HONG KONG: A REVIEW OF DENSITY, URBAN FORM AND SUSTAINABLE DEVELOPMENT

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ABSTRACT

In Hong Kong, high-rise High-density urban form is the result of land scarcity and massive in-migration (Figure 1). However, the creation of its unique urban form has rarely been underpinned by sustainable development criteria, nor, arguably, urban design criteria. Increasingly, the quality of life that it offers is becoming an important issue. Density is thus a critical issue for Hong Kong with urban forms at both extremes of the density spectrum. This paper presents a case study evidence in order to highlight density related issues and policies. The paper adopted a methodology, which focuses on theoretical underpinning of the available data mainly empirical in nature.

1- INTRODUCTION

Most of the problems of overcrowding and environment are not just the size of the population, but rather the distribution of the population. Increase in land price increases density to optimise development. The underlying problem is the land scarcity, land demand and the low supply of land. Density itself is an objective and quantitative term.

Figure 1: Hong Kong skyline-a product of high-density compact city.
Source: Author, 2002

However, it is complicated concept mainly due to two reasons:

i) The complexity of the density-related issues: The density-related issues include transportation, city size, decay and regeneration of city centres, site and building design, pattern of landuse, policies of planning and zoning, sustainable development, environment-related policies, urban intensification, urban sprawl, economic issues, and quality of life.
ii) The complexity of the concept of 'density' also stems from the different definitions used in different countries and different disciplines.

Density can be defined in different ways: density; perceived density, and overcrowding (Alexander,1993). Density is a term representing the relationship between a physical area and the number of inhabitants. It is expressed as a ratio of population size or number of dwelling units (the numerator) to unit of area (the denominator). The concept of perceived density and crowding are based on the principle that different people can perceive the same density differently in different cultures and different countries.

Perceived density is defined as an individual's perception and estimate of the number of people present in a given area, the space available, and the organisation of that space. Cues in the environment that represent people and their activities play critical roles in this perception of density.

Crowding is a psychological state, the outcome of a subjective and experiential process that includes an evaluation of the existing physical conditions (Baum and Paulus, 1987; Altman, 1975; Stokols, 1972). It is also a subjective experience of an individual that associated with the negative aspects of density (Evans and Cohen, 1987; Sundstrom, 1978).

2- HONG KONG HIGH-DENSITY COMACT CITY FORM

The high-density urban environment of Hong Kong is characterised by mixed land uses, population and housing, an efficient mass transit system and cheap public transport, and easy access to most facilities. Smaller family size in Hong Kong demands for smaller housing unit, thus, creating more densely residential building in urban and suburban areas.

The compact urban form of Hong Kong originated from its topography and shortage of land for development (Figure 2). Also, the development has been affected by the high economic and real-estate gains through limited land availability. Hong Kong is a product of accidental circumstances as well as intentional interventions that have collectively produced an economically and environmentally viable urban model (Mahtab-uz-zaman et al, 2000).

Hong Kong is one of the most densely populated cities around the world, with an overall population density of 6,160 persons/km^2, whereas Kwung Tong has density of about 54,030 persons/km^2 with the highest density of 116,000 persons/km^2 in Mongkok (Gilchriest, 1994).

High density of Hong Kong is influenced by issues, such as, topographical constraints; land sales and income revenue; reclamation-based urban development strategy, residential density planning policy, and urban renewal favouring urban intensification.

Hong Kong has a land area of 1096 km^2 out of which only 17% of the land area is intensively developed (Figure 3). To get more land for development near the existing settlement areas. Large-scale reclamation is taking place, producing about 1,053 hectares of land.

Hong Kong government plays the role of the biggest landlord by controlling the land distribution and revenue collections. The government has given priority to 'economic space' rather than 'life space' (Friedman, 1988) and this has become the main proponent of land-use planning in Hong Kong (Ng and Cook, 1996).

