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Analytical Study for Urban Rating Systems and Natural Environment for the Egyptian Cities

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" دراسة وتقييم اداء النظم البيئية والعمرانية بالمدن المصرية"

Thesis submitted for the fulfillment of Master of Science

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Cairo 2013

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Abstract

"Analytical Study For Urban Rating Systems and Natural Environment For the Egyptian Cities"

Egyptian cities are suffering from a number of urban , environmental and social problems. According to Egyptian environmental reports 2011:

- Encroachment on agricultural land has led to the loss and waste of one million and two hundred feddans of fertile agricultural lands, mostly in the Delta region.
- Degradation of urban environment and encroachment on lands in cities and villages.
- Increasing costs of residential areas development.
- Difficulty in allocating lands for public utilities and infrastructure works.
- Increasing pressure on public utilities networks (electricity - sewage - roads, etc.) as a result of vertical urbanization.

One of the reasons causing these problems is ignoring sustainability aspects when building in Egypt.
Therefore, building codes considering sustainability assessments can help in solving or at least appeasing the effect of these problems as well as controlling future problems.
Sustainability assessment through the use of specialised rating systems is a model which is steadily gaining acclaim in the built environment professions. These systems aim to associate techniques, effects and design philosophies with the promotion of the (now familiar) concept of sustainability.
This research aim is proposing guidelines for sustainability assessment rating system for Egypt. This is performed by reviewing existing international sustainability assessment rating systems, analyzing them and concluding on their applicability in Egypt.
LEED, BREEAM, CASBEE the top three sustainability assessment systems used worldwide are described in details in this research with an application case study for each. Based on the analysis of the three processes and comparing them, the research proposes a guideline sustainability assessment rating system for Egypt. The proposed

system is based mainly on LEED system due to its flexibility with additions from BREEAM systems that are absent in LEED system. CASBEE is disregarded because it is a very different approach, and highly complex way.

Introduction

Problem Definition :

Egyptian cities have many environmental and urban problems as a result of ignoring sustainability aspects. This initiates the need for a sustainability assessment rating system in Egypt for new urban projects. Worldwide, different approaches for assessing sustainability are developed. However choosing the suitable system to adopt in Egypt needs further investigation.

Hypothesis

LEED sustainability rating system is more suitable than the other systems to be considered as the base for the proposed sustainability assessment rating system for Egypt.

Research Methodology :

