Environmental Performance

A Global Perspective on Commercial Real Estate

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ECCE

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), and the European Public Real Estate Association (EPRA.

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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 and the European Association for Investors in Non-Listed Real Estate Vehicles.

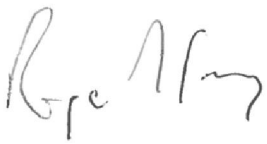
The purpose of the study is to provide an objective and uniform set of environmental data, which can serve as a starting point for the real estate sector, investors, academics, and policy makers in the discussion on how to optimally monitor and improve the environmental performance of the commercial 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 underinvest 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

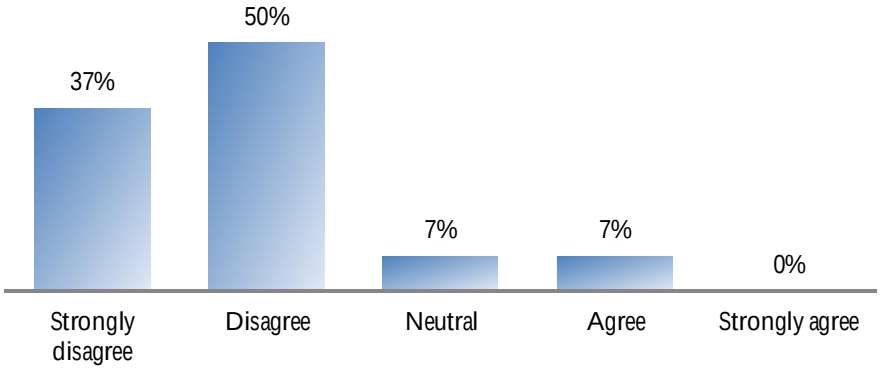
cost savings from his energy investments. The Greenhouse Guarantee of the Australian Investa Property Group is an example of such a structure.[5] The property sector would have more incentives to make profitable energy-saving investments if "green" rental contracts were adopted for commercial property.

E. The crisis and property investors' green outlook

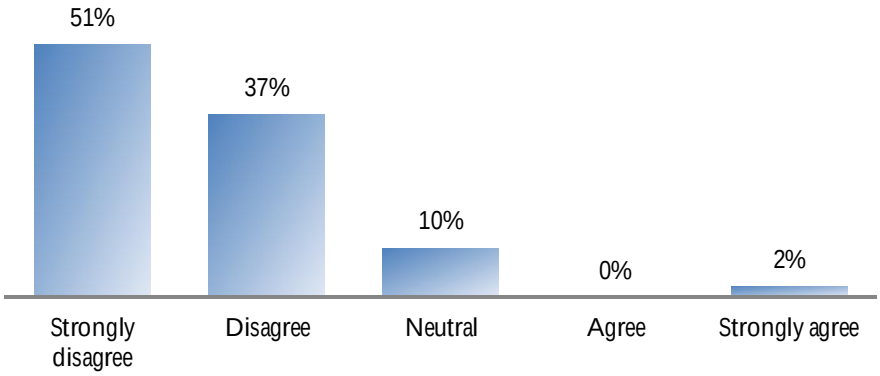
Given the current financial crisis and its effects on the property industry, it would not be a surprise if property investors would pay more attention to their immediate financial health than to the energy efficiency of their portfolios. However, that appears not to be the case. Opinions on the topic 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.

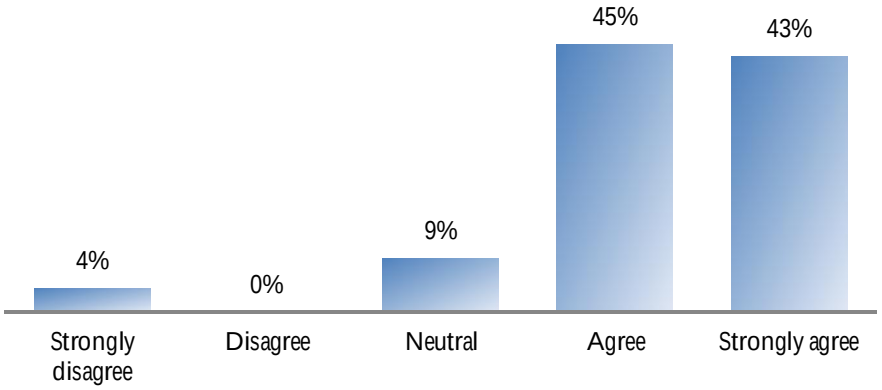


B. Sustainability (including environmental performance) is a hype and will not last for more than 3 years.



[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."

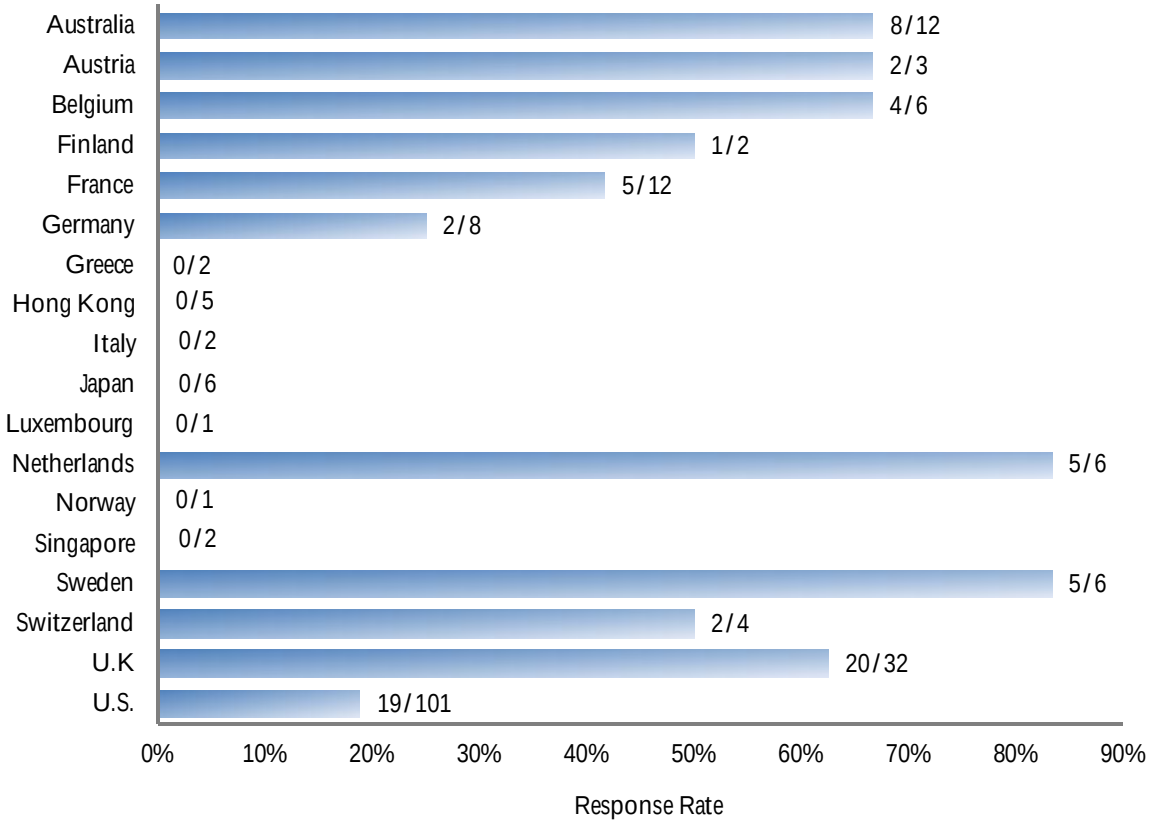
To further investigate the relation between the investment opacity of the national real estate market and the responsiveness of listed property companies, we correlate the Jones Lang LaSalle (JLL) Real Estate Transparency Index with the response rate in each country.[12] We find that the observed correlation 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 more strict 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

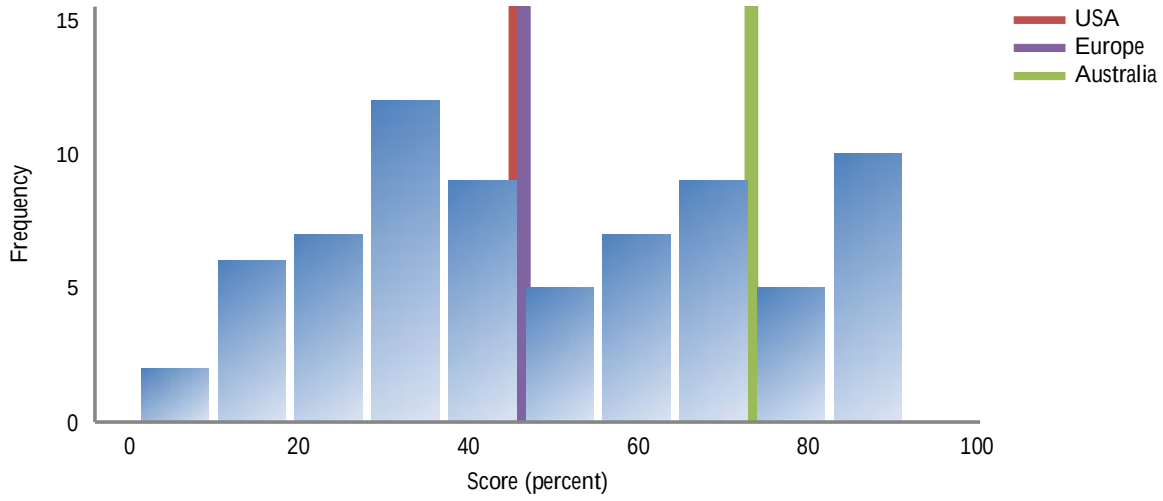
Implementation & Measurement. However, there are no such scores for European and American property companies, which reach only about a third of the maximum score on the Environmental Real Estate Index. Obviously, these companies have a long way to go in improving environmental management practices. This 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



