

# Information paper – 34

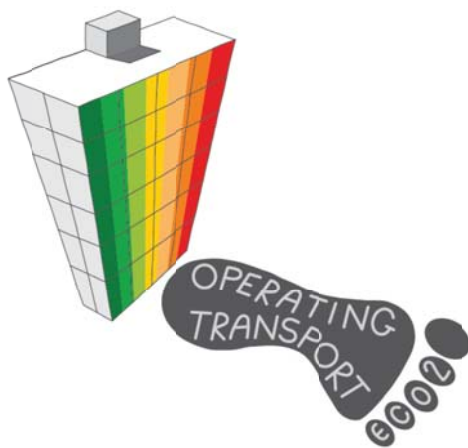
## The green premium – is it real?

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A paper referenced in the book:

### WHAT COLOUR is YOUR BUILDING?

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This information paper is one of a series of papers written during the preparation of the book **What Colour is Your Building?** ([www.whatcolourisyourbuilding.com](http://www.whatcolourisyourbuilding.com)). The papers do not form part of the book and have not been peer reviewed. They provide further technical detail, analysis and information to support statements made in the book. All of the papers can be downloaded from [www.wholecarbonfootprint.com](http://www.wholecarbonfootprint.com).

## The green premium – is it real?

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This information paper provides a summary of various studies to determine if there is a green premium, the premise that sustainable buildings give a better financial return than standard office buildings. The studies use different methodologies, and sample sizes can be quite small, so it is difficult to draw definitive conclusions.

This information was prepared in 2012 during the writing of the book. More recent studies have been undertaken in 2013 but these are not included here.

### 1. SUMMARY OF FINDINGS

Figure 1 shows the typical increase in rental returns from ‘green’ buildings compared to standard buildings based on the reported findings from various studies. The proportion of green buildings in the study sample is represented by the size of the circle. The number or value of green buildings compared to the total buildings for each study is shown in brackets. The results for operational energy ratings (NABERS and Energy Star) are shown in blue and green design ratings (BREEAM, Green Star and LEED) are shown in green. Figure 2 is similar but shows the increased capital value compared to standard buildings. Table 3 (at the end of this paper) shows the data on which the two figures are based.

No attempt is made here to verify the findings of the studies or to compare them on a like-for-like basis. The data is simply presented graphically with no conclusions or comment.

Some headline findings from the various studies summarised in this paper include:

- **London:** BREEAM certified offices have a 26% higher transaction price than non-certified (RICS, 2012)
- **UK:** No conclusions can yet be drawn as to the impacts of sustainability on investment performance (IPD, 2011)
- **Australia:** Buildings with 4 star ratings for NABERS and/or Green Star gave better returns than buildings with higher, lower or no ratings. (IPD, 2011)
- **Australia:** Green premiums up to 20% for 5 star NABERS ratings, with discounts up to 13% for ratings less than 3 stars (API & PFA, 2011)
- **United States:** LEED and Energy Star certified buildings have 16% higher transaction prices. A \$1 saving in energy costs from increased thermal efficiency yields roughly \$18 in the increased valuation (Eichholtz, 2009)
- **United States:** LEED certified buildings have 3.1% improvement in both rental rates and building occupancy compared to the general market (CBRE, 2011)
- **United States:** LEED properties account for 2% of REIT property portfolio, while Energy Star account for 5 to 7% (Eichholtz, 2012)

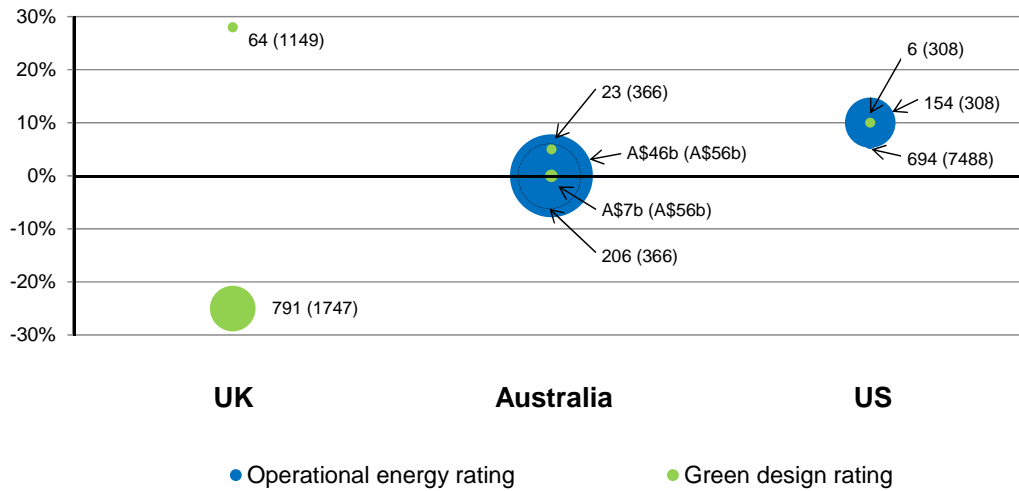


Fig 1 % increase in rental return of 'green' buildings compared to standard buildings from various studies

