# PLANNING MALAYSIA
## Journal of the Malaysian Institute of Planners

Copyright © MIP, 2003

঩৯৹৽৹঩৯
"The Search of Knowledge is a sacred duty imposed upon every Muslim"
(Sahih Al Bukhari: The Book of Knowledge)
঩৯৹৽৹঩৯

# CONTENTS

# MESSAGE FROM THE PRESIDENT

Dear Readers,

*I* had always believed that the Malaysian Institute of Planners (MIP) is capable of producing a journal, which had never been done before. The production of this first issue (i.e., **PLANNING MALAYSIA – Journal of the Malaysian Institute of Planners**) happened after almost four years of my mooting the idea. It was not because of incapability, but there was a change in the organizational structure in the midst of producing and putting together this journal. At last this journal is now in your hands as a result of the hard work and effort put forward by a great team of people, led by Assoc. Professor Dr. Alias Abdullah, the Vice President of the Institute. I thank all of them and urge them to continue and dedicate themselves to the furtherance of planning through the journal.

*F*or members of the Institute, I would urge that the journal forms part of your educational and learning medium. Reading is to the mind what exercise is to the body. Therefore, reading the journal is certainly pertinent to improve your knowledge of planning and related issues. Reading is a necessity to stay healthy in the business of planning. The wisest mind has always something to learn and learning does not stop upon graduation from university. To catch up with new issues and experiences, use this journal as a constant companion and reference.

*L*astly, I express my hope that the journal continues to be produced at least once a year. I therefore call upon members and non members, whether from the academic world, public service or those in private practice, to contribute your thoughts on paper. You will learn as much by writing as by reading.

Thank you.

*Khairiah Talha*
**PRESIDENT**
(1999-2003)

# EDITORIAL

Welcome to the Inaugural Issue of **PLANNING MALAYSIA**, a professional journal published by the Malaysian Institute of Planners (MIP) to bring more and better benefits to its members. While *Berita Perancang* (the newsletter) will continue to bring you news of happenings or developments in the town planning scene in the country, **PLANNING MALAYSIA** will strive to bring the latest in terms of ideas, concepts, theories, philosophies and practices in the field of planning to continuously upgrade its members in order to better serve the community not only in Malaysia but also the international arena. We expect contributions in the form of full-length refereed articles as well as short essays or notes and case-studies to come from academic researchers in local and foreign institutions of higher-learning as well as practitioners in the public and private sectors.

The response to MIP's standing invitation to its members to write for the *Berita Perancang* have been mostly lukewarm despite creative efforts to boost the flow of articles through the awarding of points which can be used to obtain discount for products and services from MIP. Practioners in the private and public sectors see very little incentive to take on the added burden of writing or publishing on top of their already heavy workload in the office. The local academia has it own reasons for not writing for the MIP bulletin, one reason being that they just don't write (at all). But for those who are active in writing and publishing, the bulletin ranks at the bottom of the ladder in terms of recognition for career advancement and hence are not the target of their academic publication agenda.

The Editorial Board of **PLANNING MALAYSIA** will strive to accommodate the various segments of contributors and readers to sustain interest and to keep the journal current with global issues relevant to Malaysian planning. Our main agenda is to disseminate up-to-date information as a means of knowledge-sharing for the benefit of its members. We will continuously strive to improve the quality of the articles and hope that this first issue will spur writers

(including non-MIP members) to contribute and share their knowledge and insights for the betterment of the community. And beyond the spirit of sharing, we are proposing that all contributions to the journal will be awarded appropriate CPD (Continuing Professional Development) points.

We welcome your views and feedback as we embark on this new milestone in MIP.

