



Supporting Sustainable Energy Production from Biomass from Landscape Conservation and Maintenance Work

Stakeholder Working Group 2 “LCMW pathway Utilisation Strategies”

Date: 20.09.2016, 10-14 h.

Organisation: Daniel Garcia and Mainer Gomez, CIRCE.

Topic: greenGain pilot experiences. Exploring potential alternatives for its conversion into energy or energy carriers.

Planned overall timing:

- 10.00-10.10: Connection, welcoming and registration of participants.
- 10.10-10.25: Current status of greenGain assessments.
- 10.25-10.30: Structure and content for the discussion.
- 10.30-11.45: Spanish pilot experiences. Final conversion and discussion of alternatives.
Czech pilot experiences. Final conversion and discussion of alternatives.
Italian pilot experiences. Final conversion and discussion of alternatives.
German pilot experiences. Final conversion and discussion of alternatives.
- 11.45-11.50 Invitation to the next SWGs and potential topic for next SWG2.
- 11.50-12.00: Summary and conclusions. Closure of the session.

Public available summary of SWG results

SWG	LCMW pathway Utilisation Strategies
Date of the conference	20.09.2016
Participants	<ul style="list-style-type: none"> - Rainer Zenthöfer Biotechnologie GmbH Expert stakeholder - Manolis Karampinis CERTH Expert stakeholder - Leonard Römer LiPRO Energy GmbH & Co KG Expert stakeholder - Boris Cosic SDEWES Centre Expert stakeholder - Julio Fierro CETIM Expert stakeholder - Huw Parry Network New Europe Expert stakeholder - Beatriz Fidalgo University of Cranfield Expert stakeholder - Pere Navarro CTFC Expert stakeholder - Wibke Baumgarten FNR greenGain partner - Kathrin Ludewig SYNCOM greenGain partner - Federico de Filippi SOGESCA, greenGain partner - Aline Clalüna COALS, greenGain partner - Jan Dolezal CZ Biom greenGain partner - Maider Gomez CIRCE, greenGain partner - Daniel García CIRCE, greenGain partner -
Topics	greenGain pilot experiences. Exploring potential alternatives for its conversion into energy or energy carriers.
Summary	<ul style="list-style-type: none"> • One of the main risks to use LCMW biomass is the raw material contamination that can be increased along the supply chain. It may cause the biomass to have a low market price or to be incompatible with the local facilities. • During the pilot experiences, sampling will be carried out in some cases to determine contamination along LCMW biomass supply chain. It is a good practice to detect the actual contents of contaminant fractions. • Several LCMW include manual handling of biomass. Even if the cost is higher than other mechanised methods, sometimes other barriers (administrative, legal) limit the mechanisation. In such cases risk of biomass contamination with exogenous materials is prevented. • One of the crucial issues is the material particle size distribution. Feeding systems in many facilities are prepared only for regular woodchips. Therefore, too much fines or large pieces of particles may cause clogging in screw feeders or in hoppers. • Some thermochemical conversion technologies are also quite sensitive to particle size distribution: e.g. in downdraft gasifiers the fines can impede the air flows and change the distribution of reactions inside the fixed bed. • Producing biomass with an appropriate particle size requires extra expenses. The key is in the selection of the shredder/chipper processing the LCMW biomass during or after its collection at field site. Also a sieving process can be a key option, which allows reducing fine and large fractions, and causes the LCMW wood to have a more similar distribution. The achievable market price increases, and the risks of problems at consumers' facilities are reduced. • Current forest chipping machines are quite efficient for LCMW woody material. However, in the case of branches or LCMW biomass in small pieces, the chippers

must be tested before, as they may need a re-arrangement of internal sieves and hammers.

- Agro-industries can be a key issue to use or commercialise the LCMW biomass from agrarian fields (abandoned olive groves) or from areas adjacent to agrarian areas. The synergy of industries already handling agrarian residues (almond shells, olive waste, etc.) is high for establishing new routes for LCMW biomass procurement.
- Large plants are a default option for LCMW biomass. Their feeding systems are better prepared, and usually less sensitive to biomass with heterogeneous particle size. This is not true for every large biomass consumer, but some of them can cope with troublesome materials. Co-firing is an example. It is not always possible to find locally large biomass consumers, and in such case the strategy for procurement is a key issue.
- When a material is expected to contain metal pieces, like in the case of wood from hedge and tree rows along banks, agricultural land or roads, which contain parts of metallic fence, it is crucial to treat this biomass separately to be sent to large consumers able to separate metal fractions, or able just to feed it in as received. However, the part of wood not susceptible of contamination can be derived for local uses which is able to pay more for the biomass.
- Producing mixed pellets can be an option for LCMW biomass. However, a sufficient amount of medium-scale biomass consumers is needed: heat for industry or district heating. There, LCMW biomass pellets can be an option and cause savings in energy bills for facilities based on EN-Plus pellets.
- It is however recommended to first try the use of untreated woodchips instead of pellets, since it avoids investment and operational costs in transformation. Also sieving can be sufficient to obtain LCMW woodchips of sufficient quality.
- The use of herbaceous biomass from parks cleaning in biogas plants is already being done in Czech Republic. The use of roadside grass shall present no further problems. It is an alternative to reduce the use of straw, and to substitute corn grain as feedstock.
- The use of LCMW biomass in gasification could be challenging in downdraft gasifiers (or other fixed bed systems) as the fine fractions of the material may hinder the gas movement through the bed. In conclusion, the LCMW biomass can be utilised as wood chips, but particle size distribution is a key issue in many technologies.
- The use of LCMW biomass for biochemical production is underway. These technologies are becoming more available and demonstration plants are being built (under industrial initiative or supported by H2020 programs). However, they are operating with regular woodchips or other more standard types of biomass. LCMW biomass can be a co-feedstock in future. Nevertheless, there are currently small chances to do a real demonstration in the greenGain target regions, as these types of facilities are not present locally.
- Synergies have been achieved between greenGain partners and experts. Bounds between several current on-going works and H2020 projects have been identified, as e.g.: Steambio, uP_running, Agrocycle, or greenGrain projects.