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Environmental Performance

A Global Perspective on Commercial Real Estate

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A report commissioned by:

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The European Centre for Corporate Engagement (ECCE)
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is an internationally oriented research consortium devoted to delivering high-quality research in the fields of corporate engagement and sustainable finance. The Centre helps practitioners and scholars understand how businesses and financial markets can promote sustainable development by considering Environmental, Social and Corporate Governance (ESG) issues.

This report is commissioned by APG Asset Management, PGGM Investments, and the Universities Superannuation Scheme (USS). The report is also endorsed by the Australian Council of Superannuation Investors (ACSI), the European Public Real Estate Association (EPRA), and the European Association for Investors in Non-Listed Real Estate Vehicles (INREV).

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Preface (I)

We are proud to present the global perspective on the environmental performance of the commercial real estate sector. APG Asset Management, PGGM Investments and the Universities Superannuation Scheme are committed to integrating environmental, social and governance principles into their investment policies. This report is a significant step forward in our endeavours to integrate these principles into our real estate investments.

In recent years, we faced difficulties in measuring the environmental performance of the commercial real estate sector, as publicly available data were incomplete, inconsistent, and inaccurate. We therefore decided to develop our own environmental real estate survey and to use the results as the baseline for future engagement activities.

The result of these efforts are presented in this report: a global environmental real estate study focussing on all the main real estate sectors, endorsed by the Australian Council of Superannuation Investors, the European Public Real estate Association (EPRA) and the European Association for Investors in Non-Listed Real Estate Vehicles.

The purpose of the study is to provide an objective and uniform set of environmental data, which can serve as a starting point for the real estate sector, investors, academics, and policy makers in the discussion on how to optimally monitor and improve the environmental performance of the commercial real estate sector. The highest ranked companies and funds in this report can be regarded as "best practice in environmental performance" and these companies and funds serve as an environmental benchmark for both their lower ranked peers and the group of non-respondents.

We strongly urge the real estate sector to improve the environmental performance of their property portfolios in the near future, and we invite the sector to actively participate in the ongoing dialogue with institutional investors. We are confident that you will find the results in this report of interest and we welcome your feedback.

Sincerely,

Angelien Kemna
CIO APG Asset Management

Johan van der Ende
CIO PGGM Investments

Roger Gray
CIO USS

Preface (II) An important first step

Mistra is a Swedish foundation that has the specific objective of promoting the development of high-quality research aiming to help solve major environmental problems and contributing to the development of a more sustainable society. Since 2005, Mistra funds the Sustainable Investment program, which is managed by an international consortium of Swedish and Dutch Universities. The European Centre for Corporate Engagement is an important partner of this consortium.

The innovative power of Mistra's Sustainable Investments program has lead to a new stream of research that is related to social responsible investments and to the influence of RI policies on investments outcomes. Part of the research focuses on the economics of energy efficiency and sustainability in the built environment. In Mistra's view, this is an increasingly important topic that has suffered from a lack of corporate transparency and a lack of robust academic research thus far.

This survey initiative, mapping the environmental performance of professional property investors, is in line with the vision and goals of Mistra: it results in environmental metrics to benchmark intermediate property investors, and provides pension funds and other institutional investors with the tools to practically incorporate environmental issues in their tactical real estate allocations.

Mistra programs are considered a success when scientifically advanced research has been put to practical use in companies, the government, or other organizations. The cooperation between the European Centre for Corporate Engagement and three of Europe's leading pension funds provides a good example of that. As such, Mistra endorses this initiative. We hope that this first step will lead to a dialogue between property investors and institutional investors, which in the long-term perspective should reduce the ecological pressure of the real estate sector.

On behalf of Mistra,

Ola Engelmark
Chief Executive

MISTRA
THE SWEDISH FOUNDATION FOR STRATEGIC ENVIRONMENTAL RESEARCH

I. Introduction and summary of findings

Shareholder engagement addresses important topics that contribute to the broader society. Engagement issues range from the extent to which companies implement environmental risk management policies (E); how these companies manage social issues such as employee relations and Health and Safety (S); and, most prominently, to the realm of corporate governance in publicly listed companies (G).

Many institutional investors have now adopted so-called "ESG-policies", and have started the actual implementation of their engagement activities. Their actions are primarily in the area of equity investments, since extra-financial information and ESG analyst coverage on publicly listed companies are both readily available. Engagement in other asset classes is observed less frequently, lacks consistency, and is often aimed at a select group of investments.

One of the main reasons for the slow pace with which ESG policies are implemented across the full universe of investments, is that there is often insufficient extra-financial information on non-equity or "alternative" investments (e.g., real estate, hedge funds, and private equity). Legal requirements for disclosing this type of information are virtually non-existent, and the management of companies active in these fields rarely provides such information on a voluntary basis. However, institutional investors' ESG policies are usually aimed at the entire portfolio of assets, which provides a clear incentive to speed up the actual implementation of ESG engagement in asset classes beyond equities.

Recently, the environmental aspect of ESG policies has become more important, since the threat of climate change is becoming a reality. Indeed, investors are beginning to realize its destructive financial implications. Because buildings and their associated construction and operational activities (the "built" environment) account for at least one third of global greenhouse gas emissions, this holds especially true for real estate investments.[1] Real estate as an investment category has developed into a major component of the strategic asset allocation of institutional investors in general and in particular of pension funds. Most funds allocate close to 10% of their portfolio to real estate assets. However, information on the environmental performance of real estate investments is scarce, since only a handful of property management companies pro-actively deliver metrics on environmental performance. Moreover, so far, institutional investors have not demanded such information.

