Urban design to achieving the sustainable energy of residential neighbourhoods in arid climate
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Abstract
World Cities contribute to a massive amount of carbon emissions. About 80\% of the global greenhouse gasses are emitted from these cities. The sustainable practices should be adopted in built environment for these cities. As an example, a residential neighbourhoods in arid climate has been discussed as a case study in practice in this paper. It has been developed to implement the sustainable strategies and concepts. It demonstrates a mixed-use community which integrates the sustainability dimensions to improve the quality toward sustainable living in a small community (about 4000 persons), allocated in Dubai land area. This paper aims to highlight the sustainable practices in the arid zones and to give an overview about the performance of the clean energy and renewable in these areas. The studied development has been selected to evaluate such techniques and strategies in the gulf region (Dubai). Various environmental categories such as; on energy, water, mobility, energy consumption of the buildings and infrastructure, urban green spaces, solid waste management and urban farming, have been appraised in this study. It has been noticed that the urban design proposed reduces its potable water consumption by 40\% and for energy demands by 57\% compared to conventional households. The solar production can cover around 38\% of the energy consumption on average. Many challenges face the sustainability movement in the region, especially, the affordability and feasibility in such harsh climate zones areas. This manuscript opens new perspectives about the prioritization that should be considered for adopting the sustainable strategies in arid climate. © 2019 Elsevier Ltd

Author Keywords
Energy efficiency; Energy saving; Low carbon cities; Sustainability; UAE; Urban planning

Index Keywords
Arid regions, Energy conservation, Energy efficiency, Energy utilization, Housing, Potable water, Urban planning, Waste management; Built environment, Low-carbon cities, Sustainability dimensions, Sustainable energy, Sustainable practices, Sustainable strategies, Urban green spaces, Water consumption; Sustainable development

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