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# Geographical analysis for the integration of a microalgae production and biorefining unit in "Pays de la Loire"

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## Résumé

Microalgae are photosynthetic species able to transform carbon dioxide, for example from combustion processes, into biomass and valuable molecules (lipids, proteins, antioxidants, polysaccharides etc.).

The team "Marine bioprocesses and separations" of GEPEA laboratory has been developing an integrated approach to valorise microalgae, from the culture to the biorefinery, for several years. A new collaboration was build with geographers (LETG-Nantes) to explore the French geographic areas where an industrial microalgae production and biorefining unit could be built.

A database on the scale of metropolitan France was realized including the parameters for the culture of microalgae (light, water, carbon dioxide, nitrogen, phosphorus, heat, available lands). Three sizes of production unit were taken into account to identify potential zones of installation. Maps were then produced to compare the most interesting sites. This first work was followed by a second, to study more details on the coast of Pays de la Loire. Besides the choice of the site, new criteria were added: regulatory requirements in the installation, perception of the project by local actors (local authorities, public, neighbourhood) that must be known to prepare a local integration.

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