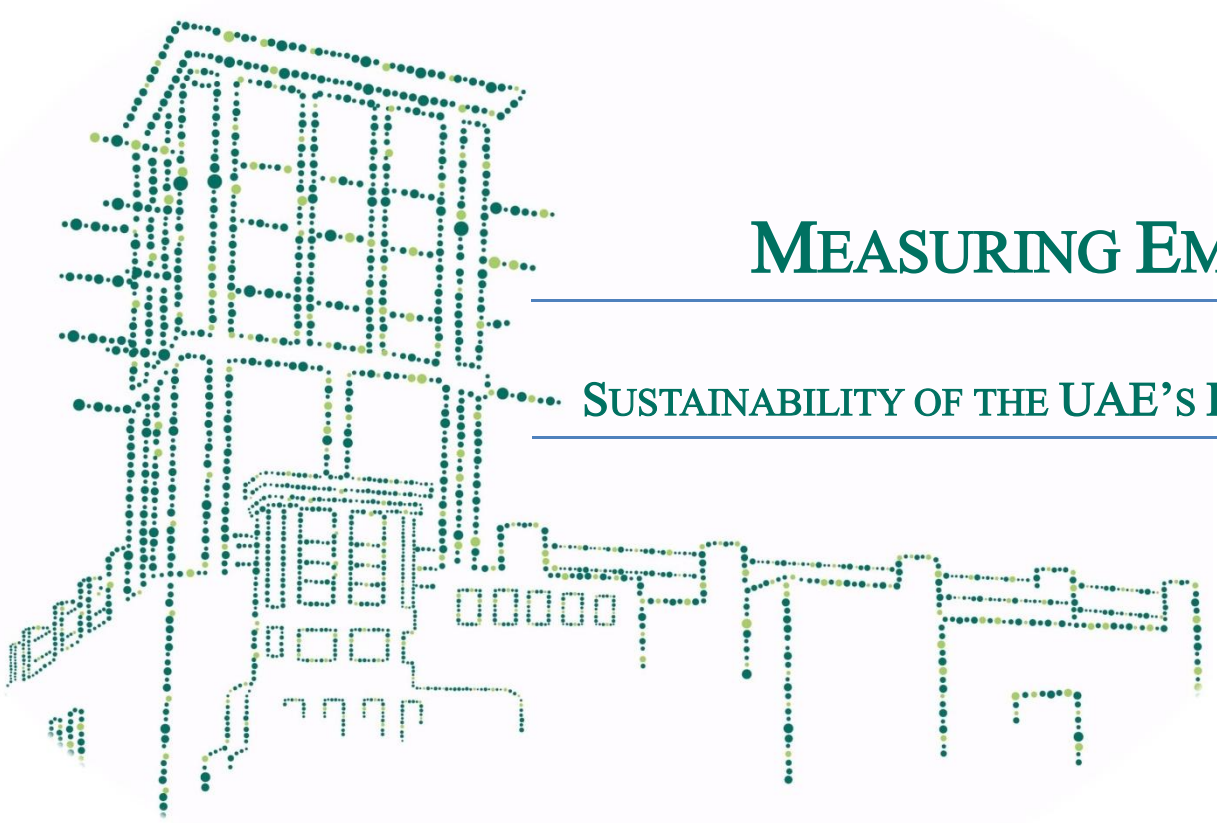

MEASURING EMIRATESGBC'S IMPACT

SUSTAINABILITY OF THE UAE'S BUILT ENVIRONMENT: 2006 - 2014

Emirates Green Building Council, December 2014

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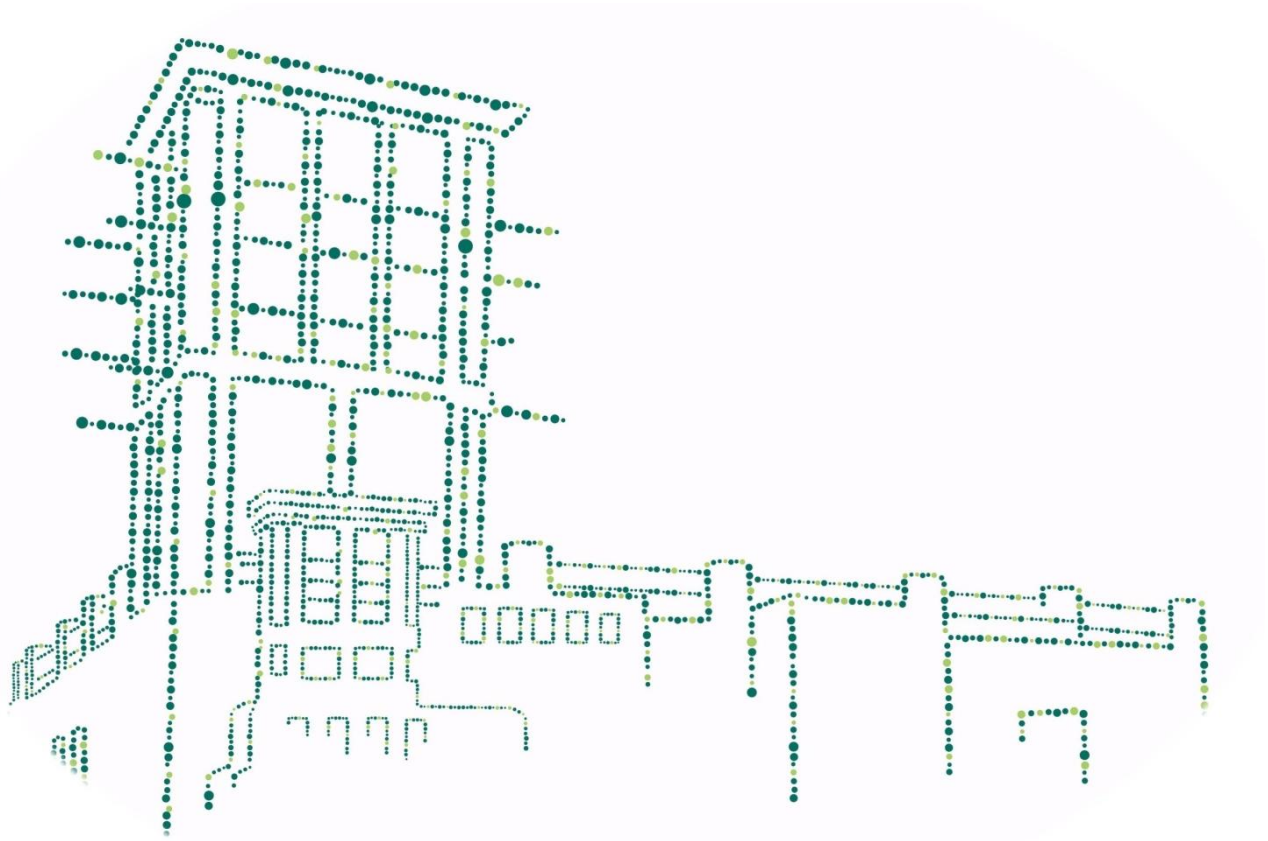


Introduction

The UAE's Environmental Impact

In 2006, the Living Planet Report (LPR)[1] ranked the United Arab Emirates as the country with the highest per capita Ecological Footprint in the world. In its latest report published in 2014, Living Planet listed the UAE as having the third-highest Ecological Footprint, per capita.

The United Arab Emirates' ranking down in the World Wildlife Federation's (WWF) globally referenced list in a span of eight years is backed by an interesting story that needs to be retold. It showcases a remarkable initiative taken by the UAE government and its administrative sector, and the numerous forums and institutes that have subsequently launched, including the Emirates Green Building Council (EmiratesGBC). These initiatives have eventually worked to push environmental conservation to the forefront of the UAE's policy making agenda resulting in conservation goals now working in tandem with agendas that pertain to economic growth.

From the many institutions and organizations that have arisen since 2006, EmiratesGBC has secured a credible place within the sustainable thinking realm, by strategically fulfilling its mission to serve as an educator, and as a platform of knowledge exchange for all sectors within the building industry which influence the country's ecological footprint. Hence, the following report aims to highlight how a) policy efforts at the federal level and b) EmiratesGBC's organizational activities have collectively impacted the building industry, building market awareness, and inspiring business decisions which have notably contributed towards the reduction of UAE's ecological footprint.

The Living Planet Report (LPR)

LPR's ecological footprint index was originally developed by the UNEP and is now published bi-annually by the WWF. The index is a science-based analysis of the health of the planet and the effect human activity has on this health. The Ecological Footprint as an index was originally developed by the Global Footprint Network (GFN)[2]. It functions as an accounting system which:

"...tracks, on the demand side (footprint), how much land and water area a human population uses to provide all it takes from nature. This includes the areas for producing the resource it consumes, the space for accommodating its buildings and roads,

[1] For this report we will use the LPR's index as the guiding benchmark as it has been cited more often in the UAE, and as of 2014, is the only Index which provides a carbon footprint for the UAE.

[2] The Global Footprint Network (GFN) is a major think tank which provides carbon footprint calculations for 150 nations. The organization also aims to standardize the science of ecological footprint calculations. The GFN provided the data and the calculations for the LPR index.

and the ecosystems for absorbing its waste emissions such as carbon dioxide. These calculations account for each year's prevailing technology, as productivity and technological efficiency change from year to year. The accounting system also tracks the supply of nature: it documents how much biologically productive area is available to provide these services (biocapacity). Therefore, these accounts are able to compare human demand against nature's supply of biocapacity."

Analysis of UAE data from the GFN and LPR

According to data collected in 2003, the collective population of the world had an Ecological Footprint of 14.1 billion global hectares (gha) averaging 2.5 gha per person. In relation to that, the biocapacity[3] of the world in 2003 was equal to 11.2 billion global hectares, or 1.8 hectares per person. According to WWF, humanity's demand began to exceed supply in the 1980s and currently this demand overshoots biocapacity by 50%[4].

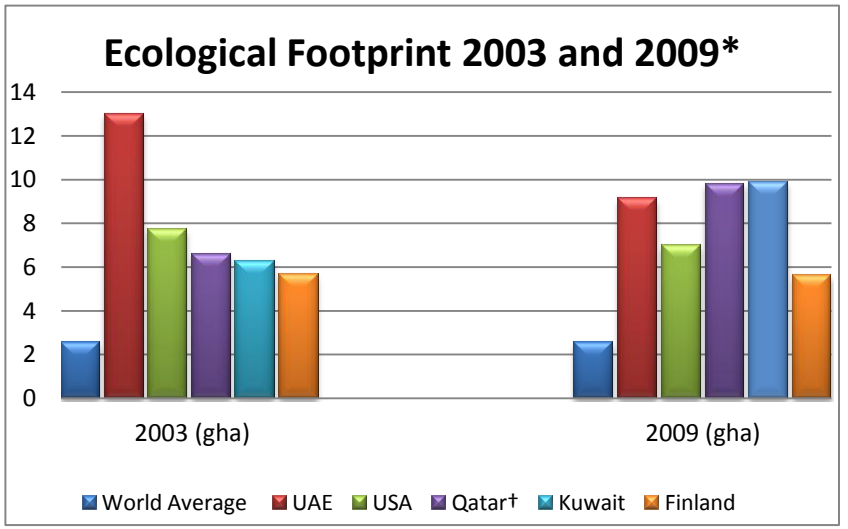


Figure 1 A comparison of the ecological footprint of countries based on data obtained in 2003 and 2009.

