PLANNING MALAYSIA
Journal of the Malaysian Institute of Planners
51M, BIM Building, Jalan SS21/56B, Damansara Utama
47400, Petaling Jaya, Selangor Darul Ehsan, MALAYSIA

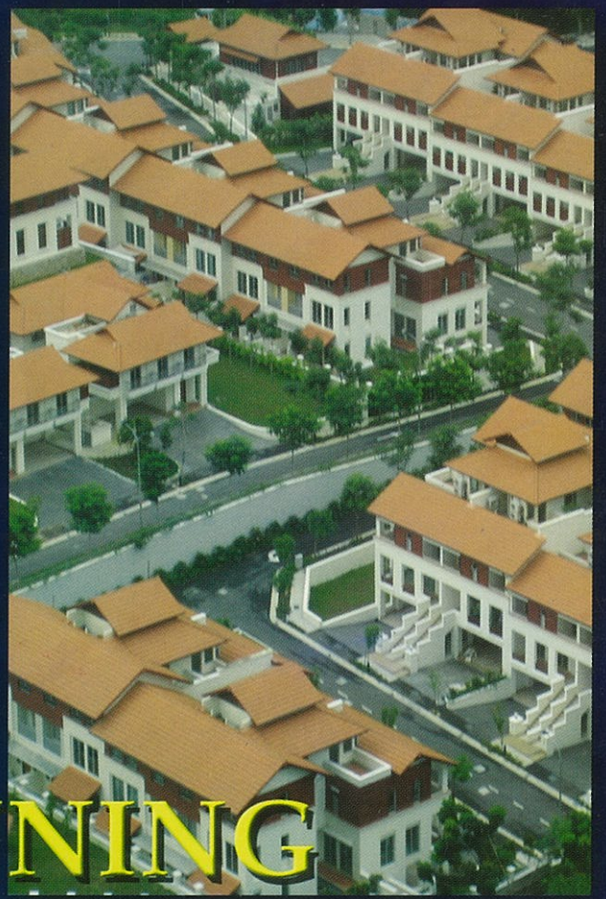
Tel: +603 77287272 Fax: +603 77286545 Email: mip@mip.org.my

ISSN 16756215

PLANNING MALAYSIA Journal of the Malaysian Institute of Planners VOLUME 4 - 2006

MALAYSIAN INSTITUTE OF PLANNERS

VOLUME 4 - 2006
ISSN 1675-6215



PLANNING MALAYSIA

Journal of the Malaysian Institute of Planners

PLANNING MALAYSIA

Journal of the Malaysian Institute of Planners

Editorial & Business Correspondence
PLANNING MALAYSIA
Journal of the Malaysian Institute of Planners
51M, BIM Building, Jalan SS21/56B, Damansara Utama
47400, Petaling Jaya, Selangor Darul Ehsan, MALAYSIA
Tel: +603 77287272 Fax: +603 77286545 Email: mip@mip.org.my

Published By
Malaysian Institute of Planners

ISSN Number
1675-6215

MIP Council Members
(2005-2007 Session)

President
Norliza Bt. Hashim

Vice President
Professor Dr. Mansor B. Ibrahim

Hon. Secretary
Ahmad Suhaimi b. Ismail

Hon. Treasury
Mohd Nazri Mohd Noordin

Council Members
Dr. Alias Abdullah
Jason Lee Poh Lee
Khairiah Bt. Talha
Assoc. Professor Wan Mohamed Yusoff
Ihsan Zainal Mokhtar
Mohd Zambri Husin

Ex-officio
Mohamad Nazri B. Jaafar

Co-opted Members
T. Mahesan
Dato' Zainuddin b. Muhammad
Datin Paduka Dr. Halimahton Saadiah Bt. Hashim
Zainab bt Mohd. Ghazali

Chairman of Sarawak/Sabah Chapter
Affandi Keli

Chairman of Northern Region Branch
Tan Thean Siew

Chairman of Southern Region Committee
Fadzil Abdul Rahman

CONTENTS

"Whoever travels in search of knowledge is on Jihād until he returns"
(Transmitted by Tirmidhi & Darimi)

MESSAGE FROM THE PRESIDENT

Dear Readers,

Over the past years, the Journal has been dedicated to providing planners, decision makers, researchers, and students' access to the fast-growing information on the field of planning. To that end, the *PLANNING MALAYSIA* has to date successfully publish three journals and this fourth journal is a reflection of the dedication of the editors and contributors towards the development of knowledge in planning and development.

In meeting the challenges in today's built environment, the Journal has managed to produced articles that touches upon the future planning needs as it highlights issues closely related to sustainability and illustrates efforts and methods towards best planning practices in today's context. The need for good decision support system in today's planning is also important and it is hoped that the articles here provide inputs and provoke thoughts towards better planning for our country.

Finally, the editors are to be commended for this fourth journal publication and our appreciation is extended to the team of writers and contributors from various institutions of higher learning whose papers are of varied planning interest. The Journal plans to extend its distribution; not only to all planning schools, Federal, State and Local Planning Authorities but also to various organizations MIP is affiliated to and other professional bodies locally as well as globally. Thus it is hoped that planners from other planning sectors will also contribute to the journal where new ideas and thoughts can be shared and explored for the development of the profession and the industry.

Thank you.

Norliza Bt. Hashim
PRESIDENT
(2005-2007)

PLANNING MALAYSIA
Journal of the Malaysian Institute of Planners (2006) **IV**, 1 - 21

HOW WE FAILED TO PLAN FOR HABITABILITY

Lee Lik Meng[1], Aldrin Abdullah, Tan Sook Fern, Nurwati Badrulzaman and Ahmad Sanusi Hassan
School of Housing, Building & Planning
UNIVERSITI SAINS MALAYSIA

Abstract

A quality housing development should not only take into account the physical aspects of design but also be sensitive to human needs. Habitability in housing involves several components, including environmental factors, man-made designs, socio-cultural operations and psychological impacts. Elements of habitability can be observed in various concepts of residential developments including classical concepts such as the Garden City Movement and the Neighbourhood Unit. In Malaysia, the Malay Kampung and the Chinese New Village exemplify some ideal living practices relating to habitability. Both the classical and traditional concepts influenced subsequent residential developments in Malaysia such as the Jengka Project, Kampung Tersusun, Town 8, Cyberjaya and Putrajaya. However, not all residential developments succeeded in creating a quality living environment. More recent concepts such as the New Urbanism and the China Healthy Residence have placed greater emphasis in dealing with such issues. In Malaysia, legislations and policies have not adequately addressed the problems on habitability. We lack a thorough planning system, which prepares and monitors the quality of our residential development. Failures in planning policies have also created other planning issues that affect habitability, as portrayed in the case of the Rifle Range Low-cost Flats in Penang. The top-down approach in housing policy and planning should be geared up to match the growth of community towards achieving habitability.

Keywords: Habitability, Housing, Legislation, Public Policy

INTRODUCTION

Habitability is a subject that concerns people, buildings and the environment. Conceptually, habitability refers to the condition of a building, i.e. residential, where people inhabiting the dwelling unit are free from defects that may be harmful to their health and safety. Specifically, habitability means housing that provides people a needed space to live in dignity and peace, and as a protection

[1] Assoc. Professor Dr. Lee Lik Meng can be contacted at lmlee@usm.my

from the natural elements, structural hazards and disease vectors which threaten their physical well being. The physical conditions of habitability can affect the realization of other human rights, including the attainment of high standards of mental and physical health. Habitability ensures that the dwellers live in a healthy, safe and comfortable environment, which helps develop a positive identity.

Housing is an integral element in planning for habitability. A housing unit is the smallest building unit in a housing development. Dwellers of a group of housing units of similar built and character make up a community. A community constantly interacts with other communities through a framework of planning aspects to achieve an orderly living environment. Community interaction is enhanced through recognition of the principles of habitability, i.e. safety, health, mobility, sustainability, convenience and accessibility. Specific indices are identified based on these principles to gauge the quality of the living environment. Housing is associated with other planning aspects such as population, socio-culture, economy, land use, infrastructure and utility, health consideration, mobility and governance (refer Figure 1). Good coordination among these aspects leads to a habitable housing development.

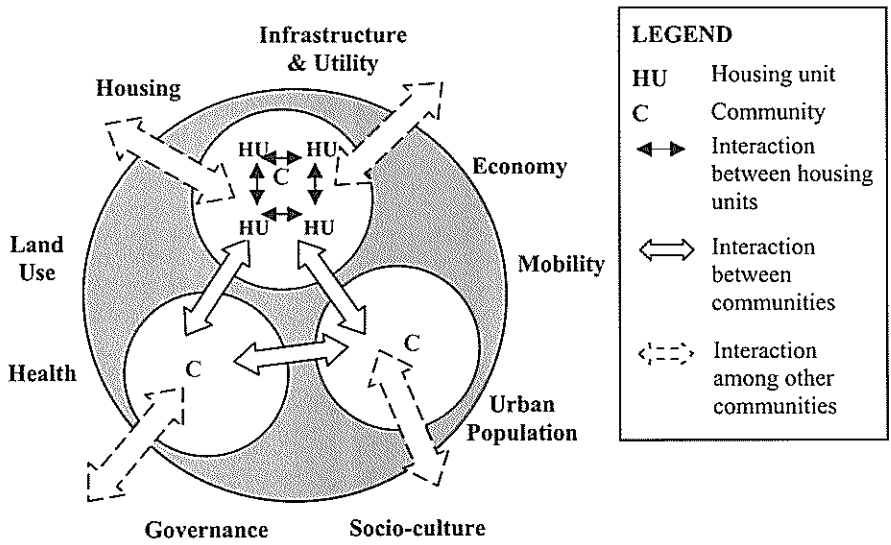


Figure 1: Town Planning and its Components
(Source: Modified from Indicators of Sustainable Development in Industrializing Countries, Vol. III: Key Indicators for Tropical Cities)

HABITABILITY ELEMENTS

Generally, there are two major elements in habitability extending from the identified principles and indices. The first element is the physical factor comprising of the natural considerations and the man-made aspect. The second element is the human factor, which consists of the socio-cultural and psychological aspects. All these elements and factors are inter-related as shown in Figure 2.

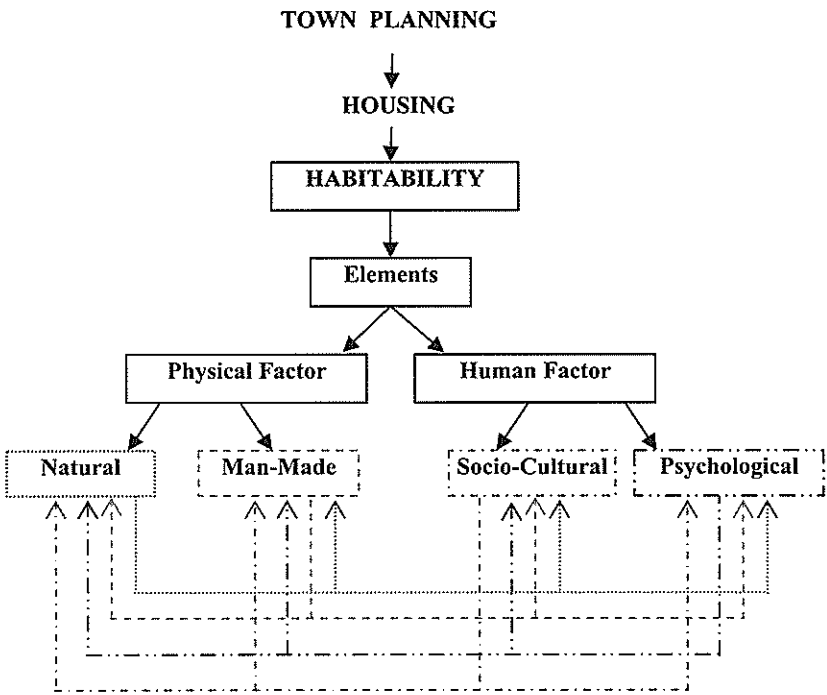


Figure 2: A Model of Habitability and other Related Components of Planning

The **physical factor** consists of two components. The first component is the natural aspects. In this regard, it is essential to design for a housing development that minimizes the destruction of natural resources. The housing design should adapt to the natural elements such as trees, rivers and hills, and should preserve the greenery to maintain a balanced ecosystem. Safeguarding the natural resources in housing development is an effort towards mitigating potential environmental hazards. Damage inflicted upon nature and the ecosystem is irretrievable. Humans are faced with the consequences of

ultraviolet and radioactive exposures, ozone depletions, high lead compositions, electromagnetic interruptions, temperature increase, flooding, landslide and other pollutants. Such hazards affect our living condition and habitability appears to be a distant ideal. On the contrary, a housing development that considers the natural elements will extend a harmonious relationship between human and nature.

The second component is the man-made aspects, which refer to the allocation and design of space, construction works and other non-natural considerations that contribute towards creating a habitable environment. These man-made aspects include colour scheme, building materials, views and vistas, lighting and illumination, heat and humidity control, ventilation, fire protection, hygienic consideration, design for privacy, basic infrastructure and amenities, landscaping and furniture arrangement. Taking into account the associations between the man-made aspects, health as well as other psychological influences, the man-made aspects are measured scientifically to establish parameters of a living condition that satisfies the principles of safety, health, accessibility, mobility, sustainability and user-friendliness. Reducing a man-made design into simplified calculations is a quick and easy way to establish a standard of habitability for practical applications, especially in legislations. Some examples include determining the density of a dwelling unit by the family size; safety and security of a house by the cases of reported thefts; and the mobility in a house by the design and use of space.

There is also the **human factor** in habitability comprising the socio-cultural and psychological aspects, which relate to people and their activities that affect the quality of a living environment. In socio–cultural aspects, the social needs of the people are a prerequisite in habitability. It reflects the nature of the clusters and patterns of relationships that exist within the community. People often communicate and interact through a medium of a common language, norm, culture, and shared expressions. Such interactions extend from a family unit to a neighbourhood and to the entire community; a process that eventually builds a lucid image and identity of a community of similar socio-cultural backgrounds and values. Having a sense of community helps promote a cheerful spirit of sharing and caring among members of the community. A sense of belonging in a community enhances the peoples' capacity to build a habitable environment. A good example is the Malay Kampung where villagers often demonstrate their *kampung* spirit through voluntary activities such as *kenduri* and *gotong-royong.*

Profound changes in the social structure have witnessed a change in family patterns and lifestyles. The number of extended families sharing the same

household has dropped. This situation has reduced the household size and alters the space needs in a house. It is also common for people to share out a house to reduce the burden of high rent or to avoid the high costs of owning a house. Transformations in the social structure, values and lifestyles in the light of economic growth and modernization have made an impact on planning for habitability. Community needs are changing and the pursuit of quality life more demanding, parallel to technological advancements and the influence of human rights.

The psychological aspects in habitability refer to the dwellers' inner responses toward the design and space arrangement of a residential building and the environment. Such inner responses could be positive or negative depending on the individual concerned. Positive responses, i.e. happy, safe, secure, healthy, relax and dynamic, help shape a better living atmosphere which subsequently improves personal development, enhances family relationships, and extends the warmth and friendliness to the whole community. On the contrary, negative responses register a bleak outlook on habitability. Examples of the negative responses include fear or insecurity towards crime, height and darkness; pressure from poor colour scheme, décor, space limit, noises in the living space, a lack of comfort and of privacy. Negative responses are more apparent among dwellers of residential areas or housing units that do not meet certain habitability principles. Other negative influences of a psychological nature relate to the impacts of environmental hazards and disasters. Disaster-related damages not only cost the lives of loved ones and personal property, but the realities of the aftermath are often beyond healing. From a psychological viewpoint, habitability can only be achieved when there are positive responses and reactions towards a living environment.

While the physical factor considers the realm of a scientific measurement of space to reach a habitable target, the human factor examines the needs and responses of the various groups of people in pursuing habitability. In essence, the design of space, preservation of natural resources, maintenance of the physical environment, and consideration of social and psychological needs should be incorporated in a proper framework that aims towards creating a habitable living environment.

CONCEPTS OF RESIDENTIAL DEVELOPMENT

Planning literature has highlighted substantial theories and concepts related to housing and housing development. An overview of the various concepts of

residential development in planning history would facilitate an understanding of the habitability elements being adapted in housing development.

Classical Residential Concepts in Town Planning

There are two major classical concepts of residential development in the history of town planning. The first is the Garden City movement inspired by Ebenezer Howard at the end of the19th century. The garden city concept reflects a self-sufficient satellite town that emphasizes a close relationship between human settlement and nature. In Howard's plan there was a greenbelt linking the city and the countryside. Trees were planted, and shrubs and greenery were in abundance to provide the residents a pleasant and comforting view of the environment. Howard's underlying philosophy was to raise the standards of health and comfort among the workers regardless of grade.

Howard's garden city was not physically built until Raymond Urwin and Barry Parker designed the first garden city at Letchworth. Howard's garden city concept was much enhanced in their design. The core of the concept was focused on creating a harmony between human settlement and the natural elements such as sunlight, greenery, view and vista. Such integration of the natural elements has turned the garden city concept into a creation of social reform for squalid cities. Since then the garden city movement had established a vast influence towards subsequent residential planning worldwide.

Another classical concept of residential development is the neighbourhood unit developed by a social worker, Clarence Perry. Perry put forward some ideas derived from the famous layout of Radburn, which stressed on the segregation between the movement of vehicles and people. According to Perry, there are six principles underlying a neighbourhood unit design. They are:

i. The size should be related to the catchment area of an elementary school.
ii. The residential area should be bounded on all sides by arterial streets and there should be no through traffic.
iii. There should be ample provision of small parks and play area.
iv. There should be a central point to the neighbourhood containing schools and other services.
v. District shops should be located on the periphery, thus serving approximately all neighbourhoods.

There should be a hierarchy of streets to facilitate access but through traffic is discouraged.

The design principles addressed by Perry underline a key element in habitability- that all residential development should pay attention to the connections between various activities that take place within a housing area in order to provide maximum convenience to its residents. Furthermore, the design of road networks should emphasize both accessibility and safety of the users. Another habitability element found in this concept is the recreational activities which provide space for the residents to be acquainted and to appreciate the natural resources. In short, the concept of neighbourhood unit cultivates a sense of a healthy community among its residents.

Residential Concepts in Malaysia

Various residential concepts, both traditional and modern, have been observed in Malaysia's unique, multi-cultural residential landscape. It is noteworthy that different races of distinct cultures and lifestyles are portrayed in the residential concepts of the Malay Kampung and the Chinese New Village. This section discusses these two unique residential concepts in relation to habitability. This is followed by an overview of selected residential development schemes in Malaysia in their attempts to incorporate some elements of habitability.

i) Malay Kampung and Chinese New Village

A Malay Kampung is a traditional settlement which emphasizes friendly and habitable design that adapts to the natural environment. In a traditional kampung, four houses will normally occupy one acre of land; therefore the density of a Malay Kampung is relatively low. The Malay houses are usually built in groups. Each group consists of a core house surrounded by several subgroups of houses.

A traditional Malay house usually has a kitchen, a living room and a bedroom. But there is always a reserve plot for expansion to accommodate future children. The toilet and bathroom are built at a distance from the house for the indigenous villagers think these spaces are dirty areas. Some houses have narrow bridge ways as a transition area between the so-called clean and dirty areas. This design concept explains how the villagers deal with the hygiene aspect since there was no centralized sanitary system in the old days. However, a modern Malay house today is well equipped with basic infrastructure, and so the bathroom and toilet are no longer separated from the house.

A Malay house is also well-known for its stilt design. The structure is built in such a way to avoid flooding and to separate the ground level from the house for hygienic reason. The building material used is not

heat resistant like *attap* roof and wooden wall. The planting of trees and shrubs provides adequate shading and ventilation around the house. Moreover, the trees and shrubs play an important role in marking the boundary of each house, which however are being replaced by fences and walls in some kampung. Another unique attribute of a Malay Kampung house is the orientation of the building unit from southeast to northeast for religious obligations. Such an orientation is beneficial in avoiding direct sunlight, thus reducing the heat trap in the house. Until today it is uncommon to find an air-conditioning system being installed in a Malay house. The well-designed Malay Kampung house which adapts to the environment illustrates a fine example of the physical factor in habitability.

Figure 3:`A Malay house on stilts.
(Photo by Ahmad Sanusi Hassan)

A Malay Kampung also incorporates the human factor in habitability. The *kampung* lifestyle is based on customs and mutual ties among the households. Residents normally share a kinship, which is extended from the core house to its subgroups. Rapport among the villagers is formed rather easily. Although the scatter pattern is typical of a Malay Kampung, there are often some focal points like the mosque, community hall, shops and neighbourhood courtyard which bring the villagers together. The villagers interact with each other to a high degree through regular activities held at these focal points. From their daily contacts, the relationships and a sense of belonging among the villagers grow stronger. This is evident in the villagers' cheerful

cooperation during a feast or *khenduri;* or when faced with hardship, the neighbourhood bond offers protection and a helping hand.

The Chinese New Village is another unique concept of residential development in Malaysia. Formed during the Emergency Period (1948-1960), the Chinese New Village was a mega resettlement project headed by General Sir Harold Briggs. There were four prerequisites under the Briggs Plan. Firstly, the new villages were to be built on or near the main road and their locations to be economically viable. Secondly, only six houses were allowed on per acre of land. Thirdly, new agricultural land within two miles of the new villages was to be prepared for farmers who had abandoned their homeland. Lastly, estate workers who were relocated to the new villages could work anywhere within two miles of the new villages. Most of these villages were equipped with basic amenities including police station, clinic, primary school, community hall, basketball court, field, temple and an area for animal rearing. Interestingly, the four prerequisites specified for these villages had underpinned some of the habitability considerations such as accessibility, density and social operations, although they were shrouded with political ramifications. However, since the resettlement decision was done in haste; these villages were not as organized.

