

UNIVERSITI TEKNOLOGI MARA

**HUMAN CAPACITY
DEVELOPMENT FRAMEWORK
FOR CIVIL ENGINEERS IN
ADVANCING SUSTAINABLE
CONSTRUCTION**

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ABSTRACT

Human Capacity Development (HCD) in sustainable construction refers to the process of enhancing and sustaining the capabilities of individuals, organizations, and institutions to achieve long-term development goals while aligning with the three pillars of sustainability: environmental, economic, and social. Although prior research has predominantly emphasized the environmental and economic dimensions due to their more tangible, quantifiable indicators, the human capacity dimension remains underexplored due to its inherently subjective nature. Various stakeholder perceptions and motivations regarding HCD across different phases of the sustainable construction project life cycle further compound this gap. Moreover, existing studies have disproportionately focused on the construction phase, often neglecting the critical contributions of HCD in other stages of the project. To address these limitations, this research presents a comprehensive review of the existing literature, critically evaluating academic studies on Human Capacity Development (HCD) in the context of sustainable construction. The analysis focuses on the conceptual understanding of HCD, exploring its three fundamental dimensions: Leadership, Knowledge, and Accountability. It also examines the research methods applied, the key themes discussed, and the progression of theoretical perspectives over time. The central outcome of this study is the formulation of a framework that connects specific HCD attributes to the distinct phases within the sustainable construction project life cycle. This framework aims to guide stakeholders in recognizing and leveraging key HCD attributes that influence organizational decision-making and capacity continuity. By offering a structured understanding of human capacity within the broader sustainability agenda, the study contributes to advancing more holistic and effective strategies in sustainable construction practice.

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CHAPTER 1

INTRODUCTION

1.1 Research Background

Human Capacity Development (HCD) can be explained as the ability of someone or an organization. The ability includes ability to make decisions and conduct tasks based on decisions made. According to Yuan, Chen, et al. (2018), HCD can be described in another way which HCD as a process of developing the ability. The process includes the things that need to be done and what elements are needed which act as catalysts in developing the ability. There are a few elements that have been widely mentioned such as knowledge, skill, behaviour and energy (Nnenna 2015). Every element has been studied which brought findings regarding the contribution of every element which can help in developing HCD (Konduri et al. 2017; Petersen and Kadefors 2016).

Sustainability and sustainable development are now more than 30 years since the 1972 UN Conference on Human Environment in Stockholm suggested that the post-war economic development model based on continuous growth in consumption and fuelled in part by the drive to ‘develop’ the so-called ‘developing countries’, may exceed certain basic environmental limits, and in the process upset the delicate balance of the ecosystem on which the human species depends for its survival (UNDP 2013). From this understanding grew the gradual formulation of a new model for development that: ‘meets the needs of the present without compromising the ability of future generations to meet their own needs’, as defined by the World Commission on Environment and Development (Chiang, Tao, and Wong 2015). In essence sustainable development is about managing the relationship between the needs of humans and their environment (biophysical and social) in such a way that critical environmental limits are not exceeded and modern ideals of social equity and basic human rights (including the ‘right to development’) are not obstructed. The purpose is to avoid environmental and/ or social meltdown, thus ‘sustaining’ the existence of not only modern society, but the future of the human species. The relationship between humans and their environment is determined by a number of factors (Jafari et al., 2019). The first is the interpretation of ‘quality of life’ held by a particular society. This is the main