

Research and Development of Novel Applications for Community and Small-Scale Energy Systems

Summary

This PhD project focusing on sustainable business development is one sub-project in the overall framework of the European Just Trust Fund research activities of TalTech and Tartu University in Estonia. The overall ambition of these Just Trust Fund research activities is to achieve a fundamental improvement of the Ida-Viru County region's economic, environmental, social living and business conditions. The crucial goal of the PhD project is to investigate with mixed methods of mainly business research, the market potentials, drivers, barriers, and relevant public as well as private stakeholders to facilitate novel technological, economic and organisational applications for community and small-scale electric power systems (e.g. electric microgrids), with the overall aim to contribute to the sustainable transition of Ida-Viru County in Estonia. The consideration of comparative aspects, for example, with other Estonian and EU regions, is generally possible. The project addresses research questions as follows: What is the current socio-economic and business-related situation in Ida-Viru County regarding research and development activities and the uptake of applications used in small-scale power systems? What are the relevant barriers and drivers? What relevant potentials can be identified for different market segments? What motivates citizens and other stakeholders to engage in activities related to developing and integrating applications for community and small-scale energy systems?

Research field:	Business
Supervisors:	Dr. Tarmo Korõtko Prof. Dr. Wolfgang Dieter Gerstlberger
Availability:	This position is available.
Offered by:	School of Business and Governance Department of Business Administration
Application deadline:	Applications are accepted between January 01, 2024 00:00 and January 22, 2024 23:59 (Europe/Zurich)

Description

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Responsibilities and (foreseen) tasks:

- Compile an analytical framework for the planned mixed method research
- Analyze sustainable energy development features in Ida-Viru County and its different potentially relevant locations for novel applications for community and small-scale electric power systems (e.g. microgrids)
- Map possible cases, collect data and develop qualitative and quantitative studies within the Ida Viru context
- Contribute to qualitative and quantitative data collection by conducting interviews and surveys among various stakeholders (consumers, enterprises, local government, NGOs, etc.)
- Develop proposals and suggestions for different practical business-related and technological applications
- Participate in the research and practitioner workshops where project findings are presented
- The candidate is also expected to engage in small-scale teaching and supervision related to a PhD candidate's field of expertise and active participation in the department's activities.

The candidate is expected to have

- a master's degree in social sciences
- a clear interest in the topic of the position
- excellent command of English
- command of Estonian and Russian is an asset for candidates
- strong and demonstrable writing and analytical skills
- proficiency in qualitative and quantitative research analysis
- capacity to work both as an independent researcher and as part of an international team



- capacity and willingness to assist in organisational tasks relevant to the project

The following experience is beneficial:

- Working knowledge of data analysis software, e.g. SPSS Statistics, NVIVO, MAXQDA or similar

The candidate should submit a research plan for the topic, including the overall research and data collection strategy. The candidate can expand on the listed research questions and tasks and propose theoretical lenses to be used.

We offer

- 4-year PhD position (employed as an Early-Stage Researcher at the Department of Business Administration) in a strong team of researchers.
- The chance to do high-level research in one of the most dynamic sustainability contexts globally
- Opportunities for conference visits, research stays and networking with leading universities and research centres in the fields of energy, environmental and innovation studies
- All PhD positions are guaranteed a gross income of at least 1828 EUR and Estonian national health insurance.

About the department

Tallinn University of Technology (TalTech) is an international scientific community with approximately 9,000 students and 2,000 employees; it is one of the largest universities in Estonia, the leading EU country in digitalisation. The university's strengths are broad multidisciplinary study/research interests, a modern research environment, and strong collaboration with international educational and research institutions. TalTech is aiming to be an organisation leading the way to a sustainable digital future.

The research carried out at the **Department of Business Administration** in the School of Business and Governance in TalTech deals with various aspects of business – entrepreneurship, sustainability, knowledge and technology transfer, operations and strategic management, digitalisation, marketing, supply chain management, accounting and performance management. The School has over 200 employees.

The research is co-supervised by the Department of Electrical Power Engineering and Mechatronics of Tallinn University of Technology. The mission of the Department is to be a leader in electrical engineering and technical studies and development projects in Estonia, known and valued in society, and a respected partner in national and international cooperation networks and organisations.

Both departments are highly internationalised, and their staff has been involved in many international research projects with the EU (INTERREG, COST, Horizon Europe, etc).

Additional information

For further information, please contact Professor Wolfgang Dieter Gerstlberger at wolfgang.gerstlberger@taltech.ee and visit <https://taltech.ee/en/department-business-administration> and <https://taltech.ee/en/phd-admission>

TalTech has a green and one of Europe's most compact university campuses, including the Tehnopol Tallinn Science Park. Low hierarchy, academic freedom and a balanced work and family life are valued at TalTech. The university provides individual development and training opportunities, material and non-material tokens of acknowledgement, sporting opportunities at TalTech Sports Club and all-staff activities.

TalTech, as an employer, brings together representatives from a wide range of disciplines - engineers and economists, business and biotechnology, and data scientists - with a shared mission to develop Estonian higher education and research. Keywords that characterise TalTech today are rapid development, interdisciplinarity, and internationalisation. The university has an international working environment; the functional languages are English and Estonian.

List of crucial references:

Di Silvestre, M.L., Ippolito, M.G., Sanseverino, E.R., Sciumè, G. and Vasile, A., 2021. Energy self-consumers and renewable energy communities in Italy: New actors of the electric power systems. *Renewable and Sustainable Energy Reviews*, 151, p.111565.

Gui, E.M. and MacGill, I., 2018. Typology of future clean energy communities: An exploratory structure, opportunities, and challenges. *Energy research & social science*, 35, pp.94-107.

Lode, M.L., Te Boveldt, G., Coosemans, T. and Camargo, L.R., 2022. A transition perspective on Energy Communities: A systematic literature review and research agenda. *Renewable and Sustainable Energy Reviews*, 163, p.112479.



Otamendi-Irizar, I., Grijalba, O., Arias, A., Pennese, C. and Hernández, R., 2022. How can local energy communities promote sustainable development in European cities?. *Energy Research & Social Science*, 84, p.102363.

Korōtko, T.; Plaum, F.; Häring, T.; Mutule, A.; Lazdins, R.; Borščevskis, O.; Rosin, A.; Carroll, P. Assessment of Power System Asset Dispatch under Different Local Energy Community Business Models. *Energies* 2023, 16, 3476. <https://doi.org/10.3390/en16083476>

Joey Li, Munur Sacit Herdem, Jatin Nathwani, John Z. Wen, Methods and applications for Artificial Intelligence, Big Data, Internet of Things, and Blockchain in smart energy management, *Energy and AI*, Volume 11, 2023, 100208, ISSN 2666-5468, <https://doi.org/10.1016/j.egyai.2022.100208>.



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