

- Title:** **The Sustainable Vision of Dubai**
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- Subject:** Urban Design
- Keywords:** Sustainability
Sustainability Certification
- Publication Date:** 2008
- Original Publication:** CTBUH 2008 8th World Congress, Dubai
- Paper Type:**
1. Book chapter/Part chapter
 2. Journal paper
 3. **Conference proceeding**
 4. Unpublished conference paper
 5. Magazine article
 6. Unpublished

The Sustainable Vision of Dubai

As outlined by His Highness Sheikh Mohammed bin Rashid Al Maktoum,
Vice President and Prime Minister of the United Arab Emirates and Ruler of Dubai
and reported in the UAE and international press, October 2007.

(Paper created by CTBUH from Press coverage)

Abstract

In recent years Dubai has positioned itself as the epicenter of urban construction activity globally, resulting in some of the most impressive and challenging building projects in the world. At the same time, latest statistics suggest commercial and residential buildings in Dubai utilize 70 percent of the city's overall power consumption.

This paper focuses on recent strategies implemented in Dubai that will improve the sustainable performance of the city's built environment; specifically the green building directive outlined by HH Sheikh Mohammed bin Rashid Al Maktoum in October 2007 and the LEED Emirates assessment system, as developed by the Emirates Green Building Council.

Keywords: Dubai, Sustainability, Green Building Standards, LEED Emirates

Background

Climate change is arguably the greatest challenge facing the modern world. With latest figures predicting a global temperature increase of between 1.8°C and 4.0°C by the end of the century (IPCC, 2007), it is now inescapable that the world must reduce CO₂ emissions in order to avoid dramatic disruption to the global climate.

At the same time, over the past few decades, Dubai has positioned itself as the epicenter of urban construction activity globally. This unprecedented construction boom has resulted in some of the most impressive and challenging building projects in the world, from the dramatic Palm Jumeirah (see *figure 1*) to the Burj Dubai, set to be the world's tallest upon completion in 2008 (see *figure 2*). Whilst this construction surge has created a dynamic and spectacular city, it has also produced a built environment that is responsible for the majority of energy usage within Dubai; Ministry of Economy and Commerce statistics show that Dubai power consumption in 2004 was 16,363 Gigawatt-hours, of which 70 percent was utilised in commercial and residential buildings (Landais, 2007).

In light of these issues, on October 24th 2007, His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and ruler of Dubai issued a new resolution implementing green building specifications and standards in the Emirate of Dubai. The aim is to turn Dubai into a healthy city that meets the demands of best practices and benchmarks of pollution-free sustainable development, whilst boosting its continuous efforts to promote global endeavors to face environmental changes. Through implementing this regulation, Dubai will become the first city in the Middle East to adopt green building specifications.

“Dubai's energy intensity – the amount of energy used per capita – is among the highest in the world, much higher than Singapore or Hong Kong for example...Going forward, Dubai has to use energy more efficiently. There seems to be no doubt in anyone's mind that better energy conservation is a key initiative going forward for Dubai”

[His Highness Sheikh Mohammed bin Rashid Al Maktoum]

Dubai Green Building Standards



Figure 1. Palm Jumeirah, Dubai. [Source: www.thepalm.ae]

Under the resolution, all new residential and commercial buildings in Dubai must comply with internationally recognized, environmentally-friendly specifications, effective from early 2008. The directive, which falls in line with the city's priority towards sustainable development as outlined in the Dubai Strategic Plan 2015, will be implemented in three phases; firstly it will be applied to private buildings, and then followed by new and existing government buildings. In

the final stages, ortho-photo flyovers will be brought under the green building criteria.

The impact of these new regulations is likely to be significant; estimates suggest their application will result in 30 percent building energy savings for cooling and air-conditioning; 9 percent savings for artificial lighting and 6 percent for heating water. At the same time they will also reduce water consumption in buildings by up to 30 percent (Gulf News, 2007).

