University of Glasgow
Siming You
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University Partner

University of Glasgow

Academic Supervisor - Name and Email Address

Siming You (Siming.You@glasgow.ac.uk)

Suggested Project Title

Economic feasibility and environmental impacts of bioenergy in supporting net-zero energy building (NZEB+Bio) in the UK

Suggested Project Summary

The energy consumed by a net-zero energy building (NZEB) is as much as the renewable energy generated onsite or elsewhere. It is expected that NZEB will play an important role in mitigating greenhouse gas (GHG) emission and has received significant attention in recent years. Biomass accounts for around 12% of the world's renewable energy resources. Distributed bioenergy production serves as a potential way of fulfilling NZEB. It is important to understand the economic feasibility and environmental impacts of bioenergy on the design of NZEB. This project will design a novel configuration of bioenergy-supported NZEB and will decide the profitability and carbon footprint of the configuration using big-data supported cost-benefit analysis and life cycle assessment. The results will enable policymakers to make informed decisions for the fulfilment of NZEB in the UK.

Collaboration Sought for the Project

The project is looking for an industry sponsor in the sector of (not limited to) sustainable/green building development and design, bioenergy technology development, or distributed bioenergy application, that will could potentially provide input data on the design of bioenergy-supported net-zero energy building (NZEB). The partnership will enable the PhD candidate to receive training from an industry supervisor and to design a bioenergy-supported NZEB configuration driven by future building industry standards and market demands.

Benefit to the Industry Sponsor

The project will develop an optimal configuration design (patentable) for bioenergy-supported net-zero energy building (NZEB). This project will serve as a feasibility study of the futuristic net-zero energy building (NZEB) route and will provide data support for the

design of pilot-scale NZEB buildings in future development. The developed model will be applicable to other types of renewable energy for NZEB. The project will potentially help the industry sponsor to gain data support for leading the low-carbon building development based on the integration of renewable energy technologies into building designing.