

Incorporating Green Building Features into Property Valuation Practices

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Abstract

The aim of this paper is to review the relationship between sustainability and property value in commercial real estate and provide some suggestions for valuers in recognising the sustainability features as part of property evaluation process. In doing so, the key factors that impact the valuation of commercial property are identified. The survey of stakeholders in Singapore's real estate industry was also conducted. The findings indicate that the stakeholders generally recognise the importance of sustainability but with a strong focus on economic factors such as lower costs and asset financial performance. Though social benefits are recognised, their translation into financial value is more complex. Further quantitative and market studies are required to evidence the link between sustainable characteristics of buildings and their property value. Some guidelines have been proposed as a result of this study and they include improving data collection and storage, enhancement of the current valuation parameters to incorporate financial benefits of sustainability features as well as the need for continual learning and development in the area of sustainability.

Keywords: green buildings, property valuation, real estate

1. Introduction

Contributing up to 40% of CO₂ emissions, 40% of energy consumption, 16% of water usage, 30% of solid landfill waste and 40% of raw materials consumption [16], buildings have a major impact on climate change. One key justification to encourage action within the property and construction sector is its greatest potential to contribute toward carbon emission reductions, [17]. The public sector, industry and non-profit organisations have strived to encourage the adoption of sustainability practices for implementation in the built environment through various means. Changes in policy and regulations within the real estate industry are continually being introduced; more so in developed markets globally: forms of mandatory policies, such as the requirement for buildings in the European Union (EU) to publicly display Energy Performance Certificates and other market-based environmental rating and certification systems for buildings such as LEED (USA), Energy Star (USA), Green Star

(Australia), BREEAM (UK) and Green Mark Scheme (Singapore), [29]. Some progress has been made in areas of planning, design, construction techniques, building products and materials, rating and assessment tools. However, in practice some argue that these broadly technocratic approaches had insignificant impact on property markets, [12]. The stakeholders, i.e. owners and occupiers, are usually more interested in the financial benefits of sustainability initiatives, [27]. Which is why, professionals in the industry, especially valuers, have a key role to play in assessing and advising about the effect of sustainability on property value. Without financial justification the viability of the required investment in commercial real estate may not be fully recognised and the advancement of sustainability may be limited. In the operation of commercial markets, price signals are central in providing information for the basis of allocation of resources. In a real estate context, higher potential returns on certified green buildings would not only increase the development, supply and use of such buildings but also encourage greater investment in this area. The value of property investments in Singapore averaged US\$24billion annually for the last 3 years representing about 9.7% of annual gross domestic product, [6, 24]. With a target of at least 80% of buildings in Singapore achieving the Green Mark (GM) certification by 2030, [2], benchmarking green buildings features against the value of property will certainly influence investments in green buildings.

The main objective of property valuation is to provide a financial measure of the function or service derived from the use and control of property. Value is determined through the flow of services it is capable to generate to meet the requirements of owners and/or occupiers. Depending on the purpose of the valuation, concepts of value used in property valuation can either be market value (i.e. exchange value) or worth (i.e. use value), [19]. Worth can be defined as the value of the property to a particular investor, mainly for the purpose of investment. Market value is shaped by competitive forces within the market where the property is located identifying what is likely to be the highest and best offer in exchange of the asset. The Singapore Institute of Surveyors and Valuers (SISV) adopts Valuation Standards and Guidelines that members have to follow. Non-SISV members abide by the valuation standards and guidelines issued by the Royal Institution of Chartered Surveyors (RICS) and/or the International Valuation Standards Committee. The SISV Standards generally adopts the International Valuation Standards based on three fundamental approaches: Direct Comparison Method (inferring value by comparing properties to similar buildings); Cost Method (takes into consideration initial costs) and Income Method (estimates

net income that the property may generate in the form of a direct capitalisation method or a discounted cash flow over an appropriate period), [25].