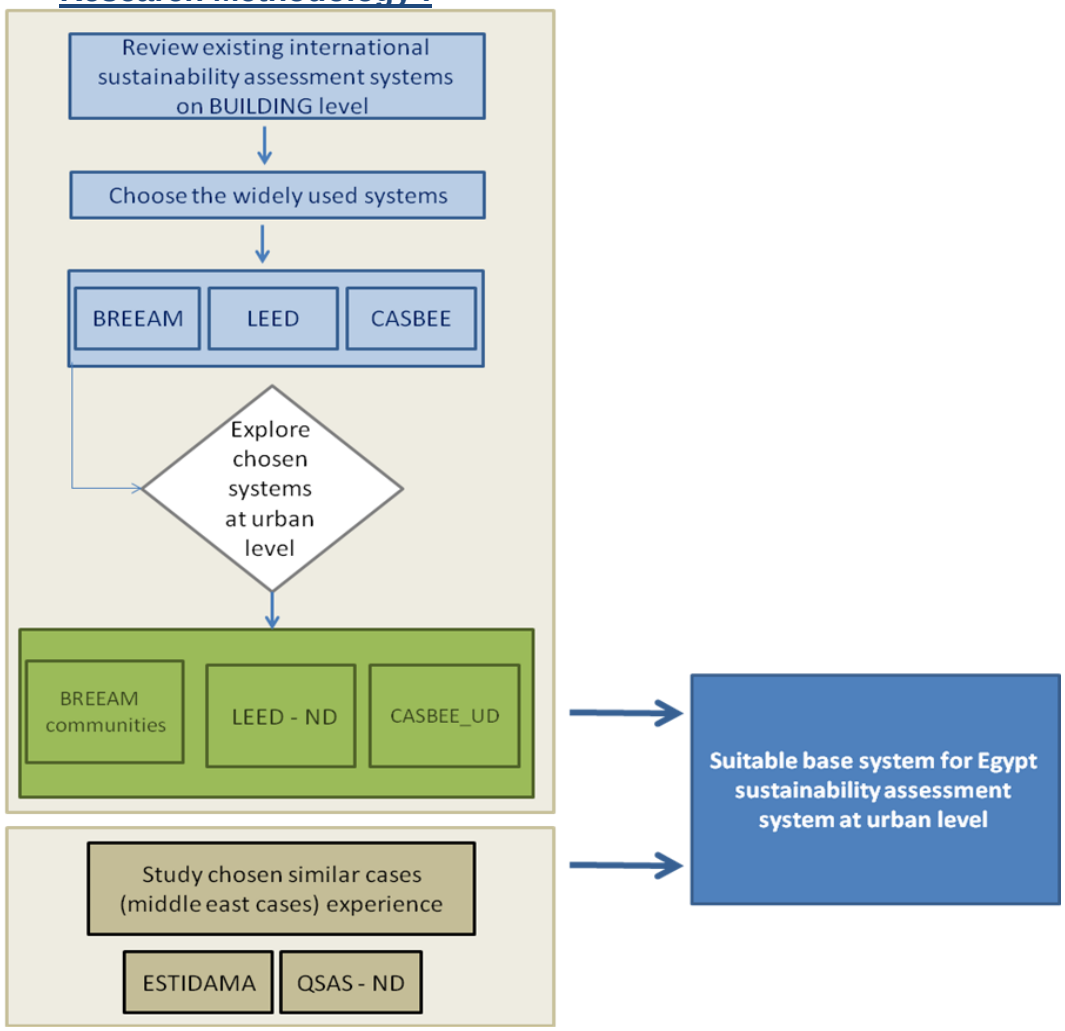

Figure 1: Research Methodology
Source :by the researcher

Aim of the research

. Understand the importance of rating tools and the beginning of them.

.Review rating tools worldwide and analysis the most frequently used.

. Proposing guidelines for sustainability assessment rating system for Egypt.

Research Structure

Part One: Theoretical Study and Definition Rating System on Buildings Scale

Introduction

The research introduces rating tools, their importance and the need to study them. In addition to the problem definition, research questions, hypotheses, and research methodology.

Chapter One: Rating System on Building Scale

Chapter one gives a review of rating tools around the world, how they started and Study the most frequently used (building scale).

The first chapter is concluded by a comparison between the most common rating systems on the building scale.

Part Two: Study and Definition of Rating System on Urban Scale (world wide)

Chapter Two: BREEAM Communities

This chapter includes the main elements of BREEAM Communities systems, their primary goals, market penetration, characteristics, basics, their categories and weights .

Chapter Three: CASBEE for Urban Development

This chapter includes the main elements of CASBEE_UD systems, their primary goals, market penetration, characteristics, basics, their categories and weights .

Chapter Four: LEED for Neighborhood Development

This chapter includes the main element of LEED-ND systems, their primary goals, market penetration, characteristics, basics, their categories and weights .

It is concluded by a comparison between the most common rating systems on the building scale.

Part Three: Study and Definition Rating System on Urban Scale (Middle East)

Chapter Five: ESTIDAMA (THE PEARL RATING SYSTEM FOR ESTIDAMA)

This chapter includes the main elements of ESTIDAMA and QSAS-ND systems, their primary goals, market penetration, characteristics, basics, their categories and weights .

Chapter SIX: The Green Pyramid Rating System(GPRS)

This chapter includes the main elements of Green Pyramid Rating System(GPRS), their primary goals, market penetration, characteristics, basics, their categories and weights .

Results and Recommendations

The research conclusions and recommendations are produced.

Chapter one gives a review of the assessment programs which have been developed around environmental and energy impacts of buildings worldwide, how and where did the assessment programs started. Why is compliance to a building rating system useful.

1.1 Review Of Relevant Literature

Green building practices are not new phenomena. A handful of buildings integrating environmental design aspects were erected as early as the late 19th and early 20th centuries (Cassidy,2003). After World War II, a stern belief in technical progress and the abundance of cheap fossil fuels resulted in a building style with little regard for energy efficiency or other ecological aspects. A unified green design movement did not begin to emerge until the 1970s, when design and building practices first became a focus of environmental advocates. In his seminal work Design for the real world,(Papanek,1972) advocated design practices embracing moral and social responsibilities and criticized design characterized by conspicuous consumption. The first attempts at introducing environmental considerations into the design process were characterized by hostility towards the design community and by a focus on developing countries (Madge,1993). In consequence, the reception of Papanek's and colleagues' ideas was limited in the United States and other industrialized countries.

In the 1980s, the issue reemerged under the labels of sustainable development (Rees,1989) and sustainable design (St.John 1992) and this time, it proved more successful. During the last decade, a proliferation of publications on sustainable design and architecture have appeared. Some of these works focus on outlining target objectives, without quantifying their costs and benefits or going into much detail about strategies to attain them. For instance, (Hawken, et al.,1999) discuss a number of green buildings, and then proceed to propose integrative design as a solution to ecological shortcomings, with retrofit insulation and installation of energy efficient appliances as second best solution. The 1990s also saw increasing efforts to give practical advice to design and construction professionals. (The Minnesota Sustainable Design Guide, 1997), for instance, is providing guidance on how to attain sustainability during the design and planning process. The American Institute of Architects' Environmental Resource Guide (Demki,1999) provides information on sustainable building materials.