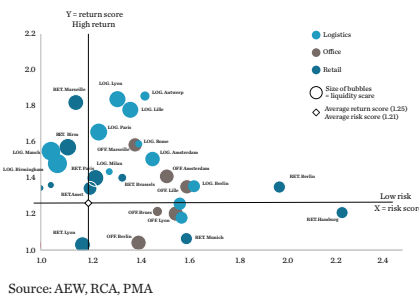


3. 15 markets with above overall average return and risk limits



Source: AEW, RCA, PMA

better risk-return dynamics; this is evident from the steeper risk curves for the 24 and 15 segment universes compared with the 50 segment universe, with the final portfolio situated between the 15 and 24 market efficient frontiers. In the next section, we describe how we filter down from the 50 to the 24 and 15 markets.

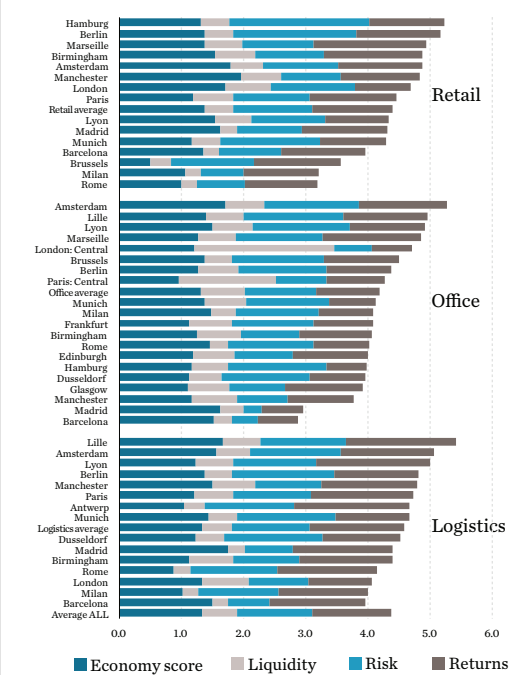
Initially, we considered an investable universe of 50 local markets across seven countries, including the 20 most liquid office, 15 most liquid retail and 15 most liquid logistics markets.

A practical approach forces us to limit our market universe as most investors looking at Europe are unlikely to be able to cover all 50 markets. As a first step, we include only markets scoring above their own property type's average overall score. This more than halves the universe from 50 to 24 markets.

If we then only include markets above the overall universe average risk-and-return scores, this further reduces the universe from 24 to 15 markets and including fewer, higher scoring markets results in better optimal portfolios (figure 3).

With respect to our market scoring, we assume a five-year holding period; while we

4. Overall market scores are used to select best universe



Source: AEW, OE, RCA, JLL, PMA

accept that many institutional investors hold core assets for longer, this coincides with the period for which we have forecasts. Each market is scored by the following four, equally-weighted criteria to estimate an overall score:

- **Economics:** common (GDP, unemployment, bond yield) and property-specific;
- **Liquidity:** past five years' investment volume

and transparency index;  
 ● **Risk:** standard deviation, maximum draw-down and Sharpe-ratio of historical returns;  
 ● **Return:** forecast total, income and capital returns for the next five years

Logistics markets are, on average, ranked higher than high street retail and offices, although this does not mean that all logistics markets rank ahead of all retail and office markets. For each of the three property types, non-gateway markets consistently rank highest at this point in the cycle.

In the case of offices, Amsterdam ranks top, based on strong risk, return and economics scores; this is partly driven by its late-cycle recovery from a perhaps prolonged but less dramatic decline. Spanish offices deliver low overall scores due to low risk-and-return sub-scores; this is mostly driven by their above-average historical volatility.

In the retail sector, Hamburg and Berlin lead on the back of very strong risk scores driven by strong rental and yield stability over the long term. London and Paris retail also score above average, but Italian retail markets show low overall scores due to low risk sub-scores; again, this is driven by their above-average historical volatility.

The results for our four criteria are presented in figure 4. This confirms the attractiveness of many logistics and selected retail and office markets, as well as the high level of liquidity in the London and Paris office markets.