According to the 2006 LPR report, the average UAE resident had an Ecological Footprint of 11.8 gha, ranking it as the highest in the world. In 2010, that number was down to 10.68 gha. In 2012, this footprint had shrunk to 8.4 gha (based on data collected in 2008). In 2010, the UAE had successfully reduced its footprint to 7.7 gha, as reflected in the latest 2014 LPR.[5] For the first time since the 2006 ranking, and still currently holding, the UAE does not have the highest Ecological Footprint in the world. Thanks to concerted national efforts, it has been superseded by the two neighboring countries, Qatar and Kuwait [6] (See Figure 1).

*The comparison of Ecological Footprint illustrated in Figure 1 used raw data provided by the Global Footprint Network to EGBC for the years 2003, 2005, 2009. The selection of countries based on their ranking borrows its methodology from the WWF's Living Planet Report which excludes countries with populations less than one million. LPR data is collected from the years 2003, 2005, 2007, 2008, and 2010. EGBC was unable to obtain raw data for the years 2008, and 2010.

† Qatar was not included in the 2006 LPR report (2003 data) as its population was less than one million.

[3] A country's biocapacity is a function of the number and type of biologically productive hectares within its borders, and their average yields. More intensive management can boost yields, but if additional resources are used this also increases the footprint (Living Planet Report, 2006).

[4] LPR summary, 2012

[5] LPR summary, 2014

[6] LPR, 2006, 2010, 2012

In comparison with countries that have successfully reduced their footprint, the UAE dropped 3.4 points while the US dropped 2.8 points.

Countries	2006 ranking	2014 ranking	2006 footprint (gha)	2014 footprint (gha)	Point change
United Arab Emirates	1	3↓	11.8	7.8	4↓
United States	2	8↓	9.6	6.9	2.9 ↓
Finland	3	15↓	7.6	5.4	2.2↓
Canada	4	11↓	7.6	6.4	1.2↓
Kuwait	5	1↑	7.3	10.4	3.1↑
Australia	6	13↓	6.6	6.3	0.3↓
Estonia	7	20↓	6.5	4.8	1.7↓
Sweden	8	10↓	6.1	6.4	0.3↑
New Zealand	9	51↓	5.9	3	2.9↓
Norway	10	24↓**	5.8	4.8	1↓
Qatar*	1**	2↓	11.6**	8.4	3.2↓
Denmark*	11	4↑	5.8	7.6	1.8↑
Belgium*	13	5↑	5.6	7.6	2↑
Trinidad and Tobago*	40	6↑	3.1	7.5	4.4↑
Singapore*	n.d.	7	6.1**	7	0.9↑

*** Countries that were not included in 2006 or were not in the top 10.**
****Data from 2012**

Table 1. The top 10 countries from 2006 and 2008 and how they fare in 2014.

While the Ecological Footprint of a country is a good indicator of individual demand averaged over a country's population, it is typically compared against the region's biocapacity[7]. In 2008, the UAE's biocapacity was recorded at 0.6 gha per person and given that this number did not vary in the 2012 report - this indicates that even though the Ecological Footprint has reduced, the country's relatively stationary biocapacity level shows that the average UAE resident is largely dependent on other nations for all the resources it imports and not on its natural resources.

Background

The United Arab Emirates was founded on December 2, 1971 by the ruling Al Nahyan family. It is a country composed of harsh, arid terrain with very little natural resources, biodiversity, and population. However, the country had tremendous wealth deep underground in the form of a non-renewable energy source also known as crude oil, the discovery of which is credited with having led to the country's formation. Fast forward twenty years and the UAE had already become a well-established supplier of crude oil in the burgeoning global market. Since the 90s, it has continued to effectively capitalize on its hydrocarbon wealth experiencing remarkable economic growth as well as improvements in the quality of life for its growing population.

[7] LPR summary, 2012

Since 2000, the GDP in the emirate of Dubai has grown at an annual rate of 13%[8]. Abu Dhabi has also experienced a substantial increase in its GDP. In 2011, the Emirate achieved an annual growth rate of 29.9%, however, this was reduced to 7.7% in 2012.[9] Sharjah also witnessed a steady growth of 11% from 2001 to 2012[10] and it is important to note that these statistics also coincide with the economic recession of 2008-2009.

The following sections build the primary focus of the report which is a) the country's man-made urban environment and how it has influenced the demand for energy and resources and, b) the steps the UAE government is undertaking to reduce the impact of urban development on the planet.

Evolution of the country's built environment

The history of Dubai's development involves a steady trajectory of growth and progress in nearly every sector of urban development. This growth was evidently fueled by the wealth bought in from the global trade of oil; however, the corresponding economy and foreign investment created by this wealth also provided space for the market expansion of lateral internal economies such as housing, tourism, infrastructure, and commerce. The new market void was rapidly filled up by the exponential growth in the country's population leading to further growth in the industrial and service sectors. It is estimated that between 1965 and 2013, the UAE's population increased by 6280%, with 85% of its residents residing in urban developments and situated mainly in Abu Dhabi and Dubai.[11]

The Demand and Supply Side

The demand of a growing population coupled with demand for a high standard of living also enabled Dubai's economy to build a strong niche in the service and tourism sector which flourished and led to the construction of several shopping malls, centers, and entertainment venues. Additionally, the population's need for housing was also tied with the need for schools, hospitals, roads, and transportation facilities, resulting in a development boom that has seen steady upward growth for several years. Over time several UAE Emirates have undergone a thorough transformation: from arid desert to a "political, economic, and financial success story" and the city of Dubai especially has been hailed as the "Singapore of the Middle East"[12].

Meanwhile, on the supply side, the country's biological resources have remained scant and are mostly supplied by a strained fishing industry and limited livestock capacity[13]. As a hot and dry country, agriculture is financially unfeasible and any food production that is undertaken in the country is energy and water-

[8] Dubai Strategic Plan 2015, 2008.
[9] Abu Dhabi Statistical Yearbook, 2011 & 2012.
[10] Bitar, 2014.
[11] Dubaifaqs; World Bank 2014 Doing Business Report; World Bank Urban population %, 2012.
[12] Mayo, A.; Nohria, N.; Mendhro, U.; Cromwell, J. 2010
[13] Todrova, 2012

intensive. Essentially 90% of the country's food supply is imported from neighboring countries and the global market[14]. From the outset, the UAE has had to rely on imports for many basic necessities including fiber, timber, and other material goods that are required for a high standard of living[15].

With respect to energy, the hot and humid climate has led to round-the-clock cooling needs, made possible only by extensive production of electricity. Average international consumption of energy is 15kwh per day, whereas in contrast a UAE resident can use up to 20-30 kwh in a day.[16] In addition, the region's dry climate also meant that desalination plants needed to be installed on the coast in order to meet the demand for domestic water. This demand coupled with the addition of a new and growing aluminum smelting industry meant a further increase in demand for precious energy. The average individual consumption of water internationally is 170-300 liters a day; the average UAE resident on the other hand uses up to 550 liters of potable water per day.[17] Coupling this rate of development with minimal resources and crude oil as the source of energy, it is not surprising that the UAE developed a large Ecological Footprint while its biocapacity lagged behind disproportionately.

The synergistic growth outlined above and the ensuing demand for water and energy has shown that over the years, while the UAE experienced remarkable financial prosperity, its environment and local resources were put under immense strain, especially as environmental regulations in the country remained nonexistent through several decades of development. A change was needed as global organizations such as the UN and World Bank increasingly called for more precedence of environmentally sustainable practices within urban sectors.[18] This change was soon forthcoming in the UAE also as leaders grew more aware of the environmental and economic consequences of business-as-usual growth. Several initiatives were subsequently generated and are outlined in the next section.

The Government Steps Up

From 2006 to 2013, the UAE government has taken several initiatives to uphold a new legacy of sustainable development and construction in the country. The maintained goal is to reduce the country's carbon footprint by diversifying its energy sources and by initiating numerous programs and organizations that collaborate to develop frameworks and policies which effectively actualize these goals. The following is a list of several important agencies and policies initiated by the UAE government and primarily by the rulers of Abu Dhabi and Dubai:

Royal 'Green' Decree

In October 2007, the newly appointed ruler of Dubai, His Highness Sheikh Mohammad bin Rashid Al Maktoum issued a

[14] Bonner, 2014
[15] EFI, 2010
[16] Kader, 2014
[17] Kader, 2014
[18] UNEP; World Bank Sustainable Development overview, 2014.

decree that all new urban structures would conform to environmentally-friendly green building standards – even though the country had no such green building standards yet established.[19] Targets were also laid out which included that all buildings would have to reduce baseline water and energy usage by 30% and reduce lighting costs by 9%[20].

In January 2008, at the World Future Energy Summit, HH Sheikh Mohammad announced that the UAE would invest $15 billion to promote green energy. This process entailed a widespread education and awareness campaign that would highlight the different renewable sources of energy the country could effectively adopt. Further mandates later influenced the importation of the Leadership in Energy and Environmental Design (LEED) rating system into the UAE and led to all new construction in Dubai World properties under Trakhees to comply with at least 32 certification points, which at the time designated a building as LEED Certified[21].[22]

Dubai Supreme Council of Energy (DSCE)

The Dubai Supreme Council of Energy was formed in 2009 under Law 19 issued by HH Sheikh Maktoum to serve as a governing body that would authorize policy, planning and coordination of concerned authorities and energy bodies to deliver new energy sources and diversify Dubai's energy sector which was set in motion by the Royal Decree. DSCE ensures that governed parties employ a balanced approach to protecting the environment as they implement the policies. This authority aims at developing alternative and renewable energy sources for the emirate as well as increasing energy efficiency to reduce demand.

