



**UNIVERSITÉ
DE GENÈVE**

**INSTITUT DES SCIENCES
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University of Geneva, Institute for Environmental Sciences, Energy Efficiency Group

In the energy domain, we have vacancies for

two to three Ph.D. students on energy efficiency technology and policy, energy storage and digital tools for the energy turnaround (interested post-doc researchers with a relevant profile are also encouraged to apply).

The successful applicants will become members of the Energy Efficiency Group (<https://www.unige.ch/efficience/en>) within the Department F.-A. Forel for Environmental and Aquatic Sciences, Faculty of Sciences and will be housed by the inter-faculty Institute for Environmental Sciences (ISE, <http://www.unige.ch/environnement>) that is active in cross-disciplinary research in the domains of energy, climate change, surface waters and urban ecology as well as sustainability. The institute represents an enthusiastic, dynamic and international working environment. It offers an interdisciplinary Master programme in Environmental Sciences (MUSE) with a track on Energy to which the successful candidates will contribute.

Project and job description:

Energy efficiency and renewable energy play an important role in the European Union's Energy Efficiency Directive, in Switzerland's Energy Strategy 2050 and in the energy plans prepared by Swiss cantons. According to the Energy Strategy 2050, final energy use in Switzerland shall be reduced by 35% until 2035 and by 46% until 2050 (New Energy Policy scenario) which are very challenging objectives considering economic growth and the rise in population. The replacement of nuclear energy by new renewable energy sources is a further key objective of the Energy Strategy 2050. Against this background we are studying the current and future potentials for energy savings and the opportunities for energy storage in the Swiss and European context.

The topics to be addressed by the new positions include the spatio-temporal analysis of electricity and heat demand as well as energy saving opportunities today and in future, thereby covering residential buildings, the commercial sector and selected industry sectors. In order to manage the loads on energy infrastructures and to minimize of fossil fuel consumption, best possible use needs to be made of emerging opportunities related to energy storage (for electricity and heat), distributed generation and new IT tools. The latter can, for example, help to balance demand and supply at different levels, e.g. by utilities (role of aggregators), by ESCOs but also by end users (e.g. households). The planned research concerns various systems at different geographical scales, e.g.

from the neighbourhood level, to cities, regions and the country as a whole. Next to the assessment of technology implementation, also energy efficiency programmes are studied. The analysis includes technical and economic potentials as well as organisational and behavioural constraints, ultimately leading to policy-relevant conclusions.

To this end, a variety of methods are applied including techno-economic analysis, bottom-up modelling (simulation), regression analysis, optimisation and geographical information systems.

The positions are financed by funds from the Swiss Competence Centers for Energy Research (SCCERs) and from the utility sector

Requirements:

Candidates should have background in physics, engineering and/or environmental sciences (M.Sc. degree) and they must be able to combine thorough technical understanding with economic assessment and broader aspects of the energy transition, including policy aspects. Experience in handling large datasets and modelling expertise using tools like Matlab, R or Python are expected. Experience with GIS tools is considered as advantage. Excellent knowledge of English (written and spoken) is a necessity and good knowledge of French and/or German are advantages.

The positions offer unique opportunities to the successful candidates to build a solid CV for an academic or professional career by further developing a wide range of analytic skills, presentation and reporting skills and networking in a cutting-edge R&D area that is essential for the energy transition, nationally and internationally.

Not all of the topics described above will be covered by each Ph.D. project. Instead, a selection will be made for each Ph.D. trajectory, thereby matching project needs with the skills of the successful candidates.

Conditions of employment and application:

We offer a one-year appointment (with further extension by up to four years within the Ph.D. trajectory). The salary offered is in accordance with the regulations at the University of Geneva.

Interested applicants are kindly requested to send until 8 September 2018 a letter describing their motivation and competences next to an up-to-date CV (with publication list and overview of student supervision, if relevant) as well as transcripts (with information on the course load and grades of the courses followed by the applicant). If necessary, the deadline will be extended until suitable candidates will have been found. Applications should be sent by email to (applications-energy@unige.ch). More information about the position can be obtained from Prof. Martin Patel (Martin.Patel@unige.ch).