Some elements of habitability are evident in the Chinese New Village. Houses located in the Chinese New Village are mostly single dwelling units. Normally these houses have passageways along the side. There is usually a big compound in the front or in the rear of the house where the villagers' rear domestic fowl or plant flowers, vegetables and fruit trees. Fowl, vegetables and fruit from the compound provide food for the household. In addition, the fruit trees provide shading to the compound and the house. This factor explains why a typical village house is relatively cooler than a modern house, which does not usually grow big trees in its compound due to a lack of space. The compound is also used as a place to dry clothes or to air the cocoa seeds. It is a pleasant place to relax where the elderly could get together for a chat, while the children play under the shady trees.

Another important element of habitability found in the Chinese New Village is self-initiative. Most of the Chinese New Villages have set up their own committees to carry out various programmes; for instance, village beautification, tuition class, neighbourhood watch and voluntary fire brigade. Most of these programmes have been

successful, which further portrays the villagers' spirit of cooperation in taking charge of their living environment. The spirit of participation in the Chinese New Village is a good example of town planning practices that sustain and contribute towards achieving habitability.

Figure 4: A typical Chinese New Village house with a big courtyard. (Photo by Tan Sook Fern)

However, most of these activities are fast diminishing in the Chinese New Village today. Many villagers have rebuilt, renovated and extended the floor space of their houses. Trees were felled and grounds were cleared for maintenance and hygienic reasons. As a paved surface is relatively easy to maintain, many villagers have paved their grounds and built walls or fences around their house. A drastic change in the housing appearance, from soft landscaping to hard surface surround, has created a sense of rigidity that undermines the character and identity of housing in the Chinese New Village. Today, most of the Chinese New Villages are stirring with problems including a lack of upgraded amenities and maintenance, and a lack of governmental response. While some of the Chinese New Villages are rather crowded due to a high population growth, some other villages especially those in the rural areas are experiencing a steady population decline. The generally poor living condition prevalent in the Chinese New Villages has affected the levels of habitability in this area.

*ii) **Rural Residential Schemes and New Towns***

Shortly after independence in 1957, Malaysia carried out various housing development policies such as the rural residential schemes and new towns to cater for a growing populace. Programmes for rural development began in 1956 with the formation of the Federal Land Development Authority (FELDA). FELDA, the country's largest land development agency has developed a regional-level settlement scheme called the Jengka Triangle Regional Land Settlement Project in the east coast of Pahang. The Jengka settlement comprises several villages surrounded by plantation, which is the villagers' economic resource. A town named Bandar Pusat, equipped with school, mosque, clinic, social welfare and other basic infrastructures was established to provide service for the surrounding villages.

From a habitability perspective, the Jengka settlement has not been successful in providing a quality living environment. A major reason is that the traveling distance between Bandar Pusat and the surrounding villages is too far. Furthermore, the range of goods and services offered at Bandar Pusat is limited and unsatisfactory compare to the other towns. Convenience was supposed to be an important measure in providing services and amenities to the settlers, but apparently the planning of the Jengka settlement has overlooked the social needs of its residents. The Jengka situation may be highlighted as a successful exploitive example for forest clearing, but it has inadvertently failed to develop as a planned, convenient and sustainable settlement that attracts people to stay.

Apart from Jengka, there are other rural settlement projects spearheaded by various state agencies, namely Ketengah, Kesedar, Keda, Perda and Kejora. Concerned with reorganizing and improving the living conditions of existing villages, these state agencies have introduced several residential concepts to achieve their goals. The concept of Kampung Tersusun, for one, explores a planned village setting based on several categories or conditions such as a village resettlement, a new village located on government-granted land or a village rearrangement in lieu of natural disasters. Kampung Tersusun focuses on enhancing the socio-economic livelihood and welfare of the villagers. Villagers are encouraged to be involved in other economic activities instead of agriculture. Kampung Tersusun is a low-density type development and is well equipped with social services and basic infrastructure.

Judging by the efforts of the authorities, more rural areas are being developed as new residential settlement. However, several questions linger. While Kampung Tersusun may become a productive and progressive village, what is the true character and identity of this *kampung*? Is the theory of economic growth and development being introduced indiscriminately in a *kampung*? Will the concrete jungle replace nature, the air-conditioning system replace the natural breeze, and automobile noise faults the serenity of the *kampung*? When traditional villages are converted into a Kampung Tersusun, what are the resources at hand for the people to sustain and develop?

The controversy surrounding such housing development often relates to the sustainability issues. It is not easy to achieve a balance between them, particularly when policy makers impose a new housing model in an existing residential area. It is quite problematic to gauge the impact 10, 20 or 50 years down the road. It may help residents to solve their current issues but in the long term, it may create new issues. Moreover, are the residents ready for change? It is crucial that policy makers listen and discuss with the affected residents to understand their needs and concerns. Otherwise, one thing is for sure, this development trend would inevitably weaken the identity of the local settlement patterns and affect the character of the housing development. Sustainability in housing is often a victim of development. When a place is not sustainable, it is hard to pursue a habitable environment.

New town is another settlement concept introduced in many urban or suburban areas in Malaysia, especially in the Klang Valley. When the State Economic Development Corporation (SEDC) started their plans for the new town development in 1964, it was based on the concept of self-contained development inclusive of the industrial zone, housing, public services, infrastructure, commercial and administration. Town 8 is an example of new town residential development in Malaysia. Located in Development Authority of Pahang Tenggara (DARA), Town 8 is designed to reduce the monotony of town life by allowing a flexibility of choice among migrants. There are three organizational levels in Town 8, namely the kampung, neighbourhood and town which decide the allocation of public facilities and utilities. The hierarchical arrangement concentrates on the basic infrastructure services and the prevention of resource wastage. The organized levels also facilitate the planning of transportation network that consists of pedestrian pathways, bus routes and road networks. This is to ensure

smooth traffic movements between the home and work place or other facilities, as well for the flow of goods.

The linear layout of Town 8 highlights a design concept based on segregation between the pedestrian and vehicular movement. An appropriate distance between home and work place and other facilities is emphasized in order to reduce energy usage and traveling time. The design of Town 8 shows the central spinal axis is under half a mile while the axis is within half a mile distance. In addition, the area has been zoned such that each zone focuses on a main activity with supporting amenities and services such as sport centre, open space, library, shops, etc.

In Town 8, similar dwelling units are clustered and an industrial site is established near the town to provide jobs for the residents. Social consideration is one of the criteria used to decide the micro development around the town. This shows that the residential pattern, structure, trend and norms in the community play an important role in shaping a livable and dynamic environment. Overall, Town 8 attempts to create a habitable environment based on the principles of safety, mobility, health, convenience and the social needs of its residents. It stresses on the hierarchical functions at the residential level and supports an integrated transportation system to serve the residents better. However, not every concept works in reality. A main cause for this is the attitude of the end users, that is, the residents' poor acceptance towards the concept applied. With better public empowerment and participation, planning for habitability in the residential areas will make substantial progress.

*iii) **Mixed Development and Intelligent Township***

Another residential concept introduced in the country is mixed development where the residential area becomes the main supporting activity to other functions such as industry and administration. Examples include the newly developed towns of Cyberjaya and Putrajaya. Claimed as the first intelligent city in Malaysia, Cyberjaya is well equipped with the latest in information technology infrastructure and facilities. The development concept of Cyberjaya emphasizes an eco-friendly principle. Vast natural areas in Cyberjaya have been reserved as a recreational place for the residents. Green areas and related public services encompass about 50% of the total area development, which was designated as a flagship zone for recreation. Apart from the flagship zone, there are three other major

zones in Cyberjaya, namely the enterprise zone, the commercial zone and the residential zone.

Located a short distance away from Cyberjaya is the new town of Putrajaya, Malaysia's new administrative capital. Putrajaya's development concept is based on a combination between the garden city and intelligent township. One third of Putrajaya's land area comprises parks, wetlands, gardens and lakes. The development of Putrajaya is made up of a core and a peripheral area. The core or the focal point of Putrajaya house most of the government ministries, departments and agencies, along with other predominant economic activities and social needs. The layout of the core area resembles a formal axis punctuated with nodal features and identifiable precincts.

The peripheral area of Putrajaya is mostly residential, with a projected total of 67,000 housing units catering for residents of various income levels. The residential concept of Putrajaya aims to nurture a sense of identity among the community through the establishment of neighbourhood focal points, public realm and landscaping. A sense of the local identity is developed through the promotion of local flowers, design of street furniture using local images, and the creation of open space of an Islamic influence. Reforestation and enhancement of the natural landscape are encouraged to preserve a scenic view. Various policies and legislations are imposed on the building facade and area to maintain the housing identity and to ensure the land uses contribute to enhance the aesthetic quality of the site.

With regards to the socio-cultural aspect, the authorities including Perbadanan Putrajaya and Putrajaya District Police have undertaken a neighbourhood watch programme in the residential areas to encourage social integration. Through this programme, residents are able to help curb crime and related unhealthy activities in their neighbourhood. Moreover, the intelligent township of Putrajaya is equipped with the smart home concept, intelligent building, intelligent transportation and teleservices. The intelligent concept has been claimed to provide for more secured housing with automated home appliances that respond quickly and efficiently during an emergency. Residents are also able to access the public services and utilities through an integrated electronic community. Above all, the intelligent buildings in Putrajaya are cost effective and environment-friendly.

Interestingly, both Cyberjaya and Putrajaya new towns emphasize the intelligent concept with high technology input. Yet, at the same time their layout design claim to be adaptable to the natural elements. Technically, the planning concept of both towns is quite similar and both are impressive in terms of nature preservation and technological advancement. But the main function of the towns is not residential development. Several issues are raised. Firstly, how appropriate is it to plan a residential area in proximity to a government administration centre or a high technology development corridor? Secondly, does an intelligent concept make a habitable living environment? Thirdly, both towns claim to be eco-friendly but the construction of hard surfaces is prevalent all over the towns. This situation seems contradictory to nature preservation. Lastly, to what extend does the planning of Putrajaya look into the social needs of the resident of various income levels? How well do the residents maintain their unique lifestyle of a multicultural country?

There is much skepticism concerning the development of Cyberjaya and Putrajaya in achieving the habitability target. One of the possible explanations is that these are pioneering projects in an era of technology. But it is feared that the residents of Putrajaya are generally not ready to make dramatic changes in their lifestyles. As our Prime Minister, YAB Dato' Seri Abdullah Haji Ahmad Badawi has commented, we are a country with first class infrastructure but with third class mentality. It is hard to make progress in planning for habitability without the people's willingness to change their mentality.

Emerging Concepts

In the light of rapid urbanization and changing lifestyles, many issues regarding the quality of a living environment have emerged. The critical situation has raised awareness among the community. More people have spoken out in response to the habitability issues such as poor quality of living environment, and disasters caused by human ignorance and improper development. These responses have reflected poorly on the quality of our residential development and living habits. In line with these responses, concepts that seek to build a humane living environment have emerged in order to upgrade the monotonous, unfriendly and unsustainable living conditions.

Among the emerging settlement concepts, New Urbanism is a concept of residential development that reacts to problems of sprawl and promotes a return to traditional town planning. First coined by Peter Katz in 1992, the New

Urbanism movement had gained attention from the academia and researchers as an alternative to solve urban sprawl and develop a more habitable environment.

There are five inter-related core principles of the New Urbanism. Firstly, pedestrian-friendly and connectivity in a smart transportation design. The use of cars is de-emphasized to create a safe and friendly pedestrian environment. The suggested walking distance in a *walkable* environment is about 10 minutes. Secondly, the mix and diversity principles are emphasized in the settlement areas including neighbourhood, town or city. A settlement area should contain a diverse range and balanced development of housing, jobs, open space and activities like shopping, recreation and entertainment, which provides its residents the daily social services. Thirdly, New Urbanism promotes quality architecture and urban design. The aesthetic qualities of the built environment provide not only comfort and convenience to the people, but also create a sense of place. Fourthly, the traditional neighbourhood structure is the inspiration that contributes to the crux of New Urbanism. The public space is placed in the centre so that everyone can have access to it, easily and conveniently. The fifth principle of New Urbanism is sustainability, which suggests a minimal impact on the environment and an energy-efficient development. In addition, New Urbanism has developed other principles to deal with issues of affordable housing, urban sprawl and historic restoration.

While the New Urbanism concept has emerged in the west, a new holistic housing concept has been introduced in China. The National Residential and Living Environment Project Centre has coined the new housing concept of a Healthy Residence at the start of the new millennium. The Healthy Residence concept has been promoted throughout the major cities in China especially after the widespread incidence of severe acute respiratory syndrome (SARS). People in general have become more conscious and concerned about the health issues and have resumed a more healthy lifestyle.

The basic aspects of the Healthy Residence concept have underlined some principles of habitability. Firstly, the physical condition of the residence incorporates the best qualities of the outdoor and indoor living space in terms of air composition and measures of heat, noise, water, illumination and light. Secondly, an environmentally-friendly approach is emphasized in the housing design to maintain a balanced ecosystem and to avoid natural disaster such as flooding, green house effects, air pollution, etc. Thirdly, the Healthy Residence concept touches on the maintenance of the living condition. Varying levels of standards have been established for a public space or a private space. Among the main focuses are the visual elements, such as colours, building arrangement, advertisement and signage. These visual elements should abide by a certain

building control in order to maintain their identity and harmony within the community. Other elements include sanitary and sewerage system, water supply, garbage and environmental hygiene. The final aspect in the Healthy Residence concept is the assurance of a healthy living environment. These elements include the mechanisms involved in organizing a quality medical system and services, facilities for the aging, public participation in health consciousness and cultural cultivation.

From the review of the various housing development concepts, it is evident that the focus of habitability is not only the building per se but also the people and the environment. The difference between traditional residential patterns and other modern residential concepts is their lack of locality or identity. The racial identity and their unique lifestyles have been fading amidst rapid urbanization and modernization. Malaysia's multicultural spirit is also changing in the face of a western influence in lifestyles and housing layout. Some people still have a reminiscent for a less organized kampung living while others praise the more organized form of modern housing development. The different responses bring up a pertinent question. Which type of development is more superior and more suited for Malaysians today? It is hard to get a definite answer because there are many pros and cons of the different housing development, yet all these concepts still have rooms for improvement.

LEGISLATIONS AND PUBLIC POLICY

Basically, legislation relating to habitability covers various aspects such as land use, basic infrastructure, building design, transportation system, nature preservation, environment quality, landscape design, fire safety and rescue, governance in contract, application process, land title and ownership for housing. These are covered under the Local Government Act 1976 [Act 171], Town and Country Planning Act 1976, Street, Drainage, Sewerage and Building Act 1976, National Land Code 1965, Housing Loan Fund Act 1971, Environmental Quality Act 1974, Public Housing By Laws 2002 and Building By Laws 1985. However, there are differences in practice as different government agencies such as the local authorities have different practice.
The legislation for habitability is more focused on the physical housing development rather than socio-cultural aspects. Most of the guidelines are based on density and population size in deciding housing design, layout and the provision of public amenities. For example, in Shah Alam, a 0.5 acre children playground should be prepared for every 500 residents while a 50 acre town park should be provided for 50,000 residents. The suggested room number in Melaka for a household size of 4.6 is set at 4. In Penang, 10% of open space

must be allocated for every low cost flat development which is bigger than 1 acre or more for recreational activities.

The numbers game in the existing guidelines and standards become the basic calculation for housing design and amenity preparation. However, do numbers really help to decide the real need of the community? What if the numbers of the residents are less than the specific standards? Does that mean that those residents cannot enjoy similar facilities? As most of our laws were adapted from Britain, we should argue the suitability of these laws and guidelines for use in our local context.

There are many examples that show that numbers and figures in guidelines do not work out and contribute to a quality living environment. A good example is the lack of parking spaces in many high rise apartments especially in medium low cost or low cost housing area. In Penang, it is very common to see cars parking illegally along narrow roadside next to the apartments. This has become an issue because the rigid guidelines used in preparing the number of parking lots for every apartment or flat do not take into consideration development and growth of society. The guidelines that are employed are not revised to meet the changing needs of the society. For example, it is very common now to find that a housing unit is shared by a group of working people with individual vehicle ownership.

In addition, legislations do not cover the maintenance of a housing development. No monitoring is carried out in a continuous manner to check on the quality of a housing area after being built. For example, the quality of hygiene in many low cost apartments is poor because there is a lack of appropriate management. This causes the spread of diseases such as dengue and created a bad image for the housing area.

Apart from legislations, public policies or strategies in housing are mainly focused on affordability rather than habitability. From the previous actions of the Ministry of Housing and the Local Government lead by Y.B. Dato' Seri Ong Ka Ting, a lot of amendments and suggestions on housing are made especially on the issue of low cost housing. The ministry aims to provide sufficient and quality housing but so far, the changes have been rather slow.

In general, the government has set that 30 % of a housing development must compromise low cost units. This is to make sure that the lower income group can also own their own shelter. To make the policy a success, they are supported by other incentives such as fast application approvals. But such an effort does not guarantee that supply meets demand. There are a lot of

abandoned housing developments or empty units through out Malaysia but at the same time there are places where people are squatting, or complaining of unavailability of shelter.

Do policy makers consider changes of social structure and lifestyle in 20 years to come? A very good example is the Rifle Range High Rise Low Cost Flats in Penang. When Rifle Range was built in 1969, the government agreed to apply the rent and buy concept because most of the residents could not afford to own a house. After paying the rental for 25 years, the Rifle Range residents got their grants and have became owners of the house. When the public low cost housing became private property, a lot of infrastructure and amenity issues begin to surface. As the economic status of the residents improve, they renovated and extended their units illegally causing structural concerns. More vehicles were purchased by the residents and caused massive parking problems. This upgraded group is not supposed to stay in the low cost area anymore because the basic amenities do not cater for them. It shows that the initial planning of Rifle Range did not anticipate structural changes of the community and therefore created problems for today.

CONCLUSIONS

Habitability is not a short-term achievement. It requires effort from everybody so that a more sustainable, healthy and safe living environment can be built. In this paper, the idea of habitability is elaborated along physical and human factors. The elements explain the inter-relationship of natural aspect, man-made aspect, psychological aspect and socio-cultural aspect in the development of housing that shape a habitable environment. To get a bigger picture of habitability in the housing development, a review on the residential development concepts including the classic residential concepts, the local residential development movements and the emerging concepts are discussed. The last part of this paper talks about the legislation and public policies in Malaysia. The inefficiency of the legislation and public policies in habitability compared to other housing issues like affordability and legal process of buying a house is obvious. The emphasis on the habitability in legislation is not detailed and only touches the surface of the issue. To make our living environment more habitable and achieve more quality, the related issues must be identified. In planning, a long-term concrete goal is needed to make up a habitable environment for people. The top-down policy should meet the need of people while the bottom–up awareness acts as a monitor to the government administration and legislation, to make sure the pursuit of habitability is on the right track. Policies must also be flexible to meet changes of future societies and

future implementers must also be quick to adapt and respond to changes of societies.

ACKNOWLEGEMENT

This paper was originally presented at the *National Conference on Affordable Quality Housing*, 24-26 Nov 2004, Miri, Sarawak. The research was funded by an IRPA Grant under the National Research Programme for Affordable Quality Housing (8th Malaysia Plan).

REFERENCES

Books:

Abraham, C. E. R. 1982. *Microcosms of Malaysian Settlement Patterns: Case Studies of Indigenous Development – Pahang Tenggara Regional Master Plan*. Penang: Universiti Sains Malaysia.

Bih, Heng-Dar. 2001. *The Power of Space*. Taipei: PsyGarden Publishing Company.

Cheng, Lim Keak. 1976. *Mengkuang: A Study of A Chinese New Village in West Malaysia*. Singapore: NanYang University.

Lim, Hin Hui & Song, Wan Ying. 2002. *50 Years of Malaysian Chinese New Village*. KL: Centre for Malaysian Chinese Studies.

Lowe, Marcia D. 1991. *Shaping Cities: The Environmental and Human Dimensions*. Washington: Worldwatch Institute.

Ministry of Local Government and Housing. 1967. *The settlement structure in the regional plan for the JENGKA Triangle in West Malaysia: An attempt at controlling in-migration of persons from rural to urban centres*. Pacific Conf. on Urban Growth, Honolulu, Hawaii.

Ratcliffe, John. 1993. *An Introduction to Town and Country Planning*. London: UCL Press Limited.

Taylor J. L., Ekroth D. C. HBP, USM and Lembaga Kemajuan Pahang Tenggara. 1975. *Pahang Tenggara New Town 8: Final Report*. Penang: Universiti Sains Malaysia.