Thus far, DSCE's primary vision has been to make Dubai a global role model in energy security and efficiency by outperforming the rest of the world. In other words, DSCE's goal is to work in strong collaboration with all other government sectors and ensure that Dubai's economy continues to grow while it moves towards the use of more sustainable energy – in other words, a thriving economy that is primarily sustained by clean energy is an achievement scenario that is and has been an ongoing struggle for many advanced nations for years.[23]

Regulatory and Supervisory Bureau (RSB) for Electricity and Water

The Regulatory and Supervisory Bureau (RSB) was established in 2010 as the functional offshoot of DSCE. Under HH Sheikh Maktoum's Executive Council's Directive, Dubai's RSB has been tasked with independently regulating the energy and water sector in Dubai. RSB functions by setting standards, controlling and supervising all licensed properties operating in the field of energy

[19] Construction Weekly Online, 2008.
[20] Mayo, 2010.
[21] USGBC has since revised its criteria: according to the new LEED Green Building Design and Construction guidelines (2009), LEED Certification is obtained by complying with 40-79 points out of a total 100 base points.
[22] Mayo, 2010
[23] DSCE website: http://www.dubaisce.gov.ae/default.aspx

and water. RSB's mission is to secure a sustainable future for its diversified electricity and water supplies. Thus the RSB is responsible for setting systems and rules related to the economic, technical, environmental and public safety aspects of energy procurement and water sourcing & delivery.

On the sustainable front, in February 2014, RSB further developed a regulatory framework intended to support the ESCO market (see below). This process has comprised of an accreditation scheme for ESCOs, a protocol for measuring and verifying energy and water savings, and a tailored approach to resolving disputes.[24]

Dubai Integrated Energy Strategy 2030 (DIES)

The Dubai Integrated Energy Strategy (DIES) 2030 was catalyzed by HH Sheikh Mohammed bin Rashid al Maktoum's Royal Decree (see above) and was developed into a framework by 2010. DSCE, which was formed in 2009, was subsequently authorized to preside over the Strategy. DIES 2030 was eventually deployed in 2011 where it lay down the essential policy mandate that Dubai needed to redirect its development goals. As part of the Strategy, monetary advancement in Dubai would also incorporate strategies that secured a sustainable supply of energy from renewable sources. In addition, DSCE would also enhance the efficiency in demand for this energy, which later manifested as the Energy Performance Contracting mechanism.[25] This step emphasized the commitment of the Government of Dubai to provide the proper regulatory environment that would support the growth, expansion and sustainability of businesses.

Under DIES 2030, a successful Public-Private Partnership venture has already resulted in the construction of the first Solar Park in Dubai. The first phase of the project went live in October 2013 producing 13 MW of electricity. Subsequent phases will be completed over time until the Solar Park achieves it full capacity of 1000 MW, by 2030.[26]

Energy Performance Contracting (EPC)

Under the directive of DIES 2030, and initiated by the Dubai Energy & Water Authority (DEWA) and DSCE, Etihad ESCO was established in Autumn of 2013 as an energy and service company that would spearhead the burgeoning Energy Performance Contracting (EPC) market in Dubai. Following the European model where EPCs are already well established, the Supreme Council through RSB adopted the ESCO methodology and in February 2014 Etihad ESCO launched the first ESCO regulatory framework in Dubai.[27] The framework for the new EPC market was developed by RSB (see above) and is expected to improve the energy efficiency of nearly 30,000 existing buildings in Dubai by 10-40%, depending on the age and design of the structures.

[24] RSB website: http://rsb.gov.ae/

[25] DSCE website, (see footnote 23)

[26] Power&water, 2012; Bitar, 2014; Solar Energy in Dubai, n.d.

[27] Etihad ESCO website: http://www.etihadesco.ae/

Energy Performance Contracting is a mechanism which promotes energy efficiency in a building at no cost to the owner. Financing for the project is arranged by the ESCO which assumes some risk for the delivery of energy savings. The mechanism is effective when there is a strong collaboration between the government, building owners, finance providers, and energy service companies. The result is a reduced impact on the environment and a reduction in energy demand which also includes profitability in assets and through savings.[28]

Ecological Footprint Initiative (EFI)

Alongside the 2007 'Green' Decree and within a year after publication of the 2006 LPR, several UAE government agencies and NGOs embarked on an ambitious goal to dissect its Ecological Footprint, determine its components, measure its effect, and remedy excess however best it could. An offshoot of this initiative was the project named Al Basma Al Beeiyah Initiative or the Ecological Footprint Initiative (EFI) and was launched in October 2007 by the Ministry of Environment and Water (MOEW), the Environment Agency-Abu Dhabi's, the Emirates Wildlife Society in association with WWF (EWS-WWF), and the Global Footprint Network (GFN). [*see footnote 3 on page 2*]

From the outset, the EFI stated its mission in simple terms: "*a national effort to ensure a sustainable future by measuring and understanding the impact of our ways of living on planet earth*."[29] The Initiative is still ongoing and has already moved through key stages with progress made in various sectors, the results of which were eventually reflected in the 2012 LPR ranking. Only two other countries in the world, Switzerland and Japan, have embarked on a similar initiative. However, what is unique about UAE's EFI is that unlike these two advanced nations, the UAE government also resolved to invest in scientific solutions to mitigate and offset its carbon footprint.

Essentially the main purpose of the EFI has been to understand the various factors which comprise the market for energy in the UAE, also known as Demand Side Management (DSM). As a result of this assessment, the EFI, in cooperation with other organizations such as ESMA and EWS-WWF, realized and published the UAE Lighting Standard in December 2013 with an implementation time set from January to July 2014. The standard promotes mandated reduction in sales of incandescent lamps and indoor light bulbs, and ensures that the market is well supplied with energy-efficient, safe, high-quality light products, and provides solutions for their safe disposal.

The Lighting Standard has clearly been a step in the right direction as households take up 50% of the energy produced in the country and of this 20% is taken up by inefficient lighting fixtures. By implementing the Lighting Standard, the UAE's energy consumption would reduce by 5000MW, and an average villa

[28] Guidelines on Energy Audit, 2007.

[29] EFI, 2010

could potentially save AED 2315 per year on electricity bills[30]. Regulatory oversight for the Lighting Standard is administered by the Emirates Standardization and Metrology Authority (ESMA) and EFI provides ongoing research on the Standard's economic, technical, and sustainability impacts.

Estidama

Estidama, which means "sustainability" in Arabic, was launched by Abu Dhabi's Urban Planning Council (UPC) in 2008 as part of the emirate's 2030 General Plan. It is a specific design methodology and pertains to the planning of sustainable buildings and communities that are fully integrated with the General Plan. To further establish its methodology, Estidama devised the Pearl Rating System, which establishes a region-specific sustainability criteria that addresses all aspects of sustainable building construction starting from the design phase all the way through to end user operational stage. The Pearl Rating System is offered for community, building, and individual villa construction. Abu Dhabi's Executive Council Order of May 2010 mandated all new buildings must achieve a minimum 1 Pearl certification, and all government funded buildings must achieve a minimum of 2 Pearls. This sets high standards of quality and performance for all new projects in the emirate.

The Pearl Rating System takes sustainability a level higher than other rating systems by addressing sustainability goals via a quadruple bottom-line, as opposed to a triple bottom-line: the environment, the economics, people and culture. As of March 2014, Estidama has had over 530 developments either initiated or completed under the Pearl Rating System, with a gross floor area of nearly 12 million square meters.[31]

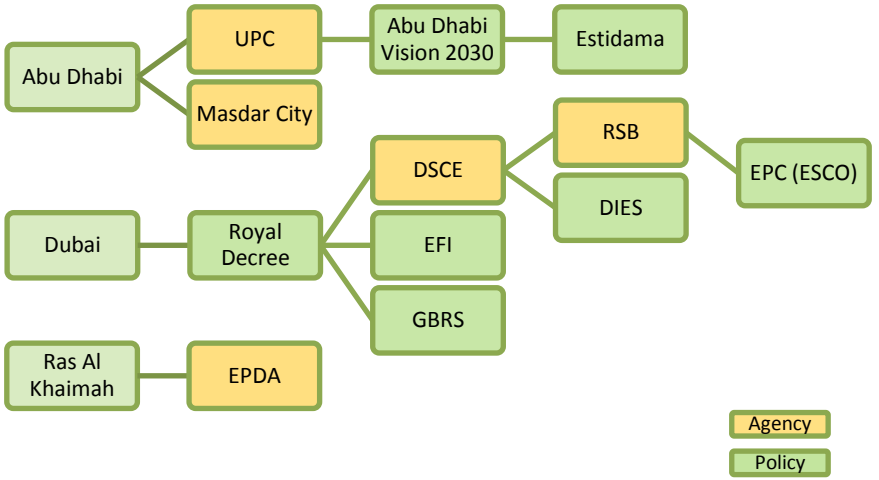


Figure 2. Decision tree which depicts the chain of environmentally sustainable policy reforms developed by the UAE Govt.

Green Building Code (GBRS)

Dubai's new Green Building Code also referred to as Dubai's Green Building Regulations and Specifications (GBRS) was initiated in 2010 by Dubai Municipality and DEWA and was mandated for all new construction in March 2014. Starting with HH Sheikh Mohammad bin Rashid Al Maktoum's Green Decree, the idea for a more rigorous and region-specific sustainable

[30] EFI Website

[31] Energy Institute, 2014.

construction criteria in the emirate was quickly adopted by Dubai Municipality and integrated into its General Plan, also known as the Dubai Strategic Plan 2015. The Code is considered key to achieving the goal of making Dubai one of the top 20 sustainable cities in the world by the year 2020[32].

Initially, since 2010, the Code was applied to government buildings only, however, right at the outset, Dubai Municipality stated that buildings built according to the Code saw a 43% reduction in energy usage and a 15% reduction in water usage[33]. The strategy proved to be successful and subsequent energy savings in the government sector have shored up general amenability towards these regulations within the design and construction industry in other sectors. Dubai's Green Building Code now applies to all new structures regardless of nature and operations. In addition to energy and water reduction, the Code is expected to green half of Dubai's building stock with a specific focus on existing buildings within 10 years, and achieve a 30% reduction in CO2 emissions by 2030.[34]

A commonality between Estidama's Pearl Rating System and Dubai's Green Building Code is that they both serve a regulatory purpose in the building and construction industry; however Dubai's Code does not function as a rating system and hence there are no certification levels. In the meantime, talks have begun within Dubai Municipality to initiate a green/energy labeling program for residential structures in the emirate.

Masdar City

It is estimated that in 2007, the Abu Dhabi government invested approximately $15 billion to start up Masdar City. From the outset, the project has been an ambitious move to create the world's first carbon-neutral and zero-waste human settlement - a sustainable, mixed-use development that would function as residence, research institute, and a commercial investment hub for technological innovation. The City is still under construction; however parts which are occupied are functioning with a very low footprint thanks to clever design techniques which cool outdoor and indoor space and minimize the need for air-conditioning.[35]

Masdar will house the future headquarters for the International Renewable Energy Agency (IRENA) and it currently houses the Masdar Institute of Science and Technology (MIST) which is strongly affiliated with the Massachusetts Institute of Technology (MIT). As a research hub, MIST is at pace to become a leading global institution for cutting-edge environmental technologies. As planned, the role of Masdar City is to provide innovative solutions that will expedite the country's goals to reduce its footprint. Many of these solutions will come about

[32] Construction Weekly, 2014.
[33] Construction Weekonline. Positive Response to Dubai's Green Building Codes, March 5, 2014.
[34] ibid

[35] The Economist. Masdar Plan. 2008.

through breakthroughs in research looking at renewable sources of energy.