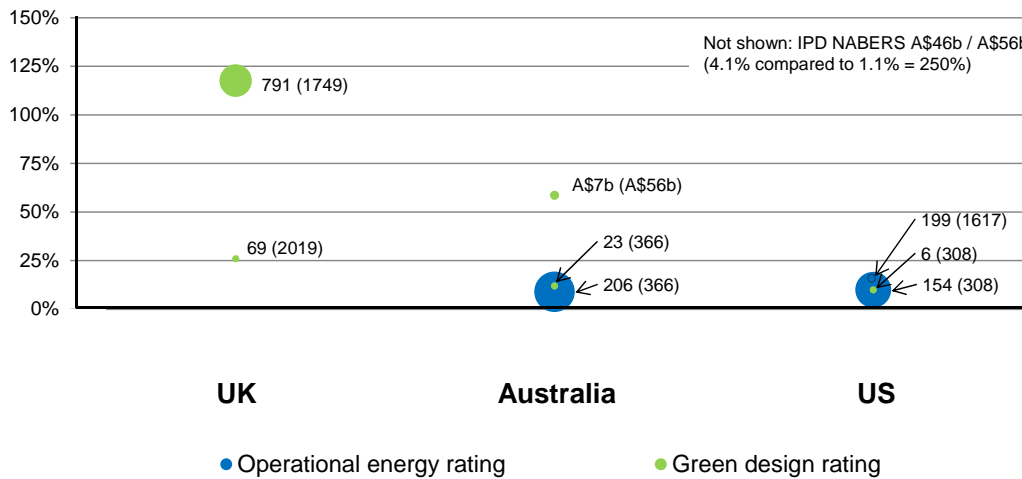


Fig 2 % increase in capital value of 'green' buildings compared to standard buildings from various studies

## 2. SUPPLY, DEMAND AND THE VALUE OF GREEN BUILDINGS, RICS 2012

The research report *Supply, demand and the value of green buildings*<sup>1</sup> describes a study for Royal Institution of Chartered Surveyors (RICS) in March 2012 of the London office market between 2000 and 2009. It observed that *'the expanding supply of green buildings within a given London neighbourhood had a positive impact on rents and prices in general.'*

The study included analysis of the impact on rental rates and transaction prices in London for BREEAM certified offices compared to non-certified:

- Rental rates – based on the transaction of 1,149 properties of which 64 were BREEAM certified.
- Transaction prices – based on the transaction of 2,019 properties of which 69 were BREEAM certified.

The key findings for rental rates were:

- An office building with BREEAM certification was shown to have a 28% rental premium compared to non-certified properties.
- If clusters of certified buildings are found in a location then a further increase of 1.6% was observed, potentially due to the gentrification of the neighbourhood.
- As more green buildings cluster together, each additional building saw a reduction in the premium of 1.5%.
- For an average neighbourhood with six certified buildings the green premium was 21.8%.

The key findings for transaction prices were:

- BREEAM certified buildings had a 26% premium during the sample period (after controlling for basic differences in building quality and location).
- Clustering of green buildings has a moderating effect. The premium was 18.2% in locations with an average number of certified buildings (4.59).
- Stand-alone green building rents and transaction prices are higher relative to green buildings with neighbourhood competition.
- Green buildings are not transacting much due to either:
  - Owner-occupied and therefore not on the market.
  - Maintained as a buy and hold investment for investors.

### 3. IPD SUSTAINABLE PROPERTY INDICES, 2011

IPD produce green property indices and compare these with non-rated buildings in the UK, France and Australia.<sup>2</sup> The results for 2011 are summarised below.

