

INTEGRATION AND SUSTAINABILITY OF CITIES – THE CASE OF KUALA LUMPUR

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Abstract

Cities are nothing more than people, their activities, the spaces that people and their activities occupies, or better known as land uses, and the systems that allows them to interact, generically termed as transportation. Cities are deemed to be efficient when its components are in harmonious interaction with one another.

More often than not, cities are plagued with numerous problems. Unemployment, crime, traffic congestion, squatters and overcrowding, pollution, etc are common in cities the world over. City components are not only internally disaggregated, but are often in conflict with one another. Indiscriminate utilization of land, the competition for survival and existence, results in neglect of the environment, affecting the sustainability of cities. Kuala Lumpur is no exception.

In anticipation of the pressure for growth and development, the need to provide for human needs, the elimination of problems and the creation of a more livable city for its future generation, Kuala Lumpur embarked on its Kuala Lumpur Structure Plan Review 2020.

The Kuala Lumpur Plan 2020 formulated 182 different policies to cover 13 different aspects of the plan, covering areas such as economic base and employment, income and quality of life, infrastructure and quality of life, commerce and industry, tourism, housing and squatters, urban design and landscapes, environment, etc. Playing the role of a premier city of the nation, Kuala Lumpur believes that it must contribute strongly to the attainment of the ideal embodied within the country's Vision 2020. Kuala Lumpur set to become a world class city by 2020 in the areas of Living Environment, Working Environment, Business Environment and City Governance.

This paper presents the findings and recommendations of the Kuala Lumpur Plan to secure the short term and the long term growth and sustainable development of Kuala Lumpur. It will summarize the issues and policies of different sectors. Particular attention will be given to the issue of *integration of the key components* of the plan, particularly, housing, commerce and industry and, traffic and transportation, in a bit to secure sustainability.

Keywords: Integration, Sustainability, Sustainable city growth, Sustainable development.

1. Introduction

Sustainability can be achieved through various means. In city planning, planners have the opportunity to shape the form and function of cities, to plan for the location of uses, amenities and facilities in order to maximize benefits, while reducing disbenefits for the inhabitants. Planners have the means to better manage cities, to break away from the present trend of development, and to pave the way for a better community.

This paper discusses the organic effect of growth on cities, namely suburbanization, and examines the policies outlined in the Kuala Lumpur Structure Plan 2020 that relate integration and sustainability. It is based on the hypothesis that integration, particularly, land use and transportation is an efficient ingredient for sustainability.

2. The Living City

Cities essentially, are made up of three major components, namely, its people, the land uses they so generate for their existence and well being, and the transportation system that link all these uses and activities. The larger the population size, the more diverse will be their needs leading to the growth of the city to include diversified establishments and institutions. In more recent times, it is common to have cities with more than 10 million people, as in Mexico City, New York, Tokyo, New Delhi, etc. Kuala Lumpur however, has 1.2 million people. Its daytime population is about 1.6 million.

The density of population in cities increases with the increase in population. As such we have modern high rise cities like Hong Kong with 37,000 inhabitants per sq kilometer, Singapore, 9,000 inhabitants per sq kilometer, and New Delhi, 11,000 inhabitants per sq kilometer, and so on.

The basic needs for survival i.e. for food, education, health, recreation, housing and employment is enormous. Translated into land uses, it means more land will be used up for these purposes. Cities grow in size and needs. They are alive. The speed of city growth or urbanization has been greatest during the last 50 years, and now more than 50% of the world's population lives in cities. Continued urbanization put pressure on resources. The desire for sophisticated comfortable places to live and work, and the typical features of modern life styles, also multiplies the resource usage, waste production, and pollution generated in urban areas. There is no doubt that cities are effective in terms of their wealth creation and cultural promotion; but not without cost.