Previously, other research conducted at MIST has already achieved a 20% reduction in energy costs by improving the efficiency of cooling units; and an ongoing project with Abu Dhabi National Oil Company (ADNOC) is looking at procuring oil with 70% improved efficiency.[36]MIST research is primarily focused on renewable energy technology such as through bio-fuels, water engineering as with desalination, and waste management technology.[37]

EPDA

Ras Al Khaimah developed its Environmental Protection and Development Authority (EPDA) in 2007. The entity is focused on the protection and development of the emirate's environment while also promoting economic development and human health. [38] In addition, Ras Al Khaimah has hosted two annual international conferences where participants could promote scientific collaboration and keep up with the rapidly advancing knowledge, concepts and technical know-how in the field.

The EPDA has also focused on research creating a lab that measures and tests air quality and the long term effects of underground pumping. Testing revealed that proper land use management has improved air quality in the emirate by 16%[39]. The EPDA has also initiated outreach and awareness campaigns within the emirate, and is working towards the modification of existing building and construction codes.

Other National Initiatives

EEG – The Emirates Environmental Group which was formed in 1991, is the world's first ISO 14001 certified environmental non-profit organization and non-business signatory in the UN Global Compact. The EEG is also affiliated with several members of the UAE government, and is a strong advocate for the environmental education of UAE residents and for the establishment of nationwide sustainable programs. The EEG was founded by Mrs. Habiba Al Marashi who also later became the founding member of the Emirates Green Building Council (see Section 2 of report).

The EEG also plays host to the Global Compact Network for Gulf States which consist of six GCC countries On the local front, the organization has developed an extensive palette of waste management campaigns recycling all post-consumer products which are recyclable in the UAE, including mobile phones, batteries, and printer toners.

[36] Malek, 2014.
[37] ibid
[38] http://epda.fi-demo.com/uploader/general%20abstract.pdf

[39] RAK report, 2012.

Trakhees

In 2008, The Jebel Ali Free Zone established a Department of Planning and Development (Trakhees), which was designed to serve as a regulatory arm for the issuance of building permits, commercial licensing, and for the supervision of engineering and all health, environmental and safety related matters within the Free Zone. Using Sheikh Mohammed bin Rashid Al Maktoum's 2007 Decree as a foundational guide, Trakhees incorporated several LEED credits into its own building assessment system, setting the baseline construction standard in the Free Zone to LEED Silver.

EWS-WWF

The Emirates Wildlife Society and its collaboration with WWF was established in the UAE in 2001, and is under the patronage of HH Sheikh Hamdan bin Zayed Al Nahyan. In addition to their valuable conservation efforts, in 2007, EWS-WWF was pivotal in the formation of the Environmental Footprint Initiative (EFI) and their subsequent publication of the New Lighting Standard will have far reaching impact on DSM within the lighting market. Research indicates that the new Lighting Standard when implemented would reduce CO2 emissions equivalent to taking 165,000 cars off the road.

The EWS-WWF also operates the International Eco Schools Initiative in the UAE and has inducted over 50 UAE schools into the voluntary program creating a benchmark for an environmentally conscious school ethos in the region. The Eco School Initiative provides numerous energy/water conservation and waste management guidelines to schools; offers a detailed seven step implementation plan, and finally offers tiered certification which it awards to schools that comply with the set amount of guidelines. Based on qualitative and quantitative results from the guidelines, the initiative also aims to develop an Environmental Sustainability Index for Eco-Schools whereby schools would be ranked based on their compliance scores.

Sustainable Schools Initiative

The Initiative (*Al Madaris Al Mustadama)* which operates in Abu Dhabi only, was started by the Environment Agency Abu Dhabi and the Abu Dhabi Education Council in September 2008[40]. The Initiative imparts a lasting educational experience for young learners, with lessons on the indicators of sustainability, hands-on experience - children are encouraged to plant and nurture their own food garden – and also facilitates a social forum for students where they can empower themselves further with meaningful environmental activities and projects.

[40] Heroes of the UAE, 2009.

Table 2. A summary of initiatives taken by the UAE Government, their mission, and their goals.

Sustainable Initiatives	Year	Mission & Goals
Royal Decree	2007	The royal mandate was the first initiative of its kind in the country. The Decree ordered that energy efficiency and sustainability be incorporated into all sectors of development.
Ecological Footprint Initiative (EFI)	2007	This initiative seeks to measure and understand the impact the residents of the UAE have on the planet. The results have led to new efficient lighting standards that are currently being implemented.
Masdar City	2007	Abu Dhabi's revolutionary project is home to Masdar Institute of Science and Technology (MIST) which works in close conjunction with MIT, USA. The city is designed to be the first zero-carbon human settlement and its onsite research facility is expected to expedite UAE's carbon footprint reduction goal by facilitating breakthrough technological innovation in energy, water, and waste management sectors.
EPDA	2007	A smaller entity created by the Ras Al Khaimah government, the EPDA promotes the protection of the Emirate’s environment and additionally also provides a platform of scientific and economic development to further environmental conservation.
Esitdama	2008	A rigorous approach towards sustainable planning and construction, the Estidama and its Pearl Rating System is part of Abu Dhabi's vision for a sustainably developed emirate by the year 2030. The Pearl Rating System is the only established green construction criteria which comprehensively addresses new villa (residential) construction.

Dubai Supreme Council of Energy	2009	DSCE was developed to function as a regulatory authority which would facilitate diversification of Dubai's energy sector, and authorize policy, planning & coordination of energy bodies. The Authority is in charge of developing alternative and renewable energy sources for the emirate as well as increasing energy efficiency to reduce demand.
Regulatory and Supervisory Bureau (RSB)	2010	The RSB serves under the DSCE as an independent regulator of electricity and water facilities in Dubai. RSB's role is to secure stable and sustainable sources of energy for Dubai. The Bureau is also responsible for creating the EPC framework taken over by ESCO providers across the emirates.
Dubai Integrated Energy Strategy 2030 (DIES)	2010	The DIES 2030 functions as a policy which further establishes the Decree goals. The Strategy is authorized by the Dubai Supreme Council of Energy and aims to a) redirect Dubai's source of energy by enhancing the market for energy compliance and b) to reduce overall demand for energy in the emirates.
Green Building Code	2010	Dubai's Green Building Codes is mandatory for all new construction in the UAE. Initial compliance reports have already shown a 43% reduction in energy usage and a 15% reduction in water usage. The code is expected to reduce CO2 emissions by 30% by 2030.
Other National Initiatives	1991 1998 2001 2008	EEG Trakhees EWS-WWF Sustainable Schools Initiative

The Emirates Green Building Council (EmiratesGBC)

Mission and Vision

The EmiratesGBC was formed in 2006 with the goal of advancing green building principles in the UAE that would help to protect the environment and promote sustainability. Since its inception, the Council has evolved its mission and vision and today the EmiratesGBC functions as a common platform for all stakeholders (see Fig. 3) in the building industry supply chain, whereby they can meet, discuss, interact, and exchange groundbreaking ideas and help promote a sustainable built environment. Essentially, EmiratesGBC serves the UAE as:

a) A prime driver and facilitator of UAE's position and aspiration to be a global leader in ecological footprint reduction of the built environment and,

b) An independent forum which helps to shape policies that influence the built environment and which facilitate collaborative solutions and promote sustainable practices in the country.

Goals a) and b) comprise EmiratesGBC's **Vision** and **Mission** respectively.

Figure 3. The different stakeholders EmiratesGBC serves to connect within the region.

Formation History

In 2002 and 2003, significant changes began to occur within the UAE: the steady growth and development of the previous decades had sped up suddenly and at an unprecedented level. Massive construction projects were taking hold of available land and towering skyscrapers were sprouting quickly along the Sheikh Zayed Road– development projects ranged from dense urban sub-cities such as the Dubai Marina area, to sparse high-end residential districts such as Downtown Dubai and the Arabian Ranches. In nearly two years, Sheikh Zayed Road had grown a skyline relatively "overnight".

These changes gravely concerned Mrs. Habiba Al-Marashi, then (and current) Chairwoman of the Emirates Environmental Group (EEG). In an interview conducted with her, Mrs. Al-Marashi expressed her views from at the time; her primary concern - in her words - was if these structures were eventually going to serve as a "legacy" for future generations or unfold as a "curse". In other words, she asked herself if all the development taking place was actually sustainable.

An Organization is Born

She deftly embarked on an outreach campaign and began to host and organize community meetings that spanned over a year and featured talks from various industry representatives who were similarly motivated about sustainable green building design and construction. The discussions that took place during these meetings eventually seeded the concept of a Green Building Committee within the EEG. However, ideas quickly began to evolve, promising to offshoot into something larger and more substantial. The need for a more focused institution was evident from the outset and eventually everything fell into place at a historic conference on Green Buildings held in Dubai in May 2005, and attended by what would be the original founders of the Emirates Green Building Council, including Mrs. Al-Marashi.

This conference which was held at the Dubai Chamber of Commerce and Industry and hosted representatives from the World Green Building Council (WGBC) and the Australian Green Building Council (ABGC) as well as several important local entities such as the Dubai Municipality and the Abu Dhabi Environment Agency (EAD). The conference became an ad hoc think-tank with speakers and representatives combining their strong leadership skills and collective motivation to originate the idea of a green building council.

It wasn't long after the conference took place that discussions began to navigate from inception to legality, development, and establishment. Dr. Sadek Owainati, then Deputy General Manager at a major UAE contracting company, recalls the genuine support for the initiative at the time. Meetings continued over two years, and often took place several times a month. The discussions systematically formed the first set of board members whose collaboration eventually led to the formation of the Emirates Green Building Council.

Initial Development

EmiratesGBC was established on a similar financial and structural platform as the EEG with other founding members providing strong logistical support. A professional license was obtained via the Dubai Department of Economic Development (DED) in July 2006. The leadership team at the time was able to produce the EmiratesGBC bylaws in less than a year and subsequently developed a revenue generating system that has effectively sustained the council and its mission to date.

The effort to streamline the organization's logistics culminated with the official launch of EmiratesGBC at a major event held in July 2006 – a fledgling operation but one that had

already generated substantial buzz in the construction and design industry.

The Board

The first official Board meeting took place in early 2006. In an interview, Dr. Owainati recalled the enthusiasm expressed by the initial leadership as they laid down the Council's vision. During the meeting, the new members approved the bylaws and budgets that had been brainstormed during previous meeting sessions, and they voted on new members of the Council's governing body including its officers and technical committees. The next step was to utilize the momentum of interest from within the industry and the Board embarked on an extensive outreach campaign. Most leading companies within the construction industry were approached including developers, material providers, MEP practitioners, as well as financial institutions. Corporations were also visited personally if it was deemed necessary. In addition, the campaign was not exclusive to Dubai but the entire United Arab Emirates to ensure that this was a truly national endeavor.

