forests are bought from neighbours, whether by communities or privates, to complete (round up) existing larger forests. 2.) Land consolidation projects in forests ("Flurbereinigungsverfahren") – though long-winded procedures – have an effect in reducing fragmentation. 3.) The procedure of the so called “voluntary land-exchange” ("freiwilliger Landtausch") can also be expected as an effective instrument to build larger units and to realise a more efficient management of private forests (Schurr 10/11/2009).

4.1.3 Indication of the volume of annual increment and annual wood fellings in fragmented private forest ownerships, description of differences between ownership categories within that group, and its development

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

The annual increment is 8.9 m³/ha p.a. in private forests, while the average for all ownerships in Saxony is 9.4 m³/ha p.a. (BWI II, Freistaat Sachsen 2005: 44). Because of a less intensive management of fragmented private forests the annual increment is expected to be lower than the average of all private forests. There is no specific data
about the increment for this ownership category available. For eastern Saxony (region of Lusatia), a pine-dominated region with poor soils, the annual increment is estimated to be 3.5 cubic meters per hectare and year for the category of fragmented forest ownership (HAF 2008: 18).

4.1.3.2 The annual wood fellings of fragmented private owners (of the last 10 years)

No statistics are available concerning annual wood fellings in fragmented private forests (Schmieder 11/11/2009). Schurr estimates that annual fellings are about 3 m³ p.a./hectare (Schurr 10/11/2009). Schmieder pointed out that quotations should be handled with care because of varying different methods of management of fragmented forests (Schmieder 10/11/2009). Intensively used forests exist side by side with completely unmanaged forests and high potential forests in one region (e.g. Vogtland) are part of the same category of fragmented forests as low-potentials do (e.g. Lusatia).

4.1.3.3 Description of the different ownership size categories within that group of fragmented private forest owners

A rough differentiation can be made between the group of private forest owners with forest sizes less than 5 hectares and private forest owners with estate sizes of 5 to 10 hectares. Weber mentioned that owners with less than 5 hectares do not offer wood for commercial use but use it for their own requirements mainly as fire wood. Owners with properties larger than 5 hectares also offer wood to commercial customers, since possible annual felling volumes can reach amounts suitable for full truck loads (Weber 4/12/2009).

In case of specific mobilisation projects owners of smaller forests participate in wood markets as well. The HAF mobilisation project found a participating ownership size averaging at about 4 hectares (HAF 2008: 86). In the HAF project mobilisation activities were initialised by the local forest management cooperative.

4.1.3.4 Indication of the development and explanation of any significant changes over the last approx. 10 years, as well as ongoing trends

Assessments of the development as well as future trends concerning fragmented private forest ownership are not homogeneous. Schurr and Ransch/Schönbach pointed out that increasing energy prices are leading to fellings for own requirements while the total amount of fellings for commercial use remains constant (Schurr 10/11/2009, Ransch/Schönbach 10/11/2009). Ransch/Schönbach stated furthermore that increasing inheritance rates could influence the attitude of using private forests in a positive way. The younger generation could be dedicated to a more intensive use of forests than the older generation did (Ransch/Schönbach 10/11/2009).

Von Geibler argued that the increasing amount of marketed wood from fragmented private forest owners during the last decade has mainly been the result of calamities as storms. In his opinion the willingness of small forest owners to offer wood for the market cannot be strongly influenced (von Geibler 23/11/2009).
4.1.4 Statutory reasons that influence wood mobilisation

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

Statutory reasons do not play any significant role in the region. Forest area with strong restrictions is of minor importance: only 1 to 2 percent of forest land could be regarded as strongly protected which hampers or even prevents any forest use. Management restrictions that affect private forest owners to a larger extent (e.g. restrictions in the selection of tree species) do exist by the formulations of the European Habitats- and Birds-Directive. However, strong restrictions are (financially) compensated for a period of 10 years in most cases (Schurr 10/11/2009). These arguments were confirmed by other experts (Schmieder 11/11/2009) and during the focus group session. Though quantification seems to be difficult, restrictions with significant influence on wood mobilisation are assumed to be relevant for less than 10 percent of the fragmented private forests.

Beside statutory reasons limitations for wood mobilisation can also be attributed to the low interest of private owners, to uncertain cases of inheritance, to specific interests of owners (e.g. environmental interests, hunting), to a lack of knowledge and other factors.

4.1.4.2 Indication of the development and explanation of any significant changes over the last approx. 10 years, as well as ongoing trends

Statutory reasons with considerable effects on mobilisation of wood from fragmented forests are not expected to increase dramatically within the next decade. Present management plans (concerning the Habitats- and Birds-Directive) have to point out protection aims more definitely. But it is expected that restrictions in management are highly compensated by financial support. The effect for forest owners will thus have only minimal financial disadvantages (Schurr 10/11/2009).

4.2 What is the level of fragmented private forest owners’ participation in wood markets?

4.2.1 The main factors that induce or prevent different size categories of fragmented private forest owners to participate in wood markets and its development

4.2.1.1 Description of the main factors that induce or prevent different size categories of fragmented private forest owners to participate in wood markets

Important factors which prevent smaller forests from participating in wood markets are defined as followed (Weber, Schurr, Ransch/Schönbach, von Geibler):

- A low amount of wood that can be offered for commercial use
- Needs for subsistence (mainly fire wood)
Case study Saxony

- Insufficient infrastructure (roads) in private forests
- Lack of information/knowledge how to access the market
- Unavailability of market access (e.g. by dropping below the volume of a full truck load (30 m³) that is required as a minimum by wood buyers; in case no pooling organisation is involved smaller forest owners are excluded from the market)
- A missing partner (forest ranger) as a result of continuous reorganisations of forest authorities and lacking trust
- New structure of subsidies which do not take into account internal labour of forest owners

4.2.1.2 Explanation of the major chains of cause and effect

Cause and effect of the above mentioned factors are described in the following (Weber, Schurr, Ransch/Schönbach, von Geibler):

- A low amount of wood that can be offered for commercial use

Forest owners with estates of less than 5 hectares of forests can cover their annual need of firewood with the annual increment of wood. A short calculation may show this: supposed that the annual increment is about 5 m³ p.a. and the forest ownership covers 3 hectare than about 15 m³ could be used every year. This amount corresponds roughly with the average household energy consumption.

- Insufficient infrastructure (roads) in the forests

The existence of adequate forest roads for transport of wood and forest machinery is necessary to realise forest management and efficient logistics. However, communities – often responsible for the forest roads in Saxony – have decreasing interest (and resources) to invest in such roads. So the lack of infrastructure could be regarded as a mean of increasing importance concerning problematic market access for fragmented forest ownerships.

- Unavailability of market access; lack of information how to access the market; wood buyers

The growing forest industry (some mills have reached a consumption level of more than 1,000,000 m³ of wood p.a.) requires a highly professional supply chain. Fragmented forest owners with low and unsteady offers of wood cannot be adequate partners for the wood industry. Market access can only be realised by forest administration (state forestry enterprise), forest management cooperatives, forestry unions and other organisations.

- A missing partner (forest ranger) as a result of continuous reorganisations of forest administration and lacking trust

Various reorganisation processes of the forest administration in Saxony resulted in a differentiation of forest tasks. Forest authorities of communities are now responsible for aspects of sovereignty of forests (‘forest police’), whereas the forest authorities of the state forestry enterprise (Sachsenforst) are responsible for guidance and assistance of
private forest owners concerning their forest management. As a consequence it seems quite difficult for forest owners to contact the responsible person for specific problems. Additionally trust is a key factor to motivate private forest owners for management and wood marketing. However, trust cannot be built if contact persons are not available for a longer time.

4.2.1.3 Expectation regarding an increasing participation of small private forest owners in the wood market in the future

Factors which can result in higher market participation of small private forest owners depend on markets and forest policy. Expert views vary whether participation can be increased or not.

In case prices rise even small private forest ownership could be motivated to offer wood to commercial buyers (Ransch/Schönbach 10/11/2009). In such situation the possibility of intermediate organisations to gain money from mobilisation activities would also increase. Especially the situation of management cooperatives will be improved. SCHMIEDER argued more cautious: In his opinion rising prices could indeed improve market participation of fragmented forest owners, but the effect will be negligible (Schmieder 11/11/2009). GEROLD pointed out, that owners of smaller forests mainly use their harvest volumes for own requirements (firewood) (Gerold 11/11/2009). Also SCHULZ (2/12/2009) and WEBER (4/12/2009) argued doubtfully concerning a higher level of participation of small private forest owners in wood markets. Both experts claim for considerable changes of general conditions when market participation should be improved.

Saxon forest policy of the last years can be described as hardly able or willing to support a higher market participation of small forest ownerships. Reorganisation of the forest administration led to much confusion amongst private forest owners. It is assumed that it will take years to regain the owners' trust towards forest authorities. Subsidies for forest management cooperatives were linked to requirements that did not consider fragmented private forest ownerships. Additionally advice and assistance of private ownership below 5 hectares is intended to be not actively offered by the state forestry enterprise and only given in case that forest owners ask for (which is not expected to be done).

4.3 Characterisation of fragmented private forest owners

4.3.1 Fragmented private forest owners-typologies based on socio-demographic variables, owner's values, attitudes, objectives and behaviour

4.3.1.1 Description of typologies of fragmented private forest owners that are available for the region and that seem to provide relevant information as regards the effectiveness and efficiency of measures for wood mobilization targeting fragmented private forest owners

Albeit investigation projects about owner-typologies were realised in the last 15 years, no current publication or investigation report is available. Former studies about the typologies of fragmented ownership (Köpf 1995, Köpf 1999) had only a limited focus on property
sizes below 10 hectares. Studies in the Western parts of Germany (Volz 2003, Borchers 2000) cannot be transformed to the socio-demographic situation in Eastern Germany.

SCHURR compares different typologies of forest owners (Schurr 2006: 249-253). A summarised categorisation can be extracted from his publication:

**Category 1:** Owners with interest in using forests for firewood (large group)

This category of fragmented forest ownership can be evaluated as one of the most relevant ones. The main motivation of owners is self-supply with firewood that creates independence from rising energy prices. Furthermore own work can be invested in a region where unemployment rates are very high. The access to additional and cheap manpower is easy.

**Category 2:** Owners neither interested in their forests nor in forest management (large group)

Uninterested forest owners are regarded to form another rather large group within the categories of fragmented forest ownership in the region (Schurr 2006: 352). The reasons for the absence of interest are various. Only low income possibilities, the relatively high owners’ age, missing tradition due to expropriation of the former forest owners during the period of the German Democratic Republic and other factors are relevant to understand the behaviour of forest owners.

**Category 3:** Owners with economic interests in their forests; especially owners who bought forests during the last 15 years (small, but increasing group)

New forest owners, which recently bought forests, do in general have higher interest in forest management and wood marketing. This new type of ownership is seen as very important as they act by example for other private forest owners.

**Category 4:** Owners with other but economic interests (small to medium group)

Owners which cannot be added to the economically interested or non-interested group do have further relevance. Environmental aims (e.g. protection), heritage of forests to children, land tenure (without using) can be motives of owners within this group.

4.3.1.2 *Explanation of how and why the typologies/types are relevant for this project*

The typology of fragmented private forest owners helps to evaluate the impact of forest policy concerning the development and adaption of instruments and the influences of market trends, e.g. change in prices.

**Category 1**

Owners which use their forests mainly for firewood close contracts with the state forestry enterprise (*Sachsenforst*). Training offers (e.g. how to use chainsaws) is helpful to get the owner informed of wood classification and differentiation between firewood and sawlogs.
**Category 2**

Great efforts have been made by forest authorities and also by the forest management cooperatives to reach the group of uninterested or uninformed small private forest owners. Albeit good ideas were implemented, other developments counteracted a positive development of wood mobilisation (e.g. decreasing wood prices, reorganisation of the forest administration, and complexity in the application for subsidies).

