

Call for an Erasmus+ Traineeship

Life Cycle Assessment of a Solar Cooker

Host institution

CBQF – Centre for Biotechnology and Fine Chemistry, Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Porto, Portugal.

Context

The traineeship is carried out within the SUNRISE project (Smart Use of SuNlight Radiation for Innovative and Sustainable Cooking), which combines solar cooking technology with artificial intelligence to improve energy efficiency and the quality of slow-cooked food. The student will contribute to Work Package 4, Sustainability Impact Assessment of Slow Solar Cookers.

Research project

The student will perform a cradle-to-grave Life Cycle Assessment of a commercial box solar cooker according to ISO 14040 and ISO 14044, comparing it with conventional gas and electric cooking under Portuguese conditions. The study is distinguished by the use of measured cooking performance data from instrumented solar cookers to model the use phase, which in published assessments is usually estimated from assumptions.

Main activities

1. Focused literature review and definition of goal, scope, functional unit and system boundaries
2. Compilation of the life cycle inventory of the solar cooker
3. Development of the use-phase model from experimental cooking data and solar irradiance
4. Life cycle impact assessment, hotspot identification and comparison with conventional appliances
5. Sensitivity and scenario analysis
6. Interpretation and preparation of the dissertation

Duration and period

Five to six months, between February 2027 and July 2027.

Supervision

Main supervisor: Prof. Cristina L.M. Silva. Co-supervisors: Daniel Madalena (postdoctoral researcher) and António Martins and Teresa Mata (life cycle assessment specialists), together with the academic supervisor at the home university.

Candidate profile

- Enrolled in a Master's programme in Environmental, Energy, Chemical, Food or Mechanical Engineering, or a related field
- Interest in life cycle assessment and sustainability; previous experience with LCA software is welcome but not required, as training will be provided
- Ability to work with experimental datasets (Excel or Python)
- Working knowledge of English
- Autonomy, rigour and interest in interdisciplinary research

Conditions

This is an academic traineeship for the purpose of a Master's dissertation or equivalent. No remuneration is provided by the host institution. Candidates are expected to secure an Erasmus+ traineeship grant through their home university; the host institution will sign the corresponding learning agreement and provide the documentation required.

What the host provides

- Supervision and training in LCA methodology and software
- Access to LCA software and database
- Experimental data from instrumented solar cookers, available at the start of the traineeship
- Integration in the research team of CBQF, an FCT Associate Laboratory
- Opportunity to contribute to a scientific publication

Applications

Curriculum vitae, a short motivation letter (maximum one page) and academic transcript, sent to clsilva@ucp.pt with the subject "SUNRISE LCA traineeship".