



## Project Information Sheet

### Algal treatment of biogas digestate and feedstock production (AlgaeBioGas)

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<b>Website:</b>	<a href="http://www.algaebiogas.eu">www.algaebiogas.eu</a>
<b>Benefits (max. 150 characters incl. space):</b>	By using algal bacterial treatment of biogas digestate a significant proportion of nutrients and CO <sub>2</sub> is recycled into a biogas feedstock.
<b>Keywords:</b>	Biogas digestate, algae
<b>Sector:</b>	Green Business
<b>Type of solution</b>	process, technology
<b>Duration:</b>	01/09/2013 – 31/08/2016
<b>Budget:</b>	€ 925 371 (EU contribution: 50%)
<b>Contract number:</b>	ECO/12/333018

#### Summary

Algal-bacterial treatment of biogas digestate will be introduced to the market. CO<sub>2</sub> emissions and nutrients from the biogas digestate will be recycled using algae, resulting in treated water and new biogas feedstock. This approach significantly reduces CO<sub>2</sub> emissions and energy consumption compared to classical wastewater treatment and solves digestate logistic problems.

Algae have a great potential because of their high growth rate, easy production, better utilization of sunlight compared to plants, shorter lifecycles and independence from agricultural land. Biogas plants are rich sources of mineral nutrients, CO<sub>2</sub> and heat. By algal recycling we can close material cycles, provide feedstock for bio-refining high value products and decrease competition between biogas and food use of agricultural crops.

Within this project we will set-up a demonstration centre and prepare technology, organization and marketing tools to market replication projects. The demonstration centre will not only be able to demonstrate the technology in real size, but also provide on-site support for customer's testing, analysis, evaluation, training and other activities required as part of a complex project.

#### Expected and/or achieved results

For a typical 1MWe biogas plant running mostly on corn silage:

- we can recycle 95% of nutrients in liquid phase of digestate on 1-4 ha of algal bacterial treatment facility;
- biomass production in such facility will be 72 – 200 t/y; additionally approximately the same weight of cellulosic residues will be used as a biogas substrate;
- we will recycle 123 – 380 t of CO<sub>2</sub> emissions yearly, out of 13.000 t cycled through corn silage.
- biomass production in such plant will replace 9 – 27 ha of corn out of 335 ha if only corn was used as a substrate;
- reduced energy consumption for digestate treatment ~42 MWh annually with associated reduction in CO<sub>2</sub> equivalent emissions for power production ~29 t annually; reduction in CO<sub>2</sub> emissions from bacterial treatment of digestate up to 1.100 t CO<sub>2</sub> annually; with NO<sub>x</sub> and N<sub>2</sub>O emissions significantly reduced.

There are more than 10000 biogas operators in EU; we estimate that some 10% of them are ready for our technology today.