#### UK

Sustainability data from a total of 115 funds (including 17 whole portfolios) was completed on 1,747 properties. Of these 791 had sufficient data to classify as sustainable (45% by property count), with 81 considered 'more' sustainable by property count (10.2%). The value of these was £3.1bn accounting for 25.5% of capital value. The Kingston University Sustainable Property Appraisal Project, was used to identify 'more' sustainable properties:

- BREEAM certified 'very good' or better
- The building passes criteria in 4 of the following 5 categories – building accessibility, energy efficiency, water efficiency, waste management, and flood risk

The full year 12 month returns to December 2011 are shown in Table 1.

	Total return	Capital growth	Income return
More sustainable	8.4%	3.7%	4.5%
Less sustainable	8.4%	2.0%	6.3%
All properties	7.8%	1.7%	6.0%

**Table 1 Annual returns on 1,747 UK properties in 2011 (source: IPD)**

IPD state that: *‘Given the small sample size and the fact that sustainability factors have not yet been priced into the market valuations ...anything we note in the most recent performance numbers must be treated with a high degree of caution.’*

IPD also caution that: *‘No conclusions can yet be drawn from these performance numbers as to the impacts of sustainability on investment performance.’*

## France

The majority of green offices are certified using the HQE rating system. The headline results at December 2011 are shown in Table 2.

Green offices had a higher capital growth than high-end non-green offices, but lower rental return. The average rent for new leases signed during 2011 for green buildings reached 449 €/m<sup>2</sup>, higher than all high-end non-green building leases (€365/m<sup>2</sup>).

	Total return 1 year	Income return 1 year	Capital growth 1 year	Number of properties	Market value B €
Green offices	7.4%	4.2%	3.1%	56	4.8
High-end non-green offices	6.3%	6.3%	0.1%	162	10.8
Non-green offices	7.2%	6%	1.1%	2,767	38.3

**Table 2 Annual returns for sample French properties in 2011 (source: IPD)**

IPD note that: *‘Although the analysis reveals a slight financial outperformance by the more sustainable properties, IPD is unable to conclude that this outperformance is due to sustainability reasons. Given the small sample size and the fact that sustainability factors have not yet been priced into market valuations in France, these performance numbers must be treated with a high degree of caution.’*

## Australia

The Australian IPD database had around 1,500 of commercial assets with an asset value of approximately \$117bn, representing 60% of investment-grade property in Australia. The IPD Green Property Index measures investment returns for green office buildings. Offices account for

a combined value of \$56bn with \$49bn (88%) having green ratings: \$42bn have a NABERS Energy rating, \$3bn have a Green Star rating, and \$4bn have both.

Key findings from a March 2012 report to the Green Cities conference were:

- The average return after 1 year for all offices was 10.4%.
- Buildings with a NABERS rating 4 star or above had higher returns than all offices: 4 star (12.8%), 4.5 star (11.1%), 5 star (10.8%).
- Buildings with a NABERS rating less than 4 stars had lower returns: <3 stars (8.6%), 3 stars (9.1%), 3.5 stars (9.8%)
- After 1 year, 4 star Green Star buildings had a higher annual return (10.3%) than 5 and 6 star rated buildings (6.3%).
- Over 3 years, 4 star Green Star buildings had a higher annual return (10.3%) than 5 and 6 star rated buildings (6.3%). The average 3 year annual return for all offices was 4.6%.

Buildings with 4 star ratings for NABERS and/or Green Star gave better returns than buildings with higher, lower or no ratings.

#### 4. BUILDING BETTER RETURNS, API & PFA

The *Building Better Returns: A Study of the Financial Performance of Green Office Buildings in Australia*<sup>3</sup> by the Australian Property Institute and the Property Funds Association in September 2011 looked at investment returns for offices in Sydney and Canberra. The 366 buildings included in the study represent half of the office floor area in these markets. 206 buildings had NABERS rating and 26 had green star ratings. Key findings included:

- The green premium in value for office buildings for NABERS energy ratings were:
  - 9% for 5 stars.
  - 2 to 3% for 3 to 4.5 stars.
- Green premiums in value differed in specific office markets. For a 5 star NABERS rating Canberra had a 21% green premium, suburban Sydney 8%, and Sydney CBD 4%.
- There was evidence of major discounts in value in the lower NABERS energy rating categories (less than 3 stars) for the Sydney CBD (10% discount in value) and Canberra (13% discount in value).
- The Green Star rated buildings showed a green premium in value of 12%. The increased rental returns were 5%.
- The office market green premiums in values and rents for Green Star and the top 5 star NABERS energy rating are generally comparable to that seen in recent US green office building studies (eg: Eichholtz et al, 2010)

