ISSUE 5

Sustainability

ASIA PACIFIC

ENVIRONMENT MATTERS FOR REAL ESTATE

RETAIL GOES GREEN

SUSTAINABLE PRACTICES IN SHOPPING MALL DEVELOPMENT AND MANAGEMENT IN ASIA PACIFIC

Trends in valuing sustainability

Best practice insights

A discussion on Integrated Design with Jerry Yudelson

Market news from around the region

Climate change news and analysis

CBRE

contents

foreword

Welcome to the fifth issue of Sustainability Asia Pacific, CBRE's annual publication covering the latest regional news and developments in green real estate.

This issue sees us look at some of the progress being made towards sustainability in the retail sector. Many shopping centre owners and retailers remain unconvinced of the financial returns to be gained from investing in sustainability, whilst the complex nature of shopping malls makes it challenging to introduce legislation for energy usage and environmental impacts. Retailers have also yet to make the same environmental requirements of landlords as office occupiers. However, we are now beginning to see some encouraging progress in the retail sector in Asia Pacific by a select group of developers with long standing commitments to sustainability. In our main feature we examine how these market leaders are integrating environmental and social issues into the construction and management of their retail property holdings and investments.

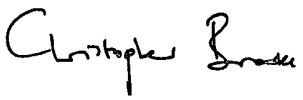
Also in this edition we look at some of the trends in valuing sustainable buildings. The uncertain economic outlook has created a culture of caution for many firms and as a result, investment in green initiatives has been subject to greater scrutiny. However, even in a cost-conscious environment, a large number of green buildings are still being prioritised. Concerns around rising energy costs and energy security are likely to be a strong influence on investment patterns, whilst sustainable buildings are also perceived to have enhanced marketability in some sectors. Hard evidence of the value of sustainable buildings is being sought and demonstrated through an increasing number of studies internationally.

Finally, we interview Jerry Yudelson, a renowned green building expert and author of twelve green building books, on how the development of integrated design in the United States may come to influence projects in Asia Pacific. Integrated design turns the linear and compartmentalised production line process of traditional design-and-build projects on its head, emphasising a completely different approach that seeks to include all project stakeholders in an inclusive dialogue at the start of the design phase. We profile how leading projects in the US are using this alternative approach to design cost-effective and high performance green buildings

In addition, we provide our usual round-up of green real estate news from the major markets around the region and review the latest issues and developments related to climate change.

Thanks again for your ongoing support and I hope you enjoy the fifth issue of Sustainability Asia Pacific.

Many shopping centre owners and retailers remain unconvinced of the financial returns to be gained from investing in sustainability, whilst the complex nature of shopping malls makes it challenging to introduce legislation for energy usage and environmental impacts



CHRIS BROOKE
EXECUTIVE MANAGING DIRECTOR
CONSULTING, ASIA PACIFIC

market news

A roundup of green building news from across the region

Australia marks first anniversary of compulsory energy-efficiency disclosures

In November 2012 Australia's commercial property sector marked the first anniversary of compulsory energy-efficiency disclosures. Since 1 November 2011 a registered Building Energy Efficiency Certificate or BEEC is required when selling or leasing over 2000 sq. m of office space in Australia, in addition to the NABERS Energy rating. This applies to all campaigns, including those that have commenced (but not yet exchanged/signed leases) and off market transactions. All marketing and formal correspondence on deals must be suspended until a BEEC is in place. Failure to comply can result in fines being applied to property owners and agents. Since the new measures have come into force just two non-compliance orders have been issued among around 1,300 transactions.

PCA unveils greener quality office matrix

The Property Council of Australia announced in December 2011 that a prime rated building must also be rated five star Green Star and carry a NABERS Energy rating, following the latest review of its quality office matrix. In order for a building to be rated premium grade it must perform tests on separate metrics for energy, water, waste and indoor environment quality. Other new requirements include specified zone sizes in chilled beam air conditioning systems and new metrics for destination control systems in elevators.

100 Green Star buildings certified in 2011

The Green Building Council of Australia (GBCA) certified 100 Green Star buildings in 2011, the highest in any one year. More than 390 buildings have now achieved Green Star ratings and nearly 550 have been registered for Green Star certification since 2003 when the GBCA launched the Green Star system. According to the GBCA around 18 per cent of CBD office space in Australia is now certified.

Stockland tops Dow Jones Sustainability Index

Australian developer Stockland has been named the world's most sustainable property company in the Dow Jones Sustainability Index for 2011-2012. The index evaluates the corporate governance, risk management, climate change mitigation and stakeholder engagement performance of property companies around the world. Stockland recorded a total score of 90 compared to the average score of 63. The company says it has reduced greenhouse gas emissions intensity by 38% across its office portfolio and by 18% across its retail portfolio since 2006.

China plans to construct more green buildings

An official document jointly released by the Ministry of Finance and the Ministry of Housing and Urban-Rural Development in May 2012 entitled "'Guidelines on Promoting China's Green Buildings" stated that energy-efficient buildings will account for 30% of new construction projects in China by 2020. The target is the first country's first announced goal for the development of green buildings and reflects its strong to speeding up the development of energy-efficient construction. The document states that the government will adopt various measures including increasing policy incentives and improving industry standards as well as promoting technological progress and the development of related industries. The country is expected to invest over US$158 billion in energy efficient buildings by 2020.

Shanghai offers big green incentives

In August 2012 the Shanghai Urban Construction and Communications Commission announced that the local government had pledged to subsidise green property development projects to minimise pollution and boost energy efficiency across the city. The local government will provide subsidies of up to RMB 6 million for each construction project and RMB 10 million for each affordable housing project. Property developers have been able to apply for the green subsidy since September 15 and must install energy efficient devices, including solar panels and shading facilities to reduce energy consumption, in order to meet requirements. The subsidy is reportedly one of the highest nationwide.

First zero-carbon emissions building completed

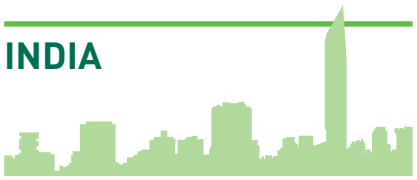
Hong Kong's first zero-carbon emissions building formally opened to the public in September 2012. The HK$240 million joint project by the Construction Industry Council and the Development

Bureau is situated in Kowloon Bay. The two-storey 50,000 sq. ft. building will use an estimated 145 megawatt hours of electricity per year but will generate 225MWh per year, 30% from solar panels and 70% from biodiesel made from used cooking oil, resulting in a surplus of 80MWh. The project is aimed at educating the public about eco-friendly living and will also provide a platform for sharing the latest technology in sustainable development.

Google and Pacnet plan new green data centers

Google has acquired land in Hong Kong upon which it plans to construct one of its first data centres in Asia. The company says the US$300 million project will be completed within one to two years and has pledged for it to be energy efficient and environmentally friendly. At the same time, telecoms provider Pacnet has announced plans to build a second data centre in Hong Kong at its existing EAC-1 cable landing station in Tseung Kwan O. In July 2012 NTT Communications' Hong Kong Data Centre became the first data centre in the city to achieve LEED Certification for improvements to existing buildings.

INDIA



IGBC expects green building footprint to soar

The Indian Green Building Council (IGBC) says it expects there to be nearly 2 billion sq. ft. of green building floor space in India by 2015. As of September 2012 some 1,745 eco-friendly building projects providing over 1.21 billion sq. ft. of green space were registered with the IGBC.

TERI and HUDCO sign MoU to promote green buildings

The Energy and Resources Institute (TERI) and the Housing and Urban Development Corporation (HUDCO) signed a MoU in September 2011 to encourage energy conservation in urban areas and cities across India. Under the purview of the MoU, TERI and HUDCO will work to help implement the government's directive that all buildings constructed by the Central Government should aim to achieve a three star green building rating.

MNRE releases guidelines for green large area developments

The Ministry of New and Renewable Energy (MNRE) in association with the Association for Research and Development of Sustainable Habitats (ADARSH) has released a set of draft guidelines and benchmarks for the development of green large areas. Green large area developments include townships, educational campuses and special economic zones. The guidelines focus on a range of issues including the selection and assessment of sites, water and waste water management systems, climate change and the various incentives offered by MNRE for parties interested in pursuing such projects.

INDONESIA

Regulation on green buildings set to come into force

The Jakarta Construction Supervision and Regulation Agency (P2B) has announced that owners of large buildings must follow environmental guidelines as laid out in the governor's 2012 regulation on green buildings, with effect from April 2013. Shopping malls, offices and apartment complexes of over 50,000 sq. m, hotels and health centres of more than 20,000 sq. m and schools and other educational centers of 10,000 sq. m will be subject to the regulations. The P2B will not issue permits for new buildings or feasibility certificates for existing buildings which fail to comply with the regulations. Buildings are subject to five categories of compliance: building management, energy efficiency, water conservation, air quality and site usage.

JAPAN

New feed-in tariff system introduced

On July 1 2012 a new law took effect in Japan requiring utilities to purchase electricity generated from five renewable energy sources under what is known as a feed-in tariff (FIT) system. The FIT is an amount paid by a government to businesses, individual households and other organisations to generate renewable electricity. That power is then sold to the utilities at a fixed rate over a set period of time. The goal is to encourage investment in renewable electricity generation by ensuring that providers of such power can profit over a certain period of time and that prices will remain stable for the purchases required by the utilities.

