Microgrid design kuwait city

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In this project we teamed up with the Structural Design Lab at MIT as well as Kuwait University and the Kuwait Institute for Scientific Research to develop our first calibrated Urban Building Energy Model (UBEM) of the Al Qadisiyah neighborhood in Kuwait City (paper). In December 2015 we presented our findings of how to reduced annaul energy use in Al Qadisiyah by 85% to key Kuwaiti government officials and industry representatives.

The heart of this project is the unique resilient landscape, which is multifunctional and designed to promote health, wellbeing & biodiversity. The landscape is the social glue to the entire city, which will enable a vibrant neighborhood while connecting residents to all amenities within minutes. The landscape promotes a variety of habitats for wildlife. - Baharash Bagherian, CEO of URB

The holistic approach addresses the three key pillars of sustainability: social, economic, and environmental conditions. Design decisions such as orientation, density, and form were taken into consideration from the early stages of the design to reduce the energy demand with a relatively low financial investment. The project was optimized with various digital tools, such as energy modeling and microclimate analysis.

The landscape of the city integrates engineered natural areas that provide a variety of habitats for wildlife, rainwater collection, and flood mitigation. By integrating various environments, the city becomes resilient and capable of maintaining its level of quality of life despite shocks and stressors to its environment. An integrated mobility strategy includes limited access to vehicles, thus contributing to creating a healthy urban environment for its residents.

XZero aims to become a productive city, incorporating multiple farming methods such as community gardens, bio-domes, aquaponics, vertical farms, and biosaline agriculture. Beyond creating an accessible food source, urban farming is promoted as a social engagement and educational tool. The city will also include the first scalable food-energy-water & waste farms, known as FEW+W Nexus farms. To achieve its sustainability goals, the city integrates technology and information communication technologies into its hard and soft infrastructures.

At a building level, sensors play a key role. Indoor lighting and temperature can automatically be adjusted based on various parameters. These include the number of occupants in a room, the time of day as well as exterior weather and light conditions. All systems are aimed at reducing consumption while not lowering the standard of living.

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