Internet:

Bahrin T. S., Lee B. T., and Dorall R. F. 1988. The Jengka Triangle: a report on research in progress. In Manshard W. and Morgan B. W. *Agricultural Expansion and Pioneer Settlements in the Humid Tropics*. Tokyo: The United Nations University. http://www.unu.edu/unupress/unupbooks/80636e/80636E0d.htm#7.The%

20Jengka%20Triangle:%20a%20report%20on%20research%20in%20progress (19 Apr 2004)

Chen, Ya You et al. "The Story of New Village". *Kwong Wah Yit Poh* [Penang]. http://www.kwongwah.com.my/village/vl1.htm (14 Apr 2004)

Dasimah Omar. Urbanisation, Urban Fringe Development and the Quality of Life: Evidence from New Town Development in Peninsular Malaysia. 2003. http://www.planning.sa.gov.au/congress/pdf/Papers/Dasimah.pdf (27 May 2004)

Habitat International Coalition, Housing and Rights Network, Midde East/ North Africa. http://www.hic-mena.org/14%20Elements%20of%20RAH/05habit.htm (1 Apr 2004)

Kai, Y., Liu, D. W., Zhang, W. H., Zhao, X. *et. al.* 2002. Healthy Residence Technical Report 2002. Beijing: National Housing Development Centre. http://www.build.com.cn/health/health-2002-0.htm (25 April 2004)

LegalDefinition.com. http://www.legal-definitions.com/real-estate/habitability.htm (1 Apr 2004)

Leshler, Jim. 2000. *Online News Hour.* Kansas: MacNeil-Lehrer Productions. http://www.pbs.org/newshour/newurbanism/keypoints.html (3 Apr 2004)

Lucey, Norman. 1973. *The Effect of Sir Ebenezer Howard and the Garden City Movement on Twentieth Century Town Planning.* http://www.rickmansworthherts.freeserve.co.uk/howard1.htm#sne (1 Apr 2004)

"Malaysian Should Change Their Mind". *Sin Chew Jit Poh [KL].* 6 Mac 2003. http://news.sinchew-i.com/article.phtml?artid=200303070620&data=news (25 May 2004)

New Urbanism. VA: New Urbanisim.com http://www.newurbanism.org/pages/416429/index.htm (3 Apr 2004)

Pejabat Daerah dan Tanah Manjung. *District Profile: Human Settlements.* http://pdt-manjong.perak.gov.my/ENGLISH/index.html (15 May 2004)

Perbadanan Putrajaya. (2003). *Pusat Pentadbiran Persekutuan Putrajaya.* http://www.putrajaya.net.my/ (19 Apr 2004)

***

PLANNING MALAYSIA
Journal of the Malaysian Institute of Planners (2006) **IV**, 23 - 30

CAIRO'S AL-AZHAR PARK: MILLENIUM DEVELOPMENT GOALS ETCHED IN GREEN

Khaled el-Khishin[1]
Faculty of Engineering,
BENHA UNIVERSITY, EGYPT

Abstract

This paper sheds light on a grand new park that has been inaugurated in Cairo on March 25th, 2005. The park is just one element of a far-reaching urban renewal scheme which seeks to restore a slum of Islamic Cairo where many cultural assets and monuments exist. The ambitious project, which has galvanized the nation, has drawn on the resources of international, national and local agencies in addition to grassroots organizations. Upon completion, the integrated development project is envisaged to rehabilitate many dwellings, monuments and urban spaces, in addition to creating employment, drawing droves of tourists and improving the quality of life in its vicinity. Thus, the impact of the project will most certainly fulfill some of the Millennium Development Goals (MDGs) set forth by the UN at the turn of the century.

Keywords: Park, Millennium Development Goals, Urban Growth

INTRODUCTION

The city of Cairo, home to some 17 million inhabitants, has arguably the least amount of green space per capita compared to other major metropolises of the world. In 1984, a major conference entitled, "*The Expanding Metropolis: Coping with the Urban Growth of Cairo*," was held in the Egyptian capital at the behest of the Aga Khan Award for Architecture. The conference culminated in very valuable deliberations and research; however, its most tangible outcome was a commitment by HH Prince Karim Aga Khan -leader of the Ismaili sect and descendant of the Fatimids who ruled Egypt between the years 969-1171- to donate a park to the city of his ancestors. The choice of the park's site, therefore, came as no surprise. The al-Darrassa site, formed of mounds of debris and garbage accumulated over 5 centuries, covered parts of Cairo's Ayyubid wall. Beyond the wall, to the west, lies the Darb al-Ahmar slum, part

[1] Dr. Khaled el-Khishin is a Professor of Urban Planning.

of Fatimid Cairo. To the east, lies the famous Mamluk City of the Dead with its many mausoleums and minarets. Finally, to the south of the site, lies one of Cairo's eternal landmarks: Saladin's Ayyubid Citadel.

This paper will review the Millennium development Goals (MDGs), the history of the project, the challenges which faced it, the park's different components, and finally, the project's impact on a developing metropolis such as Cairo. The synthesis section will highlight questions deemed important for the replication of the project in other contexts.

THE UN MILLENIUM DECLARATION: A REVIEW OF MDGS

The UN Millennium Declaration made public in the year 2000 strove to improve the lives of at least 100 million dwellers by the year 2020, by realizing eight goals. Appropriately labeled MDGs, they are the following; *eradicating extreme poverty* by halving the proportion of people suffering from hunger; *achieving universal primary education; promoting gender equality and empower women* by increasing their enrolment in primary education; *reducing the mortality rate of children* under 5 years of age by 65%; *decreasing maternal mortality* rates by up to 75%; *reducing the incidence of HIV/AIDS and other pandemics*; *ensuring environmental sustainability* by incorporating the environment in national and urban policies; And, finally *developing a global partnership* for the development of cross-cultural exchanges, information, new technologies ...etc (Moreno, 2005).

THE PARK SITE: CHALLENGES AND PROSPECTS

The park site was originally a barren expanse of saline soil, which was used as a garbage dump for 500 years. More recently, the site was used as a storage area for a governmental construction company, in addition to the stables of the Cairo mounted police (Lindsey & el-Amrani, 2005). In the 1990s, moreover, the Cairo Wastewater Authority constructed three large water tanks 80 meters in width and 16 meters in breadth on the site to provide clean water to the local neighbourhoods. Claiming the site for the park, therefore, involved overcoming bureaucratic hurdles, which delayed the launching of the project till the year 2000. Other challenges posed by the site included its proximity to one of the poorest slums in Cairo, al-Darb al-Ahmar. The 200,000 residents of Darb al-Ahmar had been left to fend for themselves over the years resulting in low literacy, lack of awareness, and gender inequality, a high crime rate and poor sanitary conditions. The 1992 earthquake, moreover, damaged many of the

valuable monuments existing in the slum. For instance, minarets of some mosques were toppled, while medieval schools suffered from serious cracks. Finally, the salinity of the soil at the site of the park was a major challenge which required testing plant species in the American University of Cairo's desert nursery, located some 100 Kilometres away, before planting the successful ones in the park.

By 1996, and in response to such challenges, the project of the park developed beyond the initial idea and expanded to include, first, the rehabilitation of the Ayyubid wall; second, the restoration of selected monuments and urban spaces in Darb al-Ahmar, and third, the upgrading of housing stock along the Ayyubid wall. The initiation of an ambitious socio-economic development program, which aimed to alleviate poverty and improve the quality of life in Darb al-Ahmar, was also included to guarantee the sustainability of the project. The aforementioned socio-economic development program, include the extension of micro-credit finance, a health care component, and apprenticeship opportunities (AKDN, 2005a).

THE MODE OF INTERVENTION

At the outset, The Aga Khan Trust for Culture was faced with three scenarios for upgrading Darb al-Ahmar. The first scenario would have entailed radical intervention and the relocation of swathes of population and eradication of dilapidated premises. The second laissez faire scenario would have left market forces to exercise their full weight, thus resulting in new developments that are totally alien to the existing fabric. The third scenario, which was ultimately chosen and implemented, called for educated and incremental interventions especially in the vicinity of the Ayyubid wall. The intention of this scenario was to promote an exercise in social engineering. According to this scenario, residents' lives, and not only the physical structures, were earmarked for restoration! Only fairly recently, did the Egyptian Council for Antiquities give up its demand that the Ayyubid wall be "freed" from the onslaught of residential development in its immediate vicinity. This was a major decision that helped kick start the restoration of dilapidated stock along the wall (El-Mikawy, 2005).

THE PROJECT'S COMPONENTS: BALANCE SHEETS TO DATE

The $ 30 million project has made strides since its inception. On March 25th 2005, al-Azhar Park was opened to the public. The park covers 30 hectares and

is furbished by 655,000 plants, out of a total of 2 million plants, which have been propagated in a special nursery and will eventually be transplanted in the park (see figure 1 to 3). The amenities of the park include two upscale restaurants, an artificial pond, children's playgrounds, an amphitheatre, observation decks, and a central 8 meters wide promenade flanked by royal palms (AKTC 2003). The processional promenade links both ends of the park and provides a powerful visual link to Saladin's Citadel. Furthermore, the western hillside leading to Darb al-Ahmar is covered with colourful flowers and succulent plants.

Beyond the park, the excavation of 1.5 million cubic meters of debris which buried the 1.5 kilometer long Ayyubid wall has been completed, and the restoration of the latter is proceeding in earnest. A British designer is, currently conceiving the lighting scheme of the wall. Under permitting circumstances, the interior chambers of the wall and the towers will be open for the public (AKDN 2005b). In tandem, three monumental buildings in Darb al-Ahmar are being restored. These are the Khayrbek complex (consisting of a 13th century palace, a mosque and an Ottoman house), the Umm Sultan Shaaban mosque and the Darb Shoughlan school.

As for the residential stock, a sample of houses has been rehabilitated. This marks the start of an ambitious program estimated to rehabilitate 50 houses per year till 2009 at an overall cost of $ 4 million. Furthermore, the employment component of the project has been boosted by the disbursement of 425 loans, of which 53% went to retail, 35% to cottage industries and 12% to the service and transportation sectors (AKTC 2005). Job training and employment are now offered in park maintenance, landscaping, shoemaking, furniture manufacturing and souvenir products. Apprenticeships in automobile maintenance, computers, traditional construction techniques, carpentry and office skills are also available for young men and women.

Finally, basic social services relating to health, education and solid waste disposal have been upgraded. Much of the upgrading effort is credited to, first, the construction of a Family Health Development Centre offering maternal and clinical care; second, the establishment of vocational, administrative, and literacy courses; and third, close coordination with the responsible solid waste company as well as with volunteers from Darb al-Ahmar who engage in periodic awareness campaigns (Ibid.).

Figure 1

Figure 2

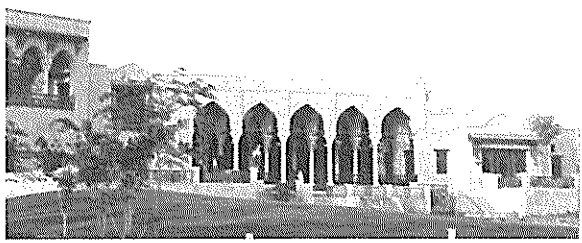


Figure 3

MAJOR CONTRIBUTORS TO THE PROJECT

In addition to the main provider, the Aga Khan Trust for Culture, the project owes its existence to a collaborative effort of international, national, local and grassroots organizations. International contributors include the Ford Foundation, the World Monuments Fund (providing grants for monument restoration), the Egyptian Swiss Development Fund (project initiation grant), the American University in Cairo (offering its nursery for propagating the flora of the park), and finally, Egypt's Social Development Fund. National contributors include the Egyptian Ministry of Culture and the Supreme Council of Antiquities. The Governorate of Cairo contributed its resources at the local level in tandem with multiple NGOs and the grassroots including residents of Darb al-Ahmar (Ibid.).

ANALYSIS: THE PROJECT AS A CATALYST FOR THE REALIZATION OF MDGS

Once complete, the integrated development of the park and rehabilitation projects will bring many MDGs to the city level, since it situates the targets in a local context (Mehta, 2005). Currently, the integrated project realizes three of the MDGs reviewed in section 3 of this paper. These are; the eradication of extreme poverty through the extension of micro-credit and employment generation; ensuring environmental sustainability through the rehabilitation, and raising the awareness, of cultural and natural assets; and finally, the promotion of global/local partnerships and networks by pooling the resources of contributors. To a lesser extent, the health care component of the socio-economic aspect of the project will also help realize the goals of decreasing child mortality rates and promoting gender equality.

That said, the project has had a tremendous impact on slum upgrading efforts in Cairo. First, the project highlighted *the importance of political will* at all levels of the Egyptian and donors' hierarchies. Second, implementation of the project promoted *innovative governance.* Third, the project encouraged the residents of Darb al-Ahmar to think of *creative local solutions* to their problems and to engage in participatory governance. It also reaffirmed *traditional cultural values and the concept of ownership,* which Auclair (2005) so aptly refers to as "shared responsibility.", on top of setting *targets which could easily be monitored and evaluated* throughout the implementation phase. The project *strengthened existing institutions* at the neighbourhood level, and *pioneered new ones* thus bolstering capacity building at the community level. Finally, it

created *effective partnerships, established valuable socio-cultural databases,* and *initiated top-bottom* and *bottom-up* learning processes.

SYNTHESIS: WHAT NEXT?

Emulating the success of al-Azhar's integrated development project elsewhere in Cairo, or indeed in any other metropolis, depends on whether the following questions are addressed properly. Can enough *political will* be mobilized at all levels with the explicit aim of realizing a marked improvement in slums? How is this will *incorporated* in urban policy? Is the *right* policy, legal and regulatory (finance, tenure, norms and standards) framework in place? Are the necessary institutions and human resources up to *the challenge of sustaining the upgrading effort* over the period of the project and beyond? And, finally, can *the dividends of successful developments* be invested to generate momentum in other areas less visible and notably deprived from cultural assets?

REFERENCES:

Aga Khan Development Network (AKDN). 2005(a). "Inauguration of al-Azhar Park." Press Release, March 25th 2005. (www.akdn.org.)

Aga Khan Development Network (AKDN). 2005 (b). "Aga Khan and Madame Mubarak Inaugurate al-Azhar Park: the Park as a Catalyst for Social Economic and Cultural Renewal." Press Release, March 25th 2005. (www.akdn.org.)

Aga Khan Trust for Culture (AKTC). 2005. *Cairo: Urban Regeneration in the Darb al-Ahmar District.* Historic Cities Support Programme. Artemides Edizione, Rome, Italy.

Aga Khan Trust for Culture (AKTC). 2003. *The Azhar Park Project in Cairo and the conservation and Revitalisation of Darb al-Ahmar.* Historic Cities Support Programme. Impremeries Réunies Lausanne s.a., Switzerland.

Auclair, C. 2005. "The Millennium Declaration and the Habitat Agenda." *Habitat Debate*, September vol. 11 no 3, p. 9. UN-Habitat. Nairobi, Kenya.

Bazoglu, N. 2005. "The need for a more ambitious target." *Habitat Debate*, September vol. 11, no 3, p.8. UN-Habitat. Nairobi, Kenya.

El-Mikawi, M. 2005. Informal Interview with al-Azhar Park Manager. October 14th.

Lindsey, U & el-Amrani, Iskander. 2005. "Dream of Green." (www.cairomagazine.com.)

Mehta, D. 2005. "Bringing the goals to city level." *Habitat Debate*, September Vol. 11, no 3, p. 10. UN-Habitat. Nairobi, Kenya.

Moreno, E. 2005. "How far is the world from the slum target?" *Habitat Debate*, September Vol. 11, no 3, p.4. UN-Habitat. Nairobi, Kenya.

***

PLANNING MALAYSIA
Journal of the Malaysian Institute of Planners (2006) **IV**, 31 - 48

KNOWLEDGE CITIES: EXAMINING THE DISCOURSE
SMART VILLAGES, INTERNET CITIES OR CREATIVITY ENGINES

Ali A. Alraouf[1]
Department of Architecture, Faculty of Engineering
UNIVERSITY OF BAHRAIN, KINGDOM OF BAHRAIN

Abstract

The world's growing cities are a critical fact of the 21st Century, and represent one of the greatest challenges to the future. By the year 2050 cities with populations over three million will be more than double; from 70 today to over 150. When knowledge is perhaps the most important factor in the future of city's economy, there is a growing interest in the concept of the "knowledge city". An acceptable definition of knowledge city might be it is not just a regular city. It is a growing space of exchange and optimism in which each and everyone can devote himself to personal and collective projects and aspirations in a climate of dynamism, harmony, and creativity. A world examination of the status of Knowledge Cities will reveal a tangible development in collective efforts of declaring and developing such cities around the globe. On the contrary, Arab cities are building technological isolated projects thinking that they are promoting the same concept. An examination of projects like Egypt' Smart Village and Dubai's Internet City and Knowledge Village will be helpful in evaluating the knowledge status of contemporary Arab Cities.

The purpose of this paper is to explore the knowledge city concept in depth. It will discuss the principles of a knowledge city, and portrays its distinguishing characteristics and processes. I'll argue in this paper that the concept of 'Knowledge Cities' is rooted in the urban, cultural structure of traditional Arab cities. Therefore an attempt to foster this concept in today's Arab cities would not be possible by building isolated technological statement scattered around the city. Alternatively, the rise of the network society, global networks, linked cities and existence of smart communities should construct the basis for shaping Arab Knowledge Cities.

In addition, the paper will introduce the concept of Urban Creativity Engines , and examples of various types will be presented. I ll argue that this is a more comprehensive concept for constructing and evaluating knowledge cities. Although this concept and its terminology is new, the paper will prove that there are many historical examples, regionally and internationally, of knowledge cities and Innovation/Creativity

[1] Assoc. Professor Dr. Ali A. Alraouf can be contacted at alialraouf@yahoo.com

Engines . A focus on the traditional built environment of the Middle Eastern cities will be included to examine the main hypothesis of the paper.

Keywords: Smart Communities, Knowledge Cities (KC), Network Society, Community Architecture, Global Networks, Creativity Engines

INTRODUCTION

'In the knowledge economy, human development depends not on having more but by being more-becoming a co-creator to the future of humanity'

Dr. Thomas F. Malone

When knowledge is perhaps the most important factor in the future of city s economy, there is a growing interest in the concept of the knowledge city . Hence, what are the qualities of future cities becomes a crucial question and its answer creates a challenge for architects, urban designers, planners, developers, and decision makers around the world.

Globally, there has been an explosion of worldwide initiatives to reconsider contemporary cities as hubs of knowledge and all its related activities. It seems that the challenge of human kind in the third millennium and in a post-globalized world is how to increase the innovation capacity and performance of cities by creating an active community of knowledge sensitive cities or regions which will rapidly learn from each other.

In addition, another explosion of cross-boundary internet activities took place. It creates a modern city management landscape that defies traditional geographical limits. It also creates a highway of networked knowledge operating in the best interest of our common good, but not on the expense of individual development.

WHAT IS KNOWLEDGE CITY?

KCs play fundamental roles in knowledge creation, economic growth and development. Edvinsson (2003) sees KC as a city that was purposefully designed to encourage the nurturing of knowledge. The notion of KC is interchangeable to a certain degree with similar evolving concepts such as 'knowledge-based clusters' (Arbonies and Moso 2002), 'ideopolis' (Garcia 2004) or 'technopolis' (Smilor et al. 1988a; Smilor et al. 1988b; Dvir and Pasher 2004). KC is also seen as an umbrella metaphor for geographical entities, which focus on knowledge creation and covers other knowledge zones

such as 'knowledge corridors', 'knowledge harbours', 'knowledge villages' and 'knowledge regions' (Dvir 2003).

Ergazakis et al. (2004) refer a KC as a city that aims at a knowledge-based development, by encouraging the continuous creation, sharing, evaluation, renewal and update of knowledge. This can be achieved through the continuous interaction between its citizens and also between them and other cities' citizens. The citizens' knowledge-sharing culture as well as the city's appropriate design, ICT networks and infrastructures support these interactions.

This concept involves developing a path towards more viable, vibrant, and sustainable development. KCs have embarked on a strategic mission to firmly encourage the nurturing of innovation, science and creativity, within the context of an expanding knowledge-based economy and society. In this regard a KC can be seen as an integrated city, which physically and institutionally combines the functions of a science park with civic and residential functions. It offers one of the desirable paradigms for the sustainable cities of the future.

Knowledge cities are seen as fundamental to the economic growth and development of the 21st century cities. Knowledge city is a new perspective of development which is based on knowledge, innovation and creativity. Leif Edvinsson (Dvir, 2004) defines Knowledge City as *"a city that purposefully designed to encourage the nurturing of knowledge"*. Knowledge city is not just a city. It is a growing space of exchange and optimism in which each and everyone can devote himself to personal and collective projects and aspirations in a climate of dynamism, harmony, and creativity. What is unique about this definition is the focus on Knowledge city as a holistic environment for comprehensive development. Hence, it calls for different process of articulating the city structure and subsequently raises issues and concepts like transparency, democracy and sustainability.

CITIES FOR A NEW MILLENIUM

Advances in information and communication technologies (ICTs) are inevitably making societies and cities increasingly knowledge-based. The nature of city development changes accordingly as activities in the knowledge sector are becoming more important and they require conditions and environments which are different from commodity-based manufacturing activities (Knight 1995).

Globalization was made possible with the advent of the digital revolution and has turned the world into a global village; and, in this era of globalization, cities

are regarded as arenas of accelerating change. Needless to say, cities themselves should likewise change dramatically. Saskia Sassen (2000) once referred to the four major interrelated functions that cities should perform in their attempt at becoming global. In his words, they should become "highly concentrated command points in the organization of the world economy; second, as key locations for finance and for specialized service firms, which have replaced manufacturing as the leading economic sectors; third, as sites of production including production of innovations, in these leading industries; and fourth, as markets for the products and innovations produced" (1991:3-4).

Castells (1996&1998) has argued that a new type of society is rising in our contemporary cities due to the consequences of the information revolution. From a sociological point of view, Sassen (2000) has argued that cities in the information age should be perceived as nodes of an immense network of cultural, commercial and political transactions. Giving these points of view, it is obvious that the classical planning process and design guidelines of contemporary cities need a substantial revision. In a world which is best described as a global village with less and less boundaries, Knowledge and its physical representation in the built environment creates a major challenge and invite us to vision and predict the main aspects of the cities of a new millennium.

In this new collection of essays, Sassen (2002) and a distinguished group of contributors expand on the author's earlier work in a number of important ways, focusing on two key issues. First, they look at how information flows have bound global cities together in networks, creating a global city web whose constituent cities become "global" through the networks they participate in. Second, they investigate emerging global cities in the developing world-Sao Paulo, Shanghai, Hong Kong, Mexico City, Beirut, the Dubai-Iran corridor, and Buenos Aires. They show how these globalizing zones are not only replicating many features of the top tier of global cities, but are also generating new socio-economic patterns as well.

In global cities, urban and regional planning has displayed a recent interest in designing policies to attract international investment and encourage economic growth in KCs. These policies also focused on creating social amenities and communities to attract knowledge workers (Martin 2001; Chen and Choi 2004). The key factors in attracting knowledge workers to KCs are mainly social relationships and quality of life of these cities (Mathur 1999; Leamer and Storper 2001; Robinson 2002; Santagata 2002).