A study done by RICS in the UK in 2005 concluded that; not only are green buildings good for the environment, provide healthier places to live and more productive places to work, they can command higher rents and prices, attract tenants more quickly, reduce tenant turnover and cost less to operate and maintain, [20]. Though financial benefits and risks reduction of sustainable buildings may be acknowledged, (i.e., by banks, insurance agencies, investors, occupiers etc.), there is no hard data to support this. Also few green buildings have yet to change hands, or are within private ownership. When valuers compare prices they need to consider that the final price of the transacted asset may be brought about by the interplay of constellations of price-determining factors, [11]. These exchange ratios are not constant and typically valuers make their own informed judgments on the assessment of market value of property. In practice, there are no clear approaches yet, for including the value of sustainability when assessing the value of green buildings. Thus, valuers and appraisers need to understand the specific features of green buildings, adopt methods to assess the impact on property value and possibly fine-tune the current methods to address these new issues. The growing push towards green certified buildings has generated greater research on the subject, but quantified research on the relationship of green features to asset value is still in its infancy, [18].

This paper looks at current practices in identifying the value of green buildings, and examines the link between commercial real estate value and features of green buildings with the aim to propose possible approaches that could be adopted by the real estate sector in valuing green buildings, and some guidelines that could be incorporated into property valuation practices. This is done through a review of academic papers, industry publications and a survey conducted with stakeholders within Singapore's real estate industry.

2. The added value and cost of green buildings

To be able to adequately consider the impact of sustainability issues on property values it is necessary to define what a 'green building' is. The expression green building and sustainable building are often used interchangeably, though these terms can have different meanings too. Green buildings can be expected to consume less energy and thus consequently generate lower CO₂ emissions. The definition of a sustainable building "goes far beyond the narrower

concept of lowering a building's energy consumption", [12, p 60], as sustainable buildings are constructed with a higher urban planning, creative, functional and technical quality. In the context of this paper, the term 'green building' is used for those buildings which have low environmental impact throughout all phases of their life cycle and provide healthy indoor environments, [13].

There is a general consensus that sustainable buildings are more energy efficient; have lower operating and maintenance costs; provide better comfort and well-being for occupants; are more marketable than conventional buildings; have lower risk potential; and reduced negative impact on the environment, [8, 10, 20]. Sustainable commercial buildings also have a competitive advantage over conventional buildings and are able to attract higher profile tenants, command above market rentals and thus increase capital values, [28]. While environmental benchmarking is well advanced within the framework of rating systems like BREEAM and LEED, benchmarks for social factors are not yet established. The studies which included some social factors such as health and safety, compliance with legislation, occupant satisfaction and productivity found that green commercial buildings provide a healthier and more enjoyable working environment and have been shown to improve worker productivity, [10, 12, 22].

Some links are beginning to emerge between market value of a building, its sustainable features and financial performance. The Green Building Council of Australia reported in 2008 that sustainable buildings in Australia commanded 5% to 10% higher rents and had higher relative investment return and asset values of 10%, [8]. A study of 23 refurbished commercial properties in Singapore concluded that retrofitting against GM standards can lead to an increase in the property value of about 2%, with an average expected savings in operating expenses of 10%, [3]. A report published by the RICS in 2005 concluded that a clear "link is beginning to emerge between the market value of a building and its green features and related performance" [19, p 3]. Several studies found a positive effect of the Energy Star certification with some differences in the extent of the relationship, [7, 9, 13]. They all used data from the CoStar database, which utilised sales, and rental transaction data for office property in the US. Using a sample of 550 Energy Star rated buildings and 318 LEED rated buildings, it was found in [13] that the average LEED impact on sales price per square foot is 9.94%, while the Energy Star impact on sale price is 5.76%. The analysis of 10,000 subject and control buildings to identify the economic values of certified green