Reclamation has been used as a solution to accommodate urban growth and to alleviate the congested living environments. Reclamation is mainly concentrated along Victoria Harbour, as it was an important frontier to Mainland China; an economic gateway to the outside world. By 1924,

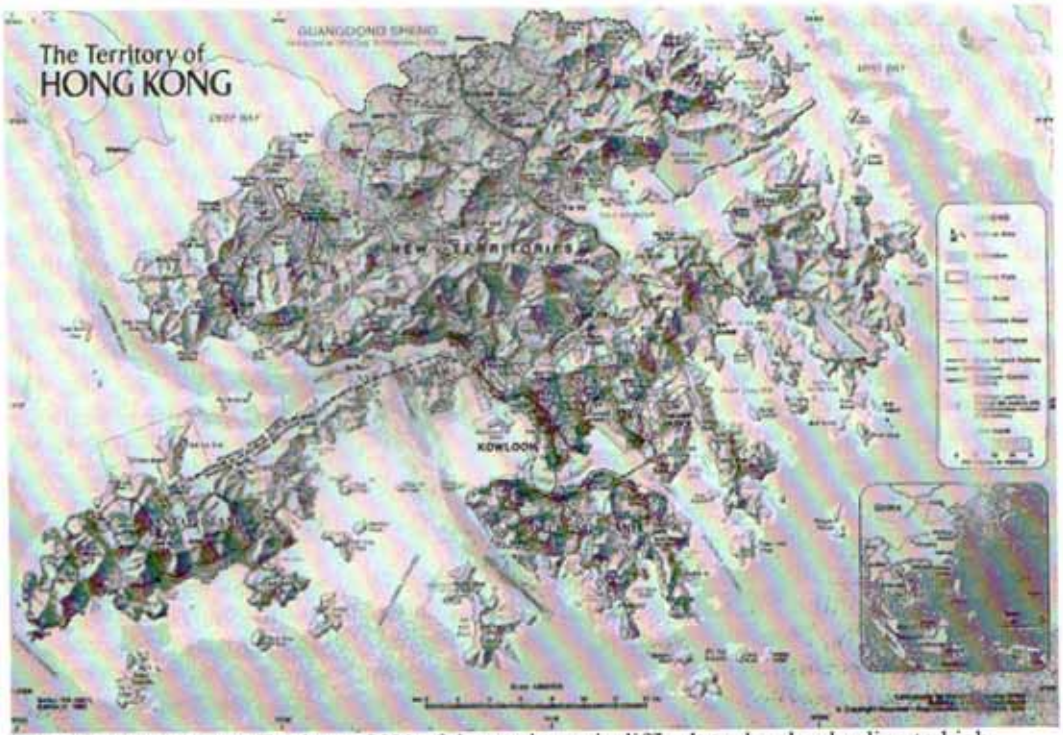

Figure 2: Hong Kong Territory: 80% of the total area is difficult to develop leading to high concentration of urban development (Gilchriest, 1994).
Source: Buildings and Lands Department, Hong Kong Government

