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The Structural and Behavioural Barriers to Sustainable Real Estate Development

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Abstract:

Sustainable real estate development appears, on literal translation of both terms, to be an oxymoron - however it is a concept that the real estate profession needs to embrace knowledgably. On one hand it can be argued that real estate development is required for continued economic growth and the adoption of sustainability measures is required to mitigate climate change and global warming. Over the last few years there has been growth in the number of sustainability tools available to designers and operators of buildings. For example, in the US the LEED scheme enables designers to assess the environmental impact of their design and to benchmark the sustainability of the design against industry recognised criteria. LEED follows a similar format to the UK’s Building Research Establishment Environmental Assessment Method (BREEAM) introduced in 1990 and the Australian ‘GreenStar’ introduced in 2004. Even though there are an increasing number of sustainability tools available to designers, it still remains that the degree of uptake of the tools has been sporadic. This paper discusses the barriers to sustainable real estate development. Firstly it identifies the barriers to uptake and secondly it establishes the structural barriers in the market which prevent the wider uptake of tools.
Introduction

As a starting point, the concept of ‘development’ has been defined in the Encarta Dictionary as: “the process of developing, developing something, or of being developed, for example by growth, change, or elaboration” or with reference to buildings as “a group of buildings of the same kind that are built as a single construction project” (Encarta Dictionary, 2007). Whilst there are varying approaches to and methods of development, the concept of altering the existing use of a good or item is a common theme. With reference to the real estate market and the improvements primarily in the form of buildings, for the purposes of this paper it can be argued that development of the built environment involves the utilisation of natural and man made resources, the use of energy, the potential destruction of eco-systems and so on in order to bring about change and economic growth.

Over the past decade in particular, sustainable development has become an important aspect of the real estate and construction industries. There are many ways in which sustainability issues can be incorporated in to the design, construction, operation and deconstruction of buildings. Importantly sustainability represents the link between society and built environment professionals. In the built environment buildings have a significant impact environmentally many because buildings are significant emitters of carbon dioxide (a greenhouse gas and contributer to global warming). According to BRE (2003) buildings are responsible for 50% of carbon emissions in the UK, a similar figure is recorded for the US (Croxton, 1994). Equating this to a larger worldwide perspective, it is clearly evident that the built environment is a major contributor to global environmental issues with links to climate change. According to the UN Environment Programme as shown in figure 1, buildings contribute to global environmental issues in the following ways; production of water effluents, production of solid waste; carbon dioxide emissions; land use, water use, raw materials use, and energy consumption (UNEP, 2007).
With reference to sustainability, development is usually driven by higher demand although is undertaken within the context of reducing consumption of natural and man-made resources. Therein lies the oxymoron:

“How can we continue to ‘develop’ and at the same time remain sustainable?”

**Drivers for Sustainability**

It is clear there is an increasing acceptance of the need to take action at local and national government levels with accompanying momentum. The release of the high profile report in 2006 by the economist Nicholas Stern raised awareness about the economics of climate change – overall the report focused the minds of many on the need to take immediate action in order to avoid serious economic as well as environmental consequences of mankind’s actions (Stern, 2006). Whilst there are arguments against the existence of climate change largely founded on the belief that heating and cooling of the planet is a natural long-term occurrence, it is commonly agreed that the most resources will last longer (and often be cheaper) if a sustainable perspective is undertaken.

Depending on the context in which it is used, sustainability has broad and different definitions. Often sustainable development is classified using Bruntland’s definition, where development meets ‘the needs of the present without compromising the ability of future generations to meet
their own needs’ (Brundtland Commission Report, 1987). In Australia development is commonly referred to as ‘Using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased’ (Commonwealth of Australia, 1992). Brundtland (1987) described the concept of ‘sustainable development’ as a strategy or means to achieve sustainability by optimising the relationship between the global society and its natural environment with consideration of social, economic and environmental goals of the society. Notably Bruntland’s report contained two key concepts: the concept of needs especially in relation to the world’s poor and secondly, of limits to growth to ensure future generations’ access to natural capital. International concern for the environment was reflected early in the United Nations conference in Stockholm in 1972 and the idea of eco-development emerged from the conference as ‘an approach to development aimed at harmonising social and economic objectives with ecologically sound management’ (Gardener, 1989).

