Time to

Many energy savings initiatives in buildings can be achieved with little or no cost, simply through careful building design and good management practices.

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Surveys have shown that buildings account for around one third of the world's total energy consumption and a similar percentage of the world's greenhouse gas emissions, making them a major concern when it comes to the issue of climate change.

Since buildings last for many decades, the way they are designed and constructed today will definitely affect the world's future energy consumption patterns and environmental conditions tomorrow.

In a city with a high density of high-rise commercial and residential buildings such as Hong Kong, buildings account for 89 per cent of total electricity consumption. Lifts and escalators account for up to15 per cent of buildings' energy consumption.

In 2007, the Asia Business Council in Hong Kong published a study, "*Building Energy Efficiency – why green buildings are key to Asia's future*". This study included interviews with more than 70 experts throughout the region and overseas. The study says that energy efficiency is one of the quickest, cheapest and cleanest ways to address energy and environmental challenges. Yet, the great potential for efficiency improvement is largely untapped in Asia.

Another key finding is that, contrary to popular perceptions; research confirms that many energy savings initiatives can be achieved with little or no cost simply through careful building design and good management practices.

Why are they not doing it?

The building sector accounts for more than 50 per cent of Hong Kong's total energy consumption; and this percentage is rising as energy consumption in the building sector grows faster than in other sectors.

go green

Kevin Edmunds of the BEC encourages a system for buildings where the energy management is measured and monitored.

If we just look at the total electricity consumption at end-user level in Hong Kong, which is about 40 billion kilowatt-hours, then 89 per cent of consumption can be accounted for by buildings.

Therefore, promoting energy efficiency in buildings is an effective measure for achieving energy conservation, helping alleviate climate change and improve air quality.

Many technological and other solutions can be used to improve buildings' energy efficiency, as seen in the numerous green building projects being developed around the world.

However, without incentives, improvements in building energy efficiency will continue at a slow pace. Therefore, governments have a role in mandating regulations to ensure faster developments.

The Hong Kong government has established high environmental standards for public buildings. A main contractor and its sub-contractors all have to comply with government legislation and ensure they have a waste management plan. But this only applies to government projects.

The Housing Authority has also put a lot of effort into environmental design, but this is, of course, also constrained by budget limits.

In the private sector, in general, there is little pressure on contractors.

Government energy scheme – does it really work?

In 1998, the Hong Kong government introduced four voluntary building energy codes for lighting, air conditioning, electrical systems and lifts and escalators. The purpose of the voluntary scheme has been to provide a role model and showcase energy-efficiency technologies and practices for the private sector. Lobbying organisations do not think this is enough.

Kevin Edmunds, chief operating officer of the Business Environment Council (BEC), calls Hong Kong's efforts "a very modest success".

In 2001, the government introduced the Energy Efficiency Registration Scheme to encourage developers to adopt the energy codes. The scheme, which also is voluntary, means that developers and owners can get a certificate if they fulfil certain criteria.

However, the scheme has seen a low participation rate. Since the implementation of the scheme, the

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Electrical and Mechanical Services Department (EMSD) has issued a total of only 1,981 certificates, covering 791 building venues. Of the 791 buildings, 76 per cent are government premises. In other words, only 187 non-government premises have come forward for registration over a nine-year period.

"In general, these energy codes have not been tough enough. It has not been difficult to comply with the codes and there has not been any real value for a developer to get a certificate," says Kevin Edmunds.

The government has now proposed mandatory implementation of the building energy codes.

The BEC has many concerns about the mandatory scheme. First, the codes mainly apply to new buildings, which make up a very small proportion of Hong Kong's total buildings, only about 5 per cent per year.

Second, even a high-quality new building will not use much less energy if these mandatory codes are implemented, because the energy efficiency standards in the codes are not particularly high.

Global retrofit programme

Hong Kong has signed up for former US president Bill Clinton's climate initiative, C40, which brings 40 cities around the world together in tackling climate change. Hong Kong was not among the 15 cities that have joined a special retrofit programme. However, five of the cities are in Asia.

The C40 Energy Efficiency Building Retrofit Programme developed by the Clinton Climate Initiative brings together 15 of the world's largest cities, five of the world's largest banks and four of the world's largest energy service companies.

The programme will offer building owners a package with three elements:

- An energy audit to quantify current energy use and emissions from a building and recommendations on a full range of measures to reduce them.
- A comprehensive, discounted offer of goods and services guaranteed to deliver the identified reductions.
- Finance to pay for the works, paid back through the guaranteed energy savings.

This initiative will deliver a real economic benefit for participating public sector and commercial organisations, and is expected to lead to annual energy savings of between 20 and 50 per cent.

The initial group of 15 of the world's largest cities that have agreed to participate in the retrofit programme are Bangkok, Berlin, Chicago, Delhi, Houston, Johannesburg, Karachi, London, Melbourne, Mexico City, New York, Tokyo, Toronto, Sao Paulo and Seoul. The participating banks are ABN AMRO, Citibank, Deutsche Bank, JP Morgan and UBS. The participating energy services companies are Honeywell, Johnson Controls, Trane and Siemens.

The current proposal will require that if a building undergoes refurbishment of 50 per cent of its floor area, then it has to comply with the energy codes, a similar approach to the regulations within the European Union (EU).

This reflects a concern that a lot of energy is used within the retail sector, where the retailers refurbish their stores frequently with no controls.

Green rating systems

In Asia, the most well known green building rating and certification systems are BEAM, LEED and the Green Mark.

