

THE TRIPLE BOTTOM LINE APPROACH TO PROPERTY PERFORMANCE EVALUATION

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Abstract

The utility of enclosed space is the basic performance measure for built assets. Historically these assets have been assessed on the ability of the occupier to pay for the space, resulting in an expression of the financial return from the investment. This concept is being expanded today by astute investors who are taking account of longer-term considerations, and, in particular, the sustained optimal utility of the space.

This paper is concerned with the development of triple bottom line performance benchmarks for operational built assets. Specifically it maps out the conceptual changes taking place from short-term financial agendas to longer-term economic, environmental and social considerations. While reasonable progress has been made developing environmental rating systems for building design and operation, significantly less work has been done identifying and measuring the social factors relating to built assets. With this in mind, particular emphasis is placed on the identification and measurement of the most relevant social issues.

The case study research of the CRC-CI project on 'The Evaluation of the Functional Performance of Commercial Buildings' is outlined, and the complementary work of other leading researchers in this field is reviewed. Finally, avenues for further research are suggested.

Keywords:

Social indicators, efficiency, environmental benchmarks, evaluation, cultural issues

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INTRODUCTION

The recent favourable economic climate in Australia has seen the rapid rise in the property and construction sectors. Construction costs have risen at an exponential rate and property values have increased strongly in line with the re-rating of property as a desirable security. In particular the technological aspects of construction have advanced strongly, meaning that the market is now being supplied with products that continue to improve in various ways. This is delivering better value for money, increasing productivity and enhancing well-being for occupants, and is providing scope for more environmentally friendly products.¹ Some of these improvements are reflected in the financial returns of the asset, and can be measured accordingly. However this reflection is somewhat indirect and hence, sole reliance upon financial evaluation methods are sub-optimal for determining built asset performance. Indeed, this traditional evaluation approach privileges financial concerns and fails to keep abreast of technological change, environmental demands, and new expectations in social responsibility reporting.

There is a demand for users of built space to have an improved living and working environment and social aspects feature among their requirements. Many of the social aspects of buildings have more to do with design and management than technology directed at energy savings. Social sustainability of built assets are measured in terms of user friendliness, compatibility, the free flow of information, and the impacts the building itself may have on the wider social environment. These criteria are more difficult to measure than technological or environmental features, which helps explain why there has been comparatively less research undertaken attempting to understand and evaluate the social side of built assets. However, it makes little sense to talk of performance in the built environment if property is not measured against human satisfaction. Appropriate benchmarks therefore need to be developed, tested and applied.

The development of social benchmarks will complete the triple bottom line performance assessment approach to the evaluation of operational built assets. Some astute property investors are likely to embrace such an approach, and it can reasonably be expected that the entire industry will, over time, be either coerced by regulation or encouraged by competition and internal pressure, to provide triple bottom line performance data. The benchmarks used will vary depending on a number of variables, such as asset type, utility and locality, and will change over time according to market

¹ There is a growing literature encouraging improved building performance. Probe (Post-Occupancy Review of Buildings and their Engineering) has been very influential in the UK. It was a research project that ran from 1995-2002 under the Partners in Innovation scheme carried out by Energy for Sustainable Development, William Bordass Associates, Building Use Studies and Target Energy Services. The Sustainable Building Task Force (California) and the Rocky Mountain Institute are at the forefront of this research in the US, while the CRC CI projects such as 2001-005-B Indoor Environments: Design, Productivity and Health, and 2002-043-B Smart Building for Healthy and Sustainable Workplaces are also making a significant contribution.

demands, social attitudes and political and economic conditions. What must be remembered though is that the data delivered by measuring the benchmarks “has to be available in an accessible format that allows meaningful comparison of one building with another...[and]... it has to be capable of being fed into a standard appraisal tool, such as a DCF, by a valuer, or similar, without specialist environmental or engineering training.”²

