



Interreg Alpine Space project - **NEWFOR**

Project number 2-3-2-FR

NEW technologies for a better mountain **FOR**est timber mobilization

Priority axis 2 - Accessibility and Connectivity

Work package 6: Forest connectivity

GENERAL PRESENTATION OF THE WOOD TRANSPORT SECTOR IN THE ALPINE SPACE

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Final version

MAY 25th, 2014





The consortium of the project Interreg Alpine Space NEWFOR



This project has been, co-funded by the European Regional Development Funds, and achieved under the third call of the European Territorial Cooperation Alpine Space Programme 2007-2013.



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• ABSTRACT

Transport activity from the forest to the timber industries is an important technical and economical step in the process of wood procurement. In mountain areas, hard conditions in terms of topography, seasonality, difficult forest road network (low density and practicability) are increasing significantly the cost of transport in comparison with the costs in flat area.

Specific equipment's are used for transportation of long pieces or roundwood (6-16m) or billets (2 to 6m). The latest is the most common in the AS.

In terms of organization, transport operation is made by small independent enterprises with 1 to 5 trucks and most often, the orders are given by the logging companies or the end-users of the timbers (sawmills, pulpmills and chip board mills). The organization is not favourable to optimization as a great number of enterprises are involved in the process. Only a common approach and a mutualisation of decision tools - such as rout guidance system or planning tools - may offer some perspectives of decreasing the costs.



- A SYNTHETIC OVERVIEW OF THE INTERREG ALPINE SPACE
PROJECT NEWFOR

.1 THE CONTEXT

Although forests represent a key resource of mountain environments, their valorization is hampered by accessibility constraints that prevent an efficient mapping, management, harvesting and transport of wood products.

Forests fulfil multiple functions in mountainous areas. They have an ecological function as host of many habitats and species. They also are a leisure area for social activities such as hiking, skiing... From the economical perspective, the production of renewable resources like timber and fuelwood has positive effects both at global scale, with climate change mitigation, and local scale with rural employment and the development of a regional value chain. The objective of preserving and improving the development of mountain forests is a point of public interest. However, managing forests in mountain territories is a difficult task as topography and climate set strong constraints inside a complex socio-economical framework.

In particular, a precise mapping of forest biomass characteristics and mobilization conditions (harvesting and accessibility) is a prerequisite for the implementation of an efficient supply chain for the wood industry. The available information is currently insufficient to provide, at reasonable costs, the required guarantees on the wood supply and on its sustainability. With the recent development of new remote sensing technologies and modelling tools, major improvements regarding the evaluation of the forest growing stock and accessibility are now possible. Upon this highly valuable information, decision-making tools must be build to optimize the investments in forest infrastructures required for a cost-effective wood supply while securing the sustainable management of forests, and to support the implementation of an efficient European policy for mountain forest management.

.2 OBJECTIVES OF THE PROJECT

According to this context and based on the use of new technologies (LiDAR: light detection and ranging, Unmanned Aerial Vehicle,...) for forest and topography characterization, the project NEWFOR is dedicated to enhance and develop tools and adapted policies for decision making in the field of a sustainable and adaptive mountain forest resources management facing the sustainability of mountain forest ecosystems services.



So, the main objective of the NEWFOR project is the improvement of mountain forest accessibility for a better economical efficiency of wood harvesting and transport in a context of sustainable forest management and wood industry in changing climate.

The 14 partners involved in the project consortium tackle this objective within five thematic workpackages (wp):

- Forest resources and LiDAR

Recent developments in LiDAR technology, combined to other available data sources (aerial photographs, aerial photo series by UAVs, ...), are now allowing a precise and fine mountain forest resource quantification, qualification and mapping. Integrating this technology will provide an innovative response to the challenges of a precise and robust knowledge on the available growing stocks. The project aims at testing and developing tools that will help forestry end-users to benefit from this technological advance.

- Forest accessibility

After the identification of forest resources, the second step of an efficient forest management is to evaluate the accessibility to these resources. In mountain areas, topography is the main constraint to a technical and economically efficient exploitation. The project demonstrated how to use topographic LiDAR data coupled with geographic information systems (GIS) for an optimal planning of forest harvesting and logging while taking current and scheduled accessibility of forest resources into account.

