**Implementation and Development of Economic viable Algae-based value chains in NWEurope (IDEA project)**

The initial IDEA project focuses on algae value chains using closed photobioreactors and targets higher value applications such as for animal feed, food and cosmetics. Value creation is linked exclusively to the algal biomass and appears to be driven by the applications. To increase economic viability (and reduce risk for algae farmers), the IDEA capitalization project aims to evaluate options for creating additional revenue (including reduced discharge costs) through the reuse of tributary streams. This concept also aligns with a growing trend toward circularity. Some sidestreams (digester-related) were found to be available on the premises of new algae growers. Other side streams (process/wastewater from chemical & agro-food sector) offer potential for algae growth (open & closed systems), which is currently underexplored in practice, despite being studied on a small scale for decades. Barriers identified so far were the required pre-treatment of waste streams, harvesting technologies (large volumes, low densities), applicability/value of the algal biomass and availability of space.

IDEA wants to explore and capitalize this domain to new stakeholders (waste stream owners in chemistry & agro-food sector, companies aiming for circularity) & a new economic sector (crop protection, fertilizer), involving new partners who are experts in pre-treatment of digestate (SU, link Alg-AD, UK = new land), crop protection (pcfruit vzw), circularity (CC,HEI).

The IDEA capitalization project has the following objectives: 1) to increase the economic viability of algae-based value chains by creating added value through reuse of waste streams, 2) to intensify circularity in the process. The targeted recycled components for phototrophic algal growth (CO2, nutrients (N, P) & salts) will be recovered from a) nutrient rich process water (low organic carbon content) and b) outputs from digesters (digestate & CO2). The value of algal biomass for old and new (crop protection) applications will be evaluated. The role of pcfruit vzw in this project is to investigate the possibilities for use of these microalgae or for crop protection applications in fruit cultivation. Both the effect towards biotic stress (fungal diseases and pests) and abiotic (drought) stress will be investigated.

Consortium: 13 partners & 3 associated partners:

Lead applicant: VITO, Belgium