Analyses of mitigation policies show that the built environment offers the largest potential for greenhouse gas abatement (Per-Anders Enkvist, Thomas Naucler and Jerker Rosander, 2007, IPCC, 2007, Nicholas Stern, 2008). Thus, small improvements in the environmental management of existing buildings, or in their energy efficiency, can have major effects on their current use of energy and on their life-cycle energy consumption. As it is very likely that the real estate sector will play a major role in the reduction of global energy use and greenhouse gas emissions, there is a clear need to change the level of environmental information provided. Moreover, the impact of energy costs directly affects property investors and users:

[1] Evidence suggests that the construction and operation of buildings accounts for about 40% of worldwide consumption of raw materials and energy (RICS, 2005). In the U.S., the buildings sector account for some 70% of total electricity consumption.

energy represents about 30% of operating expenses in the typical office building in the U.S. This expense is the single largest and most manageable item in the provision of office space. Rising energy costs can only increase the importance of this issue for the private profitability of investment in real capital.

"Analyses of mitigation policies show that the built environment offers the largest potential for greenhouse gas abatement"

In most cases, it is possible to turn environmental risks into opportunities, as many energy efficiency investments in buildings have positive net present values. ECCE research confirms these opportunities: rents of energy efficient buildings are higher than conventional buildings by 6 to 8%, occupancy is higher and less volatile, and transaction values are higher by up to 18% (Piet M.A. Eichholtz, Nils Kok and John M. Quigley, 2010a, b).[2]

A. The Environmental Real Estate Survey

Given the fact that the property sector can play such a major role in the reduction of energy use and carbon emissions, it is worthwhile to map the current state of environmental management practices among the largest and most professional property owners: listed property companies and private property funds. Although the social and governance dimensions of ESG policies are also important, these are not the areas in which the real estate sector can have the biggest impact on society.

Table 1 shows in bold the three of Europe's largest institutional investors – APG Asset Management (Netherlands), PGGM Investments (Netherlands), and the Universities Superannuation Scheme (U.K.) – who asked the European Centre for Corporate Engagement (ECCE) to conduct a survey that measured the extent to which property companies and funds integrate elements of environmental (risk) management into their investment process. By commissioning such a survey, these pension funds demonstrate their wish to actively engage with property investors on environmental issues.

[2] A recent Mercer report provides further insights into the costs and benefits of energy efficiency in the built environment (Mercer, 2009).

Table 1. Survey Scope - Top 10 European Pension Funds[3]

Rank	Fund Name	Country	Assets under management (€m. 2009 Q3)	Percentage of top 10
1.	Norway Government Pension Fund	Norway	277,900	32.3%
2.	ABP (managed by APG)	Netherlands	204,700	23.8%
3.	Pensioenfonds Zorg en Welzijn (managed by PGGM)	Netherlands	78,500	9.1%
4.	Reserva de la Seguridad Social	Spain	57,223	6.7%
5.	Arbejdsmarkedets Tillægspension (ATP)	Denmark	53,695	6.2%
6.	BVK - Bayerische Versorgungskammer	Germany	44,000	5.1%
7.	Alecta	Sweden	40,100	4.7%
8.	Universities Superannuation Scheme (USS)	U.K.	36,556	4.3%
9.	British Telecommunications	U.K.	36,400	4.2%
10.	Danica Pension	Denmark	31,276	3.6%

This survey, which is the first of its kind, is intended to create an overview of the current level of integration of environmental management in all listed property companies and private property funds across the globe. The initiative focuses on two dimensions: the definition of an environmental management policy, and the actual implementation and measurement of that policy. In the first part of the survey, public and private property investors were asked 20 detailed questions related to the presence of environmental management policies, integration of environmental issues in property management, and disclosure of environmental policies. In the second part, respondents were asked 28 questions, the purpose of which was to supply evidence on the actual implementation and measurement of their environmental policies. For instance, investors were asked to provide detailed information on energy consumption, water consumption, waste collection and recycling, and CO_2 emission, and on employee training programs and remuneration policies.

"This survey is intended to create an overview of the current level of integration of environmental management in all listed property companies and private property funds across the globe."

Based on the survey results, we have developed a "Global Environmental Real Estate Index", which includes sub-scores on environmental management practices and on the actual implementation of these practices. The index is a benchmark, an assessment tool for which the highest score is 100. The maximum index score reflects optimal environmental performance, an environmental policy that is fully in line with the creation of shareholder value, so it does not conflict with the primary fiduciary responsibility of the pension funds. Managers of listed property companies and private property funds should aim for this environmental performance level.

By using information contained in the index, institutional investors can compare the environmental score of individual property investments with their environmental real estate targets. This benchmarking will serve as a catalyst for environmental engagement in real estate investments.

[3] Source: IPE Magazine, September 2009.

B. Summary of findings

Our analysis of the survey data leads to numerous interesting findings:

- We report the companies and funds that rank highest in each continent. The results confirm that the maximum score on the environmental benchmark formulated by the three sponsoring pension funds is realistic. A few of the listed property companies and private property funds around the globe – mostly from Australia and Sweden – come very close to attaining a score of 100 on the Global Environmental Real Estate Index. These property companies and funds can be considered as "best practice in environmental performance" and can serve as benchmarks for many other property companies and funds.