3. City Growth and Suburbanization

Suburbanization refers to the movement and developments eating into the country side as the urban areas become too dense and saturated. For the affluent, it's a way of life. For some, it's a legitimate search for cleaner air and green pasture and a different style of living. For the working population, it's a search for cheaper land and property, pushed out by higher rent and cost of living in the urban centers. For the developers it's a new frontier of development, to try out new housing designs, and a new market to ride on. Proponents of new urbanism and smart growth movements that subscribe to the idea of sustainability respond to these concerns with calls for creating more livable communities. Developments that are designed to maintain and enhance the existing neighborhoods, as well as environmental and natural resources conservation were prescribed.

Douglas R Porter (2006) believed that market demands are changing in the direction of more sustainable form of development. He noted a sizeable niche market of consumers apparently values compact, mixed-use development that frees them from maintaining large houses and gardens and depending on the automobiles. This may be true in some developed economies. It is unclear if the same can be said of this region, where success and achievement are often portrayed in the size of one's property, the high parameter walls and the electric gate, where cottages in the countryside are rural retreats or weekend hideouts. It is a sought-after lifestyle.

It was also noted that developers respond well to the so-called advocates of sustainable and smart growth. As a result, we see pockets of smart sustainable rural like development taking place around the urban areas. In Malaysia, Tanarimba in Janda Baik, in the state of Pahang is an example. But these are exclusive communities designed for a certain target group. It was never meant for the man on the street. They cannot afford it.

It was noted that the result of growth, overspill, sprawl and suburbanization is that both the city and the suburbs are now locked in a mutually negating evolution towards loss of community, human scale and nature. This pattern of growth has created unnecessary congestion, pollution, isolation, seclusion, slums and division of community. This pattern of growth have become more and more dysfunctional and problem cumulative. It separates the very community the planner dream of integrating. Lewis Mumford (1956) noted that metropolitan growth is fast absorbing the rural hinterland and threatening to wipe out many of the natural elements favourable to life.

Suburban sprawl increases travel demand, pollution and generate enormous cost, particularly to the taxpayers and the environment. Sprawling land use patterns compel us to drive our cars, and with growth in family size, we add more cars to our house, and this led to greater fuel consumption. It was noted that, in the last 20 years, the population of California increased by 40%, while vehicle miles traveled have increased 100%. We drive more (Peter Calthorpe, 1993).

4. Integration and Sustainability

Westerman (1998) define integration as implying “a concern with the whole; agreement on the kind of outcomes we wish to achieve; having the means of achieving them; and a collective commitment to make it happen.

The concept of sustainability is worth a brief examination. The [U.N. Bruntland commission](#) in 1990 defined sustainability as “meeting the needs of the present generation without compromising the ability of future generations to meet their own needs.” The Oregon Progress Board (2000) defines sustainability as “using, developing and protecting resources at a rate and in a manner that enables people to meet their current needs and also provides that future generations can meet their own needs” ... through “simultaneously meeting environmental, economic and community (social) needs”. The achievement of the sustainability outcome simultaneous with meeting of needs implies integration. Other than that, sustainability refers to the ability to maintain and continue that which sustains us, and that we find sustaining. It is a multi-dimensional concept that has environmental, social, political, economic, cultural and spiritual dimensions. Sustainability acknowledges that evolution occurs within limits that prevent continuous and unceasing growth (Puttnam, 2000).

5. Land Use and Transport Integration

Greiving and Kemper (1999) link land use and transport planning together by defining the desired outcome for land use planning as “reducing the need for travel” and for transport planning “making the remaining traffic (travel) sustainable”. The Western Australian Planning Commission (1996) identified the desired land use planning outcome as an orderly planning process that achieves regional wealth, conserves and enhances the environment and builds dynamic and safe communities. Based on this view, reducing the need for travel, or “accessibility by proximity”, is the desired outcome for land use and transport integration rather than land use. Curtis (1999) describes the desired outcome of integration as achieving a better balance in the use of transport modes. The suggested integration outcome for land use and transport, separate from land use and transport outcomes on their own, is presented in Figure 1.