Hill and Bowen (1997) (as cited by Graham, 2003) noted the early concept of sustainable development was firmly entrenched within the environmental movement and sustainable development was often interpreted as sustainable use of natural resources. Debate continued on about the appropriateness of a definition as well as uses of the concept of sustainability. Solow (1993) argued development will inevitably lead to some of draw-down of stocks of non-renewable resources and that sustainability should mean more than the preservation of natural resources. Thus sustainability is the means by which we strive to achieve sustainable development where Goodland (1995) argued that sustainability had three interconnected dimensions: environmental, social and economic. This well known concept was shared by Elkington (1994) who named it the ‘triple bottom line’ as illustrated in figure 2.
Figure 2. Triple Bottom Line concept of sustainable development.

![Triple Bottom Line concept of sustainable development](image)

(Source: Elkington, 1994)

The ‘triple bottom line’ approach seeks to rationalise development that promotes economic growth, but maintains social inclusion and minimises environmental impact. O'Riordan et al. (2001) and Lutzkendorf and Lorenz (2005) developed alternative models of sustainable development based on the 'triple bottom line' approach in the ‘Three Pillars’ model. In this model sustainability is viewed as the assimilation of economic activity, social well-being and environmental integrity, which is commonly referred to as the 'Russian Doll' model. As shown in figure 3, economic capital is central as the basis of wealth creation which propels development (O'Riordan et al, 2001), however it is inhibited by environmental and social factors. Furthermore, these three aspects are supported by the institutional and governance structures required making sustainability work.

Figure 3. Russian Doll Model or Three Pillars Model of sustainable development.

![Russian Doll Model or Three Pillars Model of sustainable development](image)

(Source: O'Riordan et al. (2001); Lutzkendorf and Lorenz (2005))
Hill and Bowen (1997) argued the area of sustainability is so broad that a single definition can not adequately capture the concept. Both sustainable development and sustainability within the context of the built environment was defined by Kibert (2005:9) as construction that created “a healthy built environment using resource-efficient, ecologically-based principles”. Hill and Bowen (1997) identified four principles in their concept of sustainable construction: social sustainability, economic sustainability, technical sustainability and biophysical sustainability. Notably the concept of sustainable construction posited by Hill and Bowen (1997) provides the building and construction industry with a practical framework to guide the implementation of sustainable buildings.

**Assessment tools**

There are an increasing number of assessment tools available to professionals in the built environment. The rationale of the tools is that they promote sustainability, provide a benchmark for the real estate and construction industries (BRE, 2003). The tools vary from rating tools or systems, and such tools seek to rate a building or project on the basis of a number of environmental criteria for example energy consumption, water consumption and the embodied energy in materials used. Typically these tools provide either a star or points rating or scale assessment form fair to excellent. Tools such as the *Building Research Establishment Environmental Assessment Method* (BREEAM) in the UK and *Leadership in Environmental Design* (LEED) in the US are good examples. Other tools like the *National Home Energy Rating* (NHER) cover the operation stage of a buildings life cycle. Some tools are restricted to single issue aspect, such like the *Australian Building Greenhouse Rating* (ABGR) that covers energy use only (ABGR, 2007). Another variation in the tools is that some are available on line such as ABGR and BASIX in Australia while other are based on software applications such as the UKs NHER system. Some tools are promoted by governments such as the UK and Canadian BREEAM rating and the Australian BASIX rating tools.

It must be noted that each tool requires different levels of information in order to facilitate an assessment and/or rating if appropriate. Some tools can only be used by registered and trained assessors, such as the BREEAM schemes in the UK. In addition there are issues regarding the associated expenses involved in completing assessments - for example LEED has been criticised for being a time consuming process that requires considerable amounts of information and paperwork from the design team, and consequently is a relatively expensive process (Schendler et al., 2005).
Social Barriers