Mitsui Sumitomo Bank launches building evaluation fund

Mitsui Sumitomo Bank has begun offering a service to evaluate and certify office buildings with superior environmental performance. Named "The SMBC Environmental Building Evaluation Fund," the service rates the environmental and seismic performance of a building, as well as the operational policies of its managers. Buildings can be awarded Platinum, Gold, Silver, Bronze and Unevaluated certification. The bank intends to use the new environmental performance metrics to establish loan criteria including interest rates.

MLIT launches green real estate internet portal

The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) has established a Green Building Online Portal on its website at www.mlit.go.jp. The site features case studies of best practice in green building in Japan and also includes easy-to-understand explanations of environmental performance evaluation standards and certification schemes such as CASBEE.

KOREA

Govt offers incentives for green building design

The Ministry of Land, Transport and Maritime Affairs announced in December 2011 that more incentive payments will be given to architects that adopt and apply green building certified designs. Detailed energy efficiency ratings, intelligent building design and BIM design are now to be included in the criteria for incentive pools. Incentives will be given depending on the difficulty of realising the environmental-friendly design and will be included in design costs. The government will also manage the design cost through adjustment rates to reduce the cost burden on developers.

Korea to host US$100 billion Green Climate Fund

South Korea has been selected as the official host for the UN's new Green Climate Fund (GCF) after the fund's board approved plans for a new headquarters in Songdo, Incheon City. The formation of the GCF was announced at the 2011 UN climate change summit in Durban as a way of managing the US$ 100 billion a year in climate-related funding which countries have committed to delivering by 2020.

Government approves carbon trading scheme

In May 2012 Korea approved a national emissions trading scheme to tackle its growing greenhouse gas emissions. The scheme focuses on industrial operations producing more than 25,000 tons of (CO2) a year and caps carbon pollution across the economy, from steelmakers, ship-builders and power generators to even large universities, encouraging them to become more energy efficient. The programme is due to launch in January 2015 and could potentially be linked to other schemes as part of a global effort to curb carbon pollution. To meet the mandatory cap firms will be able to trade emissions permits or buy carbon offsets from U.N.-backed clean energy projects in poorer nations.

MALAYSIA

REHDA requests funding for energy efficient buildings

The Real Estate and Housing Developer's Association Malaysia (REHDA) has called on the Malaysian government to include in the 2013 budget a fund to cover part of the cost of renovating various buildings to become more energy-efficient. REHDA has also encouraged the government to acknowledge international green certificate rating systems including LEED, Green Star, BREEAM, and Green Mark as part of the qualification system for incentives provided by the government.

NEW ZEALAND

NZGBC launches green rebuild assessment tool for Christchurch

The New Zealand Green Building Council (NZGBC) in partnership with Christchurch City Council (CCC) has launched a green rebuild assessment tool for Christchurch, which continues to recover from the February 2011 earthquake which devastated large areas of the city. The Christchurch rebuild tool will apply to multiple building types (office, retail and residential and combinations of these) and feature a streamlined, affordable submission and assessment process. It will also have a number of conditional requirements in areas such as energy, thermal comfort, ventilation and water efficiency, and project teams will be able to select from a broad range of additional credits to achieve a pass mark.

PHILIPPINES

DBP promotes green financing scheme

State-owned Development Bank of the Philippines (DBP) unveiled a green financing programme in September

2012 to promote green projects in both the private and government sector by providing financing and technical assistance. Projects eligible for the scheme include pollution and waste management projects, green building construction and property management including hotels, resorts, and restaurants, green transport, and other environment-friendly initiatives like energy efficient lighting, urban greening, rehabilitation of water bodies and endangered ecosystems, and eco-tourism projects.

SINGAPORE

Govt launches green financing for buildings

The government has launched the Building Retrofit Energy Efficiency Financing (BREEF) pilot scheme to provide loans to building owners and energy services companies to enable them to undertake energy retrofits. The Building Construction Authority (BCA) will partner with two financial institutions – Standard Chartered Bank and United Overseas Bank – to finance the loans. Under the scheme the BCA and the banks will share the risk of any loan default. To complement the financing scheme, the Ministry of National Development will amend the Building Control Act to mandate minimum Green Mark standards for existing buildings.

BCA and NUS study shows higher value for greener buildings

The Building Construction Authority (BCA) and National University of Singapore (NUS) recently completed a study of the impact of Green Mark certification on the commercial value of buildings. The study found that green retrofits increased the value of commercial buildings by 2% and reduced operating expenses by as much as 10%. It also found that energy-efficient retrofits would cost between just 0.5% and 1% of a building's current market value, whilst reducing total energy consumption by 17.0%.

Govt agencies and Panasonic aim to green public housing

Japanese electronics firm Panasonic has announced plans to partner with the Economic Development Board (EDB), the Housing & Development Board (HDB) and the Energy Market Authority (EMA) to integrate solar technology, fuel-cell batteries and Home Energy Management Systems into 100 households at a public housing block in Punggol. The firm will install roof-top photovoltaic solar panels and lithium-ion batteries to store excess energy for night time power supply and fit apartments with energy management systems enabling residents to see where their electricity is going and how much they are consuming. The scheme will also test the use of smart grid and smart meter technology both for household use and for the integration of renewable energy sources into the grid until the end of 2013.

TAIWAN

Building code gets greener

Amendments to the Building Technical Regulations came into force in July 2012 and will require construction plans to provide plant covering for at least half of their open-air space. Applications that fail to comply will have to submit revised plans to local authorities before they can be granted permission to build. Covering all building sites larger than 300 sq. m the updated rules will see the mandatory percentage of green building materials used for interiors raised from 30% to 45%. Public spaces such as sidewalks or gardens will be required to use at least 10% green materials.

Four cities selected as low-carbon national models

Four cities across Taiwan have been selected by the Environmental Protection Administration to serve as national models promoting low-carbon city development. The winning proposals included New Taipei City's initiative for the development and use of green energy, Taichung City's plan to build a public transit system and a low-carbon business park, Tainan City's promotion of ecotourism, and Yilan County's advocacy of green buildings and transport. According to their proposals the four cities expect to collectively reduce carbon emissions by a total of 12 million tons over the next three years.

VIETNAM

Incentives sought for green buildings

The Vietnam Green Building Council has called on the government to encourage green private developments through the enhancement and implementation of green building incentive policies. Other environmentalists have said there is a need for a better legal framework that will encourage and oblige project consultants, developers and owners to embrace sustainable technologies and materials.In September 2012 the government approved the Vietnam Green Growth Strategy which targets an 8% to 10% reduction in greenhouse gas emissions by 2020 compared to levels recorded in 2010.

climate change news

The United Nations Climate Change Conference (COP 18) takes place in Doha, Qatar from November 26-December 7 2012 and will see delegates attempt to reach agreement on how to implement decisions reached at COP17 in Durban last year

The United Nations Climate Change Conference (COP 18) takes place in Doha, Qatar from November 26 – December 7, 2012. During the meetings delegates will attempt to reach an agreement on how to implement decisions reached at the previous conference in Durban (COP 17) in December 2011, which delivered what was widely regarded as a breakthrough on the international community's response to climate change. The outcomes of COP 17 included a decision by participating nations to draft and subsequently adopt a universal legal agreement on climate change that would have legal force and require both developed and developing countries to cut their carbon emissions. The terms of the agreement are required to be agreed by 2015 and will come into effect from 2020.

The "Durban platform" agreed during the conference was notable for developing countries such as China agreeing to be legally obliged to reduce their greenhouse gas emissions

Figures released by the United States Department of Energy showed that global carbon emissions in 2010 rose by around

564 million tons

compared to 2009

▲ 6.0%

and also for the United States accepting that the new deal would have legal force. However, critics have pointed out that the pact does not address the scale of emissions cuts required. Nevertheless, the fact that the deal requires all countries to comply with legal requirements has been hailed as a significant step forward.

COP 17 also saw the approval of The Green Climate Fund which is designed to help developing countries tackle climate change and was originally agreed at the COP 15 conference in Copenhagen in 2009. The fund will mobilise US$100 billion per year in adaptation and mitigation funding by 2020 to support projects that will help avoid the most catastrophic effects of climate change and support developed countries in meeting their pledges for the climate finance needed in the years ahead.

In June 2012 a study by a team of scientists from China, Britain and the United States published in the journal Nature Climate Change found that China's carbon emissions could be nearly 20% higher than previously thought. The study analysed two sets of energy data provided by China's National Bureau of Statistics – one for the nation's energy use and the other for its provinces – covering carbon dioxide (CO2) emission inventories for China and its 30 provinces for the period 1997-2010 and found a huge 1.4-billion ton emission gap (in 2010) between the two datasets. The study said that differences in reported coal consumption and processing at the provincial level were the main contributors to the discrepancy in energy statistics. With provinces under pressure to meet targets, many are likely to underestimate emissions.

China's State Council announced in August 2012 that it estimates the country will spend around RMB 2.37 trillion on projects for conserving energy and reducing emissions during the 12th five year plan between 2010 and 2015. By 2015 China plans to reduce the amount of energy it uses to produce every unit of gross domestic product by 16% from 2010 levels and is targeting energy savings equal to 670 million tons of standard coal equivalent energy during the same period. During the same month the government also confirmed that it had increased its target for solar energy by 40%, pledging to deploy 21GW of capacity by 2015. The move means renewables will account for 9.5% cent of the country's energy mix by 2015.