- Forest and industry connectivity

Once the forest resources and accessibility are characterized, then remains the issue of the connectivity between wood piles in the forests and wood yard of mills. This link is often neglected but is crucial for a comprehensive assessment of the wood supply efficiency.

- Costs and benefits evaluation

NEWFOR aims at developing decision-making tools dedicated to the definition of strategies for sustainable mountain wood supply chain. To fulfil this objective, tools for identifying forest resources, their accessibility and connectivity to the wood market are first considered separately. In order to achieve the demarche, and to choose the optimal strategy, it is necessary to evaluate the whole workflow from the economical aspect by comparing the costs and benefits of each possible strategy.



- Logistical planning strategy

There is a need to frequently adjust the planning of forest management to new economical evidence as well as to unforeseeable developments. Such an adaptive management needs to balance ecological, social and economic factors. The final objective was to provide forest managers and decision makers with reliable information for the evaluation of technical and economical conditions for their decision-making on timber supply chain logistical planning and land use strategies.



- GENERAL PRESENTATION OF THE WOOD TRANSPORT
SECTOR IN THE ALPINE SPACE

.1 METHODOLOGY

After the first meeting held at Grenoble, the 13rd of September 2012 we decide that each partner should describe the organization of the roundwood transport in his country with a common approach so that everybody could understand what are the factors affecting the transport activity and its evolution in the alpine space.

Items to be addressed were listed (see below) and a census template was given by FCBA to all the partners who wanted to describe precisely the transport fleet (appendix 1).

Finally, several data sources have been used:

- Data from reports and articles,
- Available data from Public forest services (Slovenia, Austria) or from organizations representing the forest enterprises (France)
- Hearings of big companies (wood procurement companies, sawmills, forest cooperative, entrepreneurs...)
- New surveys have been launched in Italy (online questionnaire + direct interview of the forest enterprises)
- Tyrol partner made a specific survey on “social” aspects related to the organization of transport



.2 RESULTS

.2.1 GENERAL CONTEXT

The Alps are an area with multiple issues. The wood transport sector is not immune to stress that the Alpine region contains. In all countries of the mountain chain, transportation reveals itself as an economic, technical and ecological challenge. In this document, we will see that the methodologies deployed in each country deferred, both in their material and their organisation. We will focus here only on the part of the transport from the forest road to the first processing unit. This phase enquires the use of specific materials that do not allow the transport of other goods. This is the biggest problem for optimization of logistics, because every full ride will be followed by an empty and due to that costs are quite high.

.2.2 WOOD PROCUREMENT OF MILLS

France

In Rhône-Alpes, which is the main French region for the forestry sector in the Alpine Space, There are around 310 sawmills and no other first transformation mills such as pulp mills or board mills. So the mains harvested products are saw wood. Very few quantities of pulpwood or wood for panels, generally delivered in short billets are harvested in Rhône-Alpes.

The trend is toward a concentration of the saw mills: they were around 1400 in 1990. The smallest ones (less than 8 000 m³ of sawn wood per year) are disappearing.

175 of them are involved also in logging activities; the other part is buying its wood from logging companies at the road side or delivered to the mill.



In 2012, the total volume of harvested round wood is 2,420 billions of m³ (over bark). It is quite steady since more than 10 years. 78 % of the volume is wood for sawmills (of which 92% is softwood), 12% for pulp or particle boards, 10% is wood for energy. The latest market is increasing with the development of forest chips for small boilers in the communes.

