Research on green building practices in the South African built environment

Abstract

Worldwide, the built environment contributes significantly to global warming and plays a significant role in most economies. In South Africa, the picture is no different as through electricity consumption alone, buildings in the built environment account for nearly a quarter of South Africa's carbon emissions (UNEP, 2009). The aim of the study is to examine the barriers and drivers of green building practices and assess good practices of sustainable green buildings practices in South Africa selected countries. The study found that there is a plethora of issues impacting on the uptake of green building practices and they include: 1) Lack of communication between green building teams, 2) Perceived high costs/financial constraints and limited demand by clients, 3) poor Incorporation of Indigenous Knowledge Systems in built environment curricula, 4) a*nd the* shortage of skilled professionals, such as architects, engineers, and contractors, with expertise in green building design and construction. The study recommends for the CBE to develop an advisory note and advise the Minister of DPWI on the review of the Green Building Policy (2018) and the development of The Framework/Guidelines for the Incorporation of Indigenous Knowledge Systems in Built Environment. It is also recommended for the CBE to foster collaboration with Agreement SA, infrastructure departments, relevant entities, local government and local organisations for the massification of awareness campaigns about, testing, certification and accreditation of materials, structures and promote climate resistant housing and safety.

Introduction

The Council of the Built Environment (CBE) is a statutory body established in terms of the Council for Built Environment Act (No. 43 of 2000) and an entity of the Department of Public Works and Infrastructure (DPWI). The CBE is a schedule 3 (a) public entity and is subject to compliance with the Public Finance Management Act (PFMA) Act No. 29 of 1999 and Treasury regulations. Sections 3(c) and (d) of the CBE Act mandate it to *promote ongoing human resource development in the built environment, and to facilitate participation by the built environment professions in integrated development in the context of achieving national goals.* It is an overarching body that leads, regulates, coordinates, and advises the six Professional Councils namely: Architectural Profession, Landscape Architectural Profession, Engineering Profession, Property Valuers Profession, Project and Construction Management Professions, and Quantity Surveying Profession. The CBE also entered

into strategic relationships with the following professional bodies: South African Council for Planners, Environmental Assessment Practitioners Association of South Africa, and South African Geomatics Council Programme.

Research Objectives

The following objectives will contribute to the aim of this study:

- To analyse the barriers impeding on the implementation of sustainable green building practices in the South African built environment.
- To examine the drivers and benefits of adopting sustainable green building practices in the South African built environment.
- To assess good practices of sustainable green buildings practices in selected countries (Argentina, Australia, Israel and Spain).
- To document good practices of green buildings that have been constructed through public funds in South Africa.
- To develop recommendations for incorporating sustainable building practices in the South African built environment.
- To assess the contribution of Indigenous Knowledge Systems (IKS) in sustainable building practices.

Methodology

This research is qualitative in nature and used far reaching desktop research and interviews to address its research objectives.

The targeted population for this research study are/were sustainable construction experts, sustainable construction specialists, indigenous building materials experts, indigenous building systems experts, Built Environment professionals, academics in the Built Environment sector, and Built environment candidates.

Data analysis was undertaken using Thematic Analysis, Microsoft forms and Excel.

Data was collected from fourteen participants.

The following stakeholders were also engaged: DPWI, DSTI, Human Settlements, GBCSA, Agreement SA, NHBRC & The Sustainability Institute.

Research Findings:

Lack of Knowledge and Awareness: There is often a lack of awareness and understanding of the long-term benefits of green building practices, especially among small and medium-sized developers, property owners, and even some government entities. This lack of knowledge leads to skepticism regarding the potential for cost savings.

Non-Compliance to Legislation (Developers and Contractors): Construction company stakeholders are not fully committed to developing or promoting green building practices due to: their selective implementation of legislative requirements – only concerned with health and safety.

Perceived High Costs/Financial Constraints and Limited Demand by Clients: The adoption of green building practices is the *perception of significantly higher upfront costs associated with green construction materials, technologies. Additionally,* the arduous process of accreditation and certification can cost up to R300,000 and take

up to three months and 3 years to finalise. The research also found that the testing laboratories and experts used to evaluate these technologies have become costly. There is limited funding schemes available to support the assessment for certification for upcoming and small enterprises. Furthermore, SMMEs face challenges in *financing these costs is* a major deterrent, especially for developers with limited budgets or those focused on short-term returns.

Poor Incorporation of Indigenous Knowledge Systems in BE Curricula: The curriculum in tertiary is prevalent teachings about modern carbon-based building materials, structures and standards. This creates a cycle of BE professionals who have less knowledge and interest about indigenous materials, structures and standards.

Sustainable Construction Skills Gaps in the BE: There is a shortage of skilled professionals, such as architects, engineers, and contractors, with expertise in green building design and construction. In addition, there is limited training among industry professionals means that even if developers are willing to adopt green practices, they may struggle to find the right talent or technical expertise to implement them. Furthermore, there *is a shortage of experts to provide the testing services* required for the evaluation of these technologies.

Recommendations

- The CBE must develop an advisory note and advise the Minister of PWI on the review of the Green Building Policy (2018) and the development of The Framework/Guidelines for the Incorporation of Indigenous Knowledge Systems in Built Environment.
- The CBE must foster collaboration with Agreement SA, infrastructure departments, relevant entities, local government and local organisations for the massification of awareness campaigns on testing, certification and accreditation of materials, structures and promote climate resistant housing and safety.
- The CBE must foster collaboration with DPWI, infrastructure departments, relevant entities at the local government and advocate for the expansion of incentives (expedited building permits, grants and local green building awards) to increase the uptake of green building practices.
- The CBE must consider a category that recognises green building pioneers in the BERA Awards (projects in the public sector/post three years).
- The CBE must facilitate cooperation with government departments, relevant entities and private sector stakeholders to advocate for the expansion of entrepreneur development programmes to support local manufacturers/innovation of green building materials and technology.

Areas of Future Research:
An empirical study on the implementation of the current legislation is recommended to overcome the lack of government enforcement.

A comparative study (country level) of practical incentives to drive the implementation of green building practices

Conclusion

The aim of the study is to examine the barriers and drivers of green building practices and assess good practices of sustainable green buildings practices in South Africa selected countries (Argentina, Australia, Israel, Nigeria and Spain). The study found that there is a plethora of issues impacting on the uptake of green building practices and they include: 1) Lack of communication between green building teams, 2) Perceived high costs/financial constraints and limited demand by clients, 3) poor Incorporation of Indigenous Knowledge Systems in built environment curricula, 4) and the shortage of skilled professionals, such as architects, engineers, and contractors, with expertise in green building design and construction.

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