**Category 3**

Forest owners which are interested in their forests and in forest management should be in the focus of every mobilisation activity, whether initiated from forest administration or other organisations. Advice should be given about the forests’ potential, the possibilities of market access, income possibilities for the next years and the opportunities of own manpower within the felling process. The aims of private forest owners of a region are often varying to a large degree, although size, natural potentials, tree species and even demographic factors are the same. The category of “new forest owners” can play an important role as “good examples” for the above mentioned categories of forest owners. Experience shows that good examples of forest management mainly depend on two things: good advice from forest administration or management cooperatives and a successful process of wood marketing. Each selling process needs itself relevant factors to be fulfilled. Thereby the most important factors are seen in good prices, fast payments, just in time transports and a careful treatment of forest roads.

**Category 4**

The owners’ interests of this category cannot be defined as clearly economically orientated or non-economical. SCHURR points out that especially the owners of smaller forests possess a combination of economic, social and non-material aims (Schurr 2006: 253). Nevertheless there is a certain part of fragmented forest ownership with low economic interests. In case environmental interests or hunting are dominant for owners’ behaviour, even an economic forest management that is sustainable can be counterproductive. The main attitude to deal with this category of forest owners from the perspective of wood mobilisation is avoiding conflicts and demonstrating that management of forests goes along with certain enhancement (e.g. the composition of species for the stability of forests).

**4.3.2 The volume of wood potential of fragmented private forest owner-types**

4.3.2.1 The volume of wood potential of fragmented private forest owner-types as described in 3.3.1., in terms of previous differences (of the last 10 years) between harvestable annual increment and actual fellings (m³ o.b.)

No reports of investigation projects are available and no specific data exists about categories of fragmented forest ownership and the number of related owners. Thus, there is no published estimation as well as no reliable statement of an expert concerning the volume of wood potential of types of fragmented private forest owners.
4.3.3 Characterisation of fragmented private forest owners in the region as regards the following aspects\(^{43}\)

No reports of investigation projects are available and no specific data exists about categories of fragmented forest ownership and the number of related owners. Thus, there is no published estimation as well as no reliable statement of an expert concerning the volume of wood potential of types of fragmented private forest owners.

4.3.3.1 Socio-demographic aspects

a) Farm-forest owners vs. non-farm forest owners; full-time vs. part-time farmers

In general it can be stated that the share of non-farm forest owners in Eastern Germany (former German Democratic Republic) is higher than in western Germany (Schurr 2006: 267). Schurr estimates that only \(~4\) percent of the private forest owners and 8 to 9 percent of the private forest area is linked to agriculture (Schurr 2006: 266).

b) Living “next door” to their forests vs. absentee/non-resident forest owners

Within the mobilisation project of the *Holzabsatzfonds* (HAF) five forest districts (“*Forstreviere*”) with a total amount of 10,000 hectares and 2,000 forest owners have been evaluated. For reasons of data privacy addresses were not made available, but relevant information was communicated by the forest administration (HAF 2008a: 26). One of the most important results was that approximately 16 percent of the owners addresses were unknown or respective forest owners could not be reached at the addresses that were documented by the state forestry enterprise (the only organisation that manage personal data of all forest owners in Saxony) (HAF 2006: 30).

Consequently, about 1,100 forest owners in the region of Lusatia where studied with regard to the distance between their residence and their forest location. 85 percent of these forest owners addresses had to take a drive of 30 minutes by car to reach their forests, which corresponds to a distance of approximately 30 kilometres (HAF 2006: 31).

Nevertheless, the proportion of forest owners that live “next door” to their forests is expected to decrease. Reasons for that are seen in an increasing mobility of people and inheritance of forests from a less mobile (rural) generation to a more urban one (Schurr 2006: 252).

c) Education in forestry and agriculture vs. no such educational background

More than one decade ago Köpf found that 43 percent of the forest owners in Eastern Germany passed an apprenticeship whether in farming or forest management and even 8 percent of them were trained academically (Köpf 1999: 1123). Because of the described changes in the ownership structures (i.e. “new” forest owners, inheritages etc.) the current status quo of forestry and agricultural education is expected to change although it is not known in which direction.

\(^{43}\) … and, whenever possible, try to relate these characterizations to ownership size categories (see 3.1.2.)
d) Owners’ capacities available for forest management: knowledge, machinery, manpower (time availability)

No data, research work or expert opinion can be cited about the owners’ capacities available for forest management.

e) The share of family income derived from forests and derived from agricultural production

KÖPF found that 12 percent of the forest owners in Eastern Germany realised any income from forestry or agricultural production (Köpf 1999). The definite (as well as present) proportion of income from forestry and agricultural production is, however, unknown.

f) Membership in forest owner cooperatives and forest owner interest groups

The share of membership in the forest management cooperatives in Saxony is one of the lowest in Germany. Only about 2,100 or 2.8 percent of private forest owners are members of such cooperatives in Saxony (SMUL 2010). The Saxon forest owners association (Sächsischer Waldbesitzerverband) represents the interests of ~3,500 forest owners (private as well as community and church forest owners), which means a similarly low degree of organisation of private forest owners.

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

The Saxon forest owners association (Sächsischer Waldbesitzerverband) offers the journal “Der Sächsische Waldbesitzer” (circulation 2,500) for members four times a year. Information for forest owners is also available in the internet at the website of the association (www.waldbesitzerverband.de).

Forest administration (Sachsenforst) also gives information for forest owners via its website (www.smul.sachsen.de/sbs/index.html), by annual reports and through publications (“Schriftenreihe”) regarding specific aspects as for example silviculture, forest conversion, climatic influences or soil improvement.

A number of professional (commercial) journals provide further information for forest owners. “AFZ Der Wald” and “Forst und Holz” are two of the most important journals that provide information for private forest owners. Albeit with a more agricultural background, also “BauernZeitung” gives information about forests and forest management.

Although information for private forest owners is available from different organisations and in different ways only a small share of owners in the region is expected to use it.

h) Other socio-demographic characteristics relevant regarding wood mobilisation

KÖPF found in his research that 51 percent of all private forest owners are retired, nine percent are jobless, mini-jobber or in early retirement, 12 percent work in agriculture or forestry, 23 percent are engaged as employees and 5 percent are independent or freelancer (Köpf 1999). KÖPF disclosed that private forest owners in Saxony averaging at 56 years of age. 47 percent of the owners are older than 60 years (Köpf 1999). In addition to a relatively high average age of forest owners the population of rural areas of Saxony is characterised by low birth rates, an ageing population and migration/movement of labour.
i) Expected trends of socio-demographic characteristics relevant as regards wood mobilisation

A relatively high average age of forest owners as well as migration to urban regions and regions were manpower is needed is expected to negatively affect the possibility of the owners’ personal contribution to manage forests.

4.3.3.2 Attitudes towards forests, forest management objectives, forest management behaviour

- Major attitudes of fragmented private forest ownership towards their forests (e.g. forest as work place, 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.)

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

While in former times forests and agricultural land was an important source for family income, the behaviour patterns are characterised by a broad variety today (Schurr 2006: 248). Both owners and their attitudes are less typical or uniform than in the past. Some important research work for Eastern Germany was done by Köpf and is cited in the following to give a clearer description of forest owners. Although in these studies the questionnaires were directed to private forest ownership in general, results are also valid for fragmented private forest ownerships (see Köpf 1995, 1999):

- 53 percent of forest owners stressed that tradition and heritage play an important role concerning their attitudes towards forests and its management

- 47 percent of owners underline that land ownership itself is important as an asset

- 46 percent of owners are motivated to use their forests for own requirements (mainly as firewood)

- only 4 percent of forest owners regard their forests as a source of income and

- 11 percent valuate forests for leisure time activities

The described attitudes come along with the above described typologies of forest owners. On the one hand there is a certain motivation due to proudness of land ownership, while on the other hand the possibilities to create income are not seen as very important by the majority of forest owners.

Focussing the economic factors of forest ownership

- 58 percent of forest owners regard forest management as economically inefficient,

- and 37 percent of owners evaluate fees and taxes as to high.

Economic interests are important especially for the group of owners which bought forests from the former BVVG during the restitution process of the last years. For the bigger part
of fragmented forest ownership that received their property after the German reunification land ownership is most important as security (although small it is nevertheless an asset) and for autonomy (especially regarding firewood) (Schulz 2/12/2009).

- **Attitudes of fragmented private forest ownership 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 or to delegate forest work)**

The very low share of membership in forest management cooperatives (2.8 percent of forest owners are organised) as well as in the forest owners association can be interpreted as an indicator for a low acceptance towards forest organisations (Schulz 02/12/2009).

Additionally it is often emphasised that it depends on the local forest ranger who is responsible for all private forest owners in a certain district, whether confidence in forest authorities (or in forest-related organisations in general) is provided or not. This would mean that several reorganisations of the forest administration during the last decade which led to high fluctuation of staff could have counteracted any developments of confidence building of fragmented private forest ownership.

Furthermore, expropriation and incapacitation experienced during the four decades of administration within the German Democratic Republic and the course of the restitution process may have led forest owners to lose confidence in organisations and administration.

- **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, forestry education, science, training centres etc.)**

One of the main sources of information is the Saxon forest owners association (Sächsischer Waldbesitzerverband). This organisation offers the journal ‘Der Sächsische Waldbesitzer’ (edition 2,500) for its members four times a year. Also information is available at the website of the association (www.waldbesitzerverband.de). Though mostly owners of larger forest are members of the forest owners association, interests of fragmented forest owners are also represented by the organisation due to lobbying and public relations. The membership publication ought to be an informative platform regarding the aspects of fragmented forest ownership as well.

The forest administration also offers information for private forest owners at its website (www.smul.sachsen.de/sbs/index.html), by its annual reports and in publications concerning specific aspects (“Schriftenreihe”). Especially for the publication of the range and availability of subsidies this website is (or can be) an important source of information. It is however not known whether this source of information is used by the forest owners of small estates or not.

Information is also offered locally by the forest rangers within their districts. Foresters are dedicated to give advice to private forest owners by disclosing their knowledge by personal conversations as well as in local or regional assemblies of forest owners.
Quite recently an initiative has started in Saxony to implement trainings on forestry topics. This initiative is aimed at an inclusion of small forest ownerships (Gerold 10/11/2009).

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

No research work or statistical data is available about the quantity of loggings realised by the owners themselves. It can be assumed that most of the cuttings for firewood are done without any outside help only by the owner’s family. Also loggings for marketing are partly realised by the owners themselves.

It is furthermore expected that owners of small forests employ forest companies for cuttings or other forest management services only recently. This is mainly due to the fact that owners refuse pre-financing of necessary harvesting or transportation costs. Especially owners of small forests try to avoid the delay in payments between logging services and incoming payments from dealers or mills. In case independent harvesting is impossible for private forest owners they prefer to sell wood via stumpage sales to forest operators, dealers or industrial mills (see also section 2.2.1.). These contractual partners offer felling, transport and selling in one, i.e. forest owners can avoid pre-financing.

Sometimes the local forest management cooperative buys the logs from the owners, processes the wood (pooling), optimises assortments and finally sells it. In such cases payments can be obtained by forest owners before service costs must be paid, since pre-financing must be done by the forest association. However such cases are rare in Saxony.

