Student assistant (m/f/d)
Support for Cost Calculation within the project “Circular transformation towards integrated water-waste-energy systems”

From April 2024 (41.5 hours per month, for 5 months)

Background and topic description

The fast development of new urban settlements in Latin America, together with its associated socio-environmental challenges, is a unique opportunity to rethink the current linear model and the state of the art of the water, waste, and energy sector in the urban build environment. The transformation to alternative circular systems, in which the management of water, wastewater, waste, and energy management are integrated, can therefore play an important role in the adaptability of the cities to climate change and reduce environmental pollution, as well as in the establishment of more sustainable resource management. However, decision-making processes toward alternative systems also strongly depend on the costs associated with implementation. Therefore, consideration of economic aspects aims to contribute to an integrated sustainability assessment.

The circular systems under study are based on the principle of wastewater separation at the source, in which wastewater is separated into two or more streams at the household level. Heavily polluted blackwater is, for instance, mixed with separately collected household organic waste, aiming for a more efficient biogas production that covers plant and local energy supply as well as the generation of local fertilizers. Light-polluted greywater, on the other hand, is treated separately, under the principle of “fit to purpose” and aiming to contribute to local water provision from alternative sources.

Tasks

- Collection and preparation of quantitative data, e.g., costs of equipment, costs of energy, water, fuel consumption, etc.
- Calculation of capital and operation costs during the lifetime of the technical components of selected circular systems alternatives (NPV calculation).
- Other assigned research-related activities

Qualifications

- Good English language skills. Additional knowledge of the German or Spanish language is an advantage but is not compulsory.
- Interest in the area of sustainability, circular economy, and/or economic aspects of sustainable projects.
- Knowledge of techno-economic assessment/cost calculation/Life cycle costing, e.g., through attendance to topic-related lectures, etc.
- Master students from industrial/economics engineering, environmental engineering, economics, or related disciplines are invited to apply.
What we offer

- A pleasant working atmosphere in a dedicated interdisciplinary team of experienced sustainability scientists
- A workplace in the center of the city of Karlsruhe (near Europa Platz)
- The opportunity to acquire/enhance your knowledge in technology assessment, system analysis, economic evaluations of sustainable projects, Life cycle thinking and circular economy by means of an exciting research topic

Contact person

For questions please contact: M.Sc. Vanessa Bolivar Paypay (vanessa.bolivar@kit.edu)

Please send your application to Vanessa Bolivar electronically with a motivation letter and CV latest by 18th February 2024. Expected entry Mid of March or Beginning of April 2024, flexible based on availability of the candidate.

We look forward to receiving your application.

Karlsruhe, 31.01.2024

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