## 5. DOING WELL BY DOING GOOD?

The paper, *Doing well by doing good, Green Office Buildings*<sup>4</sup> by Eichholtz, Kok & Quigley in January 2009, provided some of the first evidence on the economic value of the certification of ‘green buildings’ by comparing the rental rates and selling prices of Energy Star and LEED rated office buildings with non-rated buildings. Data from 10,000 buildings in the United States was analysed. The key findings were:

- Green building rental rates are roughly 3% higher per square foot with an effective rental premium of 6%.
- Selling prices of green buildings are higher by up to 16%

The type of label matters. Energy Star rated buildings showed a consistent and statistically significant market impact – LEED rated buildings did not. The authors suggest that *‘tenants and investors are willing to pay more for an energy-efficient building, but not for a building advertised as “sustainable” in a broader sense.’*

## 6. DO GREEN BUILDINGS MAKE DOLLARS AND SENSE?

First published in 2009, this is an on-going research project by CBRE, University of San Diego and McGraw-Hill Construction based on annual surveys of 150 offices managed by CBRE in the US. Key findings in the 2009 report<sup>5</sup> included:

- Green buildings have a 3.1% improvement in both rental rates and building occupancy in comparison to the general market.
- Sub metering of utilities for tenant space reduces energy costs by 21% on average.
- 19% of tenant respondents reported increased productivity.
- 94% of tenant managers registered higher employee satisfaction in green office space.

Other findings included:

- Most tenants will not admit to being willing to pay more for a green building, yet empirical evidence suggests they will and do.
- Green buildings are more intensively managed than non-green buildings; therefore, the total operating expenses are not that different.
- Green buildings, even if only Energy Star labelled tend to be occupied by higher than average wage tenants who generally feel more productive and take fewer sick days.
- Public image, recruitment of and retention of employees are enhanced in green buildings.
- Green leases and green operational practices are important to tenants.

## 7. GREEN OUTLOOK 2011

The findings of the report *Green Outlook 2011: Green Trends Driving Growth through 2015*,<sup>6</sup> by Harvey M. Bernstein of McGraw Hill Construction included:

- Green building market in the US grew six fold between 2005 and 2010.
- Revenues from green building projects increased for designers and contractors between 2007 and 2009 while overall revenues fell.
- One third of tenants are willing to pay a premium for green renovated / retrofitted space.
- Business benefits of new green buildings and green retrofits are:

	New Build	Retrofit
Decreased operating costs	13.6%	8.5%
Increased building values	10.9%	6.8%
Improvement in Rol	9.9%	19.2%
Increased Occupancy	6.4%	2.5%
Rent rise	6.1%	1%

## 8. PORTFOLIO GREENNESS AND THE FINANCIAL PERFORMANCE OF REITS

In the 2012 paper *Portfolio greenness and the financial performance of REITs*,<sup>7</sup> Eichholtz analysed the performance of LEED and Energy Star certified buildings in a sample of US Real Estate Investment Trusts (REITs). The average percentage of certified properties in REIT property portfolios was found to be quite low: about 2% for LEED and 5 to 7% for Energy Star. If a REIT increased the share of green properties in its portfolio by 1% then the paper predicted:

- Its return on assets would increase by around 3.5% for LEED certified properties and by 0.3% for Energy Star certified properties.
- The return on equity would increase by 7.4% to 7.9% for LEED certified properties and by 0.7% for Energy Star-certified properties.
- For LEED certification the share of funds from operations as a fraction of total revenue would increase by 17 to 25%, and Energy Star certification by 2 to 7%.

## 9. OTHER STUDIES

Various other studies not summarised in this paper include:

- *Greening of Corporate America*, SmartMarket Report, McGraw-Hill Construction, 2007.
- *Pricing Sustainability*, Fuerst, Franz and Patrick McAllister, 2009.



- *Does Green Pay Off?* Miller, Spivey and Florance, 2008.
- *Green Design and the Market for Commercial Office Space*, Wiley, Benefield and Johnson, 2010.
- *Why Do Companies Rent Green?* Eicholtz, Piet, Kok and Quigley, 2009.
- *Socially Responsible Property Investment: quantifying the relationship between sustainability and investment property worth*, Ellison, Sayce and Smith, 2007.