In December 2011 a series of reports examining how climate change will impact weather patterns in 24 countries including Bangladesh, China, India and Indonesia, was launched by the UK Met Office Hadley Centre. The study forecasts an increase in coastal and river floods, extreme weather events and a global temperature rise of between 3-5C over the remainder of the century, if emissions are left unchecked. These changes would have profound impacts on urban areas, which would be forced to adapt to regular

Asian cities most at risk from rising sea levels

"EXTREME" RISK

Dhaka

HIGH RISK

Bangkok
Manila
Kolkata
Jakarta
Delhi
Guangzhou

Bangkok floods in 2011

DEATHS

500

PEOPLE DISPLACED

1.2 m

ECONOMIC LOSS ESTIMATED

US $45.7 b

China's State Council announced in August 2012 that it would spend around

RMB2.37 trillion

on projects for

conserving energy and reducing emissions

during the 12th five year plan between

2010 and 2015

flooding by constructing new infrastructure such as flood barriers. Temperature rises from climate change would also be significantly exaggerated in urban areas due to the urban heat island effect

Figures released by the United States Department of Energy in November 2011 showed that global carbon emissions in 2010 rose by around 564 million tons compared to 2009, an increase of 6.0%. Additional pollution generated by China and the United States accounted for more than half the increase in emissions. Analysts say these latest figures exceed the worst case projections made by the Intergovernmental Panel on Climate Change in 2007. Recent emissions figures do show, however, that developed countries which ratified the 1997 Kyoto Protocol have succeeded in their goals of cutting emissions to about 8% below 1990 levels.

The same month the Australian Senate approved The Clean Energy Act which will force the country's 500 worst-polluting companies to pay a tax on their carbon emissions. The act came into force on 1 July 2012. The country's mining firms, airlines, steel makers and energy firms are among those expected to be hardest hit by the tax and domestic fuel bills are expected to rise as companies pass on costs to consumers. The government hopes that the new legislation will force innovation in renewable energy supplies, and free Australia from its reliance on fossil fuels. The country accounts for 1.5% of the world's emissions but is the developed world's highest emitter per head of population thanks to its relatively small population.

A global survey released in October 2011 by risk analysis and mapping firm Maplecroft found that a number of megacities in Asia are at serious risk from rising sea levels,

flooding and other impacts of climate change. Dhaka was the megacity most at risk with an "extreme" ranking whilst other megacities in Asia at high risk include Bangkok, Manila, Kolkata, Jakarta, Delhi and Guangzhou. The survey included maps which highlight areas within countries that might be more vulnerable, allowing risks to towns, cities, economic zones and individual company assets to be identified. It also pointed out that whilst many other cities were also vulnerable to climate change, better governance, greater wealth and better policies meant they were more able to adapt.

Experts warned the same month that the widespread flooding which hit Bangkok and its surrounding areas in the autumn of 2011 may be a sign of things to come as climate change increases the frequency of natural disasters and extreme weather events. The floods resulted in more than 500 deaths, displaced 12 million people and caused significant damage and disruption to the large industrial plants located on the fringes of the city. Economic losses have been estimated at THB 1.4 trillion (US$ 45.7 billion), making the disaster one of the costliest in human history. The World Bank has called on Thai authorities to invest in flood protection, improve drainage, construct flood barriers and improve retention areas and other prevention methods.The World Bank, Asian Development Bank, African Development Bank, European Bank for Reconstruction and Development and the Inter-American Development Bank have formed a partnership designed to support cities in developing countries to assess climate risk, standardise greenhouse-gas emissions inventories and encourage a consistent suite of climate finance options. The five institutions collectively lend around US$8.4 billion annually to tackle the problems resulting from climate change in cities. Cities account for over two-thirds of global energy consumption and an estimated 80% of global greenhouse-gas emissions.

In September 2011 the Japanese Ministry of Economy, Trade and Industry began public solicitation of participants in a program intended to help stimulate the use of carbon credits to compensate private industry for the introduction of equipment and facilities that reduce CO2 emissions. The domestic carbon credit system involves the use by small and mid-sized enterprises of capital and technology from larger corporations to help reduce greenhouse gas emissions. A domestic carbon credit certification board then approves credits commensurate with the resulting reduction in greenhouse gas emissions, and those credits can then be sold back to the larger corporations. By offering financial assistance, the program is aimed at increasing domestic carbon credits to stimulate their effective use by larger corporations. ■

Retail Goes Green

Sustainable Practices in Shopping Mall Development and Management in Asia Pacific.

Government legislation and incentives, occupier demand, rising awareness of the bottom-line benefits of energy efficiency and a stronger emphasis on corporate responsibility and environmental stewardship have all begun to drive growth in the construction of new green buildings and the retrofitting of older building stock across Asia Pacific. However, whilst the office sector has witnessed steady growth in the construction of green buildings and the proliferation of interior fitouts certified under various green rating schemes, progress in the retail sector has been rather limited by comparison. Many shopping centre owners and retailers remain unconvinced of the financial returns to be gained from investing in sustainability, whilst the complex nature of shopping malls makes it challenging to introduce legislation or benchmarks for energy usage and environmental impacts. In addition, retailers have yet to make the same environmental requirements of landlords as office

occupiers, particularly the leading multinationals, have increasingly demanded in recent years. Indeed, the bulk of retail occupiers continue to make their leasing decisions purely based on where they want to be in the market – not because of the environmentally friendly features of a particular building.

In the West a number of larger retailers have woken up to the challenges of sustainability and several groups have begun to build and operate green shops in the U.S. and Europe. Others have adopted green building methods or at least created prototype green stores. For example, many Wal-Mart stores in the U.S. feature L.E.D. lighting, white roofs to reflect sunlight and other energy saving features specific to local climate conditions, while Carrefour reportedly spends EUR30 million per year on energy efficiency initiatives in its shops. Whilst Asia Pacific lags by comparison, recent years have seen some encouraging advances by a select group of developers. Many of these groups have long standing commitments to sustainability and are now integrating environmental and social issues into the construction and management of their retail property holdings and investments.

The retail sector has a well deserved reputation for wasteful use of energy, water and other resources. Lights in shopping malls and other retail formats are frequently left on non-stop, as are air-conditioning and refrigeration units – particularly in hot and humid Asian climates – whilst the use of plastic and paper in packaging is often excessive and unnecessary. Significant quantities of energy are also used throughout the retail supply chain, such as transporting products from factories to warehouses and then to stores. In the United Kingdom the direct greenhouse gas (GHG) emissions from the retail sector are estimated to be around 2.0% of the country's total emissions, although it should be noted that some stores – particularly supermarkets – indirect influence via supply chains and influencing customer behaviour extends even further.

50%

In Australia the retail sector accounts for around 50% of energy use in the commercial property sector and between 4%-5% of the country's total GHG emissions. Studies have found that in terms of energy intensity, or energy used per sq. m of floorspace, the retail sector is one of the most energy intensive industries in Australia,

In Australia the retail sector accounts for around 50% of energy use in the commercial property sector and between 4%-5% of the country's total GHG emissions. Studies have found that in terms of energy intensity, or energy used per sq. m of floorspace, the retail sector is one of the most energy intensive industries in Australia, only slightly behind food services and hospitals. The retail sector is therefore a crucial battleground in efforts to improve energy efficiency, reduce emissions and address the challenges posed by climate change.

As the retail sector continues to expand at breakneck speed in Asia Pacific – particularly in the emerging markets of China and India – it is understandable that the vast majority of retailers are looking to secure the best spaces in the best locations to grow their business. Leasing green retail space or achieving LEED certification for their shop fitouts is not a concern. Shop managers are still primarily incentivised on sales and not on energy savings, even though they still contribute towards the bottom line, while regional consumers' appetite and demand for energy efficient or environmentally friendly products is still in the early stages of development. Retailers' lack of enthusiasm for green fit-outs is a major cause for concern as how they operate

and manage the shops or space they occupy has a major impact on the use of energy and other resources. However, a number of markets in the region are seeing a gradual but important shift in attitude among developers who have recognised the need for sustainability – even in the absence of any real demand from their retail tenants – and have begun constructing and managing environmentally friendly shopping centres. One such group is Stockland, one of Australia's leading diversified property groups. The company operates a total of 41 shopping centres across the country and has adopted a comprehensive Corporate Responsibility and Sustainability strategy. "We recognise that as a large corporation we have a responsibility to minimise the environmental impact of our operations," says Greg Johnson, Stockland's National Environment Manager for Commercial Property. "We had an early understanding of corporate responsibility and sustainability around 8 years ago and began to engage people by examining the simple issues across the whole of our business. Through engaging with our stakeholders and learning through our actions our thinking has become a lot more sophisticated," he continues.

Top: Stockland's Northshore Mall in Queensland
Above: Many Stockland Malls feature waterless urinals

12%

By understanding where energy is used at different times of the day and better managing the operations of its shopping centres, this initiative alone is expected to result in average energy usage reductions of 12% on each site.

Stockland launched its drive towards sustainability in its retail portfolio by firstly looking for simple solutions which could be implemented quickly and at low cost, such as fitting new lighting systems to reduce energy usage and variable speed drives on air conditioning and ventilation systems. It then moved on to more significant improvements such as installing intelligent energy sub metering systems to around 25 malls to track energy performance and manage energy wastage. "Energy management requires human intervention so monthly teleconferences are held with facilities management teams to discuss issues identified and implement actions" Johnson says. By understanding where energy is used at different times of the day and better managing the operations of its shopping centres, this initiative alone is expected to result in average energy usage reductions of 12% on each site.