Implementation & Measurement

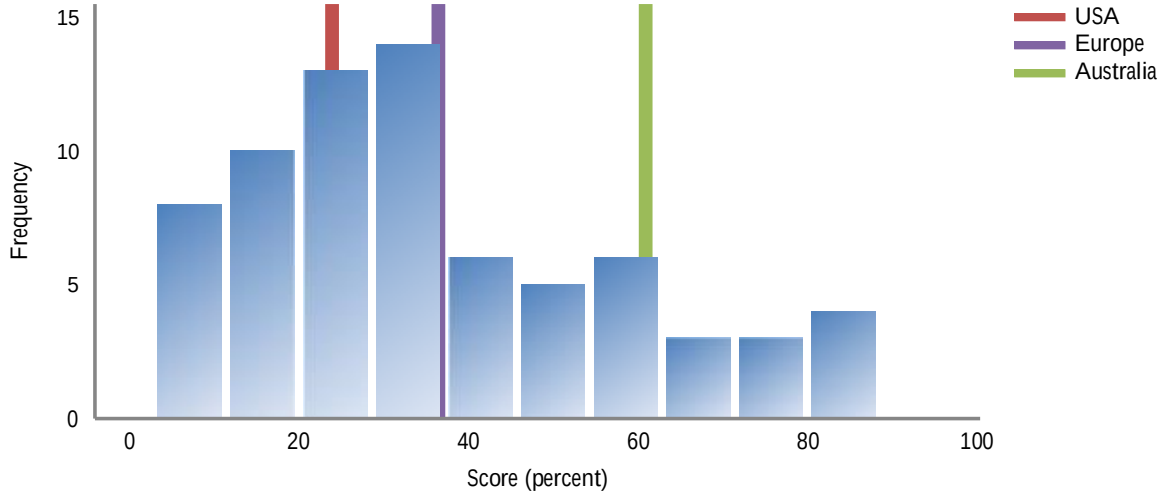


Table 4 shows the ranking of the ten best environmental performers in Europe. Number one is Big Yellow Group, a U.K.-based self-storage property company. Big Yellow has a strong dedication to carbon reduction, makes extensive use of renewable energy and is the only respondent with "zero-carbon" buildings in its portfolio. Interestingly, the company with the best environmental management is a relatively young company; most of the other names in the top-10 are well-established property companies, with long histories. Moreover, the market capitalization of Big Yellow is only about one third of the company size of the average respondent. Clearly, a property investor does not need to be very big to have stellar environmental performance. On the contrary, small companies might have an advantage because it may be easier to implement energy-efficiency improvements and retrofits in a smaller portfolio of buildings.

Seven out of ten of the top performers in environmental management are from the United Kingdom. This performance level may be related to more stringent regulation regarding environmental matters, and also the presence of a strong responsible investment community, which has been engaging the property sector on environmental issues for years. Sweden also has two of its six listed property companies (Castellum and Hufvudstaden) in the European top-10, which supports that country's strong reputation on environmental matters.

"Seven out of ten European top performers in environmental management are from the United Kingdom."

Furthermore, we note that, although a number of respondents come quite close, no company reaches the maximum environmental score set by the three institutional investors that commissioned this survey. With some exceptions, the scores on Implementation & Management generally stay well below 75%.

Table 4. Leaders in Europe: Top-10 Listed Property Companies

Rank	Company	Country	Management & Policy	Implementation & Measurement	Total
1.	Big Yellow Group	U.K.	83	83	83
2.	Hammerson	U.K.	70	89	81
3.	Unibail-Rodamco	France/NL	83	67	73
4.	British Land Company	U.K.	61	79	72
5.	Castellum	Sweden	87	59	70
6.	Great Portland Estates	U.K.	61	73	68
7.	Land Securities Group	U.K.	48	79	66
8.	Liberty International	U.K.	70	61	65
9.	Shaftesbury	U.K.	61	61	61
10.	Hufvudstaden	Sweden	83	46	60

Table 5 provides the ranking of the best performing listed property companies in the U.S. The company with the highest total score on the Environmental Real Estate Index is Vornado Realty Trust, one of the largest commercial property investors in the U.S. This company actively incorporates environmental practices in its management, for example by striving to certify the existing portfolio under the U.S. Green Buildings Council's LEED for Existing Buildings system. The total score of Vornado is 55, which is mainly due to its excellent environmental Management & Policy score. If we were to rank actual environmental Implementation & Measurement, Liberty Property Trust and ProLogis would rank first and second.

"Relative to the top-10 in other geographic areas, the best environmental performers in the U.S. underperform."

Relative to the top-10 in other geographic areas, the best environmental performers in the U.S. still underperform: if we were to create a global ranking of individual property companies based on environmental performance, then Vornado would be number 21 on the list. The top-10 U.S. performers barely show up in the right tail of the global environmental performance distribution. Clearly, a large part of the U.S. property industry has yet not woken up to the fact that optimizing environmental management and energy investments in their buildings can create positive value for their stakeholders. These findings also imply that there is substantial upside potential.

Table 5. Leaders in the U.S.: Top-10 Listed Property Companies

Rank	Company	Management & Policy	Implementation & Measurement	Total
1.	Vornado Realty Trust	83	37	55
2.	Liberty Property Trust	43	56	51
3.	Douglas Emmett	74	34	50
4.	Simon Property Group	61	40	48
5.	Washington Real Estate Investment Trust	65	30	44
6.	AMB Property Corporation	65	26	41
7.	Macerich	74	20	41
8.	ProLogis[13]	35	43	40
9.	Digital Realty Trust	48	34	40
10.	Kilroy Realty Corporation	39	29	33

[13] Prologis submitted data based on their global portfolio.

Table 6 provides the ranking of the 5 property companies that have the highest score on the Environmental Real Estate Index in Australia. This table clearly shows that the environmental benchmark formulated by the pension funds commissioning this survey is not unrealistic, but can be attained through current real estate practices. The Australian property companies are the clear environmental leaders of the globe. This is particularly the case for the top performer, the GPT Group, which has the impressive total score of 86, and an even higher score on Implementation & Management than on Management & Policy. GPT is a well-established, diversified property company with a strong reputation in environmental management. The company is currently leading the Dow Jones Sustainability Index in the real estate sector.

To a great extent the Australian top-5 outperforms their European peers and the full top-10 of American peers. It is clear that property companies from all over the world can learn from the Australian best practices in environmental management.

"It is clear that property companies from all over the world can learn from the Australian best practices in environmental management."

Since the response rate among Asian listed property companies is zero, we cannot make an individual environmental performance ranking for that region.

Table 6. Leaders in Australia: Top-5 Listed Property Companies

Rank	Company	Management & Policy	Implementation & Measurement	Total
1.	GPT	83	89	86
2.	Stockland	83	80	81
3.	Commonwealth Property Office Fund	91	66	76
4.	Colonial First State Retail Property Trust	87	63	72
5.	Valad Property Group	74	53	61

Incorporating energy efficiency measures is neither as easy nor as financially attractive for some property types as it is for others. Also, different property types have different types of leasing contracts, thus providing owners and tenants different incentives for energy efficient behavior and related investments. Therefore, we distinguish between property companies according to property type. We classify a company as "industrial", "office", "retail", or "residential" if the company invests more than 70% of its assets in the corresponding property type. A few companies are specialized in other property types, such as "self-storage" or "hotels". Otherwise, we classify the property company as "diversified". We calculate the average score on the Environmental Real Estate Index for the different property types.

Table 7 and Figure 4 report the results, which show that property type indeed plays a role in environmental management. Residential property investors score very low (15%) on the Implementation & Measurement category. Apparently, it is more difficult to implement environmental policies in multi-family and single-family rental units.

Compared to large, scalable office or retail properties, the small size of the individual units may hinder measurement of current environmental performance and investments to enhance energy efficiency. Also, the lease contracts prevalent in the residential sector may provide less incentive for a building owner to invest in energy efficiency: a recent paper by Lucas Davis (2009) shows that relative to owner-occupied homes, residential property investors under-invest in energy-saving appliances.

