

## Chapter 4.27

# Sustainable Urban Infrastructure Development in South East Asia: Evidence from Hong Kong, Kuala Lumpur and Singapore

**Suharto Teriman**

*Queensland University of Technology, Australia*

**Tan Yigitcanlar**

*Queensland University of Technology, Australia*

**Severine Mayere**

*Queensland University of Technology, Australia*

### ABSTRACT

Many South East Asian cities have experienced substantial physical, economic and social transformations during the past several decades. The rapid pace of globalization and economic restructuring has resulted in these cities receiving the full impact of urbanization pressures. In an attempt to ease these pressures, cities such as Singapore, Hong Kong and Kuala Lumpur have advocated growth management approaches focusing especially on urban infrastructure sustainability. These approaches aim to achieve triple bottom line sustainability by balancing economic and social development, and environmental protection. This chapter evaluates three Asia-Pacific city

cases, Singapore, Hong Kong and Kuala Lumpur, and assesses their experiences in managing their urban forms and infrastructure whilst promoting sustainable patterns of urban development.

### INTRODUCTION

The state of health of urban areas and city-regions depends to a large extent on the availability of, and access to, urban infrastructures which support the daily requirements of urban populations to move around and attend to their routines comfortably. These urban infrastructures are the heart and soul of city-regions; their provision determines how city-regions are able to sustain themselves and their ever growing population. The development of sound and adequate urban

DOI: 10.4018/978-1-60960-472-1.ch427

infrastructures is of paramount importance to achieve urban sustainability (Choguill, 1996). Inadequate, substandard and unsustainable provision of these infrastructures will have detrimental effects to the sustainability equilibrium. During the past decades, adequate provision of urban infrastructures has become an increasingly important agenda in public discourse. It is often argued that whilst urbanization creates wealth for the nation and increases income and living standards for urban populations, it also results in tremendous strain on cities' infrastructure and contributes to the problems associated with urban sprawl. In consideration of rapidly growing urbanization, particularly in city-regions of developing countries, urban managers and policy makers have become concerned with the compounding effects of growing urbanization on the carrying capacity of urban infrastructures.

Urbanization and rapid population growth are two major, inevitable consequences of any city-region focusing on economic development such as in South East Asia (Marcotullio, 2004; Ooi, 2005). The South and South East Asian regions are home to one-third of the developing world's urban population, with a similar proportion of this population residing in urban areas. The rapidity of population growth and expansion of cities has notable implications for the management of urban infrastructure provision and service needs of its inhabitants. Even though these phenomena are common in any urbanized areas across the globe, they are more obvious in highly dense Asian cities such as Hong Kong, Seoul, Tokyo, Manila, Bangkok and Kuala Lumpur. Most of these cities have a compact form of urbanization denoted by vertical patterns of development and served by high frequency public transit and other high capacity urban infrastructures. With increasing urbanization rates, however, these city regions are facing increasing pressures to extend these infrastructures and services. Planners and urban managers, therefore, face the daunting task to seek a balance between facilitating urbanization

progress to accommodate the growing population and economic activities on the one hand, and to foster sustainable forms of infrastructure development on the other. Furthermore, this needs to be achieved with the goal of triple bottom line sustainability in mind.

Broadly, infrastructures are structural elements that allow goods and services to move between different people and places. They can be divided into two broad categories: physical and economic infrastructure which includes roads, railways, airports, ports, energy systems, telecommunications, water supply, drainage and sewerage systems; and social infrastructure which includes housing, health and education facilities (Choguill, 1996; Hardwicke, 2008). The World Bank refers to this type of infrastructures as 'the long-lived engineered structures, equipment and facilities, and the services they provide which are used in economic productions and by households' (World Bank, 1994, p.13). In this regard, efficient infrastructure systems facilitate the delivery of goods, services and information, and support the physical, economic and social growth of a nation. The discussion in this chapter only focuses on the development of physical and economic infrastructure, which is also referred to as 'technical infrastructure' (Timmeren et al., 2004) and large technical systems (LTS) (Coutard et al., 2005).

## **Urban Infrastructure and Compact City**

Technological networks and other LTS have become key elements in modern life (Lorrain, 2005) and increasingly influence the urban built form. The expansion of modern cities is to a large extent determined by the distribution network of physical urban infrastructure for the purposes of transportation, information and communication, energy, water supply, and wastewater collection. In cities such as Tokyo, Hong Kong, Shanghai and Singapore, high vertical density demands a higher degree of reliance on the connectivity of these

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