

By Yang Baojun

PLANNING STRATEGIES FOR LIVEABLE HIGH-DENSITY CITIES



This article is a translated extract from Yang Baojun's original essay in Chinese, which appears in full on pages 76–79.

People the world over view low-density urban environments as natural, beautiful and, therefore, liveable. In contrast, high-density cities are seen as unliveable due to congestion and noise. In reality, this is not the case. Liveability is a comprehensive topic with multiple facts, and high urban density has both positive and negative effects on liveability.

On the positive side, a higher population density can make economic operations more efficient, as this supports greater commercial opportunities and creates ample jobs. High-density cities also offer residents a variety of lifestyles and opportunities for interaction.

The negative impacts of urban density can include lower environmental quality and traffic congestion. Yet, a high-density city can avoid these adverse effects and achieve a higher quality of life through technical innovation, scientific planning and management. The successes of cities like Singapore, Hong Kong and Tokyo can be used as reference points for high-density development. There are two aspects to consider with respect to liveability in a high-density city: strategic planning concepts and planning management systems.

Strategic Planning Concepts

Blending Green Areas with Compact Cities

To use land efficiently, the optimal use of good land and minimal use of scrubland is essential. There are significant differences in land-use potential in terms of location, resource endowments and development stages. Homogeneous land-use weakens the capacity to use land intensively. It also reduces the ability to make good use of natural environments that are unsuitable for urban development. From economic, social and environmental perspectives, the optimal use of good land is a strategy that will maximise benefits.

To implement this strategy, cities must first protect green open spaces by exercising control over construction on farmland and ecological areas. They must restore the ecology, improve leisure options in these places, and sustain a macro-ecological environment on which high-density cities depend. Then, they must build compact and efficient cities. Preparation for building these includes installing public facilities and infrastructure, investing in high-density projects, and instituting efficient construction management in order to economise our land resources.

To prevent disorderly growth, a long-range spatial structure of the city should, firstly, be established.

Within this structure, both built-up and undeveloped areas must be designated, and an urban growth boundary defined. A legally binding planning tool must also be employed to exercise control over the growth of the city in free market conditions.

Case Study: Hong Kong, noted for its high density development, is a leading example when it comes to blending green areas with compact cities. While incorporating high-density development to house its population, the city gives strict protection to non-urban areas. Today, land use for urban development accounts for less than 20% of the city's total area, with the remaining spaces reserved as forestland and farmland. As a result, the city's natural environment enjoys a high-level of government-led protection.

This decision also means the city's operations are very efficient, as most urban areas are inter-linked. This is exemplified by Hong Kong's mass transit system, which has - for some time - been one of the few profitable systems in the world.

Combining a Regional Ecological Matrix and Urban Ecological Patches

According to landscape ecology theory, a natural ecosystem consisting of a complete 'patch-corridor-matrix' structure should be set up. This system involves the interspersing of high-density city buildings with public open spaces, hills and waterways. The purpose of this is to safeguard green open areas that are used for ecological and recreational purposes.

Case Study: Singapore is a leading example of interspersing urban infrastructure with public open spaces. The city allocates more land than Hong Kong to urban development, yet there is a clear distinction between built-up urban areas and non-developed areas. Adjoining nature reserves provide urban areas with an effective ecological service and leisure spaces. This prevents the environment in Singapore from rapid deterioration due to contiguous urban development. Singapore's nickname - 'the garden city' - comes from its built-up areas enjoying a near-equal environmental quality. This is why the city-state's urban environment is admired by its population.

Controlling the Urban Cluster Scale

Clusters are municipal areas that provide basic public services and are integral components of urban structure. A reasonable cluster scale provides for basic urban services and gives a rational structure for urban planning. Balanced functions within clusters contribute to a lower transport demand across clusters.

Controlling a cluster-scale prevents contiguous development of the city. Ecological corridors between clusters improve urban microclimates and produce healthy, natural, environments for urban development.

When urban expansion reaches a certain stage, it moves from an agglomeration economy - an economy that benefits from multiple businesses being located next to one other - to a diseconomy that lacks this trait. At this point, any expansion of the city should cease, and efforts should be diverted to building new towns and districts.