Finally, it should be noted that our optimal portfolios and market scores are focused on traditional prime market definitions and do not address different investment styles.

Experienced investment managers are able to add value for investors with 'manage to core' strategies, even if large prime markets such as London and Paris are less attractively priced.

*Hans Vrensen is managing director, head of research and strategy; Ken Buccam is director of research and strategy; and Guillaume Oliveira is an analyst at AEW Europe*

**SUSTAINABILITY** The real estate industry needs to become a more active participant in reducing carbon emissions. Richard Peiser and Thomas Wiegmann explain

# The green imperative

In a rapidly urbanising world, the real estate industry has a critical role and increasing responsibility to act as a catalyst to reach climate and environmental sustainability targets. In the report to the United Nations 'Our Common Future', which the Secretary General also refers to as the Brundtland Report, a development is designated as sustainable if it "meets the needs of the present without compromising the ability of future generations to meet their own needs".

A major concern of environmental sustainability is related to climate change. If the world's nations do not reduce global warming quickly, temperatures may increase dramatically in the coming decades. Disastrous results will likely include scarcity of food and fresh water, the

spread of diseases and rising sea levels, which will flood coastal cities and submerge many island nations. Also, the United Nations Intergovernmental Panel on Climate Change (IPCC) estimates that a 1.5°C average rise may put 20-30% of species at risk of extinction.

In addition, increasing extreme-weather events like storms and floods are likely to affect the property industry and infrastructure. In its fifth assessment report, the IPCC said that it was "extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century". A key human influence has been the emission of greenhouse gases and, specifically, carbon dioxide (CO<sub>2</sub>).

Given the significant development activities in emerging markets, global emissions

could increase by one-third between 2012 and 2040, according to the US Energy Information Administration. Such increase in total emissions is expected despite a moderate decrease in carbon intensity (CO<sub>2</sub> per unit) resulting from an anticipated growth in the use of renewable energy sources and a shift in mix of fossil fuels.

Since the United Nations Framework Convention on Climate Change was negotiated first in 1992 in Rio de Janeiro, much time has been lost without taking significant action to prevent the imminent dire consequences. At COP21, the Paris climate conference that took place in December 2015, 195 countries adopted the first-ever agreement, which sets a target for reducing negative effects from climate change by limiting global warming to well below 2°C. Cities and ▶

## 34 INVESTMENT

the broader real estate community and its stakeholders play a key role in the implementation of the great achievement of the Paris Agreement, as emission of greenhouse gases in the context of the construction and operation of real estate are main contributors to global warming.

### Real estate industry is essential to limit global warming

According to the US Green Building Council, buildings account for 39% of CO<sub>2</sub> emissions in the US, more than any other sector. Most of these emissions come from fossil fuels to provide heating, cooling, and lighting and to power appliances and electrical equipment. Real estate, both residential and commercial, has a crucial role to play in reducing the impact of its construction and operations on climate change.

The World Economic Forum states in its report 'Environmental Sustainability Principles for the Real Estate Industry' that the real estate sector consumes over 40% of global energy annually, that buildings originate 20% of global greenhouse gas emission, and use 40% of raw materials respectively (3bn tonnes globally). A study by dCarbon8, reveals that one-fifth of greenhouse gases are emitted by buildings in the construction phase, with the remaining four-fifths of emissions resulting from building operations (assuming a useful life of 60 years). This is a poignant demonstration of how important sustainable thinking is in real estate over its lifecycle.

The World Bank forecasts that the real estate sector has to reduce CO<sub>2</sub> emissions by 36% by 2030 to stay within the 2°C threshold. There are enormous savings to be derived from renovation of existing buildings, considering possible energy savings for individual households, businesses, the transportation sector, and so on. According to CO<sub>2</sub> abatement studies – by McKinsey, for instance – insulation is among the lowest hanging fruits, allowing for some of the highest financial gains for every tonnes of CO<sub>2</sub> it saves. As such, the savings potential from sustainable renovations is regarded greater than that available in most other industries.