buildings in the US found that Energy Star certification achieved more than 3% rental per with increment selling prices as high as 16%, [7]. The results suggested a premium for Energy Star buildings, but not LEED certified buildings. Another study analysed transaction prices for 292 Energy Star and 30 LEED certified buildings. A 10% price premium was found for Energy Star and 31% price premium for LEED certified buildings as compared to non-certified buildings within the vicinity, [9]. The large variance in these quantitative studies would suggest that the results cannot be considered statistically significant with confidence. Valuers would not be able to utilise the information to accurately assess a relationship between sustainability and market value, as the reliability and communication of the specific quantitative results of these studies are incomplete and inadequate for use in practice, [15]. It's argued in [12] that a major obstacle for a more scientific basis for integration of sustainability aspects into property valuation is due to insufficient property transaction evidence linking the buildings' environmental and social performance to property prices. Studies that investigate the relationship between building characteristics and property prices rely on property transaction databases that contain generally crude statements on the availability, age or size of particular building features and/or by making use of subjective and mainly qualitative judgments based on implicit assumptions. As such benefits of sustainability may be reliant on the knowledge, judgment and experience, or lack thereof, of the individual valuer. In addition, the application of sustainability assessment tools has not yet gained general market acceptance within the property sector.

Research has also been done in proposing to modify valuation theory and methodologies to incorporate sustainability features in valuation, [5, 11, 23]. Generally they proposed that sustainability issues would affect major risk factors in computing the asset value. Thus, valuers can attach a risk premium to each of these factors or group the risk factors to adjust other parameters used in traditional valuation methods. The proposed model for a sustainability appraisal in [23] assumes that all the characteristics of a property investment can be reflected through four key variables: rental growth, depreciation, risk premium and cash flow. It is further assumed that the specific sustainability criteria (building adaptability, accessibility, building quality, energy efficiency, pollutants, waste and water, occupier satisfaction) would impact on one or more of these key variables. In order for the additional construction costs of green buildings to be rationalised, investors would require a combination of higher income and/or reduced risks. Failure to recognise price premiums at the initial phase would be a disincentive for stakeholders to invest in green buildings. Such costs therefore

would have to be accompanied by an understanding of benefits obtained for the additional construction costs to be justified. Several studies found that initial construction costs are typically higher but these extra costs may be recouped through operating savings and reduced energy costs, [20, 21, 26].

In summary, green buildings have characteristics and benefits that could influence value not only from environmental efficiency, but also improved health and productivity, a competitive advantage and increased marketability over conventional buildings. Certified buildings have a positive effect on property rental and values. Whilst there is a construction cost premium involved, they have lower operating costs over useful life. The existing studies have also attempted to quantify the financial costs and benefits to provide some certainty around the relationship between sustainability and property value. However, in reality, the applicability of these studies is not appropriate for the valuation profession. To develop an opinion on value, an appraiser investigates how the market views a particular property, which will require an analysis of trends and forces that influence value but will also rely on appraiser's expert intuition. Valuers may also not have a full understanding of the characteristics or ability to translate these into financial benefits to form appropriate assessments on property value. Generally few of the studies have been able to propose suitable methods to identify a relationship between sustainability and property value or propose guidelines on how this could be done in practice.

3. Research Design

For this study, rather than trying to draw some conclusion from the limited number of available empirical studies, it was decided to carry out a targeted questionnaire type survey. The questionnaire was distributed to a group of stakeholders who are involved in various aspects of the property and real estate sector in Singapore: developers, investors, financiers, valuers, consultants and asset and facility managers. The main aim of the survey is to gather and review their perception of the economic, social and environmental impact of green buildings on property values. The survey comprises of an electronic questionnaire based on a standard set of questions to obtain mainly qualitative responses. The electronic survey was conducted over a 3-week period from 19th July to 9th August 2013. The questions addressed 3 areas (Section 1-3), with an additional comment field under Section 4.

