Chair of Renewable and Sustainable Energy Systems
Department of Electrical and Computer Engineering
Technical University of Munich

Winter semester 2022/2023

Interdisciplinary Project Internship: Concept Development of a Renewable Energy System in a Developing Country

Description:

A food supply chain or food production system refers to a process in which products from a farm end in human consumption. This process compromises different preliminary stages including production, processing, distribution, consumption, and disposal. The Agrifood industry is highly energy intensive, and it is accounted as one of the major environmental hotspots globally. The hazardous environmental impacts of the food industry are significantly higher in developing countries because of higher food demand, rudimentary food production technologies, unstandardized waste management, and very large distances between the production areas and consumption sites.

Accordingly, it is of paramount importance to assess and quantify the environmental impacts of the food supply chain in developing countries. This could assist conscious consumers and agrifood producers to know the potential scenarios and opportunities for developing a more sustainable food supply chain which correspondingly could bring about so many positive effects on not only the specific site under the study but the whole world.

In line with the above-mentioned contexts, this internship project has been organized for interdisciplinary students who are interested in sustainable food production and its integration with the renewable energy sector. By participating in regular meetings and team works, students will learn how to quantify the environmental impacts of a food supply chain in a developing country using LCA methodologies. Besides, they will increase their knowledge about the different forms of renewable energies while comparing and evaluating their technical, economic, and sociocultural feasibility.

There will be two teams in this project internship; each group involves six students. One group analyses and develops a system for the main agricultural products of Iran, and the other group does the same analysis for Colombia. The tasks involved in the project are:

- Literature research
- Life Cycle Assessment of Food Supply Chain

- Quantifying the environmental impacts by LCA methodology
- Modelling LCA scenarios by LCA software
- Assessing Potentials for Renewable Energy Systems
- Creation of a business concept of the alternative renewable system

Based on simplifying assumptions, the assessment will indicate an approximate quantification of the environmental impacts of an agriproduct on each region and the product's life cycle cost. The key performance factors are derived and presented in the form of a written and oral report.

Notes on registration

If you are interested in participating in this project internship, please do the following procedure:

1. Select the group team which is more relevant to you: Colombia or Iran.
2. Prepare a short text explaining your motivation for selecting the mentioned topic and your intended contribution to the group work based on the tasks listed above.
3. Get in touch with the supervisor of the topic of your choice and send your text, CV and transcript of records to Andrea Cadavid AND Nashmin Elyasi at andrea.cadavid@tum.de and nashmin.elyasi@tum.de.
4. Applications will be considered as soon as they are received, early application is worthy.
5. You may be required to take part in a short virtual interview (3-5 min); if so, the supervisors will get in touch with you to schedule an interview time.
6. Please register in TUMonline at the latest on Thursday, **October 13th**, **2022**.
7. By Monday, **October 17th**, **2022,** at the latest, we will inform you whether and, if so, which topic you can work on for the project internship.

If you have questions concerning the organization of the lab course, please contact Andrea Cadavid (andrea.cadavid@tum.de).

Please be sure to pay attention!

In order to participate in the project internship, it is essential that you

1. Write an **email with the topic selection, motivation, CV, and transcript of records** to Andrea Cadavid AND Nashmin Elyasi **AND**

2. register **in TUMonline for the course**.

If you do not meet one of the two requirements, you won't be included as one of the participants. .

Organizational matters

Regular weekly meetings are **mandatory** for the project internship. Only in specific cases, it might be possible to use online platforms for organizing the work inside the group and for keeping in touch with the supervisors.