



## RECRUITMENT OF A TENURE TRACK ASSISTANT PROFESSOR IN ENVIRONMENTAL IMPACT OF ENERGY PATHWAYS

**Institution** : MINES ParisTech (Ecole Nationale Supérieure des Mines de Paris)  
**Laboratory** : Centre for Observation Impact Energy (O.I.E.)

Developing its research and teaching activities in the field of Energy, [MINES ParisTech](http://www.mines-paristech.fr), member of [PSL University](http://www.psl.eu.org), opens an assistant professor position in Environmental impacts of energy pathways.

This 3-years position (for an initial period of one year, renewable twice) is aimed at a researcher (man or woman), who appreciates a multidisciplinary work combining fundamental research and industrial applications. The successful candidate will take part to the partnership research work of his/her team and contribute to industrial and economic innovation. He/She will also have the opportunity of defining a PhD subject during his/her first year at the O.I.E. Center that he/she will supervise together with a senior member of the team who is officially accredited for such a task.

The position is to evolve into a permanent lecturer and researcher work within 3 years in the framework of a Tenure Track procedure. A description of the process is available on MINES ParisTech website: <http://www.mines-paristech.fr/Ecole/Recrutement/Travailler-a-MINES-ParisTech/>

### 1. RESEARCH AT MINES ParisTech

In line with its teaching activity, MINES ParisTech develops a research activity that covers a wide range of scientific disciplines. The eighteen research centers are organized in five departments: Earth and Environmental Sciences, Energy and Processes, Mechanics and Materials, Mathematics and Systems, and finally, Economics, Management and Society.

MINES ParisTech research aims at both academic excellence and socio-economic impact. This research model is developed in close interaction with the socio-economic world: private or public sector companies, and also institutions and public administrations. MINES ParisTech is the first school in France by its volume of research on contracts, carried by Armines, the Mines ParisTech Foundation or MINES ParisTech. This special positioning allows the School expanding its staff and maintains unique experimental and digital platforms highly appreciated by its partners.

This ability of MINES ParisTech and companies to work together on ambitious scientific and industrial issues is recognized nationally and internationally. For example, the CNRS silver medal awarded to Madeleine Akrich, two French Research Agency industrial chairs and the renewal of the Carnot label in 2016. MINES ParisTech is positioned at the 23rd place in the QS World University Rankings by subject and in the top 100, 150 and 300 of the Shanghai engineering thematic rankings

### 2. MINES ParisTech OBSERVATION IMPACTS ENERGIE (O.I.E.) CENTER

The position is for the [Observation, Impacts, Energy Center \(OIE\)](#), located at the Sophia Antipolis site of MINES ParisTech, whose staff is composed of 8 permanent scientists, 5 doctoral and post-doctoral students and an administrative assistant.

The Observation, Impacts, Energie Center (O.I.E.) is a joint research team MINES ParisTech - ARMINES, whose activities are at the crossroads of energy, environment and earth observation. It studies and models the "renewable energies" resources and the environmental impacts related to their exploitation, by relying on fundamental and applied

scientific disciplines (mathematics, metrology, physics, environment, ...) and on Information technologies (IT) and communication. Web databases and services are one of the main media for knowledge dissemination.

The work of O.I.E. Center is part of the strategic axis No. 3 "New and renewable energy" of the [Department of Energy and Processes \(DEP\)](#) from MINES ParisTech, the first engineering school in France by its volume of research contract. Research undertaken at the O.I.E Center is contributing to three areas of activity:

1. The development of energy-specific meteorology for resource assessment and prediction, including solar and wind energy;
2. The analysis and decision support in terms of reducing the environmental impacts of transport, energy production and uses;
3. The dissemination of scientific data through web services in an international collaborative environment (OGC, GEOSS, IRENA, IEA).

The research activity of O.I.E. Center is related to environmental impacts apply to energy and scenarios and explore the concept of life cycle analysis (LCA) with original methodological developments related to uncertainties and variability. O.I.E Center has carried out numerous LCAs (photovoltaic, onshore and offshore wind, geothermal) in collaboration with the players in the field (BRGM, EDF, ENGIE, AIE, NREL, ADEME). The center has also initiated the development of new services on the Web allowing access for example to the environmental performance of photovoltaic systems (ENVI-PV) on a worldwide scale or to those of a wind farm for a large territory such as Denmark (LCA-WIND\_DK). More recent work addresses the sensitive issue of the impacts induced by the integration of variable and non-controllable 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 electric generators, energy storage device, reinforcement of interconnections and / or to a telecommunication device making it possible to adapt the consumption to the demand (erasure or report).