Section 1: *What aspects do you think have the greatest potential impact on the market value of Green Buildings?* comprises of 15 questions on the benefits of sustainable buildings. These were grouped into 4 categories Enhanced Value, Maintenance/Cost Savings, Sustainability and Legislation with further breakdown to specific issues as presented in Table 1. Respondents were asked to rank the factors according to the level of importance on a 5-point Likert scale, with 1 being ‘Least Important’ and 5, ‘Most Important’ to allow for further evaluation and comparison of the responses for the various categories into positive and negative. A central ‘Neutral’ rating was also allowed. Section 2: *Do you agree (or disagree) with the following statements on Green Buildings?* requested respondents to indicate their agreement or disagreement of 7 typical statements of sustainable buildings, mainly focusing on economic and social considerations. Responses are also required to be ranked according to a 5-point scale, with 1 being ‘Strongly Disagree’ and 5 ‘Strongly Agree’. In Section 3: *What do you consider are the most important factors in evaluating or assessing the market value of a commercial Green Building?* the respondents were asked to list down not more than 8 key factors that should be considered in evaluating the market value of Green Buildings, based on typical factors currently adopted by valuers, [25], such as location, size, age, etc. Section 4 offered the possibilities to the respondents to include any other remarks on the financial benefits of green buildings from their individual perspective. Section 5 of the survey was designed to establish a Demographic profile which included profession and length of service.

Tab 1: Aspects which Impact Market Value, (Kats *et al.*, 2003, Fuerst and McAllister, 2007 and GBCA, 2008)

Enhanced Value	Maintenance Costs	Sustainability	Legislation
Better market positioning	Lower operating cost	Reduced impact on the environment	Compliance with legislation
Able to command higher quality tenant	More energy efficient	Meeting CSR initiatives	
Attracts good quality tenants	Reduced need for future refurbishment	Reduced health and safety issues	
Faster take-up rate	Lower service charge	Increased productivity	
Lower tenant turnover	Reduced liability, risks		
Higher demand from investors			

4. Results and Analysis

A total of 41 completed survey forms were returned. Of the total number, about 40% of respondents are current practitioners in asset, property and or facilities management. Another 15% are consultants involved in various building related aspects including design and

environmental management. 12% are involved in finance and real estate investments, 7% property development and 2% valuation; overall a fair mix of participants presently involved in the property and real estate industry. 56% of the respondents have been working in their current capacities for more than 11 years of which 9 respondents have at least 20 years of service. More than 80% of the respondents have a minimum degree qualification, 11 of whom hold a Masters or PHD. Respondents were required to answer all questions for each of the four categories under Section 1. The responses regarding Enhanced Value are presented in Table 2. A total of 62.2%, of responses rated these aspects to be important or most important (54.10% + 8.10%) i.e. having a positive influence on property market value. The 3 highest ranked attributes, better market positioning, ability to attract good quality tenants and command higher rental show a focus on income generation. 1 respondent felt that none of these 6 aspects had the potential to impact on the market value of green buildings.

Tab. 2: Section 1; Aspects - Enhanced Value

What aspects do you think have the greatest potential impact on the market value of Green Buildings?						
Aspects	Least Important	Not so Important	Neutral	Important	Most Important	Total Responses
i. Better market positioning	1	7	3	25	5	41
ii. Commands higher rental	1	3	4	28	5	41
iii. Attracts high profile tenants	1	7	4	23	6	41
iv. Faster take-up rate	1	10	11	19	0	41
v. Lower tenant turnover	1	13	11	16	0	41
vi. Higher demand from investors	1	7	7	22	4	41
Enhanced Value (Total for 6 Aspects)	6/2.4%	47/19.1%	40/16.3%	133/54.10%	20/8.1%	100%

The responses related to Maintenance Costs (lower operating costs, more energy efficient, reduced need for future refurbishment, lower service charge and reduced risks) are presented in Table 3. 37 out of 41 (90.2%) respondents rated lower operating costs as important or most important and only 1 respondent rated energy efficiency as least important. Reduced need for future refurbishment and lower service charge were rated almost equally with about 44% of respondents who felt that these aspects were not important or took a neutral stand on the position. About 68% rated reduced liability and risk as import or most important. Overall, about 73.7% (56.60% + 17.10%) rated these 5 aspects important or most important in influencing the market value of property.