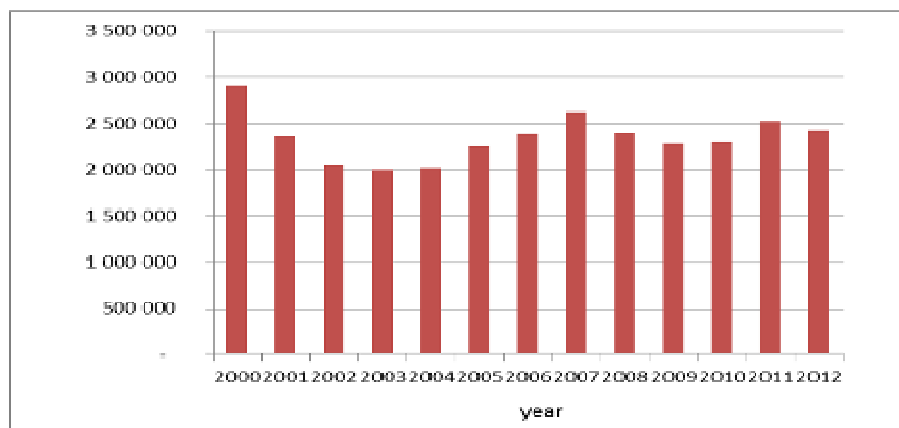


Figure 1: Annual timber cut in Rhone-Alpes forests

In average, the procurement distance is about 80 km. 82% of the saw wood is coming from Rhône-Alpes region, 18% from other French region but mainly from neighboring regions such as Auvergne, Bourgogne and Franche-Comté.

Italy

In Veneto region, no recent census of mills has been done. In the last years, many sawmills closed down and for this reason the data of previous studies (in 2006 have been censused 86 sawmills in Veneto) is not realistic anymore

Austria

Austrian sawmills are processing 16 Mio m³ of roundwood, about 30% are imported from neighboring countries, especially from Germany, the Czech Republic, Slovakia and Poland. Most



of sawmills in Austria (1.200 in total) are small to medium sized companies, but the 8 largest companies have a share of 53% of the total production capacity, the 40 largest 83%. This shows clearly, that the timber market in Austria is dominated by large and competitive companies.

In the last decade the annual cuts in Austrian forests were increasing due to some large wind throws and mass propagation of bark beetles and the growing price for timber in general.

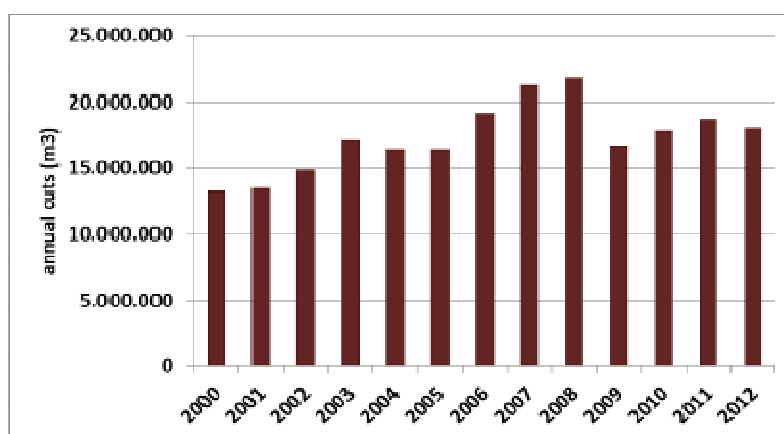


Figure 2: Annual timber cut in Austrian forests

Slovenia

The state of the Slovenian sawmill industry has changed considerably in the last years. In research (conducted in year 2007) done by analysing the questionnaire, the total capacity of sawmills was established. It is 810.030 m³ of timber, representing 48% of the available timber for 2007. The bigger plants have increased their capacities, and have become technologically more advanced. However, they are still technologically behind sawmilling plants abroad. 40% of the sawmill plants sell their products abroad (Perme, 2007). According to data of Slovenian statistical office we notice decreasing trend in wood processing industry, especially in terms of number of employees.



1. Number of legal entities operate on	2008	2009	2010	2011
02.200 Logging	201	209	218	237
16.100 Sawmilling and planing of wood	510	533	512	539
16.210 Manuf. of veneer sheets and wood-based panels	33	36	36	40
16.220 Manuf. of assembled parquet floors	7	6	6	6
16.230 Manuf. of other builders' carpentry and joinery	564	578	583	582
16.240 Manuf. of wooden containers	166	161	159	148
16.290 Manuf. of other products of wood	436	427	398	377
31.010 Manuf. of office and shop furniture	478	468	461	440
31.020 Manuf. of kitchen furniture	139	154	170	177
31.090 Manuf. of other furniture	463	460	484	479