“
Choosing a sound strategy that balances residential areas with parks and offices, a good public transport system, and the sustainable use of energy, water and waste are all key to the survival of today's and tomorrow's cities.
 ”



In doing this, attention should be paid to ensure a reasonable cluster-scale. A small scale will not enjoy agglomeration effects, and will lead to public infrastructure diseconomies and high operating costs.

Case Study: In order to relieve overcrowding in London and accommodate high migration to the southeast of England, the UK government sought to develop a generation of new towns in the region. Among them, was Milton Keynes, which successfully balanced providing ample jobs and adequate housing with stable population growth.

Construction began in 1970 and by 1981 the city had grown from 35,000 to 120,000. During this period, Milton Keynes maintained its moderate-density and a reasonable cluster scale, and managed to sustain its public services, business prosperity, and high environmental quality.

Covering 89 square kilometres, Milton Keynes' urban design is divided into many squares in a grid pattern, with ecological greenways carved into clusters of suitable scale. The town has a central business district that - like most urban centres - combines spaces for public entertainment and recreation. Surrounding the new town are dense forests and more than 10 manmade lakes.

Integrating a Mass Rapid Transit and Slow-moving Traffic System

A high volume of human and goods movement enables the development of a mass rapid transport system. This turns scattered traffic into efficient community traffic by making good use of urban spatial resources, lowering the per capita consumption of resources, and reducing pollution. This clearly demonstrates how a high-density city is superior to a low-density one.

- 1 pg 50-51: Hong Kong has embraced high-density development and yet preserves a significant amount of green spaces. Photo credit: © 2012 Thinkstock
- 2 pg 52: In Hong Kong, land use for urban development is kept compact, with the remaining spaces reserved as forestland and farmland. Photo credit: © 2012 Thinkstock
- 3 pg 53: Singapore's densely built up areas are interspersed with public green spaces, creating a pleasant urban environment. Photo by the Centre for Liveable Cities.
- 4 pg 54, above: Map of Milton Keynes town. Image courtesy of Yang Baojun.
- 5 pg 54, below: Skyline of Tama New Town. Photo courtesy of Yang Baojun.



Public transport-led urban development emphasises the combination of transport with land use and strengthens integration among urban systems. It is a higher form of urban spatial resource planning and is more efficient in terms of land use.

A mass rail transport system can sustain a city's extensive and comprehensive development, its highly concentrated population and its economic activities with rail transit stations at the core. A common practice is to integrate these stations, public activities and service centres, with park and ride facilities and public transport interchanges.

The mass rail transport system is intended to tackle difficulties faced by people travelling long distances within a city, while a slow moving traffic system is meant for people travelling short distances. The latter is complementary to the former, providing a way of travelling the last kilometre from a rail station to the workplace or home. In a conventional system for slow-moving traffic, there are lanes on either side of the motorway. It is, therefore, still vehicle-oriented. For a system to be fully people-oriented, safe and convenient, it must meet certain criteria. It should be built independently of motorways, be capable of meeting the needs of commuters, fulfil recreational functions, and ensure commuters enjoy a stable journey.

Case Study: Tokyo is densely populated. The city faced the problem of overcrowding after Japan recovered from World War II and experienced rapid development in the 1960s. It was against this backdrop that the construction of Tama New Town began in 1965. Of all the new towns in the greater Tokyo region, Tama is

the most successful. It stretches 14 kilometres from east to west and between one and three kilometres from north to south. Its planned population today stands at approximately 340,000 and is divided into 21 neighbourhoods with 3,000 to 5,000 families in each.

There are two primary schools and one secondary school in each neighbourhood. Several neighbourhoods combine to form a district, and at the centre of each district is a rail rapid transit station, linking Tokyo's city centre and other towns via the Tokyo railway networks. The rail transit station can be reached from every neighbourhood or residential unit on foot, by bicycle, public transport or car. The area around Tama central station has been developed to act as the centre for the new town, complete with commercial, business and recreational facilities.