### Green buildings – certification systems

Green buildings refer to both structure and the use of processes that are environmentally responsible and resource-efficient throughout the lifecycle. Key areas of focus are the reduction of energy consumption, the protection of natural resources as well as the provision of a healthy working environment.

Green buildings represent a significant share of global construction projects, which is expected to further grow. The status of implementation varies widely by country, regions as well as micro-locations. This illustrates that the real estate industry has acknowledged environmental sustainability in its decision-making and the objective to balance the environmental footprint of the properties, specifically for new developments.

As it is nearly impossible to draft a clear and universal definition of a sustainable building due to the inherent complexity of the concept and differing opinions among world's nations, certification systems offer at least a practical solution for assessing buildings' sustainability. Standards include inter alia LEED (North America, Asia), BREEAM (worldwide, especially UK), HQE (especially France), DGNB (especially Germany) and CASBEE (especially Japan). LEED and BREEAM are widely established certification systems, focusing on the areas of energy efficiency and conservation of resources. Other systems, such as the DGNB seal in Germany, attempt to consider the entire lifecycle

of a building, as well as its social and economic impact.

Yet the value of certification system for practitioners is still, in some parts, questionable due to plurality of labels. From the perspective of users, a high degree of transparency with regard to the measures that lead to certification of a building is important. From an owner's point of view, certification systems must allow measurement and comparison of assets and be able to clearly demonstrate advantages for users and tenants. As such they should support the creation and investment into better performing assets and thus create a competitive advantage.

In the absence of one fully uniform certification system, it is still difficult to measure, standardise and compare monetary valuation of

sustainability aspects. Even if the existence of a 'green value' is less disputed in recent years, its amount is still lively debated. The rating systems offer a useful formula for comparison of properties within a usage category, but this primarily applies to new projects. At the same time, appraisers mostly deal with existing buildings, which are typically not subject to certifications. Given the tremendous carbon footprint of existing buildings, it is necessary to further implement certification or rating systems for the existing built environment to achieve transparency on their ecological footprint, as well as to identify optimisation measures and associated models to support their economics and as such their 'business case'.

A lack of public awareness and still often lack of political support and also governmental incentives are obstacles to the adoption of green building certifications in many evolving countries and markets. In more established markets there is still some perception that green building profiles are mostly relevant for core projects in more prominent locations to underpin the prestigious profile of an asset.

### Sustainability as value driver

The core challenge for many investors lies in the frequently diffuse causal chain between the effects of costs and the resultant effects of benefits of investments into sustainability measures on the level of an individual property as well as on a portfolio level.

However, research has illustrated that property pricing is increasingly distinguishing between properties and portfolios that exhibit different sustainability-related features and resulting performance. Also, evidence shows that more sustainable properties correlate positively with higher rental premiums. Secondly, green buildings tend to have lower vacancy rates as well as lower operational costs. At the same time, there is still a need for enhanced empirical evidence of causality between sustainability and performance.

It should be noted that investors frequently call for relatively short amortisation periods, which is a factor obstructing the long-term benefits of sustainable real estate. This challenge becomes more accentuated, particularly because of the long lifecycle phases of a property. It is important to further develop business cases for sustainability that are capable of quantifying the economic benefit of green building measures in a transparent way.

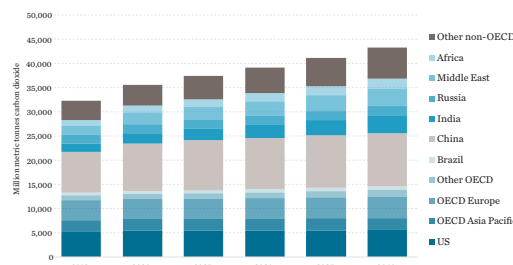
Among many studies, the 'World Green Building Trends 2016' report by Dodge Data & Analytics provides insight from respondents expecting 14% savings regarding operational costs over a holding period of five years for newly developed green buildings. The savings potential for green retrofit and renovation projects is expected to be around 13%. A value uplift of about 7% over traditional buildings reflects the view of market players.