## 10. DATA FOR FIGURES 1 AND 2

Study	Country	Certification	No. or value of properties	No. or value of green buildings	% of green buildings in sample	Method of return	Performance or improvement		
							non-green	Light green	Green
RICS, 2012	UK	BREEAM	1149	64	6%	Rent			28.0%
RICS, 2012	UK	BREEAM	2019	69	3%	Capital			26.0%
IPD, 2011	UK	BREEAM	1747	791	45%	Rent	6.0%	6.3%	4.5%
IPD, 2011	UK	BREEAM	1747	791	45%	Capital	1.7%	2.0%	3.7%
<b>IPD, 2012</b>	<b>UK</b>	<b>BREEAM</b>	<b>1747</b>	<b>791</b>	<b>45%</b>	<b>Total</b>	<b>7.8%</b>	<b>8.4%</b>	<b>8.4%</b>
IPD, 2011	France	HQE	2823	56	2%	Rent	6.0%		4.2%
IPD, 2011	France	HQE	2823	56	2%	Capital	1.1%		3.1%
<b>IPD, 2011</b>	<b>France</b>	<b>HQE</b>	<b>2823</b>	<b>56</b>	<b>2%</b>	<b>Total</b>	<b>7.2%</b>		<b>7.4%</b>
IPD, 2011	Australia	NABERS	A\$56 b	A\$46 b	82%	Rent	7.5%		7.5%
IPD, 2011	Australia	NABERS	A\$56 b	A\$46 b	82%	Capital	1.1%		4.1%
<b>IPD, 2011</b>	<b>Australia</b>	<b>NABERS</b>	<b>A\$56 b</b>	<b>A\$46 b</b>	<b>82%</b>	<b>Total</b>	<b>8.6%</b>	<b>9.5%</b>	<b>11.6%</b>
IPD, 2011	Australia	Green Star	A\$56 b	A\$7 b	13%	Rent	7.5%		7.5%
IPD, 2011	Australia	Green Star	A\$56 b	A\$7 b	13%	Capital	2.9%		4.6%
<b>IPD, 2011</b>	<b>Australia</b>	<b>Green Star</b>	<b>A\$56 b</b>	<b>A\$7 b</b>	<b>13%</b>	<b>Total</b>	<b>10.4%</b>		<b>12.1%</b>
API, 2011	Australia	NABERS	366	206	56%	Rent			0.0%
API, 2011	Australia	NABERS	366	206	56%	Capital		2.5%	9.0%
API, 2011	Australia	Green Star	366	23	6%	Rent			5.0%
API, 2012	Australia	Green Star	366	23	6%	Capital			12.0%
Eicholtz, 2009	US	Energy Star	7488	694	9%	Rent			6.0%
Eicholtz, 2009	US	Energy Star	1617	199	12%	Capital			16.0%
CBRE, 2009	US	Energy Star	308	154	50%	Rent			10.0%
CBRE, 2009	US	Energy Star	308	154	50%	Capital			10.0%
CBRE, 2009	US	LEED	308	6	2%	Rent			10.0%
CBRE, 2009	US	LEED	308	6	2%	Capital			10.0%

**Table 3** Data from studies used to produce Figures 1 and 2

## Notes

All websites were accessed on 20 July 2013 unless noted otherwise.

1. *Supply, Demand and the Value of Green Buildings*, a research report for the Royal Institution of Chartered Surveyors (RICS), March 2012. [www.rics.org/uk/knowledge/research/research-reports/supply-demand-and-the-value-of-green-buildings/](http://www.rics.org/uk/knowledge/research/research-reports/supply-demand-and-the-value-of-green-buildings/)
2. All IPD reports downloaded from <http://www1.ipd.com/pages/dnnpage.aspx?desturl=http://www.ipd.com/sharepoint.aspx?tabid=2215>
3. [www.api.org.au/folder/news/building-better-returns-research-report](http://www.api.org.au/folder/news/building-better-returns-research-report)
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5. Do Green Buildings Make Dollars and Sense? USD-BMC Working Paper 09-11, Draft: November 6, 2009. [www.sandiego.edu/business/documents/real\\_estate/Do\\_Green\\_Buildings\\_Make\\_Dollars\\_and\\_Sense\\_draft\\_Nov\\_6\\_2009.pdf](http://www.sandiego.edu/business/documents/real_estate/Do_Green_Buildings_Make_Dollars_and_Sense_draft_Nov_6_2009.pdf).
6. <http://aiacc.org/wp-content/uploads/2011/06/greenoutlook2011.pdf>
7. *Portfolio greenness and the financial performance of REITs*, Eichholtz, P., et al., Journal of International Money and Finance (2012). [http://www.corporate-engagement.com/files/publication/EKY\\_JIMF.pdf](http://www.corporate-engagement.com/files/publication/EKY_JIMF.pdf)

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