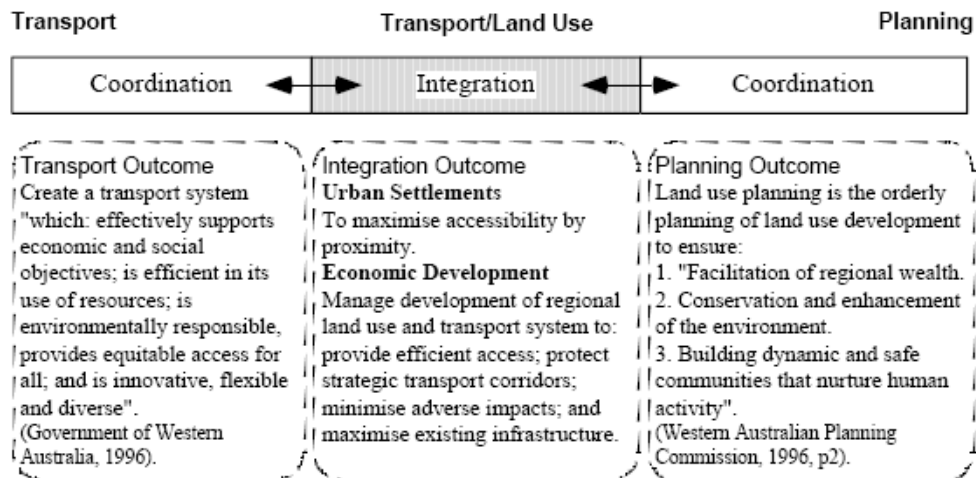


Figure 1: Land use and Transport integration desired outcomes

The location of land uses has a major influence the demand for travel. Conversely, the provision of transport infrastructure and services can influence land use and development patterns. The integration of land use and transport planning is critical for reducing demand for travel by private car. Key initiatives that address this situation are: employment self containment, mixed use development, higher density development around public transport nodes, concentration of major traffic generating land uses in areas well serviced by public transport, viable local centres, limiting car access in congested areas, parking constraints, encouraging higher vehicle occupancies, provision and protection of routes for cycling, walking and public transport and requiring transport impact statements for major development.

6. Elements for Integration and Sustainability

6.1 Density

The density of development plays an important role toward ensuring sustainability. With high density development, meaning a larger number of people over a given area, with amenities and facilities planned around it, one will eventually need to travel less. It is economically viable, as the density provides the threshold population to support the goods and commodities sold. It is also with high density that an efficient public transportation system can be set to work. Urban planners have an important role to play, especially in promoting higher density development at strategic locations and in planning for higher density living that is attractive to a wider range of population. There is a need to reverse the trend of urban growth from one of low density sprawling land use to that of higher density mix development.

Some of the newly planned settlements in Kuala Lumpur have a much higher density. They are built close to the main commercial and shopping areas, and more importantly within walking distance of the main public transport corridor. Apartments at these locations are in good demand and fetch higher rental value. Commuters gradually realize that it is to their advantage to live in such apartments as transportation will not be a problem. The train guarantees smooth uninterrupted rides, always. Perhaps the electric powered train should replace all petrol powered vehicles in the city!

6.2 Accessibility

When distance between land uses and buildings increases, it **create** the needs to travel. When cities grow in size, and both population and uses get dispersed over a wider area, planning for public transport become difficult. The automobile consequently become the automatic choice for ease of movement. It is also not feasible to provide for public transport when density is low and the population sparsely distributed across the landscape.

Urban planners should strive for accessibility needs, high degree of accessibility from residential quarters to work places, to education and recreational areas. Community office development providing employment should be planned to have easy access to community hubs and local centers with public transport links and facilities.

Accessibility is not about building more highways, or adding more lanes to our roadways, or continuous intersection upgrading. Of course they ease the flow of traffic considerably, but only temporary. Solving congestion by building more infrastructures is ineffective. It does nothing to reduce trips. Indeed, it invites more sprawls and paves the way for more auto use. It is self defeating.

6.3 Mix Use Development

Mix use development refers to the different land uses, such as commercial, educational, recreational, administrative, etc, located in close proximity to one another. Mix use development reduces the need to travel as all facilities and services are available close by. Some argued that local facilities become more viable due to increased local demand from the local work force as local residents and community spirit is encouraged.