Mines ParisTech' O.I.E. Center seeks on the one hand to strengthen its skills in the field of environmental assessment of new energy sectors (hydrogen, biomass, ...) in the field of energy production as well as in the field of transport. The O.I.E. Center also seeks, taking advantage of the dynamic synergy between its three fields of activity, to develop new digital tools integrating socio-economic models and thus to be part of a prospective approach to more global evaluation of a territory, beyond the simple environmental assessment.

### **3. DESCRIPTION OF THE VACANCY**

The successful candidate is expected to have already proven his/her ability to develop academic research in the field of modelling and environmental assessment related to the energy sector. He/she is expected to develop an independent and creative research program devoted to his/her topics, initiate an externally funded research program, and establish a strong partnership with academic communities and actors of the Industrial world. The candidate will work in cooperation with all members of the team, in a highly collaborative and multidisciplinary framework.

#### **Research**

O.I.E. Center wishes to strengthen its "Environmental Impact" team with a researcher in the field of environmental assessment of new renewable energy sectors (hydrogen, biomass, ...) and decarbonisation processes (CO<sub>2</sub> capture ... ) both in the field of energy production and in the field of transport. The development of digital tools to link socio-economic models at the level of territories (region or nation) and the ability to generate new web services is also an objective for this position.

The successful candidate will develop an independent and creative research program devoted to these topics, supervise Ph.D students, participate in various courses for both students and engineers, publish in the best journals and international conferences and be an active player in the development of the Center's joint research activities.

#### **Teaching activities**

He (she) will contribute to the various courses and trainings carried by the Energy & Processes Department ("Life Cycle of Energy Systems" course taught for the training Civil Engineer in 3rd year, "Life Cycle Analysis" Course for the Master PSL Energy, doctoral training «Advanced LCA»). The selected candidate will be encouraged to set up new courses that will enrich the educational offer of the Energy & Processes Department.

#### **Special features of the candidate's profile**

The applicant will have to show his/her capacity to conduct research work in a multidisciplinary context, together with an aptitude for teamwork. A first experience in academic or industrial joint research would be appreciated.

The position will evolve to a permanent position after 3 years for an excellent candidate.

The position is aimed at a researcher who has graduated at a university or a major school and has a Ph.D. in energy, civil engineering or mechanical engineering, chemistry or environmental engineering with a marked taste for the modelling of complex systems and proven experience in the field of environmental assessment. Skills in programming, applied mathematics (statistics, probability ...) and Geographic Information Systems (GIS) would also be important assets for this position.

A post-doctoral period in a research laboratory different from the one in which he / she will have completed his / her Ph.D., and preferably in a foreign institution or laboratory, will be highly appreciated.

The candidate must have experience in scientific publications (at least 4 articles published in international journals and contributions in international conferences).

The candidate will be required to collaborate in the elaboration and coordination of projects linking theoretical research and numerical simulations.

The mastery of specific LCA software is highly appreciated, and the experience in programming R, python or equivalent will be taken into account.

Fluency in spoken and written English is imperative.

#### **4. APPLICATION**

The application should include:

- a detailed CV;
- a list of recent research work and publications;
- a covering letter presenting the candidate's research project;
- if possible three reference letters directly sent to O.I.E. Center from experts in the field selected by the candidate. If not, the application will include at least the names and contact details of three scientific leading figures who could be contacted to give their opinion about the candidate's work and abilities.

**The file should be sent at the latest on May, 6<sup>th</sup>, 2019 at the following address:**

**Centre O.I.E - MINES ParisTech,  
CS 10207 - F-06904 SOPHIA ANTIPOLIS CEDEX, France,  
Thierry RANCHIN, Head of O.I.E. Center  
and by/or e-mail to Isabelle BLANC and Paula PEREZ LOPEZ  
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