- **What are possible reasons for non-management of private forests? Other factors relevant in terms of attitudes, objectives and behaviour?**

Some additional reasons for non-management and other relevant factors can be mentioned:

- Lack of owners’ addresses
- Difficult ownership situation due to inheritance related problems
- Missing boundaries (landmarks)

One reasons for non-management of forests is that no one except the local forest authorities (forest ranger) knows officially to whom the forests belong to. In some cases, owners’ addresses are not known even by the authorities. Even a survey of the land charge register, the consultation of neighbours or community authorities can be ineffective. As a consequence private forest owners cannot be confronted with ideas concerning a more effective forest management.

Small forests are often inherited by several heirs. Due to certain types of disagreement the distribution of the heritage can lead to long-term legal disputes. Harvesting is often impossible in such situation.

The exact boundaries of small forests are often unknown by the owners. The East German Administration awarded remunerations for the extraction of boundary stones
(until 1989). Thus a time-consuming and expensive identification of borderlines between the forest properties is necessary today.

- **Expected trends regarding relevant factors**

The trend of the above mentioned factors which influence the management or non-management of fragmented forests could be summarized in the following manner:

1. A low amount of wood that can be offered for commercial use

The problem of low amounts of wood offered by the fragmented forest ownership is a problem which results in only little incentive to sell wood. A good wood pooling service done by the local forest companies or by the local forest association could resolve this negative factor. Some models exist in Saxony.

2. Needs for subsistence (mainly firewood)

Energy prices are expected to increase in a long-term view. Forests are regarded to provide some independence from rising prices and uncertain energy markets. So firewood could be regarded more precious even in the future. This could result in a more restrictive supply to commercial buyers.

3. Insufficient infrastructure (roads) in private forests

Investment in forest infrastructure is expected to take place only when high and governmental subsidies become available. Otherwise a negative impact due to deteriorating infrastructure must be expected.

4. The unavailability of market access and deficiencies in information how to enter the market

Forest authorities, forest management cooperatives and private companies (forest service companies as well as commercial buyers) try to improve the market access for fragmented private forest owners. Albeit some activities have negative impacts (e.g. re-organisation of the forest administration), the availability of market access through pooling of wood as well as information of fragmented forest owners can be considerably improved in the long-term view.

5. Changes in the forest administration affecting guidance for small forest ownership and a new structure of subsidies

It is expected that the ability of forest authorities to offer advice to fragmented forest owners will deteriorate (due to larger forest districts, decreasing staff) in the future. Nevertheless a reduction in the staff of forest authorities could be compensated by the implementation of adapted forest policy instruments (e.g. direct subsidies instead of institutional subsidies).
4.4 Why is there a certain level of motivation to actively participate in forestry?

4.4.1 Characteristics of private forest owners that are of central importance as regards wood mobilisation

4.4.1.1 The most important factors that explain why fragmented private forest ownership exploit or not exploit the sustainable harvesting potentials of their forests

Concerning the obstructions to sustainable forest management and wood use in fragmented private ownerships the following factors were identified in the expert interviews and the focus group session.

Factors, why private forest owners exploit their forests are:

- Demand for firewood and other own requirements for wood
- Generation of income
- Forest management without economic reasons (e.g. thinnings)

Factors, why private forest owners do not exploit their forests are:

- A low amount of wood suitable to be offered for the market
- Insufficient infrastructure (roads)
- Lack of organisations that are able to pool smaller wood amounts for sale
- Unavailability of market access
- Lack of information/knowledge concerning forest management and wood marketing (shrinkage of advisory services offered by forest rangers)
- As a result of the permanent reorganisation of the state forestry enterprise: unavailable (or unknown) contact person within the forest administration and lacking trust
- Structure and availability of subsidies
- Existence of other ambitions except forest management (e.g. hunting, nature conservation)

4.4.1.2 Description of these factors and explanation of cause and effect in general

4.4.1.3 Description of expected future developments of these factors

Descriptions of expected future developments were described above.

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44 compare to 3.3.1. and 3.3.2.
4.4.2 Discussion of the most important factors regarding wood mobilisation

4.4.2.1 Description of which incentives could be strengthened and which barriers could be overcome in the short-, medium- or long-term

a) Factors to improve wood mobilisation in the short term:

- The access to forest owners’ data would increase the possibility for other organisations to contact private forest owners more easily. This means that providing addresses to interested organisations would improve the market access for forest owners, since owners would get necessary information concerning wood use and marketing (Richter 10/11/2009, von Geibler 23/11/2009).

- Owners of small forest properties do often have to pay disproportionally high costs for harvesting activities (felling, transport, marketing). Pooling of wood for marketing would reduce these costs. Improved pooling activities could be realised within a short-term view.

b) Factors to improve wood mobilisation in the medium term

- One factor to improve wood mobilisation in the medium term is to replace institutional subsidies (forest administration, subsidies for the administration costs of forest management cooperatives) by direct subsidies. Direct subsidies should be related to the forest area under management (Ransch/Schönbach 10/11/2009).

- The improvement of the infrastructure in the forests, especially regarding the construction and maintenance of forest roads in less accessible regions is another basic factor for wood mobilisation in the medium-term view (Gerold 10/11/2009).

c) Long-term-factors to improve wood mobilisation

- Information about forests and wood marketing improves the willingness to manage forests. Information could be offered in different ways (e.g. workshops, flyer, mass media). Although it seems to be a long-term process, the effects are generally expected to be strong (Gerold 10/11/2009).

- An improved degree of organisation within forest management cooperatives and forest owners associations goes along with wood mobilisation. Forest policy should create instruments to encourage self-organisation of fragmented forest ownership and thus increase the number of members in these organisations. (Schmieder 11/11/2009).
4.5 What other characteristics of fragmented private forest owners are important to understand their reactions to (potential) measures that aim at mobilising wood from their forest lands?

4.5.1 Indication of other factors and explanation of cause and effect

Following characteristics should be taken into account to understand the reactions of forest owners:

- Personal attitudes and personal motivation is complex. Especially for the owners of fragmented forests the economic motives are of lesser importance than non-economic and social motives (Schurr 2006: 252).

- A certain degree of stability among all different acting organisations and structures is highly recommended (Schmieder 10/11/2009, von Geibler 23/11/2009) since trust is a key factor for wood mobilisation. In recent years, stability did not come along with mobilisation activities: Prices increased and decreased, reorganisation processes of the forest administration created confusion, huge forest industries were first built up and later nearly went bankrupt. But owners of fragmented private forests need and expect stability.

- Competition between the active parties within the regional forest sector must be mentioned as well. (Weber 4/12/2009). The state forestry enterprise competes for wood with local forest management cooperatives and forest service providers. This competition results in confusion and is often a waste of money since forest authorities are financed by the government and local forest management cooperatives are partly financed by subsidies.
5 Mobilisation

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

5.1.1 Description of the measures for wood mobilisation in the region

A number of measures have been implemented in the last years. These measures are either implemented within specific projects (mostly with restrictions concerning time and financial resources) or realised within the regular work of forest organisations (e.g. administration).

“Cluster-Initiative” (Cluster initiative)

The so called “Clusterinitiative” (cluster initiative) emphasize the importance of wood mobilisation and focuses on the development and implementation of measures to improve wood mobilisation in the region (Gerold 11/11/2009; Schurr 10/11/2009). One main project is “Bioenergie Oberlausitz” (bioenergy Upper Lusatia), a new cooperation where farmers and forest owners produce biogas, firewood and electricity. An important driver for this project is the idea that “firewood for local energy” is easy to communicate to land owners.

“HAF” mobilisation project in the Lusatia region

A mobilisation project in the Lusatia region has been realised from 2005 to 2007 by the HAF (Holzabsatzfonds). The main objective was to support a local forest management cooperative and to develop new instruments for wood mobilisation. Emphasis was placed on the information of private forest owners (HAF 2008a). Financial support for the project was provided by the wood industry.

Specific campaigns of forest administration

Specific forest fairs or conventions organised by the forest administration open to the public are important for the information of forest owners and their forest management behaviour. The so called “Sächsischer Waldbesitzertag” (day of Saxon forest owners) or “Mitteldeutscher Waldbesitzertag” (day of forest owners of Middle Germany) which take place every year are two of such events for forest owners (Schulz 02/12/2009).

A reward for good forest management was announced by forest authorities for the first time in 2009 (SMUL 2009). Private as well as community forest owners have already been amongst the awardees. The award and its related activities (public prize giving ceremony) are good opportunities to emphasize the topic of forest management in the local and regional public.

Forest authorities also offer seminars concerning harvesting methods and the use of chainsaws. Most workshop participants are small forest owners that are interested in using their forest for firewood production. These seminars offer thus excellent oppor-

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45 The so called “Cluster Forst und Holz” (cluster forest and wood) recently became important in Germany. Projects trying to improve innovative ideas from forest and wood industry have been developed and implemented in several federal states of Germany.
tunities to contact fragmented forest owners and can be used to inform about general aspects of forest management as well as the use of the potential of forests.

**Permanent activities of forest administration**

Most measures executed by the forest authorities do not have any “project character”, but are inherent in the structure and function of forest authorities. Implemented policies and the reorganisation of forest administration are aimed at an improvement of wood mobilisation in the middle- and long-term point of view.

Most important of all measures provided by the forest authorities is the system of forest districts, where one forest ranger is dedicated only to the private forests and give advice to forest owners (Schmieder 11/11/2009). Thereby most experts emphasize the importance of continuity. Authorities’ staff and forest districts should remain stable for years to establish an atmosphere of confidence. Forest management decisions are decisions for long time periods, which means from the owner’s point of view that the acting persons must be the same for a long time, too.

With reference to this aim, forest policy failed completely in the last decade. Various reorganisation processes took place. Even in case these reforms have been economically successful, structures as well as staff have changed so often that experts complain about created confusion amongst private forest owners.

Apart from support by authorities’ structure (forest rangers and private forest districts) a policy of direct support (financial subsidies) has been developed. Recently a policy guideline was announced with the aim to implement a mobilisation bonus programme for local forest management cooperatives (*Förderrichtlinie Wald und Forstwirtschaft – RL WufF/2007*). This programme intends to give financial support to commercialise wood from private forests.

**Small-scale measures with a local focus**

Some experts mentioned the existence of a variety of small-scale local projects or activities. Although these activities hardly have an impact at the regional or even national level, they can nevertheless be successful within a community or in a forest district. These wood mobilisation initiatives are accomplished by local partners (in most cases by the local forest ranger) while support is given by local companies or communities (Weber 04/12/2009, Schulz 02/12/2009).

5.1.2 Description of the institutions and persons that initiated and implemented the measures in the region

“Cluster-Initiative” (Cluster initiative)

<table>
<thead>
<tr>
<th>Title:</th>
<th>„Cluster Forst und Holz Sachsen“ (Cluster forests and wood Saxony)</th>
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<tbody>
<tr>
<td>Realisation:</td>
<td>Ostdeutsche Gesellschaft für Forstplanung mbH</td>
</tr>
<tr>
<td>Responsible person(s):</td>
<td>Dr. Denie Gerold, Henrik Thode</td>
</tr>
</tbody>
</table>
Case study Saxony

Financing: Saxon Ministry for Environment (SMUL)
Period: June 2008 – May 2010
Results: www.cluster-forstholzsachsen.de

“HAF” mobilisation project in the Lusatia region

Title: „Holzmobilisierung im Kleinprivatwald – Projektregion Lausitz“ (Wood mobilisation in small private forests in the region of Lusatia)

Realisation: BBW-Consult in cooperation with the local forest management cooperative “Forstbetriebsgemeinschaft Brauna w.V.”