6.4 Public Transport

It has been accepted worldwide that the key to improving the environmental performance of a city is by the reduction of private auto use. The urban sprawl common to most cities, Kuala Lumpur is no exception, calls for the provision and encouragement to use the public transport system. The commuter train in Kuala Lumpur serves the main urban hub with the suburban areas and surrounding towns. The network is expanding into new areas where travel demand warrants such a service.

In Hong Kong, major infrastructure providers such as the bus or the MRT, are given land rights over their stations for property development. The cost of constructing new lines comes from the profit made on these developments while the fares merely cover the operational cost. As such, there is a good relationship between a station and its surrounding buildings and uses. Land use and transport integration is at its best when it is convenient and safe to walk from one's house, board a train, and arrive at the office without having to cross a single road.

6.5 Transit Oriented Development

TOD is a concept that promotes public transport usage. Land use and the transit systems must be planned together. The two cannot be disconnected. Transit system will not work if the density of land uses is inappropriate. Similarly, if the land uses immediately surrounding transit station are thoroughly developed with the right mix and density, the result is more beneficial environmentally and physically. Some even argued for transit station to be the neighborhood or the community's focal point. It will encourage ridership of the public transport. High density mix uses around a transit core promotes environmentally friendly walk-and-ride rather than park-and-ride which again is auto dependent. TOD discourages auto usage.

7. Integrating Land Use, Town and Transport Planning : Singapore

Land use planning plays a key role in creating a sustainable transport network. Planning can influence the need for travel, even the mode of travel. Singapore has done well in integrating their land use and transport planning. For example, they decentralized the population by building HDB towns away from the city centre but connected them by an efficient system of roads, expressway and public transport. Besides that, they decentralize commercial and other economic activities through the development of regional, sub-regional, fringe centres at MRT stations. This has resulted in better utilization of the MRT network in both directions during peak hours. They also planned to reduce the need for people to travel by locating employment centres like industrial estates, business parks and commercial centres near residential areas.



Figure 2(a)

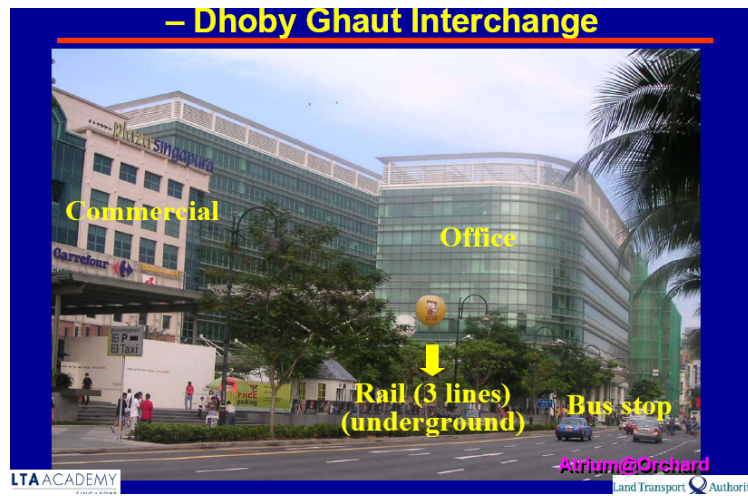


Figure 2(b)

Figure 2 : Land Use and Transport Integration, Singapore

Singapore also planned for a proper mix of residential, industrial and even institutional developments with the highest plot ratios at and around MRT stations as in Toa Payoh where the bus interchange was developed into commercial cum residential hub. The purpose is to improve accessibility to the bus interchange, the Toa Payoh MRT station and residential and commercial developments nearby (Figure 2(a) and Figure 2(b)).

Intensifying developments around MRT station alone is not sufficient to ensure good accessibility. They also fully integrate MRT stations with building developments and other transport modes. For example, at the new Woodlands MRT Station, other transport facilities like bus interchange and taxi and car drop-off points are well integrated with the station. Commuters can interchange easily, in comfort even in poor weather.

