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## A Theoretical Review of Ecological Economic Thinking amongst Professionals in the Built Environment

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### Abstract

The impact of society on the environment and socio-economic development has been considerably contributed by the consumption of natural resources and energy from the construction industry. The present paper evaluates the ecological and environmental awareness of the ecological economic (EE) concept amongst Built Environment professionals in the Gauteng Province of South Africa within the Built Environment. The research was conducted through the use of credible secondary based (literatures) sources. The literature revealed that ecological thinking is currently hindered by the following: non-immediacy of many ecological problems, slow and gradual ecological destruction and complex systems in place. Moreover, there are also demographic, external and internal reasons that influenced sustainability in the built environment which include: level of education and sector of employment amongst others. Also, the study revealed that the awareness level of EE amongst professionals is limited in the construction industry.

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### 1. Introduction

For many decades construction professionals, worldwide, have struggled with keeping to the stipulated construction project budgets, time frames and quality requirements of their projects. The occurrence, mainly, as a result of the inadequate or improper planning of the projects by the selected professional teams. The Built Environment has a high number of inhospitable construction activities due to large quantities of natural resources being consumed, which results in pollutants being formed, thus negatively impacting on the environment[1]. They further identified that majority of the construction professionals were not too keen about environmental conservation within the construction industry.

Ecological Economics (EE) was enkindled during the late 20<sup>th</sup> century due to the need for environmental protection and economic sustainability. It is the modern methodology of the study that addresses the relationship between ecosystems and economic disciplines in a broader spectrum. This relationship is the primary source of many ecological problems facing the South African construction industry today because of the traditional economic models that neglected the ecological aspect. Similarly, EE provides particular emphasis to natural capital and the maintaining of natural capital systems that encourages economic activities and promotes life through sustainable means [2]. The paper focuses on ecological thinking amongst professionals in the built environment followed by the presentation of the methodology and the findings from literatures before conclusions and recommendations for further studies are drawn.

## **2. Ecological thinking amongst construction professionals**

Ecological thinking is closely linked to environmental awareness. Environmental awareness is defined by Kollmuss and Aghteman [3] as the knowledge of how human behaviour impacts the surrounding environment. They further stated that environmental awareness is currently hindered by the following limitations:

### *2.1. Non-immediacy of many ecological problems*

Almost all environmental decays are not instantly tangible [3]. The assumption of nuclear radiation, the rapidly increasing greenhouse emissions in the atmosphere and the ozone hole cannot be perceived accurately. He further advocated that the impacts of pollution and degrading (e.g. the smelling of putrid odours of a water body due to eutrophication as a result of soil erosion) are directly tangible. Also, the dependency of secondary sources of information about environmental awareness and destruction removes professionals emotionally from the matter at hand and as a result lead to non-involvement.

### *2.2. Slow and gradual ecological destruction*

Professionals are well equipped with the assumptions relating to drastic and sudden changes to the environment, but fail to determine slow, incremental changes to the environment [3]. He continued to opine that in many respects, professionals behaved like the famous frog experiment; when placed in hot water, the frogs instantly sprang out but when placed in cool water that was slowly heated up, the frogs did not react and boiled to their death.

### *2.3. Complex systems*

Many ecological problems are highly sophisticated, yet professionals fail to interpret these systems and prefer to simplify them into a linear system that tends to omit other aspects of the system [3]. As a result, the simplification deprives professionals of understanding the environmental consequences of the system at a deeper level which creates further limitations to the understanding of environmental decay and compromises the emotional attachment and willingness to act amongst professional.

The construction industry constitutes of various indispensable professionals. During an investigation, it was discovered that architects, mechanical and electrical engineers influenced 'green' construction designs due to the materials and energy efficiency choice these professionals had amongst others. Moreover, they revealed that the fruition of green building is influenced by the participation of other industry players. It is argued that despite contractors being key players in green construction, as a result of them being part of the project delivery system and contract specifications, contractors still had limited involvement in the design process [4]. Furthermore, they noted that contractors' participation in 'green' construction through recycling and reusing of material waste, limitation of hazardous material being used and the use of efficient production systems was not enough [5]. The use of integrated

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