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## **Urban Sustainable Development Case Studies**

### **II: Hybrid microclimatic village planning methodology for sustainable desert settlements; revisiting Mid-Sinai as a case study**

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#### **Abstract**

This paper presents a hybrid sustainable design methodology for desert settlement development on a microclimate thermal impact basis. Sustainable development had broadcasting and cumulative interdisciplinary thoughts through time. Main approaches started in the early 1980s by the UN to define the future strategies for resources as a moral and physical commitment towards next generations. In a 4% inhabited hot arid country like Egypt, there should be a new development model that stresses on the effect of climate conditions within sustainable design process. As a development type of desert settlements, the concept of country desert villages is viable as it lies between both urban settled communities in north and south Sinai and the unsettled population in med-Sinai. Such settlement/village planning ideas has succeeded in Israel for example through the combined fields of applied research; desert physical planning and passive solar architecture, prefabrication and low-cost construction methods and materials, building physics and climatology, desert agriculture and renewable energy systems. Despite the early rise for the sustainable development age in the 1980s, till now the two lines of sustainable physical planning and the radical Egyptian development discipline based on the socialist central housing strategy didn't meet in a hot country like Egypt. This is due to the Just to Accommodate People methodology using only the Traditional Neighbourhood Development fabric forms without considering the conditions of the eight climatic classifications and different social habits of people in Egypt. This work revisits the regional development concepts for Sinai, to select pilot development spots around existing communities in Med-Sinai after which zero energy low-cost housing development can be applied on a

microclimate basis using a hybrid passive design methodology. The suggested Desert Village Planning focuses on generating a character for patterns in different regions by accommodating people in socially acceptable houses via public participation, economic activity support for village jobs, maintaining acceptable services with outdoor social places, diverse and compact fabric form, prefabrication with low-cost materials and construction, and low or zero energy community.

**Key words;** sustainable development, microclimate, desert settlements.

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