

## **TOWARDS SUSTAINABLE FUTURE CITIES: THE CITY OF KUALA LUMPUR ENVIRONMENTAL SCENARIO**

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### **ABSTRACT**

The growth of a city is linked to the population growth and the mobility and the lifestyle demand of the inhabitants. These put pressures on the available resources, making distribution of them inequitable. Available resources are not only scarce but the blown or consumption of these resources produces wastes. These are issues that have not been successfully addressed by most cities. As a result, cities surreptitiously fall into decay. This paper draws explicitly on sustainable cities to identify some key issues and principles of urban design that constitute sustainable development. Sustainability is taken as referring to global ecology, and development is recognized as being much resource broader than economic growth. Sustainable development is therefore about maintaining and enhancing the quality of human life - social, economic and environmental - while living within the placed carrying capacity of supporting ecosystems and the resource base. The two key principles that emerge from this definition are first, effort at satisfying human needs, recognizing the obligation for interregional human as well as intra-regional equity; and second, increasing the level of self-sufficiency at different scales - buildings, locality, town, region. From an ecological and thermodynamic perspective, cities are increasingly concentrated nodes of consumption within an increasingly human-dominated global landscape. Hence, it is without doubt that material consumption is at the heart of the patterns sustainability crisis of cities. Thus, this paper will seek to look at the factors of sustainability of a city by referring to the environmental scenarios of the city of Kuala Lumpur, to understand the ecologic imperatives of city planning.

Keywords: ecology, sustainable, environment, ecosystems, resource, self-sufficiency

### **Introduction**

Urban populations have considerable resource needs and generate tremendous amounts of waste. Resource needs often strain regional ecosystems, and resource generation often exceeds the natural assimilative capacities of the local and regional environment (Beatley and Manning, 1997). Often, resources such as water and food are imported while their wastes are exported, whether to outlying landfills or as carbon dioxide pumped into atmosphere. The city also competes for land with farms and forests. Cities are usually built on good agricultural land and as they grow they push these food farms on to less suitable lands. The risk of soil erosion, where soil gets blown or washed away, increases. At the same time, cities demand that the farms produce more food to feed their people. To be sustainable, cities must meet their needs, in ways which do not damage the environment so much that their needs - and their people's needs - cannot be met in the future. This suggests that sustainable communities should be conscious of their resource needs and waste streams, ensure that they do not destroy and exhaust the bioregion in which they are situated and seek to minimize the environmental pressures placed on other regions and countries.

Taming the sprawl and the creation of more sustainable places require concerted effort at promoting compact communities - human settlement patterns that consume significantly less natural and open land and that achieve higher average densities than current development patterns. From an environmental conservation point of view, loss of habitat and many other serious forms of developmental degradation find their roots in wasteful and destructive development patterns and the economic and social systems that encourage them. Curtailing the consumption of land at the urban periphery becomes critical part of preserving biodiversity, important ecological functions and productive lands that are essential for sustaining current and future populations.

In this respect, we need to look more towards the configuration rather than the density of the city so as not to imply 'no growth'. Compact and sustainable urban form does not mean that all people would live in very high-density cities as in the city of New York or Tokyo, but one that has the desired spatial parameters and densities that are high enough to support transit, walkability, and other positive characteristics of a compact community.

A city of the future that is sustainable and cares for the environment may not be the science-fiction idea of a massive skyscrapers sprawling as far as the eye can see. It is perhaps more likely that city will be compact, and that buildings and neighbourhoods will generate their own power and partially their own food. The town of Davis in California, adopted energy in its physical planning in its 1973 General Plan, which set a goal for reducing energy consumption by the development of multimodal transport, new building and siting regulations, a more compact city and public education. Amongst the focus of the Plan were building scale and encouragement of non-motorized transport. With most facilities in Davis designed to being only within fifteen minute bicycle ride, the city's energy use has declined and the sprawl of the city is within the acceptable control limit.