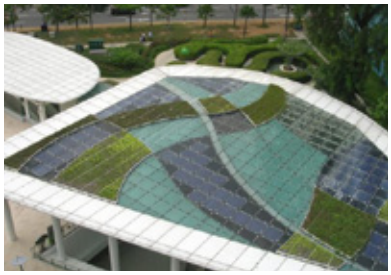
In some of its newer and larger developments, Stockland is applying green rating tools and installing trigeneration and solar power systems. One such example is Stockland Shellharbour in New South Wales, which is currently under construction and will include more than 7,000 sq. m of solar panels on the roof supplemented by a tri-generation energy system. This 900kw combination of solar and tri-generation will power 70% of the new common area of the development, which aims to achieve the first Green Star rated shopping centre in the Illawarra. The group has also begun work on a smaller project at its Green Hills shopping Centre, also in NSW, where it will install a 67kw solar PV system to coincide with a mall and carpark lighting upgrade which will be the first renewable energy project delivered in a Stockland shopping centre.

It's important to note that Stockland's retail sustainability initiatives have not just been focused on select properties – it is an all encompassing policy. "We've used a consistent approach on how we implement measures across our entire portfolio and we have not just focused on our largest assets. Every energy saving we make counts towards our targets, which will in turn deliver long-term financial savings. The next step is working with retailers to get them to recognise the benefits sustainability improvements can have for their business," says Johnson.

"We've seen transformation in the property sector in the last ten years as a result of the introduction of environmental rating systems such as Green Star and NABERS", Johnson continues. Stockland has three shopping centres certified under the Green Star Retail Centre Design v1.0 rating tool and has several others in the pipeline. It is one of the most active advocates of Green Star in the retail sector in Australia and has set a minimum standard of 4 stars on all developments. "We've had great results from the work we have done in our office portfolio and the opportunity to really make a difference in shopping centres is huge. I would say that the best is still to come across our retail portfolio," he adds.

Stockland has now committed to a number of targets for its commercial portfolio including: reducing energy intensity across office and retail portfolios by 20% from the FY09 baseline and reducing water intensity across its office and retail portfolios by 10% from the FY09 baseline, all to be achieved by 2014. "We are making a significant investment in energy and water efficiency projects that deliver real consumption and cost savings to ensure we meet our commitments," says Johnson.

Clockwise from top: CDL's City Square Mall – billed as Singapore's first eco-mall; Green roof at City Square Mall; Recycling Bins; Daylighting features; Dedicated car parking spaces for electric cars



5%

CDL invested approximately 5.0% of the total construction costs of the mall into the development of its green features.

30%

The money spent will be recouped over a period of just four years as the mall achieves annual savings of 30% on energy and water.

Singapore has a well-deserved reputation as one of the most advanced countries in Asia with regard to sustainability of the built environment. The retail sector is no exception and recent years have seen the launch of a several noteworthy projects. In September 2009, City Developments Limited (CDL), one of the biggest commercial landlords in Singapore, opened City Square Mall, which was the first private commercial development in Singapore to receive the Building and Construction Authority's (BCA) Green Mark Platinum Award – the highest rating for green buildings in Singapore.

"City Square Mall is a natural extension of CDL's long-standing commitment towards a sustainable built environment and was conceptualised with environmental sustainability in mind, right from the outset," says Esther An, CDL's Head of Corporate Social Responsibility. Designed, built and managed as a prototype eco-friendly and community-friendly shopping centre, the 700,000 sq. ft. mall is equipped with a wide range of water and energy saving and other environmental features including a 49,000 sq. ft. urban park, an eco-playground constructed from Forest Stewardship Council (FSC) certified wood, a green roof with solar panels and water-harvesting capabilities, a high-efficiency air-conditioning plant system and recycling bins. It also features an electronic screen displaying in real time the mall's carbon dioxide emissions in order to raise awareness among shoppers and tenants. CDL invested approximately 5.0% of the total construction costs of the mall into the development of its green features. The money spent will be recouped over a period of just four years as the mall achieves annual savings of 30% on energy and water.

Another noteworthy retail development to have won green accolades in Singapore is Parkway Parade, managed by Lend Lease, which in April 2010 became one of the first existing retail/office buildings in the country to achieve BCA Green Mark Platinum status. The mall's green features include motion sensors at staircases and office toilets to control lighting and extensive use of T5 fluorescent lighting with high frequency ballast in car parks. Charging stations are provided to encourage the use of electric motorbikes whilst food waste from F&B outlets is separated into organic and inorganic waste.

"An energy conservation programme was first adopted at Parkway Parade in 2006," explains Stephanie Poh, General Manager for Parkway Parade, managed by Lend Lease. "The main drivers were to reduce operating expenses especially energy consumption, as part of Lend Lease's continual efforts to enhance asset performance and value, and future proof energy costs escalation," she continues. The company has also introduced a "green lease" programme to guide and assist its tenants in achieving energy savings with a green fit-out of their leased areas.

It is noteworthy that all of these developers have adopted environmental measures despite the lack of studies showing that green shopping centres can command a rental premium. Neither is there much evidence to suggest that

> There is a lag between when the market can promote green shopping centres and when tenants are willing to pay more to rent green space. We're only just beginning to see this in the office sector.
>
> **Stockland's Greg Johnson**

space in green malls is more sought after by some retailers compared to space in non-green malls. "There is a lag between when the market can promote green shopping centres and when tenants are willing to pay more to rent green space. We're only just beginning to see this in the office sector," observes Stockland's Greg Johnson.

Indeed the small number of green malls in the market at present makes it difficult to identify or assess any widespread trends on rental levels as the sample size for any study would not be big enough. On the demand side, there have been no documented cases any retailers making leasing decisions based on the environmental performance of a building, although many large retailers in Asia Pacific are beginning to take these issues into account. "Whilst many retailers in Australia have adopted strong values around sustainability they have yet to make these demands of Stockland with regard to sustainability and green fit-out of their retail space. However, we have seen in the UK market, especially among supermarket tenants that sustainability credentials have become a differentiator," adds Johnson.

In Singapore CDL believes that City Square Mall's numerous green features haves attracted a number of environmentally conscious retailers keen to display their green credentials. "Whilst we cannot conclude that a green mall can command a rental premium, we hope to attract the correct partners – other green businesses – so our rental pricing is not impacted by our initial investment on green features," explains Esther An. Among City Square Mall's tenants is FairPrice, which in September 2009 opened Singapore's first eco-friendly supermarket with the aim of creating a green shopping environment and raising environmental awareness amongst shoppers. The store is designed with the basic principles of reduce, re-use and re-cycle in mind, and features 100% bio-degradable shopping bags, dedicated check outs for customers using their own bags, store fixtures and fittings re-cycled from other stores, best in class energy efficient lighting and switches, recycling stations for food waste and reverse vending machines for cans and bottles.

Constructing new green malls or implementing sustainability features into existing shopping centres bring with it a number of challenges, many of which are often unique to this property asset class. Shopping malls are home to dozens and in some cases hundreds of independently operated retailers, restaurants, entertainment and sporting amenities and other facilities. Whilst a landlord can improve the energy efficiency of common areas by regulating air conditioning and lighting and installing building management systems, such initiatives will mean nothing unless retailers themselves operate their stores with sustainability in mind. The bulk of a shopping centre's energy demands come from its tenants.

Shopping centre landlords and operators often find that larger tenants can be very interested in participating in sustainability initiatives but smaller retailers are usually not, as they are either comparatively less informed about the issues or more focused on the day to day trading of their business. Even among larger retailers there can often be less knowledge and enthusiasm at local branches than at head office. Many landlords have therefore taken the initiative and have begun to engage directly with their tenants – for example by organising workshops to raise awareness of sustainability issues – although there are often numerous challenges involved.

"One of the often missed challenges with managing climate change is management of people's behaviours," says Mann Young, Head of Sustainability Asia, Lend Lease. "The unique opportunity with sustainable shopping malls is that you have the opportunity to educate your tenants, as well as the wider community who visit, work, shop and play there," he continues. The group's 313@somerset shopping centre was the first mall in Singapore to introduce a green lease programme to guide and assist its tenants in how to maintain energy savings with a green fit-out. This initiative is gradually being rolled out to other malls in the Lend Lease portfolio.

CDL has been engaging with its retail tenants at City Square Mall in a number of ways. The developer holds tours to food recycling plants for its F&B tenants as part of its eco-engagement programme and also briefs its tenants on how to be environmentally friendly when completing their shop fit-outs by recommending the use of particular energy efficient lights, equipment, materials and so on. "By providing such briefings and guides we also try to influence them to practice being green through their daily operations such as segregating dry waste into designated bins or locations," says Esther An.

Stockland has for several years been working alongside Australian government agencies running programmes promoting sustainability and resource management to retailers. One such scheme saw the developer send out a survey to 55 tenants at one of its malls, 25 of which responded and were invited to participate in workshops focused on sustainability and resources management issues within the retail environment. Stockland also provided participants with research data related to rising consumer demand for green products. "The scheme was a great opportunity to engage with our retail tenants on sustainability and resulted in some basic initiatives being put in place," says Greg Johnson. "However, some of those retailers we contacted – usually smaller independent groups were not interested and some larger chains already had their own programmes in place or were participating in existing schemes which limited the opportunity." he admits.