The campaign eventually reached its deadline with 42 organizations and firms willing to provide crucial seed funding to support the EmiratesGBC platform and serve as additional board members. The incentive was lifetime founding member privileges and entailed three yearly payments of 25,000 AED followed by annual corporate membership payments of 10,000 AED.

Membership details included monetary amounts, recipient and membership limitations, which were carefully legalized into the Council's bylaws. The process took a year, with careful consideration and sometimes mirroring of the bylaws of existing Green Building Councils across the world.[41]

Technical Committee

Soon after its launch, in 2007, a Technical and Award Committee comprising architects, designers, and engineers was set up by the Council to evaluate the applicability of a green building rating system adapted to suit the weather conditions in the UAE. Headed by ARUP representative, Mr. Jeffrey Willis, it was the most active committee in the Council as more members were interested in discussions relating to the technical side of green buildings. The Committee preferred to emulate the guidelines established by LEED for New Construction. Consultations with the US Green Building Council (USGBC) resulted in a prototype guideline drafted as LEED Emirates. The draft was completed in nine months and showcased the enthusiasm of its contributors, while also pointing out the underlying impetus among local professionals to rectify the obvious and egregious regulatory oversight within the building industry that had led to a rise in the UAE's ecological footprint. The project never reached completion as USGBC decided to change course and establish regional credits instead.

Not wanting to waste the efforts made so far, the current chairman at the time, Dr. Sadek Owainati, decided to reroute the Council's goals and publish the finished draft as a local technical

[41] EmiratesGBC was number eight of recognized global GBCs at the time

guideline. The idea was voted down by the EmiratesGBC Board as the contents overlapped strongly with the current LEED regulations and would strategically be unwise to compete with the more established Rating System.

As of the end of 2014, the EmiratesGBC is on course to complete another set of Technical Guidelines which would provide energy retrofitting solutions for existing buildings in the UAE. The EmiratesGBC Technical Guidelines for Retrofitting Existing Buildings is a comprehensive set of instructions written by volunteer EGBC members and partners that guide industry professionals and end-users on the current processes, technologies, and standards in place, for the successful energy efficient retrofit of existing buildings.

The authors who have contributed to the Guidelines share strong expertise and technical knowledge and their voluntary participation affirms their personal and professional commitment towards the green building industry and sustainability at large

Headquarters

Major headway was made when the EGBC office was opened in the Al Quoz district in 2011 after nearly a year of retrofitting carried out largely by member volunteers. The office was designed as a sustainable office with several energy conserving features such as sensor lighting and sustainably sourced interiors such as carpeting and furniture. Attendees at the launch included the UAE resident UNEP Coordinator, EmiratesGBC board members, and several UAE government officials.

ISO Certification

EmiratesGBC obtained ISO Certification 9001-2008 and 14001-2004 in September 2011 and March 2013, respectively. This step further cemented the credibility of the Council and built on its already growing platform on the market.

Partnerships

Another major milestone obtained by the Council was the establishment of partnerships which formed the training ground through which the Council and its members currently enjoy a myriad choice of educational activities and events, such as the Technical Workshops, an Annual Congress, Focus Days and Seminars, and its LEED and Certified Energy Manager (CEM) Training events. Beneficial partnerships, such as with the British University in Dubai, helped bring in added income and built on its technical reputation. A partnership with the Foundation for Environmental Education (FEE) and EWS-WWF in 2013 established the Council as the regional operator for the Green Key Certification. Numerous other partnerships with NGO's, government authorities, and academic institutions further strategically position the Council and expand its reach and offerings.

Organizational Hierarchy

The organizational structure was laid out in the EmiratesGBC bylaws and continues to serve as the framework in

which the Council operates. It is comprised of a Board, founding members, and a membership scheme that was envisioned to grow as the Council expanded its activities.

Board

The EmiratesGBC Board of Directors is comprised of founding members and organizations in the United Arab Emirates that encompass a variety of sectors in the building industry. The Board meets quarterly and oversees the overarching direction and message of the Council.

Staff

Since 2011, the Council has experienced a steady growth in its personnel. With its staff retention rates more stable and the number of staff steadily increasing, the EmiratesGBC office has been able to more effectively engage the Council's members, expand the programs offered, and produce more consistent offerings. In its early development years, the office team consisted only of an Operations Director and Executive Secretary. Today the team also includes positions for Education & Events, Membership & Marketing, and Technical Officers.

Memberships

The Emirates Green Building Council is a membership-driven organization comprised of industry professionals dedicated to green building solutions and practices. Since its inception in 2006, EmiratesGBC has experienced growing corporate and individual membership rates. Members include developers, consultants, engineers, architects, interior designers, contractors, environmentalists, facilities/hospitality management, manufacturers, suppliers, research centers, universities, banks and media. Figure 4 below denotes a breakdown of EmiratesGBC's members based on their various industries[42] as of July 2014:

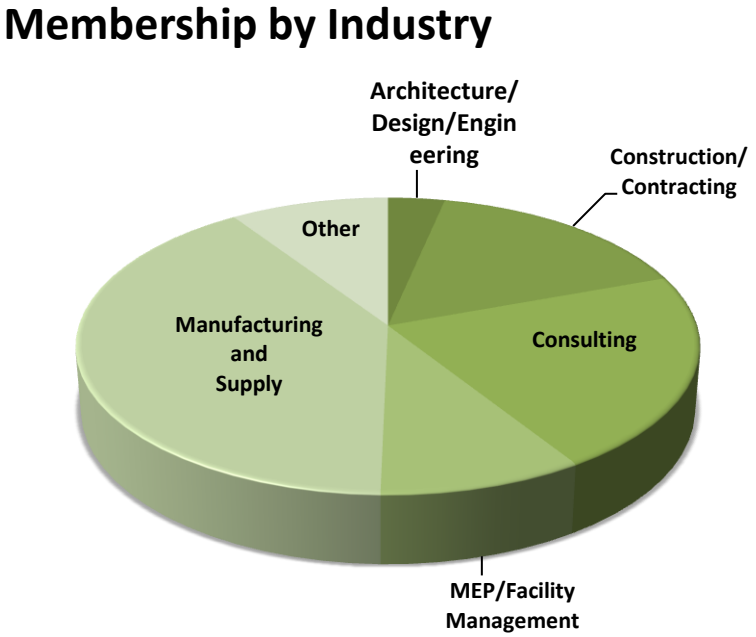
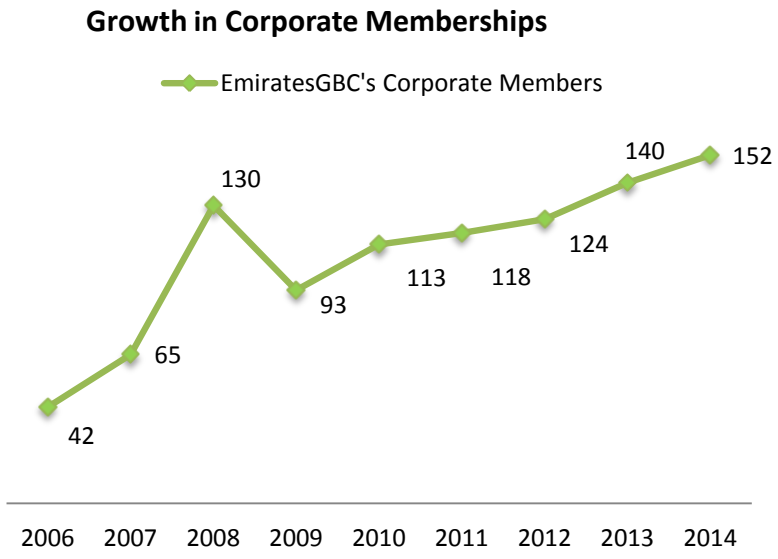


Figure 4. Breakdown of EmiratesGBC corporate members by industry.

The EmiratesGBC corporate member breakdown by industry is not based on exact percentages. The pie chart is based on close estimates taking into account overlapping services provided by several member firms



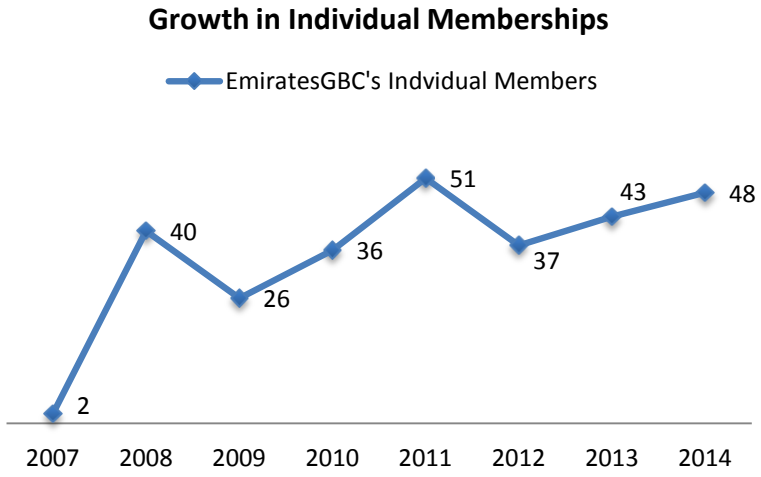


Figure 5 Growth of EmiratesGBC's Corporate and Individual Members

Distribution List

In addition to its corporate members, EmiratesGBC enjoys exposure to a growing base of subscribers who have opted to receive news and updates from the Council. This includes non-members, regional and global green building councils, and other interested industry representatives from the Middle East & North Africa (MENA) region, and around the globe. Figure 6 (below) depicts the rise in subscription rates by members and non-members expressing interest in information published by EmiratesGBC.