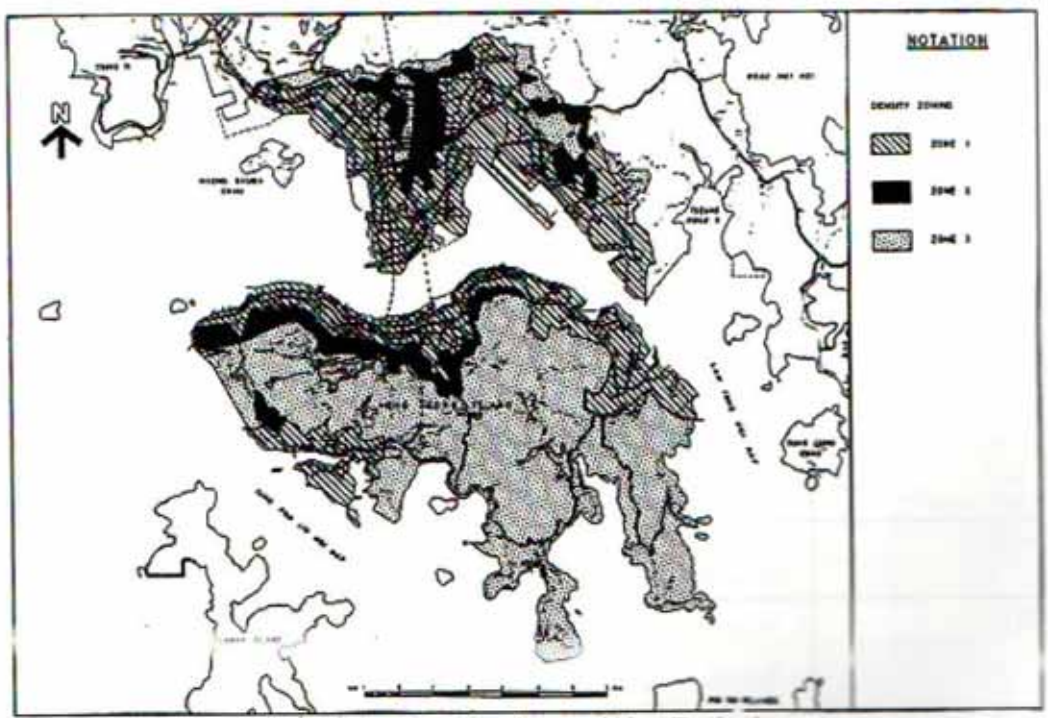

Figure 3: Density Zoning in Hong Kong, Kowloon and New Territories.
Source: Planning Department, Hong Kong Government

a total of 500 hectares of land had been reclaimed (Ng and Cook, 1996). Currently, the total reclaimed land for various new towns exceeds 3,000 hectares (Territorial Development Department, 1994).

Before the Second World War, Hong Kong's buildings were governed by the Building Ordinance Regulations that limited height to five storeys. In 1963, the concept of density zoning was introduced in Hong Kong (Planning Department, 1996). Table 1 shows the density zoning and the plot ratio of different areas in Hong Kong.

It is arguable that a compact urban form may cause an intermix of incompatible land uses and conditions of overcrowding and congestion (Figure 4). In the case of Hong Kong, high-density living environment has not generated many social conflicts due to the high tolerance of the Chinese to congested conditions (Pun, 1994). Therefore, it is unknown whether the indoor living is in advantageous conditions as much as the city provides. Moreover, the compact urban form of Hong Kong has manifold advantages: the economic use of land through vertical space utilisation; the high accessibility enjoyed by residents and short journeys-to-work; few roads and commercially viable public transport (Tong and Wong, 1997). High-density urban form is exactly opposite the urban sprawl and Hong Kong offers opportunity to restrict development to the outskirts of the islands of the New Territories.

Hong Kong's inherent compact city form supports the current belief in the need to reduce physical separation of activities. Therefore, overlaying landuse is most favourable for urban functions. Its high-density mixed-use urban form favours public transport but not the indoor living conditions of the inhabitants. Some of the lowest per-capita spaces are available in Hong Kong.

Some of the sustainable transportation systems appear as a result of compact living patterns. Such as, pedestrian linkages from business districts to the residential areas and short pedestrian walk ways within the business districts. Also the mass transit railway serves as a better, pollution free and efficient network as high-density development produces opportunity. Central to all is the need to optimise energy use.

Hong Kong has never been under the scrutiny of sustainable development criteria. In fact, sustainable development assessment SUSDEV21 came about very late in 1999. All the on going developments were acceptable in the sense that the development set some priority for transportation, less land encroachment, less energy use for travelling.