Tab 3: Section 1; Aspects - Maintenance Costs / Savings

What aspects do you think have the greatest potential impact on the market value of Green Buildings?						
Aspects	Least Important	Not so Important	Neutral	Important	Most Important	Total Responses
i. Better market positioning	1	7	3	25	5	41
ii. Commands higher rental	1	3	4	28	5	41
iii. Attracts high profile tenants	1	7	4	23	6	41
iv. Faster take-up rate	1	10	11	19	0	41
v. Lower tenant turnover	1	13	11	16	0	41
vi. Higher demand from investors	1	7	7	22	4	41
Enhanced Value (Total for 6 Aspects)	6/2.4%	47/19.1%	40/16.3%	133/54.10%	20/8.1%	100%

The responses in relation to a third category from Section 1 about different sustainability aspects are presented in Table 4. The responses indicate mainly positive attitudes with 71.3% (57.30% + 14.0%) indicating that environmental and social attributes play an important role in contributing to the market value of property. Compliance with legislation weighted heavily on the positive side with 90.30% ranking this factor to be important or most important (53.70%+36.60%). Again, 1 respondent felt that this aspect was least important.

Tab 4: Section 1: Aspects – Sustainability

What aspects do you think have the greatest potential impact on the market value of Green Buildings?						
Aspects	Least Important	Not so Important	Neutral	Important	Most Important	Total Responses
i. Reduced impact on the environment	1	1	1	29	9	41
ii. Meeting corporate social responsibility initiatives	1	7	3	24	6	41
iii. Reduced health and safety risks	1	5	5	24	6	41
iv. Increased occupant productivity	3	10	9	17	2	41
Sustainability (Total for 4 Aspects)	6/3.7%	23/14%	18/11%	94/57.3%	23/14%	100%

In summary, it can be said that of all the 4 aspects (enhanced value, maintenance cost, sustainability, legislation) which were the topics of Section 1 of the survey, greater importance is placed on legislation and maintenance costs as compared the sustainability and enhanced value categories.

As part of Section 2, respondents were requested to indicate their agreement or disagreement with 6 typical statements about green buildings covering initial capital outlays, investment and operating performance, maintenance and operations and competitive advantage as presented in Figure 1.

