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Realising social objectives of sustainable construction through procurement strategies

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Abstract

Sustainability remains highly desirable yet unattainable. Sustainable construction is about application of sustainable development in the construction industry. The traditional focus of sustainability literature was on environmental issues due to its more tangible nature. Sustainability, in its broader meaning, incorporates many different but interrelated dimensions, including social, economic, and environmental dimensions. Nevertheless, the interpretation of the issues underpinning the different dimensions of sustainability depends significantly on the context as the needs and the conditions of the developed countries are widely different from those of the developing world. In the context of the UK construction industry, the need to address sustainability in construction procurement strategies is increasingly acknowledged. This paper draws upon review and synthesis of the relevant literature, discussion with professionals and experience of authors on various projects. The paper explores the issues underpinning the social dimension of sustainable construction in the context of developed countries and in particular the UK. It also proposes potential directions that procurement strategies could take in attaining the objectives of the social dimension of sustainable construction and presents some constraints to taking such actions. The paper provides a theoretical framework for further research to realise social objectives of sustainable construction through procurement strategies.

Key words: construction, procurement, strategies, social, sustainable

Introduction

Sustainable development has become a major focus for policies and research. It was declared as “an overarching policy goal” by governments represented at the Earth Summit on Development and Environment (Parkin et al, 2003, p. 19). The Sustainable Development Research Network (2002, p. 4) describes sustainable development as “the most fundamental long-term challenge facing the world community.” Given the increasing recognition of the concept, more than 200 definitions of sustainable development exist (Parkin et al, 2003). Possibly, the best known definition is the one introduced by The World Commission on Environment and Development (1987, p. 8): “Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Sustainable construction, in general, refers to the application of the principles of sustainable development to the construction industry. However, there is a need to take into account the specific context of study to develop a better understanding of the concept. Following some discussion on the issue of sustainable construction, this paper introduces the criteria representing the social dimension of sustainable construction in the context of developed countries and more specifically the UK context. It also discusses potential actions to improve the contribution of procurement strategies in attaining the objectives of social sustainability and introduces some constraints to taking such actions. The paper provides a theoretical framework for further research to realise social sustainability through procurement strategies.
Understanding Sustainable construction

**Defining sustainable construction:** According to Hill and Bowen (1997), the term sustainable construction was proposed to describe the responsibility of the construction industry in attaining sustainability. A more detailed definition was offered by the UK Minister for Housing, Planning and Construction: “Sustainable construction is the set of processes by which a profitable and competitive industry delivers built assets (buildings, structures, supporting infrastructure and their immediate surroundings) which

- enhance quality of life and offer customer satisfaction
- offer flexibility and the potential to cater for user changes in the future
- provide and support desirable natural and social environments
- maximize the efficient use of resources.” (Raynsford, 2000, p. 16)

A noticeable issue in Raynsford’s definition is the emphasis that is given not only to the product but also to the process. The definition also introduces some aspects of social sustainability such as customer satisfaction and support for social environments, in addition to some aspects of environmental and economic sustainability such as maximizing the efficient use of resources and emphasizing profitability and competitiveness of the industry. However, the definition does not clearly capture the many aspects of sustainable construction.

Both Hill and Bowen (1997) and Ofori (1998) point out the issue that sustainability principles are still poorly defined and argue that these principles are subject to much confusion and disagreement. Ofori (1998) argue that this could even be extended to the frequently quoted definition of sustainable development offered by World Commission on Environment and Development (1987). The lack of understanding and fuzziness of the concept present one of the barriers to the implementation of sustainable construction (Adetunji et al, 2003). Further work, therefore, is still needed to better conceptualise sustainable construction.

