

# Value and Size of Algae Biomass sector in Europe and relevance of Standardization

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## Abstract

Europe has a long pioneering tradition in algae related knowledge development and innovation. The first microalgae were isolated (*Tabellaria* in 1703) and cultured (*Chlorella* in 1890) in Europe. Microalgae and seaweed research and business have consistently been developed in Europe for the last 100 years, being at the forefront of algae exploitation for new foods, feeds and chemicals.

The evaluation of the '**Value and Size**' of the Algae Sector in Europe is of importance to show the economic-relevance and the impact of algae biomass as a *resource for the future*. Exact numbers about the value and impact are not possible to obtain but the order of magnitude can be predicted using *key performance indicators*, such as the turnover of the main companies and the number of workers reported by these companies. The companies were searched in corporative information databases (1). In some cases the turnover related with algae is an estimation as the companies act in several business sectors and whenever relevant there was an estimation on relative turnover in algae biomass based on their annual reports. The main difficulty for this evaluation is related to the fact that there are many modes of production (including harvesting from the environment) and many different direct products and extracts.

Following the available list of companies collected and organized along the last 25 years and the available list of universities working with algae, EABA can provide the information about the Algae Biomass sector in Europe in 2016:

Relating to the **Macroalgae** Biomass sector (seaweeds) in 2016 we have a list of **+132 companies** this includes: +78 SMEs (5-10 persons); +38 Medium companies (> 10-50 persons); +16 Large companies (> 100 persons) - sometimes departments - so that it is *possible to estimate* an average of 2.600 persons working in these companies. The turnover of the macroalgae sector was estimated to be **>700 M€/year** (based on the top 50 companies with relevant "macroalgae related sales"). There are also **+90 research groups** on macroalgae in EU and +30 in other European non-EU countries (including Turkey and Eastern Europe). Each research group has 10-20 persons and there are several dozens of 'isolated researchers'. Thus it is possible to estimate an average of 1.400 persons working in these organizations. Therefore we have approximately a total of **+4.000 persons** working in macroalgae in Europe.

Relating to the **Microalgae** Biomass sector (dried, and paste biomass and extracts) in 2016 we have a list of **+430 companies** which include: +125 microfarmers (4-5 persons); +280 SMEs (5-10 persons); +25 Medium and Large companies (> 10-50 persons) - some times departments - so that it is *possible to estimate* an average of 4.600 persons working in these companies. The turnover of the microalgae sector was estimated to be **>750 M€/year** (based on the top 50 companies with relevant "microalgae related sales"). This includes the turnover of European companies with production outside Europe as is the case of DSM (Martek) and BASF (Cognis). There are also **+300 research groups** on microalgae in EU and +90 in other European non-EU countries (including Turkey and Eastern Europe). Each research group has 10-20 persons and < there are several dozens of 'isolated researchers'. Thus it is possible to estimate an average of 5.400 persons working in these organizations. Therefore we have approximately a total of **+10.000 persons** working in microalgae in Europe.

The Research & Development budget in the top 80 universities and research organizations related with Algae Biomass is estimated as **+60 M€/year**. There are also several companies that provide equipments, engineering and other services for the algae biomass sector that are used for both macro and microalgae cultivation, including technologies for production, harvesting, CO<sub>2</sub> supply, pumps, analyticals and others. Most of these sales are for export all over the world. Based on the turnover 'related with algae biomass' in the top 30 companies it was possible to estimate a value of more than **+180 M€/year**.

**It is possible to conclude that the European Algae Biomass sector represents an 'economical value' of more than 1.69 b€/year (macroalgae 700 M€ + microalgae 750 M€ + equipments & engineering 180 M€ + research & development 60 M€) and provides jobs for more than 14.000 persons. More than 80% of the market is the result of activity by several large multinational companies.**

The decision from the European Commission to support the development of standards for the Algae Biomass sector, following a request of the European Algae Biomass Association (2) will contribute to the consolidation of the role of Europe in the sector worldwide. This process emerged from a need detected by the EU DG-Energy through the Principal Administrator Dr. Kyriakos Maniatis. The action of implementing and developing technical standards based on the consensus and inputs of different parties that include companies, users, interest groups, standards organizations and government bodies from different European countries, will help to maximize compatibility, interoperability, safety, repeatability and quality. It will also facilitate commoditization of formerly custom processes and increase trade and other business activities. Standardisation will rationalize different varieties of products, contribute to decrease the production costs, improve management, facilitate research and innovation, speed up the management of orders, improve the exportation and marketing of products and simplify purchasing management. This standardisation effort must involve all algae related stakeholders.

(1) The turnover information and number of employees was obtained from: Hoover's, Inc., a D&B Company (October 2016).

(2) CEN/ BT / WG218 - N012. Brussel, 23.03.2016. "Commission implementing Decision on a "Standardisation request to the European Committee for Standardisation as regards algae and algae-based products or intermediates".