Emerging Evaluation Trends

Traditionally, the property valuation approach for investment-type buildings calculates the market value using financial analysis – the bottom line. In a market that has been dominated by ‘profit-only’ goals, this method has been capable of simulating the market activity provided the limitations of subjectively assessed variables are understood.³

However, in recent years advanced economies have increasingly entered into a climate of heightened public scrutiny with respect to corporate and public administration practices. This has implications for the market in terms of the socio-political backdrop forging the demand for built assets of a specific calibre.⁴ Major companies are becoming aware of the changing business environment, evidenced by the enthusiastic embrace of non-economic performance self-reporting. These broadened ‘profit-plus’ objectives have come to be known as the triple bottom line. Although outcomes from this new accountability are mixed, research indicates that for a number of reasons, businesses that endorse triple bottom line principles were making changes in the way they carried out, or at least thought about, what they did.⁵ Yet there is new evidence indicating that such changes have slowed, and perhaps even stalled.⁶

To portray triple bottom line as an altogether new phenomenon is not entirely correct. It clearly has its roots in shareholder activism commencing in the 1960s. Shareholders with vested interests progressively called company executives to account, and have in this way become influential in generating

² S. Sayce and L. Ellison (2003) ‘Integrating sustainability into the appraisal of property worth: identifying appropriate indicators of sustainability’, paper presented at the ARE and UEA conference, August 21-3, Skye, Scotland, p.8.

³ The impact of key variables in cash flow studies is demonstrated in T. Boyd (2003)

⁴ For a discussion on this see P. Kimmet and T. Boyd (2004) ‘An Institutional Understanding of Triple Bottom Line Evaluations and the use of Social and Environmental Metrics’, paper presented at the PRRES conference, Bangkok, January 25-8.

⁵ C. Deegan, M. Rankin and P. Voght (2000) ‘Disclosure Reactions to Major Social Incidents: Australian Evidence’, *Accounting Forum*, 24:1, pp.101-30.

⁶ An Australian Conservation Foundation corporate report has recently concluded that Australia’s top 50 companies failed to improve their environmental performance in 2003. See ACF (2004) *Corp Rate: An Assessment of Australia’s Top 50 Listed Companies in 2003*.

community values that have sponsored 'new' corporate values that reach beyond narrow economic constructs.⁷

The fuzziness that is now obscuring what was once a relatively straightforward, essentially numeric exercise is the very reason for the research summarised in this paper. It is about providing a way forward for valuers, owners, managers and investors to adequately assess built assets from a total life-cycle and performance perspective relative to the market. How to apply such benchmarks in practice is open to speculation, and will largely be configured through use over time, and according to individual asset specifications and data collection purposes.

Impact of Technology and Sustainability on Building Assets

Accepting the advances in technology and the current focus on sustainability in buildings, it is logical to question the impact of these changes on the performance of the building assets. In the introduction the following question was posed: "whether the advancement in technology is, or will, result in improved returns from the property assets?"

In short, the answer to this question is inconclusive at present. Some experts are predicting that with an increasing number of ethical investment funds emerging, it is inevitable that investors will begin to look more seriously at property over the next 5 to 10 years, and that this increased demand for environmentally and socially sustainable buildings is likely to result in premium values.⁸ Even now, a good energy rating (e.g. a 4 to 5 star ABGRS rating)⁹ on a building that otherwise conforms more or less to standard gives it a market edge. And there is some evidence that for public sector tenants at least, a fall in the rating during tenancy can actually trigger a diminution in rent.¹⁰ This suggests that a premium rent can be achieved based on an expectation of lower occupancy costs or a better working environment. These higher rents influence the capitalised value.