*Editor-in-Chief*
**Assoc. Professor Dr. Alias Abdullah**
(Vice President, 2001-2003)

*Editors:*

Professor Dr. Mansor Ibrahim
Assoc. Professor Dr. Lee Lik Meng
Dr. Mohamed Thalha Alithamby

\*\*\*

# INCORPORATING SUSTAINABLE
# DEVELOPMENT OBJECTIVES INTO DEVELOPMENT PLANS

**Muhammad Faris Abdullah**
*Kulliyyah of Architecture and Environmental Design*
*INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA*
*Email: faris1@pd.jaring.my*

**Ishak Ariffin**
*VIA NATURA (M) SDN BHD*
*Email: vnsb@po.jaring.m*

## Abstract

Efforts aimed at delivering sustainable development and promoting nature conservation in the planning and decision-making system in Malaysia has begun since the late 1970s. The growing importance of the preservation and protection of the environment against degradation have been highlighted in the Five Year Plans since 1980s. Over the same period, a series of strategies for sustainability, entitled Conservation Strategies, was also being prepared in Malaysia, culminating in a National Conservation Strategy (NCS) in 1993. These strategies for sustainability were aimed at providing the framework for sustainable development. The general consensus is that prevention is better than remedial action. Potential impacts must be addressed at the planning stage before development decisions are made.

Impact assessment is seen as a tool for preventive action in the quest for sustainable development. Although environmental impacts assessment (EIA) was made mandatory for a list of prescribed activities since 1987, environmental degradation continued. This paper gives brief introduction to strategic environmental assessment (SEA) and tries to demonstrate how SEA can bridge the gaps and counteracts the limitations of EIA and more effectively integrate the sustainable development objectives into the development plan system.

**Keywords:** Strategic Environmental Assessment, Development Plans, Sustainable Development

# INTRODUCTION

Since the introduction of environmental impact assessment (EIA) in Malaysia in the 1970s, environmental assessments (EAs) tools have evolved into a comprehensive and versatile instrument for natural resource planning and management. Other EA tools, such as the cumulative effect assessment (a local variation known as Macro-EIA) and strategic environmental assessment (SEA) have also been introduced in recent years. The EIA looks at project level assessment. Macro EIA deals at cumulative impact assessment. SEA complements the EIA procedures by providing a means to anticipate and prevent impacts at an earlier stage, i.e. at the strategic levels. This paper discusses the application of SEA in integrating sustainable development objectives into development plans in Malaysia. The SEA strengthens the existing development plan system to meet sustainability goals embodied in Agenda 21.

# SUSTAINABLE DEVELOPMENT – THE MALAYSIAN CONTEXT

The notion that conservation and development are two sides of the same coin became widespread from the 1970s. One of the earliest initiatives was the World Conservation Strategy, commissioned by United Nations Environment Programme (UNEP), prepared by the World Conservation Union (IUCN), and jointly funded by World Wide Fund for Nature (WWF), in 1980 which led to the State Conservation Strategy projects in Malaysia and other similar initiatives around the world. The World Conservation Strategy defined sustainable development as development that is sustained by conservation. However, the UNCED's 1992 Earth Summit is arguably the event that put the term 'sustainable development' into our everyday vocabulary.

In 1987 the World Commission on Environment and Development (WCED) report, "Our Common Future", widely publicized the term with its most widely used definition, that is, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". The report is often referred to as the Brundtland (Commission) Report. It follows a series of initiatives since the 1972 world conference on environment that led to the formation of WCED and the pursuit of integrating environmental concerns with economic and social development. The subsequent "Caring for the Earth" report in 1991, also published by IUCN-UNEP-WWF laid the foundation for the road to Rio's Earth Summit. It contributed to and complements Agenda 21.

While the interpretation of the term 'sustainable development' thus far has been wide ranging, in the case of development and environmental conservation, it introduces the idea that development and environmental conservation are symbiotic – one is supposedly benefiting the other. In other words, it opposes the orthodox perception and belief that environmental degradation resulting from development is inevitable, and it proposes the need to find a point of balance between the need to develop and the need to conserve the environment.

Sustainable development simply means improving the quality of human life while living within the carrying capacity of supporting ecosystems. The foundations of sustainable development are respect and concern for people and ecosystem. Development is likely to be sustainable if it improves the quality of human life and it conserves the vitality and diversity of the world's natural system.