Source of information: SURS

2. Number of employees	2008	2009	2010	2011
02.200 Logging	947	876	842	810
16.100 Sawmilling and planing of wood	1.576	1.383	1.287	1.339
16.210 Manuf. of veneer sheets and wood-based panels	1.751	1.604	1.750	1.443
16.220 Manuf. of assembled parquet floors	15	14	13	11
16.230 Manuf. of other builders' carpentry and joinery	4.644	3.827	1.310	3.286
16.240 Manuf. of wooden containers	383	151	329	350
16.290 Manuf. of other products of wood	1.523	1.207	1.074	1.013
31.010 Manuf. of office and shop furniture	2.389	2.324	1.986	1.521
31.020 Manuf. of kitchen furniture	2.239	1.829	1.626	1.346
31.090 Manuf. of other furniture	4.796	4.197	4.037	3.175

Source of information: SURS



In last decade we are noticing increased amount of export to neighbour countries, mainly it goes for export of round wood of conifers to Austria and fire wood to Italy. Export of unprocessed timber means a lot of damage to the national economy, the problem also has a wood processing industry, which has to search for round wood elsewhere for higher prices. This fact worsens its competitiveness and results as rise in prices of timber on the domestic market and lack of certain forest products. The decreasing trend of industrial roundwood consumption in Slovenia, which has been prominent since 2007, continued also in 2012. The production and export are reaching their highest levels while the log wood processing is dropping (-12%). On the other hand, pulpwood board's consumption is on the rise (+17%) (UNECE, 2013).

.2.3 FLEET COMPOSITION

Fleet composition differs greatly across the Alpine space. Two factors will, in most cases, determine the choice of materials: the topographic conditions and the industrial demand. That's why in Slovenia and in Austria, where most of the wood is buy in short logs (4 to 5 meters), most of the fleet is composed of 3 axle trucks with 2 axle trailers. The main advantage of this system in the alps, where forest roads are often steep and narrow, is that the truck can move with the trailer as long as the road allows it, leave the trailer on a timber yard in the forest, move to the forest site where the timber is prepared, move back to the timber yard, load the trailer with the crane, get the load for the truck at the forest site and move with the trailer to the sawmill.

In France, the fleet composition is completely different, the timber lorries are made of a tractor and a dolly. This method allows French transport companies to haul logs up to 21 meters. Again, this choice depends on the sawmill supply chain methods and also of the different harvesting systems. We can also notice that in Slovenia some of the transport is also made in long logs, but they used semitrailer.



3 axle trucks with 2 axles trailer



Timber lorry with a dolly



Semitrailer

Fleet Composition	Austria (Tyrol)	Slovenia	France (Rhône-Alpes)	Italy (Veneto)
Truck with trailer	80 – 100	78	No figure available but trucks with dolly are the most common in the alpine area	147
Truck with dolly				
Semitrailer		49		
Other (tractor+trailer)		27		327

Table 1: Number of trucks per country and type of material



.2.4 REGULATIONS

Each country has its own regulation. These tables highlight the key figures of all these laws.

Maximum weight (tones)	Austria	Slovenia	France	Italy
2 axles	20	18		18
3 axles	29	25		25
4 axles	37	32		40
5 axles	44	40	48 *	44
6 axles and more			57 *	

*On specific roads, otherwise 44 tons for 5 axles or more

Table 2: Regulation on maximum weight per country and number of axles

Just as the regulation of weight, the instructions specifying the length of the products are also very varied. In Slovenia, Italy and Austria, length is defined by the nature of the truck, while in France, since equipment are "extensible", there are specific regulations for the wood transport. This table made a recap of all the maximum length per countries and per type of trucks:

Maximum length (m)	Austria (Tyrol)	Slovenia	France (Rhône-Alpes)	Italy
Single Truck	12,0	12,0	26,0 (maximum length of the wood: 21,0)	12,0
Truck with trailer	18,0	16,5		16,5
Truck with dolly	18,0			
Semitrailer	18,0	18,75		16,5

Table 3: Regulation on maximum length per country and type of material



.2.5 EQUIPMENT TRENDS FOR WOOD TRANSPORT

Several changes occur in the transport sector. Concerning the truck, we note in particular the tendency to reduce tare weight. This desire to alleviate the trucks is found in all countries of the Alps. The suppression of cranes for trucks that perform distance is a visible evidence of this trend.