The city of Curitiba in Brazil, recognized as a showcase for sustainable city planning, in its 1965 Master Plan, on the other hand set out to enhance the quality of urban life and established priorities - like directing growth, increasing parkland and improving public transportation, which has continue to guide the development of the city to this day. The Master Plan zoned all uses and densities throughout the city; nevertheless mixed uses are encouraged. The plot ratio decreases the further away the land is from public transport. The Plan also defines corridors of development along axes radiating from downtown served by main lines of the bus systems. It is this bus transportation system that makes Curitiba an ecological city. Two-thirds of the population of Curitiba use buses daily. Research has shown that this saves 27 million automobile trips each year ( Allen, 1997). Curitiba also adopted a regenerative small scale social and cultural approach to projects by pedestrianizing and upgrading of streets and squares, preservation and conversion of historic buildings into new ones, including old industrial buildings to shopping centres, theatres, museums and other cultural facilities, hence, retaining the historical structure and cultural linkages within the city 's urban fabric. Recycling programmes undertaken by the communities themselves have shaped and created sustainablecommunities within the city and have helped minimize the extent of the 'footprint'which in turn has successfully kept in check the conversion of natural and open lands to urban sprawl. The cities of Curitiba and Davis, have demonstrated the effectiveness of setting standards in planning and by rigorously adhering to them they have been able to achieve the desired results. They demonstrate that it is possible to have a city development that is continuously mindful of its ecological functions.

## **The City Of Kuala Lumpur**

While Curitiba promotes reduction in car dependency by developing the public transportation system of conventional buses, the city of Kuala Lumpur likewise promotes public transportation by Light Rapid Transport system. While the former developed existing streets and roadways in a way that has sensitively maintain the city's charm, the latter has overheads and underground bypasses for the tracks of the light rapid transport system. Laying of these tracks involved demolition of structures, construction of overheads tracks right over existing streets, which more often than not they are just a few feet away from the walls of several significant structures including, for example, that of mosques, historical landmarks and the old city cemetery. They have destroyed not only the city's charm and heritage, but also give little respect to people's human values. This is an example of city development that is driven by economies and commerce, such as demonstrated by the city of Hong Kong (Blowers, '995). Here, the old building stocks are being continuously replaced by new high rises simply in response to extreme economic pressure.

It is not unusual for city centres to have about 20% of the land allocated to roads, but anything above that tends to become noticeably obtrusive. Overemphasis on roads and now the LRT overpasses mar the urban landscape and Kuala Lumpur will start to lose its vitality and vibrancy, the very quality that makes for urban living. It therefore makes a case for less traffic and an alternative form of transportation system that requires less hard construction.

Making people travel less is another way of checking growth and pollution. Reorganizing people's workplace to be near home will reduce journeys, and making towns self-contained within residential areas, with amenities and conveniences within reach of residents, would reduce travel time. This policy has met with considerable success in the city-state of Singapore. However, it is unrealistic to expect that human beings behave according to mathematical models and choose jobs merely based on proximity to their homes. The answers to these questions will remain that people will move where there are economic opportunities. But with new technological and electronic online development, more and more people will work from home - and may not even have to live in a large city to do their job. Hence, a smaller number of journeys in motorized vehicles will mean less pollution.

Kuala Lumpur previously, had no clear policies on control and growth, nor was any semblance of the principles of the Green Belt concept ever adopted. Thus, at the beginning of the City of Kuala Lumpur's development, we find the city sprawled unchecked. The principles of the Green Belt in the United Kingdom became a planning tool with several functions, which are: to check further growth of a large built-up areas, to prevent neighbourhood towns from merging into one another, and to preserve the special character of a town (Nelson, 1986). While restraining development means depriving owners of economic returns in these Green Belt areas, the policy nevertheless has proved successful in checking further growth and avoided the merging of neighbourhood towns. Thus, much of the suburban areas of London maintain a balanced environment for the towns.