The fundamental principle of integration was extended to HDB estates. For example, the configuration of LRTs should maximize accessibility for residents. In some instances it may be better for the LRT to hug the road reserve rather than sit astride the road divider. Such a configuration could greatly shorten the walk to the LRT station and provide residents and the local community with significant usable space under the viaducts.

8. Suburban Living – Kuala Lumpur

There has been a reversal in net in migration of about 9,000 persons per annum between 1975 to 1980 to a net out-migration of about 4,280 persons per annum for the period 1991 to 1997 (Figure 3). The out-migration is clearly not a result of lack of employment opportunities but is partly due to the shortage of affordable housing. Kuala Lumpur has experienced a movement of people to the suburbs and outlying towns such as Klang, Rawang, Petaling Jaya, Bandar Baru Bangi and even Seremban, who, nonetheless, commute daily back into the City to work (Table 1). They can easily use the highways or public transportation such as bus, taxi, and the commuter train to commute daily to the city. While the suburbs grew rapidly, the City itself experienced a slower population growth.

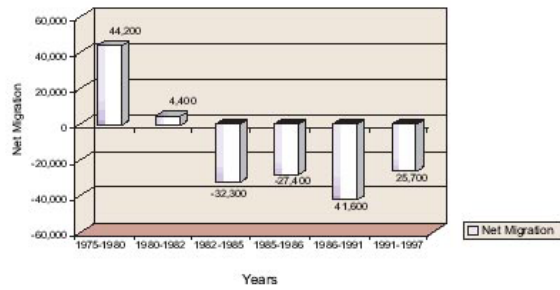


Figure 3: Net Migration in Kuala Lumpur, 1975 to 1997

Suburbs	Distance from Kuala Lumpur City
Klang	32 km
Rawang	30 km
Petaling Jaya	8 km
Bandar Baru Bangi	33 km
Seremban	67 km

Table 1: Distance from Kuala Lumpur City

In parallel with the decline of the City Centre residential population, there has been a commensurate drop in residential land area from 523 hectares in 1980 to 288 hectares in 2000. Residential land and buildings left vacant have high commercial value and are thus quickly taken over by commercial uses. In addition to the areas of dilapidated housing in the City Centre, there are many older, low density housing areas occupying land which also has high potential commercial value. Pressures will remain on these remaining pockets of residential land to convert to more profitable land use, which, in turn, could lead to a further reduction in the inner city residential population.

8.1 Travel Demand – Kuala Lumpur

Figure 1.5 shows the demand for travel in Kuala Lumpur in 1997, 2000 and 2020. The projections takes into account the population and land use increase as well as the present trend in auto use and travel pattern in Kuala Lumpur.

The modal split for Kuala Lumpur in 1997 was 81:19, in favour of the automobile. This put tremendous pressure on the roadway. The arterial roadways leading into the city are jammed up at least two hours before office begins. The evening peak is even worse stretching to up to 8.00 pm in most cases.

From the graph it can be seen that the capacity of roadways in the Central Planning Area remain almost constant till 2020. Travel demand instead, increases close to about 100%. The city is choking by its own traffic, and also by its own doing. This is a by-product of urbanization, and dependency and faith that mankind placed on the automobiles to provide for all their transportation needs. What this implies is that, for Kuala Lumpur to move, there must be a change in the modal split, meaning that trips will have to be made via public transport; an uphill task, looks difficult, yet unavoidable. Many changes will have to be made i.e., travel pattern, the frequency of trip making, land use distribution, the way we do things, including that of life style.

Because cities cannot be allowed to grow as it pleases due to the role of the state toward its citizens and other social contracts and obligations, it is therefore necessary to monitor and regulate the development process. There must be some control for orderly development and city growth. Urban planners for instance, may have to revisit the concept that encourages sprawl, suburban living and continued suburbanization.

