

## **Towards Carbon-Free Communities: A Compilation of Urban Design Criteria for Sustainable Neighborhoods**

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**Abstract :** The increase in population and energy consumption has caused environmental crises such as the energy crisis, increased pollution, and climate change, all of which have resulted in a decline in the quality of life, especially in urban environments. Iran is one of the developing countries which faces several challenges concerning energy use and environmental sustainability such as air pollution, climate change, and energy security. On the other hand, due to its favorable geographic characteristics, Iran has diverse and accessible renewable sources, which provide appropriate substitutes to reduce dependence on fossil fuels. Sustainable development programs and post-carbon cities rely on implementing energy policies in different sectors of society, particularly, the built environment sector is one of the main ones responsible for energy consumption and carbon emissions for cities. Because of this, several advancements and programs are being implemented to promote energy efficiency for urban planning, and city experts, like others, are looking for solutions to deal with these problems. Among the solutions provided for this purpose, low-carbon design can be mentioned. Among the different scales, the neighborhood can be mentioned as a suitable scale for applying the principles and solutions of low-carbon urban design; Because the neighborhood as a "building unit of the city" includes elements and flows that all affect the number of CO2 emissions. The article aims to provide criteria for designing a low-carbon and carbon-free neighborhood through descriptive methods and secondary data analysis. The ultimate goal is to promote energy efficiency and create a more resilient and livable environment for local residents.

**Keywords :** climate change, low-carbon urban design, carbon-free neighborhood, resilience

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