Sustainable development is one of the major challenges facing our society today. How and where we live, work, and play put pressures on our natural resources. Some progress has been made through agreements on Agenda 21, Montreal protocols, greenhouse gas targets, biodiversity convention, and other spin-off initiatives of UNCED. However, despite all these efforts, environmental degradation has intensified in the post-UNCED years. In consequence our towns and cities have become more congested; our air and water polluted, our waterways silted and the quality of the environment worsen.

The planning system plays a vital part in promoting more sustainable land-use patterns and use of these resources. The series of development plans prepared at different levels of Government, whereby each has an impact on our natural resources, and the plans higher up in the hierarchy influence the subsequent decisions made. Therefore, it is essential that we ensure that sustainable development objectives are already tightly integrated into the economic and social objectives of the plans at the highest level.

Malaysia is actually a long time supporter of environmental protection. The history of environmental protection in Malaysia can actually be traced back long before the Rio Summit. Khalid (1991) reports that environmental protection and awareness in Malaysia could be tracked back to the early 1920s with the passing of the Water Enactment 1920. The earliest form of environmental control in this country was introduced in Kuala Lumpur in 1884. A series of regulations were introduced during the rebuilding of Kuala Lumpur which was almost totally ruined by a major fire and subsequently severe flooding in 1881. Within two years of the 1884 regulations, Kuala Lumpur was transformed from the dirtiest and most disreputable 'shanty town' into the

neatest and prettiest town in the then Malaya. Since then, various other environmental-related acts, rules, and regulations have been passed. Jamaluddin (1997) identifies to date there are at least 46 environmental-related legislation being enforced in Malaysia.

More recently, efforts aimed at delivering sustainable development and promoting nature conservation in the planning and decision-making system in Malaysia have been included and emphasized in various plans and policy documents. The growing importance of the need to preserve and protect our environment against degradation has been highlighted in the Five-Year Plans from 1970s. The Third Malaysia Plan (1976-1980) and the Environmental Quality Act 1974 laid the foundation for a coordinated environmental management by a single government agency. As a result, the Department of Environment and the Environmental Quality Council were established.

The general consensus is that prevention is better than remedial action. Potential impacts of development plans must be addressed at the earliest stage before development decisions are made. The Fifth Malaysia Plan (1986-1990) stressed the need to incorporate preventive environmental actions into development process, pointing out that remedial action is much less effective. It clearly emphasized that conservation should be part of the overall development process and not considered in isolation. The concept continued to be emphasized and the implementation strategy further refined in the subsequent Malaysia Plans.

Over the same period, a series of strategies for sustainability, entitled Conservation Strategies, was also being prepared in Malaysia. Conservation Strategies were prepared for ten states, including the Federal Territory of Kuala Lumpur, culminating in a National Conservation Strategy (NCS) in1993. The Conservation Strategies translated the principles of sustainable development as contained in the 1980 World Conservation Strategy document produced by IUCN-UNEP-WWF and subsequently the 1987 Brundtland Commission (WCED) Report. The NCS was commissioned by the Economic Planning Unit (EPU), a multi-sectoral agency in the Prime Minister's Department, and was targeted for implementation under the Sixth Malaysia Plan (1991-1995). These strategies for sustainability were aimed at providing the framework for sustainable development.

The economic downturn in this region during the late 1990s gave us a refreshing pause to reflect our errors in the preceding decade. The Government has embarked on a more concerted effort to make more sustainable plans and local authorities are integrating sustainable development into their development plans. Some of the notable examples are the Sustainable Development Strategy

and Agenda 21 Selangor initiated by the Selangor State Government, the pilot study on application of SEA on Local Plan for Areas Surrounding Paya Indah Wetland Sanctuary, the UNDP funded pilot Local Agenda 21 (LA21) programmes and other LA21 initiatives implemented by a number of selected local authorities around the country. As a part of the effort towards sustainability, the longer term and secondary effects of development need to be recognized. The ultimate aim is to implement the principles of sustainable development.