The overall impact of enhanced environmental characteristics on investment-type buildings is illustrated in Figure 1 below:

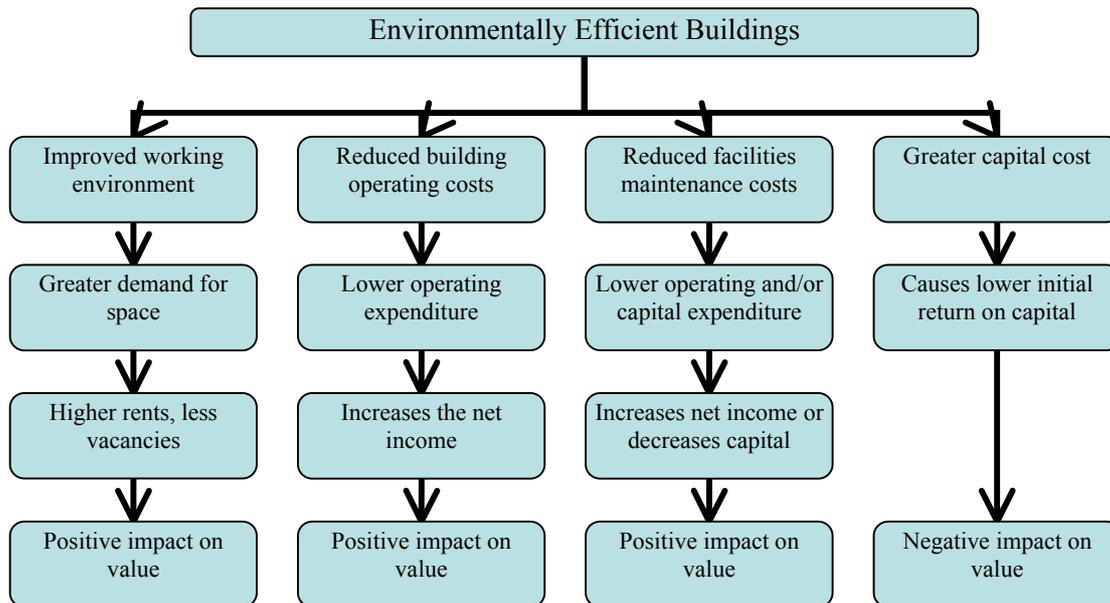
⁷ The efforts of Ralph Nader were inspirational for the shareholder movement. See T. Whiteside (1972) *The Investigation of Ralph Nader: General Motors vs. One Determined Man*, Pocket Books, New York.

⁸ Howard Brenchley of APN Funds Management is quoted by Terry Ryder to this effect, (2003/4) 'Facing up to the Future', *Property Australia*, Vol 18, No.4, p.50.

⁹ The Sustainable Energy Development Authority (SEDA) ABGRS - Australian Building Greenhouse Rating Scheme, or alternatively a favourable Green Star rating.

¹⁰ New South Wales Police Services have signed a lease with Multiplex for the Parramatta Headquarters declaring that the rent is to be reduced if its 4½ star rating falls. See Michael Dorfling (2004) 'Buildings put to the greenhouse test', *the Australian*, May 6, p.40.

FIGURE 1: Value Impact of Environmentally Efficient Buildings



The diagram in Figure 1 indicates that there are four expected results from greater environmental efficiency and that three of the four impacts should have a positive effect on the capital value of the building. However the degree and timing of the impact is complicated and will differ according to the type of environmental improvement. It is too simplistic to conclude that the change will always, or even frequently, have a positive impact on the capital value. What is important is that environmental factors have the potential to provide a better return from a building asset.

Environmental benchmark research

Valuable work identifying appropriate environmental indicators for built assets has already been undertaken both in Australia and overseas. The Green Building Council of Australia (GBCA) has been very active in this area. The Council's office rating tool was particularly instructive for developing indicators to measure the CRC-CI's *Evaluation of the Functional Performance of Commercial Buildings* project's case study commercial high-rise office buildings that this paper has emerged from. The tool focuses on strategies to enhance efficiency and reduce greenhouse gas emissions, and it should also be part of the performance assessment. However, environmental rating schemes on the whole tend to focus on the design, construction and management rather than looking at buildings as operating entities within a broader market framework in the manner that property valuers do. Recent studies in the UK that approach environmental benchmarking from an operational perspective are worth reviewing here.