Public Relations

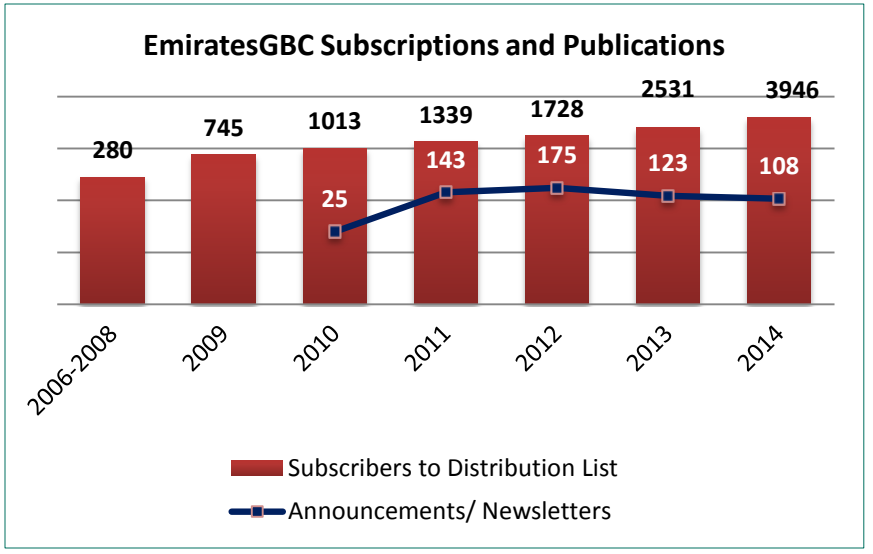


Figure 6 Growth in subscriptions to EmirateGBC's mailing list in relation to announcements/newsletters published by the Council

Public relations have been an important tool used to help widen the exposure of the EmiratesGBC. Since engaging Asdaa as the PR partner in 2011, EmiratesGBC has been featured extensively by local and regional media entities including Construction Week, BGreen, Arab Water World, and UAE today, to name just a few. Topics that are given coverage include interviews and news updates of EmiratesGBC events and initiatives. Press releases have broadened from mostly event announcements to now more technical and informative topics. See figure 7 below.

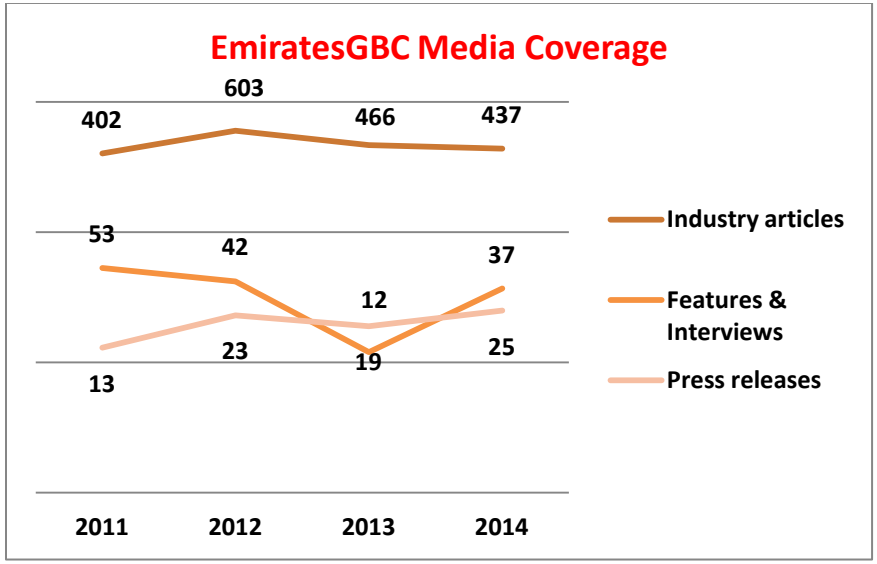


Figure 7 EmiratesGBC media coverage

EmiratesGBC Initiatives & Programs

Memorandum of Understanding (MOU)

Since 2008, EmiratesGBC has reached out and forged strategic partnerships in the region by retaining MOUs with several governmental and non-governmental entities. In addition to the agreement and cooperation of its partners who express support and advocate for EmiratesGBC's long and short-term goals, the MOUs have also served to build the necessary groundwork of environmentally motivated initiatives that can eventually scale up to the federal level and be translated into new environmentally friendly regulations and policies. See Table 3 below.

The following table lists all parties that have signed MOU's with EmiratesGBC:

Current EmiratesGBC MOUs

Government	Semi-Government	NGOs	Academia	Media	Service Exchange
Abu Dhabi Urban Planning Council (UPC) 2012	Dubai Carbon Center of Excellence (DCCE) 2011	Dubai Chamber of Commerce & Industry – Center for Responsible Business 2008	British University in Dubai (BUiD) 2008	Trade Link Media (Southeast Asia Building) 2012	KPMG 2011
Emirates Standardization & Metrology Authority (ESMA) 2013	Masdar 2011	Emirates Environment Group (EEG) 2011	Rochester Institute of Technology - Dubai 2014		Galadari Advocates 2014
Dubai Central Laboratory 2014		Middle East Facilities Management Association (MEFMA) 2011	American University of Sharjah 2014		
Ajman Municipality 2014		Emirates Wildlife Society – WWF (EWS-WWF) 2012			
Ministry of Public Works 2014		Foundation for Environmental Education (FEE) 2013			
Abu Dhabi Quality Control Council (ADQCC) 2014		French Business Council 2013			

Table 3. List of EmiratesGBC strategic partnerships established through MOUs and the year they were established.

Cooperative Agreements with Governmental Organizations

In addition to partnering MOUs with several governmental and non-governmental entities, EmiratesGBC also has informal cooperative arrangements with the following organizations:

- Dubai Municipality
- Dubai Supreme Council of Energy
- Regulatory and Supervisory Bureau
- Etihad ESCO
- RAK EPDA
- Abu Dhabi Dept. of Municipal Affairs

EmiratesGBC Energy Efficiency Program

Research conducted by the Inter Governmental Panel for Climate Change (IPCC) found that improving the efficiency of existing buildings has the highest potential for cost effective reductions in carbon emissions. With a relatively small industrial sector, the majority of electricity consumption in the UAE occurs in buildings with estimates of 80% of total electricity consumption attributable to buildings widely cited.

As a response, the Emirates Green Building Council created a taskforce of industry experts to identify the major challenges that inhibit the widespread implementation of energy efficiency projects in buildings in the UAE and proposed approaches that can be taken to overcome these challenges.

On December 16, 2014, EmiratesGBC officially launched its Energy Efficiency Program (EEP). A program that includes an online database and service that serves to connect all stakeholders in the energy efficiency market and streamline the fragmented energy retrofit industry. Through the EEP, energy consultants will more effectively connect with contractors, equipment vendors, facility management companies, banks, insurance companies and other players in the private sector.

Green Key Program

Green Key is an international sustainability certification program for hotels and accommodations that is managed by the Foundation for Environmental Education (FEE). EmiratesGBC is the national operator of the Green Key certification in the United Arab Emirates since 2013. Green Key is recognized by the World Tourism Organization and the United Nations Environment Program (UNEP), and is the largest global eco-label relating to accommodation.

As of June 2014, EmiratesGBC has audited and awarded 24 four- and five-star hotels with the Green Key certification, while other hotel properties have shown interest in participating in the program. EmiratesGBC is well on its way to growing the certification program in the UAE and encouraging hotels to take part in increasing sustainability efforts.

The Green Key program ties in nicely with the Council's efforts to reach out to the UAE hospitality industry. The hospitality sector is the first sector-based program, launched by

EmiratesGBC in June 2013, and will be used as a basis for the development of other sector-based programs in the future.

EmiratesGBC Events

Annual Congress

The first Annual EmiratesGBC Congress was held in 2012, and the running theme was 'Innovations in Sustainability'. Over 150 delegates participated in the 2-day event which included a conference comprising several distinguished speakers, a gala dinner and workshops. The 2-day Congress was a milestone for EmiratesGBC, showing it had the resources and support to develop and carry out such an important event, one of the few conferences in the UAE organized by a non-commercial organization focusing on green buildings. The conference welcomed several high profile government speakers and also included international speakers.

In December 2013, the 2nd Annual Congress received a positive response and its Gala segment was complemented with the introduction of the first Annual EmiratesGBC Awards Ceremony. The theme for the event was "Building a Green Future" and EGBC proudly hosted over 160 attendees. Guests included dignitaries from the Dubai Supreme Council of Energy, Environment Agency of Abu Dhabi, the Urban Planning Council, and from the MENA GBC network.

The 2014 Annual Congress bought together industry leaders and representatives to discuss the concept of sustainable cities and the exciting opportunities and challenges related to the role of cities and regions in catalyzing sustainable innovation, products, technologies and new business models. The event commenced with a signing of an MOU with the Ministry of Public Works laying a new and important groundwork with the public sector. Audiences were further enlightened by an international panel of speakers from the UNEP, the C40 Group, and the City of Los Angeles, highlighting best practices in city development and planning.

Annual Awards

In June 2014, EmiratesGBC held an exclusive award-giving ceremony at the Grosvenor House Dubai, hosting 107 attendees. The Annual Awards, announced in 2012 alongside the Annual Congress and launched in 2013, was another milestone initiative for EmiratesGBC. While the EmiratesGBC Awards compete with many other awards in the market, it is gaining attention as an awards platform for the industry by an industry forum, which increases its credibility.

The 2014 Awards Gala was showcased for the first time as a standalone event, giving EmiratesGBC two major events each year. Attendees included EmiratesGBC members, industry leaders, award applicants and winners, sponsors and media.

Networking Events

Since 2009, EmiratesGBC has also been hosting networking events which are open to both members and non-members. The networking events feature a short presentation or panel

discussion about a relevant building topic, followed by a short Q&A session and networking opportunity. Topics that have been covered in past events include discussions on green economies, Dubai EXPO, waste management, building energy efficiency, and sustainable housing, to name a few.

To date, EmiratesGBC has hosted a total of 23 Networking Events attended by over 1,200 professionals with an average attendance of 52 participants per event. Figure 9 depicts a visual analysis of the success of EmiratesGBC's events.

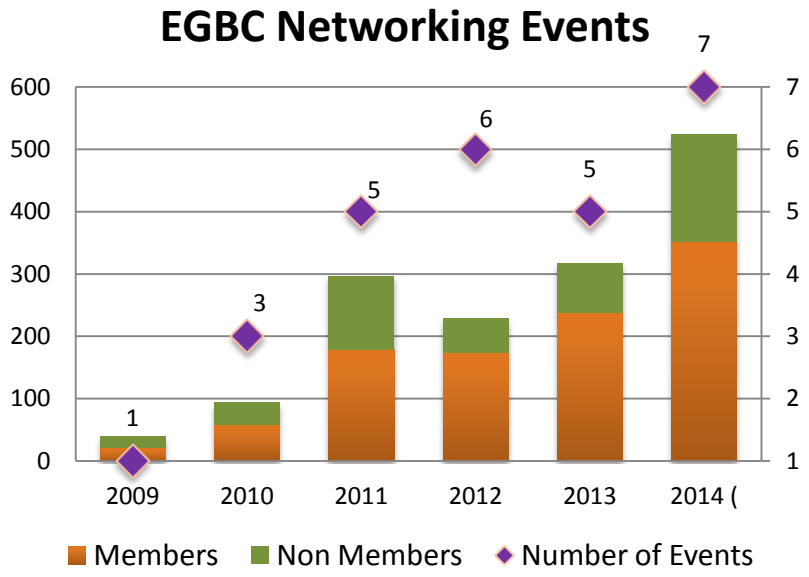


Figure 8 Attendance record at EmiratesGBC Networking Events.

