Sustainability assessment and green metrics for university campuses

Summary

TalTech School of Engineering, Department of Civil Engineering and Architecture, Nearly Zero Energy Buildings research group offers 1 4-year PhD position in civil engineering.

Research field:	Building and civil engineering and architecture
Supervisor:	Jarek Kurnitski
Availability:	This position is available.
Offered by:	School of Engineering Department of Civil Engineering and Architecture
Application deadline:	Applications are accepted between November 16, 2020 00:00 and December 16, 2020 23:59 (Europe/Zurich)

Description

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There are well established building labelling schemes enabling to assess environmental impacts of commercial buildings. To cover all three categories of sustainability, i.e., environmental, social and economic, these schemes typically include some aspects of indoor climate, innovation etc. University campuses represent a more specific environment where objective assessment of sustainability should include in addition to energy and carbon, solid contribution from learning environment quality and learning performance and perhaps sustainability related research quality in order to assess the availability of in-house competence that can be seen as a prerequisite to work with this topic. The issue is important for any university campus because of the climate neutrality, Green Deal and Renovation Wave ambitious targets boosting to decarbonize buildings and energy production by using relevant technical solutions together with smart utilization of digitalization. Planned extensive developments for next 30 years provide an opportunity for university campuses to serve as a test bed for new solutions as well as competence development and to show a direction for society if capable to be a forerunner.

The main research objective is to develop and validate a minimum set of green metrics and other key performance indicators which would allow an objective assessment of sustainable development of university campuses. Research effort should focus to following topics:

1. State of art analyses of existing labelling and ranking schemes in the context of university campuses;
2. Identification of key performance indicators allowing to describe the social aspects of sustainability, i.e., the quality of the learning environment and effects on learning performance;
3. Defining a minimum set of objective key performance indicators to be suitable for practical use with consideration to per m2, per person or effective usage time performance monitoring;
4. To design interventions and to conduct these as case studies for selected old and new university buildings;
5. To assess the co-benefits of smart application of 2030 and 2050 targets in terms of learning performance improvements, infection risk/sick leave reductions, energy and possible other cost savings.

Research tasks will include:

- data collection and monitoring from existing university buildings
- performance analyses and methodology development
- practical KPI-s formulation and benchmarking
- design and implementation of interventions in specific case studies of existing and new university buildings

Qualifications

The applicants should fulfill the following requirements:

- Master degree in Civil Engineering

- Some experience in building labelling schemes and sustainability assessment is expected

To get more information or to apply online, visit https://taltech.glowbase.com/positions/194 or scan the the code on the left with your smartphone.