Social barriers are sometimes referred to as ‘behavioural barriers’ because they are comprised of attitudes and beliefs which then act as barriers to action. For example, one particular group of barriers revolve around a lack of knowledge or understanding of the issues. In this instance the attitude is partly driven by the complexity of ‘sustainability’ as an issue with its respective environmental and economic and social aspects. For example, the evaluation of a development might include considering the social benefits and disadvantages that accrue along with economic advantages and costs, as well as the environmental impacts. In other words, direct and indirect benefits and disadvantages result from the development but may not be easily recognisable. For many professionals involved in the built environment, such an analysis goes beyond their education and knowledge base with the lament that ‘we don't know enough’ to make an informed decision on sustainability issues. In such an instance practitioners enter the realms of great uncertainty which is unfamiliar territory in a professional sense. It can be argued that stating that a lack of knowledge or lack of information is a weak excuse for inaction.

It is acknowledged that when two competing interests clash, the most immediate or local concern will win through which is commonly referred to as ‘attention pressure’. With many organisations there are sustainability ‘champions’ being people with forceful personalities who are able to bring about change as needed – they possess the ability to motivate others, however if no such ‘champion’ exists within an organisation, change will be impeded and slow. Scrase (1999) noted that generally professional conservatism was impeding the uptake of sustainability.

Another important social barrier is the media presentation and coverage of sustainability. This medium sends powerful messages to the public about whether environmental impacts such as climate change and global warming are valid ‘scientifically proven’ hypotheses - there is much evidence to suggest some studies have been portrayed in dubious ways in order to credit or discredit claims of climate change and global warming. For example it is only recently that US and Australian governments have began to accept the overwhelming scientific evidence confirming that climate change is occurring and that it is a result of mankind’s activities (Stern, 2006).

There is a major barrier between the acceptance of sustainability issues and acting upon those beliefs. Many individuals will accept the premise of the science regarding climate change but do not change their behaviours to reduce their environmental impact. This is supported by the relatively poor take-up of public transport and the relatively high reliance on automobiles.
One of the most substantial barriers for the built environment is that once built, buildings generally exist for decades and often even hundreds of years. Structures usually undergo various changes and alterations during their lifecycle and depending upon they manner in which they are operated and managed, can have varying levels of environmental impact. This is commonly referred to as ‘the inertia of the built environment’, where the physical fabric of communities with buildings, streets, and infrastructure does not change quickly. However all of these elements do alter over time and are replaced, repaired, refurbished or renewed.

Sustainability is not about the wholesale or radical immediate disruption of the built environment, which experience has proven to be costly in both social and financial terms. However sustainable development is concerned with ensuring that as change takes place, it is assessed against sustainability objectives and criteria ensuring it is undertaken in a sustainable manner.

Finally there are the time horizons and conflicting interests. The pursuit of sustainability can not evade the reality of conflicting interests that arise, to a great extent, out of wide differences in the time scales involved. The benefits of a sustainable community to be gained in the long run are not likely to compensate most people for the prospective loss of a job, a market or an election in the short term. Creating sustainable development means to neither ignore nor minimise such issues, but rather to find ways to address them effectively.

In summary, social or behavioural barriers to sustainable property development can be summarised as follows:

- Lack of understanding about the issues;
- Overwhelming complexity of the issue;
- Lack of knowledge/information;
- Uncertainty;
- Competing issues;
- Differences in perception;
- Acceptance of the status quo;
- Perceived lack of empowerment;
- Perceived inequity;
- Attention pressure;
- Lack of a ‘champion’;
- Professional conservatism;
- Lack of public support;
- Media presentation of information;
- Disjunction between verbal support and willingness to take action;
- Inertia of the built environment; and
- Time horizons and conflicting interests.
Economic Barriers

The economic barriers to sustainable development are powerful and include financial gain motives. In short there is much scepticism, especially among valuers about how to value sustainability in property. The valuers tend to follow the market and until the market signals that it is valuing sustainable buildings, for example with tenants seeking out sustainable buildings to lease and paying higher rental levels for such buildings the market remains unconvinced of any intrinsic value in such properties. Our capitalist economic systems are predicated on a philosophy that does not yet fully account for externalities such paying for any environmental degradation that results form economic activities. E.g. the idea that says water costs should reflect any recycling or clean up that is required to provide clean safe water to the community and or the price should reflect scarcity. Another example is that the fossil fuel based energy industry currently does not pay the costs of the environmental consequences of carbon dioxide and greenhouse gas emissions.