## THE MALAYSIAN DEVELOPMENT PLAN SYSTEM

The Town and Country Planning Act 1976 introduced a uniform system of town and country planning in Peninsular Malaysia. The Act ensures the proper control and regulation of town and country planning in local authority areas in the various States of Peninsular Malaysia. Two recent amendments introduced significant changes to the Act. Amendments introduced by the Town and Country Planning (Amendment) Act 1995 strengthened its environmental management objective in planning for sustainability. The 1995 amendment provides added protection for trees and natural topography. A more stringent set of regulations for development control was introduced, notably, the requirement for Development Proposal Report to be submitted with planning applications. Environmental management plan is made part of the requirements in the Development Proposal Report. EIA approvals are also required for projects which are "prescribed activities", under the provision of Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987, before planning permissions are granted.

The latest amendment in the Town and Country Planning (Amendment) Act 2001 introduces a revised format for the development plans hierarchy. The previous two-tier system now becomes a three-tier system with a series of Plans that covers the nation, the individual states and the districts. At the top of the hierarchy is the National Physical Plan (RFN), then the State Structure Plans (RSN) and followed by District Local Plans (RTD). Besides the newly introduced RFN, the form and functions of the RSN and RTD is similar to the old Structure Plan and Local Plan. RSN are strategic documents outlining the policies and intention of the state authority for a period of 15 to 20 years. RTD translate these policies into more specific land use proposals for implementation. The major difference is the area covered by the plan. The preparation of the first round of the new development plans has been recently commissioned.

**NATIONAL PHYSICAL PLAN**
(RFN/Rancangan Fizikal Negara)
Translates the National Development
Policy & the 5 Year National Plans

**STATE STRUCTURE PLAN**
(RSN/Rancangan Struktur Negeri)
Translates the policies of the RFN into
strategic action

**DISTRIC LOCAL PLAN**
(RTD/Rancangan Tempatan Daerah)
Translates the RSN strategic policies for
action
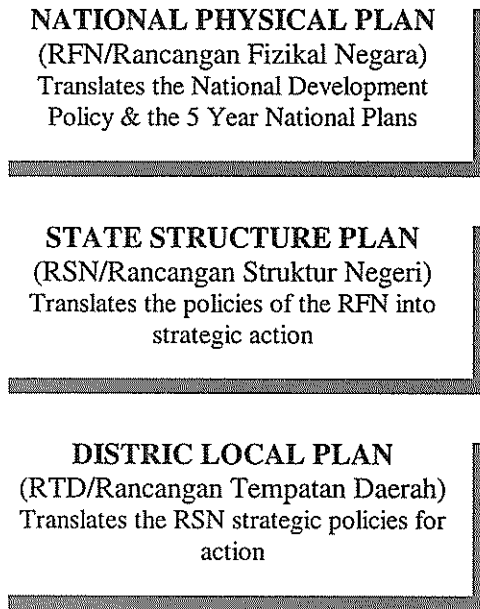
FIGURE 1: Three-tier National Development Plan System

Another significant feature of the new development plans is the additional requirements for impact assessments to be integrated with the process of plan preparation. SEAs are now incorporated into the RSN preparation process and social assessments (SAs) are included for both RSN and RTD studies. As for RTD preparation, the requirement for SEAs on RTDs is subject to the decision of the authority in charge of RTD preparation. Some RTDs are subjected to such assessment depending on local planning authority areas the Plans are being prepared for. The impact assessments are carried out as an integral part of plan preparation. This new requirement emphasises the goals of sustainable development in integrating the environmental needs with the socio-economic objectives of the Plans. Stakeholders' participation and input become an integral part of the planning process.

