



SUSTAINABLE SYSTEMS

Fields of Expertise TU Graz

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Source: Lunghammer – TU Graz



S In the 22nd round of the initial funding program, a total of eleven proposals were submitted in the Sustainable Systems category. The quality of the projects was high and we were glad to be able to fund six of them.

Svenja-Rebecca Hollstein from the Institute of Design in Existing Structures and Architectural Heritage Protection proposes developing a Sustainable Densification Assessment Tool (SDAT). The tool would allow us to analyze and evaluate existing single-family housing developments from the 1970s and 1980s with regard to more sustainable vertical densification compared to the common horizontal approach. The SDAT will be demonstrated in Graz, a pioneering city in the Climate-Neutral City mission. The City of Graz and the TU Graz sustainable construction working group are project partners.

Markus Monsberger from the Institute of Urbanism proposes leading an international consortium to apply for the FFG/DUT project SUSTAIN: Safe Urban Schools for Transportation, Accessibility and Inclu-

sion. The project aims to establish well-designed and safe “school zones,” thereby promoting the use of sustainable transport and active mobility among students across different school levels and local spatial contexts. A participatory planning method (“placemaking” as a multidimensional approach) is being developed that focuses on improving the visibility, traffic safety, and quality of stay for children and young people both at school entrances and on their routes, including from public transport stops.

Florian Steindl from the Institute of Applied Geosciences heads a team of researchers to apply for an FFG project with the acronym EPIC, which stands for Efficient Phosphorous recycling and Innovative Cementitious materials. The project proposes the carbothermal treatment of sewage sludge ash or coal in combination with other mineral residues to enable the utilization of previously landfilled mineral waste in a single process. This could close gaps in existing material flows and contribute to the circular economy of mineral resources and the provision of sustainable building materials.

Sarah Steiner from the Institute of Technology and Testing of Construction Materials proposes leading a consortium to apply for the FFG project with the title Performance-Enhanced Biochar Concrete for CO₂-storage and circular economy (PEB-CO₂). The planned research project will, on the one hand, develop the fundamentals for the use of new, innovative binder components. On the other hand, it aims to provide the basis for quality-assured use in construction practice. Another goal is to gain data-based evidence of the durability (e.g., chloride resistance, carbonation,

freeze-thaw resistance) and long-term behavior of CO₂-reducing concretes containing (bio)char.

Sonja Wogrin, head of the Institute of Electricity Economics and Energy Innovation, proposes an FWF project with the acronym CRISPY (Critical scenaRIO Identification for energy System Planning under uncertainty). The project proposes improving the way Energy System Optimization Models (ESOMs) can deal with uncertainties. This is important because ESOMs are widely used for supporting decision-making in the operation and planning of energy systems, but they are currently challenged by uncertainties inherent in the current transformation of fossil fuel-based towards renewable energy, i.e. the availability of wind and solar energy.

Bernhard Freytag from the Laboratory for Structural Engineering (LKI) proposes an FFG project with the short title linkFOStructure. Fiber optic methods have increasingly been used for structural monitoring in bridges, tunnels, and dams over the past 15 years, because they enable the continuous measurement of one-dimensional strains and temperatures along the entire length of a measuring fiber using a single measurement channel. Yet these measurements aren't as useful as they could be because we don't know enough about how the elasticity between the fibre and the structure affect the measurements. The project aims to close this knowledge gap.

We wish all applicants the best of luck with their proposals and hope that the resulting projects can one day be presented on these pages, just like the and the project Physics-Informed Neural Networks on page 34.