The Royal Institute of Chartered Surveyors (RICS) Foundation funded a report by the *Upstream* group, which lists energy use, water use, waste management, transport; pollution; and materials use and selection, as the most prominent environmental criteria for valuers.¹¹ There is little dispute over the validity of their criteria, although others have further expanded the list. For instance, a project underway at Kingston University in the UK and supported by government and business partners, also includes management, or as they call it – occupier criteria, within their categories. Known as *The Sustainable Property Appraisal Project*, this project prefers to label water consumption and waste management – ecology, while materials use and selection is subsumed by building flexibility, and design categories. What Kingston’s Sarah Sayce and Louise Ellison also identify is that indicators in each criterion vary in their impact with respect to environmental, social and economic components. For instance they argue that the indicator ‘build quality’ has environmental and social impacts only, while ‘reuse of building’, ‘quality of management’, and some transport and energy efficiency indicators are exclusively environmental and economic in nature.¹²

Sayce and Ellison list reuse of building; operational CO₂ emissions; embodied CO₂ emissions; CFC emissions; methane emissions; nitrous oxide emissions; hydro fluorocarbon emissions; perfluorocarbon emissions; efficient use of equipment; distance from local public transport nodes; provision of facilities for non-drivers; policies to encourage alternatives to single occupancy car journeys to work; use of brown field sites; quality of management; water consumption; and waste management as distinctly environmental indicators.

Proposed Environmental Benchmarks

Taking account of the GBCA measures and the substantial work of Sayce and Ellison (referred to above) we recommend the environmental indicators listed below for existing investment-type buildings (Refer Figure 2). They do not appear in any particular order for weighting purposes, but they are organised into 3 distinct fields.

¹¹ *Upstream* (2003) ‘Sustainability and the built environment’.

¹² Sayce and Ellison (2003) ‘Integrating sustainability into the appraisal of property worth’, p.11.

**FIGURE 2:
Recommended Environmental Benchmarks: Existing Buildings**

Resource consumption	
Energy	<ul style="list-style-type: none"> • Net fossil fuel energy use (assessed on an intra-building and market comparison basis) • Effective action to reduce greenhouse gas emissions (particularly from energy use) • Office lighting power density and peak energy demand reduction strategies. • Evidence of alternative energy supplies from renewable sources or from cogeneration.
Air-conditioning	<ul style="list-style-type: none"> • Condition of air-conditioning plant • Use of ODP or GWP refrigerants.
Water	<ul style="list-style-type: none"> • Water consumption (potable, hygiene and cooling towers), • Recycling and water capture measures • Wastewater reduction • Hazardous and non-hazardous waste and effluents recycling or removal strategies.
Design and Use	
Transport	<ul style="list-style-type: none"> • Public transport availability and standard of service, • Strategies to discourage single occupancy vehicle journeys, including cyclist facilities.
Building fabric	<ul style="list-style-type: none"> • Age of building (obsolescence or depreciation of materials) • Re-use or upgrade history or potential • Suitability of original materials for refurbishment and façade retention • Ecological impacts of materials used (can be ascertained by using LCA Design¹³ or similar software package).
Interior	<ul style="list-style-type: none"> • Indoor quality measured by ventilation, natural lighting, individual thermal control, noise abatement • Absence of indoor air pollutants.
Environment	<ul style="list-style-type: none"> • Quality of overall built environment and site use in relation to aesthetics, visual blending and connection contribution of its street frontage and wider precinct.
Governance	
Awareness	<ul style="list-style-type: none"> • Maximisation by management of the potential of the environmental design features through awareness programs.
Disclosure	<ul style="list-style-type: none"> • Disclosure and transparency of environmental data, regulation compliance, awards, and environmental expenditure of any type.

¹³ This is developed by a project in the CRC for Construction Innovation.

It is accepted that the definition of environmental indicators can take many forms. The table above is one attempt to identify the major characteristics of an operational nature with particular reference to the utility of the building. The selection of benchmark indicators should be evaluated against the market's perception of value of the individual measures. Once the appropriate indicators and their component characteristics have been selected, the next challenge is to determine a grading or weighting for the indicators. The GBCA's Green Star rating system is a well reasoned grading approach and consequently this star ranking is recommended provided it is applied to the usefulness of the building asset to the occupiers.