Town planning in Malaysia had its origin during the British administration of then Malaya, when it adopted a formal town planning control through the Town Planning Enactment 1923 (Lee, 1991), to regulate buildings and public safety, sanitary conditions, health, conveniences and amenity. Attempts were made by Charles Reade, the first town planning advisor in 1921, to adopt

Garden Cities principles for Malayan towns then. However, these never materialized due to the lack of arterial roads. Written records also do not show that the Green Belt concept was ever considered in the early planning efforts by the British administrators. Perhaps the present day growth was never envisaged for then the sleepy hollow of Malaya.

As such, the merging of the city of Kuala Lumpur and the town of Petaling Jaya was one such example, whereby the only demarcation of either town today are the visible ones put up by their respective municipal and city councils. Like many other townships in the area, Petaling Jaya owes its existence to Kuala Lumpur in the early 50s. Today, with almost 500,000 residents, it stands as the most developed municipality in Selangor. The development of highways, the first being the Federal Highway, has hastened this sprawl. Subsequent ring road developments only speeded up pace. And, as there are now more and more highways being built the length and breadth of the country, merging of towns will become inevitable. It is therefore imperative that the economic planners and the physical planners comprehensively and collectively study strategic development planning from an environmental perspective and not solely base it on economic indices, if we are to preserve the environment. Converging townships convert productive lands into hard urban landscape, accelerating both physical and biotic breakdown. Top soils are removed, eroded or capped with concrete structures, which effectively stop the soaking of precipitation and percolation into underground waterways which are so vital for our clean water supply. Furthermore, sprawling cities dissipate resources and energy, and alienate people from nature.

The realignment and straightening of natural watercourses in urban areas to accommodate various new structures, have contributed to flooding from clogged waterways due to sedimentation. Indiscriminate developments on slopes have caused landslips and landslides in several densely populated areas in Kuala Lumpur with catastrophic results in some cases. We often fail to realize that the natural elements of nature, such as the watercourses, play an important role in regulating surface water drainage and that the adjacent land areas are the natural flood plains to retain water when they overflow the banks. Ian McHarg in his book *Design With Nature* (1969) championed the cause to design following the existing natural environment and minimize human intrusion. The same principle applies in regenerative design. It has been argued that the environmental crisis that is happening today, is largely due to humanity having lost contact with the natural world. By living in artificial environment for so long we may have lost our ability to perceive that something is wrong when natural processes become dysfunctional. Hence, we need to relentlessly find solutions that are mindful of the environment, to continue the ecological functions of the land they displace. They can carry the flows of energy and materials, and they can incorporate complex communities of organisms. By doing this they become partners in the ecological community, joining the web of interactions that is landscape.

Kuala Lumpur is between 30 and 100 metres above mean sea level (AMSL), and comprises extensive flat river plains in the north and east, steep sided hills to the west, north, east and south and a narrow river valley to the southwest, where Sungai Kelang flows towards the coast. Until recently, development on slopes exceeding 30 degrees still occurred, which has led to potentially serious instability of slopes especially in high rise and high density development. Inadequate measures to stabilize slopes or to cover disturbed ground in new developments are the main causes of soil erosion. The Kuala Lumpur Structure Plan (KLSP) 1984 addressed the issue of soil erosion and slope stability and provided guidelines for development. However, soil erosion from construction sites still occurs (KLSP 2003).

Bukit Tunku or Kenny Hills as it would be fondly referred to by most of the older residents of Kuala Lumpur, was among the earliest residential developments of Kuala Lumpur, built at a time

when mechanization was in its infancy, where leveling and cutting of the earth was minimal and would have been done by hand. Dwellings back then, were constructed following the natural terrain, leaving much of the vegetation in its natural pristine state until today. However, over the intervening years and with the subsequent development of mechanization, many hills and slopes of Kuala Lumpur have been terraced, shaped, and frequently leveled for easy construction. Thus, we have what Kuala Lumpur is today, the result of variously taming the natural environment and destroying its ecological balance. Often resources meant for more useful projects must be diverted for remedial and emergency works such as slope strengthening, river dredging, storm drain construction, flood retaining ponds and setting up of relief centers during natural disasters. These will all add up unnecessarily to economic losses in terms of costs and productivity of the residents affected by the environmental crisis.