Lend Lease's Parkway Parade – One of the first BCA Green Mark Platinum certified retail and office buildings in Singapore

> "The unique opportunity with sustainable shopping malls is that you have the opportunity to educate your tenants, as well as the wider community who visit, work, shop and play there."
>
> **Mann Young,**
> **Head of Sustainability Asia, Lend Lease**

Stockland also provides vacant or **unused spaces** to community groups or up and coming **local artists** to display their work. "We are thinking about ways in which we can use a mall differently, and not just for retail but to make them the social hubs of their community," says Johnson.

Top: Daylighting features in Stockland's Forster Mall in New South Wales
Above: Stockland's Forster Mall in New South Wales

Developers have found that it can often be challenging to engage with smaller retailers as they tend to be more focused on running their business and the lack the manpower to participate in such schemes. Franchises also lack authority with regard to decision making as key decisions are usually made by head offices and not at store level. Much also depends on the individuals managing or working within a store – many may not be particularly interested in environmental issues or motivated to participate. Cost can also be a barrier to participation with many retailers lacking the capital to contribute towards the capital expenditure of installing environmental upgrades to the space they occupy. Possible solutions to these challenges could include mechanisms which incentivise retailers to participate and bear some of the costs. In the longer term shopping centre managers could simply allocate a set amount of energy to each store which they must then use as they see fit.

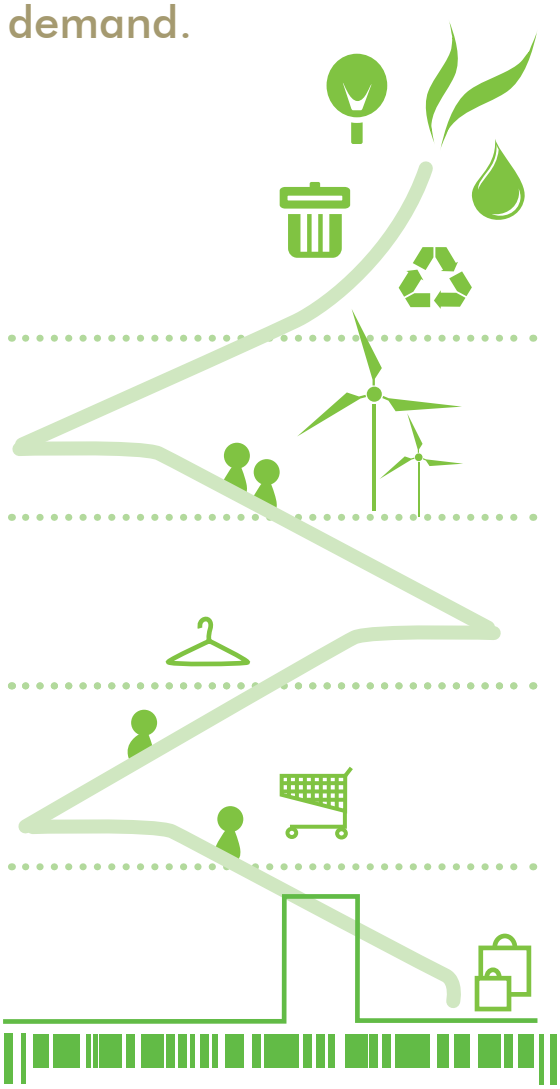
Recent years have seen the gradual introduction of green building rating tools specific to retail developments. In December 2009 The National Australian Built Environment Rating System (NABERS) released its retail rating tool, which is designed to provide a standard, national, performance-based environmental rating framework for existing shopping centres. The tool allows shopping centre owners or managers to measure a mall's energy and water efficiency on a scale from 1 to 6. However, the scheme is only voluntary at present and applies only to the base building of shopping centres with gross lettable area retail (GLAR) of 15,000 sq. m or greater. Nevertheless, a mandatory disclosure scheme for shopping centres is being investigated, meaning that a valid NABERS rating would need to be disclosed as part of any sale or lease documentation or advertisement for shopping centres in Australia covered by the scheme, with penalties applied for non-compliance. NABERS also reportedly intends to develop a tool for retail interiors in order to capture the behaviour of individual retail outlets.

Social and Community issues are also increasingly being viewed as an important component of best practice in sustainability in shopping centre management. Indeed a number of leading developers in the region are beginning to implement community engagement programmes alongside their environmental initiatives. "We know we have a responsibility to improve our environmental performance," says Stockland's Greg Johnson. "But we also have a responsibility to create spaces and places which meet the social needs of the communities in which we operate," he adds. Stockland offers space in a number of its malls for communities to run social programmes. In one such example, the mall organises and hosts film-making classes for local teenagers and then lets them showcase their movies at a special event at the mall's in-house cinema.

Stockland also provides vacant or unused spaces to community groups or up and coming local artists to display their work. "We are thinking about ways in which we can use a mall differently, and not just for retail but to make them the social hubs of their community," says Johnson. "With the growth of online retail, the nature of shopping in Australia is changing. We believe that shopping centres should be more than just a location in which to go shopping – they should be an experience and a place where people can socialise," he adds.

Lend Lease is also rolling out community engagement initiatives at several of its malls across the region. In Singapore, 313@somerset has partnered with PaTH (Pop and Talent Hub) to showcase artwork and handicrafts created by independent artists, craftsmen and designers, whilst Parkway Parade has worked closely with the South East Community Development Council to support its community outreach programmes in the Eastern Part of Singapore by engaging with local schools to showcase and promote various sporting activities. Elsewhere, CDL's City Square Mall hosts eco-workshops where shoppers are encouraged to explore their creative side while doing their part to protect the environment, and also help schools, not-for-profit organisations and other community-related interest groups reach out to the public by offering free use of spaces for events and activities.

Whilst shopping centre landlords and tenants in Asia Pacific have been late adopters of sustainability – the region is beginning to see some **progress** as leading developers recognise the need to incorporate **green design principles and energy reduction plans** into their retail properties, even in the absence of any tenant demand.



Whilst shopping centre landlords and tenants in Asia Pacific have been late adopters of sustainability – especially in comparison to those in the office sector – the region is beginning to see some progress as leading developers recognise the need to incorporate green design principles and energy reduction plans into their retail properties, even in the absence of any tenant demand. Many companies are aware that failure to do so could eventually result in falling market share, weaker investor sentiment, higher energy and water costs and litigation and insurance risks, as well as a possible backlash from increasingly more informed and environmentally aware consumers."The green economy is still in its infancy and demand for green buildings is only just starting to grow," says Esther An of CDL. "We hope that our position as a pioneering green developer will give us a first-mover advantage when the age of socially responsible consumerism dawns," she continues. CDL continues to witness rising demand for green space from office occupiers, particularly from multinational corporations, and is optimistic that this growing environmental consciousness may eventually extend to retailers.

To date many developers have not been prepared to invest in green initiatives as they have been unconvinced of the financial returns. Indeed there is a lack of evidence to suggest that green shopping centres can command a rental premium. However some developers believe this situation may eventually change. "Whilst shopping malls are still maturing compared to office buildings in terms of environmental credentials, more developers are picking up green building ratings and using them to inform their retail developments. Delivering eco-efficiency and having a focus on the needs of the local community will deliver a pay-back, and the evidence for this is building," says Greg Johnson of Stockland.

Ultimately, however, developers' moves towards building green shopping centres or installing energy efficiency features in existing malls mean very little unless they are accompanied by a similar commitment from tenants. Environmental responsibility and sustainability are global trends retailers cannot ignore and such companies ought to be investing in initiatives which can both reduce their energy and water consumption and maximise their profits, as well as improving their appeal to consumers willing to pay a premium for environmentally friendly goods and services. ■

Trends in valuing sustainability

Are green buildings worth more? Numerous academic research papers over recent times have shown that highly green rated properties yield greater rental and capital returns to their owners

The trend toward creating sustainable buildings is demonstrated in many markets around the world, and has not waned significantly with unstable economic conditions. The Australian property industry saw a surge of retrofitting projects enabled by government funding for energy efficient buildings as part of the stimulus strategy in reaction to 2008 financial crisis. This funding finished in early 2011, but owners have continued to investigate and implement projects.

In Europe the uncertain economic outlook has created a culture of caution for many firms. Marginal and discretionary projects are prone to postponement or cancellation and as a result, investment in "green initiatives" has been subject to greater scrutiny. Business cases must be compiled and benefits quantified but, crucially, this does not mean all projects are mothballed. Mark Creamer, CBRE's Head of Valuation and Advisory Services for EMEA observed "Speaking with our clients, they have been reluctant to approve some of the more outlandish or experimental projects that might fall into these categories. However, even in a cost-conscious environment a large number are still being prioritised."

Why are these projects still getting the green light?

Concerns around rising energy costs and energy security are likely to be a strong influence on investment patterns, with many so called "sustainability" projects focusing strongly on improving energy efficiency. Sustainable buildings are also perceived to have enhanced marketability in some sectors.

