



FACTSHEET OF BIOMASS LOGISTIC SUPPLY CHAIN

Summary of the factsheet

The current factsheet tackles the topic of biomass supply chain providing: (i) some tips, (ii) logistic considerations to be taking into account according to resource selected and (ii) final recommendations that should be considered with other stakeholders of the value chain when developing an initiative.

KEYWORDS:

Biomass logistic
Supply chain
Collection system
Agreement with other stakeholders

What should be taken into account to properly select the supply chain?

Biomass logistic operation is a critical step of the solid biofuels value in terms of economic feasibility, quality and environmental performance. There are different possibilities when collecting these resources, some of them are better than others, the most suitable alternative will depend on a number of factors, such as:

- Amount of biomass to be mobilized yearly according to the availability and the market potential.
- CAPEX (investment) of the new machinery needed.
- Access and slope to the field/forest, since it could constrain the suitable machinery to be used and the supply chain to follow.
- Distribution and amount of biomass to be harvested from the fields/forest/urban parks
- Quality requirements of the client (it could be a final consumer or an intermediate stakeholder), for instance: moisture content, size distribution, etc.

Machinery*	Productivity (t/h)**	Investment, CAPEX (€)***
Collection integrated with shredding/chipping	1.5-4	20,000 – 40,000
Large shredding/chipping	10-25	200,000 – 500,000
Small chipping machines	2-10	10,000 – 50,000
Self-loader truck	10-15	150,000 – 350,000

*There are many different types of machinery

**Productivity can change according to the biomass resource used

***CAPEX can vary according to the productivity and the brand selected

Agricultural biomass

- It is a biomass resource with high dispersion and low productivity per ha, so logistic operation is critical.
- Almost each year it is generated after pruning/harvesting operations. Collection should fulfil [RED II](#) criteria.
- Usually, the radius of operation should be lower than 30 km, if bales are produced it could be increased.
- Shredder machinery are more suitable than chipper machinery since it could contain sand and stones (contamination that should be avoided during the collection operations)
- Reference documents: [Monographic uP running](#), [Straw to Energy](#)

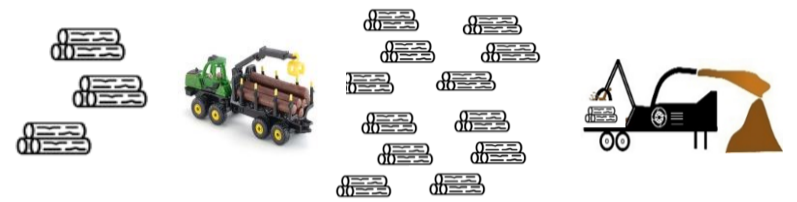




Forestry biomass

- There is a significant variability in terms of tonnes of biomass that can be obtained per ha (from 20 to more than 100 t/ha) according to the forest characteristics.
- Biomass logistic operations should fulfil [RED II](#) criteria.
- The average radius of operation could be of around 100 km.
- Large chipper machinery is usually preferable since the product obtained is more homogenous, and productivity reached is higher.
- Reference documents: [Wood fuels handbook](#), [Recovery of forest residues](#)

Shaft biomass



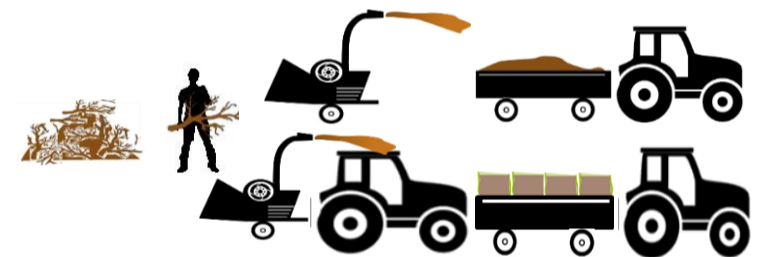
Branch and stem biomass



Biomass from urban parks and gardens

- The amount of biomass will depend of the tree species, a first estimation could be around 15-30 t/ha.
- It is obtained when maintenance operations are performed and/or planned by the managers of these urban parks and gardens.
- Small chipper machinery (easily to move from one site to other) is usually preferable since the product obtained is more homogenous. It could be fed manually or with machinery.
- Reference document: [Biomass supply chains](#)

The chipper could need a tractor or not



The woodchips can be transported in bulk or in a big bag

Recommendations to develop new biomass supply chains

Biomass owners Don't forget to obtain a successful agreement with the resource owner (farmers, forest management, municipalities, etc), sometimes intangible benefit could be enough.

Logistic operators It will be easier if you already account with some machinery to avoid starting from scratch. Also, don't forget that in some cases it could be more profitable to subcontract a service than investing on machinery or equipment.
Try to avoid the mobilisation of the biomass from one point to another if it is not necessary.

Clients Supply agreements with your consumers will decrease the risk of the OPEX and CAPEX of these collection operations. In this sense, it is key to reach an agreement regarding the quality, price and supply period requirements to ensure good cooperation and avoid misunderstandings.

THE PARTNERSHIP

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 952930.

The sole responsibility for the content of this website lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the European Commission nor any person acting on behalf of the Commission is responsible for any use that may be made of the information contained therein.