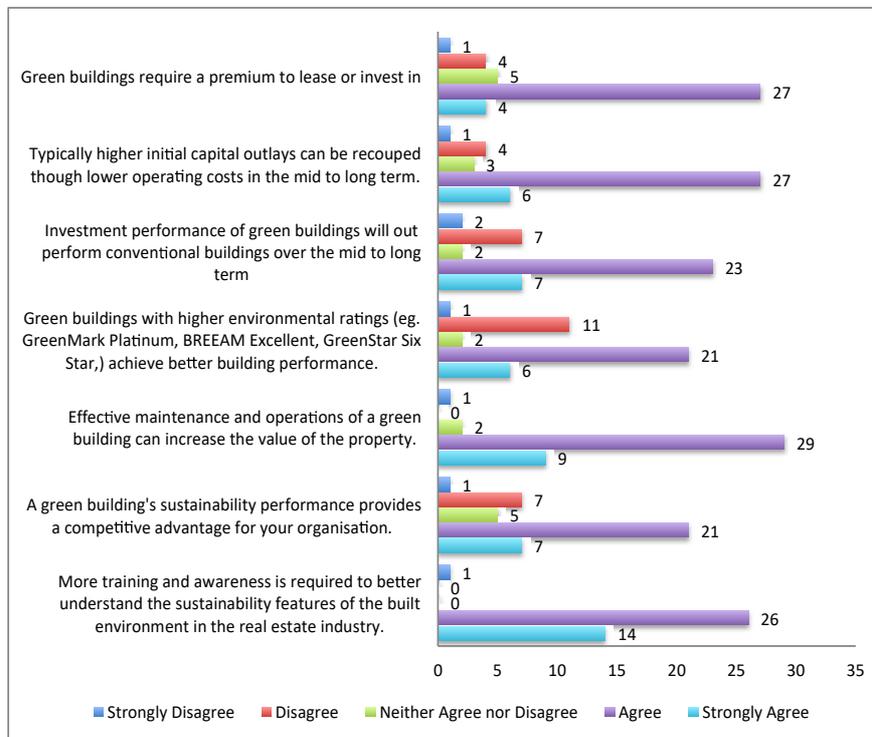


Fig 1: Statements on Green Buildings

A final question was also included to see if more training and awareness is required. Overall 75% of responses agree/strongly agree that green buildings require a premium either to lease or invest in. However 80% also agree/strongly agree that the higher initial outlay can be recouped over the mid- to long-term through lower operating costs. 22% disagree/strongly disagree that investment performance of green buildings would out perform conventional buildings over the mid to long term. Whether these factors weigh positively, depends on the value driver of the stakeholder. For developers who intend to dispose off their building stock quickly, the longer recovery period may not be viewed favourably. 65% of responses agree/strongly agree that buildings with higher certifications achieve better operational performance. Over 92% feel that effective maintenance and operations of a green building can increase its value. Competitive advantage was not a key factor with about 42% either disagreeing or remained neutral on the benefit of this intangible benefit. Lastly, only 1 respondent strongly disagrees that more training and awareness is required within the real estate industry to understand issues of sustainability in the built environment. The 8 factors

considered most important when assessing the value of a commercial green building were not much different from the assessment criteria presently used by valuers (Fig 2). Location ranked the highest with 39 out of 41 responses followed by condition (32), operating cost (31) and design/features (30). Tenure, age and size gathered almost similar responses. It is interesting to note is that 26 responses indicated sustainability features.

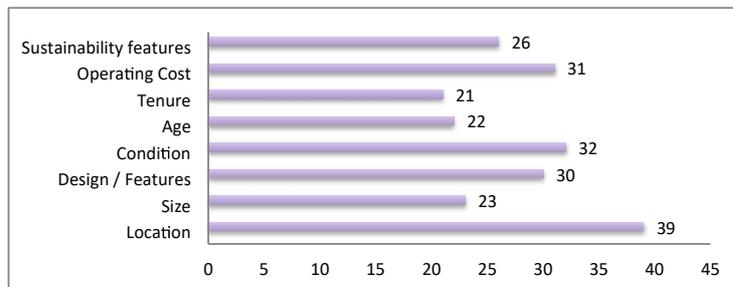


Fig 1: Factors in Assessing the Value of Green Commercial Buildings

The survey registered an overall response of 75% who agree/strongly agree that green buildings require a cost premium either to lease or invest in. Factors that reduce environmental impact such as energy efficiency, lower operating costs and effective maintenance and operations are ranked favourably in their impact on property value. 65% of the respondents also agree that green buildings with higher certifications achieve better performance. The survey respondents also ranked market positioning, ability to attract good quality tenants and command higher rental, as important factors. However whether one would pay the additional ‘premium’ for such benefits has not been evaluated. The results seem to identify a distinct link between benefits of green buildings and property value for commercial real estate, mainly focused on economic factors (i.e. higher initial capital outlays, ability to recover costs and generate better rentals). A further in depth and quantitative study should be carried out at a later stage to show evidence of this financial impact.