Commenting on the European context Creamer noted "Tenants are becoming more selective, especially in markets where there is an excess of supply, and some – particularly in the public sector – have adopted strict policies concerning the environmental performance requirements of any space they occupy. Others will negotiate more aggressively with landlords whose buildings do not comply with best practice or are not appropriately rated, and where they are concerned about refurbishment and maintenance expenses. One result is often shorter void periods in more sustainable buildings."

"Tenants are becoming more selective, especially in markets where there is an excess of supply, and some – particularly in the public sector – have adopted strict policies concerning the environmental performance requirements of any space they occupy."

Building the evidence base

Hard evidence of the value of sustainable buildings is being sought, and demonstrated, through an increasing number of studies internationally.

USA: "Doing Well By Doing Good"

The "Doing Well By Doing Good? Green Office Buildings" research (by Piet Eichholtz, Nils Kok and John M. Quigley at University of California, Berkeley) was the first major study undertaken, released in April 2008. The study was undertaken in USA and compared 694 Energy-Star and LEED-rated office buildings with over 7000 non-rated buildings nearby. The findings revealed "systematic evidence that rents for green offices are about two percent higher than rents for comparable buildings located nearby. Effective rents, i.e., rents adjusted for the occupancy levels in office buildings, are about six percent higher in green buildings than in comparable office buildings nearby."[1]

Australia: "Building Better Returns"

A study based on the same principles was conducted in Australia in 2011, examining office buildings in the Sydney and Canberra CBD and suburban markets. "Building Better Returns" research report was commissioned by the Australian Property Institute and the Property Funds Association of Australia with research undertaken by the University of Western Sydney (Professor Graeme Newell and Associate Professor John MacFarlane) and the University of Maastricht, Netherlands (Dr Nils Kok). The study revealed a "green premium" for office buildings based on the two most common building sustainability ratings – the NABERS Energy rating and the Green Building Council of Australia "GreenStar Office" rating.

NABERS (the National Australian Built Environmental Rating Scheme) is a government administered rating scheme that rates buildings on Energy, Water, Waste and Indoor Environment Quality through the use of separate tools. Ratings are benchmarked from 0 to 6 stars based on 12 months historic performance data. The NABERS Energy rating is most common and is mandated under the Federal Commercial Building Disclosure program which requires owners and lessors to publicly disclose the current NABERS Energy prior when marketing office space over 2000sqm. GreenStar Office Design is a voluntary, holistic tool administered by the Green Building Council of Australia. It is similar to the LEED New Construction tool and is based on submissions around design intent to obtain points leading to a 4, 5 or 6 star rating. In 2013 the new Green Star Performance tool will be introduced to provide an holistic view of buildings in operation.

The "Building Better Returns" research showed a green premium in value for office buildings to be evident for the NABERS energy rating. The premium varied depending on specific markets, but overall there was a clear link between enhanced premiums and higher ratings. The research showed the 5 star NABERS energy rating delivering a 9% green premium in value and the 3-4.5 star NABERS energy ratings delivering a 2-3% green premium in value.

There was also evidence of major discounts in value in the lower NABERS energy rating categories (less than 3 stars) for the Sydney CBD (10% discount in value) and Canberra (13% discount in value). These markets could be regarded as the most mature of those studied in terms of sustainable buildings. Buildings with Green Star ratings showed a green premium in value (12%) and rents (5%). Green premiums were also generally evident in reduced

vacancy, reduced outgoings, reduced incentives and reduced yields, particularly in the higher rated NABERS energy categories.

USA: "Do Green Buildings Make Dollars and Sense?"

The results of these two studies are largely similar and indicate a trend towards market recognition, through behavior and measurable financial results of the benefits of sustainable buildings. Some more qualitative evidence has been found in the USA, where CBRE have partnered with McGraw-Hill Construction on a longitudinal study of occupants experience of green buildings. Released under the title "Do Green Buildings Make Dollars and Sense?" the study analyses data gathered in 2010 and 2011 through the online survey of over 720 tenants in 147 CBRE managed buildings across the US. This amounts to just under 5.5 million square metres of space in buildings that were differentiated between LEED EBOM (Existing Building and Operations: Operations and Maintenance) and buildings rated through Energy Star only.

Overall 72% of building occupants agreed that "working in a green building is important. Significantly a large proportion of respondents rated working in a green building as at least "somewhat important" when selecting an employer – 29% rated it "important" or "very important". This result is notable at a time of high unemployment in the US, when concerns about working conditions and employer policies may be expected to decline.

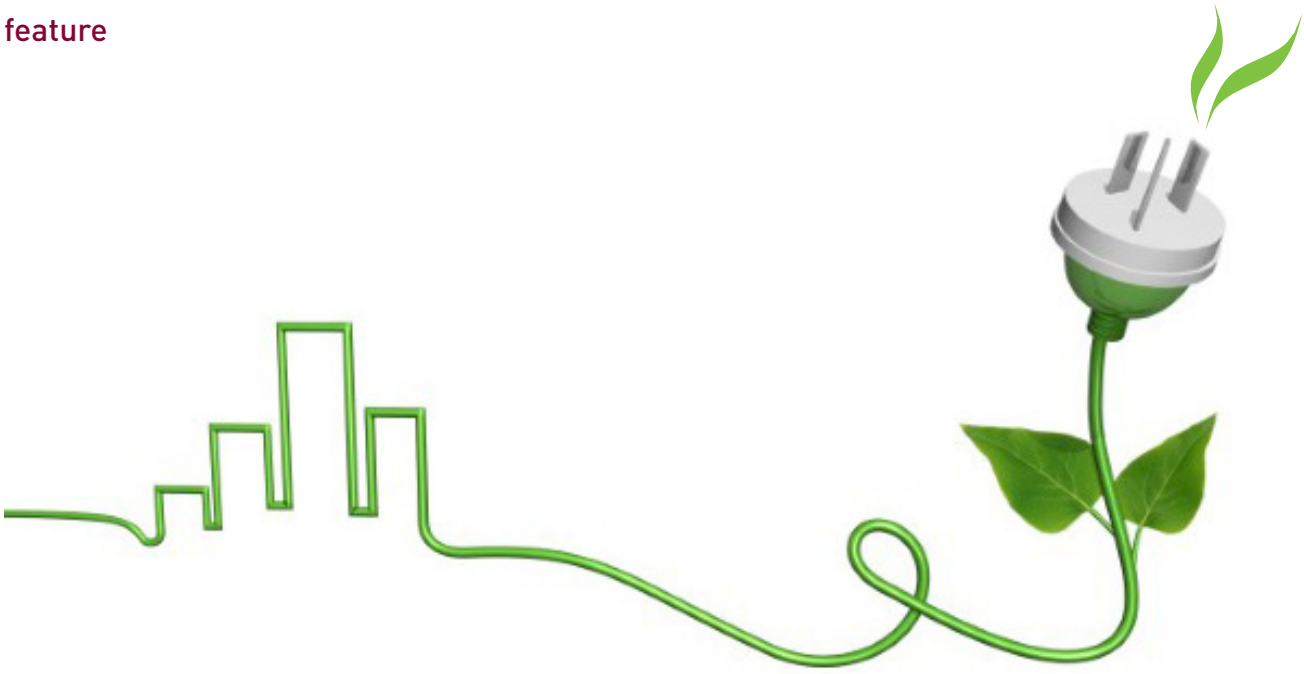
Dave Pogue, CBRE Global Director of Sustainability noted: "These results suggest that people regard environmentally responsible corporate actions as important and that companies would benefit from making their green efforts more prominently known to attract and retain employees" Strong scores were noted for respondents "overall satisfaction with your current building" (73% in 2010, 72% in 2011). Occupants were also asked to compare their current work environment with their workplace two years ago – either in a different building or before improvements to achieve the LEED or Energy Star rating. Significantly more than two thirds noted improved satisfaction in the 2011 survey. A small but significant proportion of occupants (16-19%) also noted they experienced greater productivity in their current workplace when compared with two years previous. More research is ongoing into the influence of "green" workplaces on productivity, but these statistics make a good case for building owners sustainability improvements as a factor in tenant attraction and retention.

Building Sustainability into the valuation methodology

With increasing attention to sustainability and corporate responsibility, evidence of property market trends and the impact of a building's "green" features on tenants' decision making, one may question how this is being reflected in building valuations. In Australia the take up of sustainable benchmarks has been greatest in the office sector. The prevalence of rating labels and the transparency enforced by the Commercial Building Disclosure (CBD) regime, has

72%

of building occupants agreed that "working in a green building is important"



enabled tenants and investors in the marketplace to easily compare products based on new criteria. Yet despite this, commercial valuation rationale has remained relatively unchanged over the same period.

Whilst most major valuation firms now include a sustainability section within their reports when valuing major commercial buildings, these vary in length and complexity, from a paragraph to 2-3 pages, dedicated to the topic. The wording can be generic and often misses the point ¬ that being to inform the reader how undertaking sustainability related works, or not undertaking them, will likely affect cashflow performance during the horizon of the projected discounted cash flow (DCF).

To address this deficit the Oceania chapter of the Royal Institution of Chartered Surveyors (RICS) has recently published a new guide Sustainability and the Valuation of Commercial Property, written by Mark Willers of CBRE and John Goddard of John Goddard & Co, with technical assistance and review by Bryon Price of AG Coombs, Stephen Hennessy of WT Sustainability and Davina Rooney of Stockland. This publication is not intended to provide a template that can be used to value all green buildings, but rather it seeks to raise some key issues, themes and topics that may well require consideration by valuers during the valuation process. The guide sets out how sustainability performance in commercial property can be measured in an Australian context and how valuers should use this information to assess the performance, and potential future performance, of commercial buildings. It sets out numerous issues that may prevent, limit or expedite sustainable refurbishment of properties. The guide also addresses numerous areas within the valuation process where sustainability may have an effect on pricing, and offers insight into the kind of questions that should be asked of building owners and managers, in order to help valuers assess future cashflow risk relating to sustainability issues.