Responsible person(s): Prof. Dr. Dr. h.c. Gero Becker, Dr. Bernd Wippel, André Ransch

Financing: Holzabsatzfonds (HAF) (German timber foundation, Bonn)
Period: 2004 – 2007
Results: www.info-holzmobilisierung.de

Forest authorities

Title: no specific title; forest authorities are responsible for forest policy in Saxony

Institutions: Saxon Ministry for Environment (SMUL) and the state owned forestry enterprise “Staatsbetrieb Sachsenforst” (SBS), department of private and community forests

Responsible person(s): Bert Schmieder

Financing: State of Saxony
Period: without determination
Results: no specific project-related results

5.1.3 Description of the measures’ success and the reasons behind

The Mobilisation Bonus Programme (“Mobilisierungsprämie”)

Out of the mobilisation bonus programme an extra of 2 Euro per cubic meter is offered for wood mobilisation in private forests. However the bonus is only paid to the local forest management cooperative for related forests of its members.
Case study Saxony

The idea of the mobilisation bonus programme is to motivate the forest management cooperatives to develop wood mobilisation as a business area. 2 Euro per cubic meter should compensate the efforts of mobilisation or even allow some benefits. But access to this subsidy is related to some conditions: the minimum amount of marketed wood must be 4,000 m³ each year. Regarding the existing cooperatives, about one half of them have less than 1,000 ha members’ area. For these small management cooperatives access to the bonus programme is only possible in case more owners become members or if merging leads to bigger cooperatives.

As a first short-term result, the total size of organised forest lands really has increased. But the share of membership by persons did not rise. This means that up to now only the larger forest ownerships have benefited from this programme (von Geibler 23/11/2009).

Table 15: Development of the membership in forest management cooperatives

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<tr>
<th>Year</th>
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<th>Members (number)</th>
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<td>2009</td>
<td>29</td>
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Results from the HAF mobilisation project

The HAF mobilisation project was realised from 2004 to 2007 in a period of relatively high wood prices and favourable parameters for wood sales even under the difficult conditions of less organised private forest ownership in the region of Lusatia.

One of the most important findings of the project is the need of a clear definition of the roles of participants. Why is this? Within the wood mobilisation process five fields of work can be differentiated:

1. Selection of the area of activity
2. Information and motivation of the forest owners
3. Preparatory work in the forests
4. Harvest, harvest control, management of wood lists
5. Selling and accounting

Up to now the forest administration is responsible for the whole process. Within the project there was an attempt to specialise the previously mentioned tasks. Forest administration should have been responsible for the non-commercial aspects of wood mobilisation as the selection of the area of felling, the information and motivation of the private owners and
the preparatory work in the forests. The management of the felling, wood lists, selling and accounting should have been in hands of the local forest management cooperative. These last mentioned tasks generate income and are strictly market related. But the project failed in reaching an agreement, how tasks could be shared. So competition was created between public and private activities regarding wood mobilisation.

The existing competition between forest authorities and the local forest management cooperatives in harvesting and marketing of wood from fragmented private forest owners has negative effects. Both, the official forest ranger (paid by the government) and the local forest management cooperative (receiving subsidies from the mobilisation bonus programme), compete for wood of private forest owners instead of working together. This competition worsens the chance for local management cooperatives to become economically successful in mobilisation activities (HAF 2008a).

Another main result of the HAF project is the importance of a pooling process. Wood pooling ("Holzmengenbündlung") makes mobilisation activities far more efficient than isolated felling and wood marketing. The following process should be implemented: First owners must be identified and contacted within a specific area. Afterwards people must be convinced that management of their forests improves the forests' productivity and stability. Motivation of forest owners through the local forest ranger is dependent on good contacts, key-persons, good marketing etc. In case some of the owners agreed in using their forests, more sceptical persons took part in the running felling process, too. Good practice and positive examples are the best arguments within the wood mobilisation process aimed at small forest ownership. Within this pooling process even the smallest forest could be involved without any problems (HAF 2008a).

5.1.3.1 *Indication of approximate costs of the taken measures and the funding sources*

Two calculations can be discussed concerning costs for mobilisation:

**Structural costs of mobilisation**

If the whole process of mobilisation is regarded as to be done by forest authorities then mainly the costs of the local forest ranger must be taken into account. The local forester from the forest administration gives advice and assistance to private forest owners of his forest district. In Saxony these staff is dedicated only to the private forests. Whereas advice is without charges, the support in wood marketing needs a fee requiring contract, if the forest's size is above 3 hectares. This means on the other hand that the majority of fragmented private forest owners do not have to pay any costs for wood mobilisation.

Costs for an employee of forest administration are approximately 50,000 Euro a year. The amount of mobilised wood from fragmented forest ownership per district can be estimated at 1,000 to 2,000 m³ annually (HAF 2008a). Assuming that forest rangers spend 50 percent of their time with wood mobilisation activities, personal costs per cubic meter would amount to 12.5 to 25 Euro. Overhead costs are not even included. This institutional subsidy must be regarded as a highly expensive measure of wood mobilisation.
Some research on costs of mobilisation

Within the HAF mobilisation project mobilisation costs have been evaluated. Every cubic meter mobilised in fragmented private forests went along with mobilisation costs of 6 to nearly 10 Euro in the Lusatia region (HAF 2008a: 90) and 5 to 8 Euro in the Eifel region of Rhineland-Palatinate. Both projects were financed by the German timber foundation (Holzabsatzfonds)\textsuperscript{46}.

Figure 9: Mobilisation process and its costs (Wippel 2010)

Mobilisation in fragmented forest ownership

1. Select mobilisation
2. Contact owners
3. Preparational work
4. Control felling activities
5. Commercialization of wood
6. Calculation and accounting

ca. 5 - 10 € per m\textsuperscript{3}

5.1.3.2 Estimates of the effectiveness of measures in terms of additionally mobilised wood supply

The effectiveness of measures was also evaluated within the HAF mobilisation project in the Lusatia region. The local forest management cooperative (FBG Brauna) improved its activities in forest mobilisation considerably. Before the project started in 2005 only 2,000 m\textsuperscript{3} of wood were marketed by the cooperative per year. The volume of mobilised wood increased to 8,000 m\textsuperscript{3} in 2006 and to 11,000 m\textsuperscript{3} in 2007.

Following reasons are mentionable for the growth of volume of mobilised wood:

- A private forester that was financed mainly by the HAF\textsuperscript{47} and partly by fees paid by the wood sellers worked full-time in wood mobilisation.

\textsuperscript{46} Calculated costs in both projects involved the costs of mobilisation that were done by the local public forest ranger.

\textsuperscript{47} The HAF project in turn was financially supported by the wood industry.
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- The pooling process had been optimised within the project period.

- Some public foresters supported the process (made contact, helped with addresses, supervised the fellings), whereas the local forest management cooperative was responsible for wood marketing.

- Wood prices were relatively high and transport distance to wood industry was minor.

Figure 10: Volume of mobilised wood of a local forest management cooperative (red coloured areas)

In case of the forest management cooperative (FBG Brauna) marketed wood was evaluated concerning its origin from fragmented private forests.

Up to 2005 the average volume of wood commercialised per forest owner (member of the cooperative) was about 167 m³. The average amount of marketed wood decreased to 78 m³ in 2006 and to 61 m³ in 2007 (HAF 2008a: 87). Considering a thinning with an average harvesting amount of 30 to 40 m³ per hectare, the average of 61 m³ for 2007 would mean a related forest size of approximately 1.5 to 2 hectares.
Forest authorities and their local staff

Experts emphasized the importance of the forest district and the local public forest ranger for Saxony (Schurr 10/11/2009; Schmieder 11/11/2009). However, the attitudes of German forest authorities regarding the system of forest districts and local forest rangers are differing to a large extent. While other federal states enhance forestry staff in regions where fragmented forest ownership is dominant (Wippel 2010), Saxon forest policy reduced the number of local forest rangers. Additionally, the responsibility for private forest owners was allocated amongst two authorities, i.e. one federal state-level administration and one regional authority with own staff are now responsible for fragmented forest owners.

Forest authorities and wood marketing

The volume of wood marketing for private forests is about 100,000 cubic meters per year (Schmieder 11/11/2009). Whereas forest authorities regard this amount of wood as low and do not see any competitive influence on forest management cooperatives (Schmieder 11/11/2009), management cooperatives in turn feel that forest administration is impeding the cooperatives’ marketing activities and market access to high extent (Ransch/Schönbach 10/11/2009, HAF 2008a).

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48 Are the measures expected to be intensified or to be increased?
Organised forest owners – improving the situation of local forest management cooperatives

The total size of organised forest land has increased during the last years. As a result of the mobilisation bonus programme larger forest ownerships joined existing forest management cooperatives or found new organisations. However, the requirements for receiving subsidies from this programme aimed at a higher membership proportion of smaller forest ownerships in management cooperatives were changed per 2010 and will again be changed per 2013. Forest administration assumes that this alteration will lead to a step by step integration of smaller forests and thus a higher share of organised fragmented owners (Schmieder 11/11/2009).

Wood industry – increasing demand

A huge wood industry was established in Eastern Germany in the last decade. Capacities have increased not least due to high amounts of wood in private forests in the region. High capacity utilisation rates accompany an increasing demand of raw material. Wood market development and wood demand can hardly be foreseen. Nevertheless, most experts expect an increasing wood demand in Saxony after overcoming the present economy crisis (Focus group 14/12/2009).

Consequently also private forest owners can realise profits due to good wood prices, financial support of mobilisation projects and higher consideration of forests of smaller size in general.

5.1.4.1 The main new instruments for wood mobilisation in the region

As a result of several wood mobilisation activities a number of instruments have been realised. The most important instruments are the following ones:

- Wood pooling process

The implementation and optimisation of the wood pooling process in fragmented private forests is one of the most effective measures which can used to reduce harvesting and marketing costs and scale up felling volumes. (HAF 2008a)

- Subsidies

The mobilisation bonus programme (“Mobilisierungsprämie”) can be assessed as an instrument for supporting owners who are already managing their forests. The change in subsidies’ requirements could lead to a more intensive integration of fragmented forest owners in the wood market. Subsidies labelled as “mobilisation bonus” have necessarily to focus on small forests.

- Firewood – gaining access to fragmented forest ownerships

Firewood can be regarded as a new argument to change the owners’ attitude towards a regular use and management of forests. Experiences from the project “Cluster-initiative/Bioenergie Oberlausitz” (Gerold 11/11/2009) and other activities towards firewood (Wippel 2008) should be used to come into contact with private forest owners.
Information and education/training

Activities associated with information and education/training lead to results only in a long-term view. Nevertheless this instrument should be regarded as highly important. After higher interest was put on the question how to improve knowledge of Saxon forest owners concerning forest management, research is presently done to emphasize this topic (Gerold 11/11/2009).

5.1.4.2 Lessons learnt from the past

Following aspects can be listed as main lessons learnt from the past:

- **The local forest ranger – taking a key position**
  
  The existence of local forest administration staff plays a key role for wood mobilisation. Foresters should give fair-minded advice and guidance how to manage forests and how to fulfil the forest owners’ goals at best. Additional advisory service is necessary concerning financial support/subsidies.

- **Pooling wood – the only way of economical effectiveness in fragmented forests**
  
  If wood of fragmented forest ownership should be offered to the wood industry, a pooling process must be implemented. Well planned and realised pooling can be arranged by forest administration, forest management cooperatives or other private organisations.

- **Wood marketing – forestry groupings first**
  
  There are three reasons why forest management cooperatives (as well as forestry unions) are most likely the organisations for the realisation of wood pooling activities: 1. Forest administration reduces its staff, forms larger forest districts and is not willing to spend much attention to forest owners with properties smaller than five hectares. 2. The wood pooling process is expensive and thus only done by private organisations when wood prices are high. 3. The mobilisation bonus programme was elaborated especially for forest management cooperatives to encourage forest owners for wood marketing that is independent of forest administration.

