

Integrated Urban Transitions for Sustainable Urban Systems

Cities have a crucial role in pioneering bold action towards a more sustainable future. Cities need to meet the challenge of reducing urban carbon dioxide emissions by at least 45% in the next 12 years. Such a challenge necessitates that cities are equipped with tools that can place scientific metrics and processes into the context of providing effective guidance for decision-making. This lecture will provide an overview of original research for supporting sustainable urban systems in cities. It will provide a method of utilizing energy quality management to reduce carbon dioxide emissions by re-structuring urban energy systems towards net-zero targets at the district level. Moreover, the complexity of urban systems requires an integration of sectors that can be supported by an approach that considers multiple indicators simultaneously. A comprehensive benchmarking tool based on the Sustainable Development of Energy, Water and Environment Systems (SDEWES) Index will be shared as a means of supporting cities in comparing performances and considering solutions for integrated urban transitions. The composite indicator has been applied to more than 120 cities that are primarily signatories of the Covenant of Mayors Initiative. Beyond transitions with a sectoral focus, an integrated cross-sectoral perspective will provide an effective means to accelerate climate action in a time when cities are called upon to lead as never before.

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