Encouraging a Mixed Use of Urban Land

An industrial-age city emphasises functional zoning, with industrial land, residential land and land for common facilities clearly demarcated. The purpose of this was to separate any industrial land that created greater air, water and noise pollution, from residential areas in order to preserve a pleasant living environment. However, in a post-industrial society, most people work in places that no longer cause pollution. This creates novel conditions for the mixed use of urban land.

Mixed-use developments help bring about a balance between work, housing and recreation within the limits of non-motorised commutes. This balance sees a return to the traditional urban spatial model and lifestyle with the following notable advantages: making tasks convenient for people in their daily life; relieving traffic pressures; reducing energy consumption; contributing to a healthy and dynamic urban community; and the promotion of a prosperous city.

In the course of building new towns and districts, similar attention must be paid to striking a balance between work, housing and recreation. This avoids the growth of a 'dead city' where there are too many jobs and too few residents, or the emergence of a 'sleeping city' where there are too many people and too few jobs.

Developing Efficient Water, Energy and Waste Systems Use

Harvesting a city's natural resources and the collection, disposal and recycling of its waste – including wastewater,

refuse and waste gas – continues to be a major challenge worldwide. Maintaining a stringent and high standard of execution in all these areas requires state-of-the-art technology and robust management systems.

For the utilisation of resources within a city, urban planners and developers should adopt the '3R' principle: reduce, reuse and recycle. Cities must reduce the import of outside resources and develop recycling technology that turns waste into a resource, which in turn, can be used in the operation of city systems.

Establishing a Disaster Prevention System

Natural and man-made disasters come in many forms. It is critical, therefore, that a sound and comprehensive urban-security system is set up within a city. This system must conform to the distinguishing features of the city, maximise disaster prevention and minimise losses from disasters. An emphasis should be placed on cooperation and coordination among functional systems, including disaster warning, transport, communications, storage of emergency supplies, and evacuation.

The disaster prevention system is an emergency backup plan that uses various resources operating under normal conditions. To increase the efficiency of resource use, as well as improve safeguards for facilities, disaster prevention facilities should share the use of other urban facilities. For example, a city might build a park and an evacuation area together so that they share transport and communication facilities.

Planning Management Systems

Legal System

A robust legal framework is a prerequisite in all areas of planning and implementation. Such a system should safeguard the rights of all, mobilise social resources, and connect diverse information. Effective supervision is needed during implementation, and irregularities must be restrained.

Public Participation

Key to ensuring fair and impartial planning, public participation throughout the entire process of planning and

implementing urban solutions should be promoted as much as possible. This safeguards the legal rights of the public and other interested parties, prevents corruption and avoids mistakes in decision making.

Stringent yet Dynamic Planning

Scientific planning and strict adherence requires stringent mechanisms to draft, approve, evaluate and maintain plans. In the wake of changing conditions, plans will need to be constantly updated for them to make more sense as time progresses. Such plans will continue to improve resource efficiency and become a blueprint for a city to develop effectively.

Grassroots Organisations

Nurturing community ability and an advanced community culture requires attention. When the natural bottom-up organisational ability of a city and its conscious top-down planning are coordinated, a city is better able to advance itself.

Conclusion

More than half of today's global population lives in urban areas. With this figure growing at an unprecedented rate, planning for tomorrow's cities has become a foremost priority for nations worldwide.

Despite the common perception of high-density cities being over-congested, under-resourced and polluted, developed cities in Asia – and select cities from Europe and the US – have proved that high-density urban areas can have a positive impact on liveability. Choosing a sound strategy that balances residential areas with parks and offices, a good public transport system, and the sustainable use of energy, water and waste are all key to the survival of today's and tomorrow's cities.

“
The negative impacts of urban density can include lower environmental quality and traffic congestion. Yet, a high-density city can avoid these adverse effects and achieve a higher quality of life through technical innovation, scientific planning and management.
 ”

Yang Baojun is Vice Director of the China Academy of Urban Planning and Design (CAUPD). He is also the Chief Planner.