  Great efforts should be made to improve the power of these organisations. Their role as link between a modern wood industry and (traditional) fragmented forest owners as wood suppliers is of high importance for wood mobilisation.

- **Demand side – Awareness of the attitudes and fragmentation of suppliers**
  
  Higher consideration of the wood industry towards fragmented private forest owners has not necessarily to result in higher prices. Other important factors as stability in the buying process, reliability in wood sorting and accounting and quickness in payments are very important aspects. The partnership between wood industry and fragmented ownership could be improved if these factors are taken into account.
5.2 What are barriers for wood mobilisation from fragmented private forest ownership in the region?

5.2.1 Explanation of the barriers

- Barriers referring to the owners’ attitudes

Owners’ attitudes vary to a large extent especially within small private forest ownership (Schurr 2006: 254). While interests in and knowledge about forests are differing from owner to owner, wood mobilisation is always solely related to felling and marketing of wood. There are consequently numerous forest owners whose attitudes are not compatible with the attempts of wood mobilisation activities.

- Barriers concerning the natural situation and the infrastructure of forests

Saxon private forests are partly characterised by low productivity, low wood volumes and thus hardly noticeable income. In case financial effects for private forest owners do not exist, arguments of forest stability and productivity improvements must be more clearly emphasized. The absence or bad state of roads in private forests must also be mentioned as a barrier for wood mobilisation.

- Barriers concerning forest owners’ organisations

Saxony is the federal state with the lowest share of organised private forest owners. In some Saxon regions forest management cooperatives do not exist at all. This means that fragmented private forest ownership cannot benefit from an effective owners’ organisation and cannot gain advantages due to long-term experience.

- Barriers referring to forest policy in Saxony

Regarding wood mobilisation forest policy in Saxony is related to a number of barriers and attempts to overcome these obstacles. Most important barriers are:

- Reorganisation of the forest administration
- Reduction of local administration staff
- The mobilisation bonus programme and competition in wood marketing with forest management cooperatives

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

5.3.1 Explanation of the factors with the strongest impact on wood mobilisation from fragmented forest ownership in the region

Most important for wood mobilisation from private ownership are the following factors:

- The extent of fragmentation
- Owners’ attitudes and behaviour towards forest management
Case study Saxony

- Instruments designed and implemented by forest administration
- Pooling forest management and wood marketing
- Wood prices

A detailed description of these factors is given in the following section.

5.3.2 Description of how the factors do work

The extent of fragmentation

The extent of fragmentation can facilitate or complicate wood mobilisation from private forest ownership. The larger and well-structured the forest properties are (i.e. low degree of fragmentation) the easier wood mobilisation activities can be implemented. On the other hand mobilisation activities need much more effort in case of small forest property sizes (however an average size of 3.2 ha for Saxony’s private forests shows no significant disadvantage compared with other German regions). Additionally the properties’ shapes have substantial influence on wood mobilisation. As a consequence of inheritance modes in Saxony there is a number of very long, but narrow (in breadth) forest sections (“towel parcels”) where forest management is exceptionally difficult. The existence and condition of forest roads as well as the presence of (visible) landmarks are two further factors relevant for the management of fragmented private forests.

Owners’ attitudes and behaviour towards forest management

The owners’ attitudes are complex and not mainly driven by economic objectives. Amongst other factors family tradition, landowner pride and a potential independence from energy prices are important drivers for decisions concerning forest management or land sale of fragmented private forest owners. Information can be a very helpful instrument to “mobilise” uninterested forest owners or to affect current attitudes. Although some research work emphasized the importance of ownership categorisation, a classification alone does not mobilise wood. Consequently, specific instruments and applicable measures for wood mobilisation are necessary to be developed under consideration of elaborated ownership category research.

Instruments designed and implemented by forest administration

The local forest ranger is responsible for advising of private forest owners. Especially in case of fragmented forest ownership forest administration acts as a full service provider. Services in wood marketing (normally linked to specific fees) are free for private forest owners with property sizes below 3 hectares. Consequently a confidential relationship between forest administration and private forest owners has been developed. However, after reorganisations of forest administration private forest owners are presently faced with a number of problems such as non-transparent responsibilities (a consequence of a task sharing among authorities) or limited capacities of local forest rangers due to staff reductions.
Apart from the administration’s role in wood mobilisation also wood marketing is conducted by the authorities. SCHMIEDER estimates the share of wood that is marketed on behalf of private forest owners at ~20 percent (Schmieder 11/11/2009). It is often stated that wood marketing activities of the forest administration counteract the support of forest management cooperatives. A specialisation in tasks (public tasks: advice; private tasks: wood marketing) is thus recommended by some experts.

Fragmented private forest owners have been in the focus of forest policy for a long time. Disadvantages resulting from small forest properties are intended to be compensated by the help of several policy instruments. While general formulations concerning support of private forest owners are to be found in the German forest law (Bundeswaldgesetz), federal states are obliged to realise specified assistance. Subsidies are referred to as very important measures of support. They were given for the construction and maintenance of forest roads, for liming forest soils, the use of specific tree species for regeneration etc. (see also section 3.6.6.). Concerning wood mobilisation the so called “Mobilisierungsprämie” (wood mobilisation premium; mobilisation bonus programme) must be mentioned as to be most important, albeit some interviewed experts assume the subsidies’ structure as inappropriate and its success as relatively small.

**Pooling of forest management and wood marketing**

While small forest owners can easily harvest firewood with chainsaws and use it for own requirements or sell it to consumers directly, wood industry set a number of conditions concerning wood purchase. Requirements are for example a minimum wood volume of a full truck load (~30 cubic meters), consistent qualities of assortments or a relatively steady flow of raw material. But the owners of small forests do not normally have neither the skills nor appropriate machines or tools for professional harvests. Additionally they lack the necessary knowledge and experience concerning industrial consumers. Hence there is no market access for fragmented private forest owners. These problems can be overcome by the help of pooling organisations that are interested in forests of (even small) private owners as forest administration, forest management cooperatives, forest operators or other organisations/institutions. If one of these partners is involved professional forest management and wood marketing can be implemented to the advantage of the owner as well as of the wood industry.

**Prices**

High prices accelerate wood mobilisation also from fragmented private forests although the absolute income effect for these owners is negligible due to small property sizes. In periods of favourable economic conditions and high wood prices all stakeholders are encouraged or even forced to intensify wood mobilisation activities: Industry has to buy wood due to a potential lack of raw material, forest administration is more active in advising private forest owners to let them participate in the favourable market situation and finally the forest owners are willing to manage their forests and benefit from high prices.
5.4 What other factors may be important regarding wood mobilisation from fragmented private forest ownership?

Membership in local forest management cooperatives

Membership of private forest owners in management cooperatives in Saxony is lowest compared to other federal states of Germany. In some Saxon regions not a single forest management cooperative exist. In case forest owners join a pool of harvest activities they do not have necessarily to be members of a forest management cooperative. However from the political point of view a number of advantages come along with the membership of small private forest owners concerning wood mobilisation, e.g. access to owners’ addresses or the possibility to regularly inform forest owners.

Saxon wood industry with high capacities

Wood industry in Eastern Germany has substantially increased its capacities during the last decade, which consequently led to an improvement of the wood markets from the owners’ point of view. The high demand on wood can be regarded as a positive factor for wood mobilisation.

Lack of information and trust

The forest owner’s lack of knowledge concerning forest management, wood markets or responsible/advising contact persons is often observed as a quite important factor with respect to wood mobilisation. Interested and well-informed forest owners as well as members of forest management cooperatives can easily be won for wood mobilisation activities in most cases. In general the supply and availability of information related to forests and its management has increased during the last years mainly attributed to the activities of the forest administration, the forest owners association and other institutions. Although much information is generated for private owners, some improvements could be made regarding the mode of communication.

Firewood first

The high importance of firewood was already mentioned above. In context with wood mobilisation the following remarks seem to be essential: Firewood is a valuable product for forest owners since it can be used for energy purposes which in turn means (partially) independence from external energy delivery and thus energy prices. In case forest owners have time they can spend it by working in the forest instead of paying forest service providers. This consequently means that firewood production meets a number of economical as well as recreational objectives of owners and can be used as a good starting activity to convince forest owners of a more intensive forest management and wood use.
6 Discussion

The following discussion is structured as follows: Firstly data, methods and experts’ estimations will be discussed and evaluated, while secondly a discussion of the main results will be represented. Results will be discussed within three sections concerning “fragmentation” of forest ownership, mobilisation character of “wood prices” as well as “forest administration and forest management cooperatives”.

6.1 Data, methods and experiences

Surveyed secondary data and results of the expert interviews represented in this report are featured as follows:

- There is no consistent definition for the term “fragmented (or small) forest ownership” neither for Saxony nor for Germany. Some statistics refer to 20 hectares as a maximum size for the category “small private forest ownership”, while other definitions consider a size of 200 hectares as the limit for “small” private forests. For the present study 10 hectares were determined as an adequate maximum size for fragmented forest ownership.

- Referring to secondary data, a general lack of official statistics became apparent. No comprehensive data was available for harvesting amounts or sales volumes of private forest owners, for wood volumes used for own requirements, for buying volumes of the wood industry, amounts of export and import, assortments etc. Statistics concerning the energetic use of wood (e.g. pellet production, heating mills, (...), sales volumes, buying volumes, share of saw mill residues) do not exist at all. However, this lack of published data could be partly compensated by estimations of experts. Expert appraisals were in most cases results of personal experiences and knowledge or deducted from research in specific regions or on specific topics. Due to differing experiences and research estimates regarding specific contexts varied to some extent.

- There is also a high degree of heterogeneity amongst private forest owners (e.g. differing property sizes and structures, attitudes and social backgrounds) as well as amongst the wood industry. Few mills with very high capacities (> 1 million cubic meters of wood p.a.) exist alongside with a number of mills with low processing amounts (< 1,000 cubic meters p.a.). Calculated averages must therefore be handled with care.

- Only few current research on small private forest owners, their attitudes and behaviours exist for the region of Saxony. Knowledge about ownership categories and owners’ attitudes towards their forests is however important especially with regard to the implementation of new instruments and the effectiveness of mobilisation measures. For the case study some older studies provided useful information. Most valuable and up to date is the study of SCHURR (2006).

Secondary data, methods and experiences supply the background of the results of this case study. As in many other German regions the information concerning small forest owners and wood markets obtained for Saxony is neither sufficient nor satisfying from a
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researchers’ point of view. However, data were not only gathered via secondary data investigation but also by expert interviews and one focus group session. As a consequence the used methods can be regarded as appropriate to compensate the lack of secondary data and empirical research. Results of the case study are thus recognised as generally reliable.

6.2 Discussion of the results

Apart from the results discussed above three especially important complexes of results are to be described and discussed in the following.

Fragmentation – more than small private forest ownership

Saxony’s forest landscape is characterised by highly fragmented private forest ownership. The average size of private forest properties is about 3.2 hectares. Additionally the properties’ shape (quite long but only a few meters wide; “towel land parcels”) and the lack of forest roads or its bad condition does in part thwart effective forest management.

Owners of small forest properties have been in the focus of research work in the eastern as well as in the western part of Germany. Results show that economic interests of private forest owners are not dominant; instead a combination of a number of objectives for each owner can be determined. Additionally, attitudes and behaviour towards forest management vary from forest owner to forest owner. The formation of ownership categories pictures an approach to understand motivations as well as behaviours of forest owners and to design and implement adapted instruments and policies. However, such categorisation cannot fully overcome the high degree of heterogeneity amongst private forest owners’ objectives, particularly since attitudes and behaviour can change over the years.

