

Urban Environmental Engineering

Research aim

Although city densification, in contrast to further city sprawl, is often considered a need in the viewpoint of the growing world population, it puts at the same time a strong pressure on the urban environmental quality, and as a consequence, on the quality of life and health of citizens. Eco-efficiency and sustainability should be guaranteed in this process to alleviate current problems and avoid future problems. Major environmental challenges in the next decades are consequently located in the build-up environment.



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Many of these topics are interlinked and only an interdisciplinary approach could lead to sustainable solutions. Topics could share the same sources, while changes and evolutions in some could have a large impact on others. But also goals set forward for some of the aspects of urban environmental quality could be solutions for others. Synergies should be exploited while conflicting demands should be identified at any time.



Research highlights

The urban environmental group within CEST bundles state-of-the-art knowledge at Ghent University on the disciplines mentioned. There is a strong emphasis on the development of measurement methodologies and prediction tools leading to practical and implementable solutions. The generic scientific background in these research groups not only allows to tackle today's problems, but opens possibilities to study the urban environmental challenges of tomorrow.

Urban Air Quality

- ▶ Street canyon effects, city odor and pollution mapping (volatile organic compounds (VOCs), semi-volatile organics, non-volatile organics, particulate matter), perception of odor and air quality, indoor air quality, effects of air pollutants (tropospheric ozone formation, health effects), air pollution modeling, odor and air pollution mitigation...

Urban Noise and Acoustics

- ▶ Urban sound propagation, street acoustics, city noise mapping, perception of noise, urban soundscape analysis and design, city noise sensor networks...

Urban Climate

- ▶ Heat islands, micrometeorology and comfort, local climate zone mapping...

Urban Water Management

- ▶ Analysis and environmental behavior of pollutants in (urban) waters, advanced processes for the treatment of urban (waste)waters, ecological water quality monitoring, water reuse and recovery of resources from wastewater...

Urban Green

- ▶ Urban biodiversity of fauna and flora, ecosystem services, building envelope greening, urban agriculture, urban green mapping and health status assessment...

Urban Waste

- ▶ Closing material cycles, assessment of potential for reuse of urban waste materials and recovery of valuable compounds...



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