EMERGING KNOWLEDGE CITIES AND INTERNATIONAL ATTEMPTS

It is estimated that by 2030, 60 percent of the world's population will be living in cities (Wagner 2001). As KCs creating skilled employment opportunities and economic growth, much of the urban development would occur around them. The major role of a KC is to provide its citizens with enabling conditions which foster knowledge creation, knowledge exchange and innovation.

There are already several cities that identify themselves as knowledge cities, or have strategic plans to become knowledge cities. These cutting edge cities are aiming to win competitive and cooperative advantage by pioneering a new environment and knowledge ecology for their citizens. The list includes some of these cities according to the Knowledge Cities Observatory (KCO) classifications:

- Melbourne, Australia_– its strategic plan for 2010 emphasize the path towards enhancing its position as a knowledge city.
- Delft, the Netherlands_– the city clustered its knowledge intensive projects included in the "delft knowledge city" initiative in 5 themes: soil & water, information technology, innovative transport systems, environmental technologies.
- Barcelona, Spain – the activity of Barcelona Forum 2004, which manifests the cultural perspective which Barcelona adopted as a main theme for its knowledge sensitive development. Accordingly, the city was chosen to host the founding meeting of the distinctive Knowledge Cities Observatory (KCO).
- Palmerston North, New Zealand – this relatively small city puts education in the heart of its "knowledge city" manifest.
- Monterrey City, Mexico – the new governor set the goal of becoming a knowledge city among his top 5 priorities.

This short list shows how the concept of Knowledge Cities is spreading successfully to different geographic, cultural, social and economical contexts around the world.

The case of Melbourne deserves more analysis and attention. Melbourne's experience as a knowledge city needs to be further analysed. Melbourne's initiatives on science, technology and innovation and policies for economic and social development are setting an example for the holistic process of establishing KCs world wide. It also illustrates how the city administration

played a key role in developing Melbourne as a globally recognised, entrepreneurial and competitive knowledge city.

KNOWLEDGE CITIES/ZONES: REGIONAL ATTEMPTS

The Middle Eastern cities are not only exceptions but would require major social transformations. These transformations in this paper would be regarded as preconditions towards the creation of knowledge cities. Furthermore, based upon what has been put forward in the introduction above, the rest of the paper would be devoted to spelling out the said preconditions or prerequisites. Considering so, sustainability and citizenship would be regarded as the most important strategies in the development of a knowledge-city project in the Middle East.

In an attempt to actualize the high-performance knowledge city, different initiatives took place in some of the Middle Eastern cities. Egypt, UEA, and Qatar are pioneers among other Arab countries in trying to inject knowledge entities in the structure of their major cities. Cairo and Dubai are witnessing a major development in this direction which results in a variety of projects where knowledge is a substantial component of their identity.

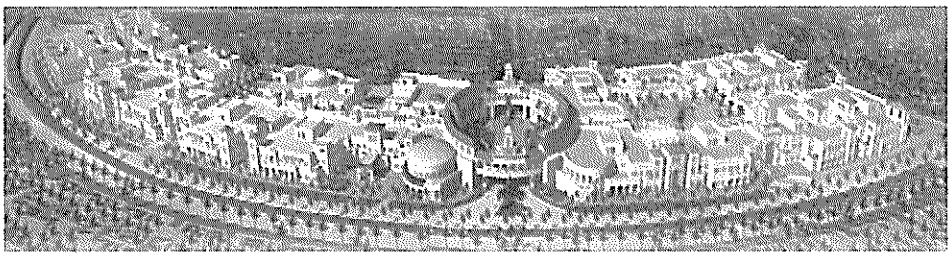


Figure 1: Dubai's recently opened Knowledge Village.

On the contrary of the comprehensive strategic planning of European and American knowledge cities, Arab cities are building technological yet isolated projects. This is considered as an attempt towards claiming a new identity for its contemporary cities as knowledge cities. An examination of projects like Egypt' Smart Village and Media City or Dubai's Internet City and newly launched project Knowledge Village will be helpful in evaluating the knowledge status of contemporary Arab Cities. Experiences and lessons learned from developed world Knowledge Cities initiatives must be used as a criterion for such an evaluation.

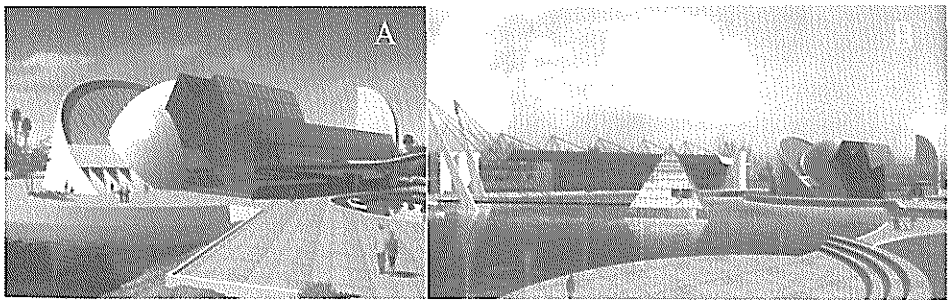


Figure 2: Smart Village project in Cairo – Egypt, is it really smart?

Another crucial point is that the concept of 'Knowledge Cities' is deeply rooted in the urban, cultural and even architectural structure of traditional Arab cities. Some traditional cities in Egypt, Iraq and Syria were designed as an arena for knowledge exchange. Therefore, an attempt to foster this concept in today's Arab cities would not be possible by building isolated technological statement scattered around the city. Alternatively, the rise of the network society, global networks, linked cities and existence of smart communities should construct the basis for shaping Arab Knowledge Cities.

PRINCIPLES OF A KNOWLEDGE CITY

The revolutionary transformation of knowledge has been made possible with the revolution in electronics which, in turn, has made the digital world a reality (see Sassen, 1991). This major innovation has led to as many transformations as possible in almost all aspects of life; cities, as arenas of accelerating change, not excluded. Hence, concepts such as digital city, dot com city, internet city, intelligent city, global city, and knowledge city are the by-products of these changes as mentioned above. In a narrow sense, Knowledge City would mean a city where the fruits of the IT Industry are applied to run it. In this regards, the management and control of city traffic was pioneer. However, in contrast to this narrow definition of Knowledge City, there is another view which claims that Knowledge City is not a novel phenomenon and "there are many historical examples of 'Knowledge Cities' and Innovation engines" (see Dvir, 2003:1).

The Kaieteur Institute for Knowledge Management and ENTOVATION International, Ltd. (http://www.entovation.com/), have published ten principles which govern the holistic formation of a knowledge city. These principles include the following:

- Knowledge Purpose
- Knowledge commerce
- Abundant Economy
- Knowledge Fusion
- Knowledge Governance
- Knowledge Symmetry
- New growth Medium
- Knowledge-to-Democracy
- Boundary-less Intellectual Capital
- Knowledge Enabling Grid

For the purpose of this paper, I will try to shed some light on four of these principles which form a major importance and substantiate the argument of this paper.

New growth Medium:

Knowledge-Based Urban Development is the perfect new medium in which to grow more livable, stimulating, cleaner, intelligent, tolerant and meaningful communities' world wide.

Knowledge Fusion:

The Knowledge City is the culmination and synthesis and reintegration of the 'Creative City' and the 'Science City' where arts and sciences become unified in uniquely human twenty-first century urban ecology. To focus on one without the other would not be smart.

Boundary-less Intellectual Capital:

The knowledge city though it may be grounded in space and time, is ultimately unbounded by space and time, and this gives it greater potential global richness and reach.

Knowledge Governance:

In an era where there is growing unease, dissatisfaction and distrust in current governance regimes, the Knowledge City can facilitate new forms of Citizenship in which openness, transparency, accountability, and recall, replace fear, cynicism, fraud, and the knowledge gap expressed so often in 'Who Knew'?

It is obvious that these elements are stressing the equal and fair distribution of knowledge within cities as oppose to creating gated and excluded centers for knowledge. The crucial point is the fact that knowledge cities are about engaging the whole community not limited and selected sectors of it.

CHARACTERISTICS OF A KNOWLEDGE CITY

What makes a knowledge city perform optimally? The following list is compiled as a result of analyzing the published criteria by the Latin American Knowledge Development forum, Monterrey, Mexico (2003) and by the ENTOVATION 100, Barcelona, Spain (2004):

- A city that has instruments to make knowledge accessible to citizens.
- A network of public libraries that is compatible with the European standards.
- Access to the new communication technologies for all citizens.
- All cultural facilities and services with a central educational strategy.
- A city that has a newspaper- and book-reading level that is similar to the average European level.
- A city that has a network of schools connected with artistic instruction throughout its territory.
- A city that is respectful of the diversity of cultural practices of its citizens.
- A city that places the streets at the service of culture.
- A city that simplifies, through the provision of spaces and resources, the cultural activity of the community collectivises and associations.
- A city with civic centers that are open to diversity and that foster face-to-face relations.
- A city that makes available to citizens from other territories all the tools required for them to express themselves.

TRADITIONAL ARAB/ ISLAMIC CITIES

A close examination of the urban and architectural structure of a typical Islamic/Arab city reveals that many of the city's experience was based on exposing community members to knowledge either consciously or subconsciously.

Three main building types can be used in the context of this paper to illustrate the previous point. These buildings are: the Mosque, the School, and the Market.

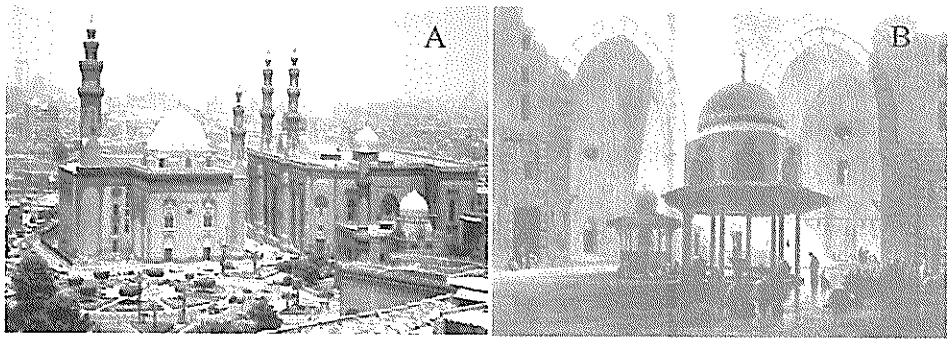


Figure 3: Madrasat Sultan Hassan, Cairo: Mosque as a knowledge centre.

The bazaar has always played an important role in the economy and social life of the city. In the broadest sense of the term, the bazaar is an organized system grouped into guilds. In an Iranian bazaar, the shops are usually grouped by profession; thus one alleyway may be occupied by carpet sellers, another by goldsmiths and yet another by coppersmiths. It acts as an interface between the town and the country, and has close links with the clergy.

TOWARDS A MIDDLE EASTERN KNOWLEDGE CITY

The question still remains, however, How to turn our cities into knowledge cities? To answer such a difficult question and in an attempt to draw a tangible conclusion to this paper, the concept of 'Urban Creativity Engine' will be introduced. Its reflection on city planning and design which can allow the emergence of Knowledge cities in the Middle East will be explored.

Urban Creativity Engines

Creativity is the process of turning knowledge and ideas into value. An 'Urban Creativity Engine' is a system that can trigger, generate, foster and catalyze creativity in the city. Typically it is a complex system that includes people, relationships, values, processes, tools and technological, physical and financial infrastructure. A close examination of the constructs of a typical city reveals that many of the city constructs can serve as Creativity Engines. However, not every University, or Library, or Industrial District, for example, do play the role of a true creativity engine. There is always a unique combination of intangible factors which turn a specific ordinary urban construct into an innovation engine. This set might include, for example, a strategic intention, an explicit vision to use it as a creativity engine, exceptional leadership, an urgent need, special team.

Smart Patterns For A Middle Eastern Knowledge City

Five creativity engines: the Café, the Library, the Museum, the University, and the Market are selected to illustrate how urban institutions can transform into essential part of the Knowledge City network. The existence and the social, cultural and even architectural articulation of these institutions in Middle Eastern cities would facilitate the emergence of smart urban patterns which will construct the overall holistic structure of a knowledge city. However, at the end of the paper we suggest that other urban constructs might also serve as Creativity Engines.

i) The Café

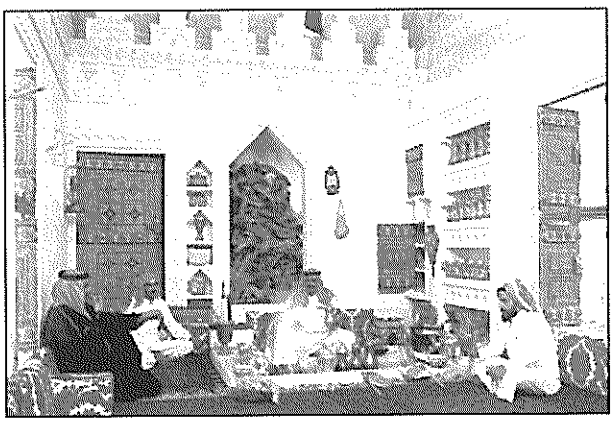


Figure 4: Traditional coffee shop (*Gahwa*) in Middle Eastern Cities.

The first Innovation Engine we visit is the old good Café', since knowledge and ideas are created mainly through conversations. Historically, cafés provided stimulating environment for rich conversations which led to the creation of exchange of provocative ideas and breakthrough in diverse areas such as arts, philosophy, psychology and politics. Many of the influencing ideas of the 19th Century were created at the café's of Wien and Paris, for example. It is only natural that the methodology of "Knowledge Café" was developed to support innovative brainstorming sessions.

ii) The library

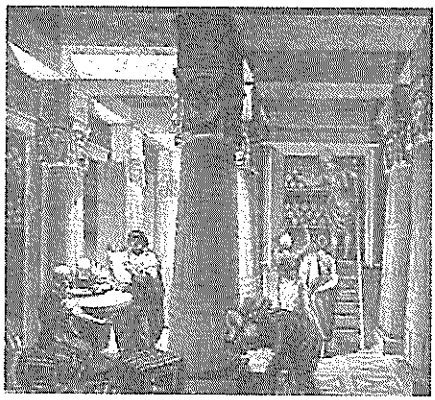


Figure 5: Scholars at the old Alexandria library

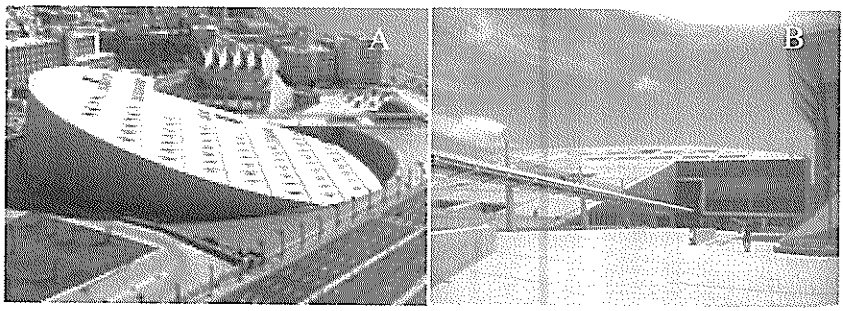


Figure 6: The New Bibliotheca Alexandrina, Egypt

Great Libraries are not only about archiving the intellectual achievements of the past generations but can serve as a place for innovation. The ancient library at Alexandria had been the western world's most important center of learning for a thousand years. The Alexandria Library was nothing less than the summit of ancient scholarship. Its archives and museum were filled with the intellectual riches of Mesopotamia, Persia, Greece, Rome and Egypt, and its research center was visited by many generations of scholars seeking to stimulate their minds and keep alive memories of the past.

Today, in an event that speaks of renewal Alexandria is trying to recapture the spirit of perhaps its richest legacy—the Great Library of Alexandria—by opening the new Bibliotheca Alexandrina.

iii) The Museum

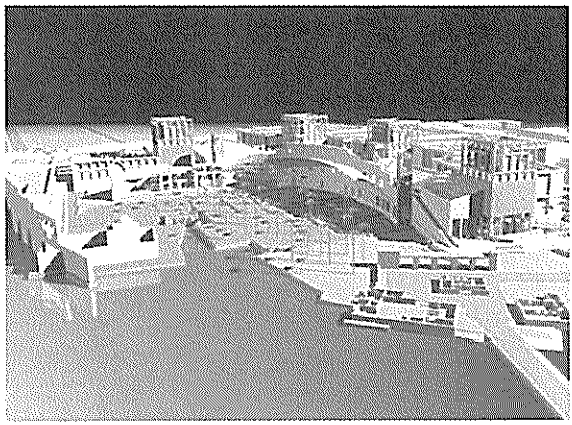


Figure 7: Islamic Museum, Qatar: A knowledge center integrated with the city.

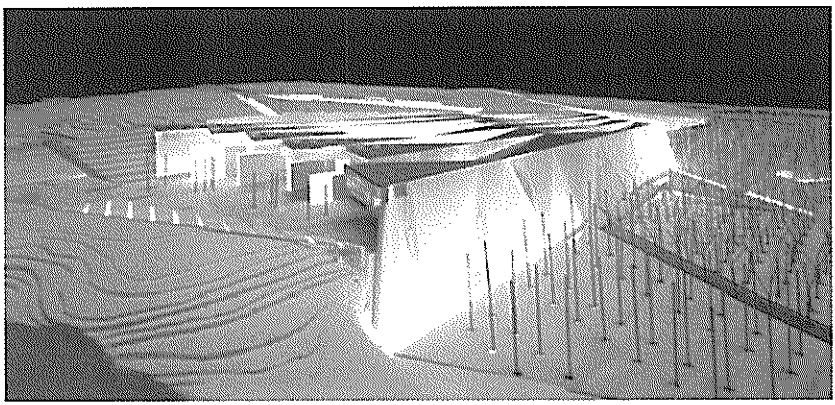


Figure 8: The New Civilization Museum., Egypt: More transparency and openness

Similarly to the case of libraries, great museums not only show past cultural achievements but can also serve as hosts and stimulators of innovation in diverse arts fields as well as in other areas.

One of the best examples is the Guggenheim museum at Bilbao which was one of the most important ingredients in the plan to redevelop the city of Bilbao and transform this old industrial town into a knowledge city. Since it opened its doors in 1997, the museum hosted not only art events but many conferences in business innovation, intellectual capital and similar domains. It was a full day visit to the museum that

led the author to the idea that art could and should take an important role in EC funded research projects.

iv) The University

The University of California, Berkeley in San Francisco, the colleges of Oxford, MIT and Harvard at Boston, Le Sorbonne in Paris, and Monterrey Tech at Monterrey. All are fine examples of the scale, quality and different kind of innovativeness that a good university can contribute to a city. In all visions and strategic plans of knowledge cities, the local universities play an instrumental role. However, beware of ivory towers. It is not enough to nourish the academic excellence of the university. The multi-faceted linked between the university and the city citizens – children, teachers, business people, artists, industrialists, etc – turn the university from a learning and research center into an innovation engine.

Endless/Timeless Creativity Engines:

How can cities turn other urban places and institutions into engines for creativity? We believe that creative thinking based on collaborative efforts of all stakeholders – citizens, business people, policy makers, educators etc. – can lead to interesting answers. For example, what about the following constructs of the city (see figures from 9 to 15).

FINAL RECOMMENDATIONS

- Knowledge cities should be perceived as the opportunity for new sustainable growth and prosperity in the global knowledge-based economy.

- The emerging knowledge cities in the Middle East should be seen as a regional knowledge network. The ultimate goal is to increase the innovation and creative capacity of cities based on a new set of knowledge patterns.

- An active community of knowledge sensitive cities or regions will learn from each other. The pre-condition for participation is the willingness to share the experience with other members of this unique community.

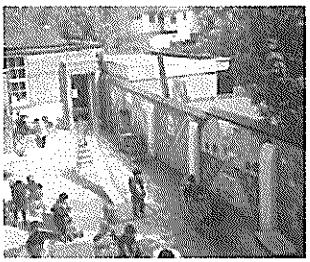


Figure 9:
Kindergarten as An Interactive Knowledge based Environment.

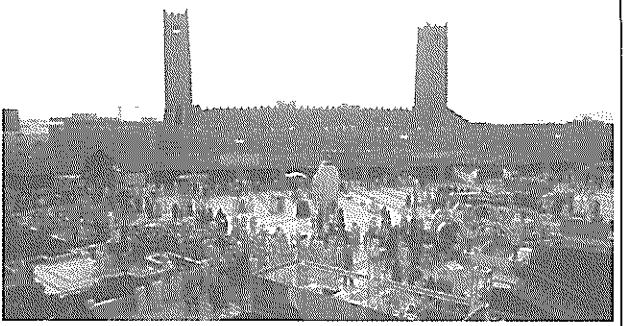


Figure 10:
Plaza or Community Saha.

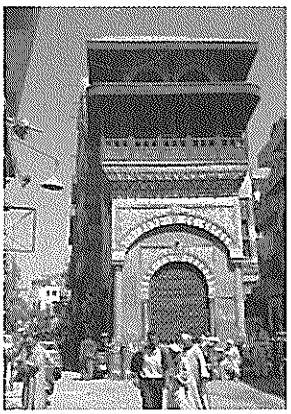


Figure 11:
Street as an Opportunity for Knowledge Encounters

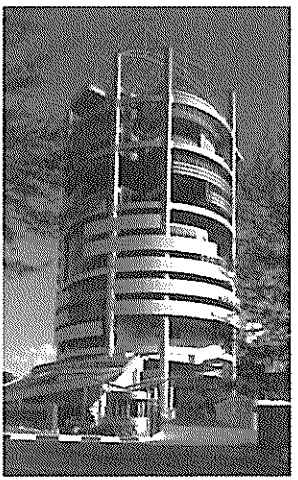


Figure 12:
Public Buildings which Communicate.

