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Proposed Contribution to the Urban Metabolism Session: Abstract

Urban Metabolic Profiles

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Over the course of the last decades, interest in sustainability assessment for urban areas has increased notably, with additional attention generated due to the fact that by now half the world's population lives in cities. In conceptualizing the biophysical inputs and outputs of a city, the analysis of urban metabolism provides valuable insights into the energy and resource requirements of a given urban area.

But while the urban metabolism concept (or elements thereof) has been widely applied since Wolman's 1965 pioneer-study of the metabolism of a hypothetical US-American city, its applicability to sustainability analyses has remained limited.

The information on a city's metabolism becomes especially meaningful analytically when it enables a comparison between different types of cities. The specific composition and magnitude of the material and energy inputs and outputs of a city make up its metabolic profile.

Within the FP7 project on Sustainable Urban Metabolism for Europe (SUME), such metabolic profiles for cities and urban areas are derived from the data provided by metabolic case studies for specific cities as well as by international data sets on environmental indicators for urban areas (e.g. as published by the UN Human Settlements Programme). The profiled cities are chosen so as to represent a variety of climatic conditions as well as levels of population density and rates of growth or shrinkage.

The metabolic profiles are analyzed in terms of the environmentally relevant flows of which they consist, enabling conclusions about a city's sustainability. Additionally, the comparison of metabolic profiles makes it possible to develop a city typology based on energy and material requirements.

These metabolic profiles are a prerequisite in identifying those elements of urban form most strongly linked to questions of sustainability and may inform current debates on cities' greenhouse gas emissions and energy efficiency.