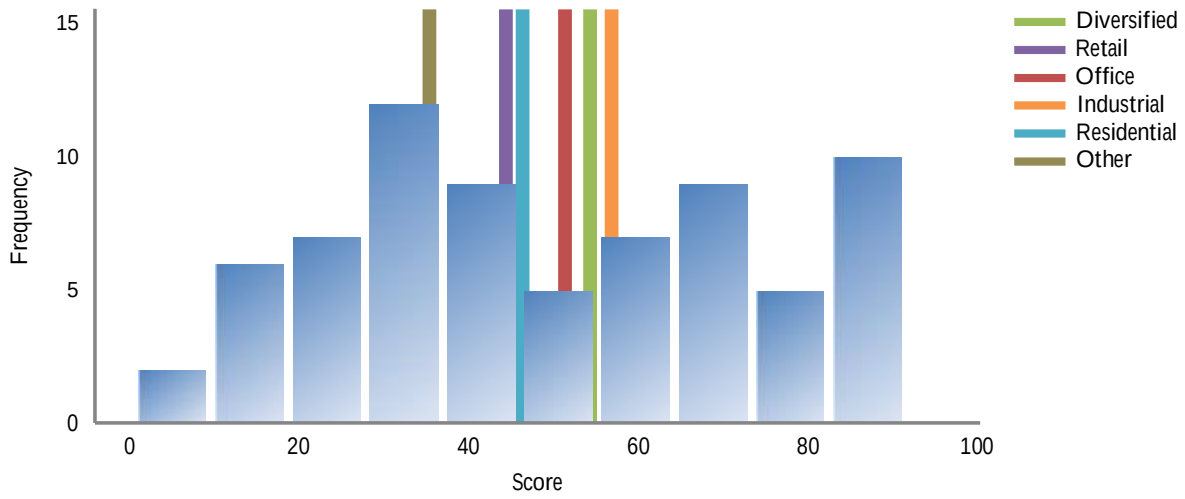
In Table 7 we also show that property companies invested in "other" real estate assets have a relatively low score. This underperformance may be due to the fact that "green" building rating schemes, such as LEED and BREEAM, are mostly unavailable for the more unusual property types.

Industrial property investors are leading the field, but there is a strong regional bias here: all industrial property investors are from the U.K.

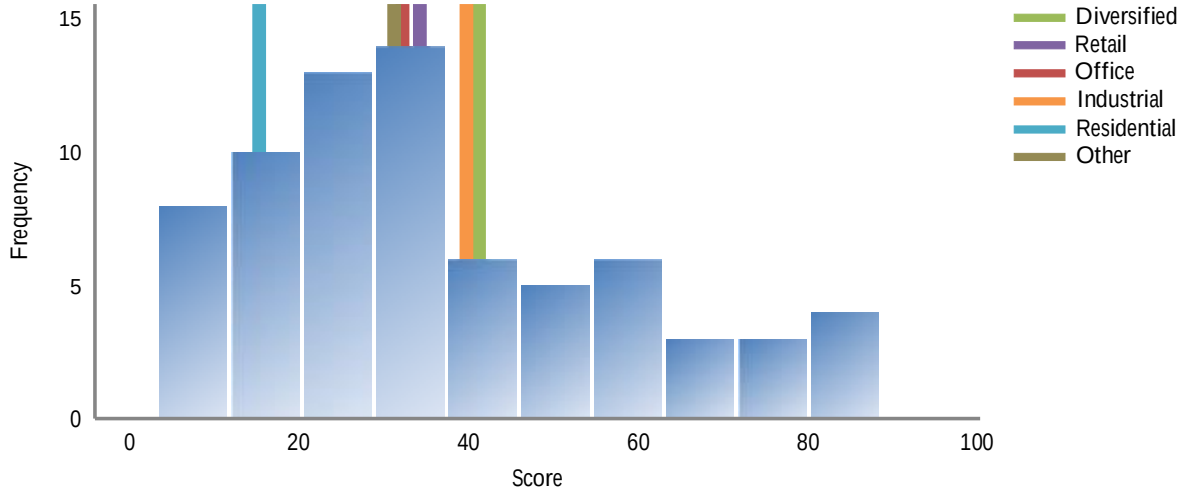
Table 7. Environmental Performance per Sector - Listed Property Companies

	Industrial	Office	Retail	Residential	Diversified	Other
Sample	3	11	23	3	27	5
Management & Policy	56.5%	50.6%	43.9%	46.4%	54.3%	34.8%
	(19)	(22.4)	(21.3)	(16.5)	(24.2)	(34.0)
Implementation & Measurement	39.5%	31.8%	33.6%	15.2%	40.8%	28.6%
	(12.5)	(15.3)	(23.3)	(14.7)	(23.9)	(32.8)
Total Score	46.3%	39.3%	37.7%	27.6%	46.2%	31.0%
	(10)	(16.7)	(21.3)	(10.5)	(21.8)	(32.1)

Figure 4. Environmental Real Estate Index: Sector Scores for Listed Property Companies
Environmental Management & Policy



Implementation & Measurement



Private property funds

We separately analyze the survey results for private property funds. Table 8 provides the scores on the Environmental Real Estate Index for the 126 private property funds that responded to the survey. The variation in the scores is largely in line with the scores for listed property companies: scores for Management & Policy are higher than those for Implementation & Measurement, and Australian funds perform best.

Table 8 also reports on Asian funds. On average, these funds score poorly, with an overall average score of only 19%, not even a fifth of the maximum attainable score on the Environmental Real Estate Index. This low score indicates that environmental management is not high on the agenda in less developed property markets, and/or that it may be seen as a lower priority. The lagging implementation of environmental management practices is problematic, because environmental issues are not just some Western phenomenon. Pressure by, among others, institutional investors, is needed to increase environmental management practices and awareness of the financial opportunities in energy efficiency investments in Asian markets.

Private funds have a lower average score on the Environmental Real Estate Index and the two sub-indexes for all regions. The differences are not very large for the U.S. and for Australia, but they are substantial for Europe. Also, the distributions in Figure 5 show a wide dispersion in the scores of the individual respondents. Only three funds can be found in the 9th decile for Management & Policy. For Implementation & Measurement, examples of best practice benchmarks are scant. The distribution on Implementation & Measurement includes more than 75 funds with a score below 20%. Part of the low scores may be due to the limited disclosure and, consequently, the inadequate public scrutiny of property funds operating in the private market. A recent paper shows that companies that are more exposed to media and public stakeholders are more likely to act in a "socially responsible" manner (Piet M.A. Eichholtz, Nils Kok and John M. Quigley, 2009). Moreover,

"Pressure by institutional investors is needed to increase environmental management practices in Asian markets."

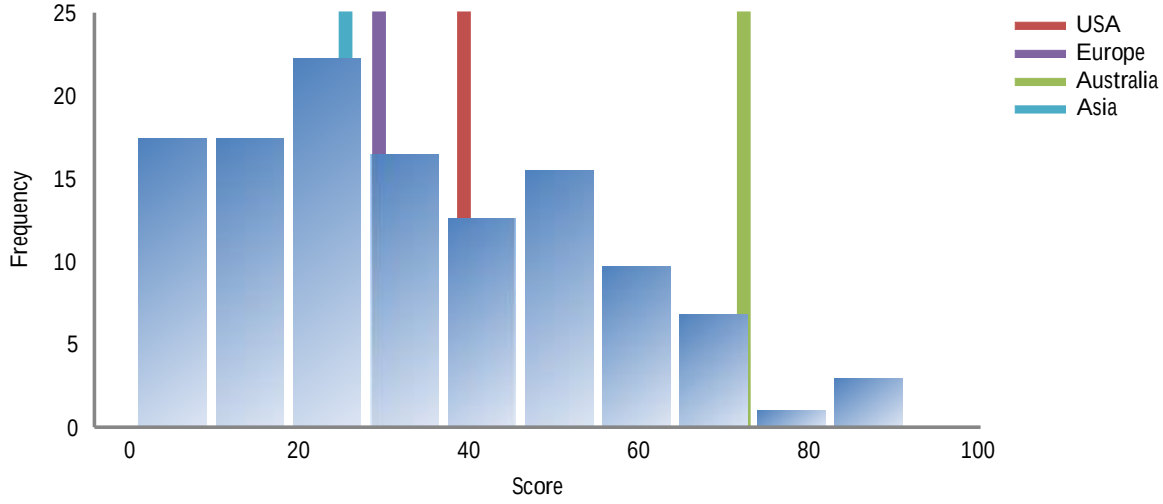
the finite life of some private funds may lead to a more short-term focus and may hinder investments in energy efficiency. We conclude that private funds should consider their listed counterparts as benchmarks for best practices in environmental performance.