## THE NEED FOR ENVIRONMENTAL ASSESSMENT OF DEVELOPMENT PLANS

The development plan system represents an integrated approach to planning for land use development. The major objectives of the plans are primarily economic, social and environmental sustainability. Nevertheless, the approach

in plan preparation has resulted in plan documents that are tailored more towards economic and social development based on the assumption of continuing growth. The land use strategy has been too focused on how much land is available for future development needs. The issues that were addressed in the plans are geared towards meeting the need of a growing population base, such as the projected number of houses to be built, the amount of commercial and industrial space to be allocated, road construction and expansion, and the amount of recreational space and supply of utility services required to cater for the anticipated growth.

Environmental concerns have been treated as a sector by itself and addressed issues relating local environmental quality, namely pollution mitigation, waste management, landscape enhancement and access to open space. Conservation measures are concentrated on protection of existing natural areas and environmentally sensitive sites. Global environmental issues (such as emission of greenhouse gases, biodiversity protection and energy consumption) or natural resources utilization issues (such as water consumption and waste generation) are often not adequately addressed. Landscaping recommendations cater more for aesthetic treatment and beautification instead of habitat improvements or regeneration of degraded landscape.

Despite the inclusion of stronger environmental management objective introduced by the Town and Country Planning (Amendment) Act 1995, development strategies and proposals of development plans continue to fail, in most cases, to include solid environmental conservation objectives. As a result, subsequent implementation of the strategies and proposals leads to development projects that can impose adverse impacts on the natural environment. Therefore, there is a need for development plans to be subjected to assessment on their impacts on the environment. Subjecting development plans to environmental assessment can ensure the environmental integrity of the plans. The underlying principle for doing this is that once the plans themselves are environmentally robust, then actions and projects flowing from them should accordingly be environmentally acceptable.

In summary, the general process of development plan preparation has been geared for continued economic growth and is not adequately adapted for sustainable development. An additional mechanism for assessing the environmental implications of the planned development strategies and proposals is, therefore, needed. The economic downturn of 1998 highlighted the glaring weaknesses in the "land availability" and "continuing growth" approach. The measures introduced by latest amendment to the development plan system and the requirement for impacts assessments in their preparation aim to ameliorate

the shortcomings of the old Plans. Initial enthusiasm shown by the various parties involved in preparing the new round of Development Plans is indeed promising. The outcome can only be assessed in the next couple of years when the first batch of the new generation of Plans are completed and gazetted.

# ENVIRONMENTAL ASSESSMENT AS A TOOL TOWARDS SUSTAINABLE DEVELOPMENT

Environmental assessment (EAs) may mean a number of things. In the USA, it refers to a document presenting enough information to allow for a decision to be made on whether a development merits a full EIA. In this paper, we defined EAs in a more general context of impact assessment procedures that are employed to present accurate, critical and objective assessment of likely effects of a development, as well as providing more information of the nature of impacts and measures to mitigate them. We may use the term interchangeably with 'impact assessment' in the text.

Environmental assessment is seen as a tool for preventive action in the quest for sustainable development. The underlying wisdom of EAs is the concept that it is better to prevent a problem than to cure it. Although environmental impact assessment (EIA) was made mandatory for a list of prescribed activities since 1987, environmental degradation continued. This is not to say that EIA is not an effective tool but there are some issues that cannot be addressed by the EIA process. Some of its shortcomings can be overcome through a cumulative approach in impact assessment. However, they are still done at the project level where the decisions on the alternative option have been made. There is a need for an additional tool that can enable us to assess the various alternatives available and this is often only possible at the strategic level. This paper tries to demonstrate how strategic environmental assessment (SEA) can bridge the gaps and counteracts the limitations of EIA and more effectively integrate the sustainable development objectives into the development plan system. With a hierarchy of development plans, we need a hierarchy of EA tools to ensure sustainable development and use of our natural resources.

# ENVIRONMENTAL IMPACT ASSESSMENT – PROJECT LEVEL ASSESSMENT TOOLS

In Malaysia, the EIA process was implemented through administrative procedures between 1979 and1987. Malaysia has been quicker to adopt and adapt the EIA than many developed countries. EIA became mandatory for

certain prescribed activities after the Environmental Quality (Prescribed Premises) (Environmental Impact Assessment) Order 1987 was introduced.