The situation of Saxony’s forest owners is characterised by the fact that no noteworthy tradition in private forest ownership exits compared with Western Germany or in other European regions. After the German reunification a restitution process started and new (small as well as larger) private owners emerged. Nonexistent family tradition and thus a lower degree of emotional relatedness must be considered as a specific characteristic of the region especially in case of the adaption of mobilisation instruments that were effective in other regions.

Finally fragmentation of the Saxon private forests is not only a fragmentation in sizes and properties’ structures but is also a fragmentation of interests, behaviour and tradition within the fragmented private ownership and finally even within the forest owner himself. For this reason membership in local forest management cooperatives is low and not expected to rise considerably in a short-term view.
Good prices mobilise – even if the absolute effect for private forest owners is small

Several experts emphasized that wood prices are important for wood mobilisation from private forests – even for fragmented ones. For private forest owners with small properties income from wood sales is low in general and variations in wood prices do have negligible effects. Nevertheless, high wood prices do have positive impact even for fragmented private forest owners. Why is that?

The main reason can be seen in the fact that high wood prices come along with a convenient economical disposition. In periods of favourable economic conditions wood industry participates in good sales markets and thus capacity utilisation is high. To minimize the risk of wood shortages in these periods of high demand, wood industry is willing to pay higher wood prices. As a consequence forest service companies are also able to close in satisfying contracts. Local forest rangers feel as well motivated to give recommendations concerning harvesting activities to private forest owners since there is a low risk that harvesting decisions are untimely. Even if the income effect for small forest owners is low (and thus rather independent on current wood prices) they are more satisfied appreciating that they sold their wood for higher prices.

This means that the impact of high wood prices meets the atmosphere of a gold rush situation that affects wood industry, forest administration, forest operators and management cooperatives as well as private forest owners independently of the mobilised amount of wood.

Forest administration and management cooperatives – alliance/fellowship in wood mobilisation

Forest administration plays a key role in wood mobilisation from fragmented forest ownership. Reasons for this unique position of forest authorities are seen in the local forest rangers and their districts, in the stewardship for forest owners' addresses, in processing of subsidies and realisation of trainings and information. But although there are a number of measures and advantages, mobilisation efforts are not always effective.

Besides structural support due to local forest rangers' guidance, direct support of private forest owners is provided via subsidies for wood mobilisation. The mobilisation bonus programme ("Mobilisierungsprämie") aimed at financial support of forest management cooperatives and related private forest owners. Apart from financial support, general support of forest management cooperatives goes along with some inconsequence. Two aspects should be considered in this context: (1) local cooperatives do not have any access to forest owners' addresses, and (2) forest administration adheres to a commitment in marketing of wood from private forests. Consequently there is a conflict of intentions of the forest administration (offering support for cooperatives vs. use of constitutional advantages).

At the same time forest administrations' local influence is decreasing due to reductions in staff and shared responsibilities. Forest management cooperatives could compensate the resulting lack of services for private forest owners mainly due to specialisation in wood marketing. It will however take some time, need further political efforts and a clear assignment of tasks and responsibilities until forest management cooperatives are able to operate self-sustaining and independent of forest administration.
7 Conclusion

The main conclusions as well as recommendations conveyed by the present case study are described in the following.

Fragmentation remains

Considering last years' research results and experiences with private forest owners it can be concluded that the situation of fragmentation will not change in the near future. Despite the realisation of land consolidation parties involved in the wood mobilisation process must be aware that fragmented private forest ownership remains a challenge for a long time. Attitudes and behaviour of owners of small private forests are not expected to alter short term. This means that wood mobilisation from fragmented private forests remains a big challenge. Forest management cooperatives will not solve the problem of fragmentation, even if the numbers of organised small private forest ownership are expected to rise due to present subsidies’ conditions. However, the large majority of fragmented private forest owners cannot be gathered by management cooperatives.

Nevertheless there is hope. With instruments consequently implemented, as wood pooling in fragmented private forests, mobilisation could be improved even if fragmentation continues.

More research and better statistics

KÖPF and SCHURR did very important research work in Saxony. Nevertheless there is a lack of current and qualitative (empirical) research. The development of fragmented private forest ownership is not only interesting concerning the issue of wood mobilisation, but it is also worthwhile as an object to study the development of the modern society of Eastern Germany. Consequently more research should be done to obtain comprehensive background knowledge of small private forest owners useful for wood mobilisation as well as for the development of effective policy instruments in a broader sense. Wood mobilisation cannot effectively proceed when forest owners’ backgrounds (attitudes, objectives, social situations etc.) are unknown!

Additionally statistical data concerning forest management behaviour of fragmented private forest ownership is absolutely not satisfying. No recordings are made on harvesting rates, wood marketing volumes, wood amounts used for own requirements or informal market segments or the degree of organisation of fragmented private forest ownership. In case fragmented forest owners should play a certain role in wood mobilisation in the future, statistics should be adapted and more investigation with emphasis to the quantitative part of mobilisation should be done. Wood mobilisation can only be improved if the management behaviour (harvesting rates, sales volume, use for own requirements) of owners is known.

Forest policy – forest authorities “in transition”

Forest policy in Saxony is characterised by a lack of a straight policy towards wood mobilisation, a lack of adapted instruments and the absence of a decision about the future role of forest authorities concerning fragmented private forest ownership. Forest admini-
stration should define its future role in wood marketing activities more precisely to prevent further conflicts with other organisations and to solve the conflict of interests (i.e. obstructing access to important information and, at the same time, offering subsidies for wood mobilisation to the same stakeholders). As a consequence forest administration can presently best described as an organisation “in transition”, i.e. an institution that is developing from a full service provider for small private forest ownership towards an organisation focussed on counselling of all forest owners.

Nevertheless, most of the measures and instruments implemented and executed by the forest administration are useful and important to improve wood mobilisation. One of the most eminent “instruments” is the local forest ranger responsible for all private forest owners within his forest district. Similarly important are activities/events that are aimed at the information of private forest owners (e.g. trainings, workshops, forest owners’ meetings, publications). Except for its effectiveness, the development and processing of subsidies must also be seen as very important for wood mobilisation realised by the forest administration.

Industry should accept the efforts in fragmented forests

Saxony has a modern wood industry with high capacities. Capacities were planned and installed assuming that resources will also be available from fragmented private forests. However, wood from fragmented forests is different compared to wood from larger forests (higher harvesting costs, differing wood quality). Forest owners nevertheless expect the same price level as it is known for the larger suppliers. In case suitable prices are not paid small forest owners prefer to produce firewood (for own requirements) or completely refrain from forest management. Industry must be aware of this relatively high economic independency of small forest owners.

The price level for sawn wood, chipboards, pulp and paper cannot be influenced even by bigger companies. Dependency from global market situations seems to reduce the possibility of financial contributions to the wood supply side. But other facts as stability of buying, reliability in wood sorting and quickness in payments are very important aspects regarding the partnership of wood industry and fragmented ownership. If wood industry is really interested in resources of smaller private forests it has to accept their contribution for wood mobilisation in fragmented structures.
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### 8 Summary (fact sheet)

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<td><strong>2.1</strong> Total forest cover in the region:</td>
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<td>Development of the forest cover p.a. (last 10 years):</td>
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<td><strong>2.2</strong> Wood mobilisation in terms of annual increment (harvest rate)</td>
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<td><strong>2.3</strong> There is no legal uncertainty regarding forest ownership.</td>
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</tr>
<tr>
<td><strong>3.1.4.1</strong> Average distance between sellers and buyers</td>
<td>10-50 km, small-scale buyers; 150-200 km, large-scale buyers</td>
</tr>
<tr>
<td><strong>3.1.4.2</strong> Harvesting costs to forest road (excl. Stumpage sales)</td>
<td>9-13 EUR, state forest; 14-17 EUR, private forest</td>
</tr>
<tr>
<td><strong>3.1.4.4</strong> Approximate volume of informal market segments (own use, neighbours etc.):</td>
<td>25% PFO, 50% FPFO</td>
</tr>
<tr>
<td><strong>3.1.4.5</strong> Informal market segments are expected to further increase.</td>
<td></td>
</tr>
<tr>
<td><strong>3.1.4.6</strong> There are no reliable statistics available on fellings or wood sales.</td>
<td></td>
</tr>
<tr>
<td><strong>3.2</strong> Typical sales methods in the region:</td>
<td></td>
</tr>
<tr>
<td>Individual ad hoc</td>
<td>Long-term master agreements</td>
</tr>
<tr>
<td>all ownerships</td>
<td>via state forestry enterprise</td>
</tr>
<tr>
<td>~3%</td>
<td>management cooperatives</td>
</tr>
<tr>
<td>~5%</td>
<td>owners association</td>
</tr>
<tr>
<td>~17%</td>
<td>management cooperatives</td>
</tr>
<tr>
<td>~32%</td>
<td>owners association</td>
</tr>
<tr>
<td>The share of wood sales by “organised” forest owners is not known.</td>
<td></td>
</tr>
<tr>
<td><strong>3.3.3</strong> Cross forest owners and wood industry associations do not exist in the region.</td>
<td></td>
</tr>
<tr>
<td><strong>3.4</strong> The role of forest authorities regarding harvests of FPFO:</td>
<td>Guidance (Control)</td>
</tr>
<tr>
<td>clear cuts are prohibited</td>
<td></td>
</tr>
<tr>
<td>The role of forest authorities regarding timber sales of FPFO:</td>
<td>Guidance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Topic</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4.1.1.2</strong> The share of PFO by area:</td>
<td>45% of the total forest area</td>
</tr>
<tr>
<td><strong>4.1.1.3</strong> The share of FPFO by area:</td>
<td>20% of the total forest area</td>
</tr>
<tr>
<td>Development of the share of FPFO by area during the last 10 years p.a.:</td>
<td>-0.8% absolute (total forest area)</td>
</tr>
<tr>
<td><strong>4.1.3.2</strong> Harvest in percent of the annual increment in FPFO (harvest rate):</td>
<td>&lt; 20%</td>
</tr>
<tr>
<td>Development of the share of FPFO by area during the last 10 years p.a. is not known.</td>
<td></td>
</tr>
<tr>
<td><strong>4.3.3</strong> Share of non-farm forest ownership amongst FPFO:</td>
<td>91-92% area-related (ALL PFO), 96% owners related (ALL PFO)</td>
</tr>
<tr>
<td>Share of non-resident FPFO (i.e. 30 km distance, 30 min. car drive):</td>
<td>85% valid for Lusatia (ALL PFO)</td>
</tr>
<tr>
<td>The share of membership of FPFO in forest management cooperatives is not known.</td>
<td></td>
</tr>
<tr>
<td>Share of FPFO with secondary education in forestry and agriculture:</td>
<td>43% study of 1999 (ALL PFO)</td>
</tr>
<tr>
<td>Share of FPFO with tertiary education in forestry and agriculture:</td>
<td>8% study of 1999 (ALL PFO)</td>
</tr>
<tr>
<td>Major attitudes of FPFO towards their forests</td>
<td>Tradition/heritage, asset, own requirements; study of 1999 (ALL PFO)</td>
</tr>
<tr>
<td>Guiding management objectives of FPFO</td>
<td>Own requirements, reserve growing stock; study of 1999 (ALL PFO)</td>
</tr>
<tr>
<td>Important incentives for FPFO to join in or delegate forest work is not known.</td>
<td></td>
</tr>
</tbody>
</table>

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### Measures for wood mobilisation from FPFO

| Owner associations/cooperatives, Community forestry | yes |
| Forest service companies, forest management service | no |
| Communication/Advertisement | yes |
| Forest management grants/Subsidies | yes |
| Advisory services by authorities | yes |
| Training or education programmes by authorities | yes |
| Legal framework to prevent further fragmentation | no |
| Others | yes |

### Structural features:

**Owner related:**
- High degree of fragmentation: average PFO property size of 3.2 ha
- Lacking information concerning forest management and wood marketing
- Other than economic objectives
- Boundaries of estates are sometimes unknown

**External features:**
- Small areas mean small amounts of wood (problem of marketing, low/negligible income)
- No publication of (open access to) forest owners' addresses for other owners, industry, operators etc.
- Problems of infrastructure (existence and condition of forest roads, unfavourable shape of properties)
- Low degree of organisation/cooperation amongst FPFO (partly influenced by historical developments)

### Forest owners:

"New" forest owners are rather economically interested (i.e. in wood marketing) = small part

A high number of FPFO have multiple objectives, e.g. firewood use (own requirements, neighbours), "live" tradition, "having" an asset, spending leisure time, enjoy nature (small forest land as an "allotment")

### Management behaviour:

Management in most cases for firewood use (own requirements, neighbours etc.)