Training Programs

In early 2007, the EmiratesGBC Management Committee had identified a need to introduce technical training for professionals, and it was considered beneficial to start training courses on the LEED sustainable rating offered by USGBC. EmiratesGBC initiated talks with USGBC and coordinated travel and accommodation for a LEED trainer from the US. EmiratesGBC's academic partner, The British University in Dubai (BUiD), agreed to provide their campus as venue for training and with all the logistics in place, EmiratesGBC hosted the first LEED trainings in the UAE. There were three sessions offered in the first year, two in Dubai and one in Abu Dhabi. The first sets of courses were enthusiastically received by the professional industry and attracted a large regional audience including candidates from neighboring countries such as Kuwait. 150 participants attended the first year, and by the end of 2008, EmiratesGBC had trained more than 500 professionals.

Initial training programs provided LEED training courses to its members covering LEED GA and LEED AP (BD+C and EBOM). In 2013, EmiratesGBC branched out to offer a second training program for Certified Energy Manager (CEM) qualifications. The first CEM training course was offered in January in conjunction with the BUiD and the Association of Energy Engineers. To date, EmiratesGBC has facilitated CEM training for over 60 professional candidates; see table 4 below:

Year	Number of Sessions	Type of Training	
		LEED	CEM
2007	2	62	
2008	2	193	
2011	5	76	
2012	5	58	
2013	8	38	45
2014	3	8	19

Table 4. Total number of attendees at EmiratesGBC hosted training programs.

Conferences and Exhibitions

With growing awareness of sustainable development, several conferences and exhibitions have been hosted in the UAE and the MENA region that endorse the vision of UAE leaders for a sustainable built environment, diversification of the energy sector, and effective demand side management. Participating in and attending these conferences and exhibitions allows the EmiratesGBC to present the Council's activities and events, highlight membership benefits and showcase the latest improvements made by the local authorities in terms of green regulations and awareness. They also allow EmiratesGBC to share its expertise from within to present important topics related to sustainable development.

Since 2012, EmiratesGBC has participated in 35 conferences and exhibitions. The following table lists the various events, including exhibitions and conferences where EmiratesGBC has participated. See Table 5 below:

Table 5. EmiratesGBC participation in regional conferences and exhibitions with level of participation highlighted.

	2010	2011	2012	2013	2014
Speaking Engagements	Cost effective sustainable design	Façade and design engineering	Energy Savers UAE	EWS-WWF Energy Workshop (WFES) (SA)	Construction Week's Infrastructure UAE
	Gulf Bid	2nd Annual Cost Design (KSA)	FM Expo	Green Energy (SA & JW)	GCC Ecotourism
	Arabian Construction Week	Sustainability Symposium	Green Middle East	Future Housing Summit (JW)	Urban Agenda 2020
	Power Forum	Building Green ME	Oman Construction Week	MOPW Sustainability Forum (KB)	Greenovation
	Enviro Cities	City Build	Sustainable Architecture & Design-Bgreen	Dubai Global Energy Forum	2nd Edition District Cooling Stakeholders Summit
	Bureau Veritas Energy Management Seminar	Gulf Wastewater Summit	Think Green Conference Jordan GBC	AD Quality Forum	Bgreen
	Affordable Housing	5th Cost Effective Sustainable Design	Breen Networking Event Sustainable Architecture and Design.	Real Estate Sustainable Development Conference	UAE's Contractor's forum
		Qatar Stadium and Venue Design	Affordable Housing Summit Oman	Indoor Air Quality Conference	Sustainable Hospitality
		Future Cities World Architecture Congress	World EcoConstruct	GCC Infra Facilities Management	ME Summit & Awards
		WGBC International Congress	Gulf Wastewater Summit	Sustainable Cooling Infrastructure	Hotel Show

Greenbuild Toronto	RIBA		2nd Global Corporate Real Estate Leaders Summit
Smart Energy	Sustainable Arabia: Clean Energy		Quality Assurance for Sustainable Construction Materials
RIBA Gulf Chapter	Green Day: Summertown		
Greenbuild Congress	Sustainable Design Forum		
EWS-WWF Schools	Arab Renewable Energy Congress		
Sustainable Design Qatar			
Future Concrete Conference			

	2010	2011	2012	2013	2014
Conferences/ Exhibitions Endorsed	World Green Tourism	Solar Investment	Facilities Management ME	World Future Energy Summit	Urban Agenda 2020
			Smart Cities World	MEDMA Bldg materials	Quality Assurance for Sustainable Construction Materials
			Sustainable Design Forum	Green Energy	Quality Assurance for Sustainable Construction Materials
			Future Cities and Cityscape Global	UAE Energy Savers	
			Green ME	Future Housing Summit	
			Big 5 ME	Austrade Green Bldg Seminars	
				WETEX	

	Arab International Real Estate Development Conference
	Middle East Indoor Air Quality
	Power Water Middle East
	Light ME
	Future Cities and Cityscape global
	Big 5
	SB 13

	2010	2011	2012	2013	2014
Exhibitions	Arabian Construction Week	WFES	WFES	WFES	WFES
	Gulf Landscape	WETEX	ME Electricity	ME Electricity/ Solar ME	ME Electricity
	Power Gen Water Exhibition	Arabian Construction Week	WETEX	WETEX	WETEX
	Light ME	Sustainable Facilities	World EcoConstruct	EcoConstruct	Cityscape Abu Dhabi
	Big 5	Cityscape Global	Future CityScape	CityScape	FM Expo
		Green ME	**Green ME**	Big 5	Cityscape Global and Future Cities
		Big 5	Big 5		The Big 5
			FM Expo		Arab Future Cities Summit
					CEBC Forum

Seminars, Workshops, and Focus Forums

Since 2010, EmiratesGBC has provided an active forum of seminars, workshops, and focus forums that promote education and awareness of:

a) Local and industry regulations in sustainable building, construction, and facility management.
b) New and existing regional policies related to energy efficiency, and
c) Innovative solutions for the enhancement of sustainable design in the built environment.

Building tours

In addition to the above activities, EmiratesGBC also hosts building tours of local sustainably built structures to facilitate knowledge and shore up interest and motivation towards new and existing building certification. Recent building tours have included DEWA Headquarters, The Change Initiative in Dubai, Cleveland Clinic Abu Dhabi, Masdar City, and DAFZA. Figure 9 below represents the number of events and attendance rates:

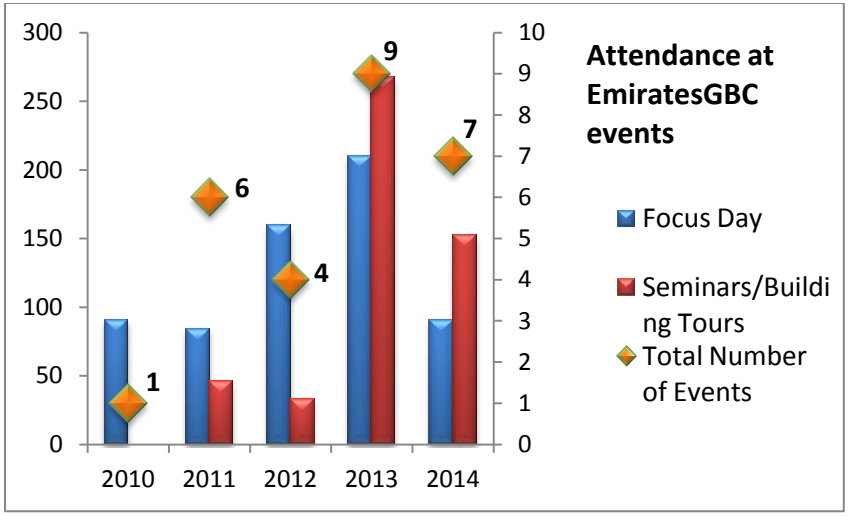


Figure 9 Attendance at other events hosted by EmiratesGBC (Focus Groups, Seminars, and Building Tours). [43]

Workshops

EmiratesGBC began its technical workshop program in 2012, and has since hosted monthly workshops at its office headquarters in Dubai. Discussions on various topics are facilitated by industry representatives from the EmiratesGBC membership directory and reflect contemporary trends in sustainability and pertain to the industries where EmiratesGBC's stakeholders are situated. Workshops are open to EmiratesGBC members and partners only and past workshops have covered a wide range of topics from waste water treatment & reuse to passive environmental design, and have also provided technical overviews of new and current sustainable regulations in the UAE. The graph

[43] Attendance number for 2010 Focus Day is based on estimate.

below offers a comparison between the number of workshops hosted every year and the number of attendees:

Figure 10 Attendance at monthly EmiratesGBC workshops

EmiratesGBC Project Path Timeline

The image below illustrates a table which provides a visual analysis of the programs and workload undertaken by EmiratesGBC.