The Department of Environment has taken a number of measures to strengthen the quality of EIA implementation. The most notable weakness in the early years when EIA laws came into force was the variable quality of the EIA reports submitted. It was a learning process and the quality of reports is now becoming more consistent. The reports were frequently prepared and submitted at a very late stage in the decision making process (Ibrahim, 1992). It was partly due to the poor acceptance of the EIA process by project proponents who failed to see the value of the exercise. Preparing an EIA report was seen as a formality that incurred additional costs to the project proponents. Stricter enforcement efforts on the part of the authority have led to greater acceptance of the EIA process. EIA reports are now being prepared together with development proposals.

Nevertheless, a decade of rapid urban expansion that took place between the mid-1980s and 1990s highlighted the deficiencies of EIA system as a tool for sustainable development and natural resource management. Environmental qualities of urban areas, particularly around the Klang Valley continue to deteriorate. High suspended particulate, dust pollution, noise, flash floods, siltation of waterways, loss of habitats and species extinction are some of the adverse effects seen.

A United Nations Environment Programme report argued that the EIA process has not played a significant role in reducing the serious global and regional environmental problems caused by economic growth (Bisset, 1996). Scales and rates of environmental deterioration and resource depletion are more significant now than when EIA was introduced in the 1970s. It is also apparent that the EIA process that is conventionally applied to projects is not capable of addressing these problems fully. Hence, there is a need to adopt more pro-active and integrated approaches that deal with the multiple causes of environmental degradation. The causes have been traced to higher level initiatives such as government macro economic policies, development plans, programmes and strategies.

The EIA process, on its own, has not been an effective instrument for s ustainable natural resource management. The limitation is due to EIA being carried out at the relatively late stage in decision-making to address issues which are more strategic in nature. The options available to the project are already limited by this stage. We are often left with a narrower choice of alternatives for the option that we have chosen. Environmental problems arose

despite having a planned development which individually satisfies the environmental and local planning standards.

At project level EIA, it is difficult to evaluate impacts that may result from indirect and induced activities emanating from a major development. It is also difficult to assess alternatives that have been eliminated by decisions at the higher, strategic level of policy and plan making. Cumulative effects and impacts stemming from actions that normally fall outside project level EIA procedures (e.g. the combined impacts of individually small projects or impacts of technological advances) cannot be adequately addressed.

## CUMULATIVE EIA - CUMULATIVE OR COMBINED IMPACTS ASSESSMENT

The cumulative EIA, or macro-EIA, as it is known here (otherwise also known as cumulative effects assessment or cumulative impact assessment) was introduced recently in an attempt to arrest the limitations of individual project EIA. A macro-EIA is the assessment of the combined environmental impacts of a number of different projects within the same geographical area or within the same economic sector. Macro-EIA is an attempt to deal with the implications of multiple projects in the context of project-by-project EIA system. It is based on the recognition that the impacts of individual projects can interact with each other to bring about combined impacts that may be different in character or scale from the impacts of each project by itself.

Although macro-EIA emphasises the importance of the assessment of combined impacts of individual development actions within a defined area and over a specified period, it is still carried out at the project implementation level of the development process. The approach is closely tied to specific projects to initiate its use, and thus, its application is still limited. It would be more effective, therefore, to apply the EIA principles in decision-making process at higher level initiatives such as policies, plans and programmes that give rise to individual projects.

It is too early to gauge the effectiveness of macro-EIA process. To date, only a few reports have been prepared. Furthermore, macro-EIA is a procedural, not statutory requirement. It has been prepared at the directive of the Authority, not because it is a legal requirement.

## STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) – STRATEGIC LEVEL ASSESSMENT

SEA, also referred to as environmental appraisal, is essentially an environmental assessment of strategic actions. It is an analysis and evaluation of the environmental effects of a proposed policy, plan or programme (PPP). In practice, the line that differentiates between PPPs is rather unclear. Nevertheless, one may view a policy as the guidance and incentive for action, a plan as a set of coordinated and timed objectives for the implementation of the policy, and a programme as a set of projects in a particular area (Therivel & Partidaro, 1999). It is a 'top-down' strategy to ensure that environmental consequences are considered together with economic, social and development implications of a proposed PPP.

SEA has been widely accepted in principle and it addresses the global concern that environmental impacts of human actions are cumulative and occur at a larger scale (global, regional or trans-boundary). SEA is an instrument to promote sustainability that can meet what the Brundtland Commission proclaimed the chief institutional challenge of the 1990s, which is, considering the "ecological dimensions of policy at the same time as economic and other dimensions". SEA is a process that can facilitate our efforts to fulfill the goals of Agenda 21. Although there is no internationally agreed definition of SEA or guidance on how it should be conducted, there is a consensus on the need for SEA (Bisset, 1996).

Government policies, plans and strategies have been identified as potential sources that contribute to the problem. Therefore it is more prudent to address the issues at their outset that is preventing environmental damage at source instead of only treating the symptoms or impacts at project stage. Hence, the need arises for an avenue to ensure that environmental concerns are taken into account at the earlier stages of policy, plan and programme process. SEA ensures that environmental considerations are suitably addressed at the earliest possible stage, i.e. at the same level with economic, social and other considerations. It is intended to complement the process of EIA, which takes place at a later stage of the development process.

Generally, there are three main types of PPPs:
- sectoral PPPs which are related to specific sectors, such as industry, transportation, river catchment management, tourism and housing ;
- area-based PPPs, which covers all activities in a given area, such as land-use plans, structure plans, local plans, economic or regional development plans and wetlands management; and

- "indirect" PPPs which do not give rise to projects but nevertheless have a significant environmental impact, such as privatization, trade agreements, laws and regulations.

As PPPs are tiered, so are SEAs, with higher tier SEAs setting the context for lower tiers SEAs, which in turn set the context for project EIAs. Table 1 below shows the examples of tiers of SEAs and PPPs with special reference to Malaysian development plan system.

TABLE 1:
Examples of Tiers of SEAs and PPPs

| Level of Govern- ment | Malaysian area- based plans (SEA) | Category of action and type of assessment (in bracket) | | | |
|---|---|---|---|---|---|
| | | Policies (SEA) | Plans (SEA) | Programmes (SEA) | Projects (EIA) |
| National/ Federal | National Physical Plan | National transport policy → National economic policy ↘ | Long term national roads plan → | 5-year road building programme → | Construction of expressway section |
| Regional | Regional development plan | | Regional strategic plan ↘ | | |
| State | State structure plan | | | State investment programme ↘ | |
| Local | District local plan | | | | Local infrastructure project |

Source:  Adapted from Barrow (1997).

Note:    Regional development plan is not part of the national three-tier development  plan system, but included in the table to portray continuity in the application of SEA.

The idealised inter-relationship between policies, plans and programmes occurs in a hierarchical decision-making process. In reality it may not follow a straightforward step-by-step sequence. Early decisions made at one PPP level (e.g. policy) set the structure for subsequent level of decisions, i.e. another PPP (e.g. plan). Thus, there is a "tiered" system of PPPs. A national PPP set the context for a regional or local PPP; and a strategic PPP influences a more specific PPP.

## COMPARISON BETWEEN SEA AND EIA

There is a significant difference in focus between SEAs and EIAs (Table 2). SEA focuses on the environmental opportunities and constraints to development whereas EIA focuses on the effects of development on the environment. The purpose of SEA is not to replace the decision-making process. It is to provide the fundamental information at the appropriate stage of the decision-making process and to integrate the concept of sustainability into the decision-making process.

