

GOOD PRACTICE EXAMPLE

**Forest of the Slovak Republic s.e.
Banská Bystrica**



1. General description

BIOMASS, a specialized enterprise for production of wood chips is a part of the state enterprise Forests of the Slovak Republic, s.e. Banská Bystrica. The enterprise produce wood chips from the crown parts from mature and pre-mature cuttings, whole trees from cleaning and waste wood material from assortment production in forests depots. Annual production of wood chips ranges from 130 to 180 thousand tons. Enterprise Forests of the Slovak Republic manages the total forest area of 900 thousand ha and annual production of timber thicker than 7 cm without bark ranges from 4 to 5 million m³.

A Good Practice Example was identified as part of the supply chain including wood chips production planning in the large company managing forest, preparation of the biomass for wood chipping in forest depots, organisation of wood chips production and the wood chipping and organisation of the subsequent storage and transfer to the end user. The end users are also heating plants in Zvolen and Martin with an annual fuel consumption of 90 and 50 thousand tons.

The mentioned parts of the supply chain can be transferable and implemented by large forest owners, willing to produce wood chips using their own capacities or as part of their services.



Figure 1: Forest biomass

2. Description of activity in biomass supply chain

The entire supply chain has the following structure:

1. Negotiation with end users on wood chips supply – provided by a specialized enterprise, subject to the contracts is generally supply for the next calendar year.
2. Conclusion of contracts for the wood chips supply with end users - based on documentation of the specialized enterprise, contracts are concluded by the management (headquarters) with a legal entity. In case of sudden changes (dropout of the wood chips demand) chips will be delivered to other customers based on short-term contracts.



Figure 2: Unloading of forest biomass in end consumer storage

3. Development of plans to produce wood chips - production planning for the next calendar year is provided by specialized enterprise in partnership with 20 forest enterprises of the company managing forests. Plan for wood chips production is being elaborated on the basis of annual felling plans and production conditions (type of felling, timber quality, terrain condition, transport distance, etc...) Plan for wood chips production is confirmed by the management (headquarters). Because of the large proportion of calamity felling, wood chips production plan is being updated.
4. Production of wood chips – wood chips production is carried out according to the updated plan for production and concluded annual or short-term contracts. Production is provided by the specialized enterprise and is carried out depending on the weather conditions throughout the year.
5. Storage of wood chips in buffer stocks – Due to year-round production of wood chips and seasonal changes in consumption, it is necessary to store part of the whole production in the buffer stores. These are created on land owned by the state enterprise or on leased land.
6. Transportation of wood chips to end users or to buffer stores – Wood chips transport is organized by a specialized enterprise and provided by private transport services based on short-term contracts.

As Good Practice Example have been identified processes in the supply chain mentioned in paragraphs 3, 4 and 5.



Figure 3: Chipping of forest biomass

3. Technical characteristics

We mention only the technical characteristics of part of the supply chain identified as a GPE.

Information and communication technologies are widely used for elaboration of wood chips production plans, as for example wood raw material growing stock database, its generic and qualitative structure, relevant data of actual forest management plans and selected information on production conditions. The possibilities of wood chips production in terms of its quantity, location and time schedule are optimized depending on the demand options specified in the concluded or upcoming contracts.

Preparation of raw materials for wood chips production is organized mainly by enterprises managing forests as part of harvesting – production processes organized by private companies. Parts of tree biomass suitable for wood chips production is concentrated in forest depots on the edge of harvesting areas. The condition is sufficient biomass accumulation and spatial possibilities needed for chipping and loading transports. Coordination of work, chipping and transport to buffer stores or stores of end users is organized with helps if relevant information and communication technology.

Wood chips are produced by 8 wood chipping machines of Swedish origin on German tractors completed by company Doppstadt with an annual capacity of 15 to 20 thousand tons. Wood chipping machines are property of enterprise Forests of the Slovak Republic, s.e., Banská Bystrica.

4. Economic characteristic

Direct costs on timber felling including cuttings and concentration in timber depots range from 11 to 18 EUR per m³, depending on

production conditions. These costs are offset by sales of round wood assortments and pulpwood. An ideal share for chipping is 80 to 85 % of raw material, which can be used to make other assortments and 10 to 15 % is the share of pulpwood. Raw material for chipping is sold only by enterprises managing forests for a specialized enterprise BIOMASS for the price of 9 – 11 EUR/t. The cost of chipping ranges from 12 to 15 EUR/t. Cost for wood chips storage in the buffer store are 2 to 4 EUR/t. Costs for transportation to end-user store differ depending on the distance 7 to 14 EUR/t. Overhead expenses are from 8 to 10 EUR/t. The total production cost in different conditions range from 38 to 54 EUR/t.

5. Other characteristics

Investment costs for the purchase of 1 wood chipping machine are approximately 400 thousand EUR. Annual revenue from the sale of wood chips is 6.5 million EUR.

Producer of wood chips has to respect legal requirements and the legislation valid in the field of forestry, nature conservation, work safety and transport. There is no violation of law in the praxis.

Annual production of 130 000 tons of wood chips replaces 34.6 million m³ of natural gas or 87.1 thousand tons of brown coal resulting in savings of CO₂ emissions and other greenhouse gases (CH₄). Other environmental benefits are increasing hygiene in forest stands (reproduction of harmful insects) and reducing the risk of fires.

Specialized enterprise employs 55 workers. Other private companies providing services (transport, storage, preparation of the raw material, service) for specialized enterprise has created another 250 permanent jobs. Other jobs are created by end users.