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A Review on Green Building in Vietnam

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Abstract

Following market reforms in 1986 Vietnam has transformed from a poor closed economy to a low middle income economy. Like other developing countries, economic growth has placed significant pressure on both infrastructure and environment, particularly the pressure of increasing housing demand, energy consumption, and waste and pollution management. In response to the development challenges and the green movement globally, the government has initiated actions to promote green building to promote more sustainable development. However, green building adoption in Vietnam is still criticised as being slow and lacking governmental support. This paper proposes that promoting green building could solve three inter-connected challenges hindering sustainable development, and provides a comparative review of progress.

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1. Introduction

Vietnam is a developing country located in South East Asia. The country has a total mainland of 330,966.9km², which stretches from North to South along the Gulf of Tonkin with 3,260km of coastline, and consists of two typical topographies, “small but very productive areas, such as the Mekong- and Red River deltas and large areas of less productive, mountainous terrain” [1-3].

The one-party Communist state went through a political and economic reform in 1986 [4], achieved a fast and remarkable development, and became one of the success stories in the world in terms of both economic growth and poverty reduction [5, 6]. Since then, the country has transformed from a poor closed economy to a low middle income economy with 1755 US dollars per capita in 2012 [The World Bank 2014, as cited in 6], and maintained a

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growth rate at approximately 7.3% per year between 1995 and 2008 [7].

However, the economic growth has significantly increased pressure on both the infrastructure and environment, particularly pressure of increasing demand for buildings, energy consumption, and waste and pollution management. The green movement in the world has placed green building in a high priority as it is able to meet the building demand while mitigating the negative impacts of construction industry. Following the movement to deal with its own development problems, Vietnam necessitates green building in its pathway to sustainability.

2. Inter-connected challenges Vietnam is facing on its pathway of development

2.1. Overgrowing population and urbanisation leading to increasing demand for buildings

Since the 1986 reforms, urbanisation has accelerated and its population begun to grow, corresponding with the economic development. Like other countries in Asia, Latin America and Africa, the country has also experienced over-urbanisation concerning the fast pace and scale of urbanisation without correspondingly benefits the urban production [8, 9]. In both theory and statistical data, this phenomenon is directly related to the proportion of population living in urban areas [10, 11]. The current population of Vietnam is 90.7 million and it is predicted to grow up to 108.7 million in 2049 with 58.8% of the population residing in urban areas [3, 12]. As there is a two-sided link between population and housing [13], this growth in population and over-urbanisation will create a huge demand on buildings in the coming years. Construction statistical data showed that each year, the average of housing floor areas constructed increased by 115.9% from 2005 to 2013, presented in Fig. 1. [14]. In 2014, according to Ministry of Construction, 92 million m² housing floor was built, increasing the average floor per people to 20.6m², in which, the average one in urban areas is 23m²/pp and in rural areas is 19.5m²/pp. Up to 2014, the total area of housing floor constructed is approximately 1,873.65 million m².

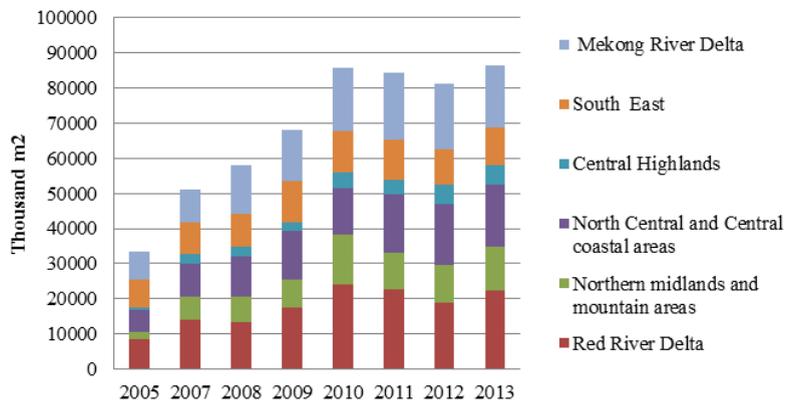


Fig. 1. Areas of housing floor were constructed from 2005 to 2013 [adapted from 14]

2.2. Predicted insecurity of energy supply

High growth rate of the economy, industrialisation, over-urbanisation and increasing population are believed to be the drivers of energy demand. Total demand increased by 9.3 per cent annually between the years 1990 – 2007; and it is estimated to increase by 5.5 per cent annually up to the year 2025. Currently, energy production relies primarily on fossil fuel, including coal, oil, gas, followed by hydro and other renewable energy [15]. The reliance on fossil fuel has made the energy system of Vietnam carbonised even faster than the world average, China's and newly industrialised countries' (Fig. 2.a).

However, reserve of oil and gas will not be enough for energy production beyond 25 year time-horizon, according to Do et.al [16]. Additionally, due to limited reserve generation capacity and rain-fall dependency of hydro, the national electricity system has experienced power shortages relatively frequently in the dry season. In a long term, studies since 2011 have pointed out that Vietnam will become a net importer of energy in a decade when

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