- The survey shows that environmental management practices are unevenly distributed across the global property investment industry. This is reflected by the overall response rate (198 property companies and funds out of a total of 688), which differs substantially across countries and sectors, and between listed companies and private funds. The response rate is high among listed investors in Europe and Australia, but low among listed investors in Asia and the U.S., and low among private investors in Europe. The cross-sectional differences in the response rate can be partly explained by the varying levels of transparency in the surveyed commercial property markets. But, the lower response rate is probably also an indication that the environmental management within the property sector is in the early stages. In some countries, it may be a token of inertia or sheer disinterest.

- Listed property companies show a much better environmental performance than their private counterparts. High scores seem to be concentrated among more profitable, larger property companies, whose focus is on the office and retail sector. On average, the environmental performance of Australian, U.K., and Swedish property companies and funds is substantially stronger than the performance of investors located in Asia, the U.S., and southern Europe. Surprisingly, in the sample of private property funds, the location of a property fund is more important than the origin of the fund manager in explaining the existence of an environmental policy and a thorough implementation.

- Importantly, property investors do not necessarily walk their environmental talk: a substantial percentage of the respondents score higher on environmental management and policy than on the actual implementation of these policies. Moreover, the majority of respondents are relatively inactive in environmental management. Their scores do not even come close to the maximum score on the environmental benchmark, despite the fact that the actual respondents are likely to be among the better environmental performers. This finding implies that there are still many opportunities regarding the improvement of environmental performance in the property sector.

- The "green talk" factor is also reflected in the strikingly low number of property companies that can report actual numbers on energy consumption (19%), water consumption (16%), waste recycling (11%), and carbon emissions (14%). The lack of knowledge on actual resource consumption is hardly surprising, since less than 40% of the respondents have "smart" meters in place and less than 22% have an environmental management system in place. However, benchmarking the energy consumption of a real estate portfolio is the key first step to making properties more efficient. The lack of data on

actual energy consumption indicates that we are standing just at the beginning of the road to energy efficiency in the commercial real estate sector.

- The results also suggest that the environmental performance of the property sector is bound to improve: 89 property companies and funds now have staff dedicated to environmental management, and many of the assets acquired or developed in 2008 adhere to "green" or energy-efficiency standards.

The findings in this report provide the metrics for institutional investors to put increasing pressure on the property sector to convert the words, opinions and views on environmental management into practice. Implementation of these practices will allow for reaping the opportunities of improved environmental performance. ECCE will continue to contribute to this development, for instance, by conducting this survey on a regular basis, thereby providing a dynamic and global benchmark of environmental performance in the global property sector.

"The findings in this report provide the metrics for institutional investors to put increasing pressure on the property sector to convert the words, opinions, and views on environmental management into practice."

This survey report is structured as follows.

- In Chapter II, we introduce the role of environmental management in real estate markets. We provide some background on the lack of awareness concerning energy efficiency. In particular, we discuss the lack of appropriate financing mechanisms, the lack of the right incentives for property owners and tenants, and the lack of awareness among property investors that energy investments can be very profitable.

- Chapter III provides our overall survey results. First, we present detailed information on response rates and discuss the causes of variation in response rates between countries, regions, and property types. We then introduce the scores on the Global Environmental Real Estate Index, and the sub-scores on the Management & Policy Index and the Implementation & Measurement Index.

- Chapter IV presents more detailed results and discussion on the scores on some of the individual questions. We focus on the disclosure of environmental performance, the measurement of environmental metrics, and management incentives towards environmental performance.

- Chapter V summarizes and concludes.

II. Environmental management and real estate

A. Background

The real estate sector plays a major role in energy consumption and carbon emissions. Buildings and their associated construction activity account for at least a third of world greenhouse gas emissions (RICS, 2005), while the U.S. property sector accounts for 70% of U.S. electricity consumption (U.S. Department of Energy, 2003). Building construction accounts for approximately 40% of the consumption of raw materials, including 55% of global wood consumption (RICS, 2005).

A recent study by McKinsey & Company investigates the costs associated with different forms of greenhouse gas reduction (Per-Anders Enkvist, Thomas Naucler and Jerker Rosander, 2007). Their study shows that measures relating to real estate, such as better insulation, optimizing building management, and modern lighting technology could, and should be at the forefront of the "green" investment revolution. Indeed, the financial benefits of these measures are such that they have substantial positive net present values. In addition to the immediate financial benefits, the societal implications of such investments could be significant: the McKinsey study documents that about one quarter of greenhouse gas abatement potential requires energy efficiency measures in the real estate sector.

The fact that real estate can play such a major role in the reduction of global energy consumption and carbon emissions implies that regulators are increasingly looking at the property sector. Recent examples are the revised EU building directive (EPBD) and the U.S Waxman-Markey bill that is now being discussed in the U.S Senate. Regulation does seem to have an impact on energy use. Recent research shows that building codes imposed by local and state regulators can significantly lower energy consumption in buildings (Anin Aroonruengsawat, Maximillian Auffhammer and Alan Sanstad, 2009, Grant D. Jacobsen and Matthew J. Kotchen, 2009). However, the results of the McKinsey study lead to the question whether more regulation is really needed. If better insulation and building management are investments that generate a positive net present value, then the market should be able to make these investments without the need for further regulatory intervention.