The 10 year cashflow

Australian valuers attempt to project income and expenditure 10 years into the future, predicting how this income and expenditure will grow or contract during this period, and then categorising the risk of receiving this cashflow, not only at today's date but also at the point of hypothetical sale in 10 years' time.

As a result Australian valuers have the perfect tool to reflect future allowances and cashflow issues. In doing so there is a need to understand how assumptions interact with each other, make allowances and predictions that relate to each other, and clearly report these issues. For example, consider a situation where significant capital works, including an extensive upgrade of airconditioning plant, have been allowed for in Year Two of a cashflow. This would most likely result in a decrease in electricity consumption once the works are commissioned and bedded in.

Should this be reflected within the growth rates applied to electricity? Do these works future proof the building against the potential for electricity costs to rise in excess of CPI and as such would they warrant a firming of the terminal yield to reflect the decrease in risk profile? If the works were not undertaken is the opposite true?

Tenant preferences and requirements

If the tenant profile of a building – both sitting and potential tenants, which may include government departments, major blue chip and offshore tenants – is influenced by green ratings and performance then at each expiry and renewal the building's likely green ratings at that time will need to be considered. Expenditure allowances also may need to be timed in order to undertake sustainability related works to aid tenant retention. If comparable buildings in the market have significantly higher ratings will this influence tenants at expiry? If the subject property performs more efficiently than its peers, would this lead to a higher tenant retention rate for corporate and government tenants, and is this being demonstrated in retention rates within the subject property to date?

Good sustainability performance does not always require investment in large scale capital works. The way in which commercial property is managed has become much more sophisticated over recent times. Findings from Stage 1 of the Low Energy High Rise Project (conducted in Australia by The Warren Centre, an independent, industry linked institute fostering excellence and innovation in building engineering) demonstrated that energy efficiency could be improved with very low or zero capital cost. Improvements could amount to a potential 1 star improvement in the NABERS Energy rating with initiatives including the provision of energy efficiency training and engaging skilled facilities management personnel.

Institutional property owners employ various experts in order to extract the greatest return from their investments. Valuers cannot be experts in every field and they need to utilise the expertise of those most familiar with the buildings we are valuing in order to assess any future risks that may affect an investment horizon. Valuers are encouraged to discuss these issues directly with sustainability teams in order to gauge property owners' strategies, potential for future improvements and efficiencies, and the scale of investment that will be required to achieve such improvements. Such information sharing should allow valuers to understand more clearly the cost, benefits and risks associated with undertaking sustainable improvements in the future, and allow them to assess the impact of undertaking (or not undertaking) these works more effectively.

Having started his career in the UK, CBRE's Mark Willers notes the benefits of the Australian context: "The way that we value buildings in Australia provides a great platform for us to be clear and transparent in our assessments. Dialogue between valuers and sustainability teams will further facilitate a better understanding of the true impact of sustainability on commercial property valuations."

Creating an evidence base

CBRE's UK valuation practice supports the inclusion of sustainability considerations in the valuation process with a view that the scope and scale of "green building" activity has now reached critical mass and can no longer operate under the radar.

Mark Creamer recently stated that "Sustainability and its promotion is an important, natural evolution of the real estate industry. Our role is to credibly address the challenge of weighing up the direct effect of sustainability initiatives on asset values – an issue for both investors and valuers."

Rejecting the idea of a standard algorithm to measure the impact of sustainability features CBRE UK is partnering with IPD, the world's number one provider of real estate performance analysis, and the RICS to create a robust evidence base through the launch of a revised IPD Sustainable Property Index (version 2, launched in February 2012). The index will be based on investment relevant environmental data reported by valuers through the use of a checklist as part of regular valuation activities.

"Sustainability and its promotion is an important, natural evolution of the real estate industry. Our role is to credibly address the challenge of weighing up the direct effect of sustainability initiatives on asset values – an issue for both investors and valuers."

Mark Creamer

IPD will be able to analyse the data collected at asset and portfolio level through a new service called EcoPAS, shorthand for the Eco-Portfolio Analysis Service. The investment relevant environmental variables which underpin EcoPAS were agreed in late 2011 by representatives from five of the UK's largest property investing institutions (AVIVA, Hendersons, HERMES, L&G and PRUPIM), IPD and CBRE, the UK's largest valuation practice.

John Symes-Thompson, Senior Director, Valuation Advisory, CBRE said: "As valuers we already appreciate the need to be fully aware of these sustainability factors, and we have been delighted both to sponsor IPD and work with them, our clients and the RICS on producing this upgraded data-collecting initiative which we hope will become an industry standard."

"The information gathered in our checklist, will enable the industry to map more precisely the relationship between an asset's sustainable features and its value – and to differentiate between gimmicks and game-changing investments. As this relationship becomes more quantifiable, the benefit for investors will be that they can prioritise the projects that offer the greatest impact for both the environment and their bottom line."

Duty of care

CBRE Pacific's Mark Willers regards the review of sustainability as a professional responsibility for valuers today. "Although many buildings may not yet be price affected by sustainability, for some buildings the issue could be critical. Where this is the case, valuers have a duty of care to understand, address and highlight any issues that might affect future cashflow performance and investor demand. In the most extreme cases, sustainability considerations could affect almost every cashflow assumption, from the growth rate applied to utilities over the 10 year cashflow horizon, to renewal probability, lease up periods, capital expenditure and terminal yield."

The definition of a "sustainable building" is not fixed, with rapidly changing technology enabling the evolution of construction and management practices. Accepted benchmarks for efficiency and tenants expectations for quality space are constantly being challenged. The valuation profession must adapt to the changes in the property industry. CBRE is working around the globe to build a knowledge base to allow sustainability considerations to be accurately reflected in valuations. This is a key pillar in our strategy to raise awareness amongst investors, owners and occupiers, and drive the transition to a more sustainable built environment. ■

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best practice insights

A discussion on Integrated Design with Jerry Yudelson

Two commonly asked questions surrounding green buildings, particularly for project owners new to the concept, relate to the actual realisation of anticipated operational performance and the upfront costs of green design and construction. Over the past few years there have been various articles in the real estate press regarding criticisms that green building design fails to deliver on performance and statistics are banded about in conferences and online regarding the so called 'green premium' for project budgets. Both of these issues are of course important from a business perspective and need balanced evaluation to demonstrate that green building is a sound investment, but many of the articles surrounding the negative side of these issues are based on data taken out of context, or that's out of date in terms of how the green building movement has advanced to deliver better buildings at lower costs.

Jerry Yudelson is a LEED Fellow, professional engineer and principal at the Yudelson Associates consultancy in Arizona, USA. He is the author of 13 books on green buildings, green marketing, water conservation, green homes and sustainable development. In 2011, Wired magazine dubbed him, "The Godfather of Green." He received engineering degrees from Caltech and Harvard University and holds an MBA with highest honors from the University of Oregon.

Integrated design turns the linear, compartmentalised production line process of traditional design and build projects on its head, emphasising a completely different approach that seeks to include all project stakeholders in an inclusive dialogue at the start of the design phase, often referred to as "Everybody Engaging Every Issue Early in the Project". Integrated design takes a systems based approach to discover interrelationships (both synergies and conflicts) between project elements to minimize redundancy and waste, while maximizing performance. It does this through an iterative series of multi-stakeholder workshops, or charrettes, that increases the amount of work during the design phase where there is greater opportunity to positively influence design decisions without adversely impacting the construction budget, and hopefully reducing time spent during the construction phase.

There is now an American National Standards Institute (ANSI) guide for this new design concept. The MTS 2012:1 "Integrative Process (IP)© - ANSI Consensus National Standard Guide© - Design and Construction of Sustainable Buildings and Communities" outlines the design process requirements for project teams to integrate systems and stakeholders to reduce construction and operating costs and risk.

The USGBC's LEED® green building rating system has already actively started to promote integrated design with a groundbreaking new Integrated Project Planning and Design prerequisite and additional credit in the Innovation and Design category, LEED® for Healthcare v2009, meaning that all projects being certified under this system must include a fundamental level of integrated design. The drafts of all the upcoming LEED® v4 design and construction systems include a proposed 'Integrative Process' credit in a new credit category, which while not currently requiring full integrated design process, encourages more of a systems approach to design that will necessarily bring stakeholders together at the start of a project.

To better understand how the development of integrated design in the US may come to influence projects here, CBRE Sustainability Asia discussed how leading projects in the US are using this alternative approach to designing

cost-effective, high performance green buildings with Jerry Yudelson, renowned green building expert and author of twelve green building books (at least two of which have been translated into Chinese and Korean).

CBRE: You wrote a book on integrated design which was published back in 2008, how has integrated design evolved in the commercial market in the US since then?

