

O.I.E.

Centre Observation, Impacts, Energie

Post-doctoral position

Short title	<i>Environmental impacts assessment of energy production technologies and consequential LCA</i>
Subject	<i>Environmental impacts assessment of energy production technologies with a strong focus on Hydrogen and biomass and consequential LCA</i>
Key-words	<i>Renewable energies, Consequential Life Cycle Analysis, environmental impact assessment, Hydrogen, Biomass</i>
Type of contract	<i>Up to 36 months contract</i>
Duration	<i>24 to 36 months starting in April 2022</i>
Degrees & Profile	<ul style="list-style-type: none"> • <i>PhD in Sciences</i> • <i>Applied Mathematics and Statistics backgrounds required</i> • <i>Experience in Python is required but also if possible in Matlab or R</i> • <i>Knowledge on Geographical Information Systems will be a plus</i> • <i>Knowledge of LCA software – Brightway, openLCA, Simapro – is highly appreciated</i> • <i>Scientific publications : at least 2 published articles</i> • <i>Fluency in English and French is required</i>
Location	Laboratoire d'accueil : Centre « Observation, Impacts, Energie » (O.I.E.) MINES ParisTech – ARMINES Département Energétique et Procédés SOPHIA ANTIPOLIS (06 - France) http://www.oie.mines-paristech.fr
Entity overview	<p><u><i>The Center "Observation, Impacts, Energy" (O.I.E.) is a joint Research Laboratory MINES ParisTech/ARMINES that focuses on energy. It addresses the temporal and spatial issues linked to renewable energy resources as well as to the environmental impacts of energy pathways.</i></u></p> <p><u><i>MINES ParisTech</i></u> trains high-level engineers and scientists since its foundation in 1783. Originally in charge of the training of civil engineers of Mines and of the Inspectors of Mines, the School has developed research and third cycle programs (specialized masters, PhD) since 1960s, linked to industry and international academics. MINES ParisTech is one of the founding members of <u><i>ParisTech</i></u>, and of PRES Paris Sciences et Lettres (<u><i>PSL University</i></u>)</p> <p><u><i>ARMINES</i></u> is the first contractual research association in France, and was created in 1967 as an initiative of the Ecole des Mines de Paris. It focuses on industry-oriented research.</p> <p><i>MINES ParisTech and ARMINES are distinguished with the <u>Institute Carnot</u> label since 2006.</i></p>
Missions	<p>Context:</p> <p>The Centre O.I.E.'s researches on environmental impacts apply to energy sectors and scenarios and explore the concept of life cycle analysis (LCA), with original methodological developments relating to the dynamic modelling of energy scenarios, the consideration of uncertainties and variability in LCA as well as social and economic aspects. The centre has thus carried out numerous technical (photovoltaic, onshore and offshore wind, geothermal, hydrogen) and socio-economic (urban mobility, offshore wind, bio-energy) LCA in collaboration with the actors in the field (BRGM, EDF, ENGIE, AIE, NREL, ADEME). The centre has also initiated the development of new web-based services providing access to, for example, the environmental performance of photovoltaic systems (ENVI-PV) on a global scale or those of a wind farm in a territory such as Denmark (LCA-WIND_DK). More recent work addresses the sensitive issue of impacts induced by the integration of variable and unmanageable energy on the electricity grid. What is acceptable and realistic for low rates of integration of renewable energies, may involve the use of new devices not devoid of environmental impacts (particularly flexible electrical generators, energy storage devices, reinforcement of interconnections and/or telecommunication devices to adapt consumption to demand - erasure or postponement).</p> <p>The Centre O.I.E. de Mines ParisTech seeks on the one hand to strengthen its expertise in the field of environmental assessment and sustainability of energy sectors (hydrogen, biomass, etc.) and more</p>

specifically, Consequential LCA modeling approaches in both energy production and transportation. The Centre is also seeking, taking advantage of the dynamic synergy between its three fields of activity, to develop new digital tools incorporating socio-economic models and thus to be part of a more global prospective evaluation of a territory, beyond the simple environmental assessment.

Objectives:

The candidate is expected to have the ability to develop academic work in the field of modelling and environmental assessment related to energy streams. It is hoped that the candidate will have good autonomy to participate in industry-related research projects and to be involved in the definition of research projects, to find external resources through partnerships with different actors from the industrial and academic worlds. The candidate will work cooperatively with all team members in a highly collaborative and multidisciplinary setting.

The Centre wishes to strengthen its "Environmental Impacts" team with a researcher in the field of environmental assessment by Life Cycle Analysis of renewable energy sectors and more particularly of the Hydrogen sector (solar, wind, hydrogen, biomass, etc.) A technical knowledge of these renewable sectors is an asset for the implementation of this research. The development of digital tools that can generate new web services is also an objective for this position.

The successful candidate will participate in the own research programme on these topics, participate in various courses for both students and engineers, participate in the supervision of doctoral students, publish in the best international journals and conferences and contribute to the development of the Centre's research partnership.

The successful candidate will contribute to the various courses and trainings carried out by the Energy & Processes Department, including the Specialized Education «Life Cycle of Energy Systems» of the Civil Engineer training in 3rd year, the Life Cycle Analysis course of the Master PSL Energy and the Specialised Masters ALEF and EnR, the doctoral training «Advanced LCA», as well as the supervision of projects at the Civil Engineer and Master level. The successful candidate will be encouraged to set up new courses that will enrich the educational offer of the Energy & Processes Department.

The position is for a graduate researcher from a university or college with a PhD in Energy, Civil or Mechanical Engineering, chemical or environmental engineering with a strong taste for modeling complex systems and proven experience in the field of LCA environmental assessment. Skills in programming, applied mathematics (statistics, probability, etc.) and Geographic Information Systems (GIS) would also be important for this position.

The candidate must have experience in scientific publications (a minimum of 2 papers published in international journals and contributions to international conferences).

The candidate must have demonstrated a good ability to work as a team, in order to be able to develop his or her research activities in collaboration with the teams of the centre or other French and foreign laboratories.

The candidate will be required to collaborate on the set-up and coordination of projects involving theoretical research and numerical simulations.

Mastery of specific ACV software is highly valued (i.e. openLCA, Brightway2), as well as experience in R, python or equivalent programming.

Fluency in spoken and written English is imperative.

Deadline	Deadline for application: 20th January 2022
How to apply	Send motivation letter, curriculum vitae and Publications list and 3 recommendations letters : to: Paula PEREZ-LOPEZ Centre O.I.E. (Observation, Impacts, Energie) MINES ParisTech - ARMINES Rue Claude Daunesse – CS 10207 - F-06904 SOPHIA ANTIPOLIS CEDEX Tél. : +33 (0)4.93.95.74.53 ou, par e-mail à : paula.perez_lopez@mines-paristech.fr
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Date de mise à jour de la fiche : 06/12/21