That raises a paradox: why are investors not solving the market inefficiency by reaping the financial opportunities offered by investments in energy efficiency? Some of the main issues that play a role in answering this question include:

- Real estate investors do not yet engage in large-scale energy efficiency investments because they are not aware of the profitable investment opportunities that are hidden in their buildings.
- The market has not created the mechanisms and products to finance investments in energy efficiency.
- The market does not provide the right incentives for building owners and managers to make investments in improving the energy performance of their buildings.
- Recent market turmoil has diverted the attention of property investors and managers to resolving short-term, but immediate and important, other issues.

B. Market information

The first, and arguably most important reason, why investments in energy improvements are not yet happening at the scale warranted by the numbers is a lack of information on the financial costs and benefits of such investments, and a general scarcity of knowledge on energy performance contracting and retrofitting among property market participants.

"Recent academic research shows that energy efficient buildings have better economic performance than conventional buildings."

Recent academic research shows that energy efficient buildings have better economic performance than conventional buildings (Piet M.A. Eichholtz, Nils Kok and John M. Quigley, 2010a, b). Effective rents are higher by 6 to 8%, and transaction values are higher by up to 18%. Moreover, evidence on the direct economic implications of retrofitting and retro-commissioning shows that, on average, these investments lead to financial returns that easily surpass the hurdle rates of institutional investors (Charles A. Goldman, Nicole C. Hopper and Julie G. Osborn, 2005, Evan Mills, 2009). However, awareness of these findings among property market participants is still limited.

The current lack of information on actual energy consumption implies a deficit in information at the micro level. Building owners cannot make well-informed changes in their environmental management if they do not have building management systems in place. For example, if they cannot directly measure the energy cost reductions of more efficient lighting or heating, then they are not likely to install more energy efficient lighting or an advanced environmental management system (EMS). We note that, under all circumstances, it is necessary to exactly measure the source of an energy saving by using "smart" metering and "smart" building software.[4] Such technology is developing rapidly, is already available at low prices, and is becoming more commonplace among property investors.

C. Financing mechanisms

Currently, property owners must self-finance investments in insulation, better environmental management systems, and renewable energy generation. The resulting capital constraint is a problem that can be solved by financial markets, but banks and institutional investors have not yet created the financial instruments and infrastructure to deal with investments in energy efficiency improvements in buildings. There are two main types of financing vehicles for investments in energy improvements.

The first is stand-alone, i.e., the investment is funded separately from the building to which it pertains. And in fact some innovative funds have been created. For instance, APG Asset Management has created and co-funded a dedicated fund to finance energy efficiency retrofits. Together with energy performance contractors, who guarantee units of energy savings, this fund offers property investors the opportunity to improve the environmental or energy performance of their property portfolio without any capital

[4] A "smart" meter is a digital meter that records electricity, water or gas consumption with a high frequency and periodically transmits the readings via a dedicated radio frequency, Bluetooth, or network, back to the building manager. "Smart" building software is an automated supervisory control system for HVAC systems in buildings, designed to reduce energy consumption, operating costs and CO2 emissions. It connects to existing building management and control systems using industry standard interfaces.

requirements. It is fair to assume that other market participants will increasingly adopt this example, with for instance the Climate Change Capital Property Fund as an example.

The second approach is to make the financing of energy efficiency investments either part of the mortgage that is written on the building, or a separate lien on the building that is senior to the existing mortgage, for example in the form of a property tax. Financing as a part of the mortgage has not yet materialized. However, researchers at the University of California at Berkeley have started to analyze possible designs for such mortgages (Dwight Jaffee and Nancy Wallace, 2009). One of the main obstacles is lack of information, because banks do not currently take energy costs into account when making mortgage loans, despite the fact that these costs affect the cash flows pertaining to the buildings. Lower and less volatile energy costs improve the value of these buildings, and therefore increase the lender's financial security. So, in principle, banks should welcome investments to improve energy efficiency. Financing energy improvements by means of a senior lien or property tax has been implemented under the Property-Assessed Clean Energy (PACE) program in California. Various market participants, most notably the Clinton Global Climate Initiative, are actively pursuing market alternatives to this government program.

D. Market incentives and rental contracts

The third reason the property sector has been reluctant to invest in energy efficiency is the existing incentive structure in the market. To optimize the environmental performance of the property sector, the relationship between investors, landlords, and tenants should be structured in such a way that it offers both owners and users the incentives to behave in a more energy-efficient way. Neither of the two main contract forms that are currently used (gross and net leases) are optimal in this regard. Under net lease contracts, which are common in most European commercial property markets, the energy bill pertains directly to the user. Since the savings derived from such behaviour flow directly to the user, this creates an incentive for users to economize on energy costs. However, this type of lease contract provides no incentive for a building owner to invest in energy efficiency. A recent paper by Lucas Davis (2009) shows that when the tenants pay the energy bill, residential property investors under invest in energy-saving appliances.

Receiving positive net present value from investments in energy efficiency is easier for property owners if they use gross lease contracts, which is the most common form of lease in the U.S. commercial property market. Under this lease, the energy bill is the responsibility of the property owner. The benefits of measures reducing energy consumption in a building now flow directly to the investor, leading to an increase in the net operating cash flow. However, a gross lease does not provide any incentive for tenants to behave in an energy-efficient way. Turning off lights or shutting off the air conditioning will not lead to any monetary gains for the property's tenants, so it is likely that daily energy consumption in a given building with a gross rental contract will be higher than would be the case if a net rental contract would be used.