On the other hand there is also the appearance of truck composition with more and more wheel axles and particularly in France, where the deployment of trucks up to 6 axes is relatively recent. These developments lead the French drivers to invest in auto-turning gear systems, in the case of sets with dolly. Another change occurs with the increasing of short wood assortments in the deliveries to sawmills. Indeed, sawmills have invested recently in new materials, especially in processing lines that consumes billets (Canter line) from small to medium trees and that means that they are buying roundwood from other regions surrounding the Alps where the "short-wood" harvesting system is more common. Consequently, some haulers have invested in new truck compositions such as Truck +trailer or semi trailer. The latest one is often chosen because it is possible to optimize the loaded mileage with empty truck when going to the procurement area.

The last major change that we can report on the equipment is of course the increasing presence of GPS in the trucks. This change, however, is more measured in some countries. The use of GPS will mainly depend on the needs of the carrier and of the communication media between transport companies and sawmills (or wood procurement companies). In most countries information concerning the location of the piles in forest are communicated in oral and GPS are not useful in this context. But on the public network this kind of tool are more and more used.

.2.6 STRUCTURAL & ORGANIZATIONAL ASPECTS OF THE TRANSPORT SECTOR

Transport company structure:

In general, the structure of business in the timber industry is relatively small. The transport sector will not deviate from this rule. In most Alpine countries, transport enterprises own from 1 to 5 trucks. These small operators often operate at a very local scale. It is also important to notice that these companies, because of their specific road materials, are exclusively specialized in the transport of wood and can not carry other goods.



However, in Austria and especially in Slovenia, companies who have 5 to 20 trucks are more common.

In Slovenia, most of the time these fleets depend on logging companies working in regional or even at national scale. Large and medium forest companies in common have they own fleet (5-15 trucks/trailers). Forest transport entrepreneurs are specialized for transport from forest roads to end consumer (sawmill...). Along these companies we can notice also some small private own companies with 2-5 forest transport compositions. According to increasing wood exportation there is expected further development of long distance transport sector.

In Slovenia, most of the time these fleets depend on logging companies working in regional or even at national scale. Large and medium forest companies in common have they own fleet (5-15 trucks/trailers). Forest transport entrepreneurs are specialized for transport from forest roads to end consumer (sawmill...). Along these companies we can notice also some small private own companies with 2-5 forest transport compositions. According to increasing wood exportation there is expected further development of long distance transport sector.

Management of wood deliveries:

Several types of management can be made for the delivery of timber and the transportation planning. The organization can be managed by three actors: the forest owner (or the logger), the carrier, or sawmill. The practice differs quite significantly in the Alpine space and that because of the structure of the different national wood sectors. The description of this operation is detailed here by country. What is nevertheless clear from all of these practices is that the timber business is based on confidence, interpersonal relationship and faithfulness. Most of the timber is sold after inspection at the forest site by the trading agent and the forest owner. The importance of written contracts is growing; nevertheless there are still a lot of contracts which are concluded per hand sale.

Austria

Most of timber haulage is done by companies, which are independent from the timber Industry, but sometimes strict contracts make the haulers dependent on the timber industry. Large sawmills, papermills and chipboard factories have developed an efficient logistic to optimize the timber supply according to their daily demand to reduce storage space and idle time.

For payment of transport a combination of cubic meters and transport zones are used by the timber industry.



The Austrian cooperation between forestry timber and pulp industry ((FHP) has developed some data exchange format standards to make the wood supply chain more transparent for the partners at the timber market and more efficient:

FHPDAT Modules:

- FHP-Dat Saage: Data exchange format for saw timber, provides standardized information about the
 - o Equipment of the timber classification process
 - o Tree species, dimensions, and quality of every single log
 - o Parameters which a crucial for the quality classification

This standard is used by medium to large sawmills, large forest owners and cooperatives of forest owners

- FHPDat Industry: Data exchange format for pulp wood

Standard is used by the industry, large forest owners and cooperatives of forest owners

- FHPDAT Logistic: Data exchange format for the whole wood supply chain from the forest to the timber industry including all the elements needed, to establish an information chain between the market partners without media discontinuity.
 - o Sales contract
 - o Service report
 - o Supply information note
 - o Delivery confirmation
 - o Transport purchase requisition
 - o Transport order
 - o Supplier delivery note
 - o Transport delivery note
 - o Acceptance note

Standard was released recently (07/2012), it will take a while until the data format is well established on the market.