Table 8. Environmental Real Estate Index: Global Private Sample - Descriptive Statistics (standard deviation in parentheses)

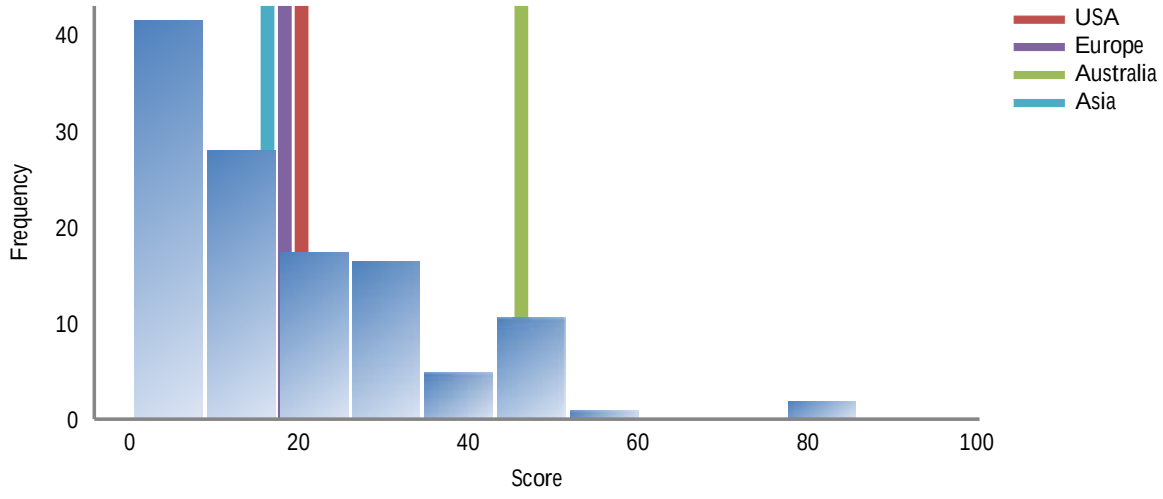
	Europe	Australia	U.S.	Asia
Sample	64	5	37	20
Management & Policy	29.3%	71.7%	39.1%	24.8%
	(17.0)	(23.7)	(17.9)	(22.9)
Implementation & Measurement	17.7%	47.1%	20.2%	15.9%
	(14.8)	(26.6)	(12.3)	(13.9)
Total Score	22.3%	56.9%	27.7%	19.4%
	(13.8)	(23.0)	(12.1)	(16.9)

Figure 5. Environmental Real Estate Index: Global Private Sample

Environmental Management & Policy



Implementation & Measurement



Even among private property funds, there are some reasonable environmental performers. Tables 9, 10, and 11 present a more detailed look at the top performers by region. We note confidentiality does not allow us to report on some funds.[14]

"We conclude that private funds should consider their listed counterparts as benchmarks for best practices in environmental performance."

Table 9 shows the top-10 environmental performers among the European private property funds. The environmental leader is the Capital & Regional Mall (CRM) fund. The fund manager has a well-defined environmental management policy, and by engaging with shoppers and retailers about what they could do to reduce their impact on the environment, even takes its environmental philosophy to the end consumer.

The ultimate score of the individual private fund is to a large extent determined by the fund manager who runs the fund. In this sample, Prudential Investment Management and ING Real Estate Investment Management, with, respectively, 2 and 3 property funds in the top-10, are leaders in terms of environmental management.

Table 9 also shows that even the best performers do not come close to the maximum score on the Environmental Real Estate Index defined by APG, PGGM and USS: only three funds reach a score of 50% or more. Compared to the top-10 for listed companies in Europe, none of the private funds has a higher environmental score.

Table 9. Leaders in Europe: Top-10 Private Property Funds

Rank	Company/ Manager	Fund Name	Management & Policy	Implementation & Measurement	Total
1.	Capital & Regional	CRM Fund	57	51	53
2.	PRUPIM	M&G Property Portfolio	57	49	52
3.	PRUPIM	The M&G Pooled Pensions Property Fund	52	49	50
4.	ING REIM	Dutch Office Fund	52	43	47
5.	ING REIM	ING RPFI	70	29	45
6.	ING REIM	ING Real Estate Office Fund Netherlands	48	40	43
7.	Grosvenor	Grosvenor Shopping Centre Fund	43	43	43
8.	Pramerica Real Estate	TMW Immobilien Weltfonds	52	37	43
9.	Tishman Speyer Properties	Tishman Speyer - Europe	35	46	41
10.	Andersson REIM	AREIM Fund 1	57	29	40

Table 10 shows the top-10 for private property funds in the U.S. The overall best performer is an (anonymous) fund managed by Principal Global Investors. The remainder of the funds do well compared to their U.S. listed peers, but remain far below the maximum score on the Environmental Index Real Estate Index. We also note that, for some funds, there are substantial discrepancies between the score on Management & Policy and the score on Implementation & Measurement.

[14] Some property funds are private placements and highly regulated. Therefore, these funds cannot be named or published in our index

Table 10. Leaders in the U.S.: Top-10 Private Property Funds

Rank	Company / Manager	Fund Name	Management & Policy	Implementation & Measurement	Total
1.	Principal	[anonymous]	57	51	53
2.	USAA Real Estate Company	USAA Real Estate Funds (overall)	52	44	47
3.	Normandy Real Estate Partners	Normandy Real Estate Funds (overall)	61	31	43
4.	Brookfield Properties Corp.	Brookfield Core Office Fund	57	34	43
5.	Tishman Speyer Properties	Tishman Speyer - Brazil	39	40	40
6.	ING Clarion	ING Clarion Lion Fund	65	23	40
7.	MacFarlane Partners	MacFarlane Urban Real Estate Fund III	70	17	38
8.	Thayer Lodging Group	Thayer Hotel Fund IV	52	29	38
9.	[anonymous]	[anonymous]	52	29	38
10.	Tishman Speyer Properties	Tishman Speyer - U.S.	39	37	38

Table 11 presents the Australian private top-5 (i.e., all Australian respondents). The environmental performance of the top-3 of the Australian private funds – GPT's Office and Shopping Centre funds and Investa's Commercial fund – is higher than any of their peers in other regions. We note that GPT ranks number one in the survey on both listed property companies and private property funds. Contrasting the outperformance of other Australian funds, the scores of QIC Retail and Westfield lag behind. For QIC, the low score is mainly due to poor implementation and measurement of an otherwise well-defined environmental management and policy.

Table 11. Leaders in Australia: Top-5 Private Property Funds

Rank	Company / Manager	Fund Name	Management & Policy	Implementation & Measurement	Total
1.	GPT Funds Management	GPT Wholesale Office Fund	87	86	86
2.	Investa	Investa Commercial	91	80	84
3.	GPT Funds Management	GPT Wholesale Shopping Centre Fund	87	54	67
4.	QIC Retail	QIC	70	17	38
5.	Westfield	Westfield PLN	39	37	38

"In explaining the existence of an environmental policy and thorough implementation, the location of a property fund is more important than the origin of the fund manager."

Table 12 shows the Asian private funds with the best environmental management practices. As noted earlier, Asian private funds score low compared to property funds in other regions; even the best funds do not come close to the maximum score on the environmental benchmark. Surprisingly, this underperformance also holds for private funds managed by companies that are headquartered in regions with otherwise high scores, such as Australia. Apparently, in explaining the existence of an environmental policy and thorough implementation, the location of a property fund is more important than the origin of the fund manager.

Within the top-10, there is a wide variation: CapitaLand's CapRet China Incubator leads with a score of 55%, whereas Ascendas S.E.'s Asian BSF has a total score of only 16%. Again, the fund manager is important to the environmental performance of a private fund: the funds managed by Australian

companies do relatively well, as does one of the funds managed by ING Real Estate Investment Management and Pramerica Investment Management.

Table 12. Leaders in Asia: Top-10 Private Property Funds

Rank	Company/ Manager	Fund Name	Management & Policy	Implementation & Measurement	Total
1.	CapitaLand	CapRet China Incubator	61	51	55
2.	Lend Lease Property Investment Services	APIC II	74	33	49
3.	ING REIM Korea	ING Korea Fund	65	34	47
4.	Lend Lease	ARIF	61	34	45
5.	Macquarie Global Property Advisors	MGPA Asia Fund III	35	23	28
6.	ING REIM	ING COF	30	14	21
7.	Pramerica IM/Pramerica Real Estate Investors	Asian Retail Mall Fund	13	24	20
8.	Pramerica IM/Pramerica Real Estate Investors	ARML II	17	20	19
9.	Macquarie Global Property Advisors	MGP Asia Fund II	26	14	19
10.	Ascendas S.E.	Ascendas Asean BSF	22	11	16

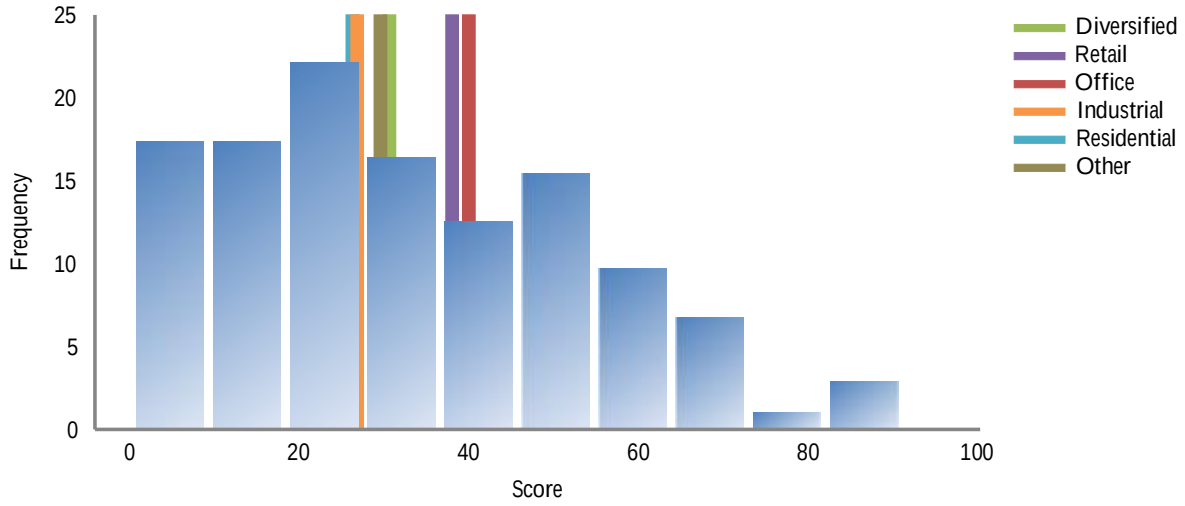
Table 13 and Figure 6 provide more information on the environmental performance of private funds in different types of real estate. The results mostly confirm the findings for listed property companies: residential property funds score low on Management & Policy and even lower on Implementation & Measurement. This may be due to the small size of the investment units and the lack of incentives for energy efficiency improvements, due to the use of a net rental contract between owner and tenant. The dedicated office funds have the highest scores, both on Management & Policy and on Implementation & Measurement. Most of the environmental metrics and energy efficiency technology that initially appeared on the market were aimed specifically at office buildings. The exception is the score for industrial funds, which significantly lags behind the environmental performance of other sectors. This contradicts our findings for listed companies, where industrial specialists scored best.

