

Special Issue

Advances in Prospective Life-Cycle Assessment of the Built Environment for Climate Change Adaptation

Message from the Guest Editors

Given the long life-span of buildings, designers and developers must be encouraged to identify effective and eco-efficient strategies that reduce the overall life-cycle (LC) burden of buildings. LC thinking promotes a circular economy perspective, fostering resource and energy efficiency by reducing the amount of raw materials used in construction, and promoting waste valorization during construction, use and end-of-life. Life-cycle assessment (LCA) is a broadly used methodology to evaluate the environmental impacts of buildings and identify hot spots and improvement opportunities. However, prospective LCA have not been applied to buildings. Considering future climate uncertainty, it is essential to predict how buildings and the urban environment would behave under future climate scenarios with an increase in global temperature. The existing building stock play an important role in boosting decarbonization targets, as most existing buildings are not energy-efficient and mainly rely on fossil fuels for heating and cooling, and use old technologies and inefficient appliances. Local synergies for creating district energy supply systems are not explored.

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