Desnity Zoning	Type of Area	Location	Maximum Domestic Plot Ratio
R1	(1) Existing Development Area:	Hong Kong Island	8/9/10
	i. Well served by high capacity public transport systems	Kowloon & New Kowloon	6/7.5
	ii. often incorporated commercial space on the lower one to three floors	Tsuen Wan, Kwai Chung & Tsing Yi	8
	(2) New Development Area and Comprehensive Development Area		6.5
R2	i. Less well served by high capacity public transport systems		5
R3	i. With very limited public transport capacity ii. Subject to environmental constraints		3

Table 1: Density Zoning and Plot Ratio
Source: Planning Department

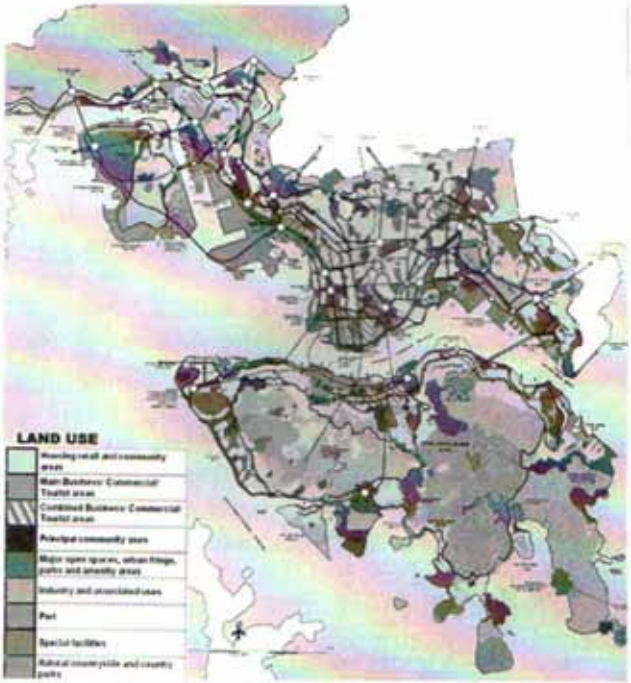

Figure 4: Hong Kong Land use pattern.
Source: Pryor, 1996

the urban form of Hong Kong has manifold advantages: the economic use of land through ertical space utilization; the high accessibility enjoyed by residents and short journeys-to-work; few roads and commercially viable public transport (Tong and Wong, 1997). It is therefore a highly convenient and efficient city, since the locations of activities and dwellings are close to each other both horizontally and vertically. This city produces a unique urban form, which is known to be a city having vertical land use pattern.

High-density vertical land use development in Hong Kong allows economies of scale for utilities and transport infrastructure. As more people are accommodated through it, the government's per capita expenditure for infrastructure provision is proportionately lower. (Mahtab-uz-Zaman, et. al. 2000)

Although, it is undeniably true that high-rise buildings trap some of the air pollutants produced by the vehicles and pollutants remain at the street level, the rail systems are comparatively environmentally friendly that ha less pollutants. The high-density compact form favors the use of rail systems because high-density development ensures passenger flow. This results in low dependencies on private vehicles because urban form influences transport choices.

Therefore, it is justifiably true to say that compact urban form, if designed carefully, and lead to a sustainable urban development pattern where all the negative components of unsustainable environment are likely to the lower than a low density dispersed settlement (Figure 5).

Hong Kong demonstrates a most sustainable transport system, both in terms of cost-effective and efficiency, partly due to the compact urban form. The current transport system serves around 11 million passengers boarding daily (Transport Department, 1999) and about 90% of the population in Hong Kong depend on public transport.