Table 13. Environmental Performance per Sector – Private Property Funds

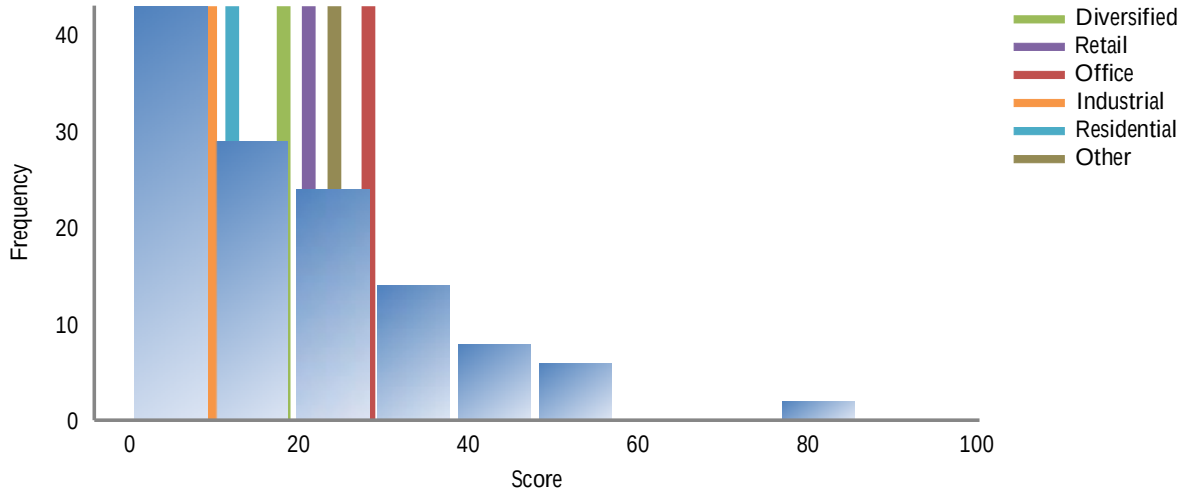
	Industrial	Office	Retail	Residential	Diversified	Other
Sample	7	26	31	19	35	8
Management & Policy	16.1%	39.8%	37.9%	26.1%	30.4%	29.9%
	(15.3)	(24.0)	(23.0)	(15.4)	(19.2)	(16.8)
Implementation & Measurement	9.4%	28.0%	21.1%	11.9%	18.4%	19.3%
	(7.3)	(21.6)	(15.9)	(4.69)	(14.8)	(16.0)
Total Score	16.0%	32.7%	27.8%	17.5%	23.2%	23.5%
	(9.8)	(21.2)	(16.7)	(6.6)	(15.0)	(13.8)

Figure 6. Environmental Real Estate Index: Sector Scores for Private Property Funds

Environmental Management & Policy



Implementation & Measurement



C. Explaining environmental performance

As we have shown, there is substantial variation in environmental performance between listed property companies and private property funds. This variation is partially driven by country of incorporation, property type, and legal status (i.e., public as compared to private). To further explain the variation in scores on the Environmental Real Estate Index, we empirically relate the total score and the sub-scores to the financial characteristics of the respondents. The model we use to explain the score on the Environmental Index takes the form:

$$Score_i = \alpha + \beta Financials_i + \delta Country_i + \lambda Sector_i + \varepsilon_i$$

where "Financials" include company size (market capitalization), financial performance (return on assets, ROA), leverage (ratio of debt to total assets), and openness to the capital market (percentage of closely held shares). All data is from Thomson One Banker, in U.S. dollars for year-end 2008. We also include a

binary dummy for each country (set relative to the U.K.) and for each property type (set relative to property type "Other").[15]

"Company size is a very strong driver of environmental performance."

Table 14 provides the ordinary least squares regression results of this simple linear model that explains environmental performance. The first column explains the score on Management & Policy, the second column explains the score on Implementation & Measurement, and the last column explains the Total Score.

In all three columns, we see that company size is a very strong driver of environmental performance. On average, a 1% increase in company size leads to a seven-point increase in the total score of the environmental index.

[15] Due to data limitations, we cannot include all countries and property companies in this analysis. The required data are only available for listed property companies in Europe, Australia, and the U.S.

Table 14. Explaining Environmental Performance of Listed Property Companies - Regression Results

	M&P	I&M	Total
Financials			
Market Capitalization	5.620*	7.897***	6.994***
(log)	[3.014]	[2.183]	[2.269]
Debt to Total Assets	-0.0186	-0.0809	-0.0562
	[0.319]	[0.192]	[0.230]
Return on Assets	0.582	0.978**	0.821*
	[0.487]	[0.446]	[0.441]
Percentage of Closely Held Shares	-0.207	-0.296**	-0.260**
	[0.159]	[0.129]	[0.128]
Property Type			
Office	12.96	10.62	11.55
	[15.58]	[9.402]	[11.04]
Retail	5.909	9.145	7.862
	[14.20]	[8.786]	[10.22]
Residential	14.36	1.316	6.487
	[18.70]	[7.860]	[10.16]
Diversified	4.424	7.458	6.255
	[14.88]	[9.395]	[10.79]
Country			
Australia	15.44*	4.777	9.008
	[8.735]	[8.840]	[7.854]
U.S.	-3.538	-17.27**	-11.83
	[11.23]	[8.379]	[8.662]
Finland	-13.67	-3.840	-7.738
	[9.871]	[7.632]	[7.831]
France	-8.003	-14.84	-12.13
	[12.52]	[10.42]	[10.58]
Germany	-16.13*	-23.47***	-20.56***
	[9.489]	[6.998]	[7.476]
Netherlands	-18.50	-12.76	-15.04
	[11.48]	[11.63]	[11.29]
Sweden	27.93***	-3.581	8.914
	[9.765]	[8.881]	[8.635]
Switzerland	-5.796	-12.36	-9.755
	[20.37]	[14.20]	[16.38]
Constant	0.298	-23.35	-13.97
	[26.86]	[16.90]	[18.51]
Observations	61	61	61
R-squared	0.436	0.640	0.588
Adj R2	0.231	0.509	0.439

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

This positive relation could be because larger firms are more visible than are smaller ones. Larger firms are therefore more likely to be under the scrutiny of the wider public, possibly forcing the company to take environmental considerations into account. Moreover, larger property companies may have the necessary scale to appoint an environmental officer and to actively integrate environmental management in day-to-day asset management.

In addition to size, we find that financial performance, which we measure by return on assets, is also strongly associated with environmental performance. The relation is positive and significant, slightly more for Implementation & Measurement than for Management & Policy. We note that this result should be interpreted with caution, because the direction of the causality between financial performance and environmental performance is unclear, i.e., well-performing property companies may decide to integrate environmental management in business practices, or a higher environmental score may result in a better financial performance.

Another important financial determinant of environmental performance is the percentage of closely held shares. Here, we document a statistically significant, negative relation with environmental performance. Thus, if a listed property company is less exposed to the public capital market, i.e., it is more closely held, than its environmental performance is lower. This finding accords with the financial literature: the involvement of institutional investors in a corporation's stock has been documented to be positively related to corporate social performance (Paul Cox, Stephen Brammer and Andrew Millington, 2008, Richard A. Johnson and Daniel W. Greening, 1999). Listed property companies with a higher free float could be exposed to pressure from institutional shareholders if they do not live up to the environmental expectations, possibly increasing the cost of capital. Companies with better developed environmental and social policies are generally able to obtain better credit ratings and have a lower implied cost of equity, thereby lowering the cost of capital (Alexander Bassen, Hanns-Michael Holz and Joachim Schlange, 2006, Rob Bauer, Jeroen Derwall and Daniel Hann, 2008, Jeroen Derwall, 2007).

As noted earlier, property type matters for environmental performance. Most important, investors that are active in the office market seem to have a consistently better environmental performance, although the coefficients are not significantly different from zero.

When we study country influences, we find that the outcomes of the model strongly suggest that Swedish and Australian property investors are ahead of the curve. When we control for differences in financial characteristics and property type, we find that both countries have significantly positive coefficients on the country dummy, suggesting that property investors from these countries have better environmental performance than do their counterparts in the U.K. For all other countries, the coefficient is negative, although mostly statistically insignificant. Only German property companies have significantly lower scores on all indexes. Compared to their European counterparts, U.K. property companies are clear environmental leaders. But, U.S.-based property companies have lower scores on all indexes, with significant results for the Implementation & Measurement index.

