

1. THE PROBLEM AND ITS SETTING

1.1. The Problem

In the developing countries of the South, such whole-system thinking is at a premium, because the new pattern of scarcity...abundant people but scarce nature – has arrived early and with a vengeance. For the developing world, most acutely, the relevant question will be: How many problems can be simultaneously solved or avoided, how many needs can be met, by making the right initial choices? And how can those choices be linked into a web of mutually supporting solutions, creating a healthy economic, social, and ecological system that develops both better people and thriving nature.¹

The implications of sustainable development for buildings and the construction industry in developing countries are not well understood. However urgent social and economic problems and environmental degradation found in developing countries mean that it is increasingly important that the building and construction industry understands sustainable development and beings to implement and integrate this into mainstream practice.²

This study aims to support increased understanding in this area by investigating how the early development stages of buildings in developing countries can be influenced in order to ensure that buildings and construction play a role in supporting sustainable development.

The research proposal argues that an effective way of doing this is through an assessment tool that enables sustainable development to become an explicit goal within the briefing and design processes of buildings. The study proposes a specification for this assessment tool.

It suggests that the assessment tool will enable sustainable development to be interpreted into building and construction objectives. Once defined, these objectives can be used to influence the briefing and design processes of buildings to ensure that sustainable development is integrated into the early stages of the development of buildings. In order to develop a specification for the tool the study uses quantitative and qualitative approaches. A number of steps are used to define the content, structure, and use of the tool.

Definitions of sustainability and sustainable development appropriate to the study are developed. In addition, a list of sustainable development objectives that can be interpreted into building and construction objectives is constituted. These are created through critical review and inductive analysis of the sustainable development and sustainability fields.

¹ Hawken, Lovins, Lovins. p. 288

² <http://www.CICA.net> 19/12/02 09:00

The structure and components of the tool are defined through a critical review of assessment frameworks. This provides a description of the essential characteristics of assessment frameworks and defines processes that should be engaged in their use.

The detailed synthesis of proposed structure, content and use of the tool is developed through an analysis, comparison and interpretation of data from sustainability, sustainable development, assessment and development frameworks and building and construction fields.

In order to evaluate the specification and validate findings of the study the specification is compared to an existing assessment tool, the Sustainable Building Assessment Tool.

The study makes a contribution to knowledge within the sustainable development and building and construction fields. In particular, it aims to support improvement in methodologies designed to integrate sustainable development into the briefing and design of buildings in developing countries.

1.2. The Sub problems

1.2.1. Sub problem one and Hypothesis one

Sub problem: What are the key aspects of the international and local contexts of sustainable development useful in understanding how buildings and construction can support sustainable development?

Hypothesis: The international and local context of sustainable development can inform the development of a specification for an assessment tool that aims to integrate sustainable development into building briefing and design processes.

1.2.2. Sub problem two and Hypothesis two

Sub problem: What are key concepts in sustainability that are useful in understanding how buildings and construction can support sustainable development?

Hypothesis: Concepts from sustainability can inform the development of a specification for an assessment tool that aims to integrate sustainable development into building briefing and design processes.

1.2.3. Sub problem three and Hypothesis three

Sub problem: What are the key features of existing sustainable development, sustainability and development assessment systems and frameworks?

Hypothesis: Existing sustainable development, sustainability and development assessment systems and frameworks can inform the development of a specification for an assessment

tool that aims to integrate sustainable development into building briefing and design processes.

1.2.4. Sub problem four and Hypothesis four

Sub problem: Can a specification for an assessment tool which aims to ensure that sustainable development is addressed and incorporated in the briefing and design of buildings in developing countries be developed by drawing on the sustainable development context (problem one), key sustainability concepts (sub problem two) and key features of sustainable development, sustainability and development frameworks (sub problem three)?

Hypothesis: A specification for an assessment tool, which aims to ensure that sustainable development is addressed and incorporated in the briefing and design of buildings in developing countries can be developed.

1.2.5. Sub problem five and Hypothesis five

Sub problem: How does the specification for an assessment tool developed in Sub problem four compare with the Sustainable Building Assessment Tool (SBAT)?

Hypothesis: A comparison between the specification for an assessment tool and the SBAT will assist in validating the specification and identify whether the SBAT is an appropriate tool for integrating sustainable development into the briefing and design of buildings in developing countries.

1.3. The Delimitations

The study will not attempt to design a sustainable building.

The study will not attempt to establish guidelines for the design of sustainable buildings

The study will be limited to the study of buildings and will not address sustainability or sustainable development, at a large urban scale.