Hong Kong's Building Environmental Assessment Method (BEAM) is the most widely used green building scheme in Hong Kong. It was initiated by the Business Environment Council (BEC) in 1995. Certification is voluntary with buildings achieving BEAM ratings of bronze, silver, gold or platinum according to their level of performance.

More than 100 BEAM best-practice criteria address sustainability issues, including energy and water, indoor environment, materials and waste and site aspects.

In Hong Kong, over 150 green building developments had been certified as of February 2008, including well-known Hong Kong buildings such as York House, Three Exchange Square, Pacific Place, Festival Walk and AIG Tower.

Singapore's Building and Construction Authority launched in 2005 the Green Mark Scheme, a rating system to evaluate a building for its environmental impact and performance. The Green Mark is intended to promote sustainability in the built environment and raise environmental awareness among developers, designers and builders when they start project conceptualisation and design, as well as during construction.

The Leadership in Energy and Environmental Design (LEED) is a green building rating system developed by the US Green Building Council and is widely used in the US and Canada. LEED promotes a holistic sustainability approach that covers the whole building in five areas: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

The energy codes will mostly apply to commercial buildings. In residential buildings the codes will apply to common areas such as lift lobbies, but not the interiors of individual flats. The market is probably still not ready for that yet, despite the fact that in Europe surveys have shown that buyers are willing to pay 5 per cent more for a flat or a house if they can save more energy.

The BEC has suggested that there should be a performance-based control system, similar to those already in place in most countries for cars.

While cars, in most countries, have to meet increasingly strict fuel-efficiency standards, buildings have, for the most part, got off easily. Surprisingly little attention has been paid to ensuring energy efficiency in buildings, despite the tremendous impact buildings have on costs and the environment.

"For buildings, we encourage another system where the energy management is measured and monitored. It is rather easy to identify an inefficient building and that is why the government should target the inefficient buildings in first place," says Edmunds.

The private sector

Even if the private sector in Hong Kong has mostly not yet responded to the government's voluntary rules, there are exceptions.

"Hongkong Land and Swire Properties are taking these issues very seriously," says Kevin Edmunds, mentioning two large developers as examples of good practice.

In most buildings in Hong Kong, energy consumption is not monitored very closely. Landlords probably know about the total energy use, but not how it is shared between lighting, air conditioning, lifts and escalators.

In Hong Kong, buildings account for 89 per cent of total electricity consumption.

Higher energy costs could boost the motivation for developers and landlords to reduce the use of energy.

"Hongkong Land and Swire Properties measure and monitor their energy consumption very closely. They analyse how the energy is used and it means that they can see very quickly if something is happening, for example if the consumption goes up in one area of a building."

These developers also try new things and measure their success, according to Edmunds, for example, by trying innovative use of air conditioning and lighting systems and by providing different billing arrangements for tenants, while measuring the performance of such experiments.

In the design of their new buildings, Hongkong Land and Swire Properties have very rigorous expectations of their design consultants.

The tenant's role

But it is also a fact that tenants could make energy management a business priority and some already do.

In 2004, HSBC announced that it would be the first major bank in the world to commit to going "carbon neutral". The bank, which is one the world's largest, launched a package of environmental measures, including the reduction of energy use and buying green electricity in order to reduce its global carbon dioxide emissions to zero. HSBC managed to achieve its objective three months ahead of schedule, in less than a year.

Companies, such as Hongkong Land and Swire, have well-developed corporate social responsibility (CSR) policies and by complying to high environmental standards they could raise standards for the whole market.

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The push for CSR could be a great incentive for creating green buildings. For example, international tenants in a commercial building can have a big impact, since they are obliged from their headquarters to follow the CSR policies very carefully.

How did others do it?

Edmunds also observes that in the US, Europe and Australia, the development towards green buildings has been driven by a few product providers that have taken the lead.

"We haven't seen a big impact in Hong Kong yet, but, definitely, international tenants can play a major role in making our buildings more green," says Edmunds.

However, he points out that most offices in Hong Kong are still occupied by local small- and medium-sized enterprises that are, in most cases, not aware or fail to see the future benefits of investing in green solutions today.

In general, industry associations in Asia have not yet played a significant role in the move towards green buildings. They have been leaving initiatives largely to governments. This trend differs from the US and Europe, where industry initiatives are one of the driving forces behind a market-led transformation toward greater efficiency and sustainability.

In Europe, different nations have joined together and provided funding together with developers for demonstration projects, allowing exchanges of information and knowledge between different countries. Kevin Edmunds of the BEC mentions this as a good learning experience and he recommends that the APEC nations could do the same.

But today, unfortunately, investors are not pushing for this and more pressure from investors is needed to create green buildings.

Globally, a movement towards more sustainable growth is gaining momentum at a rapid pace and in Asia, businesses and governments should re-think their assumptions and chart new grounds.

Another driving force towards more green buildings could be energy prices. From the mid-1980s to 2003, the inflation-adjusted price of a barrel of crude oil was generally under US$25 per barrel. However, since then, prices have jumped to more than US$140 per barrel and some analysts forecast that the price could reach US$200 within a few years.

These higher energy costs could boost the motivation for developers and landlords to reduce the use of energy.

"If the increases are passed on to the consumer, it would definitely make landlords and property managers more careful," says Edmunds.

It is a myth that environmentally friendly buildings are more expensive. Greater efficiency means that consumers can enjoy the same level of comfort and use less energy at the same time. And when it comes to efficiency, improvements in buildings offer the most cost-effective way to reduce energy use and greenhouse gas emissions. ●

China's energy consumption growth is predicted to be the highest in the world.

Japan has learnt from the oil shocks of the 1970s.

Singapore depends entirely on imports for its energy needs.