The adjusted R2s of the model, which indicate explanatory power, are high. Interestingly, they are higher for Implementation & Measurement than for Management & Policy. We conclude that the model can better explain the actual implementation of environmental practices than the reported evidence on environmental policies.

D. Policy versus implementation: walking the talk?

It is relatively easy for a private property fund or a listed property company to formulate an environmental investment policy. Moreover, surveys inherently suffer from a self-response bias, i.e., we cannot validate the answers. Thus, it could be argued that the actual implementation of environmental policies is the true hallmark of a commitment to environmental management, which is why we analyzed Management & Policy and Implementation & Measurement separately in the previous sections.

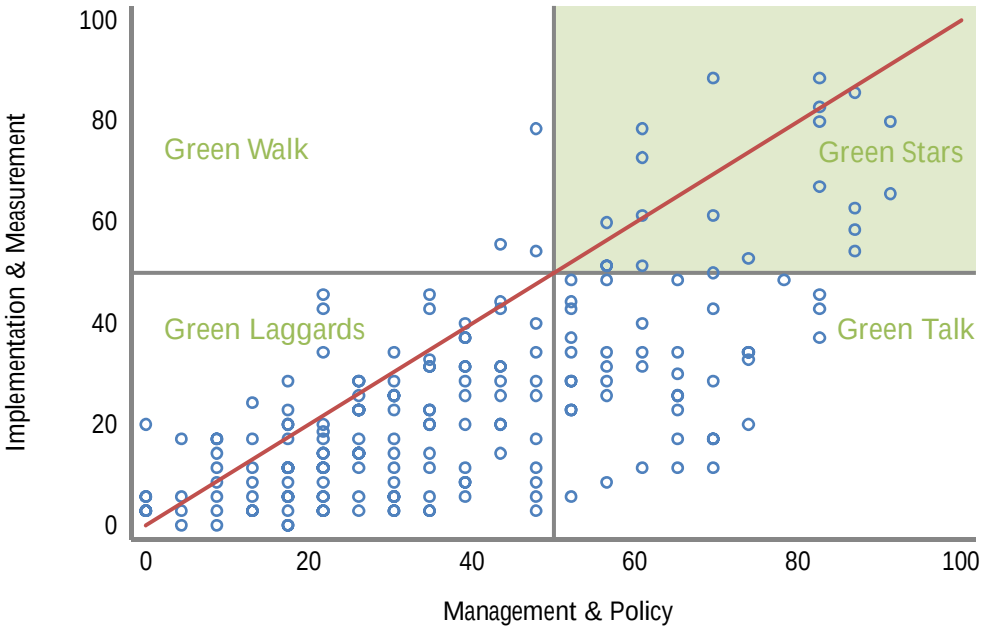
To further address the relation between environmental policies and environmental management practices, we map for every respondent how their score on Management & Policy relates to their score on Implementation & Measurement. Figure 7 shows the results. If all intentions of the respondents are reflected in actions, then the dots in the figure should either be lying on, or very close to, the red 45-degree line drawn in the graph. If respondents would outperform their intentions, then the dots should lie above the line. However, that is not the case. Nearly all the dots are below the 45-degree line, indicating that the intentions of property companies and funds are more ambitious than their actions currently reflect.

"About 133 of the respondents can be classified as 'green laggards'."

We then divide Figure 7 into four quadrants, each depicting a special set of environmental performance characteristics. Property companies and funds in the lower left quadrant are the "green laggards". These respondents are underperformers when it comes to environmental performance: they neither have the environmental policies, nor do they implement environmental measures. We note that this quadrant is the most densely populated, with about 133 (67%) of the respondents qualified as "green laggards". This is a clear indication that environmental management needs to be brought up to speed in the property sector, and at the same time it reflects untapped potential.

In the lower right quadrant, we find the property companies and funds that "talk the talk", but do not "walk the walk": their performance on Management & Policy is relatively high, but these respondents are not executing the policies equally well, which is reflected by a low score on Implementation & Measurement. We call this quadrant "green talk". The respondents in this quadrant show at least some awareness of the fact that energy-efficiency investments in buildings are often good business, but the large number of observations in this quadrant also suggests that public relations still play an important role in explaining the environmental credentials of property investors. This quadrant is the second most densely populated of the four quadrants, containing 41 (21%) of all respondents.

Figure 7. Policies versus Implementation - Walking the Talk?



In the upper right corner, we find the group of environmental top performers. The so-called "green stars" have set ambitious environmental targets, actively implement measures to improve the environmental performance of their properties, and regularly assess the effects of these measures. These respondents have already realized that financial performance and environmental performance can go hand in hand, and act accordingly. Even though this is the quadrant of the future, it does not contain the majority of respondents. Only 20 respondents (10%) are in the "green stars" category. All of the "green stars" can be found in the top-10 and top-5 rankings that we discuss in Section 3B. About one third of the investors in that group also appear above the red line, which implies that they do even better on the execution of environmental practices than on formulating an environmental policy. Obviously, the companies in this quadrant are the best examples for the global real estate investment community.

"Green stars have set ambitious environmental targets, actively implement measures to improve the environmental performance of their properties, and regularly assess the effects of these measures."

The quadrant in the upper left corner contains the property investors that do not talk, but rather act. We call this quadrant the "green walk". For these property companies and funds, action speaks louder than words. As we can see from Figure 7, this quadrant is by far the least populated, with only three property investors, a mere 2% of the respondents. This finding suggests that having a strong environmental performance is no coincidence: implementation of environmental management only happens on the basis of an explicitly formulated policy. This finding also implies that companies and funds in the "green talk" quadrant have the potential to improve environmental implementation, based on their current scores on environmental policies.

E. Chapter summary

- Response rates on the Global Environmental Real Estate survey are high in Australia and in Europe as a whole, low in North America and southern Europe, and very low in Asia. There is a significant positive correlation between the transparency of a country's commercial property market and the response rate.

- Response rates differ substantially between listed and non-listed property investors. Unlisted investors are more responsive in Asia and North America, while listed investors are more responsive in Europe.

- Non-responding property companies and funds are likely to lag behind in environmental management. Extrapolating the results based on the sample of respondents might provide an overly optimistic view on the current environmental performance of the global universe of listed property companies and private property funds.

- Overall, property investors do not come close to the maximum score on the Global Environmental Real Estate Index formulated by three leading European pension funds, despite the fact that the surveyed property investors are likely to be the best performers on these issues.

- Listed property companies show a much better environmental performance than do their private counterparts. Among listed companies, the larger investors are significantly more likely to have a strong environmental performance. Environmental performance is also significantly and positively related with return on assets, although we cannot establish a causal link, and with the percentage free float of property company shares.

- Companies and funds investing in residential or non-core property types score substantially lower on the Implementation & Measurement index of environmental practices.

- 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.

- Some Australian, listed Swedish and listed U.K. property companies and funds achieve close to the maximum score on the Global Environmental Real Estate Index and outperform the rest of the world. They provide the best practice benchmark that other property investors can emulate. The environmental performance of investors from Asia and the U.S. leaves much to be desired.

- Our results provide evidence of "green talk", rather than "green walk": performance on environmental Management & Policy is much better than performance on Implementation & Measurement. Clearly, property companies do not necessarily practice what they preach when it comes to environmental management.

- Only 20 respondents (10%) can be classified as "green stars", with relatively high scores on both environmental Management & Policy and Implementation & Measurement.

- There is still a long way to go when it comes to environmental performance of the global commercial property sector: 133 investors (representing 67% of the sample) are located in the worst performing quadrant, the "green laggards".

IV. Survey results: individual questions

Here, we present survey results for a selection of individual questions. All survey questions can be found at www.corporate-engagement.com.

A. Management & Policy questions

We first look at whether and how property investors disclose their environmental policies externally. Table 15, which is based on survey question 15 ("Does your fund communicate its environmental policies in any of the following ways?") and question 16 ("According to which reporting standards is information on environmental practices disclosed?"), makes clear that environmental performance and environmental reporting are closely related. Again, the Australian respondents lead the world: they all publicize their environmental management practices in the annual report and/or on the corporate website. Among their listed European peers, 80% do the same. Outside of these regions, disclosure on environmental management practices is much lower, especially for Asian and American private funds, with only 25% and 19%, respectively, of these respondents indicating that they incorporate information on environmental policies in their external reporting.[16]

"There is only weak consistency and comparability of the environmental information provided in annual reports."

The last column of Table 15 shows the extent to which the reporting on environmental management follows the reporting guidelines as set out by the Global Reporting Initiative (GRI). Since there are no specific accounting rules that steer environmental reporting, there is only weak consistency and comparability of the environmental information provided in annual reports. The GRI intends to improve this situation by providing more specific guidelines. The extent to which companies have already adopted GRI practices in their reporting is another measure for the importance they attribute to transparency on environmental performance. The table shows that only a very small minority of property investors adhere to the GRI standards, even in Australia and Europe. We note that the GRI has only recently started to adapt general reporting guidelines to the specifics of the real estate sector. This consensus-based process will probably lead to a global standard by 2011. In 2009, reporting on environmental metrics leaves something to be desired, and property companies and funds should be encouraged to improve their performance in this area.