**The multi-dimension nature of sustainability:** Despite the variances between the different definitions of sustainability, there is a wide acceptance that sustainable development integrates, at least, three dimensions: social dimension, which will be discussed later; economic dimension, including issues such as promoting employment creation, using life cycle costing, supporting local economies (Hill and Bowen, 1997; Rethinking Construction, 2003; Ashley et al 2003); environmental dimension, including issues such as using renewable resources in preference to non renewable resources, maximizing resource reuse and/or recycling, minimizing air, land and water pollution at global and local levels (Hill and Bowen, 1997). The later dimension has been traditionally the focus of the literature of sustainability. In addition, some publications in the literature have mentioned other dimensions of sustainability such as technical sustainability (Hill and Bowen, 1997; Ashley et al, 2003), cultural sustainability (CIB, 1999; Ofori, 1998; Langford et al, 2000), community sustainability (Ofori, 1998) and managerial sustainability (Ofori, 1998).
The role of context in shaping sustainability: Sustainable construction interpretations, approaches and priorities could be largely dependent on the context of study. Realizing the differences between developed and developing countries, CIB and other organizations published “Agenda 21 for Sustainable Construction in Developing Countries.” According to this Agenda, such differences are related to the problems and their scale, development priorities, capacity of local industry and government, skill levels in addition to cultural and world view issues which influence the understanding and implementation of sustainable development and construction. Within this context, the document aimed at providing research and development agenda with strategy for action in developing countries. The implication here is therefore clear; studying sustainable construction needs to take into consideration the context of study. There will be always, at minimum, social, economic and environmental dimensions whatever the context is. What could differ are the specific issues underpinning each dimension and/or the priority given to these issues.

The social dimension: defining the intangibles

Both the social and the economic dimensions of sustainable construction remain intangible compared to the environmental dimension. This has been substantiated by analysing the results of a questionnaire survey directed to the top end of construction contractors in the UK (Adetunji et al, 2003). Adetunji et al argue that such results may be explained by the long history of environmental management systems in the construction industry, professional bias due to the environmental management background of most people responsible for sustainable construction management, and the trend to assign the responsibility of sustainable construction management to environmental departments.

Surprisingly, despite the extensive efforts to put sustainable construction in application, it seems that there is no common understanding of the issues underpinning the social dimension of sustainable construction. It was seen more appropriate, therefore, to introduce these issues through a synthesis of the relevant literature (Table 1). It is important to note that these issues are more relevant to the context of developed countries and in particular the UK context.

Adetunji et al reported key social and economic issues of most concern from the point of view of the top end of construction contractors. Some of which coincide with the issues presented in Table 1. The key concerns reported included partnership working, shortage of skilled labour, maximising construction site security and minimise crime, effective management of stakeholders, quality of built environment, maintaining relationship with government/regulator, working with local communities, local source of material, local employment, reducing negative effects on community health, industry accountability and addressing corruption both in- and externally.
<table>
<thead>
<tr>
<th>Social sustainability criteria</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving the quality of human life including poverty alleviation</td>
<td>(Hill and Bowen, 1997; CIB, 1999)</td>
</tr>
<tr>
<td>Making provision for social self determination/enhancement</td>
<td>(Hill and Bowen, 1997; CIB, 1999)</td>
</tr>
<tr>
<td>Diversity - including making provision for cultural diversity in development planning</td>
<td>(Adetunji et al, 2003; Hill and Bowen, 1997)</td>
</tr>
<tr>
<td>Protecting and promoting human health through a healthy and safe working environment</td>
<td>(Hill and Bowen, 1997; Ashley et al, 2003; GCCP, 2000; Adetunji et al, 2003)</td>
</tr>
<tr>
<td>Training and development - including implementing skills training and capacity enhancement of disadvantaged people</td>
<td>(Hill and Bowen, 1997; DETR, 2000; Rethinking Construction, 2002)</td>
</tr>
<tr>
<td>Seeking fair or equitable distribution of the social costs and benefits of construction</td>
<td>(Hill and Bowen, 1997)</td>
</tr>
<tr>
<td>Seeking intergenerational equity</td>
<td>(Hill and Bowen, 1997)</td>
</tr>
<tr>
<td>Participation of stakeholders</td>
<td>(Ashley et al, 2003; GCCP, 2000; CIB, 1999; Adetunji et al, 2003)</td>
</tr>
<tr>
<td>Social inclusion</td>
<td>(Ashley et al, 2003)</td>
</tr>
<tr>
<td>Improving the image of construction</td>
<td>(DETR, 2000)</td>
</tr>
<tr>
<td>Employment - including equal employment opportunities</td>
<td>(DETR, 2000; Adetunji et al, 2003)</td>
</tr>
<tr>
<td>Recruitment and retention</td>
<td>(GCCP, 2000)</td>
</tr>
<tr>
<td>Equality</td>
<td>(GCCP, 2000; Rethinking Construction, 2002; CIB, 1999)</td>
</tr>
<tr>
<td>Respect to people – workforce and employee satisfaction, work in occupied premises, working environment</td>
<td>(Rethinking Construction, 2002; Adetunji et al, 2003)</td>
</tr>
<tr>
<td>Compensation and benefits, working hours, forced labour, freedom of association and collective bargaining</td>
<td>(Adetunji et al, 2003)</td>
</tr>
</tbody>
</table>