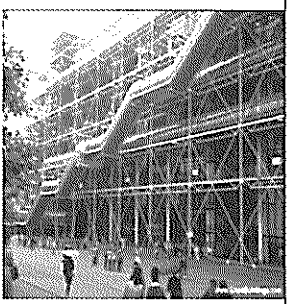


Figure 13:
Cultural Center as a Knowledge Arena

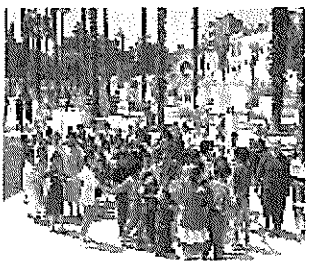


Figure 14:
Community Parks and Gardens.

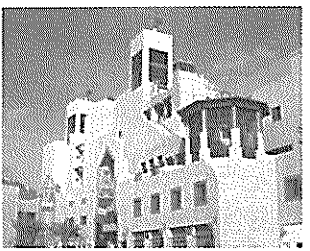


Figure 15:
Shopping Mall as a Social Center

And…Endless/
Timeless Creativity
Engines.

- The process of creating Middle Eastern knowledge cities should be shifted from focusing on creating isolated and separated knowledge centers to a process by which a knowledge network is established and shared by different sectors of the community.

- A comprehensive examination of the history of Islamic and Middle Eastern Cities is urgently needed to provide contemporary planners, urban designers and architects with tools and patterns which were used successfully to disseminate knowledge in traditional built environments.

- The making of a KC is a long and complicated process, but for sure it is the path to follow for the most sustainable urban development. Examples of KC best practices can be guidance for cities that are willing to pursue knowledge-based development. However, it should not be forgotten that each city is unique and characterised by different cultural, economic and political conditions. Therefore, KC strategies need to be customised to the unique urban circumstances, competencies, opportunities and challenges.

- A Knowledge City is a place where the outcomes and by-products of information technology are widely available to all. The physical configuration of the city would educate the people and even by just living in the city they would absorb the manifestations of culture. Facades, landscapes, city elements, etc. are designed and arranged in such a way to remind residents of the cultural presence. Moreover, well-equipped cultural centres evenly distributed throughout the city would be available to all without exception.

- Research is also a prerequisite of a Knowledge City. It requires infrastructure of research, an issue which has not been developed in the Middle East. Hence, an inclusive initiative to prepare the grounds for a major transformation must be translated into strategy.

- A network between Middle Eastern cities needs to be established to facilitate the following:
    - Creating annual events which can perform as platforms for mutual learning between cities.
    - Creating and sharing of a set of comparative indicators which enhance understanding and provide a credible mechanism for evaluating the progress of a knowledge city.
    - Best practices exchange.

REFERENCES

Abel, Chris. 2000. *Architecture and Identity: Responses to Cultural and Technological Change*. London:Architectural Press

Abbinnett, R. 2003. *Culture and Identity. Critical theories.* London:Thousand Oaks

Abel, C. 1997. *Architecture and Identity. Towards a Global Eco-culture.* Oxford: Oxford University Press

Barcelona City Government. 2003. *Culture, The Motor of the Knowledge City: Strategic Plan of the Cultural Sector of Barcelona.* Barcelona, Steering Council of the Strategic Plan of the Cultural Sector of Barcelona.

Castells, M. 1983. *The City and the Grassroots*, Berkeley: University of California Press.

Castells, M, (ed) 1985 "High Technology, Space and Society", Vol. 28. *Urban Affairs Annual*, London: Sage Publication.

Castells, Manual. 1996. *The Rise of The Network Society.* Oxford, Blackwell.

Castells, Manual. 1998. *The Information Age.* Oxford: Blackwell Publishers.

Dvir, Ron. 2003. "Innovation Engines for Knowledge Cities" in *ENTOVATION 100 Round Table and the Latin American Knowledge Development Forum*, Monterrey, Mexico.

Dvir, R. 2003. *Innovation Engines for Knowledge Cities: Historic and Contemporary Snap Shots*. Ecology

Dvir, R. and E. Pasher 2004. "Innovative Engines for Knowledge Cities: An Innovation Ecology Perspective." *Journal of Knowledge Management* 8(5): 16-27

Edvinsson, L. 2003. *Introduction to Issues in Knowledge Management.* Oxfordshire: Henley Knowledge Management Forum

Ergazakis, K., K. Metaxiotis and J. Psarras. 2004. "Towards Knowledge Cities: Conceptual Analysis and Success Stories." *Journal of Knowledge Management* 8(5): 5-15

El-Khoury, R. & Robbins, E. (Eds.) 2003. *Shaping the City, Studies in Urban Design, History and Theory.* London: Routledge

ENTOVATION 100. 2003. Round Table and the Latin American Knowledge Development Forum, Monterrey, Mexico.

ENTOVATION 100. 2004. Roundtable, Bacelona, Spain.

Howells, R. 2003. *Visual Cultur.* Polito, Cambridge.

King, Anthony D. 2004. *Spaces of Global Cultures, Architecture, Urbanism, Identity*. London: Routledge

Lefaivre, Liane & Tzonis, Alexander. 2003. *Architecture and Identity in a Globalized World* by Architecture in Focus Series: Prestel
Miles, M. & Hall, T. (Eds.) 2003. *Urban Futures*. London: Routledge
Morse, Suzanne. 2004. *Smart Communities* Jossey-Bass
Neil, William. 2003. *Urban Planning and Cultural Identity*. London: Routledge
Sasse, Saskia. 1991. *The Global City*, Princeton: Princeton University Press

Related Web Sites:

http://www.melbourne.vic.gov.au/cityplan
http://www.delft.nl/kennisstad/en/
http://www.barcelona2004.org
http://www.entovation.com/
http://www.inthekzone.com/

***

PLANNING MALAYSIA
Journal of the Malaysian Institute of Planners (2006) IV, 49 - 68

A PRELIMINARY INVESTIGATION OF A MODEL ON THE DECISION TO IMPLEMENT TELEWORKING IN THE JAPANESE BUSINESS ORGANIZATIONS

Abdul Azeez Kadar Hamsa[1]
Kulliyyah of Architecture and Environmental Design
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

Masao Miura[2]
SHIBAURA INSTITUTE OF TECHNOLOGY, JAPAN

Abstract

Teleworking, an alternative form of work arrangement, has gained very little significance in the present information era, as otherwise expected, in modern Japan. Existence of many factors would be directly responsible for the slow growth of teleworking in Japan. This paper highlights few significant factors responsible for the decision to accept teleworking as an alternate work arrangement as expressed by the managers of different business organizations in the Greater Tokyo Metropolitan Area (GTMA). These factors include but not limited to: organizational values, advantages of teleworking, performance evaluation, strategically measures and information technology requirements. A logistic regression model was developed to test the significance of these factors against the decision to implement teleworking. Finally, conclusions were also drawn.

Keywords: Teleworking, ICT, Model, Japanese Organizations

INTRODUCTION

The evolution of Information and Communication Technology (ICT) is accompanied by an abundance of organizational structural changes. To exemplify, telex was replaced by facsimile, electronic typewriters by high-speed computers, postal mails by electronic mail, and to some extent face-to-face

[1] Assistant Professor Dr. Abdul Azeez Kadar Hamsa can be contacted at azeez@iiu.edu.my
[2] Professor, Department of Architecture and Environmental System. He can be contacted at masao@sic.shibaura-it.ac.jp

meetings by teleconferencing. These changes have eventually led to greater, quicker and relatively cheaper access of information. Moreover, it also grew attention in creating and performing many productive-oriented business activities. Telemedicine, teleshopping, teleconferencing, and teleworking or telecommuting are few common information technology- oriented activities, which might make use of one or more of information technology tools to accomplish work-related activities. Thus, information technology has been playing a greater role in facilitating activities located at a greater distant apart into reality. However, the scope of this paper is limited only to teleworking or telecommuting.

The concept of teleworking has generated a significant change with regard to the central workplace of the business organizations, which is no longer considered to be the only workplace for performing work-related activities (Christensen, 1990). It is accomplished mainly as a result of rapid progress in the information and communication technology field. The rapid growth of personal computer, fax, and mobile telephone in many countries are excellent examples toward this trend. A recent survey in Japan had indicated that nearly 100% of the companies surveyed were using desktop PCs followed by 90% using laptop/notebook PCs to carry out work related activities (EPA, 2000). On the other hand, the number of cellular mobile phone subscribers was estimated to be around 62.2 million in October 2000 (MPT, 2000) and has been increasing almost to 10 million subscribers annually. Nonetheless, the increasing growth of information and communication technology has seen very little impact on the penetration rate of teleworking in Japan. One of the main reasons is due to resistance by the management of the business organizations against the implementation of teleworking. The management uncertainty is also one of the biggest barriers to increased telecommuting in United States (Olson, 1989). The stagnant Japanese economy for a decade since early 1990's as some analysts quote as "The Lost 90's" (EPA, 2000) is considered the other possible cause for the slow progress of teleworking. A number of additional cultural norms were found to be other reasons, which inhibit the adoption of teleworking in Japan (Mokhtarian et. al., 1994). Indeed, the success of a teleworking arrangement is largely dependent on the manager (Hobbs et. al., 1998) and the teleworker and it is therefore important that both are enthusiastic about teleworking. It was also found that managers are expected to spend more time controlling teleworkers than conventional on-site workers (Haddon et. al., 1994) and often expressing concern about such lack of control (Gillespie et. al., 1995). Moreover, management practices and prejudices are still regarded as one of the greatest barriers to the development of teleworking (Suomi, 1997). One of the factors which inhibit take-up of teleworking in UK was resistance from managers in the

organization who perhaps felt threatened or unable to give up control over remote staff (Huws et. al., 1996).

The inception of teleworking in Japan during late 1980's was very well received by the corporate management as the economy of the nation was in the steady increased path (Spinks, 1991). The booming economy in late 1980's has resulted in an increased of real estate cost especially at the center of major cities in Japan like Tokyo, Osaka and Nagoya. After the economy bubble burst in the early 1990's, many large and medium sized corporations, which were introduced teleworking, had started to considerably scale back the promotion of teleworking. On the other hand, the main cause for the relatively low growth of teleworking in Japan, however, is still largely need to be studied extensively despite improved innovation in the information and communication technology. This paper highlights some of the major issues, which are considered vital for the management to decide whether or not teleworking brings positive outlook for the corporations. As a result, the perceptions of the managers on each of the identified factors toward teleworking were analyzed. A binary logistic regression model was developed to assess the influence of each of the identified factors on the decision to introduce teleworking.

OVERVIEW OF RESEARCH APPROACH

The decision to implement teleworking in the Japanese organization, as perceived by the managers, was measured by using questionnaire survey. A pilot survey of the questionnaire was conducted to test the relevance of each of the questions in the questionnaire including survey method. A total number of 10 questionnaires were distributed to the managers of different business organizations in Tokyo area as part of the pilot survey. Few changes were made in the questionnaires before main survey was administered. The administration of main survey includes two sets of questionnaire, which were carried out in the Tokyo Metropolitan area at the end of the year 2000. It was primarily targeted to the business organizations, which have been practicing teleworking successfully (Group I) and the organizations, which are potential to consider but were not practicing teleworking (Group II) at the time of survey. The respondents of each of the two questionnaires comprise managers of the organizations who are responsible in making key decisions for the department concerned. Five main issues were addressed in the questionnaires toward effective implementation of teleworking, which includes but not limited to: organizational values, advantages of teleworking, performance evaluation, strategical measures and information technology requirements. A total number of 600 questionnaires for each of Group I and Group II were distributed to

various business organizations such as banking (13), insurance (12), financial (44), service (189), legal firm (46), software industries (46), telecommunication (8), real estate (39), travel agent (46), architectural (46), management consultant (46) and others (65). Figure 1 represents this trend. The samples were selected randomly from the business organizations database. The selection of sample from various business organizations was based on the employment of a large workforce performing data entry, word processing and other information-oriented jobs (Katz, 1987).

The characteristics of teleworking jobs are: 1) minimal physical facility requirements; 2) little face-to-face interaction with other people; 3) concentration and large blocks of time when employees work independently; 4) projects can be completed with medium term deadlines; 5) jobs can be performed without close supervision. A high proportion of employees was involved in information-oriented, in other words, teleworking jobs in the selected organizations. The selected organizations were small, medium and large-scale categories both in terms of number of employees and business turnover. A reply paid self-addressed envelope was attached with each of the questionnaire and distributed to the selected business organizations by using postal mail method allowing a response period of about two to three weeks. However, it has taken nearly a month for the respondents to return the completed questionnaire. The response rate for Group I and Group II were 1.7% (10) and 11% (66) respectively. This paper highlights only the findings of group II questionnaire because of very low response rate from Group I.

It is noted that the decision to implement telework by the managers is very much essential for an increased growth of teleworking. The decision to consider teleworking is greatly influenced by many factors. Five main factors were identified to model the decision to implement teleworking. Figure 2 represents the decision process to implement teleworking. The attitudes of the managers were carefully studied for the presence of positive or negative responses on each of the identified factors. A binary logistic regression model was developed to test the significant effect of each of these factors against the decision to implement teleworking.

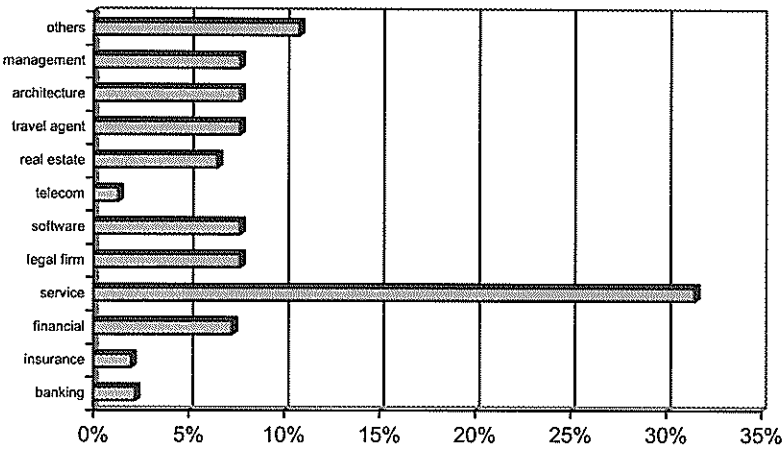


Figure 1: Distribution of sample by business category

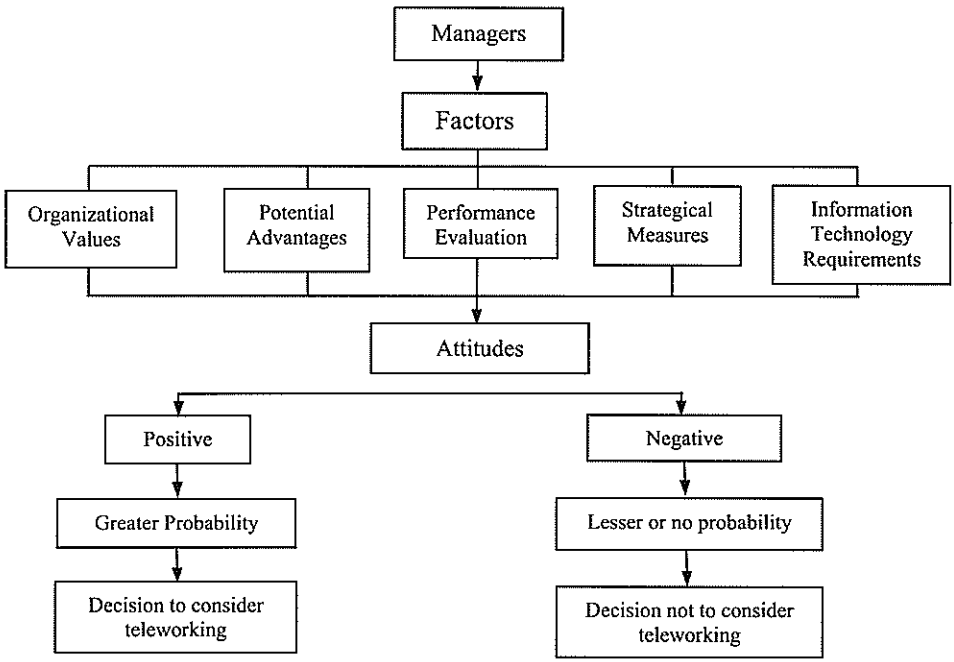


Figure 2: A simple flow chart representing the decision to implement teleworking

Many researchers pointed out the lack of adoption of teleworking due to management's resistance to the lack of visibility and control that telework entails (Cross & Raizman, 1986, Gordon & Kelly, 1986). Managers who have closely supervised their employee's work or who have relied on visual cues to assess performance might find it difficult or time-consuming to shift to a "manage by results" paradigm. The resistance to change by traditional managers can be traced to a long history of organizational discourse revolving around bureaucratization, mass production and stability (Orlikowski, 1996). Traditional office environment is a legacy of industrialization and factory system and that telework might not be adopted because it threatens organizational and personal norms, separation of home and work activities (Kraut, 1987). The basis for the resistance to telework is also found in the technological structure of organizations. Technological innovations and organizational form are recursively linked, and acceptance of telework is associated with changes in both areas (Ellison, 1999). The discussion on the concept of trust that teleworkers are truly working had appeared in many literatures that deal with teleworking. As one author wrote, "How do you manage people who you do not see? The simple answer is, by trusting them, but the apparent simplicity disguises a turnaround in organizational thinking" (Handy, 1995). Olson observes that managers felt that supervising teleworkers entailed more work for them and they did not feel this additional time was particularly beneficial, even if it resulted in better planning and time estimates (Olson, 1989).

A consistent theme throughout the literature reveals that isolation, one of the disadvantages of teleworking, is a key factor limiting the adoption of teleworking (Forester, 1989, Pratt, 1984). Stohl argues that people are less identified with the organizations, and co-workers are not available for social and task support when employees are not co-located (Stohl, 1995). Olson has explicated the importance of organizational culture in determining the adoption of telework which indicates organizations typically express and reflect organizational norms through the physical location of the organization. Managerial resistance to telework may result in various forms of subtle sabotage such as increased on-site meetings (Olson, 1988) and the demand for more deliverables (Perin, 1991).

The managerial resistance to telework is clearly seen as impedance in promoting the growth of teleworking in Japan. The decision to practice teleworking by the managers of the organizations is obviously seen in terms of organizational value, potential advantages of teleworking, performance evaluation, strategical measures and information and communication technology from the literature on teleworking research. These five measures are adopted in the questionnaire survey in ascertaining the perceptions of managers

in different organizations in Japan toward teleworking. Each of these measures is further categorized into suitable classes of responses. To exemplify, culture, traditional work style, identity of the organization, and competitiveness were used as the yardstick to measure organizational values. Similarly, performance evaluation is categorized into interaction between management and employees, additional responsibilities for the management, trust, training, and performance of employees. It is highly seen that positive perceptions toward these measures would attribute to a greater acceptance of teleworking as a formal work arrangement by the managers of the organizations. Otherwise, it would reduce the growth of teleworking.

Development of a model

Prior to developing a model, each of the identified factors such as organizational value, advantages of teleworking, performance evaluation, strategic measures and information technology requirement against decision to implement teleworking was tested for statistical significance both at 95% and 99% confidence interval by using Chi-square method. It was estimated that all the factors were found to be statistically significant both at 95% and 99% confidence interval. This test, however, accounts only for the effect of each of the factors separately against decision to implement teleworking. Having this in mind, it necessitates to test combined effect of each of the factors against decision to implement teleworking for a better understanding which was eventually carried out by developing a logistic regression model.

A binary logistic regression model was developed to estimate logistic regression coefficient for the estimation of odd ratios for each of the independent variables in the model. The dependent variable is a dichotomous in nature, which was categorized as 1 for managers who are willing to introduce teleworking and 0 for not willing to introduce teleworking. The probability of an event occurring, as given by logistic regression model, is structured as in equation 1 (Marija J. Norusis, 1999):

$$\text{Prob (event)} = 1/(1+e^{-z}) \qquad (1)$$

where z is the linear combination and

e is the base of natural logarithms

$$z = B_0 + B_1X_1 + B_2X_2 + \ldots.. + B_pX_p \qquad (2)$$

B_0 = constant

B_1, B_2, B_p = parameter coefficient

X_1, X_2, X_p = independent variables

p = number of independent variables

The estimation of resulting value from the equation 1 is a probability value that varies between 0 and 1. A value close to zero means that the event is very unlikely to have occurred and a value close to 1 means that the event is certain to have occurred. It is noted that each predictor variable in the equation 2 has its own coefficient. These parameters are estimated by fitting models, based on the available predictors, to the observed data. The chosen model will be the one that, when values of the predictor variables are placed in it, results in values of an event closest to the observed outcomes. Specifically, the values of the parameters of the model are estimated using the maximum-likelihood method, which selects coefficients that make the observed outcomes most likely to have occurred (Field A, 2000). Since the logistic regression model is nonlinear, an iterative algorithm was used for parameter estimation.

DECISION TOWARD IMPLEMENTING TELEWORKING

The managers' decision whether or not to implement teleworking is considered vital for an upsurge in the growth of teleworking. In the present work environment, many managers were found to be largely skeptical toward teleworking due to various obvious reasons. This section examines this trend accompanied by general observation and personal characteristics of the sample.

General Observation of the sample

The respondents were found to be predominately male managers as compared to female counterparts. Nearly 86.5% were found to be male managers whereas only 9% constitute female managers. It clearly showed greater gender differences in the top management positions, as it has been very much a realistic phenomenon both in the past and present Japanese corporate world. Not surprisingly, older male managers, as it is seen as a general norm in the Japanese business community, were found to be occupied the executive

positions of the organizations. About 29% of the managers were found to be in the age group of 51-60 years followed by 23% between 41-50 years, 20% 31-40 years, 13.5% 20-30 years and 10.5% more than 60 years. The number of years in the decision making position of the managers had revealed that nearly 41% of the respondents were belong to more than 10 years category followed by 24% less than 2 years, 17% between 5 and 10 years and 14% between 2 and 5 years category.