[16] We note that these fractions are based on self-reported data, i.e., we have not studied the annual reports of the respondents to validate the accuracy of their reporting. Since environmental reporting is the "politically correct" thing to do, the respondents 'answers may paint an overly rosy picture of their transparency on environmental management.

Table 15. External Reporting and Communication - Respondents Providing Information on Sustainability in the Annual Report or on the Corporate Website

Region		Number of Respondents	Percentage of Sample	Reporting According to GRI Guidelines
Europe	Listed	36	80%	4
	Private	26	40.6%	1
U.S.	Listed	7	36.8%	1
	Private	14	18.9%	0
Australia	Listed	8	100%	3
	Private	5	100%	3
Asia	Private	5	25%	0

A well-functioning environmental management system stands at the core of sound environmental management. Table 16, which is based on survey question 18 ("Does your fund have an Environmental Management System (EMS) in place that collects environmental information?"), survey question 19 ("What percentage of the portfolio is covered by the EMS?"), and survey question 20 ("How often does your fund undergo external audits on the EMS?"), shows whether property investors have an environmental management system in place.

Australian listed companies and private property funds and, to a lesser extent, European listed property companies are ahead of the pack: some 60% of Australian respondents, and just under 40% of listed European property companies, have an EMS in place. In Europe, the top performers on this issue are from Sweden, the U.K. and the Netherlands. Among respondents in the U.S. and Asia, EMS systems are rare. In the U.S., less than 10% of respondents, both listed and private, have such systems. The lack of proper management systems does not foster improved environmental performance, since without a properly functioning environmental management system efforts to improve the environmental performance of the real estate portfolio will remain fragmented and uncoordinated. The last column of Table 16 shows that if an environmental management system is in place, it covers most, if not all, of the property portfolio.

"Among respondents in the U.S. and Asia, EMS systems are rare. In the U.S., less than 10% of respondents, both listed and private, have such systems."

Table 16. Environmental Management System (EMS) in Place - Percentage of Portfolio Covered

Region		Number of Respondents with EMS in Place	Percentage of Sample	Percentage of Portfolio Covered by EMS
Europe	Listed	17	37.8%	76.4%
	Private	11	17.2%	93.5%
U.S.	Listed	1	5.3%	100%
	Private	3	8.1%	70%
Australia	Listed	5	62.5%	100%
	Private	3	60%	100%
Asia	Private	3	15%	83.7%

B. Implementation & Measurement questions

A substantial part of the survey collects information on the actual environmental metrics that are measured by the respondents. We address energy and water consumption, waste treatment, and CO_2 emissions. Given the previous evidence on the lack of environmental management systems, the results presented in Table 17 are hardly surprising. Only 37 (18.7%) of the respondents were able to report their exact energy consumption for the total property portfolio in either 2007 and/or 2008. The percentage of respondents that is able to report information on other environmental metrics, like water and waste, is even lower (16% and 12%, respectively).

"37 of the respondents were able to report their exact energy consumption for the total property portfolio in either 2007 and/or 2008."

The last column of Table 17, which is based on question 29 ("How does your fund measure the energy consumption of its standing investments?"), provides evidence on the use of "smart meters". The information collected by such meters is essential to establish a baseline measurement of energy consumption across buildings, to set targets for energy reduction, and to measure the immediate effect of resource efficiency measures. Even though utility companies all over the world are installing smart meters, the results show that this basic infrastructure to obtain information on environmental metrics is in place in (parts of) the property portfolios of 76 respondents only.

Benchmarking the energy consumption of the real estate portfolio is the key first step in making properties more efficient (Mercer, 2009). Only then can property investors set appropriate goals, optimize energy performance, and engage in retro-commissioning and retrofitting. Our results show that 37 property companies and funds around the globe are able to report consistent information on actual energy consumption. Increasing this number by active engagement should be the first priority for the shareholders in private property funds and public property companies. Given these findings, it appears that we are standing at just the beginning of the road to energy efficiency in the commercial real estate sector, with impressive opportunities lying ahead.

Table 17. Environmental Metrics Measured by Property Investors[17]

Percentage of respondents with information on:

Region		Total energy consumption (in GWh)	Total water consumption (in K litres)	Total waste collected (in tonnes)	Total waste recycled (in tonnes)	Total CO_2 emissions (in tonnes)	Percentage of Sample With Smart Meters
Europe	Listed	31.1%	24.4%	20.0%	17.8%	28.9%	60.0%
	Private	6.3%	7.8%	4.7%	4.7%	4.7%	28.1%
U.S.	Listed	26.3%	5.3%	5.3%	10.5%	10.5%	42.1%
	Private	5.4%	5.4%	0.0%	0.0%	0.0%	27.0%
Australia	Listed	62.5%	62.5%	50.0%	37.5%	62.5%	87.5%
	Private	80.0%	80.0%	80.0%	80.0%	60.0%	100%
Asia	Private	15.0%	15.0%	15.0%	10.0%	5.0%	21.4%
Total		18.7%	15.7%	12.1%	11.1%	13.6%	38.6%

[17] This table is based on question 27 of the survey, in which respondents completed actual information on energy use, water use, waste production, CO2 emission, and the corresponding rentable building area (RBA) for 2007 and/or 2008.

Renewable energy can make an important societal contribution, and also makes financial sense in some cases. In question 34 of the survey, we ask whether respondents use renewable energy in their portfolio of existing buildings, and if yes, how much of the total energy consumption is covered by renewable sources. Table 18 answers these questions. The results show that the percentage of property companies and funds that use renewable energy is still very small, only 13.1% or 26 respondents. The Australian respondents' answers are particularly interesting: only one listed company and one private fund report the use of renewable energy. This finding contrasts with the Australian respondents doing so well on almost all other metrics of environmental management. However, the underutilization of renewable energy reflects the Australian energy policy. In 2005, only 1% of Australia's annual electricity consumption was produced by renewable sources.[18] Through direct payments, favourable tax treatment, and other actions, state and national governments in Australia provide substantial financial support for the production and use of fossil fuels. These subsidies keep the cost of fossil fuel energy low and make it harder for renewable energy to compete. Under these circumstances, using renewable energy would destroy shareholder value for Australian property investors.

"Dutch and Swedish property companies are major consumers of renewable energy."

Outside Australia, renewable energy is not frequently used among respondents either, except within the sample of European listed property companies. Most notably, four Dutch and three Swedish property companies are major consumers of renewable energy. Other European respondents that consume renewable energy are also scattered across northwest Europe. This geography of renewable energy consumption may be related to either national tax credits on renewable energy or to the availability of a more sophisticated energy sector in this regard.

Table 18. Consumption of Renewable Energy in the Existing Real Estate Portfolio

Region		Number of Respondents Using Renewable Energy	Percentage of Sample	Percentage of Total Energy Consumption
Europe	Listed	12	26.7%	40.3%
	Private	5	7.8%	50.6%
U.S.	Listed	3	15.8%	9.3%
	Private	3	8.1%	35.7%
Australia	Listed	1	12.5%	12.0%
	Private	1	20%	25.0%
Asia	Private	1	5.0%	2.0%
Total		26	13.1%	

The number of buildings with a "green" or energy efficiency certification is growing at a rapid pace in many countries. For example, BREEAM, the leading "green" standard in Europe, reports exponential growth in the number of awarded certificates. A recent paper documents that the percentage of the commercial U.S. office market with LEED and/or Energy Star certification is exploding (Piet M.A. Eichholtz, Nils Kok and John M. Quigley, 2010b).

[18] See http://globalgreen.org/docs/publication-96-1.pdf for more information.

Despite the rapid growth in certified "green" space, the percentage of labelled buildings is still very small in most countries, and is almost exclusively tied to new or recently renovated buildings. As a consequence, the proportion of certified space in listed property companies and private property funds is limited.

"About one fifth of the new investments by listed property companies in the U.S. are certified under the LEED standard."

Therefore, in our survey, we asked respondents about the percentage of newly acquired or developed space (in 2008) in their portfolio that received a "green" certificate. Table 19 shows the results.

Overall, 116 respondents (59%) use "green" building standards. In absolute numbers, the European property investors lead the way, with more than 60 respondents using "green" building standards. However, in terms of the amount of new space that is certified, the Australians outperform, with more than half of the acquisitions or construction by property companies and funds having a "green" label. About one fifth of the new investments by listed property companies in the U.S. are certified under the LEED standard.

Table 19. Percentage of New Space with a Green Building Rating (2008)

Region		Number of Companies Using Green Building Standards	Fraction of New Space with "Green" Rating	Number of Zero Energy Buildings
Europe	Listed	31	15.0%	1
	Private	30	10.0%	0
U.S.	Listed	15	20.1%	0
	Private	22	9.1%	0
Australia	Listed	5	51.0%	0
	Private	3	65.0%	0
Asia	Private	10	14.0%	0

Question 32 of the survey asks whether investors have so-called "zero energy buildings"[19] in their property portfolio, i.e., buildings that generate what little energy they consume by using renewables on-site. For property investors who own large warehouses and shopping malls, this may be easier to achieve than for those investors who own offices and high street shops. However, this question is highly relevant, since in the foreseeable future many governments —with the EU at the forefront —will require new buildings to consume zero net energy. We find that, despite this legal development, only one of the respondents currently has zero-energy buildings in its portfolio. That company is the U.K.-based Big Yellow Group, which is the highest ranked European property company in our survey.