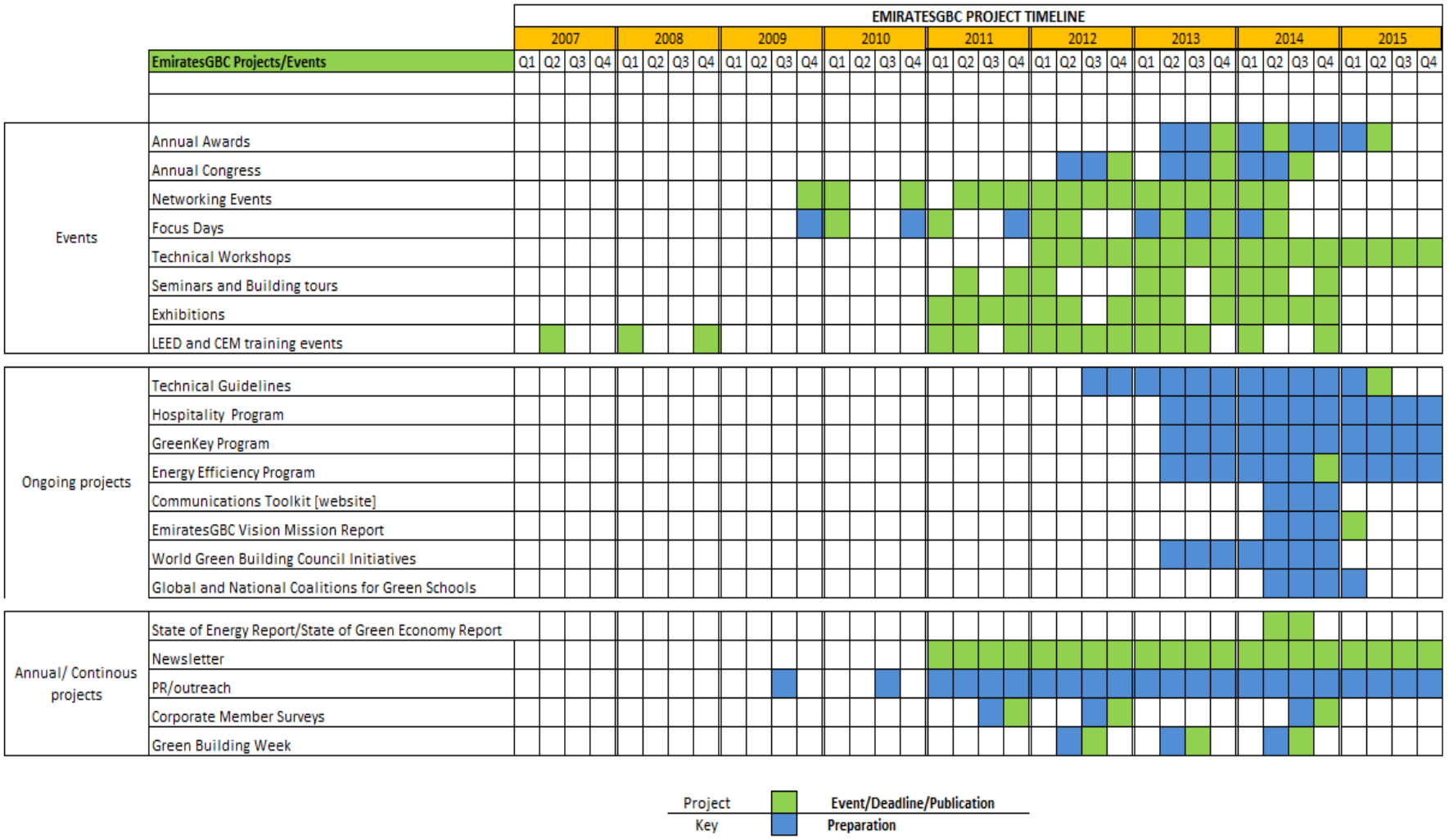


Figure 11 Image of table representing the work path and timeline of projects undertaken by the EmiratesGBC.

Setbacks and Challenges

LEED Emirates

One of the first setbacks that EmiratesGBC faced was a violation of its alliance with the USGBC. The technical committee that the Council set up to create the first set of LEED Construction Guidelines for the UAE, failed to receive feedback on its first draft version. After a stream of delays and mismanagement, in 2009, the USGBC suddenly announced the publication of its new LEED International Guidelines which essentially exhibited the hard work put in by the EmiratesGBC. The LEED Emirates fallout was a lesson for the EmiratesGBC with regards to securing its intellectual property.

LEED International eventually did not materialize and its current namesake is LEED International Roundtable which is a consortium of select global GBCs, and a platform for meeting and discussions regarding the advancement of green building principles and the LEED rating systems' impact across the world. It is managed under the USGBC and EmiratesGBC has representation as part of the roundtable, although meetings are few and far between.

Economic Crisis

The economic crises of 2008 resulted in several founding members withdrawing from their seats and for a temporary period EmiratesGBC had difficulty recruiting new members [see Fig 4 above.]

Strategic Restructuring

The years from 2008 to 2010 were a critical period for the Council financially. Many corporate members were not returning with their membership dues and the EmiratesGBC had to provide concessions which included a fourth year of membership with payment for the third year. Another challenge the Council faced was updating the outdated bylaws to align with the growing EmiratesGBC platform in order to make them practical and implementable. The term 'Founders' was removed from the bylaws and all important team players were consolidated as Board Members; this ensured a dynamic structure that could accommodate Member turnover. The revised bylaws were finalized in January 2014 with the Arabic version submitted to the DED. Under the new structure, if a Board Member resigned, the seat would then be opened up for Corporate Members on a merit basis, thus safeguarding the productivity and structure of the Board.

Market Uptake

The market is often ambivalent to news, ideas, and trends, especially if the newly injected ideas seek to revamp the normal business as usual mode. Introducing new products and services may seem like small steps to purveyors but may seem revolutionary to customers and clients. EmiratesGBC has taken concerted efforts to create awareness of new building concepts by targeting all stakeholders equally.

Conclusion

EmiratesGBC was created to primarily address the building construction industry which is the largest in the country, and to ensure that new development that took place would be environmentally sustainable and would work under a framework of accountability. When EmiratesGBC was formed in 2006, the term 'green building' was unknown among building professionals in the UAE as well as the MENA region. By 2010, EmiratesGBC had become a mainstream term in the sustainable construction industry and government organizations were keen to participate in the Council's events.

In 2009, when EmiratesGBC resurfaced after the economic crisis, its board members revived the Council's mission by emphasizing EGBC's purpose as an education portal for all industry stakeholders, offering a balanced view that upholds global and regional principles of sustainability and conservation.[44] As the previous sections highlight exclusively, the EmiratesGBC has embarked on that path with success.

Sheikh Mohammed Bin Rashid Al Maktoum galvanized the momentum in 2007 by mandating that all new construction in Dubai should measure up to green standards, and EmiratesGBC has helped established the infrastructure of knowledge and collaboration by promoting awareness and education through its events and workshop activates. Thus EmiratesGBC's formation has proved to be auspicious in that regard.

With 30 events held in 2013 alone, and over a 100 outreach campaigns, a growing membership base, and over 800 event attendees in 2014, EmiratesGBC has and continues to serve its mission of providing a dedicated platform where industry leaders and stakeholders can collaborate on sustainable solutions.

Driven by current policy measures, EmiratesGBC's well-informed stakeholders have further gone on to promote sustainable practices across the country, with results highlighted in the latest LPR ranking: given the raw data provided by the Global Footprint Network, the UAE ranks #3 in the list of countries that achieved the highest reduction of their ecological footprint.

EmiratesGBC's continued efforts to make the UAE a trend setter for the region's sustainable goals and initiatives have been effectively achieved, largely due to the synergistic overlapping of its mission with the sustainability goals of the UAE government. Lastly, due to the hard work of its governing board, members, and staff, EmiratesGBC is now identified as the leading Green Building Council in the MENA region.

[44] Stewart, 2009

References

- About Us. (n.d.) *Ports Customs and Free Zone Corporation - Trakhees.* Retrieved August 2015: http://www.trakhees.ae/web/guest/18
- Bitar, Z. 2014. Dh1b Dubai Solar Park Phase 2 Tender Opened by DEWA. Retrieved from: http://gulfnews.com/business/general/dh1b-dubai-solar-park-phase-2-tender-opened-by-dewa-1.1319458
- Construction weekly. 2014. Positive Response to Dubai's Green Building Codes. Retrieved from: http://www.constructionweekonline.com/article-26895-positive-response-to-dubais-green-building-codes/
- Construction WeeklyOnline, Dec. 4, 2008. Whats in a name. Retrieved from : http://www.constructionweekonline.com/article-4010-whats-in-a-name/
- Dubai Strategic Plan 2015. Highlights. Retrieved from: http://www.arabruleoflaw.org/compendium/Files/UAE/94.pdf
- Dubaifaq: http://www.dubaifaqs.com/population-of-uae.php
- Energy Institute, 2014. Estidama: Sustainability Management Model for the Built Environment. Retrieved from: https://www.energyinst.org/documents/2945
- Guidelines on Energy Audit. 2007. The Government of Hong Kong.
- Heroes of the UAE, October 7th 2009. 27 School Directors Pledge to Reduce their Ecological Footprint Through Sustainable Schools Initiative. Retrieved from: en-ergy.heroesoftheuae.ae/en/news/downloads/latest-news/27schooldirectors.html
- Kader, B. 2014. Abu Dhabi Takes Steps to Reduce Water Consumption. Retrieved from: http://gulfnews.com/news/gulf/uae/environment/abu-dhabi-takes-steps-to-reduce-water-consumption-1.1306746
- Living Planet Report, 2014. World Wildlife Federation. Retrieved from: http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/
- Malek, C. 2014. Masdar Science Lab Confident of Meeting UAE Consumption Targets. Retrieved from: http://www.thenational.ae/uae/masdar-science-lab-confident-of-meeting-uae-consumption-targets
- Mayo, A.; Nohria, N.; Mendhro, U.; Cromwell, J. 2010. Sheikh Mohammad and the making of "Dubai Inc". Retrieved from: http://www.kantakji.com/media/5156/w003.pdf
- Power&Water, 2012. DEWA Awards AED 124 mn Solar PV Project to First Solar. Retrieved from: http://www.powerandwater-me.com/2012/10/dewa-awards-solar-pv-power-plant-contract-solar/
- Radan, S. May 2014. Desalination plants to Run on Renewable Energy in Abu Dhabi. Retrieved from : http://www.khaleejtimes.com/kt-article-display-1.asp?xfile=data/nationgeneral/2014/May/nationgeneral_May48.xml&section=nationgeneral.
- Solar Energy in Dubai Mohammed Bin Rashid Al Maktoum Solar Part. n.d. Retrieved from: http://www.emiratessolar.org/wp-con-tent/uploads/2012/11/10.15-Fatima-Al-Shamsi-DEWA.pdf
- Stewart, J. 2009. Exclusive: Emirates Green Building Council is Back. Retrieved from: http://www.constructionweekonline.com/article-5917-exclusive_emirates_green_building_council_is_back/
- The Economist. 2008. Masdar Plan. Retrieved from: http://www.economist.com/node/12673433?story_id=12673433
- The Report Ras Al Khaimah, 2012. Information retrieved from: http://books.google.ae/books?id=u4DxaGNv2VsC&pg=PA74&lpg=PA74&dq=ras+al+khaimah+international+confer-ence+epda&source=bl&ots=Ao85ygRz6T&sig=wFQz7DNJiCo_sCxSZOWgKEnBSbM&hl=en&sa=X&ei=MfZ6U7v0Ieau7Aa0roC4Cw&ved=0CFYQ6AEwCA#v=onepage&q=ras%20al%20khaimah%20international%20conference%20epda&f=false

- The World Bank. 2014. Data: Urban Population. Retrieved October 2014 from: http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS
- The World Bank. 2014. Sustainable Development Overview. Retrieved October 2014 from: http://www.worldbank.org/en/topic/sustainabledevelopment/overview#1
- The World Bank. Doing Business 2014: Understanding Regulations for Small and Medium Sized Enterprises. Retrieved from http://www.doingbusiness.org/~/media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB14-Full-Report.pdf
- Todrova, V. 2012. UAE Industry in Desperate Need of Fishing Overhaul. Retrieved from: http://www.thenational.ae/news/uae-news/environment/uae-fishing-industry-in-desperate-need-of-over-haul
- Wiener-Bonner, D. 2014. UAE Says They Need to Start Securing Food and Water to Cope with Climate Change. Retrieved from : http://www.thewire.com/global/2014/05/uae-says-they-need-to-start-securing-food-and-water-to-cope-with-climate-change/361815/
- Willis, J. 2015. 10 Years of Sustainable Initiatives in the Region. *Architectural Design, 85 (*1), 114-119.. DOI: 10.1002/ad.1861