France

Internal management of transport is usually developed in sawmills: the small ones have harvesting equipment's, and are able to transport their own wood. But in big sawmills, the share of wood transported with their own trucks is rather small. In the latter case, more often a person is responsible for the whole deliveries (wood harvested by the mill and by other logging companies) and each forest technician of the wood procurement service is responsible of round wood transport from his geographic area.

The atomization of wood road transport enterprises gives information on the dependency of transport enterprises via wood mills. Even if new system and arrangement between haulers and transport enterprises are changing, it is common that the invoice is the only document existing. Contrary to some Nordic examples where some collaborative works for optimisation exist, one to one relationship is the rule.

For payment, sawmills use cubic meters. In general enterprises negotiate a unit price (€/m³) as a function of the distance.

Italy

In North-Eastern Italy wood transportation is done most of the time by the same enterprise that performs the extraction/chipping of the wood.

Not rare is instead the case in which the saw-mill directly goes at landing sites and pick up the material with their own trucks. Rare is the case of enterprises that only perform the transportation. Anyway the situation is quite complex.

According with this type of organization even the planning of the deliveries is normally controlled directly from the forest enterprise to satisfy the demand of sawmills. Within this context we can say that usually the forest enterprise has a direct relationship with a sawmill (or a limited number of sawmills) to which constantly supply the material.



Slovenia

Most of small-scale forest owners in Slovenia decide to sell wood through forest transport entrepreneurs. Forest entrepreneurs use different types of management, but in most cases it goes for Gantt chart. Decision on optimal fleet composition to use is done based on the site conditions and type of cutting technology. Another decision making factor is also transport distance, in case of long-distance transportation most entrepreneurs are using truck without hydraulic crane, because it's too heavy and it only produces extra weight in case of maximum payload. In general it goes for transport of short logs (4m), long logs (8m-12m) and transport of woody biomass (using containers). In Slovenia it is very rare that sawmill will have own fleet. Large and medium forest companies in common have their own fleet (5-15 trucks/trailers). Forest transport entrepreneurs are specialized for transport from forest roads to end consumer (sawmill...). Along these companies we can notice also some small private own companies with 2-5 forest transport compositions. According to increasing wood exportation there is expected further development of long distance transport sector.

.2.7 CONCLUSION: NEEDS FOR TRANSPORT OPTIMIZATION

Until now, transport enterprises and wood procurement companies or services (in mills) don't use any decision making system for the optimization of roundwood transport. Many reasons can be evoked:

- Structural aspects: Haulage enterprises are very small. There is a very few big companies likely to use this kind of tool and to rally some small companies with them.
- Cultural aspects: The development of collaborative tools could be the solution but the enterprises (haulers and 1st transformation mills) don't want to share their information with their competitors
- Habits: Haulage enterprises put forward the "good" knowledge of local drivers to justify the non-use of geo-localization system.

TORG launches a specific survey on "roundwood logistic" with some questions related to transport (see slides in appendix 2). In some districts, the localization of the piles is shown by the local foresters and sometimes they are accompanying the drivers for all the tours. Guidance, checking the timber volume and some other "social" benefits are the main reasons for



maintaining the strong involvement of local foresters in wood haulage.

The wood supply chain includes several steps from prospecting and forestry work to transport and reception at the transformation site. Along the chain, several actors are involved, exercising different activities (extraction, transportation, management of stocks....). For each of them the TIC represent an opportunity to possess information in real time in order to better plan, control and manage the whole logistic chain.

The use of standard information exchange or GIS tools can help to fulfil some needs of the sector. Forest road data base, geo-localization wood piles are likely to bring some economic gain to the actors involved in wood procurement in all Alpine countries. So NEWFOR consortium decides to investigate the following topics:

- Forest road data bases can be considered as the first brick for the implementation of optimization via forest route guidance system or planning tools (improvement of the utilization rate of a truck fleet). In all alpine countries, forest road data base exist and we decide to focus our work on that specific topic to share our experiences and to make recommendations for a common approach for upgrading the existing data bases or for building new ones so that they can be compatible with rout guidance systems.
- The Slovenia and Austria team work on NavLog system, a tool developed in Germany that need to be tested and customized for a utilization in the Alpine context.
- FCBA team tests software for the optimization of wood transport (i.e. planning with the objectives to improve the rate of utilization of the trucks and to decrease the mileage).