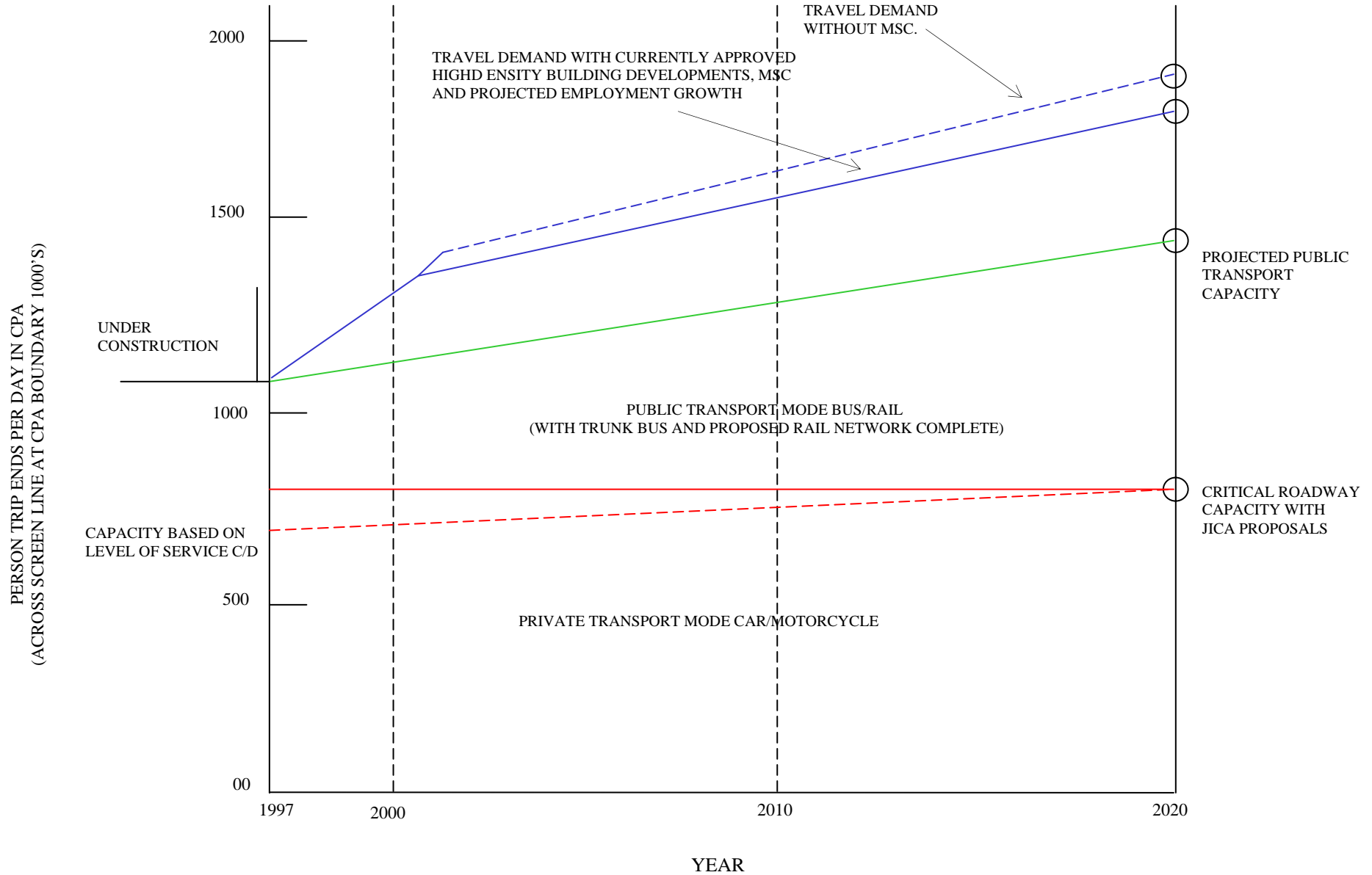


Fig 1.5: KUALA LUMPUR
CENTRAL PLANNING AREA
PRELIMINARY PROJECTED TRANSPORTATION CAPACITY

8.2 Integration Policies: Kuala Lumpur Structure Plan 2020

In order for Kuala Lumpur to achieve sustainable development, 12 policies have been identified in Kuala Lumpur Structure Plan 2020 where the integration is the key component of the plan can be found in four major sectors, they are housing, commerce, industry and transportation.