A possible design to resolve this issue could be a gross rental contract in which the tenant receives the utility cost savings that result from its own efficient energy consumption, while the owner receives the

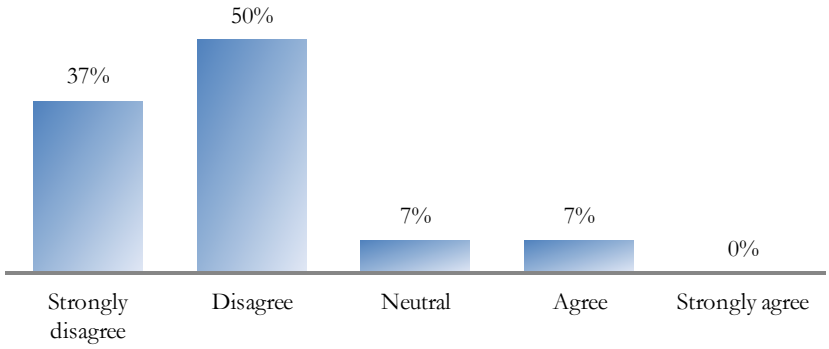
cost savings from his energy investments. The Greenhouse Guarantee of the Australian Investa Property Group is an example of such a structure.[5] The property sector would have more incentives to make profitable energy-saving investments if "green" rental contracts were adopted for commercial property.

E. The crisis and property investors' green outlook

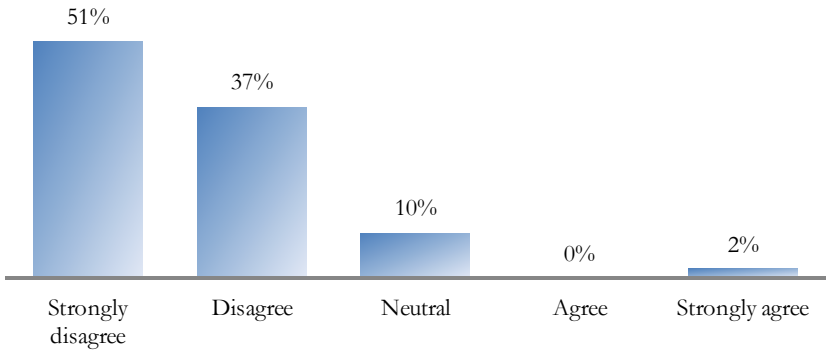
Given the current financial crisis and its effects on the property industry, it would not be a surprise if property investors would pay more attention to their immediate financial health than to the energy efficiency of their portfolios. However, that appears not to be the case. Opinions on the topic of environmental management are clear. Figures 1A, B, and C show the aggregated view of the real estate sector on environmental sustainability. Investors overwhelmingly indicate that environmental performance is still a priority, even in the aftermath of the financial crisis. Environmental management is not regarded as a short-term hype. On the contrary, most investors anticipate that the drivers for environmental issues will be stronger in the long term.

Figure 1. The Importance of Environmental Sustainability - Sector View

A. The environmental performance of the real estate portfolio is no longer a priority due to the economic downturn.

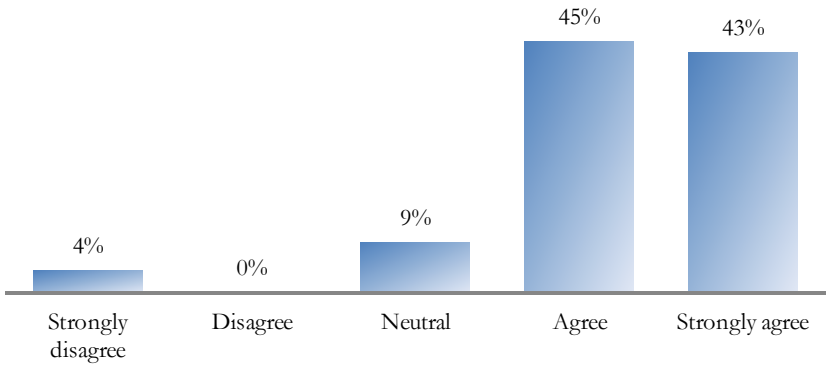


B. Sustainability (including environmental performance) is hype and will not last for more than 3 years.



[5] See http://www.investa.com.au/Common/Pdf/Sustainability/GreenhouseGuarantee.pdf

C. The drivers for environmental issues will be stronger in five years.



F. The global Environmental Real Estate Survey

Institutional investors such as pension funds increasingly use environmental information to adjust their investment strategies. Guided by ESG policies, many of the pension funds have implemented responsible investment strategies for equity and, to a lesser extent, fixed-income portfolios. With some exceptions, the vast majority of institutional investors still need to formulate similar strategies for their real estate allocation.[6] Most institutional investors build up property exposure through investments in listed property companies or private property funds, which implies that the implementation of responsible investment strategies goes through these intermediary investors.

So far, information on the environmental management practices of listed property companies and private property funds has been limited. ESG data providers, such as Thomson Reuters and RiskMetrics, cover a selection of listed property companies, but their focus is mostly on the larger, listed property companies. They do not provide in-depth information on the actual environmental performance of property companies.

"Energy efficiency and environmental sustainability are now becoming an integral part of the real estate investment policy of institutional investors."