Development of Social Benchmarking

While environmental benchmarking is well advanced, a corresponding effort with respect to social benchmarking needs to be made to provide for meaningful triple bottom line assessments of built assets¹⁴ Upstream list important social issues in the appraisal process as: investment in the community; local employment; stimulating local economic activity; community engagement; accessibility; health and safety; crime prevention; occupier productivity; and employee/ supplier relations. This list is partially endorsed here, with crime prevention the only issue called into question as a legitimate social criterion for benchmarking. Meanwhile local impacts and cultural issues should also be included as highly significant measures of social sustainability in the built environment. Moreover, local employment and economic activity, investment, and employee/ supplier relations are arguably more conveniently reported within stakeholder relations and community engagement criteria.

Sayce and Ellison identify six indicators that impact on the social dimension of the triple bottom line, and find that a further five have both social and environmental implications. The six social indicators they suggest are: protection of heritage buildings; access to local green space; local economic impact; occupier satisfaction; functionality; and impact.¹⁵ Obviously heritage buildings' protection only applies to certain, usually older building stock. However, it is unclear how this might impact on market value. Some properties actually decrease in value if redevelopment potential is restricted. On the other hand, ownership and preservation of a heritage property contributes to the 'national estate', and may accrue significance in terms of reputation and social responsibility. More research will need to be undertaken in this area to ascertain the implications for triple bottom line assessment. In the meantime, age of building and renovation requirements can be considered under productivity and satisfaction.

¹⁴ J. Fiksel, (2001) 'Measuring sustainability in ecodesign', chapter 9 in M. Charter & U. Tischner eds., *Sustainable Solutions: Developing Products and Services for the Future*, Sheffield: Greenleaf Publishing, p.168.

¹⁵ Sayce and Ellison (2003) 'Integrating sustainability into the appraisal of property worth'.

What is of increasing significance in Australia, given the ongoing public debate about reconciliation and native title, is the appropriate recognition of original indigenous owners. This indicator alone occupies the entire focus of a separate paper produced by this project.¹⁶ And a further cultural indicator that surfaced when the social indicators discussed here were recently tested was the art on display, measured as a percentage of total fit out cost.

Sayce and Ellison's five indicators that have social and environmental significance are: building age; distance from town centre; distance from local centre; corporate environmental engagement; and build quality. Once again, when approaching the appraisal from a social point of view, building age mostly relates to occupant productivity and satisfaction, and how the age of the building influences maintenance and refurbishment strategies. Meanwhile, distance from town and local centres are a mix of locational and transport factors. From a social perspective, accessibility, which has already been flagged, is generally more significant than the largely economic implications of positioning in the most prestigious and central locations. Transport on the other hand clearly also has environmental significance and in this case in particular it is important not to duplicate the reporting process.

Sayce and Ellison point out there is a danger of also duplicating reporting by making build quality a distinct indicator on its own, when it clearly influences many of the other benchmarks.¹⁷ And they also warn that low quality buildings are likely to impact on the corporate image of owners and occupiers. Corporate environmental engagement is about the acquisition of socially responsible capital (meaning goodwill and reputation) by embracing environmental criteria. This is an important indicator for social impact studies, but in a triple bottom line framework it is arguably best left to environmental indicators.

Other social indicators that neither *Upstream* or Sayce and Ellison discuss are largely informed by the extensive and widely acclaimed work of the *Global Reporting Initiative*.¹⁸ Admittedly, their approach focuses on business reporting, but some of the indicators they have developed also make sense in the performance context. For instance, credible indicators include: level of awareness and training on building/socially responsible facilities; and provision and monitoring of facilities/amenities (emphasis on equal opportunity), and lobby space from the public's perspective. And indicators that can be identified as broader society impacts include the nature of tenant businesses and naming rights, and appropriate training for security personnel.