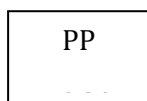
Those works will be presented in the second WP6 deliverables dealing with presentation of the existing tools and identifications of the gaps.



.3 APPENDIX

.3.1 APPENDIX 1

Template used for the census of trucks in the Alps



Transport questionnaire

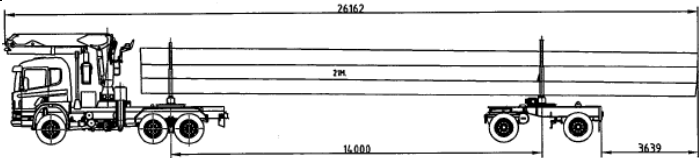
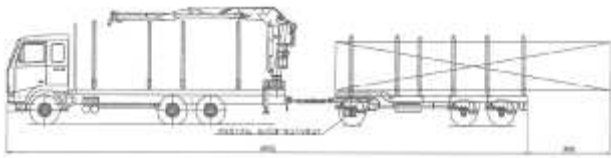
1) What is the share of volume transported for your own sawmill (or pulp mill, or panel mill....)

(In % on the total volume (logged by your own company or purchased at the roadside from other logging companies)

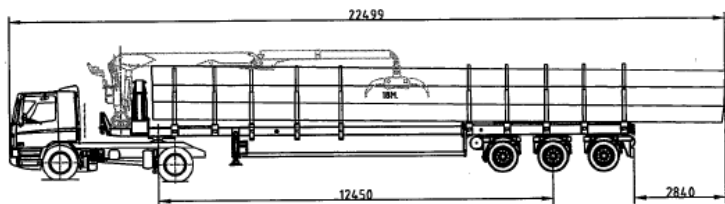
2) Number of drivers in your company



3) What kind of truck do you use?

	Truck n° 1	Truck n°2	Truck n° 3
 <p>Type of truck n°1</p> <p>Age</p> <p>Km per year</p> <p>Number of axles</p> <p>Type of embarked balance (on the grapple or on the axes)</p> <p>Other specific equipment's? (Self turning axle...)</p>				
<p>Type of truck n°2:</p>  <p>Age</p> <p>Km per year</p>				



<p>Number of axles</p> <p>Type of embarked balance (on the grapple or on the axes)</p> <p>Other specific equipment's? (Self turning axle...)</p>					
<p>Type of truck n°3</p>  <p>(for short wood or tree length up to 21m)</p> <p>Age</p> <p>Km per year</p> <p>Number of axles</p> <p>Type of embarked balance (on the grapple or on the axes)</p> <p>Other specific equipment's? (Self turning axle...)</p>					

4. Tendency for the new investments

(Kind of truck, number of axles, grapple, loading capacity, embarked balance, IT embarked equipment, GPS / PDA, ...)



- For the equipment of your own company :

- For your sub-contractors :

5. How do you plan your weekly activity?

(Weekly planning, what kind of activity monitoring...)

6. Free expression:

(E.g. on evolution toward new equipment, regulation, economy, transport organization, optimization of delivery planning, utilisation of IT,...)