Since energy efficiency and environmental sustainability are now becoming an integral part of the real estate investment policy of institutional investors, the purpose of the Global Environmental Real Estate Survey is to precisely assess the extent to which intermediate property investors, the primary owners of the real estate, integrate environmental issues into their strategies and their property management. This ambitious global survey serves as a tool to assist APG, PGGM, and the USS in benchmarking the environmental performance of their current and future property investments.

The Global Environmental Real Estate Survey is based on the environmental management practices among listed property companies and private funds. The survey covers 43 questions in two main

[6] See http://pggm.nl/Images/RIRE 2009_tcm21-150589.pdf for an example of a responsible Investment policy for real estate.

categories.[7] The first category is Management & Policy. This category surveys the environmental policies of respondents. It also includes questions on the integration of environmental criteria into asset management practices and refurbishment decisions, and on external reporting of environmental policies and management. The second category is Implementation & Measurement. This part is comprised of questions on certification of existing and recently acquired properties, the actual energy/water/waste consumption, the use of smart meters, and staff training and remuneration according to environmental performance.

The survey has been adapted to the specifics of each region and to the specifics of private funds compared to listed companies. To overcome linguistic barriers and to accommodate respondents in Japan, the survey was fully translated into Japanese.

Based on the outcome of the individual questions, we developed a simple, objective binary rating scheme in which a positive or confirming answer was given one point, and a negative or N/A answer got zero points.[8] The maximum score for Management & Policy is 23 points, and the maximum score for Implementation & Measurement is 35 points. To facilitate comparisons, these scores are standardized on a scale from zero to 100. The Global Environmental Real Estate Index enables the three institutional investors that sponsor this research to compare existing real estate investments based on environmental performance and to assess the environmental performance of future investments.

A property investment company that scores 100, the maximum number of cumulative points, achieves the maximum environmental benchmark. In other words, the full score on all of the questions implies that a fund or company reaches the current environmental target of APG, PGGM, and USS. However, this target is dynamic and will most likely become more stringent over time, as building codes become stricter and technology advances. But for now, the maximum score is attainable with currently available technology, and can be reached without jeopardizing the investment performance of a property fund or company. In fact, the survey sponsors have good reason to believe that real estate investors who reach the target can mitigate environmental risks, and, to the extent that the additional investments are more than recouped, can increase shareholder value. This provision of a public good (i.e., reducing carbon emissions), while enhancing performance is fully in line with the fiduciary duty of pension funds (Matthew J. Kotchen, 2006).

The sample of surveyed property companies consists of 688 listed property companies and private property funds: 426 from Europe, 194 from the U.S., 50 from Asia, and 18 from Australia. Of this total, 211 are publicly listed. We constructed the universe of listed property companies on the basis of the investment universe of APG, PGGM, and USS, in combination with information from the European Public Real Estate Association. The sample of private property funds represents the aggregate of the current investments of the sponsoring pension funds, plus the funds covered by the European Association for Investors in Non-listed Real Estate Vehicles (INREV).

[7] A detailed online Appendix that provides all survey questions is available at www.corporate-engagement.com.
[8] On a few questions, respondents were awarded more than one point if they gave a positive answer.

After pre-testing the survey on four listed European property companies, we first sent the survey to all European listed property companies in July 2009, followed by all remaining listed property companies in August 2009, and the universe of private property funds in September 2009. Thus, the survey results represent the state of environmental performance of the global property sector as of Summer/Fall 2009.

G. Chapter summary

- The commercial real estate sector is among the largest consumers of natural resources and among the heaviest polluters in terms of greenhouse gas emissions and waste production. The commercial real estate sector can play a major role in the reduction of global energy consumption and greenhouse gas emissions.

- Many investments in energy efficiency for commercial real estate have a positive net present value. This holds true especially for building management, lighting, cooling and heating technology, and better insulation. These investments are currently hampered by a lack of information and market awareness, lack of financing, and lack of proper incentives.

- This first-ever global survey on the environmental performance of listed property companies and private property funds should increase industry awareness and information on environmental management and performance. The survey also provides the institutional property investment market with a dynamic environmental benchmark, the Global Environmental Real Estate Index.

III. Survey results: the global environmental real estate index

A. Response rate

Before presenting and discussing the results from the survey, we first address the response rates, as they differ substantially across regions and countries. We provide an overview of the response rates for different regions in Panel A of Table 2. The table also distinguishes between listed property companies and private property funds.

"The overall absolute response is 198 respondents (29% of the surveyed sample), 72 listed companies, and 126 private funds."

Table 2 shows substantial variation in response rates between regions and types of property funds. The overall absolute response is 198 respondents (29% of the surveyed sample), 72 listed companies, and 126 private funds. Among listed respondents, we observe high response rates for European and Australian property companies, especially when weighted by the market capitalization of the surveyed companies. The response rate of 20% for the U.S. is relatively low. The zero response (out of 13) for Asian property companies is disappointing.

Table 2 also shows a substantially higher response rate for private property funds than for their listed counterparts in all regions except Europe (where only 19% of the private funds responded to the survey).[9] A priori, we expected that response rates would be consistently higher for listed companies, since the more intense public scrutiny makes it more likely that these companies actively engage in resource-efficient investment and management strategies. However, that is only the case in Europe. It could reflect the fact that the investor base of European listed property companies considers environmental sustainability more of an issue compared to the investor base of companies elsewhere in the world. The high response rates of private property funds could also be explained by the active involvement of the pension funds that commissioned this survey, which creates substantial shareholder pressure to participate. In the more fragmented listed market, such pressure is more difficult to exert.

