Sustainable Building in the GCC

A report by

Part of the EMAP network
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The case for energy management

A single indicator makes the case for greater energy management in the GCC: per capita electricity consumption. Despite being on a downward trend in recent years, annual per capita consumption remains close to the 11MWh mark. This is mostly on account of subsidised energy costs, which do little to urge consumers to limit consumption, as well as adoption of energy-intensive processes such as water desalination. Across the GCC, per capita energy consumption levels are considerably higher than larger developed economies such as France, Germany, the UK and Japan.

At current growth rates, driven by high population and economic growth, peak demand projections in the GCC up to 2020 far exceed current installed capacity. Specifically in the UAE, peak demand currently stands at about 17GW, and is expected to grow to just under 40GW by 2020. This places a substantial strain on the government to invest in additional capacity to meet projected demand. The tight gas market in the UAE, moreover, limits further expansion of conventional power generation facilities. The UAE became a net importer of gas, the primary feedstock for power generation in the UAE, in 2008 and this issue has been at the core of its energy strategy. The result has been an increasing interest in alternative and renewable sources of energy, although these are unlikely to sufficiently replace conventional sources over the next decade.

To rein in per capita consumption, therefore, there is a need to adopt widespread energy management measures across a set of key sectors.

Annual electric consumption per capita vs. GDP by country
The first steps…

With buildings using about a quarter of the energy consumed domestically in the Arab region, governments have targeted the sector in their strategy to curtail consumption. The sector is critical to energy management efforts, especially due to the recent revival of the projects market in the GCC. Project awards in the construction* sector posted its second consecutive year of growth last year, hitting $45bn in contract awards, following the protracted slowdown in the market since the 2009 crash.

There are two facets of building energy efficient buildings – utilising “green” design and building materials during the construction phase; and monitoring and controlling energy continually during the operation phase. While there has been ample emphasis on the former in some GCC states, there is considerably less attention paid to the installation of energy management systems (EMS). Having greater focus on EMS should be a critical component in the efforts towards sustainable building in the GCC.

In the UAE, through organisations such as Estidama in Abu Dhabi and Dubai Electricity & Water Authority (Dewa) in Dubai, the country has rolled out the agenda to improve energy efficiency in the construction sector. Estidama’s Pearl Rating System ensures that every new building within the Abu Dhabi municipality utilises “green” building materials and construction methods. The Dewa green building code, while not mandatory and serves more as a guideline for developers and contractors, offers similar recommendations for constructing energy efficient buildings in Dubai. Both are centred on the prescriptive use of building materials, such as additional insulation, better quality HVAC systems, double-glazed glass with a lower u-values, among others, to primarily control energy loss. In this way, both these organisations play a vital role in shaping the future of green building in the UAE.

Paving the way for increased energy management is Qatar with its Global Sustainability Assessment System (GSAS/QSAS), a similar rating system focused on adoption of green design and building materials. While Estidama’s regulations are mandatory across all developments in the emirate of Abu Dhabi, Qatar’s GSAS is presently mandatory only for public sector and high profile private sector projects.

The remaining GCC countries lag behind in terms of developing a fully fledged rating system. However, there is considerable recognition of the need to design and implement these systems. In Saudi Arabia, the Green Building Council has hosted numerous conferences to further the conversation around the issue. While these serve as the first step, there is much ground to be covered on the path to being truly sustainable.
Insights from the market: Trends & Challenges

Evidence from the market suggests that there is significant momentum to improve energy efficiency across the GCC, specifically in the UAE. Discussions with the largest developers in the UAE revealed an openness to using green design and building materials and an acknowledgement of its achievement in reducing energy consumption and operational costs. Across developers, there was an acceptance of the prospect of slightly higher construction costs through the procurement of green building materials to achieve lower operational costs over the life of the building. This opens the door to a larger conversation about the adoption of energy management systems for a more complete approach to green building.

However, the sector is held back by many critical issues. While the regulations put in place by organisations such as Estidama are moving the sector forward, they stop short of a mandate for installation of energy management systems. With heavily subsidised energy costs, high capital investment and no regulatory mandate, there is little economic incentive for developers to invest in the infrastructure to monitor and manage energy consumption. This lies at the heart of the issue in this highly price-sensitive market.

Exacerbating this further is the general attitude of distrust that exists between developers and suppliers of these systems. This stems from experiences gone sour, on account of substantial unforeseen costs for periodic system upgrades, and a general lack of transparency in the process. Overall, developers remain unconvinced of the potential of these systems to provide adequate returns on the large initial capital investment through sufficient reduction in operational costs.

