CSTB/Climate Economics Chair
Internship position

Adaptation to high heat and summer comfort: modelling household demand for new residential energy uses

Context

The impacts of climate change are becoming more evident each year; average global temperatures are rising, heat waves and severe weather are increasing and intensifying. While reducing greenhouse gas (GHG) emissions remains a priority in the hope of containing climate change, it is now clear that adaptation actions are also necessary to reduce the vulnerability of human societies.

The French housing stock is for instance subject to the intensification of heat waves exposing occupants to significant health risks. To deal with this, adaptation actions are necessary, which are generally complementary to the energy renovation of housing. Thus, the installation of active cooling system equipment, air conditioning and heat pumps (PAC), has accelerated in recent years. However, this equipment can present contradictions between decarbonisation and adaptation objectives, due in particular to fugitive GHG emissions or contribution to the urban heat island effect (UHI).

The RE2020 energy regulation sets a regulatory framework for construction in terms of summer comfort: new homes must not exceed a threshold of exposure to high heat. It is thus possible to theoretically describe the situations where the presence of air conditioning is necessary and not superfluous. But this regulatory threshold in no way predicts the actual behaviour of households faced with situations ranging from adaptation to the extreme climatic events such as heat waves to behaviours seeking "comfort" on a daily basis.

Current tools and models for describing household behaviours have focused on modelling household choices *vis à vis* energy renovation and the achievement of "winter" thermal comfort. This is why the study of household investment behaviour in terms of active cooling equipment is emerging.

The main objective of this internship is to conduct a study on the determinants of household behaviour as regards air conditioning system equipment in the residential stock.

Missions

The mission will consist of writing a research article project on the determinants of household investment and consumption behaviours to achieve summer comfort. The tasks will include:
- Carrying out a bibliographic review to identify the state of the scientific art on the notion of adaptation cost;
- Identification of quantitative studies on the subject and available databases;
- Implementation of quantitative processing based on the data available;
- writing a summary

If applicable, this internship may lead to a continuation of a thesis on the theme of adaptation trajectories to climate change within the CSTB.

Profile

Second year master's student in economics or student in engineering with training in economics and knowledge and/or experience on the themes of environmental transition, support for economic policies and advanced statistics. A thorough and demonstrated knowledge in conducting quantitative analysis **or** using models is expected.
Ability to organize and structure one's thoughts and communicate, both in written and oral form.
Autonomy, rigor, analytical mind and curiosity are among the qualities required for the success of the internship.

Duration of internship: 6 months from March/April 2025
Internship location : Mainly at CSTB 84 avenue Jean Jaurès Champs sur Marne (+ Climate Economics Chair, Palais Brongniart, 28 Place de la Bourse, 75002)
CSTB salary : €1,200 gross per month + access to CSTB company restaurant
Contact and documents : send CV, covering letter plus Master 1 grades and available Master 2 grades in a **SINGLE PDF** to claire.berenger@chaireeconomieduclimat.org indicating the title of the internship **(maximum 2 applications out of all the CEC internships offered).**
Application closure : January 17, 2025
Interviews from January 20, 2025
Final response to applicants: February 10, 2025