It is one thing to have a socially productive building and even advanced social policies, but these things of themselves do not ensure a high level of

¹⁶ Kimmet (2003) 'Socially Responsible Commercial Property Entities and the Allocation of Cultural Space'.

¹⁷ Ibid.

¹⁸ Go to their website at www.gri.org

awareness of the socially optimum use of the premises. Training and regular updating needs to be provided for the occupants to facilitate this. This is fairly straightforward to report on (assuming adequate disclosure), and can be accurately checked by brief interviews or a survey. And reporting on facilities and amenities provision need not be bound by regulations. This is a very important aspect of social responsibility, so it follows that generous common area allocations are highly desirable.

A simple perusal of the nature of businesses housed within a building will help us gauge the level of social support and services provided by tenants, strongly influencing community impressions of the building's social responsibility. For instance, tobacco and alcohol companies and other unethical businesses will detract from a building's public image, particularly if naming rights are acquired. It is envisaged that as triple bottom line assessments are progressively accepted within the industry and this indicator is specifically embraced, then socially irresponsible businesses will begin to expect to have to pay a premium for rental space to compensate for the negative impact of their business on the premises.

And finally, in some instances certain business and executive government may require an overt security presence. In such cases it is important that security personnel are adequately trained in public relations.

Proposed Social Benchmarks

In order to select the relevant social benchmarks the CRC CI project examined not only the references discussed above but also interviewed major users of office space and property managers. This helped to identify the salient issues for forward-looking space users. In compiling the benchmarks, we selected seven social criteria and thereafter chose components of these indicators that were both indicative of the criteria and measurable. The table below (Figure 3) sets out the indicators and the measures.

FIGURE 3: Proposed Social Benchmarks

Health and Safety	<ul style="list-style-type: none"> • compliance with H & S regulations and appropriate signage • adequate public liability and service provider insurance • awareness and training of emergency evacuation and accident first aid procedures for all floor wardens • a first aid station accessible to all building users
Stakeholder Relations	<ul style="list-style-type: none"> • monitoring of stakeholder concerns, views and provisions • transparency and disclosure of landlord/tenant contracts and marketing agreements • supportive use and occupation guidelines for tenants • appropriate training for security and public relations personnel
Community Engagement	<ul style="list-style-type: none"> • encouragement of employment of local residents within the building • provision of accessible public facilities (seating, toilets) • promotion of and linkage to local service providers • accessible communication channels with building stakeholders
Accessibility	<ul style="list-style-type: none"> • connections to designated green spaces • proximity to urban spaces (town centres, malls, etc) • availability and efficiency of public transport • wheelchair access • proximity to childminding facilities
Occupier Satisfaction and Productivity	<ul style="list-style-type: none"> • quality of communal service areas e.g. toilets, kitchen facilities • complementary usage of building (compatible tenants) • occupant productivity in terms of satisfaction and physical wellbeing • wheelchair access
Cultural Issues	<ul style="list-style-type: none"> • recognition of indigenous people through allocation of cultural space (for display or performance) and communication of site or community history • consideration of gender equity and minority group requirements • preservation of heritage values • value of artwork as % of fit out
Local Impacts	<ul style="list-style-type: none"> • aesthetic implications (compliance with precinct theme, building scale, etc.) • practical implications (traffic generation, off-street

	emergency parking and pedestrian management) • nature of tenant businesses and naming rights • community linkages and sponsorship of local neighbourhood activities
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The relevance and practicality of the indicators and measures were tested within the CRC CI research project. Most of the information needed for the scaling of the outputs (likert scale) was accessible. It was decided that, in practice, the benchmark could only be applied on a broad scale with buildings being placed in three categories, being:

1. not socially responsible
2. social responsibility required of a private corporation
3. social responsibility required of a public body.