Personal characteristics

Overall, the analysis of the sample has revealed relatively a fewer number of female managers in different business organizations. The decision against to introduce telework was found to be high among male managers as compared to female counterparts. About 73% of male manager were against the practice of teleworking, compared to 67% of female counterparts. The other interesting finding of the sample was that both the middle and older aged managers were found to be more optimistic toward teleworking as compared to younger counterparts. Nearly 43% of managers older than 60 years were positive about introducing teleworking compared to 32% of managers 51- 60 years old and 33% of managers 41-50 years. On the other hand, about 92% of those in the age group 31-40 years were against introducing teleworking followed by 78% of those 20-30 years old. Surprisingly, managers with more experiences were found to be more optimistic toward teleworking as compared to less experienced counterparts. About 41% of those belong to more than 10 years of experience in the manager category were expressed optimistic toward teleworking as compared to only 19% in the <2 years category.

Organizational value

Generally speaking, the analysis has shown a high percentage of disagreement toward implementing teleworking by the managers. Nearly 70% of the respondents were found to be against the practice of introducing teleworking as compared to only about 27% who were expressed optimistic toward teleworking. The various issues responsible for the greater percentage of disagreement toward teleworking encompass: nearly 59% of the managers who were against the practice of teleworking (n=46) were reportedly agreed that the practice of teleworking would jeopardize organizational value and thus considered one of the main obstacles toward implementing teleworking.

About 41% of these respondents (n=28) were agreed that teleworking would decreases organizational culture (as against about 45% who disagreed), 59% agreed it eradicates traditional work style (as against 28% who disagreed),

which clearly shows how imperative it is to the company, 48% agreed it would ultimately loses organizational identity (as against 35% who disagreed), 35% agreed it declines considerably organizational competitiveness (as against 48% who disagreed), and 31% agreed it would addresses weakness of the organization (as against 48% who disagreed). Figure 3 illustrates this trend. On the other hand, about 33% of the managers who were against the practice of teleworking were reportedly agreed that organizational value does not constitute as a main hindrance for their reluctance to consider teleworking.

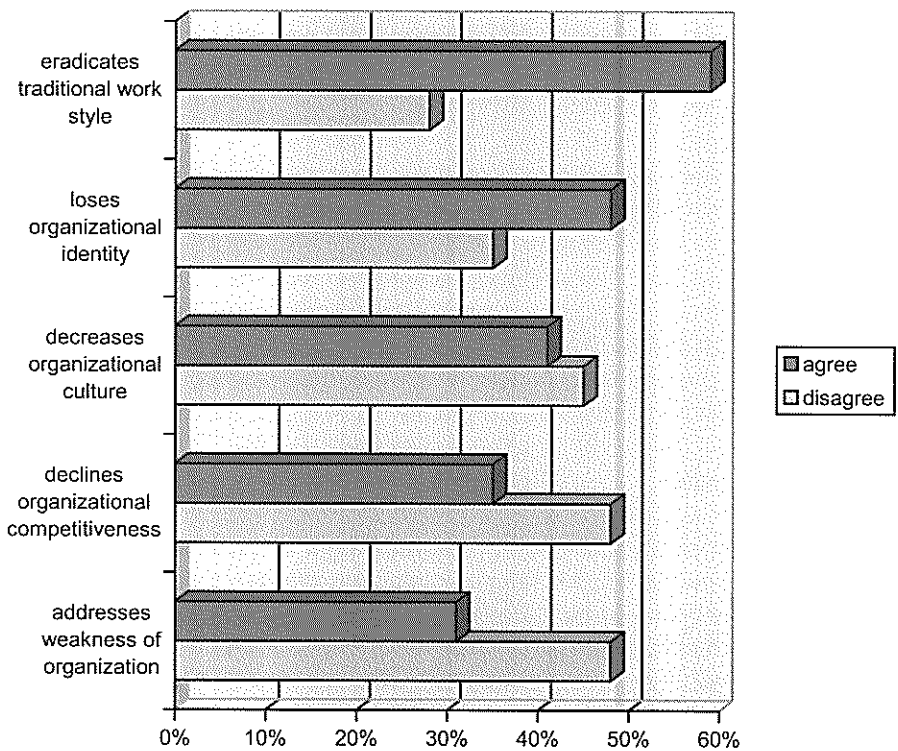


Figure 3: Pessimistic managers' perceptions of organizational value

Disadvantages of teleworking

The findings also showed that disadvantages of teleworking were one of the primary issues for the respondents who expressed pessimism toward teleworking. Nearly 65% of the respondents (n=46) were expressed disadvantages of teleworking was one of the main issues for their reluctance to consider teleworking for their organizations.

About 47% of these respondents (n=30) agreed that the practice of teleworking would necessitate expensive initial investment (as against 44% who disagreed), 44% agreed that teleworking would jeopardizes public relations with the company (as against 31% who disagreed), 69% agreed that the practice of teleworking would eventually creates security concern over the official confidential documents (as against 22% who disagreed), which is widely considered very much imperative for many organizations, and surprisingly only 34% agreed that isolation would result in a less competent worker over time as a result of practicing teleworking (as against 44% who disagreed). This is depicted in figure 4. Meanwhile, only 20% of the respondents who were found to be pessimistic about teleworking were reportedly admitted that disadvantages of teleworking does not necessarily constitute as a main reason for their reluctance to consider for their potential employees.

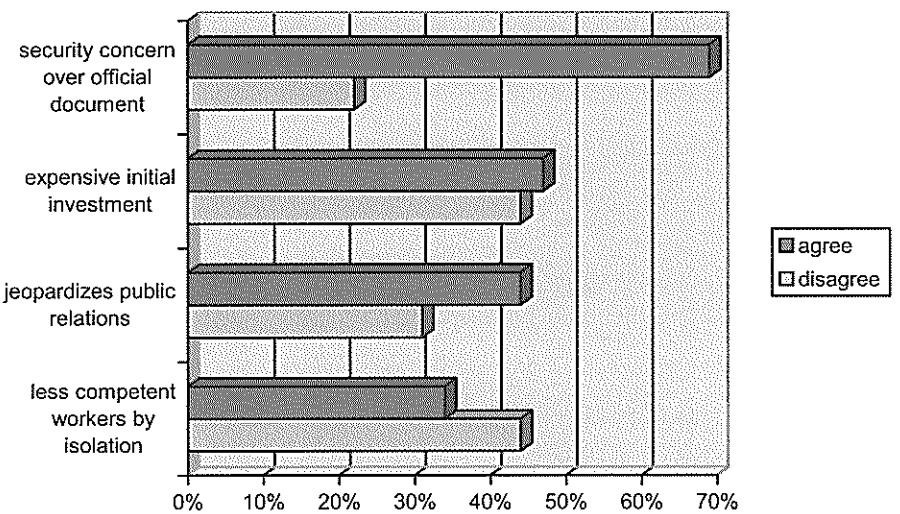


Figure 4: Pessimistic managers' perceptions of disadvantages of teleworking

Performance evaluation

The evaluation of the performance of the teleworkers has been rather reported to be a difficult task, as claimed by many supervisors, especially due to physical absence of the workers at the main central workplace. The perception of the respondents on this issue toward teleworking was recorded. Nearly 61% of the managers who were against the practice of teleworking (N=46) were agreed that performance evaluation of remote workers is one of main hindrances for their reluctance to introduce teleworking.
A relatively high number of respondents (84%) (n=28) agreed that teleworking would eventually decreases interaction between managers and employees (as against 13% who disagreed) as a result of practicing teleworking. Nearly 87% of the respondents agreed that the practice of teleworking would postulates additional responsibilities for the managers (as against 10% who disagreed), which is viewed widely as one of the main cause for pessimism toward teleworking especially in Japan, 48% agreed that physical absence from the central workplace would casts doubts on the employees whether or not he/she is truly performing his/her job (as against 32% who disagreed), 71% agreed that adequate training is very much needed to educate employees on the technicality of teleworking (as against 26% who disagreed) if employees are allowed to telework, and only 26% of the respondents agreed that teleworking would ultimately decreases performance of employees over a long period (as against 45% who disagreed). This is shown graphically in figure 5. On the other hand, about 22% of the respondents were unconvinced that performance evaluation of teleworkers was a major hindrance for their unwillingness to introduce teleworking.

Non-strategical Measures

On the issue whether or not teleworking is a strategical measures in improving the overall performance of the organizations, about 57% of the managers who were against introducing teleworking (n=46) agreed that teleworking is being considered as a non-strategical measures in improving overall performance of the organizations.

Nearly 54% of these respondents (n=27) agreed that teleworking would not help to achieve an overall improvement for the organization (as against 25% who disagreed), a relatively high percentage, about 93%, disagreed that the practice of teleworking would eventually lead to weaken company status, only 4% agreed that it helps to decrease the number of skilled workforce for the company (as against 93% who disagreed), 32% agreed that teleworking would eventually reduces a balanced workforce, otherwise sustained, for the company

(as against 57% who disagreed) if teleworking is being introduced for the potential employees of the organizations. Figure 6 shows this trend. On the contrast, only 28% of the respondents were completely disagreed that teleworking as a non-strategical measure in ameliorating the overall performance of the organizations.

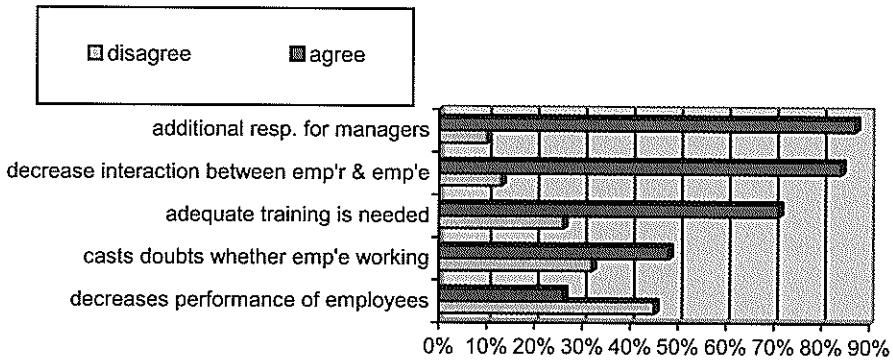


Figure 5: Pessimistic managers' perceptions of performance evaluation

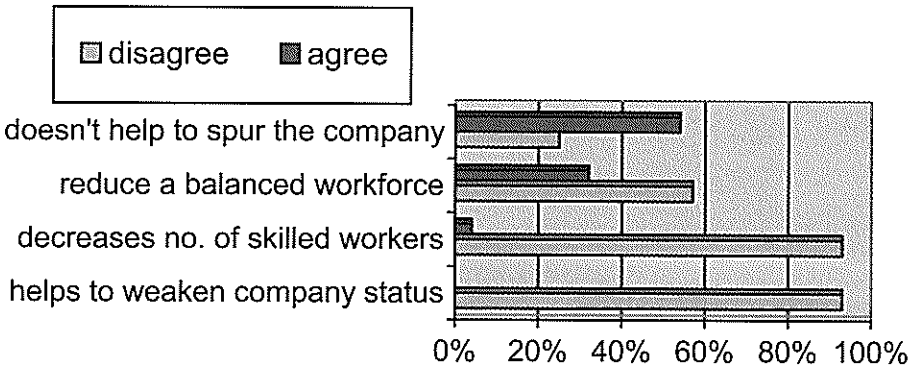


Figure 6: Pessimistic managers' perceptions of non-strategical measures

Lack of progress in Information Technology

Finally, the perception on whether or not lack of progress in the information technology was the main obstacle in introducing teleworking was recorded. It had revealed that only 33% of the respondents (n=46) were reported to be positive that the lack of progress in the information technology was a main factor for their high pessimism toward teleworking.

Nearly 60% of these respondents (n=15) agreed that the cost involved in setting up information technology hardware either for a home-based or centre-based office is very high (as against 40% who disagreed), about 47% agreed that importance of information technology is not well understood (as against the same percentage of the respondents, 47%, who disagreed), nearly 53% agreed that the skills acquired to use information technology hardware by the employees is very low level (as against 33% who disagreed), about 73% of the respondents agreed security concern as a result of transferring documents online was not increased considerably (as against 27% who disagreed), and lastly 67% agreed that both quality and quantity of online documentation was very poor (as against 27% who disagreed) for their reluctance to introduce teleworking. This is clearly depicted in figure 7. Meanwhile, about 52% of the respondents have failed to agree that the lack of progress in the information and communication technology was the main reason for their pessimism toward teleworking.

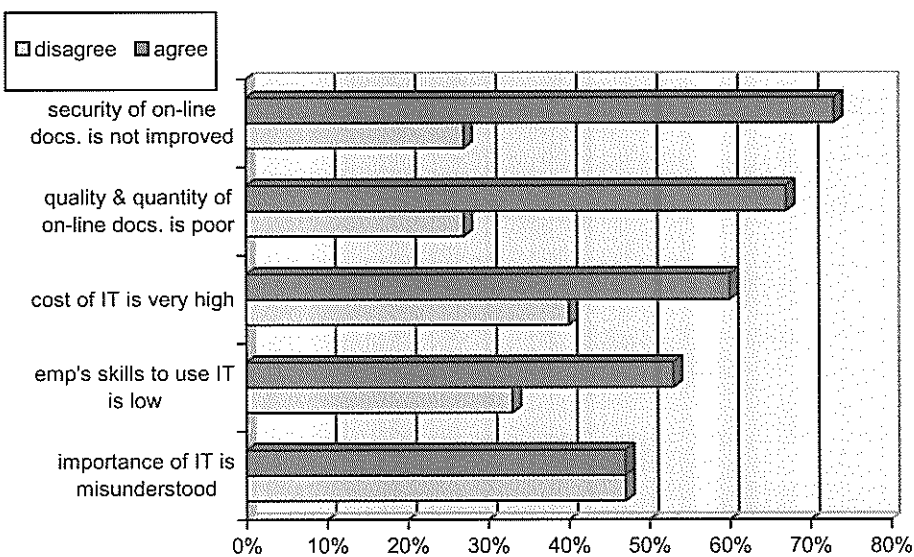


Figure 7: Pessimistic managers' perceptions of lack of progress of IT

Table 1: Pessimistic managers' perceptions of teleworking issues

Factor	Statement	Agree	Disagree	Sample size
Organizational value obstacle vs. introduce teleworking	a. decreases organizational culture	41%	45%	28
	b. eradicates traditional work style	59%	28%	
	c. loses organizational identity	48%	35%	
	d. declines organizational competitiveness	35%	48%	
	e. addresses weakness of organization	31%	48%	
Disadvantages vs. introduce teleworking	a. expensive initial investment	47%	44%	30
	b. jeopardizes public relations	44%	31%	
	c. security concern over official document	69%	22%	
	d. Less competent worker by isolation	34%	44%	
Performance evaluation hindrance vs. introduce teleworking	a. decrease interaction bet. emp'r & emp'e	84%	13%	28
	b. additional respn. for managers	87%	10%	
	c. casts doubts whether empls. working	48%	32%	
	d. adequate training is needed	71%	26%	
	e. decreases performance of employees	26%	45%	
Non-strategical measures vs. introduce teleworking	a. doesn't help to spur the company	54%	25%	27
	b. helps to weaken company status	nil	93%	
	c. decreases number of skilled workers	4%	93%	
	d. reduce a balanced workforce	32%	57%	
Lack of progress in IT vs. introduce teleworking	a. cost involved in IT is very high	60%	40%	15
	b. importance of IT is misunderstood	47%	47%	
	c. employees skills to use IT is low	53%	33%	
	d. security of online-docs. is not improved	73%	27%	
	e. quality & quantity of online-docs. is poor	67%	27%	

(Source: Primary survey 2000)

Output of the model

Overall, the decision to implement teleworking, as perceived by the managers, was largely found to be against the practice of teleworking. Only 27% of the respondents were found to be positive that teleworking would bring benefits to the organization as against 70% who were against the practice of teleworking. It is presumed that the negative perceptions toward teleworking is attributed to factors such as organizational value, disadvantages of teleworking, difficulty in evaluating the performance of teleworkers, teleworking considered as a non-strategical measures and lack of progress in the information technology field. To determine the collective contribution of each of these factors against decision to telework, a binary logistic regression model is developed. The output of the model is shown in table 2.

The significance of each of the selected factors against the decision to implement teleworking was assessed based on the estimated coefficients of the independent variables. The results of the model have showed that the parameter coefficient for each of these factors against the decision to implement teleworking is negative except for the factor related to difficulties in evaluating the performance of teleworkers. The interpretation of the parameter coefficients in a logistic regression model is made in terms of log odds of an event occurring i.e., the ratio of the probability of an event occurring to the probability of an event not occurring. The parameter coefficient of the importance of organizational value as a major obstacle indicates that when this factor changes from not a major obstacle (= 0) to major obstacle (=1) and other independent variables remain the same, the log odds of the decision to implement teleworking decreases by 2.485. Similarly, the log odds of the decision to implement teleworking were found to be decreased by 2.561 when the value of the factor disadvantages of teleworking increases from 0 (not considered as disadvantages) to 1 (considered disadvantages). Considering teleworking as a strategical measures (=0) to non-strategical measures (=1) has resulted a decrease in the decision to implement teleworking by 1.220. Finally, the decision to implement teleworking was estimated to be decreased by 1.141 when managers perception on the progress in the information technology changes from significant progress (=0) to lack to progress (=1). However, the estimation of Wald statistics has showed that only the coefficients for factors such as organizational value as a major obstacle and disadvantages of teleworking appear to be significantly different from 0 using a significance level of 0.05. The ratio of the odds of implementing teleworking when organizational value is viewed as a major obstacle to the same odds when organizational value is not viewed as a major obstacle was estimated to be 0.083. Similarly, the odds

ratio of other factors is also given in table 2. The R^2 statistics indicates that this model only explains about 53% of the "variation" in the outcome variable.

Table 2: Output of the model

Variable	Parameter coefficient	Wald statistics	Significance	Exp(B)	95% C.I. for Exp(B)	
					Lower	Upper
Constant	0.934	3.117	0.075	2.545	-	-
Importance of organizational value a major obstacle (1 = yes; 0 = otherwise)	-2.485	7.315	0.007	0.083	0.014	0.504
Disadvantages of teleworking (1 = yes; 0 = otherwise)	-2.561	5.863	0.015	0.077	0.010	0.614
Difficulties in performance evaluation of teleworkers (1 = yes; 0 = otherwise)	1.043	0.959	0.327	2.837	0.352	22.855
Non-strategical measures (1 = yes; 0 = otherwise)	-1.220	1.559	0.212	0.295	0.043	2.004
Lack of progress in IT (1 = yes; 0 = otherwise)	-1.141	1.071	0.301	0.319	0.037	2.775
Initial –2 Log Likelihood (-2LL)						76.049
Chi-square statistics						29.655
Significance						0.000
R square (R^2)						0.533

(Source: Primary survey)

CONCLUSIONS

It is largely seen that teleworking is still at a very slow pace of growth in the Japanese business establishments. The reluctance to accept teleworking as a formal work arrangement by the managers plays a central role toward this trend. This paper analyses the perceptions of the managers toward accepting teleworking for their compatible workforce. The findings clearly showed that

the managers of the different business organizations were still found to be largely pessimistic for any plan related to the practice of teleworking. Nearly 70% of the managers were found to be largely pessimistic in incorporating teleworking as an alternate work arrangement for their potential employees. The unwillingness to compromise organizational value, perceived disadvantages of teleworking, difficulties in evaluating the performance of teleworkers, if allowed to telework, conceiving teleworking as a non-strategical measure or tool in improving business related activities, and finally lack of progress in the field of information and communication technology were found to be few reasons for their reluctance to consider teleworking as a formal work arrangement. Nearly 59% of the managers who were against the practice of teleworking were reportedly agreed that the practice of teleworking would jeopardize organizational value and thus considered one of the main obstacles toward implementing teleworking. On the disadvantages of teleworking, nearly 65% of the respondents expressed disadvantages of teleworking as one of the main issues for their reluctance to consider teleworking for their organizations. The findings also showed that about 61% of the managers who were against the practice of teleworking agreed that performance evaluation of remote workers is one of the main hindrances for their reluctance to introduce teleworking. About 57% of the managers who were against introducing teleworking agreed that teleworking is being considered as a non-strategical measure in improving overall performance of the organizations. Finally, nearly 33% of the respondents were reported to be positive that the lack of progress in the information technology was one of the main factors for their high pessimism toward teleworking. Even though, the generalization of this finding should be treated with extreme caution because of very low sample size, it has, perhaps, created a platform to comprehend factors, which would affect decision of the managers toward accepting teleworking.

REFERENCES

Adolph I. Katz. 1987. "The Management, Control and Evaluation of a Telecommuting Project: A Case Study", *Information and Management* 13, pp. 179-190.

Field, A. 2000. *Discovering Statistics using SPSS for Windows*, Sage publications Ltd.

EPA. 2000. The effect of information technology on productivity: in search of Japan's "New Economy", Economic Planning Agency (EPA), http://www.epa.go.jp/2000/f/1031f-seisakukoka4-e/main.html

MPT 2000. "Statistics of telecommunications, Ministry of Post and Telecommunication (MPT)", http://www.mpt.go.jp/

Christensen, K. 1990. "Remote control: How to make telecommuting payoff for your company", *PC Computing*, Vol. 3, No.2, pp. 90-94

Cross T.B. & Raizman, M. 1986. *Telecommuting: The future technology of work*, Homewood, IL: Dow Jones Irwin.

Hobbs, D and Armstrong, J. 1998. "An experimental study of social and psychological aspects of teleworking", *Industrial Management & Data Systems*, pp. 214-218, MCB University Press.

Forester, T. 1989. The myth of the electronic cottage, In T. Forester (Ed.), *Computers in the human context*, Cambridge, MIT Press, MA, pp. 213-227.

Gillespie, A. Richardson, R. and Cornford, J. 1995. *Review of telework in Britain: Implications for Public Policy*, CURDS, University of Newcastle upon Tyne, February.

Gordon, G & Kelly, M. 1986. *Telecommuting: How to make it work for you and your company*, Englewood Cliffs, NJ, Prentice Hall.