Jerry: For most developers projects have always been about building 'faster and cheaper' not necessarily better. The real question is, how does green building address that by breaking out from being a small niche market of developers that want to lease to multinational tenants with corporate responsibility commitments that are demanding green spaces and become a standard market process? Integrated design has taken on a variety of forms in the US The most common delivery mechanism being Integrated Project Delivery ("IPD") which is effectively a method of design and build with a contract being signed between the architect, engineers, owner and builder which essentially puts them all on the same side of the table and sets forward goals. I would say that the IPD aspect of Integrated Design is there, but it's a delivery method, not necessarily a full design method.

Secondly, the recession seems to have increased the number of design and build projects, where the general contractor is essentially hiring the architects and the engineers on behalf of the owner and this compels the architects and engineers to deal with the contractor from the beginning and that's probably the essence of an integrated design project – that all critical team members are engaged from the beginning of the design process. This has definitely become more common. The third factor has been the rise of building integrated modelling where we have all of these new tools that allow us, at a very early stage, to begin integrating systems; in fact they force us to do that. So there have been a variety of things happening in the last 3-4 years but fundamentally the engineers have finally decided to come to the table and be part of the design process from the very beginning. What has been fairly typical, in the US at least, is that the architect designs the building and then throws it over the wall to the engineers to figure out how to make it work. The engineers have accepted this role for a variety of reasons, not least of which being that they don't want to design the building more than once and architects (and owners) have a habit of changing their minds. But in true integrated design the architect can't really change his mind. For example, if you've designed a very strong performing building envelope, that means the engineer has designed a smaller HVAC system; so if you suddenly change the building envelope design the engineer has to go back and re-specify the HVAC system, and is going to ask for more money for the additional work. You can't do 'Value Engineering', which we say "degrades value and involves no engineering', if I try to cut the façade cost at the expense of increasing energy demand I may find out it's not at all cost effective overall.

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The real advantage of integrated design is everyone is doing constructability, technical and cost reviews from the beginning so there are a lot less changes as you go forward. This is both good news and bad news for the architects as they have to come up with the design much earlier in the process and you can't iterate as many times on the design. In the next version of LEED it will have an explicit point given to integrated design as a tool – this is really a factor pushing the uptake of integrated design.

CBRE: You mentioned that IPD is becoming more common and because of the recession, contractors are hiring architects and engineers but does this mean that teams are necessarily following the principles of integrated design and following the iterative process of design charrettes?

Jerry: Yes – a good example is a federal government building near Denver, in Golden, Colorado – a research building for 800 people. In that design process the engineer was initially given charge of helping the building achieve its low energy goals in terms of daylighting,

Image courtesy of DOE/NREL

orientation of the building and other factors. The engineer actually came to the design charette having done 3 weeks of research and analysis, which actually helped the building not only achieve LEED® Platinum but also meet its net zero energy goal at no extra cost to the owner, compared with a standard high-end office building. Now the federal government has pioneered a new procurement process to create high performance buildings through integrated design by starting with a fixed budget, and introducing a variable scope. So in a typical project you have a fixed design and then find out how much it's going to cost after design is finished, but the idea here is to set out design criteria in a hierarchy of requirements and then challenge the design and build team to meet as many of those requirements as possible within a fixed budget. That in turn gives the owner certainty about cost – and this is very important for very high performing buildings, or LEED® Platinum buildings – the owner wants to make sure that costs are not getting out of hand. This is a method by which the owner can get cost certainty and at the same time get high-performance results – it puts the owner very much in the driver's seat, which is crucial for integrated design to work, in that the owner has to drive the process from start to finish.

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There's also an element of evolving sophistication at play. On the Denver-area project they originally built two wings, and then got the funding to build a third wing that came in 5% cheaper and with 17% better energy performance on a fixed budget, because the team learned on the first two wings how to do this better – key message – you never get it right first time and you have to expect a learning curve. From an owner's perspective you should look for project stakeholders with experience, or who have done some of that learning on their own dollar – not on yours.

CBRE: Have you seen more examples of integrated design overcoming this perceived problem of the green construction premium?

Jerry: I think the best demonstration of the fact that this has happened is that you just don't see research or articles in the green construction literature or trade magazines about green construction premiums any more. It must have

been the case that by the time an architecture firm has done 50 of these projects, they've pretty much figured out how to do it and incorporated new materials and systems into standard design processes and specifications. At least up to LEED® Gold level, most teams in the US have figured out how to do this on a regular budget. What people are now talking about is integrated delivery, Building Information Modelling (BIM) and how we're going to make this building work once it's built – and that's where firms like CBRE come in. So the commissioning process, the 'breaking in process', introducing occupants to the building and its green aspects to get buy-in on expectations and behaviour, getting the operator sophistication to match the controls sophistication, I think are becoming much bigger issues. So the discussion has shifted to "We know how to design these buildings well, but can we make them work?"

CBRE: Going back to the early days of integrated design in the US, which is similar to where Asia is now, what were the real challenges in terms of promoting adoption of integrated design and doing it right? We have a lot of developers in Asia who are interested in doing their first green building project but haven't moved forward with cost being a key issue and may not be comfortable with a completely new process with everything that real integrated design entails.

Jerry: Integrated design is clearly breaking out of non-traditional roles, particularly for the engineers and other non-architect members of the design team who have been fairly passive in the design process traditionally. What's changing that is people's demand for very high level of energy performance in buildings, which has forced engineers to learn more about architecture to learn how to get more out of buildings without spending any more money.

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Engineers have typically taken a "multiple safety factors" or 'belts and suspenders' approach to specification, i.e. you have two ways to hold up your pants in case one fails – which never looks good, it's unnecessary and it's an extra cost. The trick is to get the engineers engaged early enough so that they have enough confidence in the systems that they helped create and don't just keep adding one safety factor on top of another, which mitigates against liability but drives up cost.

The real issue has become the trust that has developed between leading edge architects, engineers and contractors to work more closely together. This is easier said than done, but it's happened in the US, being the nature of the culture here, with people more willing to step out of their traditional roles. It's also worth pointing out that even in the US, this has been a regional phenomenon, it started in the area between Washington D.C. and Boston (the so called Northeast) and on the West Coast, which are the two main innovation areas for green building in the US, plus some very big cities with very strong architectural traditions like Chicago, which has been building tall buildings for 100 years. Things started there and then spread inland. With a country of 300+ million people, new ideas take time to spread.

The leaders have been San Francisco north to Vancouver in British Columbia (Canada) and then Chicago, Atlanta, Denver, Dallas, New York, Boston, Washington D.C., and Philadelphia, those kinds of places where there are more innovators, more sophisticated

architects, engineers and owners. But as they show success they start to spread that knowledge and technique around – so it's an evolutionary process. We would expect to see similar evolutionary patterns occurring in Asian countries, starting in cities like Hong Kong, Shanghai and Singapore which are highly concentrated places with lots of government and academic resources to encourage innovation in high performance design.

In places where the real estate industry may be more traditional in its approach and culturally more conservative towards radically new methods, you need to find one or two innovators who can demonstrate the benefits of integrated design to the rest of the market on one or two projects, with the help of global design firms who have the experience and expertise. This process of "diffusion of innovation" has been well studied; it always takes "innovators" and "early adopters" to get new things going.

CBRE: How is integrated design being actively developed as a discipline in the US? Are there formal education courses that professionals can take or is it still more hands-on learning, project by project?

Jerry: LEED has certainly taken a role in promoting it. There have also been some industry advocates who have been providing workshops and training over the past decade, but the way design world works is that people take in all this stuff but then they have to apply it on an actual project in the real world for it to become tangible.

Large projects can take 2-4 years so as a result, the largest design firms have the ability to transfer knowledge on a large number of projects happening simultaneously, where as the smaller firms have been transferring knowledge on a smaller number of sequential projects. Until it happens for an individual and you've seen the process through from beginning to end, it remains theoretical.

A challenge for some Asian countries, for example, China, is that the large global design firms often don't do the full design, and a partial design gets handed down to the Local Design Institutes "LDIs," which is another whole complication, and then you have the contractor side of the equation. In 2005, I met with 8 different developers in 8 hours in Shanghai and asked one of them 'who decides what equipment you use on your buildings?' and the answer was 'I decide with the equipment vendor, the engineer is not involved in the decision' which is a further complication if you want good design.

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Therefore, for true integrated design to work in Asia, we're going to need to look to bring in these elements and it may be that the construction slowdown will facilitate that because there will be fewer but more sophisticated players left, but it will need to marry western ideas with an Asian face. Perhaps we should call it 'Harmonious Design' because the idea of working together to achieve common goals is only going to benefit everybody in the long run. It's going to have to evolve in Chinese, Korean, Singaporean, & Japanese ways. This is all part of the natural evolution of the industry.

It was less than 8 years ago that I visited China and people were pouring foundations for buildings before they'd even hired an architect. Things change fast.

CBRE: What's the single most important piece of advice you'd give to a project owner in Asia who wants to do integrated design for the first time but can't, for whatever reason, appoint a large global design firm to lead stakeholders through the process?

Jerry: Assuming that you have complete owner buy-in and support, then the single best thing you can do is appoint a process management consultant. You don't need the architect, engineers or contractors with integrated design experience but you need someone who knows the process from beginning to end. Because this is a new process, it's vital that someone is engaged who has seen it work and can manage the team through it, and they're typically not a big expense. Outlining the process, getting buy-in from parties, conducting effective design charrettes – these are all things on which money is well spent in the long run. To get the design right first time, the process has to be right first time. ■

EDITORIAL

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