Wood/timber sold to the market to derive income: stumpage sales (to forest operators, industry) and assortment sales managed by the state forestry enterprise are most important

### Types of policy measures (to facilitate participation in forest product market) that fragmented forest owners in the region are more responsive towards

- **Information, training and advice** (by state forest rangers) concerning management, harvesting operations, wood prices and marketing (should be existent for a long time period to build trust)
- **Subsidies:**
  - Indirectly, i.e. via information, training and advice, but also through improvements of infrastructure (e.g. road building)
  - Directly, i.e. financial support for infrastructure, wood mobilisation etc.

### Other factors that may be important to describe the fragmented forest owners in the region

- Low degree of organisation/cooperation (cooperations are only economically driven)
- Fragmentation is expected to continue due to further partition in case of heritage
- Willingness to sell the (small) forest property is presently decreasing (wood energy/self-sufficiency more important)
- Forest road construction/repair is often difficult to organise because of the number and shapes of small forest properties
9 Cited publications, internet pages and experts

9.1 Literature


Case study Saxony


9.2 List of interviews (experts, date, place)

Ransch & Schönbach 10/11/2009, Grumbach
Sachse, M. 3/12/2009, Schmochtitz
Schulz, C. 2/12/2009, Tharandt
Schurr, C. 10/11/2009, Kamenz
Schmieder, B. 11/11/2009, Pirna
Weber, N. 4/12/2009, Tharandt

9.3 List of other experts (further questions via email and phone)

Gerold, D. 13/1/2010 (Email)
Mixdorf, U. 13/1/2010 (Phone)
Sachse, M. 7/12/2009 (Email)
Schmieder, B. 17/1/2010 (Email)
Süß, D. 11/1/2010 (Email)

9.4 Focus Group Session – participants (14.12.2009)

Birner, A. Bioenergie Oberlausitz, Works manager
Gerold, D. Firma OGF, Head of the branch
Jung, A. Forstbetriebsgemeinschaft Freiberger Land – Mittleres Erzgebirge, Managing director
Schulz, C. Sächsischer Waldbesitzerverband, Managing director
Schurr, C. Kreisforstamt Bautzen, Managing director
von Geibler, A. Klausner, Wood purchase Saxony
Weber, N. TU Dresden, Professorship for Forest Policy
9.5 Fact sheet of the case studies results
### Fact sheet of the case studies results

<table>
<thead>
<tr>
<th>Question</th>
<th>Austria</th>
<th>Sweden</th>
<th>England (UK)</th>
<th>Rhone-Alpes (France)</th>
<th>Hungary</th>
<th>Estonia</th>
<th>Saxony (Germany)</th>
<th>Catalonia (Spain)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the total forest cover in the region?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) % of the total area?</td>
<td>47.2%</td>
<td>56.00%</td>
<td>8.4%</td>
<td>37%</td>
<td>19%</td>
<td>48.9%</td>
<td>28%</td>
<td>63.51%</td>
</tr>
<tr>
<td>ii) How did it develop during the last 10 years (approx.)? (change % per annum)</td>
<td>+0.4</td>
<td>varied between 55.5 and 58.1 since 1923</td>
<td>+0.6%</td>
<td>+2%</td>
<td>+0.2%</td>
<td>n/a (2005 to 2007 - 2.5%)</td>
<td>+0.05%</td>
<td>+0.75%</td>
</tr>
<tr>
<td>2. What is the wood mobilisation in terms of annual increment?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Harvest in percent of the increment?</td>
<td>60.1%</td>
<td>71%</td>
<td>39%</td>
<td>40%</td>
<td>50%</td>
<td>57.9%</td>
<td>~40%</td>
<td>24%</td>
</tr>
<tr>
<td>ii) How did it develop during the last 10 years (approx.)? (change % per annum)</td>
<td>+11.3%</td>
<td>NA</td>
<td>-7%</td>
<td>-1.0%</td>
<td>NA</td>
<td>** NA**</td>
<td>4.14%</td>
<td></td>
</tr>
<tr>
<td>3. Is there legal uncertainty regarding forest ownership? (yes or no)</td>
<td>No</td>
<td>NO</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>4. What is the structure of the regional wood markets, in terms of ...?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 ...buyer/seller ratio? (number of seller per buyer)</td>
<td>1:78</td>
<td>1:235</td>
<td>NA</td>
<td>1:1000</td>
<td>1:11</td>
<td>NA</td>
<td>1:450</td>
<td></td>
</tr>
<tr>
<td>4.2 ...other structural market factors?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Average distance between different types of sellers (e.g. fragmented private forest ownerships) and different types of buyers (km)</td>
<td>NA</td>
<td>Lorry 79km/ton of roundwood 60-70km/ton of bio-energy assortments</td>
<td>NA</td>
<td>100-300 km</td>
<td>under 100 km</td>
<td>NA</td>
<td>Small: 10-50 Large: 150-200 km</td>
<td>80km</td>
</tr>
<tr>
<td>ii) Harvesting costs to forest road by ownership category? (excluding stumpage sales) (€/m³ o.b.)</td>
<td>SSFOS 37.44 €/m³ PFD 21.95 €/m³ AFF 24.40 €/m³</td>
<td>Around 9 € for harvesting and 13 € for thinning</td>
<td>9.99 EUR/cum</td>
<td>20€/m³</td>
<td>10-15€/net m³</td>
<td>16€/m³</td>
<td>€9-13 (st.), €14-17 (pri.)</td>
<td>33 €/m³</td>
</tr>
<tr>
<td>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)</td>
<td>20%</td>
<td>Very small</td>
<td>Relevant</td>
<td>40-50%</td>
<td>10-15%</td>
<td>10%</td>
<td>25% (all pr.), 50% (frag.)</td>
<td>Very small</td>
</tr>
<tr>
<td>iv) Are informal market segment expected to expand or decrease? (expand, stable or decrease)</td>
<td>constant</td>
<td>Stable</td>
<td>Expand</td>
<td>Expand</td>
<td>Stable</td>
<td>Stable</td>
<td>Expand</td>
<td>Decrease</td>
</tr>
<tr>
<td>v) Do wood price changes influence the regional supply by private forest owners (yes or no)?</td>
<td>Yes</td>
<td>yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>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!</td>
<td>forest-roadside</td>
<td>Delivery timber 33% Standing forest timber 27% Felling by purchaser 26%</td>
<td>Negotiation, Ad hoc</td>
<td>Individual Ad-hoc</td>
<td>Ad-hoc Standing-on stock</td>
<td>Ad-hoc</td>
<td>Individual ad hoc, long-term</td>
<td>33% Auction, 50% individual contract and 17% forest owner associations with technical administration</td>
</tr>
<tr>
<td>Country</td>
<td>Austria</td>
<td>Sweden</td>
<td>England (UK)</td>
<td>Rhone-Alpes (France)</td>
<td>Hungary</td>
<td>Estonia</td>
<td>Saxony (Germany)</td>
<td>Catalonia (Spain)</td>
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<tr>
<td><strong>6. How are the forest owners to be characterised?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) % share of &quot;organized&quot; forest owners by number (Forest management organisations e.g. in owners associations, loose groups, cooperatives, co operations – NOT only political organisations!)?</td>
<td>37%</td>
<td>50.00%</td>
<td>NA</td>
<td>5%</td>
<td>78%</td>
<td>5%</td>
<td>2.8% (cooperatives), 4.6% (own association)</td>
<td>1% (respect all owners)</td>
</tr>
<tr>
<td>ii) % share of &quot;organized&quot; forest owners by forest area (Forest management organisations e.g. in owners associations, loose groups, cooperatives, co operations – NOT only political organisations!)?</td>
<td>21.9%</td>
<td>50.00%</td>
<td>NA</td>
<td>10%</td>
<td>78%</td>
<td>7%</td>
<td>7% of total forest area, 20% of private forest</td>
<td>17% (cooperatives) 32% (own association) 37%</td>
</tr>
<tr>
<td>iii) % share of roundwood sales by &quot;organized&quot; forest owners (Forest management organisations e.g. in owners associations, loose groups, cooperatives, co operations – NOT only political organisations!)?</td>
<td>18.8</td>
<td>Na</td>
<td>25%</td>
<td>34%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>74%</td>
</tr>
<tr>
<td>iv) Most frequent types of organized forest owners associations in the region (loose groups, cooperatives, co-operations or unions)?</td>
<td>Co-operations</td>
<td>Forest owners associations</td>
<td>Loose groups</td>
<td>Forest associations Cooperatives</td>
<td>Business companies Associations (based on ngo law)</td>
<td>Cooperatives Forest owners associations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v) Is there a trend towards increased cooperation between small/fragmented private forest owners (yes or no)?</td>
<td>Yes</td>
<td>unclear</td>
<td>Yes (slow)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Increased</td>
</tr>
<tr>
<td><strong>6.2 Are there cross forest owners and wood industry associations in the region? (yes or no)</strong></td>
<td>Yes</td>
<td>no</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>7. What is the role of forest authorities regarding fragmented private forest ownership participation in the wood markets?</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) On harvests of fragmented private forest ownerships? (guidance, control or none)</td>
<td>Control</td>
<td>Some controls</td>
<td>Guidance/ control</td>
<td>Control</td>
<td>Control</td>
<td>Control, Guidance</td>
<td>Guidance (Control)</td>
<td>Control</td>
</tr>
<tr>
<td>ii) On timber sales of fragmented private forest ownerships? (guidance, control or none)</td>
<td>None</td>
<td>Only through the measurement law</td>
<td>Guidance/ control</td>
<td>None</td>
<td>None</td>
<td>Non</td>
<td>Guidance</td>
<td>None</td>
</tr>
<tr>
<td><strong>8. Structure of forest ownership in the area in terms of forest resources:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) % share of private forest ownership by forest area?</td>
<td>80.6%</td>
<td>50.00%</td>
<td>82%</td>
<td>72%</td>
<td>44%</td>
<td>33%</td>
<td>45%</td>
<td>88%</td>
</tr>
<tr>
<td>ii) % share of fragmented private forest ownership by forest area?</td>
<td>49.4%</td>
<td>50.00%</td>
<td>NA</td>
<td>40%</td>
<td>4%</td>
<td>70.7% (from private forest) 23% (from all forest)</td>
<td>20% (&lt;10ha)</td>
<td>31.22%</td>
</tr>
<tr>
<td>iii) How did the share of fragmented private forest ownership develop during the last 10 years? (change % per annum)</td>
<td>-15% (1999-2007)</td>
<td>same</td>
<td>NA</td>
<td>-1.5%</td>
<td>n.a.</td>
<td>NA</td>
<td>-0.8% abs.(rel. to total area)</td>
<td>NA</td>
</tr>
<tr>
<td>iv) Harvest in percent of the increment in fragmented private forest ownerships</td>
<td>46.2%</td>
<td>80.00%</td>
<td>NA</td>
<td>NA</td>
<td>50%</td>
<td>59%</td>
<td>(est. &lt; 20%)</td>
<td>NA</td>
</tr>
<tr>
<td>v) How did the harvest in percent of the increment in fragmented private forest ownerships develop during the last 10 years? (change % per annum)</td>
<td>-12.5% (1999-2007)</td>
<td>Approximately the same, higher after Gudrun</td>
<td>NA</td>
<td>NA</td>
<td>n.a.</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Austria</td>
<td>Sweden</td>
<td>England (UK)</td>
<td>Rhone-Alpes (France)</td>
<td>Hungary</td>
<td>Estonia</td>
<td>Saxony (Germany)</td>
<td>Catalonia (Spain)</td>
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</tr>
<tr>
<td>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 *)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) % share of Non-farm forest ownership?</td>
<td>33% (all private forest owners)</td>
<td>NA</td>
<td>NA</td>
<td>75%</td>
<td>n.a.</td>
<td>60-70%</td>
<td>all PFO: 91-92% area, 96% owners</td>
<td>perception of increasing</td>
</tr>
<tr>
<td>ii) % share of Non-resident forest owners? (e.g. more than 15km or 30min away)</td>
<td>6% more than 20km (all private forest owners)</td>
<td>26.00%</td>
<td>NA</td>
<td>35%</td>
<td>n.a.</td>
<td>NA</td>
<td>all PFO: 85% (30min distance)</td>
<td>perception of increasing</td>
</tr>
<tr>
<td>iii) % membership in forest owner cooperatives (Forest management organisations e.g. in owners associations, loose groups, cooperatives, co operations – NOT only political organisations!)?</td>
<td>37%(all private forest owners)</td>
<td>50.00%</td>
<td>NA</td>
<td>3%</td>
<td>n.a.</td>
<td>NA</td>
<td>NA</td>
<td>few of the total</td>
</tr>
<tr>
<td>iv) % secondary education in forestry and agriculture?</td>
<td>13.8% (all private forest owners)</td>
<td>Small part</td>
<td>NA</td>
<td>NA</td>
<td>n.a.</td>
<td>NA</td>
<td>all PFO: 43% (1999)</td>
<td>few of the total</td>
</tr>
<tr>
<td>v) % tertiary education in forestry and agriculture?</td>
<td>4.5% (all private forest owners)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>n.a.</td>
<td>NA</td>
<td>all PFO: 8% (1999)</td>
<td>very few</td>
</tr>
<tr>
<td>vi) Major attitudes of fragmented private forest ownership towards their forests (e.g. income, family tradition, investment, etc.)?</td>
<td>Staves1 highest priority (1) sustainability (2) own use (3) tradition (4) free time (5) investment (6) hunting (7) income (8) working place</td>
<td>Production, recreation, income, feeling of home etc.</td>
<td>Hobby owner, family, tradition, sporting, investment</td>
<td>Family tradition</td>
<td>Family inheritance</td>
<td>NA</td>
<td>ALL PFO: Tradition/heritage, Asset, Own require. (1999)</td>
<td></td>
</tr>
<tr>
<td>vii) Guiding management objectives (e.g. derive income, reserve growing stock, etc.)</td>
<td>Staves1 highest priority (1) maintaining capital (2) increasing profit (3) selling the forest (4) abandoning forestry private forest owners less than 10 ha</td>
<td>Economy, environment and recreation</td>
<td>Biodiversity, timber, sporting, production, amenity</td>
<td>Pass on quality forest</td>
<td>n.a.</td>
<td>NA</td>
<td>ALL PFO: own requirements, reserve stock (1999)</td>
<td>Economic and sentimental</td>
</tr>
<tr>
<td>iv) Important incentives to join in or delegate forest work?</td>
<td>NA</td>
<td>Time, easier to hire someone</td>
<td>NA</td>
<td>Forest associations Massif development plan</td>
<td>No</td>
<td>NA</td>
<td>NA</td>
<td>Is difficult to delegate the property in the hands of another company, family tradition</td>
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<td>10. What are measures for wood mobilisation from fragmented private forest ownership in the region?</td>
<td>Austria</td>
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<td>England (UK)</td>
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<td>i) Owner associations / Community Forestry (yes or no)</td>
<td>Yes</td>
<td>yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>ii) Forest service companies/Forest management services (yes or no)</td>
<td>Yes</td>
<td>yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
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<td>iii) Communication / Advertisements (yes or no)</td>
<td>Yes</td>
<td>yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>iv) Forest Management Grants / Subsidies (yes or no)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes (aid to improve)</td>
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<td>v) Advisory services by authorities (yes or no)</td>
<td>No</td>
<td>Yes to some extent</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>vi) Training / educational programs by authorities (yes or no)</td>
<td>Yes</td>
<td>No, by forestry associations</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>vii) Legal framework to prevent further fragmentation (yes or no)</td>
<td>No</td>
<td>yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>viii) Others (yes or no)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes (improving demand)</td>
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</tbody>
</table>
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?

