



## **Postdoctoral Fellowship in Environmental Engineering and Sciences**

### **Life Cycle Analysis of a Carbon Capture Use and Storage project**

The Laboratory of Economics of Orléans (LEO) jointly with the French Bureau de Recherche Géologique et Minière (BRGM, French Geological Survey) is proposing a twelve-month Postdoctoral Fellowship in Environmental Engineering and Science, on the Life Cycle Analysis of a project combining a Carbon Capture and Storage process on bioenergy with its use in Greenhouse (BCCUS), the CO2SERRE project, funded by the French Region Centre-Val de Loire.

The CO2SERRE Project focuses on a CCUS process in the Region Centre Val de Loire, which will be implemented on local CO<sub>2</sub> emissions coming from Biomass, mainly from a co-generation Biomass power plant, with its use in local agricultural greenhouses. Depending on the volume of capture and stored CO<sub>2</sub>, and also on its time profile of emission and use, this process will require either a definitive storage of the excess CO<sub>2</sub> in deep geological layers, or a buffers storage between the capture and use steps.

In cooperation with an economist in charge of the Technico-economic analysis of the project, the candidate will conduct the environmental assessment through LCA of the innovative CO2SERRE system. The assessment will consider the CCUS chain as a whole (capture – transportation – storage – transportation – use of CO<sub>2</sub> in glasshouses) compared to a business-as-usual system. Particular attention shall be paid to temporary carbon storage methodological consideration.

The work involves several stages:

- Review of methodological consideration of carbon (including biogenic), temporary and permanent, storage in existing LCA studies;
- Goal & scope definition, established by agreement with the CO2SERRE partners;
- Data collection from CCUS stakeholders alongside with literature and generic LCA database (e.g. ecoinvent) and modelling of the system;
- Life cycle impact assessment of several alternative scenarios;
- Interpretation of results, comparison with business-as-usual, and environmental recommendations for the regional deployment of the CO2SERRE system.

The candidate, doctor in environment, energy or engineering sciences, will work, in a multidisciplinary team (geologists, engineers, economists) located on the BRGM and University of Orléans sites. A good knowledge of CCS technologies, geothermal energy and geology and/or background in LCA would be highly appreciated.

**More information:**

- The postdoctoral contract will be jointly supervised by Mr Xavier Galiègue (LEO, University of Orléans) and Mrs Faustine Laurent, (BRGM).
- The net wage will be about 2050 € net a month.
- Contract beginning: from September 2020, for 12 months
- Applications will have to be sent to the following addresses: [xavier.galiègue@univ-orleans.fr](mailto:xavier.galiègue@univ-orleans.fr) and [f.laurent@brgm.fr](mailto:f.laurent@brgm.fr) et [isaline.gravaud@brgm.fr](mailto:isaline.gravaud@brgm.fr), before April 3rd 2020
- Candidate will send a detailed curriculum vitae, a cover letter, and a copy of Ph.D. diploma or the defense date confirmed by a letter from the thesis supervisor.