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Sustainable Urban Street Design: Evaluation of El-Moaz Street in Cairo, Egypt

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Abstract

Streets deserve respect, they shape the form of the city and how we move through it. They accommodate buildings, people, vehicles, utilities, vegetation, signage, street furniture and lighting. Streets make up the majority of the public realm in our towns and cities. There is a strong relationship between urban design and sustainability, which led to the development in the compact city and street. Sustainable streets can be defined as multimodal rights of way designed and operated to create benefits relating to movement, ecology and community that together support a broad sustainability agenda embracing the three E's: environment, equity and economy, and implementing sustainable urban streets can create more livable communities.

The aim of this paper is to identify an approach for applying sustainable design criteria for urban streets. By defining sustainability in a broader context a case will be made for enhancing the sustainability of urban streets. Considering and assessing sustainable principles will enable urban streets to function in a manner that is more beneficial to people, communities, the economy and the environment. Through these sustainable street design criteria, analyzing the development of El-Moaz Ldin Allah Elfatimy street in Cairo, Egypt. Hence, a comprehensive improvement of the streets is certainly needed to ensure a successful sustainable street design. The paper concludes some recommendations to develop the main components of sustainable streets that are derived from the theoretical study in order to well design a sustainable street for a liveable communities

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1. Introduction

Egypt is one of the oldest civilizations in the world and the richest areas of cultural heritage and most diverse on earth. Cairo's architectural landmarks in the ranks of humanity and great achievements, to recognize that maintaining them is a matter of importance to the whole world and included Egypt in the UNESCO list of heritage as one of the distinctive historic architectural treasures.

Areas of architectural heritage is a rich regions need to respond to the effective development of tourism-yielding outstanding economic and sustainable planning of activities and uses as one reaches the main access to the sustainable development of the areas of architectural heritage nature tourism in the city, so is the nucleus of the sustainable development of the city, and through the case study we found that the El-Moaz street nucleus the sustainable development of historic Cairo as part of the development of Cairo Governorate.

One of the leading examples of the characteristic development of heritage areas in Egypt through it shown the sustainable street design in Street El-Moaz street Fatimid, which is the oldest streets of Islamic Cairo, given the importance of archaeological and heritage of that region, which contains many ancient monuments . The street became well designed, wonderful through providing several activities, fulfilling places to be community building places, attractive for all people and walkable to enhance the pedestrian experience.

The paper is based on three approaches, theoretical, applied and analytical study. The theoretical study tends to identify the concept of sustainable streets, and then the elements and principles of sustainability streets. This is followed by an applied study of El-Moaz street in Egypt, and analyzed in terms of its application to the principles of sustainable streets. Then the paper concludes that the most important recommendations to develop this street in order to achieve sustainable urban environment.

2. Sustainable Urban Streets

Sustainable urban streets can defined as “multimodal rights of way designed and operated to create benefits relating to movement, ecology and community that together support a broad sustainability agenda embracing the three E's: environment, equity, and economy” [2], and implementing sustainable urban streets can create more liveable communities [14].

2.1. Sustainable Streets design

There is a strong relationship between urban design and sustainability, which led to the development in the compact city and streets. Sustainability in architecture seeks to minimize the negative environmental impact of buildings by efficiency in using of raw materials, energy, and development environment studying sustainable development in the future. It aims to improve high level of economic growth, ameliorate the progress of social life, effective protection of the environment and prudent use of nature resources.

There are several goals of designing a sustainable street: reduce energy consumption, reduce consumption of material resources, reduce impacts to environmental resources, support healthy urban communities, and support sustainability during implementation.

2.2. The problems of the street design

Modern cities are inherently ecologically unsustainable because they need to import food energy and raw materials; they produce more waste than they can cope with within their boundaries

1. Water consumption and drainage. The growth of the major cities and the increase in per capita consumption of water has reached the point where there is a crisis in the capacity to meet the demand
2. Waste management. Analysis of the stream of domestic wastes suggests that recycling and composting can reduce the amount going to landfill sites by as much as 70%
3. Air pollution. One reason factories were and remain separated from residential areas is that many processes resulted in the release of particulates and gases which are offensive or toxic or both, even if they are not greenhouse gases.

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