Haddon, L and Lewis, A. 1994. "The experience of teleworking: An Annotated Review", *International Journal of Human Resource Management*, Vol. 5, No. 1, pp. 193-223.

Handy, C. 1995. Trust and the virtual organization, *Harvard Business Review*, Vol. 73, No. 3, pp. 31-32.

Huws, U. Honey, S. Morris, S. 1996. Teleworking and Rural Development, *Rural Research Report No. 27*, The Rural Development Commission.

Kraut, R. 1987. Predicting the use of technology: The case of telework. In R. Kraut (Ed.), *Technology and the transformation of white-collar work*, Hillsdale, NJ, Lawrence Erlbaum.

Marija J. Norusis. 1999. *SPSS Regression Models 10.0*, a software manual, SPSS Inc.

Nicole B. Ellison. 1999. Social Impacts: New Perspectives on Telework, *Social Science Computer Review*, Vol. 17, No. 3, pp. 338-356.

Olson, M.H. 1989. Telework: Effects of changing work patterns in time and space. Chapter 10 in *Information Society and Spatial Structure*, ed. H. Ernste and C. Jaeger. London: Belhaven.

Olson, M.H. 1988. Corporate culture and the homeworker. In K. Christensen (Ed.), *The new era of home-based work: Directions and policies*, Boulder, Westview, CO, pp. 126-134.

Orlikowski, W. 1996. Improvising organizational transformation over time: A situated change perspective, *Information Systems Research*, Vol. 7, No. 1, pp. 63-92.

Mokhtarian P L. and Koji Sato. 1994. "A Comparison of the Policy, Social and Cultural Contexts for Telecommuting in Japan and the United States", *Social Science Computer Review* Vol.12, No. 4.

Perin, C. 1991. The moral fabric of the office: Panopticon discourse and schedule flexibility, In P. Tolbert & S. Barley (Eds.), *Research in the Sociology of Organizations*, Greenwich, CT, pp. 243-270.

Pratt, J. 1984. Home teleworking: A study of its pioneers, *Technological Forecasting and Social Change*, 25, pp. 1-14.

Stohl, C. 1995. Organizational communication: Connectedness in action, Thousand Oaks, Sage, CA.

Suomi, R. 1997. Management Values and Telework, *Second International Workshop on Telework*, Vol II, Work and Organizational Research Centre.

Wendy A. Spinks. 1991. Satellite and resort offices in Japan, *Transportation*, Vol. 18, pp. 343-363.

***

PLANNING MALAYSIA
Journal of the Malaysian Institute of Planners (2006) **IV**, 69 - 82

AN INTEGRATION OF MULTICRITERIA ANALYSIS WITH GIS IN THE MALAYSIAN NATIONAL PHYSICAL PLAN

Nor Sallehi Kassim[1]
National Physical Plan Division
FEDERAL DEPARTMENT OF TOWN AND COUNTRY PLANNING MALAYSIA

Rafikul Islam[2]
Department of Business Administration
Kulliyyah of Economics and Management Sciences
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

Abstract

Plan preparation process has evolved from the usage of traditional approaches of brainstorming to an advanced application of sophisticated analytical techniques coupled with powerful decision support software systems. The rationale of applying analytical techniques is to ensure that the analysis is thorough and logical and minimize the uncertainties in the decisions made. The National Physical Plan (NPP) of Malaysia is prepared on the basis of the Town and Country Planning Act 1976 (A1129). It contains a written statement that pertains to formulation of strategic policies in determining the general directions and trends of the physical development of the country. The NPP is needed to strengthen the existing national planning system so that it is more systematic, effective, and efficient. The NPP also coordinates the country's various planning agencies and authorities at the national, state and local levels and acts as the basis for preparation of lower tier physical development plans, e.g., structure and local plans. The present paper presents a case study on the NPP using a combined application of GIS and a multi-criteria decision making (MCDM) technique. While GIS has provided its capability in data storage, retrieval and analysis of data, MCDM technique has reflected its capability as the tool for aggregating the geographical data and decision maker's preferences. It is expected that the study will stimulate further applications in various planning activities in Malaysia.

Keywords: National Physical Plan (NPP), Geographic Information System (GIS), Analytic Hierarchy Process (AHP), Multiple Criteria Decision Making (MCDM)

---

[1] Mr. Nor Sallehi Kassim is currently a Senior Town Planner. He can be contacted at sallehi@townplan.gov.my

[2] Assoc. Professor Dr. Rafikul Islam can be contacted at rislam@iiu.edu.my

INTRODUCTION

Conyers and Hill (1989) defined planning as "*a continuous process, which involves decisions, or choices, about alternative ways of using available resources, with the aim of achieving particular goals at sometime in future*". This definition involves planning with decision making, which is the process of selecting the best alternative from a number of available alternatives. Obviously, planning has goals that are to be achieved within limited resources. There are numerous types of planning. Out of these, spatial planning pertains to geographical entities, e.g., land, water, environment, etc. Over the years, spatial planning has attracted considerable attention from the researchers.

To facilitate spatial planning, researchers have developed many computer-based support systems. Perhaps the most significant one is the development of geographical information system (GIS) (Dueker and Barton, 1990; Scholten and Stillwell, 1990). Referring to GIS, Innes and Simpson (1993, p. 230) state that, "*this developing technology offers an opportunity to transform and empower planning practice*".

The main applications of GIS are in location choice, land suitability assessment, and collaborative decision-making (Joerin et al., 2001). Location analysis deals with the problem of selecting the most promising location for certain future activity. Saaty and Gholamnezhad (1982) have used multicriteria tool to select the most suitable location for nuclear waste disposal. Carver (1991) has addressed the same problem using GIS. For public facility planning, Yen and Hong (1996) have used GIS and location allocation modeling technique. Land suitability assessment is similar to location analysis and its goal is to map a suitability index for an entire territory of study (Hall et al., 1992; Senes and Toccolini, 1998; Joerin et al., 2001). Among the early researchers, Tinbergan (1956) and Thorbecke and Hall (1982) studied the effects of economic policies on patterns of and changes in land use. They considered the changes in land use as the result of the interaction between policy variables (e.g., infrastructure, price, etc) and exogenous parameters (e.g., resource endowment) that lead to realization of a number of goals (e.g., welfare, equity, rehabilitation). Sharifi and Rodriguez (2003) mention that land use decisions involve choices of two levels: regional and farm. They write (pp. 543-544), "*at the regional level, a policy-maker is trying to decide how best to allocate resources or lead the agricultural development process in the desired direction, in the face of uncertainty about the impact of the allocation process on the other systems (economic, cultural and ecological). This uncertainty is related to the way that farmers in the economic system will respond to the new policy. At the farm level, farmers have their own decision problem: how best to respond to the new*

policy, given their own resources and objectives that are influenced by socio-cultural values and impacts of the other systems. In order to reduce the uncertainty about farmers' reactions to and support for an effective decision on a proper policy measure at the macro-level, their impact at farm level has to be evaluated". Collaborative decision support systems mainly deal with GIS and decision-making techniques (Geertman and Toppen, 1990; Jankowski et al., 2001).

The integration of multicriteria analysis (MCA) with GIS has created a powerful tool for spatial planning (Pereka and Duckstrin 1993; Jankowski, 1995). The aim of this paper is to describe how a national physical plan has been designed using GIS and multicriteria analysis tool. The details are described in the rest of the paper.

NATIONAL PHYSICAL PLAN OF MALAYSIA

The National Physical Plan of Malaysia is a significant part of the national developing planning agenda. Three levels of planning, viz., national, regional/state, and local constitute the national development plan. Figure 1 shows the relationships and various interfaces between these three types of plans. As it is clear from the figure that the ultimate objective of all the three plans is to achieve the Malaysian vision 2020 (Malaysia envisions achieving the status of a developed nation by the year 2020). The National Physical Plan (NPP) involves formulating strategic policies for the purpose of determining the general directions and trends of the physical development of the nation. The main functions of NPP are: to strengthen national plan by providing a spatial dimension to national economic policies, to coordinate various agencies and local planning activities and to provide overall policies to perform physical planning.

The Town and Country Planning Act 1976 (A1129) has stated that the Director General of Town and Country Planning Department shall upon the directive of the National Physical Planning Council prepare and submit a draft on National Physical Plan which covers Peninsular Malaysia. Once the Plan is approved, the policies of the NPP will take effect unless those are subsequently altered or replaced. In view of changing socio-economic circumstances of the country, the Act stipulates that the Plan be reviewed every five years in tandem with the review of the National Five Year Development Plan, or as and when directed by the Council.

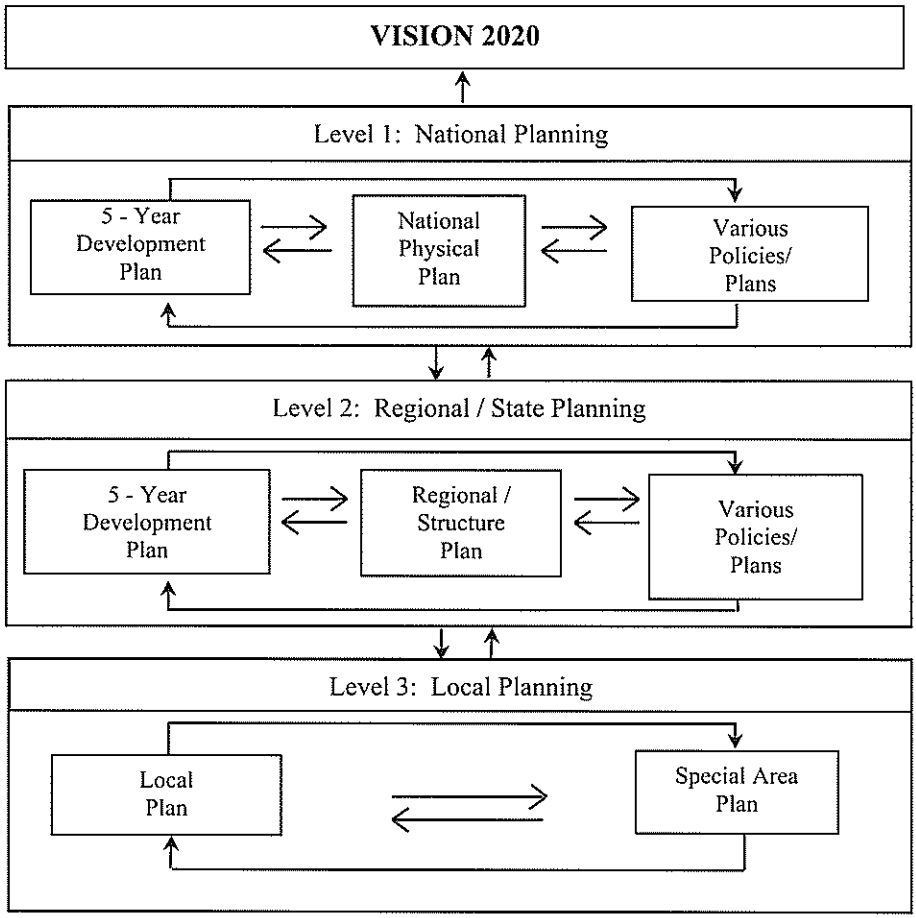


Figure 1: National development planning framework

NPP study involves seven major sectors: Global framework and Macroeconomics; Physical Planning and Urbanization; Population, Housing and Social Amenities; Infrastructure, Utilities and Transportation; Environment and Natural Resources; Information Systems; and Institutionalization and Implementation. The plan preparation process has been shown in Figure 2. The database which is developed sector wise forms the basis for NPP Information System.

The output of the NPP consists of the National Physical Framework Indicative Map and written statements that consist of policies, mechanisms for implementation, and the manual of the Planning Information System.

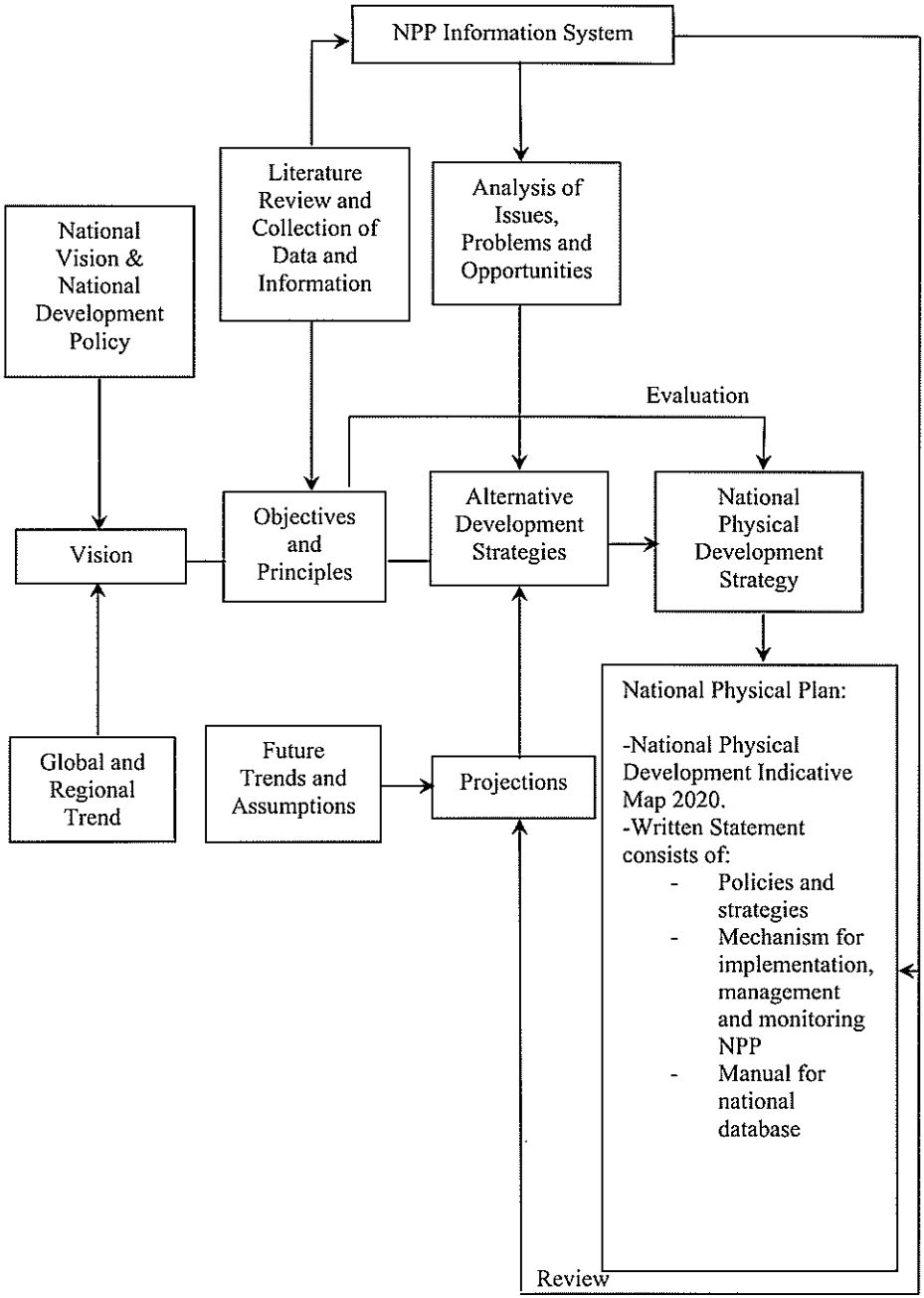


Figure 2: National physical plan preparation process

MCA AND GIS APPLICATIONS RELATED TO SPATIAL PLANNING IN MALAYSIA

A considerable amount literature is available on the three types of spatial planning in Malaysia. At the national level, Yaakup (2001) has discussed how GIS is used for data collection, land suitability analysis and generate suitability maps. Maidin et al. (2004) have discussed the effectiveness of multicriteria analysis (MCA) to assist the generation of alternative land use development plans. Yaakup and Healey (1994) have discussed how GIS can be applied in squatter settlement planning in Kuala Lumpur. Yaakup et al. (1994) have also discussed the application of GIS for the development plan formulation and implementation at both state and district levels based on the case studies of Pahang state structure plan, Klang Valley GIS (AGISwlk) and Pekan district local plan. The above mentioned authors have also applied the MCA techniques in the formulation of strategies and policies through the generation of alternative development scenarios. However, a study on the demand of MCA and spatial planning and decision support system (SPDSS) in Malaysia by Muhammad Faris et al. (2005) have indicated the level of awareness and knowledge of MCA and SPDSS amongst professional planners were still low.

NPP AND LAND SUITABILITY ANALYSIS

The basic purpose of the present study is to identify the land in various states of Peninsular Malaysia for further urban development. Specially, the objectives are the following:

- To use multicriteria decision making (MCDM) technique and GIS to generate alternative development plans.
- To generate the preferred development plan (land suitable for development) on the basis of projected population across various states in Peninsular Malaysia.

Various stages of NPP and land suitability analysis are described below:

Stage 1: Setting up the ultimate goal: to create an efficient, equitable and sustainable national spatial framework to guide and assist in the overall development of the country towards achieving the status of a developed nation by the year 2020.

Stage 2: Formulating the objectives: these are developed in congruence with the ultimate goal. The main objectives are the following:

- To optimize utilization of land, infrastructure and resources
- To promote environmental quality
- To ensure equitable regional development
- To make Malaysia globally competitive
- To enhance quality of life

Stage 3: Identifying criteria and sub-criteria that are related to the objectives: the criteria and sub-criteria are shown in Table 1. Each criterion is represented by a number of sub-criteria. Details of the sub-criteria and the corresponding intensities are provided in Table 2.

Table 1: Criteria and sub-criteria related to the objectives

Objectives	Criteria	Sub-criteria
To promote environmental quality	Physical Characteristics	▪ Slope ▪ Terrain ▪ Soil erosion risk ▪ Coastal erosion risk
To optimize utilization of land, infrastructure and resources	Land, Infrastructure & Resources	▪ Water availability ▪ Accessibility to highway /road ▪ Accessibility to railway ▪ Soil class ▪ Industrial Indices
To ensure equitable regional development	Social Economic Development Status	▪ Mean household Income ▪ Incidence of poverty ▪ Per capita GDP
To make Malaysia globally competitive	Proximity to Town and Industry	▪ Proximity to big town ▪ Proximity to industrial areas ▪ Accessibility to port ▪ Accessibility to airport
To enhance quality of life	Quality of life indices Proximity – disperse to medium town	▪ Quality of life indices ▪ Proximity to small & medium town

Table 2: Sub-criteria and their corresponding intensities

SUB-CRITERIA	INTENSITIES
A. Physical Characteristics	
a.1 Slope	1. 0-12 2. 12-20 3. 20-25
a.2 Terrain	1. Lowland: below 150 meter 2. Hilly: 150 – 300 meter
a.3 Soil erosion risk	1. Low risk : < 10 t/ha/yr 2. Moderate risk : 10 - 50 t/ha/yr 3. Moderately high risk : 50 - 100 t/ha/yr 4. High risk : 100 - 150 t/ha/yr
a.4 Coastal erosion risk	1. Within 5 km coastal erosion risk 2. Outside 5 km coastal erosion risk
B. Land, Infrastructure and Resources	
b.1 Water availability within catchment areas	1. Water sufficient until year 2050 2. Water deficient by year 2050 3. Water deficient by year 2020
b.2 Accessibility-distance to highway interchanges and road networks	1. 10 km buffer from the Interchange, 5 km buffer along the U5 reads, and 3 km buffer along the U4 roads 2. 25 km buffer from the Interchange, 5 - 10 km buffer along the U5 roads, and 3 - 8 km buffer along the U4 roads 3. 33 km buffer from the Interchange, 10 - 15 km buffer along the U5 roads, and 8 - 10 km buffer along the U4 roads 4. 40 km buffer from the Interchange, 15 - 20 km buffer along the U5 roads, and 10 - 15 km buffer along the U4 roads
b.3 Accessibility to railway station	• 10 km buffer from railway station
b.4 Industrial development indices	• Rank 1 • Rank 2 • Rank 3
b.5 Soil Class	1. Class 5 2. Class 4 3. Class 3 4. Class 2 5. Class 1
C. Social Economics Development status	
c.1 Mean household income	1. Mean household income by state above national average 2. Mean household income by state below national average
c.2 Per capita GDP	1. Per capita GDP by state above national average 2. Per capita GDP by state below national average
c.3 Incidence of poverty	1. Incidence of poverty by state above national average 2. Incidence of poverty by state below national average

(Continue next page)

D. Proximity to Town and Industry	
d.1 Proximity to Town	
Big town (>100,000 population)	1. <10 km radius 2. 10 – 20 km radius 3. 20 – 40 km radius
Medium town (30,001 to 100,000 population)	1. <5 km radius 2. 5 – 15 km radius 3. 15 – 30 km radius
Small town (10,000 to 30,000 population)	1. < 5 km radius 2. 5 – 10 km radius 3. 10 – 20 km radius
d.2 Proximity to industry areas	
Industry 1	1. Within 5 km from industrial areas
Industry 2	2. Between 5 –10 km from industrial areas
Industry 3	3. Between 10 – 15 km from industrial areas
Industry 4	4. Between 15 – 20 km from industrial areas
d.3 International airport port	20 km buffer from airport and seaport.
d.4 Local airport port	20 km buffer from airport and seaport.
E. Quality of Life	
e.1 Quality of life index	1. Rank 1 2. Rank 2 3. Rank 3 4. Rank 4 5. Rank 5

Stage 4: Determining the weights of the criteria/sub-criteria and their intensities: the Analytic Hierarchy Process (AHP) (Saaty, 1990) has been used to determine the weights. Four consultants (names are shown in Figure 3) in four different areas (architecture, transportation engineering, civil engineering, and environment) were involved in forming the pairwise comparison matrices. Expert Choice was used to compute the weights from the matrices (see Figure 3).

Stage 5: Transferring weights to GIS: the weights generated by using AHP are transferred to GIS package. The data on various sub-criteria are already captured in NPP database. Criteria maps are prepared using the data and the weights.