In light of increasing ecological and economic arguments on the subject matter, the number of certified projects worldwide has grown sharply in recent years.

According to the World Green Building Trends 2016 report, survey participants anticipate a significant increase in green projects over current levels.

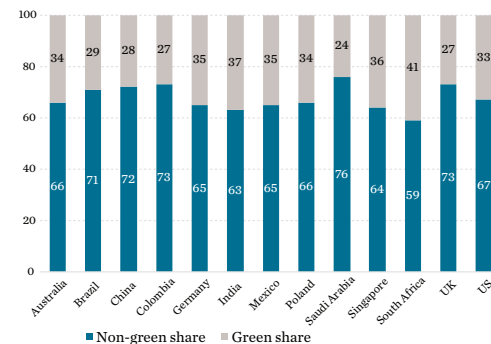
With its report 'Impact of the financial crisis on carbon economics', McKinsey and Company aims to provide a fact base on emissions-reduction opportunities and their associated cost and investment needs. According to the study, energy-saving measures in real estate are more cost-efficient. This is not least explained by the long lifecycle of buildings, which enables enormous cumulative savings.

## 1. World carbon dioxide emissions, 2011-40



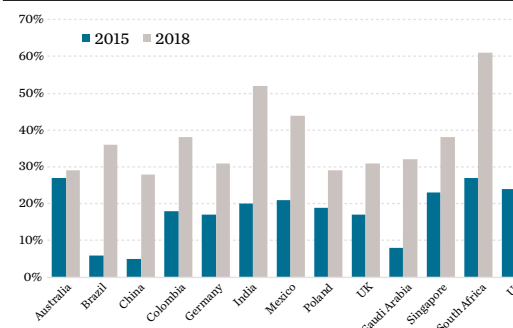
Source: US Energy Information Administration, 2016

## 2. Green share of building project activity



Source: Dodge Data & Analytics

## 3. Percentage of respondents whose firms have done more than 60% green projects



Source: Dodge Data & Analytics, 2016

This particularly applies to existing property stock. The benefits of optimised operating costs has an impact from a long-term perspective and in consideration of the entire lifecycle. High start-up investments are particularly obstructive when short amortisation periods and high-yield expectations are at the centre of attention. Cost effects are expected to prevail only from a short-term perspective. Properties that have received investments in sustainability characteristics are expected to 'pay off' in the medium and long run.

### Challenge of existing building stock

Irrespective of their success story, certified projects and properties still represent a comparably small portion of overall existing stock. Such existing 'non-green' stock is often untouched regarding significant capital expenditures on upgrading and implementation of energy-efficient and other green building-related measures. The issue is that it does not cost much more to construct an efficient building (compared to a traditional one) but it costs quite a lot to make an existing one efficient. However, actual costs of energy-efficiency measures are often overestimated as they can be conducted within the frame of maintenance measures that have to be done in any case (business-as-usual costs).

From the perspective of owners and investors, sustainability costs are not symmetric with resulting energy savings. In other words, energy-saving measures require significant one-off capital expenditures to be borne by owners and investors, but the resulting reduction of operating costs usually occurs over time and benefits mostly tenants.

Many large investors already focus significantly on projects and funds committed to the principles of sustainability. The US government, for example, requires new leases to incorporate green building standards. Many major corporations are similarly requiring new leases to meet sustainability objectives, so-called 'green leases'. The introduction of green leases (also known as energy-aligned leases) include specific provisions to define specific responsibilities and obligations with regards to the sustainable operation of a property and can solve the aforementioned asymmetry to a certain extent and is gaining popularity among larger tenants.

The future of environmental sustainability within the real estate industry is to a large extent in the hands of legislators and governments, particularly as it relates to energy optimisation and subsidy policy. In many markets, government will likely have to consider incentive programmes to support a sound implementation of green buildings, both for new projects and retrofitting of existing stock.