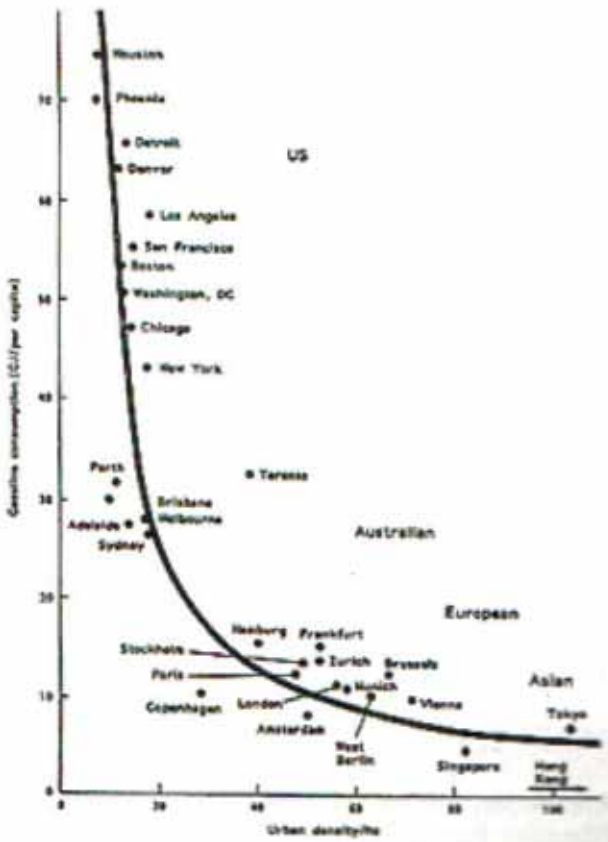

Figure 5: Urban density and gasoline consumption in 31 great cities, Hong Kong being the lowest gasoline consumer while it has the highest density.
Source: Newman, 1989

Pedestrianisation, on the other hand, can help reduce the number of short motorized trips and the pollutants emissions (Figure 5). Hong Kong Cntrl Business Districts and the shopping areas are designed in such concentration as such people can comfortably walk around and do their daily business and shopping. High-density urban forms help fulfil the prerequisite of the provision of pedestrian links, since compact developments rduce the distance between different activities. (Mahtab-uz-Zaman et al, 2000)

In terms of quality of life, high-rise high-density housing do not offer, in average, a comfortable space standard due to less space allocation. Urban design is a newly applied strategy for urban development in Hong Kong.

Development control in Hong Kong consists of mainly three separate tiers, including planning, land lease and building controls. Land use-planning control is exercised by means of zonings embodied in the statutory town plans. These zones set out the range of permissible uses on the site and thus have a direct impact on the redevelopment potential of private land lots. All land in Hong Kong is leasehold, and development control can be achieved through the land lease documents. Every site can be subject to a different set of requirements on the lease period, permitted land use, building form, development intensity and other appropriate development restrictions. (Tang and Tang, 1999).

Residential development R(A) is the land use zoning intended for high-density, high-rise housing development in urban sites. This zoning always permits non-domestic uses on lowest three floors of a building. Under the building (Planning) Regulations of the building Ordinance, these retail floors can have 100% site coverage. As a result, it allows developers to provide valuable street-and-podium-levels shopping space on the urban areas.

High-density compact urban form in Hong Kong reduces journey-to-work if the locations of employment and housing are closely situated. In this respect, cities cannot be considered sustainable if they are automobile dependent (Newman and Kenworthy, 2000)

According to the Hong Kong Planning Department's Residential Density Guidelines, density zoning is decided on the basis of transportation nodes. Higher density residential developments should be located near rail station and major public transport interchanges wherever possible. This is how the residential development are concentrated around transport interchanges. Therefore, residential urban form is developed according to the transportation planning.

The density of development in public and private residential areas in Hong Kong is guided by way of plot ratio. Plot ratio is defined as the ratio between the gross floor area (GFA as defined under B(P)R) of a building and the area of the site on which it is erected (the Net Site Area).

CONCLUSION

In terms of high-density high-rise built forms, Hong Kong demonstrates a most sustainable urban development scheme. Although the living units are small in average, outdoor landuses have potentials to support majority of the inhabitants with the commercial and shopping developments that are in close proximity to their residential units. The high-density urban development in Hong Kong brings a mix of landuses to make the whole city coherent and lively with less social entropy■

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ACKNOWLEDGEMENT

Authors of this paper would like to acknowledge the University Grants Committee of Hong Kong for the support (UGC Research No.: 10203515/06080/01100/323/01).