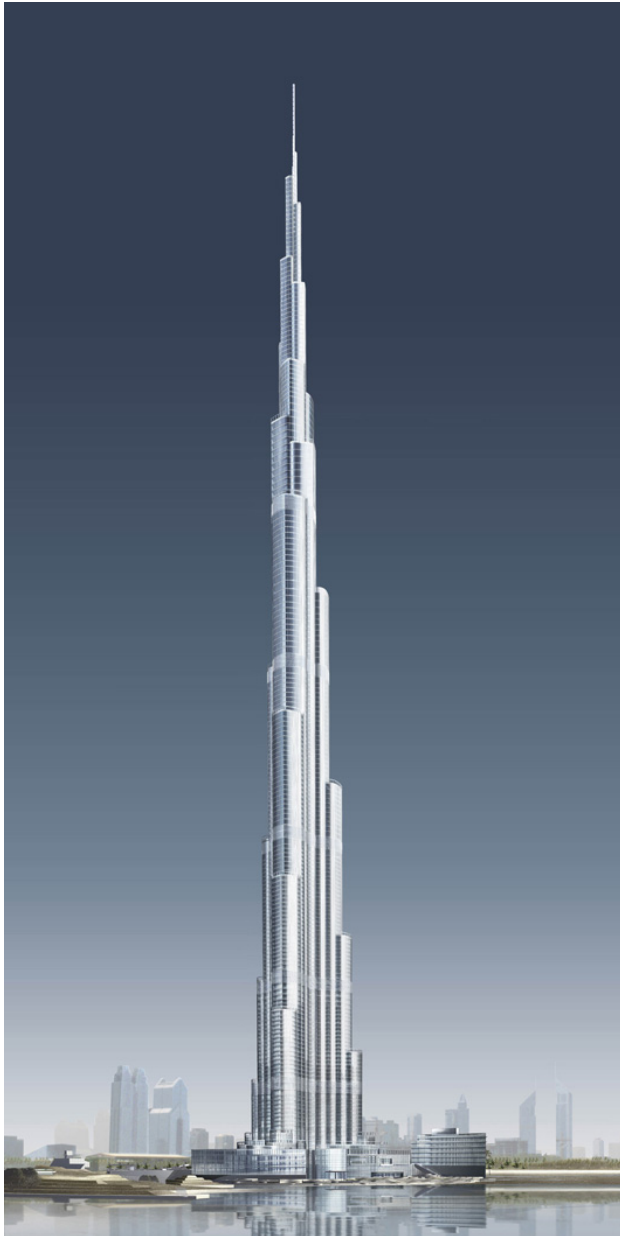


Figure 2. Burj Dubai – set to be the tallest building in the world upon completion. [Source: © SOM]

LEED Emirates

In most developed countries, there are assessment systems that quantify the sustainability of new and refurbished buildings against a wide range of criteria to establish their degree of sustainability. These systems all

have similar criteria, but contain different details tailored to suit the particular country in which they were developed and are used.

The Emirates Green Building Council (EmiratesGBC) has, over the last 18 months, produced a draft version of such a system which is tailored for the UAE environment and its construction market. This has been achieved through a controlled process of criteria setting for the UAE system, evaluating existing rating methods used elsewhere, choosing the most appropriate system in use and making modifications to customize the rating system for use in the UAE.

The work has been carried out by members of the Technical Committee of EmiratesGBC with its subcommittees, numbering over 50 professionals, at regular bi-weekly meetings and a series of one day workshops at which the details were discussed and agreed. The recommendations from these sessions were brought before the Management Committee for ratification.

The outcome of this work was to propose LEED Emirates which is a modification of the American system LEED (Leadership in Energy and Environmental Design). This rating system refers to standards that are already widely used in the UAE and referred to by the local Municipalities and it also provides an internationally recognizable label. In addition there are in existence buildings in the UAE that have achieved levels of LEED certification, so it is a model which is demonstrably achievable by the current construction industry in the country. One of the most significant of these buildings is the Pacific Controls Headquarters – the first LEED Platinum rated building in the Middle East and only the 16th in the world at the time (see *Figure 3*). This five-storey building, completed in 2006, utilizes a number of sustainable building technologies that assist in reducing its environmental impact. These include:

- Roof mounted photovoltaics powering daytime artificial lighting
- A solar thermal air-conditioning system
- CO₂ monitoring for indoor air quality
- Landscaped areas irrigated using rain water and recycled waste water
- 50% of construction materials sourced locally
- 10% of building materials by cost made from recycled goods

The LEED Emirates rating system will differ slightly to that used in the United States; the main modifications to the American version of LEED include increasing the total rating points to be scored from 69 to 72; the additions being mainly related to putting more emphasis on water conservation because of its scarcity in this region. In addition, adjustments have been made to the content and the weight given to other sections, to make the whole system more applicable to use in the UAE.

The EmiratesGBC has launched a Pilot Programme, trialing the use of this system on new buildings in the UAE that are currently in the design phase with a view to

having the LEED Emirates rating system ratified by September 2008.



Figure 3. Pacific Control Headquarters – the first LEED platinum-rated building in the Middle East. [Source: www.pacificcontrols.net]

Conclusion

This paper has outlined recent strategies implemented in Dubai that will improve the sustainable performance of the city's built environment.

Through realizing the green building standards outlined by His Highness Sheikh Mohammed bin Rashid Al Maktoum, Dubai will become the first city in the Middle East to adopt green building specifications. Furthermore, the ratification of the LEED Emirates rating system will give the UAE a building sustainability assessment procedure tailored specifically for its environment and its construction market.

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