Principles to achieve zero carbon buildings Implementation Barriers and Suggested Solutions

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Abstract:

When the British Government enacted a law stating that by the beginning of the year 2017 all-new residential buildings must meet zero-carbon requirements, many foundations contributed to developing engineering ideas and environmental solutions that would help in conserving energy, environment, and public health.

The fact that some communities are in greater need of such legislation is due to population growth, resource depletion, and problems caused by environmental pollution. This is consistent with the appearance of many new residential communities in Cairo and other governorates, such as the residential areas in the Suez Canal Development Center and New Cairo, which can be a nucleus for a healthy and environmentally friendly society that could then be a replicable prototype model for many areas.

The issue of energy conservation is one of the most important pillars on which low-carbon buildings depend on, so various institutions have been striving to achieve this. The entities responsible for implementing this type of building can be classified into the design of the building itself, technical systems, and devices in addition to adjusting Users' Lifestyles.

This research paper explains principles that could be applied to achieve zero-carbon buildings to encourage architects and engineers to work with them in Egypt. Then, to investigate these principles, some residential buildings that have experimented with the idea of low carbon buildings according to the British experiment are discussed. And using the inductive methodology, implementation barriers are inferred with a set of proposed actions after discussing some experiences of low-carbon buildings in Egypt, which aim to improve and raise the quality of life.

Keywords:

Zero-Carbon Buildings (ZCB), Zero Energy Buildings (ZEB), Energy Consumption, Building's outer shell.

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