8.2.1 Housing

The residential population of a city is its most important resource and its greatest responsibility. The well being of Kuala Lumpur's inhabitants is the overriding concern of the city authorities and for that reason, housing has always been an item high on its agenda. The emphasis focuses on improving the quality of housing and the housing environment.

H01 – CHKL shall encourage responsible parties in the housing sector to develop good quality housing and living environment.

Good quality housing is a combination of many aspects of housing development. Design and layout, environmental responsiveness, the quality of workmanship and materials, the provision of utilities and facilities, landscaping, maintenance and upgrading, all play a part in the total housing environment. City Hall Kuala Lumpur (CHKL) shall encourage and work with the private sector to raise overall standards of housing in all of these areas so as to produce housing of the highest quality.

8.2.2 Commerce

An integral part of the vision to make Kuala Lumpur into A World-Class City is to enhance its position as international commercial and financial centers. Commerce is the driving force behind a city's economy. It is the creator of wealth, the principal provider of jobs as well as a primary impetus for development and renewal.

C03 – CHKL shall encourage the development of home-office business.

The technologies associated with the K-Economy are leading to a growth in home-office businesses. There are many benefits for individuals, businesses, administrative bodies in this trend as overheads are lower, and demands on the City's infrastructure, particularly the transportation network are reduced.

C07 – CHKL shall ensure that there is adequate provision of commercial apartments with convenient access to the main business areas.

As the number of international business locating in Kuala Lumpur increases, sufficient service apartments must be provided in convenient locations to cater for the needs of expatriate businessmen.

8.2.3 Industry

The industrial sector now in Kuala Lumpur plays a relatively minor role in the economy of the City compared to the commercial sector, an industrial component will be necessary to service the population of Kuala Lumpur and provide support services to commercial enterprises in the City.

IN9 – CHKL shall ensure that all designated industrial areas are provided with adequate public facilities including parking for heavy good vehicles.

Measures shall be implemented to provide all industrial areas with proper basic infrastructure, services and facilities including wider roads, improved loading and unloading facilities, better drainage systems, parking and public transport facilities as well as suitable commercial enterprises, banking facilities, food courts and recreational areas.

IN10 – CHKL shall encourage the development of new industrial areas and the redevelopment of older industrial areas which are near to transit facilities.

Transit oriented development is a cornerstone of the development strategy. Development policies shall aim to ensure that residential areas, services and commercial facilities shall, as far as is possible, have easy access to transit facilities. Where appropriate this strategy shall also include industrial areas particularly those where there is high employment. Feeder bus services in these industrial areas shall link to the rail-based public transport system.

8.2.4 Transportation

Comprehensive and efficient transportation system networks with good inter and intra urban linkages are essential enabling factors to ensure Kuala Lumpur's position as an International Commercial and Financial Centre. For the residents of Kuala Lumpur, the City must be able to provide an efficient and equitable city structure that, as far as possible, allows all members of the community equal accessibility to all areas and facilities so that everyone may enjoy the maximum benefits of city living.

TT4 – CHKL shall establish a Transit Planning Zone to facilitate intensification of transit oriented residential, commercial and mixed-use development around rail stations.

A principle objective of the transportation sector is the integration of land use and transportation and the development of a Transit Oriented Development strategy. This strategy will promote intensified development along the rail network. Any planned extension to the rail network must, therefore complement this policy by ensuring that rail stations serve designated urban centers.

TT6 – CHKL shall ensure that public transport principally comprises a fully integrated system of bus transport and rail-based services with common ticketing and complementing route scheduling and major multi-modal interchanges located at strategic locations.

TT7 – CHKL shall ensure that multi-modal interchanges and terminals incorporate park-and-ride facilities and facilities for pedestrians and bicycles.

TT8 – CHKL shall coordinate with the relevant authorities to provide efficient feeder bus services to the rail-based public transport network.