One reason for the state of the environment of Kuala Lumpur today, perhaps could be seen from the way its objectives were conceived in the Kuala Lumpur Structure Plan (KLSP) 1984, which was ‘to secure the best achievable environmental standards through a judicious balance between development, ecology and national heritage’. The strategies supporting this objective were to promote a high standard of environmental urban amenity in terms of townscape and landscape and to attain an environment free from major forms of pollution. However, this proved insufficient to avoid environmental urban problems such as flash floods and weakened slopes. Thus, a change in emphasis was formulated in the latest KLSP 2003; that is to place greater emphasis on amenity rather than the ambient environment such as a comfortable, pleasant and nurturing environment.

Perhaps another area the city environmental planners should look at - one that not so apparent — is the city’s self-sufficiency. The bricks that gave the notable Colonial buildings enclave of Sultan Abdul Samad, the present Federal Court House, the Kuala Lumpur Library and others their brilliance and ambience, came from Brickfields, located just over a kilometre away, its name reflecting its origin as the place where the bricks were made. River sands could be dredged easily from the two main rivers, as well as from their tributaries, that once used to snake through the town centre, before they were straightened and replaced by concrete culverts and their paths forever removed from the city’s map. Quarries too from nearby areas such as Batu Caves, used to supply the clinkers for road works. These and many outlying areas just outside the city boundaries used to be the catchments for old Kuala Lumpur, suggesting that building materials and other necessary goods could easily be procured from and around the city areas itself. But as the city grew the transportation and road network developed, goods could be brought in from beyond the city limits: Marble from Langkawi, Kedah, tiles from Senawang, Negeri Sembilan, bricks and roof tiles from Pasir Gudang, Johor, to name a few. The hinterland for goods of any city today is neither confined to the city limits nor to its national boundaries, but goes beyond them. Marbles and granite can be brought in from as far as Italy, composite aluminium panels from Germany, special glazing material from Japan and an infinite variety of goods. Underlying this aspect is the total energy consumed to produce and transport these materials to their final destination. Taken together with the energy needed to run mechanical systems and appliances for human well-being and comfort, the total energy consumption is enormous. To service the city’s energy needs, power plants are constructed and transmission lines are laid. Vast tracts of jungles are often cleared and inundated with water to make way for dams together with the transmission network, to bring this energy to the urban centres. Petroleum gas is brought to the populous cities in America, by building pipelines across the entire North Slope of Alaska to the refining port in the west coast. Similarly, pipes are also laid to bring petroleum to the consuming cities and towns in the west coast of Malaysia from various refining centres. Thus, the ecological ‘footprint’ of the

city will include its bioregion and beyond. With advanced air transportation, we could even have fruit off-season or 'freshly picked and directly flown' from anywhere around in the world!

## **Conclusion**

No city or town in this present day can be totally self sustaining, given the lifestyle and comfort we are used to. The push for globalization and free trade will make certain this will never be achieved. Scenarios from the environmental perspective are not encouraging either. Nevertheless, some degree of sustainability should be pursued in the way a city manages its natural resources and waste products. Regeneration, conservation, and preservation principles should be central in planning to enable a city to be self-sustaining if not entirely, at the very least to reduce dependency beyond its city limits. In the earlier discussion it was pointed out that a city will need to be vibrant and full of vitality and should focus on its inhabitants and culture, compact and self-sufficient, and always nurturing. Mixed uses and activities within the community will at least ensure diversity at the neighbourhood level, while increasing self-sufficiency through the use of local energy sources, recycling and management of building energy demand may contribute to sustainable development.

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