Furthermore, the broad belief that the systems are ineffectual can be attributed to two key issues. A core element of a successful energy management system is proper utilisation by the end-user and adherence to certain behavioural codes, the lack of which serve as the first impediment. An example cited is a simple failure to close windows and doors when air-conditioning is turned on. The second issue is the limited availability of skilled analysts and technical staff with the requisite experience to effectively maintain facilities, monitor energy usage and provide proper solutions.

Sources: MEED Insight

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Sustainable Building in the GCC

Moving forward..

To overcome the challenges prevalent in the energy management sector, there are a number of initiatives that can be implemented. There are no quick wins and each requires considerable effort and planning on the part of the government, developers and suppliers alike. Successful implementation of these will largely determine if any real progress is made in the sector.

### Solutions for the energy management sector

**Government initiatives**

- **Reduction or removal of energy subsidies**
  - Energy costs are highly subsidised in the GCC, far below the global average.
  - To minimise the impact, these can be increased in increments to gradually bring rates in line with the international market.
  - Politically, this initiative proves challenging.

- **Regulatory expansion**
  - A mandate from the government to install EMS to continually monitor and control energy usage would overcome the need for an economic incentive through reduction of subsidies.

- **Case studies**
  - Developing independent research proving energy and cost savings in existing developments through the installation of EMS will counter the broad belief that these systems are ineffective.

- **Incentives**
  - Incentives may be provided to developers or end-users (e.g., residents) in the form of “cash-back” opportunities for meeting energy savings targets.

- **End-user education**
  - End-users of properties may be educated on optimal usage of EMS through training sessions or print materials.
  - This is aimed to bring about behavioural changes, some as simple as closing windows to minimise energy loss.

- **Greater transparency**
  - Explaining in greater depth the various steps that the installation and operation of EMS entails, specifically how savings are achieved, periodic hardware and software updates required in subsequent years and the cost this entails.

**Developer initiatives**

- **Hiring skilled analysts and facility managers**
  - Building user trust requires interaction with experienced and knowledgeable facility managers and data analysts to provide adequate services ranging from proper meter calibration to generation of pragmatic energy saving strategies.

**Supplier and facility management initiatives**

- **Case studies**
  - Developing independent research proving energy and cost savings in existing developments through the installation of EMS will counter the broad belief that these systems are ineffective.

- **Incentives**
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- **End-user education**
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**Sources:** MEED Insight
Market potential

With the right strategy mix in place, the energy management sector is poised for real growth in the forthcoming years.

Investment in energy management systems dipped after the property market crash of 2009, with fewer new construction projects in the pipeline. In the UAE, investment levels in new systems in 2013 is estimated at just under $30m a year. For the GCC as a whole, investment is estimated at $63m.

Much of the current investment in management systems comprises basic building management systems, without a substantive energy management component. The adoption of fully fledged energy management systems, which entails the use of additional sensors and specific software to synthesise energy usage, remains low, and is estimated at about 20 per cent of new projects awarded each year in the UAE.

Adoption levels across the GCC are far lower, owing to a lack of codified regulation. With Qatar further along the way, and with a sufficient number of high-profile projects in Saudi Arabia, these markets also show promise.

Implementation of EMS has so far been limited to high-profile, high-value projects that are owned and operated by the developer. Interest for energy management is therefore visible in sectors such as hospitality, healthcare and mixed-use properties, where the developer bears the burden of operational expenses. This reiterates the primary motive for monitoring energy in the region – to minimise operational costs. Where costs are passed on to end-users, as with residential projects, there is little interest in EMS investment.
Conclusion

Going forward, the current ramp up in project activity will drive growth in the sector, presenting a real opportunity for expansion of the green sector as the regulation implemented so far applies primarily to greenfield projects. Higher-than-expected levels of investment may be achieved if efforts made by organisations such as Estidama and Dewa bear fruit.

Currently, responsibility for EMS installation in projects lies with the developer. But with high initial capital investment and no mandate from the government, few are exploring the option.

Changing attitudes and awareness levels, however, is a long-term effort, requiring a huge educational undertaking across the board, from end-user behaviour alteration to training of technical facility management staff. Additionally, measures to incentivise energy monitoring, primarily through government regulation and rewards, may result in higher adoption levels of EMS over the next few years. Without the right incentives in place, the market can only progress slowly, squandering a $100m a year market opportunity in the interim.

About MEED Insight

MEED Insight is the consulting arm of the MEED business. It provides bespoke market research, business plans, feasibility studies and corporate strategy development studies to help our clients make more profitable and informed business decisions. MEED Insight has access to a wealth of regional information ranging from broad macroeconomic statistics to specific sector data to help its clients accurately and cost effectively forecast market growth and trends.

MEED Insight has a particular focus on project-related market data thanks to its proprietary database of projects in the region, MEED Projects. Thanks to the respected MEED name and magazine, MEED Insight consultants have considerable access to the market, enabling them to speak directly to clients, consultants, government ministries and other companies.

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