Stage 6: Performing land suitability analysis: the criteria maps are aggregated (see Figure 4) to form a composite plan which shows the most suitable area for future development. Figure 5 shows the output of land suitability analysis. In the functional land suitability analysis, the suitable areas for development are matched with demand for land.

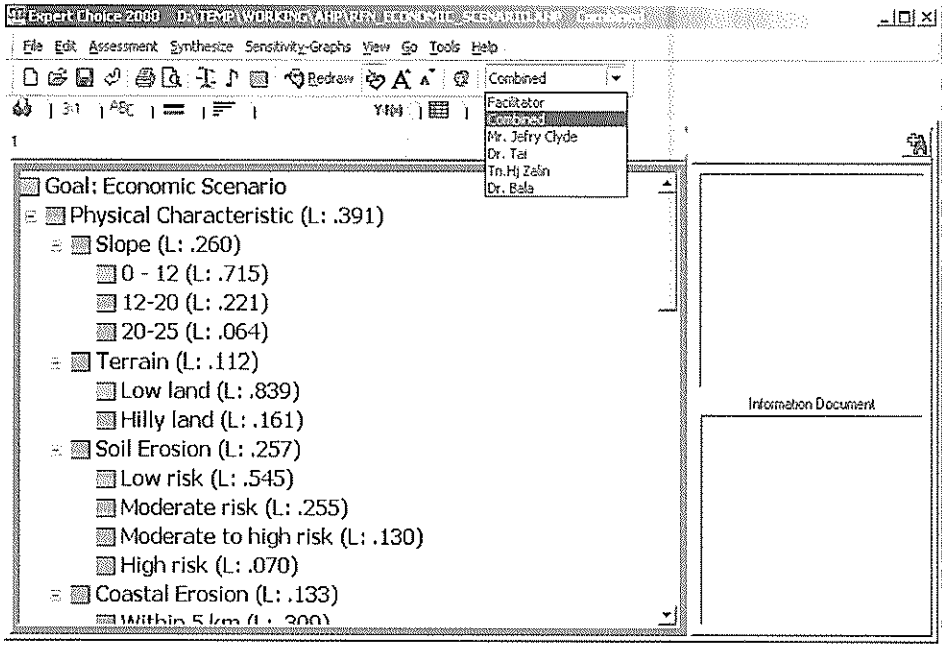


Figure 3: Assigning weights to the criteria/sub-criteria and the intensities by using the Expert Choice software.

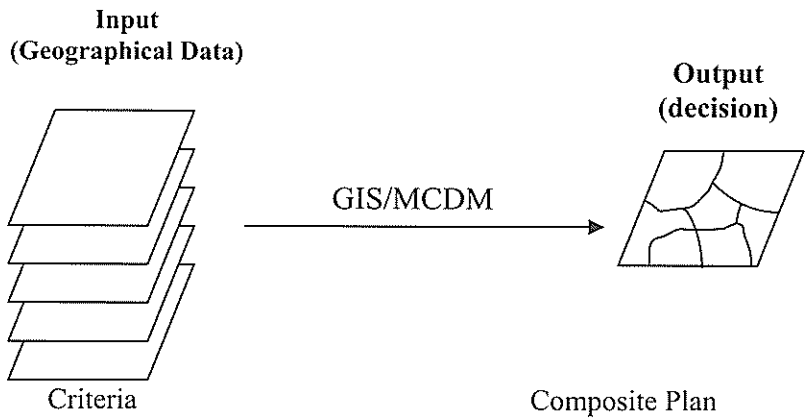


Figure 4: The way of obtaining a composite plan for NPP

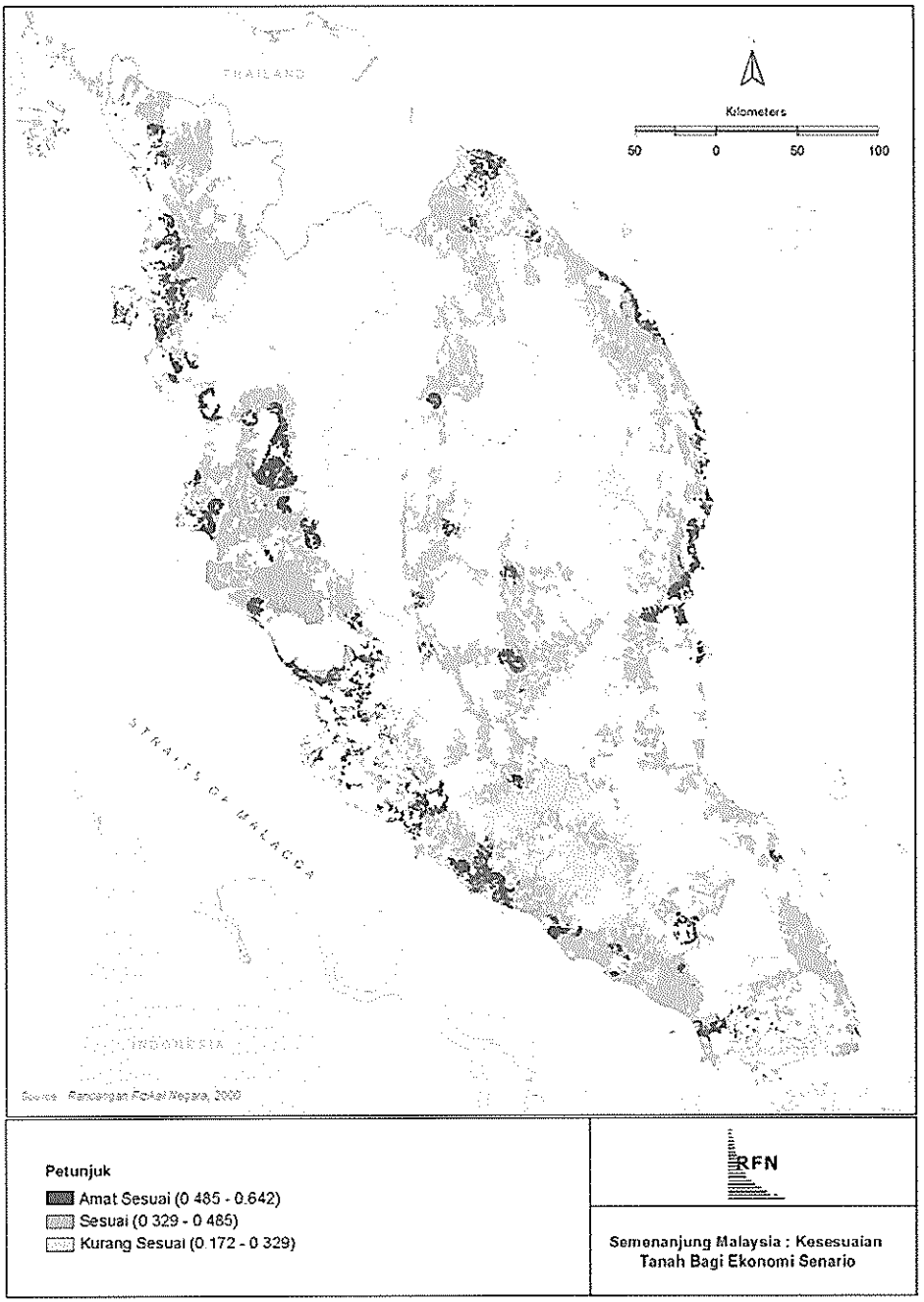


Figure 5: Land suitability diagram for peninsular Malaysia

We have estimated the demand for land based on the population projection by the year 2020, with the assumption that 30 people stay in one hectare area. Based upon the land suitability analysis, Table 3 shows the amount of land available for urbanization.

Table 3: Urban land required and available land in peninsular Malaysia

State / Region	Urban Land Required	Land Available	
		Available Land	Net Position
	Ha	Ha	Ha
Perlis	1,800	840	- 960
Kedah	28,560	18,152	- 10,408
Pulau Pinang	25,080	20,499	- 4,581
Perak	26,760	133,530	+ 106,770
Northern Region	***82,200***	***173,021***	***+ 90,821***
Selangor	111,720	13,884	- 97,836
W.P. Kuala Lumpur	19,600	5,123	- 14,477
Negeri Sembilan	10,040	22,989	+ 12,949
Melaka	10,760	36,397	+ 25,637
Central Region	***152,120***	***78,393***	***- 73,727***
Johor	52,080	135,976	+ 83,896
Southern Region	***52,080***	***135,976***	***+ 83,896***
Pahang	17,720	113,000	+ 95,280
Terengganu	*9,960*	*55,207*	+ 45,247
Kelantan	17,440	18,456	+ 1,016
Eastern Region	***45,120***	***186,663***	***+ 141,543***
Peninsular Malaysia	***331,520***	***574,053***	***+ 242,533***

CONCLUSIONS

Over the years, planning problems have become more and more complicated. The complexities have been compounded due to the presence of multiple objectives, multiple criteria, multiple stakeholders, and multiple actors. Many of these criteria are conflicting and subjective in nature. The model or tool to be used in the planning process is expected to tackle these complexities,

simultaneously giving an output plan that is viable. This paper shows how a powerful MCDM technique can facilitate the planning process with the help of GIS. It is expected that further application of the model used in the present study will be extended to similar applications including structure and local plans.

REFERENCES

Carver, S. 1991. Integrating multi-criteria evaluation with geographical information systems. *International Journal of Geographical Information Systems*, 5, 321-339.

Conyers, D. and Hill, P. 1989. *An Introduction to Development Planning in the Third World.* New York: John Wiley.

Dueker, K.J.D. and Barton, P. 1990. GIS in land development planning process: balancing the needs of land planners. *Journal of the American Planning Association*, 56, 483-491.

Geertman, S. and Toppen, F. 1990. Regional planning for new housing in Randstad Holland. In: Scholten, H. J. and Stillwell, J. C. H. (eds) *Geographical Information Systems for Urban and Regional planning.* Dordrecht: Kluwer Academic Publishers.

Hall, G.B., Wang, F. and Subakyono. 1992. Comparison of Boolean and fuzzy classification methods in land suitability analysis by using geographical information systems. *Environment and Planning A*, 24, 497-516.

Innes, J.E. and Simpson, D.M. 1993. Implementing GIS for planning: lessons from the history of technological innovation. *APA Journal*, 59, 230-236.

Jankowski, P. 1995. Integrating geographical information systems and multiple criteria decision making methods. *International Journal of Geographical Information System*, 9, 251-273.

Jankowski, P. Andrienko, N. and Andrienko, G. 2001. Map-centered exploratory approach to multiple criteria spatial decision making. *International Journal of Geographical Information Science*, 15(2), 101-127.

Joerin, F., Theriault, M. and Musy, A. 2001. Using GIS and outranking multicriteria analysis for land-use suitability assessment. *International Journal of Geographical Information Science*, 15(2), 153-174.

Maidin, M. A., Pangga, D., and Galab, N. 2004. Pelaksanaan kaedah penilaian multi criteria penyediaan pelan pembangunan guna tanah utama di Bandar pekan dan kawasan Sekitar. *Proceedings of the National Conference on GIS Towards Strengthening Planning and Urban Monitoring*, 31st March, Universiti Teknologi Malaysia.

Muhammad Faris Abdullah, Alias Abdullah, Mansor Ibrahim and Dazilah Abdul Samad. 2005. "A Study of the Demand of Spatial Planning and Decision Support System in Malaysia" in *Planning Malaysia Journal, III*, 47-60, Malaysian Institute of Planners.

Pereka, J.M.C and Duckstein, L. 1993. A multiple criteria decision making approach to GIS based land suitability evaluation. *International Journal of Geographical Information System*, 7, 407-424.

Saaty, T.L. 1990. *The Analytic Hierarchy Process: Planning, Priority Setting, and Resource Allocation*. Pittsburgh: RWS Publications.

Saaty, T.L. and Gholamnezhad, H. 1982. High level nuclear waster management: Analysis of options. *Environment and Planning B*, 9, 181-196.

Scholten, H.J. and Stillwell, J.C.H. (eds) 1990. *Geographical information systems for urban and regional planning*. Dordrecht: Kluwer Academic Publishers.

Senes, G. and Toccolini, A. 1998. Sustainable land-use planning in protected rural areas in Italy. *Landscape and Urban planning*, 42, 107-117.

Sharifi, M.A. and Rodriguez, E. 2003. A planning support system for policy formulation in water resources rehabilitation. In: Geertman, S. and Stillwell, J. (eds) *Planning Support Systems in Practice.* Berlin: Springer-Verlag.

Thorbecke, E. and Hall, L. 1982. Nature and scope of agricultural sector analysis: an overview. In: E. Thorbecke (eds) Agriculture sector analysis and models in developing countries, *FAD Economic and Social Development*, Paper No. 5, FAD, Rome.

Tinbergen, J. 1956. *Economic Policy: Principles and Decision.* Amsterdam: North Holland Publishing Company.

Yaakup, A. B. 2001. Aplikasi data GIS dan hubungkaitnya dengan pelan spatial Negara. *Proceedings of the GIS National Spatial Plan Workshop*, 21-22 March, Port Dickson.

Yaakup, A.B. and Healey, R.G. 1994. A GIS approach to spatial modeling for squatter Settlement Planning in Kuala Lumpur. *Environment and Planning B: Planning and Design*, 21, 21-34.

Yaakup, A.B., Johar, F., Maidin, M.A., and Ahmad, E.F. 2004. GIS and decision support systems for Malaysian development plan studies, *Proceedings of the National Conference on SPDSS*, 7-8 September, International Islamic University Malaysia.

Yen, A. G. and Hong, C.M. 1996. An integrated GIS and location allocation approach to public facilities planning – an example of open space planning. *Computers, Environment and Urban Systems*, 20, 339-350.

***

NOTES TO CONTRIBUTORS AND GUIDELINES FOR MANUSCRIPT SUBMISSION

INTRODUCTION

The Journal of the Malaysian Institute of Planners or PLANNING MALAYSIA is a multidisciplinary journal related to theory, experiments, research, development, applications of ICT, and practice of planning and development in Malaysia and elsewhere.

The objective of the journal is to promote the activity of town planning through dialogue and exchange of views concerning professional town planning practice. PLANNING MALAYSIA will welcome any news, feature articles, or peer reviewed (including book reviews, software review, etc.) articles for publication. All articles should be original work by the authors. **Articles, views and features will not be taken to be the official view of the Malaysian Institute of Planners (MIP) unless it carries the name of MIP as the author.** This is to encourage open discussion on diverse issues and opinion for the advancement of town planning practice. Articles and contributions will be accepted from MIP members and non-members worldwide.

In year 2010, PLANNING MALAYSIA Journal has been indexed in SCOPUS. Previous issues of PLANNING MALAYSIA Journal can be viewed on the MIP website.

SUBMISSION OF MANUSCRIPTS

Manuscript should be emailed to pmjournal@gmail.com. Manuscript should ideally be in the range of 8-10 pages long. Each manuscript should have a title page and an abstract of about 150 words. The title page should contain the title, full name(s), designation(s), organizational affiliation(s), a contact address, and an email address. All manuscripts are received on the understanding that they are not under concurrent consideration at another journal. Exclusive copyright of accepted manuscripts shall be assigned to the Publisher (i.e. the MIP), and in consideration for this, one copy of the current Journal will be provided for each article. Additional reprints of article can be ordered, at cost, by the author(s). PDF format of the article (if available) can be obtained from the Publisher.

LAYOUT

Manuscript should be typed in single spacing (including footnotes, endnotes and references) on one side of the paper only (preferably A4) with the following margins: right and left - 4.25 cm, top - 5.5 cm and bottom - 5.2 cm (including header – 4.5 cm and footer – 4.3 cm) in 11 point Times New Roman font. Footnotes should be numbered consecutively and placed at the end of the manuscript. Footnotes should be kept to a minimum. Tables and diagrams should be provided in the text. References should follow the APA (6th Edition) referencing format. All foreign words must be typed and transliterated. The Editorial Board reserves the right to change the transliteration of all historical names, titles and non-English terminology to bring them into conformity with its own style.

USE OF FORMULA, FIGURES AND TABLES

Formula (mathematical formula) should be used only when necessary and the CONCLUSION derived must be explained and made intelligible to a non-mathematical reader. Wherever possible, authors are encouraged to place the mathematical parts of the article in an appendix. In cases of empirical articles, authors are expected to make readily available a complete set of data and any specialized computer programs to interested readers.

All illustrations, figures and/or tables in the manuscript must be captioned, in clear black and white (grayscale) and ready for reproduction.

REFEREEING PROCEDURE

Manuscripts will be acknowledged upon receipt. Only selected (preferred) manuscripts will be **reviewed by two (or three) referees** in addition to the editors. Editorial decision will normally be made within **two to six months**, but circumstances beyond control occasionally dictate a longer cycle. If authors are invited to prepare a revision for further consideration, the major issues to be resolved will be outlined and will be forwarded to them as quickly as possible.

ACCEPTED ARTICLES

Authors of accepted articles will be requested to provide a digital copy of the manuscript, preferably in Microsoft Word to the MIP (the Publisher) via email at pmjournal@gmail.com. MIP will not be responsible for the loss or damage of the digital copy.

COPYRIGHT

Contact:

Editor-in-Chief
PLANNING MALAYSIA
Journal of the Malaysian Institute of Planners
B-01-02, Jalan SS7/13B, Aman Seri, Kelana Jaya,
47301, Petaling Jaya, Selangor Darul Ehsan, MALAYSIA
Tel: +603 78770637 Fax: +603 78779636
Email: pmjournal@gmail.com
Homepage: www.planningmalaysia.org

***

ETHIC STATEMENT

The Journal of the Malaysia Institute of Planners or **PLANNING MALAYSIA** is a peer-reviewed journal. This statement spells out ethical behaviour of all parties involved in the act of publishing an article for this journal, i.e. the author, the peer-reviewer, the chief editor and editors, and the publisher. This statement is based on COPE's Best Practice Guidelines for Journal Editors. URL: http://publicationethics.org/files/u2 /Best_Practice.pdf

DUTIES OF AUTHORS

Reporting Standards

Authors of original research should present an accurate account of the work done as well as an objective discussion of its significance. Data of the research should be represented accurately in the article. An article should contain sufficient detail and references to permit others to replicate the work. Fraudulent or knowingly inaccurate statements constitute unethical behaviour and are unacceptable.

Data Access and Retention

Authors may be asked to provide the raw data in connection with an article submitted for editorial review, and should be prepared to provide public access to such, if practicable, and should in any event be prepared to retain such data for a reasonable time after publication.

Originality and Plagiarism

Authors should ensure that they have written entirely original works, and if the authors have used the work and/or words of others this must be appropriately cited or quoted. Such quotations and citations must be listed in the Reference at the end of the article.

Multiple Publication

An author should not in general publish manuscripts describing essentially the same research in more than one journal or primary publication. Submitting the same manuscript to more than one journal concurrently constitutes unethical publishing behaviour and is unacceptable.

Acknowledgment of Sources

Proper acknowledgment of the work of others must always be given. Authors should cite publications that have been influential in determining the nature of the reported work.

Authorship of the Paper

Authorship should be limited to those who have made a significant contribution to the conception, design, execution, or interpretation of the study, and should be listed as co-authors. Others who have participated in certain substantive aspects of the research project, they should be acknowledged or listed as contributors.

Corresponding Author
Corresponding author is the author responsible for communicating with the journal for publication. The corresponding author should ensure that all appropriate co-authors and no inappropriate co-authors are included on the paper. All co-authors have seen and approved the final version of the paper and have agreed to its submission for publication.

Acknowledgment of Funding Sources
Sources of funding for the research reported in the article should be duly acknowledged at the end of the article.

Disclosure and Conflicts of Interest
All authors should disclose in their manuscript any financial or other substantive conflict of interest that might be construed to influence the results or interpretation of their manuscript.

Fundamental Errors in Published Works
When an author discovers a significant error or inaccuracy in his/her own published work, it is the author's obligation to promptly notify the journal editor or publisher and cooperate with the editor to retract or correct the paper.

DUTIES OF REVIEWERS

Contribution of Peer Review
Peer review assists the chief editor and the editorial board in making editorial decisions while editorial communications with the author may also assist the author in improving the paper.

Unqualified to Review or Promptness
Any reviewer who feels unqualified to review the assigned manuscript or unable to provide a prompt review should notify the editor and excuse himself/herself from the review process.

Confidentiality
Manuscripts received for review must be treated as confidential documents. They must not be shown to, or discussed with, others except as authorized by the chief editor. Privileged information or ideas obtained through peer review must be kept confidential and not used for personal advantage.

Standards of Objectivity
Reviews should be conducted objectively. There shall be no personal criticism of the author. Reviewers should express their views clearly with supporting arguments.

Acknowledgment of Sources
Reviewers should identify relevant published work that has not been cited by the authors. Any statement that had been previously reported elsewhere should be accompanied by the relevant citation. A reviewer should also call to the chief editor's attention any

substantial similarity or overlap between the manuscript under consideration and any other published paper of which they have personal knowledge.

Conflict of Interest
Reviewers should decline to review manuscripts in which they have conflicts of interest resulting from competitive, collaborative, or other relationships or connections with any of the authors.

DUTIES OF EDITORS

Decision on the Publication of Articles
The chief editor of the PLANNING MALAYSIA is responsible for deciding which of the articles submitted to the journal should be published. The chief editor may be guided by the policies of the journal's editorial board subjected to such legal requirements regarding libel, copyright infringement and plagiarism. The chief editor may confer with other editors or reviewers in making this decision.

Fair play
Manuscripts shall be evaluated solely on their intellectual merit.

Confidentiality
The chief editor/editors and any editorial staff must not disclose any information about a submitted manuscript to anyone other than the corresponding author, reviewers, potential reviewers, other editorial advisers, and the publisher.

Disclosure and Conflicts of Interest
Unpublished materials disclosed in a submitted manuscript must not be used by anyone who has a view of the manuscript while handling it in his or her own research without the express written consent of the author