Table 1: Criteria representing the social dimension of sustainable construction

While the criteria introduced above are suggested to represent the social dimension of sustainability, they are rather general guidelines to determine the areas of focus within this dimension. More effort is still needed in reaching a common understanding of the issues representing such dimension, highlighting interpretations of the different parties in a construction project regarding these issues, defining how these issues can be addressed and applied within a project life cycle context and assessing the current practices in term of the level of integration of such issues.

Promoting social sustainability in UK construction procurement: a theoretical framework

The need for introducing sustainability principles to construction procurement has been increasingly acknowledged. According to Rowlinson et al (2000), sustainability is one of the emergent themes in the context of construction procurement and which are expected to grow significantly. In the context of UK, DETR (2000) reports that a new programme will require all departments and agencies to adopt an action plan for more sustainable construction procurement. According to Rethinking Construction’s Respect for People Working Group (2002), addressing procurement in a sustainable way is a need that clients are starting to acknowledge. Adetunji et al (2003) point out that “client procurement policy” is one of three highest ranked drivers for implementing sustainability.

The publication “Building a Better Quality of Life: a Strategy for More Sustainable Construction”, which set out how the UK Government expected the construction
industry to contribute to sustainable development, identified 10 themes for action: re-use existing built assets; design for minimum waste; aim for lean construction; minimise energy in construction; minimise energy in use; do not pollute; preserve and enhance bio-diversity; conserve water resources; respect people and their local environment; and set targets. Based on these themes, the Sustainability Action Plan was produced (GCCP, 2000). The Plan highlighted many useful issues to drive procurement in a sustainable direction. However, certain issues have not received sufficient attention, despite their importance. A theoretical framework, that draws attention to these areas, is suggested here for further research. The framework may be applied to the economic and the environmental dimensions of sustainability as well as the social dimension. The areas are outlined below.

Developing a common understanding of the factors representing social sustainability: The framework developed in the Sustainability Action Plan is based on 10 themes for action. Although these themes provide many useful sustainability principles in general, they do not embrace other principles mentioned in the literature, such as those presented in Table 1. They do not consider principles such as creating employment or seeking fair or equitable distribution of the social costs and benefits of construction. A more comprehensive and up to date list of the factors representing social sustainability is therefore needed.

Assessing the contribution of different procurement systems and strategies in attaining the objectives of social sustainability: A procurement strategy refers to the best way of achieving project objectives, takes account of risks and constraints and considers funding mechanisms (OGC, 2003). It involves issues such as identifying the needs, preparing the brief, securing the finance, selecting the tenders etc. (Hodgkinson, 2001). A procurement route or system - such as integrated, separated and mediated coalitions, Private Finance Initiative (PFI) and Partnering - delivers the procurement strategy. Such systems and strategies need to be examined in terms of the extent of addressing the objectives of sustainability dimensions, including the social dimension. This is essentially an exercise to determine the areas of strengths and weaknesses, in terms of contribution to sustainability. There is a lack of analysis of such issues in the literature, including the Sustainability Action Plan.