.3.2 APPENDIX 2

PP1 : Roundwood logistic questionnaire

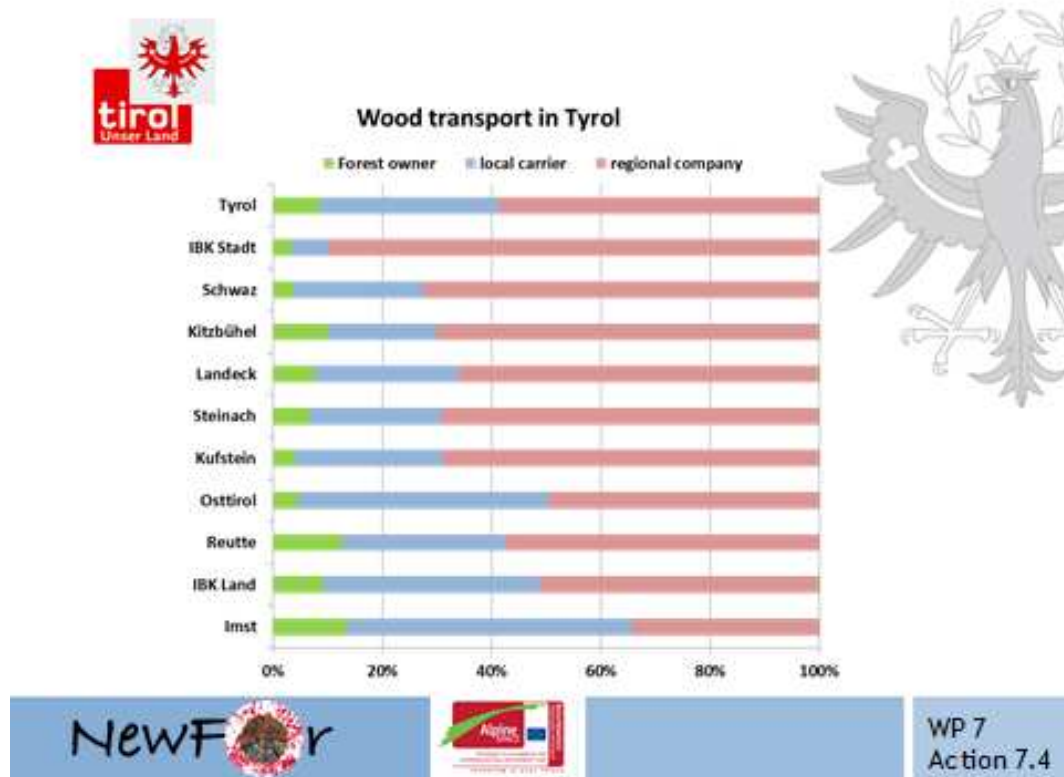


Round-wood logistic questionnaire main contents



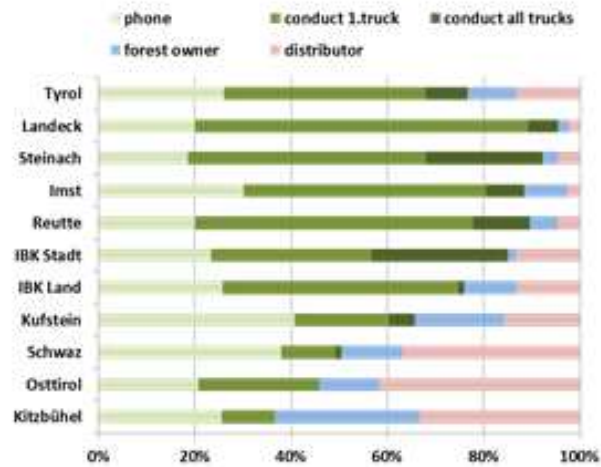
- Round wood transport
 - Forest owner, small local carriers, regional companies
 - Function of the local forester
 - Instruction about the location of timber (by phone with truck driver, by phone with a timber distributor, conducting the truck, by forest owner)
 - Reasons for conducting the timber truck (opening booms, guide along the direct line, security aspects, check the amount of transported timber, social networking)
 - Methods to check timber transport (no control, number of logs, Volume of standing trees, volume of felled trees, delivery note)
 - Type of delivery note (no note, note is dropped into a post box by truck driver, note signed by forest owner, note signed by local forester)
 - Booms (no booms, opened by local forester, open during timber transport period, opened by truck driver)
 -







Management of wood transport



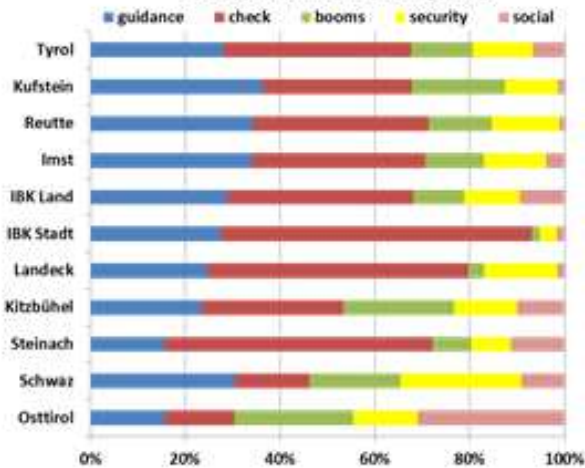
NewFor



WP 7
Action 7.4



Reasons for local foresters to conduct wood transports



WP 7
Action 7.4