Preliminary Testing

There is still little evidence of the impact of environmental and social factors on the return of an investment property. It is anticipated that, over the longer term, sound environmental improvements will improve the overall property return as the additional cost will be more than offset by the reduction in operating and capital expenditure and increased rental. It is also likely that practical social features will increase the net return after several years. Thus the triple bottom line approach should have a positive effect on the return over, say, a ten-year period provided the additional costs of implementing the environmental and social features are astutely controlled.

A hypothetical exercise has been undertaken of a typical high-rise office building in Brisbane, and, after making subjective assessments of future rent changes due to the improved working conditions, the resultant total returns from a ten-year study were calculated.

Figure 4 shows the results of this study. The total annual return for a property with high ratings in both environmental and social factors is estimated at 10.4%, while a similar property without the social and environmental features would have a return of 9.8% pa. However it will be noted that the return from the property, with good environmental features only, increases from 9.8% to 10.2%. Good social features alone do not have a strong impact on the return, the increased rate of return being approx 0.1%.

FIGURE 4: Expected Total Returns using Financial and TBL Evaluations

Hypothetical Office Building	IRR rate of return on financial evaluation only	IRR rate of return on triple bottom line evaluation
With socially good and environmentally good features	9.8%	10.4%
With socially poor and environmentally good features	9.8%	10.2%
With socially good and environmentally poor features	9.8%	9.9%

These results should be viewed with caution as a large number of subjective judgements were necessary to assess the cash flows. It is hoped that this result will be confirmed by market evidence in the future but there is no conclusive evidence from current rents on the impact of environmental and social features in the Brisbane commercial property market.

Conclusions

The CRC-Construction Innovation project on *The Evaluation of the Functional Performance of Commercial Buildings* found that a significant part of assessing functionality performance of built assets involved determining the measure of achievable sustainability relative to the market. Technological advancement has the potential to produce high sustainability outcomes for buildings, but the cost of much of this innovation is difficult to justify to 'rational economic' investors. An examination of market activity showed that property investors were essentially demand driven. They were concerned about the ability to generate increased rental from environmental and social improvements. The project also found though that significant sustainability gains could be achieved through management strategies designed to satisfy TBL benchmarks.

A key lesson derived from testing the project's benchmarks on case study buildings is the need for uninhibited stakeholder input. In the case of commercial buildings, stakeholders not only include owners, managers and occupants, but the wider public also has a stake in their operation. By this it is meant that management decisions need to be informed by society norms, habits and values, as well as by economic and utility objectives of the parties directly involved. A major plank of this normative agenda is environmental ethics, but it is by no means the only emerging issue to consider.

The research project has advanced the benchmarks required for the performance evaluation of commercial buildings. In particular there has been keen interest from property investors and managers on the benchmarks for TBL evaluation. They accept the inevitability of the changing concepts of performance evaluation but are uncertain about the timing of the market forces that will demand these changes.

What the CRC CI project 2001-011-C confirmed is that a triple bottom line assessment approach to built asset performance is grounded on the development of innovative benchmarks. Moreover, the benchmarks developed in the project were found to be measurable and appropriate for high-rise office buildings. This finding supports the claim that the sooner complete and objective triple bottom line built asset guidelines are adopted, the sooner the property industry is likely to recognise that the provision of a safe, harmonious and productive built environment for people is not negotiable.

It is broadly agreed that rating systems are a powerful driver of environmentally sustainable built asset performance. There is very useful research emerging detailing the costs and financial benefits of improving the sustainability of buildings.¹⁹ However, much more research needs to be undertaken to help determine the market implications of these innovations, and particularly the economic implications of efforts to satisfy the environmentally and socially sustainable benchmarks like those advanced in this paper. It is only when it can be emphatically demonstrated to property investors and managers that such efforts are not just affordable but have significant performance benefits and actually contribute to higher returns and premium values that the triple bottom line will have meaning and become an integral part of the valuation approach for investment-type buildings.

¹⁹ See for eg. Greg Kats et. al. (2003) 'The Costs and Financial Benefits of Green Buildings: A Report to California's Sustainable Building Task Force,' unpublished.

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