4.1 Proposed Guidelines

Three main areas identified as fundamental in enabling valuers to take into account green building features are proposed. The first is data collection. This is an important part of the valuation exercise and it is proposed that valuers expand their data collection to include key sustainability features that could impact on property value. This could relate to building performance, ratings and certifications, health and safety records, CSR initiatives etc. currently not requested as part of the due diligence by valuers. The valuation report should also reflect this information. The challenge is having a central repository for such data and to ensure that data captured is consistent and comparable. The second is linking key

sustainability features to factors currently adopted by valuers in property valuation as presented in Table 5. The objective is to encourage valuers to identify the financial benefits of these enhanced features and incorporate them within the aspects currently being assessed, without changing the principle basis of current valuation practice. The perspective of different stakeholders will also have to be taken into consideration as investors would generally look at economic returns and owners and occupiers may focus on environmental and social factors such as health and wellbeing. The third is the provision for continual learning and understanding of sustainability features, and developments in the area such as policies, incentives, design strategies, technologies etc. Closer co-operation is also required among the regulators of the built environment, stakeholders in the real estate industry, professional bodies and valuers for better exchange of knowledge, i.e. by conducting joint discussions when policies and incentives are introduced by regulators and accredited courses by professional bodies (i.e. SISV) to improve the understanding of sustainable buildings and their economic and environmental performance.

Tab 5: Linking sustainability features which can impact valuation factors

Sustainability features	Factors currently assessed by Valuers to be enhanced	Impact on Property Value due to
Better market positioning, attracts better tenants	<ul style="list-style-type: none"> • Location (Income Method) (Direct Comparison) 	Increased accessibility, reduced environmental impact
Health and well-being, Increased productivity	<ul style="list-style-type: none"> • Design/Features (Cost Method) 	Increased comfort and well-being of occupants
Maintenance costs savings, energy efficiency, water efficiency	<ul style="list-style-type: none"> • Operating costs (Income Method) 	Lower operating costs, higher net income
Effective maintenance and operations	<ul style="list-style-type: none"> • Age / Condition (Income Method) 	Lower operating costs, higher net income
Refurbishment to comply with building codes, legislation	<ul style="list-style-type: none"> • Age / Condition (Cost Method) 	Higher initial capital costs
Reduced impact on the environment. e.g. Sustainable renovation guidelines to be stipulated in the tenancy agreements.	<ul style="list-style-type: none"> • Tenure (Income Method) 	Better Sustainability performance provides competitive advantage
Corporate Social Responsibility Initiatives	<ul style="list-style-type: none"> • Sustainability features (Income Method) 	Higher demand from tenants, increase financial performance
Compliance with legislation, reduced liability and risks	<ul style="list-style-type: none"> • Risks (Income Method) 	Lower risks and insurance premiums

5. Conclusion

Green buildings generate benefits not only from environmental efficiency, and a positive effect on property rental and values but also improved health and productivity, a competitive advantage and increased marketability over conventional buildings. Though benefits exist, the ability to quantify and assess a relationship between sustainability and property value is more

difficult, whether through adopting cost-benefit analysis or quantitative evaluations. For sustainability to be assessed not only should a relationship between sustainability and market value be identified, but improved valuation tools and methodologies are required. The results of this study have shown that stakeholders recognise the importance of the characteristics and features green buildings on property value. Some guidelines have been proposed as an outcome of the survey to encourage valuers to identify areas where the enhanced value or risk impact of green buildings could be translated into financial value as a more comprehensive assessment to property value. Data collection should be improved to include sustainability characteristics of green buildings and its performance and centrally stored in transactional databases (i.e. REALIS). Current valuation parameters can be enhanced to incorporate financial benefits of features such as lower risks due to reduced environmental impact and improved health and wellbeing of occupants. The reports by valuers should also reflect an opinion on some of these characteristics. Whilst it might be still too early to quantify the impact of green buildings on property value, what is certain is that more education and research is required in this area to enhance the knowledge of all stakeholders within the real estate industry and to ensure that the benefits of sustainable buildings are recognised by the industry and reflected in valuation methods. The situation will naturally evolve over time as the experience with sustainable buildings improves and more market evidence is available.

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