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Challenges in aligning the architecture profession in Indonesia for climate change and sustainability

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Abstract

Increased energy use and attendant green house emissions are associated with increased urbanization. At the same time, climate change poses challenges for the built environment where there are tensions between rapid city building and low carbon growth. This paper develops and tests a method for the institutional development of built environment professions in emerging economies that are dealing with a range of issues, including rapid urbanization, and rapid building and construction. The built environment professions comprise a range of disciplines including architecture. Using the architecture profession as a case study, a 'deep-dive' is taken to understanding the role of architects as a central player in the move towards low carbon futures in Indonesia. The architecture profession and practitioners are analysed from the perspectives of curriculum development and governance in universities, private industry, peak industry bodies and other bodies driving low carbon growth such as green building councils. While the paper focuses on one discipline comprising the built environment profession, in reality, all disciplines comprising the built environment professions need to be considered to understand how they interact within the profession and between each other so as to maximize outcomes for low carbon approaches. An institutional approach is helpful in guiding the built professions in other transitioning economies. Generally, transitions to low carbon futures in academia have taken the approach of curriculum development in the various disciplines. While this approach is laudable, it is not enough. It is clear that curriculum development alone is insufficient to bring about broad scale and lasting changes to low carbon futures. Educational changes in universities represent only one institutional approach. In reality however, educational institutions need to work in tandem with several other institutional agencies to drive, complement and support changes for low carbon futures; including government, industry practitioners and peak industry bodies.

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1. Background

Current growth of greenhouse gas emissions in the buildings and construction sector needs to be arrested. This is particularly the case in developing countries where buildings are likely to consume half of the available raw materials and account for up to a third of final energy consumption[1]. The recent (2016) OECD report [2] focuses on the Association of South East Asian Nations (ASEAN) region due to the prospects that the region unfolds, “...the region should tap into its considerable potential in renewable energy to meet growing demand” (p.25). There are untapped opportunities to harness this in the built environment sector.

Natural resources of SE Asia need to be properly managed to ensure long term survival of key economic activities such as agriculture and forestry. As the region is undergoing rapid urbanisation, investing in low carbon infrastructure will assist in shaping cities that are energy efficient, pollution free and climate resilient. By adopting sustainable policy and economic models, SE Asia has an untapped opportunity to become a hub for green investment. Success in a green economic model may also bring with it new jobs and investment for the region. It is anticipated that by 2030, there would be more than 24 million jobs worldwide in the renewables arena[3].

It has been well documented that growth in Asia will continue and result in increased energy use and carbon dioxide emissions [4]. Key highlights are that:

- Asian GDP will expand from 27 per-cent in 2004 to 34 per-cent in 2030, the highest compared to other blocks including Europe and North America.
- Asian population is forecast to increase by half the world population, with India and China being the largest by 2030.
- Primary energy demand and attendant CO₂ emissions are expected to rise by 9 per-cent in 2030 under a business as usual scenario.
- Primary energy demand in Asia is expected to grow to 6.2 billion tonnes of energy equivalent by 2030, a growth of 200 per-cent from 3.1 billion tonnes of energy equivalent in 2004.

Within Asian cities, it is anticipated that:

- Total energy consumption through building use is expected to rise 65 per-cent to 1150 million tonnes of energy equivalent by 2030[5].
- Building energy consumption is predicted to comprise 18.5 per-cent of total energy consumption in 2030.

An important note to consider is that in the transition to new economies cleaner jobs will require managing sustainability transitions well, including retraining where required. It is in this context that this paper is situated. The paper focuses on the architecture profession in Indonesia and the preparedness of students and graduates to meet the current and future demands on the built environment from a climate change and sustainability perspective.

It builds on previous work undertaken by the author [6] [7] [8]. The project *Integrating sustainability into engineering and built environment curriculum* (funded by United Nations University’s (UNU) Promotion of Sustainability in Post Graduate Education and Research (ProSPER.Net) from 2012-14: Phase 1) found, amongst a range of other outcomes, that university academics sought assistance in extending curriculum change beyond single courses to whole professional programs. They sought assistance to change programs so that the capacity of built environment professionals to design and build low carbon cities was institutionalised. This institutional focus suggests that building-on from the first phase of the project, the focus currently should be on developing a means for understanding built environment professions, in particular engineers, architects and, construction and project

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