

BIOMASS NETWORKING IN EUROPE



DANISH
TECHNOLOGICAL
INSTITUTE



Value Chain Utilization of Aquatic Biomass

The increased energy demand and the focus on global warming have resulted in a soaring interest in the utilization of biomass for bioenergy as well as an increased demand for biomass. Algae can be a new biomass source and they have several advantages compared to the traditional energy crops among others a much larger yield per hectare. Algae are a diverse group of organisms ranging from unicellular micro algae to macro algae measuring several meters and they can contain a number of high-value compounds. Pigments and carbohydrates from algae are currently used in the food, the pharmaceutical and the cosmetic industries, however, many applications still remain to be investigated further. Hence, it seems highly possible that the use of algae biomass in a bio refinery will make it cost-effective to utilize algae for energy purposes.

The production of algae for a value chain utilization has numerous advantages compared to traditional energy crops:

- The yield per hectare is several times higher



- Macro algae can contain high concentrations of carbohydrates which makes them potentially highly suitable for a bioethanol and a biogas production or other energy conversions
- Micro algae can contain high concentrations of lipids which can be used for biodiesel production
- Algae do not require farm land and therefore they do not conflict with food production
- Algae can be produced in salt water or in brackish water which means that freshwater is not needed for the production

Danish Technological Institute is working with algae in a biorefinery concept and is involved in several projects regarding algae. We have specific experience with project management, the conditioning of biomass (i.e. drying, size reduction and pelletizing) and a quality characterization according to the CEN standards for solid biofuels.

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