We end this chapter with a look at the potential for improved environmental management among property companies in the near future. This potential will be driven mainly by human capital: property companies and funds can only improve their environmental performance if they hire specialists in this area, and if they at least partially reward employees based on environmental performance.

[19] "Zero-energy buildings" are buildings where, as a result of the very high level of energy efficiency of the building, the overall annual primary energy consumption is equal to or less than the energy production from renewable energy sources on site.

"More than half of the European and American listed property companies have a dedicated employee for environmental management."

The first question is whether the investors have an environmental officer on the staff (question 12 of the survey). Without specialized, dedicated staff to take responsibility for day-to-day environmental management, it will be hard for property companies and funds to translate environmental policies into action. The first column of Table 20 provides the percentage of property investors with such an environmental officer. More than half of the European and American listed property companies have a dedicated employee for environmental management (61% and 50%, respectively). A substantial number of U.S. private property funds also employ an environmental officer. Not surprisingly, the Australian respondents are the furthest ahead in this matter, with over 80% of respondents reporting the presence of an employee dedicated to environmental sustainability. The Asian labour market for environmental property specialists looks less promising, with only 18% of private property funds reporting the presence of an environmental officer. This finding is unfortunate, as the results from this survey show a major gap on environmental performance between Asian property investors and their peers oversees. If there are no professionals dedicated to this issue, then filling the environmental performance gap may take a long time.

Table 20 also reports whether the respondents link the environmental performance of the property portfolio to the management's compensation or bonuses (question 13 of the survey). The current incentive structures for property investors are often based on annual or quarterly financial performance figures. As such, employees have limited incentives to invest in energy efficiency improvements, because these investments may jeopardize financial performance in the short run even if they create value in the long run.[20]

The last column of Table 20 shows the results. Among the Australian property companies and funds, which is the group of respondents that consistently performs the strongest on environmental issues, a majority has financial incentives in place for superior environmental management. For all other market segments, the number of respondents reporting such incentives is low, especially among Asian and European private investors. This result is in line with the weaker overall environmental performance of these respondents.

[20] This mindset has been documented for private investors (Kenneth Train, 1985), but may also hold true for the managers of institutional property portfolios.

Table 20. Human Resources and Environmental Sustainability

Region		Number of Companies Employing an Environmental Officer	Percentage of Sample	Number of Companies Linking Environmental Performance to Compensation (bonus)	Percentage of Sample
Europe	Listed	28	62.2%	9	20.0%
	Private	19	29.7%	2	3.1%
U.S.	Listed	10	52.6%	3	15.8%
	Private	16	43.2%	6	15.4%
Australia	Listed	8	100.0%	4	50.0%
	Private	4	80.0%	4	80.0%
Asia	Private	4	20.0%	1	5.0%
Total		89	45.0%	29	14.6%

C. Chapter summary

- The disclosure of all Australian respondents and most European listed respondents is the most transparent for environmental performance. Only 6% of respondents report along the guidelines set by the Global Reporting Initiative (GRI).

- Environmental management systems and "smart" energy metering, both prerequisites for benchmarking, target setting and improving of energy performance, are very rare outside of Australia and some European countries.

- Actual measurements of energy and water consumption, waste production, and CO_2 emissions are available for less than 19% of the respondents. This result is worrisome, as the survey respondents are arguably the most sophisticated and professional property investors around the globe.

- Renewable energy is not frequently used among listed property companies and private property funds (26 respondents), except within the sample of European listed property companies. The Netherlands and Sweden are at the forefront of consuming renewable energy.

- "Green" labels, even for newly acquired or constructed buildings, are still rare among the surveyed investors, and "zero energy buildings" are virtually non-existent.

- The majority of listed property companies employ specialized environmental officers, but remuneration of the management is usually not aligned with environmental targets.

V. Summary and conclusions

This report presents the results of the first global survey of environmental practices by intermediate property investors: listed property companies and private property funds. The property industry can play a major role in reducing global energy and resource consumption, and in limiting greenhouse gas emissions. Moreover, the investments needed to make buildings more energy efficient have, to a large extent, positive net present values, even at current energy prices. This holds especially true for better building management; lighting, cooling, and heating technology; and better insulation. However, these investments face barriers such as a dearth of financing mechanisms and proper rent contracts, and a lack of information and market awareness on the merits of energy efficiency —among both building owners and their financiers.

Because real estate investments are playing an increasingly important role in their responsible investment strategy, three leading European pension funds —APG Asset Management, PGGM Investments, and the Universities Superannuation Scheme (USS) commissioned the European Centre for Corporate Engagement (ECCE) at Maastricht University to undertake a global Environmental Real Estate Survey. Without detailed information on the behaviour and environmental performance of the global property sector, a responsible investment strategy cannot be implemented, and investments in property funds and companies cannot be assessed on environmental performance. Furthermore, this survey is intended to increase awareness of environmental issues among property investors, and to communicate the commitment of these three leading institutional investors to improving the environmental performance of commercial real estate.

The survey was sent to 688 property companies and funds in more than 20 countries. Both listed property companies and private property funds were surveyed. The response was high in Australia and in northern Europe, but low among property investors in Asia, the U.S., and southern Europe. We show that the variation in response rates is related to the transparency of the local property market: less transparent real estate markets have lower response rates. Response rates also differ substantially between listed companies and private funds.

Overall, but with the notable exceptions of Australia, Sweden and the U.K., property investors do not come close to achieving the maximum score on the Global Environmental Real Estate Index, a benchmark for three leading European pension funds. Since it is likely that the response rate is higher among the relatively strong environmental performers, our results may even overestimate the current environmental performance of the global property sector. This finding suggests that most property investors are not yet aware of the potential for shareholder value creation associated with energy efficiency or environmental investments in their buildings, i.e., there is untapped potential to increase shareholder value.

However, the results of this survey also show strong differences in environmental performance among respondents. The environmental scores of the best performers show that the current environmental benchmark, as set by the three pension funds, is realistic. Some Australian, Swedish, and U.K. property companies achieve close to the maximum score on the Global Environmental Real Estate Index and

outperform the rest of the world. These top performers provide the clear benchmarks that the industry needs if it intends to improve environmental performance. Emulation of leading industry peers is a tried and tested way for the adoption of new technology and management practices in any industry, and this approach will also hold for the adoption of environmental management practices in the property industry.

Listed property companies show much better environmental performance than do their private counterparts. Among listed companies, the larger investors are significantly more likely to have a strong environmental performance. There is also a significant positive relation between return on assets and environmental performance. The environmental performance of property companies and funds from Asia and the U.S. leaves much to be desired.

The results provide evidence of much "green talk" but little "green walk": performance on environmental "Management & Policy" is much better than performance on "Implementation & Measurement". Only a minority of the respondents can be classified as "green stars", so property companies do not necessarily practice what they preach when it comes to environmental management.

The survey results presented in Chapter IV provide more additional information on implementation issues. These results show that property companies and funds have not yet translated environmental policy into actual measures in building management. "Smart" metering and energy management systems, both prerequisites for putting energy saving measures in place, are still few and far between. Actual measurements of energy and water consumption, waste production, and CO_2 emissions are still an exception, with less than 19% of the respondents measuring such metrics. Renewable energy is not frequently used among respondents, except within the sample of European listed property companies. The Netherlands and Sweden are at the forefront of consuming renewable energy. "Zero energy buildings" are almost non-existent, showing a major gap with foreseeable legislation by a number of governments.

Moreover, except in Australia and among some listed companies in the U.S. and Europe, environmental officers are a rare breed. In addition, only a few companies and funds have financial incentives of executives linked to superior environmental performance. This link needs to be improved if the industry wants to make real headway in improving its environmental performance. In order to avoid harsh (and fundamentally unnecessary) legislation, such headway is important.

The survey results suggest that the environmental performance of the global property investment industry can be substantially improved. Many investors have only taken some small steps on the road to optimizing environmental performance. However, some recent developments indicate that environmental management practices may be gaining momentum. First, the number of buildings with an environmental rating is rising exponentially, and may have passed the tipping point. Second, our conversations with many of the property companies and funds that we surveyed suggested that the survey itself, and the weight of the institutions sponsoring it, could act as a catalyst for awareness of buildings 'environmental performance. Clearly, end-investors also have a major responsibility, which could lead to many more and extended collaborative initiatives in the near future. Third, the survey itself clarifies the view of the real

estate sector on environmental sustainability. Private funds and listed companies overwhelmingly indicate that environmental performance is still a priority, even in the aftermath of the financial crisis, showing that they do not regard environmental (risk) management as a short-term hype. On the contrary, most funds anticipate that the drivers for environmental issues will be stronger in the long term, especially in the light of mounting evidence that energy-efficient buildings perform better.

This survey is the first of its kind, and given the increasing speed at which the commercial property sector is embracing environmental investment policies, it is likely that this survey will be repeated on a regular basis. We strongly urge those property companies and funds that did not participate in this survey to respond to future surveys, and we invite the global property industry not only to talk, but also to walk the road towards optimal environmental performance.

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