**Structural features**

<table>
<thead>
<tr>
<th>Austria</th>
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<tbody>
<tr>
<td>Owner related:</td>
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<tr>
<td>Traditional and non-traditional forest owners with different social backgrounds</td>
<td>Economy and market prices Owners goals</td>
<td>Barrier: lack of owners forestry knowledge/capacity</td>
<td>Education of forest owners Action for grouping</td>
<td>Own use, Limited wood volume</td>
<td>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.</td>
<td>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</td>
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<tr>
<td>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</td>
<td>External: Regulations of wood measurement Feeling of security and stability of the market actors</td>
<td>Barrier: not the owners’ principle or significant income revenue</td>
<td>External: Guidance and coordination work</td>
<td>External: Barriers: regulatory system perceived as overly bureaucratic and time consuming</td>
<td>External: High VAT, strict regulations</td>
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<tr>
<td>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</td>
<td>External:</td>
<td>Barriers: lack of local woodland owner networks Engagement: woodland projects and cooperatives</td>
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<tr>
<td>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</td>
<td>External:</td>
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<tr>
<td>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 (&lt;200ha)</td>
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</tbody>
</table>

**Owner related:**
- Education of forest owners
- Action for grouping

**External:**
- Guidance and coordination work
- 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

**External:**
- Barriers: regulatory system perceived as overly bureaucratic and time consuming
- 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)
- 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
**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?**

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<tr>
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</thead>
<tbody>
<tr>
<td>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 (&lt;200ha)</td>
<td>Knowledge-level</td>
<td>Biodiversity</td>
<td>To assure family inheritance, symbolic good to pass on to the next generation</td>
<td>No cooperation attitude</td>
<td>Forest as a source of income, Mainly additional income to daily jobs</td>
<td>“New” forest owners – though only small in number and area - are rather economically interested (i.e. in wood marketing);</td>
<td>Most of the Catalan forest owners are aging old, and therefore there is less motivation for performing forest operations and management</td>
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<tr>
<td>Trend in forest management goes away from the bread tree spruce to mixed wood because – discussion about climate change</td>
<td>Economy</td>
<td>Hobby owner</td>
<td>To save money for time in need</td>
<td>Forest as a future investment, additional income to pension</td>
<td>Owners have mainly multiple objectives: fire wood use, “having” an asset, “live” tradition, spending leisure time, enjoy nature (small forest land as an “allotment”)</td>
<td>Owners of new acquisition consider the forest owned as: second residence, investment on patrimony and leisure</td>
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<tr>
<td>Private small scale forest owners often are not educated or trained for forest management</td>
<td>Will to have a well managed forest</td>
<td>Tradition</td>
<td>To preserve nature</td>
<td>Ownership as a driver for social value.</td>
<td>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</td>
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<tr>
<td>A large part of private small scale forest owners do not have economic-oriented goals for their forest property</td>
<td>Self-sufficiency for timber</td>
<td>Amenity (e.g. sporting)</td>
<td>To have social relation through their forest</td>
<td>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.</td>
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<tr>
<td>Forest care is an important goal in the small forest owners milieu</td>
<td>Landscape</td>
<td>No objective, disappointment</td>
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</table>

**Actual behaviour**

**Please summarise (using bullet points or keywords) the most prevalent and actual fragmented forest owner’s management behaviour in your region?**

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</thead>
<tbody>
<tr>
<td>Small scale forest ownerships (&lt;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</td>
<td>Harvest according to price given and market supply</td>
<td>Lack of management due to poor knowledge</td>
<td>To cover cost</td>
<td>Urban owners are not interested in the ownership</td>
<td>Minority of owners are actively managing their ownerships, majority are passive owners</td>
<td>Management 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</td>
<td></td>
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<tr>
<td>Use of advisory services</td>
<td>Lack of management due to economic returns</td>
<td>To maintain reserve of biodiversity</td>
<td>To pass on to next generation</td>
<td>Countryside owners want to use the forest for own.</td>
<td>The dominant sales method is ad hoc sales, with pragmatic aim hit to the highest price; long-term contracts are rare</td>
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<td></td>
<td></td>
<td></td>
<td>To get an income</td>
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<td>The use of contractors is increasing, logs are sold as assortment, pulpwood as cutting right</td>
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<td>Wood has important role as raw material for the owner and his family (own use for energy, construction)</td>
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<td>Owners receive and expect to receive financial support from state for the forest management</td>
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<td>Low yields</td>
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<td>Little interest in the property,</td>
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<tr>
<td>Austria</td>
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<tr>
<td><strong>Which sorts of policy measures (to facilitate participation in forest product market) would the fragmented forest owners in your region be more responsive towards?</strong></td>
<td>Knowledge increases in different ways</td>
<td>Reduction in bureaucracy</td>
<td>Extension of massif development plans which are a local program to implement grouped actions with CRPF guidance and coordination</td>
<td>Less admin</td>
<td>National incentives maintained</td>
<td><strong>Information/Training and advice (by state forest rangers)</strong></td>
<td>Mobilisation of the demand / technological innovation</td>
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<tr>
<td></td>
<td><strong>Public opinion important</strong></td>
<td>Quicker response period to felling licence applications</td>
<td>Forest association is a model to develop to increase wood mobilisation on the long term</td>
<td>National incentives maintained</td>
<td><strong>Open land market</strong></td>
<td>- concerning management, harvesting operations, prices and marketing; - should be existent for a long time period for trust building</td>
<td>Promote associated management</td>
</tr>
<tr>
<td></td>
<td>Drivers to increase and (and therefore price for timber), e.g. RHI &amp; the Wood Fuel Strategy for England</td>
<td>Enhanced Taxation on SMEs</td>
<td><strong>Drivers to increase and (and therefore price for timber)</strong>, e.g. RHI &amp; the Wood Fuel Strategy for England</td>
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<td><strong>Lower VAT on forest products</strong></td>
<td><strong>Subsidies</strong></td>
<td>Knowledge increases.</td>
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<td>Investments into energy SMEs</td>
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<td>- indirect: see above (advice, information, training) and via direct infrastructural help (road building)</td>
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<td>- direct: infrastructure</td>
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<td><strong>Mobilisation of the demand / technological innovation</strong></td>
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<td><strong>Chamber of Agriculture advices the private small scale forest owners and initiated together with forest owner cooperatives a network of “wood mobilers” (Waldhelfer), which has successfully pushed the harvest activities in Austrian small scale forests. The “wood mobilers” are a part of forest services for wood supply provided by the chamber for fragmented private forest ownership</strong></td>
<td><strong>Most of the forest owners are not dependant on their land for income, but still wants to manage their forest well</strong></td>
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<td><strong>Austrian forest authorities in Austria primarily have a supervising or control and not a guidance function regarding harvests of fragmented private forest ownership</strong></td>
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