Potential actions to improve contribution, barriers to such actions, and parties most capable of taking such actions: Much can be done to achieve sustainability within the value for money approach, which is the “overarching” aim of construction procurement (GCCP, 2000). Some actions that can improve contribution of procurement strategies towards social sustainability are suggested below. Further research regarding such actions, barriers to taking them, and the parties most capable of taking them, will be carried out. The actions may include:

1. Integrating sustainability into project brief and contract specifications: Project brief describes the completed project, specifies the expected outcome, outlines the role of contractor and highlights constraints and difficulties. It is often a cause of failure of construction procurement (Hodgkinson, 2001). Integrating sustainability principles into a proper project brief and clearly stating the multi-dimension nature of
sustainability will present sustainability dimensions, including the social dimension, in a way that can not be ignored at any stage of project delivery. Relevant sustainability factors can also be integrated into contract specifications, an issue that is highlighted by GCCP (2000). However, in an environment dominated by “economic” performance measures, the issue of structuring sustainable construction contracts needs a “gradual” and “creative” approach, as Gordon (1996) argue. Gordon points out that structuring innovative construction contract is a matter of replacing traditional fiscal indicators with others that have a true basis in environmental and social values. This paper agrees with the perspective of Gordon in that environmental and social indicators need to be introduced into the construction contract. This is not to say that the economic or the financial measures are no longer relevant. Instead, the underlying principle should be that indicators related to all the dimensions of sustainability should be incorporated in the construction contract in a balanced way.

2. Choosing an appropriate procurement system from a sustainability perspective:
The selection of a procurement system needs to consider many factors associated with client needs, contractor requirements and project characteristics (Ambrose and Tucker, 2000). However, according to Newcombe (2000; p. 104), selection of appropriate procurement path is “not as obvious as it sometimes appears and divergent choices are sometimes argued”. What exacerbates the problem is that despite the increasing recognition that sustainability criteria need to be accommodated in procurement strategies, it does not seem that such criteria feature as a key aspect in the selection of procurement systems. However, there are some indications that the situation is changing. For example, the criteria “control over sustainability issues” is now among the evaluation criteria of procurement systems, as appears in the evaluation template developed by OGC (2003). Such systems have shown different levels of performance in attaining certain objectives such as speed, cost, certainty, flexibility, non-adversarial focus, risk allocation etc (Love et al, 1998; Ambrose and Tucker, 2000; Alhazmi and McCaffer, 2000). The challenge now is to assess the potential of these systems in attaining the objectives of the different dimensions of sustainability. Following such assessment, informed decisions that consider the different sustainability objectives, the priority given to meeting such objectives and the performance of the different systems in attaining them, can be made.

3. Using multi-criteria decision making techniques: An assessment of sustainability needs to take into account the different criteria underpinning it, and which might be in conflict sometimes. This could lead to the use of multi-criteria decision making techniques, such as the Analytic Hierarchy Process (AHP). Such techniques were used for solving problems in construction management (Cheng and Li, 2002) and selecting construction procurement strategy (Al-Tabtabai, 2002). In some cases, multi-criteria decision making techniques were used with sustainability provided the basis for choosing the criteria for decision making, as in developing SWARD (Ashley et al, 2003) or in developing a model for project appraisal (Ding and Gilpin, 2000). In the context of procurement, applying such techniques have already been suggested. For example, Al-Tabtabai (2002) suggested the use of AHP as a powerful method for selecting the best procurement strategy, although sustainability is not presented as a major criteria in the model introduced by Al-Tabtabai. Cheung et al (2001) also suggested the use of AHP in procurement selection. This paper argues that there is a potential for using such techniques to make informed decisions that consider
sustainability criteria in problems like selection of contractor or choice of procurement system. For example, the methods suggested by Al-Tabtabai or by Cheung et al could be further expanded so that the objectives of the different dimensions of sustainability are incorporated.

