

Special Issue Reprint

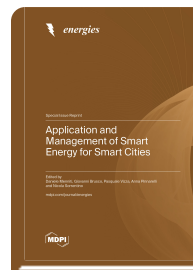
Application and Management of Smart Energy for Smart Cities

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The rapid growth of the global population and its increasing concentration in cities is reshaping the energy landscape. By 2050, nearly 70% of the world's population will live in urban areas, turning cities into massive hubs of energy consumption. At the same time, the urgent need to reduce fossil fuel dependence calls for a stronger integration of renewable energy sources (RESs). However, large cities face limited space for local RES production, shifting the focus to suburban and peri-urban areas where photovoltaic, wind, and distributed generation can flourish. Ensuring a reliable and sustainable urban energy supply therefore requires innovative approaches to store, share, and optimally use energy produced beyond city centers. This Special Issue presents a collection of outstanding studies that explore smart solutions enabling efficient energy flows between urban demand and suburban RESs. The contributions address a wide spectrum of topics, including renewable energy communities, energy aggregation, storage technologies, demand response and management, and innovative electricity market mechanisms. Together, these works advance our understanding of how emerging green energy technologies can improve system adequacy, security, and resilience.

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