The emphasis will be on providing an integrated, flexible, wide ranging and efficient public transport system orientated towards passenger accessibility and convenience. Central to this approach is the integration of public transport modes with each other and with private transport so that, with streamlined inter modal transfer facilities and integrated ticketing, passenger trips become as convenient and seamless as possible.

In order to avoid traffic congestion occurring on local streets, major bus/rail and park and ride interchange facilities will be located at the points of intersection of the rail stations and major roads.

TT11 – CHKL shall implement a bus terminal network for inter and intra urban bus services.

CHKL will also implement measures to create a network of bus terminals on the periphery of Kuala Lumpur for buses and coaches serving separate regional and inter-urban services. These terminals will be integrated with the rail system via multi-modal interchanges to enable easy access to the City Centre and other areas of the City.

TT16 – CHKL shall ensure that proposed and committed major roads are considered in the broader context of public transport services, freight movement and impact upon the community and environment.

New roads, if any, must be examined in the context of CHKL's general transportation policies. However, any new roads that may be deemed necessary should support CHKL's policies to promote public transportation by making provision for high-occupancy vehicles and/or trunk bus routes. The reserves of these roads should be clearly demarcated to prevent urban encroachment on the right of way. Privatization bids on arterial roads must also conform to the network proposed in the Structure and Local Plans and not be conceived independently.

TT19 – CHKL shall develop specific guidelines and standards to provide for the needs of the aged and handicapped to be applied to pedestrian networks, new public transport terminuses and stations as well as multi-modal interchanges.

A pedestrian friendly environment will be created throughout the City with particular emphasis on the City Centre and other urban centres. Pedestrian networks in the City Centre will emphasize linking public transport facilities and will incorporate urban design elements. Special attention is to be given to areas around main transport interchanges to ensure that they incorporate facilities to make them fully accessible to the handicapped.

9. Conclusion

"We control air pollution with tailpipe emissions, fuel consumption with more efficient engines and congestion with more freeways, rather than making cities and towns in which people are less auto dependent". We treat the problem as we see it, piece by piece. We subscribe to segmentation in our approach, in the way we analyse and recommend solutions. As a result, we become shortsighted and uncoordinated.

Planning of roads, rail, housing, commercial and other land uses at both local and regional levels must reflect efficient and sustainable community development. They must be coordinated and integrated. Policy makers must realize that sustainable community development cannot be achieved by piecemeal, localized growth management measures. Investment decisions large or small must be guided by the existing approved plans, not otherwise. The Kuala Lumpur experience has shown that in spite of the shortfalls, the Structure Plan 2020 was able to assemble an array of policies designed towards a more sustainable community through integration.

References

Curtis, C. 1999. Turning Strategies into Actions – Integration Land Use and Transport Planning in Western Australia. 23rd Australasian Transport Research Forum, Perth pp 349-363.

Department of Statistic Malaysia. 2000. Population and Housing Census of Malaysia 2000.

Government of Malaysia. 2001-2005. Eighth Malaysia Plan.

Greiving, S. and Kemper, R. 1999 Integration of Transport and Land Use: State of the Art University of Dortmund, Germany – European Commission Transland project.

Jack So. 2000. Integrated Transport and Land Use Planning as a Success Factor for Metros. International Union of Public Transport. Hong Kong.

James. B. 2004. Future Direction in Integrating Land Use and Transport Planning. 27th Australasian Transport Research Forum, Adelaide.

Kuala Lumpur City Hall. 2004. Kuala Lumpur Structure Plan 2020.

Loh Chow Kuang. 2007. Singapore's Approach to Developing a Sustainable Integrated Transport System. Embarq Workshop 'Transforming Transportation Institutions, United States of America: Washington.

Oregon Progress Board. 2000. Measuring Sustainability: The Role of Oregon Benchmarks <http://www.econ.state.or.us/opb/links/sustain.pdf>.

Schwarcz. S. 2003. Public Transportation in Kuala Lumpur.

Westerman, H.L. 1998. Cities for Tomorrow: Integrating Land Use, Transport and the Environment Austroads, Australia.

Western Australian Planning Commission. 1996. State Planning Strategy Government of Western Australia, Australia.