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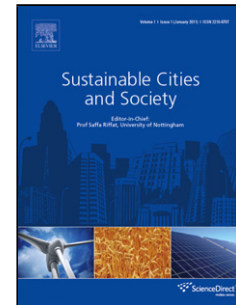
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Optimisation of community shared solar application in energy efficient communities

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Highlights

- A framework is developed to simulate net-zero energy communities' performance.
- Comparison of individual rooftop PV settings against community shared solar.
- Monte Carlo is proven efficient in simulating community household energy demand.
- Unlike individual PV settings, community-shared solar enhances self-consumption.

ABSTRACT

Integration of solar photovoltaic (PV) micro-generation into residential buildings is emerging rapidly as an effective method for mitigating the impact of housing on greenhouse gas (GHG) emissions. However, PV micro-generation is confronted with several challenges: (a) the average self-consumption does not exceed 25% in cold-climate regions; and (b) most of the generated energy during daytime is exported to the grid at a lower monetary rate per unit than that of imported energy. Governments and authorities envision the value of considering the integration of renewables at the community level since this strategy can leverage self-consumption and increase its social impacts and economics. This research aims to develop a systematic framework

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