4. **Evaluating and selecting contractors on the basis of value:** Following Egan and Latham reports, selection of consultants tends to move away from fee competition-based appointment towards selection procedures that are based on balancing quality and price (CIRIA and DTI, 2001). The focus now is directed towards applying quality-based selection principles in selecting contractors. This paper adopts the perspective of CIRIA and DTI (2001) which argues that the major selection criteria should be the potential of the contractor to add value and in particular the values of sustainability, which is becoming a major aspect in evaluating overall contractor performance (Xiao and Proverbs, 2003). Selecting contractors based on value principles implies that lowest tender principles are no longer relevant in construction procurement as the emphasis of such principles is on price rather than value. This is indicated by the results of a survey of public sector procurement in England which showed that only 11% of local authorities considered least tender to provide value for money (Holt et al, 2001). Sustainability values are becoming increasingly important within the value for money approach which allows for excluding contractors who committed serious misconduct on issues such as health and safety from tendering (GCCP, 2000). One action that can bring sustainability values to selection procedures is requiring the contractors to register under the Considerate Contractor Scheme which helps them to act in a socially responsible way (CIRIA and DTI, 2001).

5. **Provision of incentives and rewards:** The role of incentives as a key initiative in introducing improvement towards more sustainable construction was appreciated by CIB (1999). Incentives, taking the form of financial gain or improved contract terms, encourage future behaviour. Rewards recognize past performance and usually take the form of improved access to work or improved contract terms (Kenley et al, 2001). Both are means, within a strategic procurement framework, by which change can be driven to the industry, as Kenley et al argue. One possible way of providing incentives to obtain a more sustainability oriented procurement is highlighted by Casella Stanger, DTI, Form for the Future and Carillion (2002). At the tender stage, contractors may be encouraged to identify sustainable solutions that can result in life cycle savings. These can then be shared, as an incentive, through certain mechanism.

**Further research**

Further research in developing the framework will focus on developing a common understanding of the criteria representing the social dimension (objective 1). The Delphi Technique will be used here to confirm and evaluate criteria obtained from the literature review and to derive a consensus, among sustainability experts, on the most important criteria. Another Delphi Exercise, involving procurement experts, will be conducted to assess the contribution of the different procurement systems - or routes - in attaining the most important criteria representing social sustainability and to reach a consensus (obj. 2A). Semi-structured interviews will be conducted to assess the performance of procurement strategies in realising social sustainability (obj. 2B), the actions that can be taken to improve such performance (obj. 3), the barriers to taking
such actions (obj. 4), and the parties that are most capable of taking such actions (obj. 5). Results obtained from the interviews regarding objectives 2B and 3 will be further examined using a questionnaire survey. Interviews will then be conducted to validate the framework developed.

**Figure 2 - Suggested methodology in developing and validating the framework**

**Conclusion**

The application of sustainable development in the construction industry constitutes the subject of sustainable construction, which integrates different dimensions, including social, economic and environmental dimensions. The first two dimensions have received little attention compared to the environmental dimension. This paper focused on the social dimension in the context of developed countries, particularly the UK context, and presented the criteria underpinning this dimension.

Addressing the social dimension of sustainability in procurement strategies requires a common understanding of the criteria representing this dimension and an assessment of the potential of the different procurement systems in attaining such criteria. The paper suggested potential actions, within a theoretical framework for further research, to realize social sustainability through procurement strategies. These included: integrating sustainability into project brief and contract specifications, choosing an appropriate procurement system from a sustainability perspective, using multi-criteria decision making techniques, evaluating and selecting contractors on the basis of value and provision of incentives and rewards. Further research will achieve its objectives through a combination of methods and techniques, comprising Delphi exercises, interviews and a questionnaire survey. The framework may be applied to the economic and the environmental dimensions as well as the social dimension.

**References**