[9] In Europe, we used the INREV database of private property funds as the universe, whereas we used the combined portfolios of APG, PGGM, and USS in the other regions. This difference in the scope of the universe may explain the relatively low response rate across European private property funds.

Table 2. Survey Response Rates

Panel A. Response Rates				
	Universe (# of funds)	**Response** (# of funds)	**Response Rate** (Absolute)	**Response Rate** (Market cap)
Survey Listed				
Europe	84	45	54%	80%
U.S.	102	19	19%	31%
Australia	12	8	67%	88%
Asia	13	0	0%	0%
Survey Private				
Europe	342	64	19%	-
U.S.	92	37	40%	-
Australia	6	5	83%	-
Asia	37	20	54%	-
Total	**688**	**198**	**29%**	
Panel B. Characteristics Respondents and Non-respondents Listed Sample				
		Respondents	**Non-Respondents**	***t*-statistic**
Debt to Assets		42.59	49.46	2.64***
		(16.54)	(18.50)	
Return on Assets		8.97	6.29	3.26***
		(6.76)	(4.90)	
Beta		0.59	0.65	2.51**
		(0.16)	(0.16)	
Market Cap		3991.58	3482.26	0.59
(in US$ mln)		(5885.09)	(5866.49)	
Closely Held Shares		22.68	25.79	0.91
		(21.71)	(21.37)	

To make inferences based on the results of this survey, it is important to address the reasons that certain companies and funds might not have responded to this survey. First, it is possible that property investors that do not perform well on environmental management are less eager to fill out the survey, as the survey results will reveal their weak performance. These companies may also be less interested or familiar with the topic, and less willing to spend time on it. Because the survey was quite ambitious in its information requests, it is unlikely that firms with less interest in environmental issues have such information readily at hand. For example, a recent survey of Japanese property companies shows that if environmental concerns do not directly affect the safety and convenience of a building, investors are not very concerned about them. Energy and water use, recycling, and garbage reduction were all deemed relatively unimportant (Jiro Yoshida, 2009). These considerations are likely to partly explain the low response rates in Asia and the U.S. This explanation implies that the results of the survey should be interpreted with caution: extrapolating from our sample of respondents might provide an overly optimistic view on the current environmental performance of the global universe of property companies and funds. Also, institutional investors can regard a non-responding property fund or company as having an environmental score of zero.

Second, the response rate itself is an indication for the attention paid to environmental management by the property investment industry: it leaves something to be desired. Overall, the response rates may be a

function of the fact that environmental management is a relatively new issue for property investors. We expect that the response rate will increase in future surveys.

A third possible reason for the cross-regional differences in response rates is that Asian and North American property investors may be less influenced by the capital market power of three European pension funds as compared to the European property funds and companies, and are thus less likely to respond.

In addition to institutional differences between countries[10] and public compared to private property investment vehicles, the explanation for the diversity in response rates may be company-specific. Panel B of Table 2 compares the financial characteristics for responding and non-responding listed property in the global sample. The t-statistic indicates whether the differences are significant. The results show that non-respondents are significantly more levered, although the economic significance of the difference is limited; they have a significantly lower return on assets, and a slightly higher systematic risk. Contrasting prior expectations, the results show that non-responding property companies are not significantly smaller as compared to the respondents. Although non-respondents have a somewhat higher percentage of closely held shares, which indicates larger insider holdings or family holdings, the difference with respondents is not statistically significant.

Figure 2 shows the response rates at the individual country level.[11] Here, the most striking observation is that even within regions, the differences across countries are large. In Europe, the response rate in Italy, Norway and Greece is zero, but the response rate in the northwest of Europe (i.e. Sweden, the U.K., and the Netherlands) is generally very high. This finding is not surprising: property companies in the latter regions are in many ways more transparent than their southern European colleagues. The quality and information disclosure in their annual reports is far higher, and their openness to foreign investors is far greater.

"A strong ranking on the JLL Transparency Index increases the response rate."

