



## ALGAE-GHG - Carbon Dioxide Mitigation from Greenhouse Gases in Algal Photosynthetic Systems



<b>Expedient</b>	LIFE10ENV/RO/000734	<b>Date</b>	01-SEP-2011 to 31-AUG -2014	<b>Location</b>	
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<b>Coordinator</b>	National institute for research & development in chemistry and petrochemistry (incdcp-icechim)				
<b>Consortium</b>	S.C. IPROCHIM SA, Romania Research-Development Institute for Plant Protection (ICDPP), Romania				
<b>Objective</b>	<p>The overall objective of the ALGAE-GHG project is to develop a demonstration integrated photosynthetic system based on the sequestration of greenhouse gases (GHG) in algal biomass used as raw materials for value-added bio-products. The project will increase in scale (1 200 litres) new technological solutions tested at laboratory and small pilot scale. Specific objectives include:</p> <ul style="list-style-type: none"><li>• Carbon dioxide mitigation from flue gas emissions of thermoelectric power plants using a new and clean technology for biological carbon sequestration in algal culture, which is 10-20 times more efficient than that used in other plants;</li><li>• Value added use of algal biomass in various applications, such as lipids as an alternative source for biofuels and horticulture oils, as well as proteins for feed additives and spent algal biomass as plant bio-stimulants, fertilisers and soil enhancers;</li><li>• Technical and economic analysis regarding the implementation of the technology on an industrial scale;</li><li>• A market study on the final manufactured bio-products resulting from the application of the technology proposed by the project; and</li><li>• Technological solutions for the value-added use of products such as algal oil and spent biomass.</li></ul>				
<b>Expected results</b>	<p>Expected results:</p> <ul style="list-style-type: none"><li>• CO<sub>2</sub> content reduction in flue gases released into the atmosphere by microalgae, which offers the potential to convert from power plant CO<sub>2</sub> to biomass: for every 2 kg of CO<sub>2</sub> consumed, 1 kg of biomass is produced;</li><li>• Improvement of the oxygen content in the atmosphere, as oxygen is a natural product of photosynthesis: for every kg of CO<sub>2</sub> consumed, 0.73 kg of O<sub>2</sub> is released;</li><li>• Production of algal biomass that can be divided into products for use in various applications: lipids as an alternative source for biofuels and horticulture oils; proteins, for feed and food additives; and spent algal biomass as plant bio-stimulants, fertilisers and soil enhancers;</li><li>• Efficient use of the biomass for agricultural surfaces: 50 times more algae can be produced per hectare per year than terrestrial biomass: 150 tonnes/ha/yr compared with 3 tonnes/ha/yr; and</li></ul> <p>The creation of new jobs by developing the technology of CO<sub>2</sub> capture and sequestration on an industrial scale, and by marketing bioproducts obtained from algal biomass.</p>				