### Integration of sustainability

An issue as important as environmental sustainability consists of complex technical terms and cannot be implemented overnight. By definition, sustainable actions include ecological, economic and social changes and require successful implementation. This means basic concepts behind sustainability must be incorporated into a corporate strategy and organisational culture of these stakeholders. It is a complex task, which requires time and significant resources. It is driven by the corporate culture, leadership, innovators and pioneers within these organisations.

For an organisation starting to think about sustainability, a task force needs to officially be entrusted to educate others on sustainability, communicating this complex issue to relevant areas within the organisation and the public, as well as pioneering change in corporate strategy and organisational structure. Unfortunately, there are still not very specific guidelines and processes for specific challenges with regards to enhancing the green profile of properties and portfolios. However, some guidelines on addressing specific challenges are available.

When it comes to development and construction, it is crucial to review – inter alia – the location, (energy-related) remediation, high suitability for alternative uses, labels/certifications and the use of harmless raw materials in the context of sustainability. Also, lifecycle assessments and resulting lifecycle cost considerations are becoming increasingly important and turn the focus on the long-term benefits of sustainable real estate.

There is also potential to take action in the context of asset and property management. This relates primarily to improving the data for parameters that can be controlled. A number of benchmarks offer comparable sets of indicators. Organisations and governmental entities as well as consultants are increasingly developing and documenting sustainable management concepts and guidelines which provide a good orientation for the operation of real estate. Also templates for green leases have been developed for a number of years and offer a solid basis to incentivise a more environment-conscious behaviour of the tenants and support investments into sustainability measures by investors.

### Conclusion

There is a positive trend globally with regards to the development of green buildings, which prevents high emissions from being locked-in over the long lifecycle of properties. Sustainable retrofits and renovation of existing buildings is an enormous challenge in the short term, but it is still the most cost-efficient way to achieve the

reduction in CO<sub>2</sub> emissions necessary to preserve the environment for future generations. Climate protection cannot be achieved through construction of energy-efficient buildings alone as new construction represents only a very small fraction of the built environment and urban infrastructure.

Governments and cities shall further proceed in establishing and adopting sustainable and comprehensive long-term policies incentivising real estate investors to collaborate and support such initiatives. It is inevitable that owners and investors of less sustainable buildings will be faced with stricter regulations and be confronted with substantial capital upgrades in the upcoming future.

Future requirements will continue to increase due to the progressing climate change, increased shortage of resources, continuously more stringent regulation and changed consumer behaviour. From an investment market perspective, it is to be noted, that responsible property investments have developed from a niche concern to a mainstream product over the past decade. Many existing properties will be rated as not 'future-proof' and will successively fall behind when competing for customers and occupancy rates and investors. As such, we expect that a significant discount for a lack of sustainability (the 'grey discount') will be observed in the near future from tenant and investment markets.

The investment into sustainability – from the development of green buildings to the green retrofit and renovation of existing stock to sustainable portfolio composition and sustainable management, communications at the company level – are the cornerstone of successful competitiveness in the medium and long term. As such it is a rational decision for companies to invest in a sustainable direction of their business models to satisfy not only current but also future requirements.

Nearly 30 years after Gro Harlem Brundtland's landmark report to the United Nations, the time has come for the real estate industry to become a more active participant and driving force in reducing carbon emissions and achieving sustainable building objectives, both for new and existing buildings. It is an ethical imperative to meet "...the needs of the present without compromising the ability of future generations to meet their own needs".

*Richard Peiser is Michael D Spear professor of real estate development at Harvard Graduate School of Design, and Thomas Wiegmann is managing director at Blue Asset Management and honorary adjunct professor at Bond University*



**PENSION FUNDS**  
Are you researching an asset class?

EMAIL DIGESTS

STRATEGIC RESEARCH

WHITE PAPERS



**IPE REFERENCE HUB**  
hub.ipe.com

CENTRAL SOURCE

INVESTMENT TRENDS

OUTLOOKS & INSIGHTS

**Delivering asset manager research, data & commentaries to Institutional Investors**

Please contact:  
[ian.messenger@ipe.com](mailto:ian.messenger@ipe.com)