Currently a further economic barrier is that whilst the benefits of sustainable development are clear from a wider environmental perspective, the financial costs of the measures are very concentrated to those undertaking the development. For many years green or sustainable economists have argued there is a lack of widely available and understood cost-comparison data, especially from a full-cost accounting perspective (Pearce, 1989). The Pearce Report was a concise and persuasive statement of the key contributions that economics could make to the reform of environmental policy, advocating basing policy on the criterion of ‘sustainability’, valuing environmental effects, and making use of market incentives.

In summary, economic barriers to sustainable property development can be summarised as follows:

- Financial gain motive;
- Marginal pricing and economic valuation, where increased financial benefits remain the drivers behind most real estate investments;
- Inadequate funds;
- Externalities: market conditions that permit a producer or consumer to shift the costs for their economic activities to other parties;
- Free rider syndrome, which is a form of externality that derives from the inability of any institution to control and charge for the use (or abuse) of a natural asset;
- Existing funds already allocated to other initiatives;
- Monopolies;
- Benefits of sustainable real estate development are indirect, while the costs (to specific groups) are concentrated.
- Fragmentary and cumbersome approvals process, which adds time and cost to innovative development, thereby increasing risk; and
• A lack of widely available and understood cost-comparison data.

Environmental Barriers

In a similar manner to social and economic barriers, there are both direct and indirect environmental barriers. Over time various programs and policies have been introduced with the aim of reducing resource consumption and vehicle emissions, while producing indirect benefits such as enhancing the safety of streets and fostering a sense of place. Other programs have encouraged a change in land use patterns, such as introducing an urban growth boundary to restrict large scale land development.

In summary, economic barriers to sustainable property development can be summarised as follows:

• Clearly demonstrate the advantages of introduction environmental measures;
• Include government policy makers in the creation of the recommendations;
• Develop government structures that accommodate long-term decision-making;
• Develop government structures that reduce the workload of elected officials;
• Promote self-help;
• Expand communication links with other cities;
• Identify lead agencies and coordinate policies appropriately; and
• Develop policies that improve choices.

Conclusions

This paper has identified the main barriers to sustainability although the authors acknowledge that due to the constant state of change there are almost an infinite number of barriers to identify and address. For example, nuclear energy is a relatively recent innovation and the emphasis on global warming has increased substantially over the past 10 years. The starting point was the accepted triple bottom line approach based on social, environmental and economic factors. Thereafter consideration was given to three (3) main groups of barriers that align with the triple bottom line, namely social barriers, environmental barriers and economic barriers.

With reference to real estate and the built environment, most of the discussion about sustainability is focused upon advances in sustainable technology. Regardless of the efficiency levels of new technology, it is argued that unless the barriers to sustainability are identified and suitably addressed then the built environment will not be as sustainable as it could be. There are other related issues which also need further research – for example, in 2006 the authors conducted a large-scale survey of property owners/facility managers in Melbourne, Australia although were faced with substantial barriers (Wilkinson & Reed, 2006). Whilst the survey
participants were committed to participating in the survey, many were unable to due to barriers outlined in this paper. Other barriers included poor recording keeping and apparent lack of corporate social responsibility (CSR).

The purpose of the paper was to raise the awareness about barriers to sustainability, which in turn will assist to move forward and address these issues in the built environment. This research project is on-going and has many individual components – for example, the 2\textsuperscript{nd} stage of a comprehensive downtown analysis is currently being conducted (Wilkinson & Reed, 2006). Not until all barriers are identified and overcome will the real estate industry and the wider full environment be able to collectively address indirect sustainability issues for the long term, rather than focussing on short term direct issues over the short term.
References


Wilkinson, S. & Reed, R. (2006), *Combating climate change – how can cities best adapt?*, RICS, London (available at [http://www.rics.org/RICSservices/RICSresearch/RICS+Education+Trust+Golden+Jubilee+project+on+climate+change.htm](http://www.rics.org/RICSservices/RICSresearch/RICS+Education+Trust+Golden+Jubilee+project+on+climate+change.htm)).