

## PREHAULAGE OF TIMBER - A SOLUTION TO ROAD PROBLEMS?

*Prehaulage is a well known, but not too often used method in timber transport. There are many reasons for hauling timber from harvesting site to a point for onward transportation – and a range of different methods and vehicles can be employed to do so. The profitability of the operation depends on how much can be saved over the costs of taking a lorry to the harvesting site. Could this kind of a solution help alleviate problems on minor roads in certain parts of Britain then? The method is now being tested in Dumfries and Galloway using a specially designed prehaulage vehicle. Here is an overview of different prehaulage applications mainly based on experiences from Finland.*

The logic behind prehaulage is improved transport efficiency or a secured timber supply. Even if prehaulage is not very often carried out as an independent leg in the timber supply chain anymore, there are still a number of instances where timber is moved from the site to another point for onward transportation. Prehaulage of timber is often used in the following situations:

- *Collecting timber from seasonal roads.* In April timber is often left on winter roads and needs to be transported to roads accessible in the summer. This kind of prehaulage is quite common in the north and east of Finland, where the use of winter roads is a part of the operation model.
- *Transport over roads and bridges with restrictions for heavy vehicles.* Moving timber in smaller loads can sometimes help protect vulnerable roads around the harvesting site. Often it is not just about protecting weight-restricted roads or bridges, it is to avoid general or wider damage.
- *Operating on small sites.* When there are a number of small sites in an area - and especially when you cannot get full loads from them - it makes sense to move timber to a single point for onward transport. In private forests in the south and west of Finland timber must sometimes be collected in this way.
- *Preventing lorries from getting stuck and to reduce the repair and maintenance costs.* In some situations roads can be so bad that getting access to the timber with a lorry may result in a rescue operation or significantly increase the repair and maintenance costs.
- *Use of a group transport operation model.* Some hauliers in Finland use an operating model where a group of lorries are continuously running journeys on the main road network. The lorries need to be fed by timber from sites at forest roads and minor public roads – which, in effect, is pretransport.
- *Building a buffer to support secure and efficient operations.* Having an easily accessible buffer helps a haulier to enforce strict delivery programs and use their fleet efficiently. Supporting secure and efficient supply is perhaps not always the only motive for prehaulage, but combined with other reasons it may be a significant factor.

## Vehicles

Prehaulage is often associated with farm tractor operations. However, there is a range of vehicles available for carrying out this type of work:

- *A forwarder.* This so-called extended extraction is used over short distances mainly on forest roads. An advantage with this form of prehaulage is that there is no extra loading and unloading of the timber compared with direct lorry transport. However, a forwarder is not designed for roads nor roads for a forwarder.
- *A farm or industrial tractor with a trailer.* This solution was used in past years, but has almost disappeared. On distances up to 20-30 km, tractors were also used for direct transport to the mill, railhead or dumping site. Different types of trailers were used. Often a boggie wheel trailer with the loader on the draw shaft was used.
- *An intermediate vehicle.* Vehicles that fall somewhere between a farm or industrial tractor and a lorry (cf. MB Unimog) can be used for prehaulage. However, this kind of vehicle has not been used much in Finland. A standard intermediate vehicle can easily be customised for prehaulage purpose.
- *A pulling unit of a lorry.* This is the vehicle most often used in Finland for prehaulage. The option of using the pulling unit for prehaulage is probably one reason for having pullbar combinations with a detachable loader in the back of the pulling unit. The typical British lorry configuration cannot be used in the same way for prehaulage.
- *A complete lorry.* A lorry with a trailer can be used for prehaulage, if there are no restrictions on the roads. This can be the case when clearing winter roads of timber. Another issue is that there is not much benefit in using a trailer on short prehaulage distances including most loading and unloading.

Finally, if public roads do not need to be accessed, low tax diesel (red diesel) can be used in all the above mentioned vehicles. However, if the pulling unit of a lorry is used, and the same unit is used for onward transportation, the use of red diesel is almost impossible.



**Figure 1.** A farm tractor with a trailer is a simple, but workable solution for prehaulage contracting.

### **Working model and organisation**

Unfortunately prehaulage often includes some extra handling of the timber. How much extra handling is needed depends on the working model but there are three basic solutions available:

- *The timber is not put on the ground at all.* This can be achieved with a forwarder that directly loads a waiting lorry or a trailer. However, there are only a few situations where this is possible. Rotating trailers are used in some countries to offer more opportunities for direct loading by the forwarder. Another related solution is to put the timber in a container that can be easily pulled or lifted up onto the lorry. Arrangements with regular trailers aiming at a reduction of timber handling is sometimes used in Finland, but dedicated rotating trailers and containers have not been of any interest.
- *The timber is put once on the ground.* This occurs for instance when the pulling unit of a lorry is used due to bad roads or widespread timber and timber is loaded to a parked trailer at the main road. This way of working is common in Finland. A farm or industrial tractor or an intermediate vehicle can directly load a waiting lorry or a trailer as well.
- *The timber is put twice on the ground.* This “from pile to pile” method is the most common in prehaulage, but often not the most efficient.

Prehaulage can be organised in different ways. In the Finnish timber supply chain the timber buyer organisation, normally also responsible for harvesting and transport can be responsible for the operation and uses a haulier or prehaulage contractor to do the work. Another alternative is that a haulier organises the operation, either by doing the work himself or subcontracting it. The timber seller (forest owner) can be responsible for the operation by doing the work himself or employing a contractor.

## **Economy**

Prehaulage is profitable if it is cheaper than taking a lorry to the site. All costs should be taken into consideration: operational and capital costs for the vehicles as well as costs for road use. Theoretically the prehaulage distance can even be optimised. It is worth noting that increased costs for transport by lorry as well as reduced costs for prehaulage improves the profitability of prehaulage. Though differences in load size and driving speed have a significant impact, the loading and unloading times are crucial for profitability of prehaulage. Consequently, loading and unloading must be a target for rationalisation. Load size and driving speed become crucial on long prehaulage distances.

In looking at the economics of using a purpose built prehaulage vehicle there is possibly less road damage than with a standard vehicle (e.g. farm a tractor with a trailer). Productivity may also be higher. However, a purpose built vehicle tends to be more expensive than a standard built vehicle, and the use of the vehicle is often restricted only to the work it is designed for. This makes purpose built vehicles very sensitive to the volume of timber available. This must be taken into account when organising the operations.

## **A failure or a method to transport timber?**

Even if prehaulage is used in a number of different situations in Finland, it is not necessarily regarded as a method worth developing in its own right. It is considered to be a consequence of planning or infrastructure failure and that solution should be found in these areas. Thinking in Britain is probably the same. However, if the road problems are severe, and they cannot be solved in the short term, it is probably a good idea to have a close look at prehaulage solutions.

Technical issues, such as the type of vehicle to be used, need to be explored. However, the success of an independent prehaulage solution is very much down to how the work is organised. Haulier-led

operations are probably most flexible, but with regard to volumes supplier-led operations may be better. Co-operation is crucial in both cases.

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