The study will not address in detail, the construction, operation, and demolition/reuse stages of the building lifecycle.

The study will not attempt to undertake a detailed study of building performance in terms of sustainability or sustainable development.

1.4. The Assumptions

1.4.1. The First Assumption

The first assumption is that there is inadequate support to ensure that sustainable development is addressed and incorporated in the briefing and design of buildings in developing countries.

1.4.2. The Second Assumption

The need for support and systems to ensure that sustainable development is addressed and incorporated in the briefing and design of buildings in developing countries is likely to increase in importance and there are unlikely to be any major changes that might occur to influence this.

1.5. The Need for the Study

The built environment has a major impact on the environment and plays a major role in the economy and societies of many countries. For instance:

- Construction is the world's largest industrial employer, with 111million employees and approximately 28% of all industrial employment.³
- In many countries in the world, the built environment normally constitutes more than half of total national capital investment.⁴
- Construction may constitute as much as 10% of a country's gross national product (GNP).⁵
- The built environment consumes between 40-50% of all energy generated.⁶
- In developed countries the construction industry accounts for half of all the raw materials taken out of the world's crust by weight.⁷
- Three million people a year die of air pollution, with most of this caused by indoor air pollution as result of burning biomass for heating and cooking.⁸

With the increasing emphasis on sustainable development and concern about global environmental damage, many aspects of the construction and building industry need to change in order to support sustainable development. However, the issue is complex and has not been researched thoroughly.

The briefing and design stages of the development of buildings play a key role in establishing the extent to which buildings and construction support sustainable development. There is, however, little support, to ensure that sustainable development is addressed and incorporated in the briefing and design of buildings in developing countries.

This study will argue that influencing briefing and design stages is a valuable way of ensuring that buildings begin to support sustainable development more effectively and efficiently. It will

³ <http://www.CICA.net> 19/12/02 09:00

⁴ <http://www.CICA.net> 19/12/02 09:00

⁵ <http://www.CICA.net> 19/12/02 09:00

⁶ <http://www.CICA.net> 19/12/02 09:00

⁷ <http://www.CICA.net> 19/12/02 09:00

⁸ <http://www.johannesburgsummit.org/index.html> 11/11/02 10:30

suggest that developing knowledge and systems within this area can make an immediate and cost effective impact.

It will propose that this approach is of particular relevance in developing countries, where through careful design, unsustainable solutions used in developing countries can be avoided, and instead, opportunities taken to ensure that buildings play an active role in addressing sustainable development priorities.

1.6. The Organisation of the Study

The study is divided into the following sections:

Chapter Two, The Sustainable Development Context

This chapter reviews the international and local sustainable development context in order to understand this. It establishes the current international consensus position on sustainable development. To understand the difference in emphasis between developed and developing countries, national responses to the issue of sustainable development in South Africa and the UK, are compared. The chapter captures key international sustainable development issues and important developing country priorities in order to draw on these in the development of a specification in Chapter five.

Chapter Three, Understanding Sustainability

This chapter reviews a range of literature pertinent to sustainability. Through this review the study develops a detailed description of sustainability. In particular there is an attempt to distil the essential social, economic and environmental characteristics of sustainability relevant to buildings in order to draw on these in the development of a specification in Chapter five.

Chapter Four, Review of Sustainability Assessment Systems and Indicators

This chapter reviews a number of existing sustainable development, sustainability and development assessment tools and frameworks in order to establish an understanding of best practice in this field. Building assessment tools are also reviewed in order to review current approaches in this area. The chapter draws together important characteristics of assessment systems in order to use these in the development of a specification in Chapter five.

Chapter Five, Specification for a Building Assessment Tool

The understanding developed in Chapters two, three and four are used in Chapter five to formulate a specification for an assessment tool. The specification describes the structure, content and use of a tool that aims to ensure that sustainable development is addressed and incorporated in to the briefing and design of buildings in developing countries.

Chapter Six, The Sustainable Building Assessment Tool (SBAT)

In Chapter six the Sustainable Building Assessment Tool (SBAT) is introduced. This tool has been developed by the author and evolved through use on projects. This tool will be compared to the specification developed in Chapter five. This will enable validation of the specification and allow the SBAT to be evaluated to discover if it is an appropriate tool to support the integration of sustainable development into building briefing and design processes in developing countries.

Chapter Seven, Conclusions and Recommendations

The final chapter of the study will provide the conclusions of the study and make recommendations for further study.

1.7. The Definition of Terms

Terms used in the study are in Appendix one.