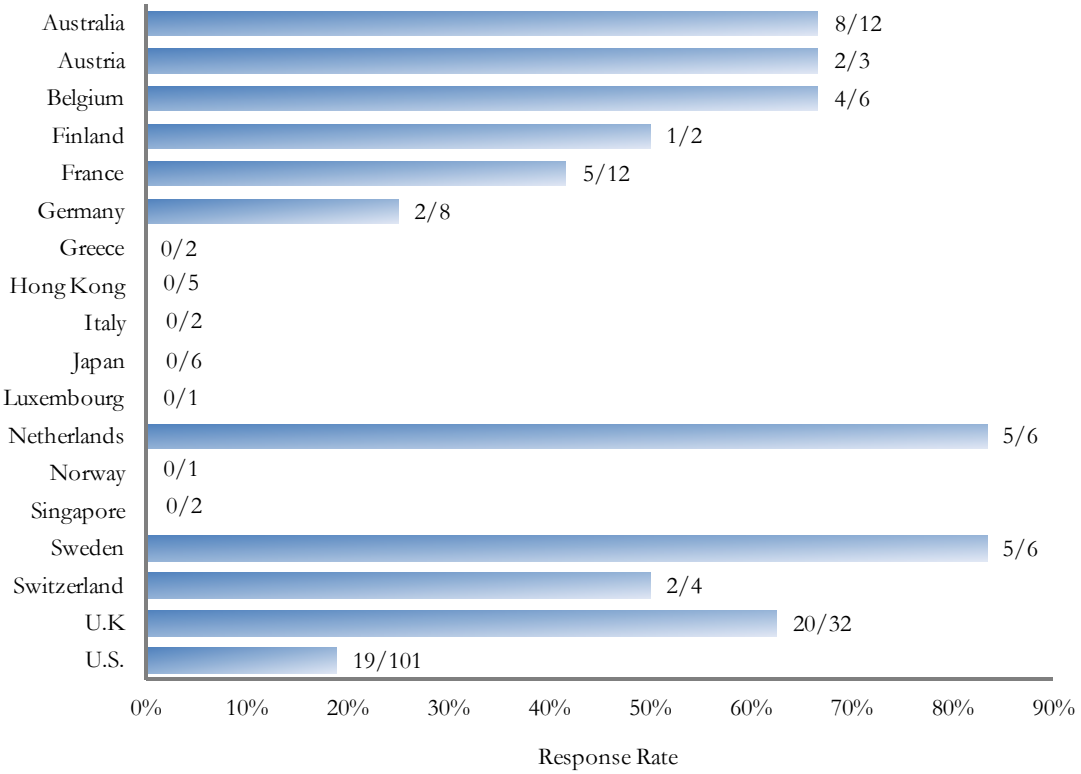
To further investigate the relation between the investment opacity of the national real estate market and the responsiveness of listed property companies, we correlate the Jones Lang LaSalle (JLL) Real Estate Transparency Index with the response rate in each country.[12] We find that the observed correlation is negative (-0.52) and statistically significant: a strong ranking on the JLL Transparency Index increases the response rate. For instance, Japan and Greece rank 26th and 33rd on the Transparency Index, and both have a response rate of zero. On the other hand, Australia and the U.K. rank 2nd and 5th on the Transparency Index, and both have high response rates of close to 66%.

[10] Another reason for a low response rate in some countries might be our use of the English language, which could be a problem in certain countries. However, the Japanese translation of the survey did not increase the response rate in Japan.
[11] Some caution is necessary here, as the sample size in some countries is very small.
[12] The Jones Lang LaSalle Real Estate Transparency Index measures and aggregates the transparency factors related to the legal and regulatory environment, performance measurement, the transaction process, and market fundamentals in 82 markets (JLL, 2009).

Last, a particular response rate of a country may have nothing to do with the potential score on environmental management of property companies or funds in that country. However, that is unlikely, as countries like Australia, Sweden, the Netherlands, and the U.K. are traditionally regarded as being best-in-class when it comes to environmental performance, and the high response rate in these countries may reflect that. Also, building codes in northern Europe are as a whole much stricter on energy efficiency than those in the southern European countries (Randall Bowie, 2009). Therefore, we conclude that the relatively low response rate in southern Europe is, at least to some extent, a reflection of weak environmental performance.

"Australian property companies come closest to the maximum environmental benchmark set by the three sponsoring pension funds."

Figure 2. Response Rates Listed Sample



B. Global Environmental Real Estate Index – listed property companies

Table 3 provides an overview of the aggregated scores on the Global Environmental Real Estate Index for listed property companies in each of the different regions. We provide scores on the subcategories Management & Policy and Implementation & Measurement, which comprise the Total Score. The table documents some interesting findings. The average scores on Management & Policy are always higher than the scores on Implementation & Policy. We discuss the discrepancy between environmental policies and actual implementation of these policies later in this report.

Australian property companies come closest to the maximum environmental benchmark set by the three sponsoring pension funds, with an average score of 73.4% on Management & Policy, and 60.5% on

Implementation & Measurement. However, there are no such scores for European and American property companies, which reach only about a third of the maximum score on the Environmental Real Estate Index. Obviously, these companies have a long way to go in improving environmental management practices. This finding is an indication of the current state of environmental management among the most professional, most advanced, global property investors. And in addition, as noted earlier, our sample of respondents is likely to provide an overly optimistic view on the current environmental performance of the global universe of property investment funds, as non-respondents are likely to have even lower scores.

Figure 3 shows graphs of the distribution of the scores on Management & Policy (Panel A) and Implementation & Measurement (Panel B). The solid lines show the average scores for the regions, and correspond with the average scores reported in Table 3. The distribution of scores is clustered in the lower deciles for Implementation & Measurement. However, the graphs also make clear that there are examples of best-practice environmental management among the respondents, to be emulated by the currently lagging peers in the industry. On Management & Policy, ten property companies have a score in the ninth decile, but there are only four companies with such a high score on the Implementation & Measurement Index.

Table 3. Environmental Real Estate Index: Global Listed Sample - Descriptive Statistics (standard deviation in parentheses)

	Europe	Australia	U.S.	Asia
	45	**8**	**19**	**0**
Management & Policy	46.1%	73.4%	44.9%	-
	(22.6)	(16.3)	(22.3)	
Implementation & Measurement	35.3%	60.5%	24.2%	-
	(23.1)	(18.6)	(13.6)	
Total Score	39.6%	65.6%	32.4%	-
	(21.1)	(16.5)	(14.6)	

Figure 3. Environmental Real Estate Index: Global Listed Sample

Environmental Management & Policy