TABLE 2:
Comparing SEA and EIA

| EIA | SEA |
|---|---|
| Is reactive to a development proposal | Is proactive and informs policies, plans and programmes |
| Assesses the effect of a proposed development on the environmen | Assesses the opportunities an constraints which the environment places on development |
| Addresses a specific project | Addresses areas, regions or sectors (e.g. the Forestry or Mining Sector) of development |
| Assesses direct positive and negative impacts of a particular project | Assesses cumulative impacts and identifies implications and issues for sustainable development |
| Focuses on the mitigation and prevention of impacts | Focuses on sustaining a chosen level of environmental quality |
| Narrow perspective and a high level of detail | Wide perspective and a low level of detail to provide an overall framework against which positive and negative impacts may be measured. |

Source: CSIR (1999)

Land use planning requirements have many elements in common with the SEA procedures. Both procedures require identification of the issues, public participation, review of the draft documents, and submission to a decision making process. The missing SEA element is a thorough assessment of their environmental impacts.

SEA process acts as an early warning system to anticipate and prevent cumulative effects and global environmental changes. It is a tool for policy makers and planners to facilitate early discussion of environmental issues identify cumulative impacts of broad public plans and programs that may not be apparent from project level EIA. Therefore, environmentally friendly options can be chosen in policy making.

By subjecting development plans to SEAs, the objectives of sustainable development can be easily incorporated into the development strategies and proposals of the plans. The SEA process puts sustainable development at the base of plan preparation process. It can be integrated firstly into the National Physical Plan (RFN) preparation stage, and subsequently, the State Structure Plan (RSN), followed by the District Local Plan (RTD). The result will be a greater emphasis on identifying environmental objectives and indicators that will form a basis for subsequent monitoring of the plan's environmental performance.

SEA will consider a range of environmental components and predict the likely future environmental impacts resulting from the application of a plan or programme. It is also act as an instrument for gaining more information for decision-making and to facilitate conception of environmentally sustainable policies and plans. The outcome of the impact assessments will be documented and thus, making the planning process more transparent to the public.


## CONCLUDING REMARKS

The new development plan system provides a great opportunity to integrate sustainable development objectives at the various levels of decision-making process through the application of environmental assessment tools. In theory, the current efforts should assist us in deriving development plans, which provides the best compromise between the economic, social and environmental needs. Hence, progress and development can be achieved without significant adverse impacts.

The present shortcomings of the EIA process can also be rectified with the newly introduced SEA process. With the integration of the SEA process into land use development plan preparation, we should expect greater move towards achieving sustainable development. But it is all very early to derive any meaningful conclusion because both the SEA and the new development plan system are only beginning to be implemented. However, SEA shows a lot of promises as a tool that complements project level EIAs.

In practice, the SEA is at present a relatively new concept but it is widely accepted in principle. A growing number of countries and international organisations have established formal processes for strategic environmental assessment of policies, plans and programmes. Mandatory SEA provisions that have been introduced by some countries contain features, which broadly correspond to those found in project-level EIA. Some elements of a more limited form of environmental evaluation have also been incorporated into their planning procedures. It is still debatable whether we need to introduce SEA as an administrative or a legal instrument. We will have to consider where SEA will be applied and how it will be monitored. Case studies from European experience have shown that SEA can be effectively used without it being made a mandatory legal instrument.

The strength of the SEA as a tool for environmental assessment lies in its application at the strategic decision-making level. The success of SEA depends very much on the commitment of the authority that commissions it. Experience from an SEA pilot study on a local plan in Selangor has shown some positive effects from the overall exercise of plan preparation. It was a learning process for everyone involved, from the consultant study team, the project management team of the authority and the various agencies, including NGOs, involved in the technical committee. The plan preparation team working closely with the SEA team has yielded a Plan with minimum potentially damaging impacts even in its first draft. The key success in this pioneering effort is integration, not just of the plan preparation and SEA process, but also of the team members involved right from the beginning of the project.

The success of SEA as a tool for environmental assessment will be evaluated by how well the development plan can be implemented. We need to evaluate whether the plan encourages a move towards a more sustainable pattern of development and natural resource utilisation.

A further tool which is a significant part of the EA process is monitoring and audit. Monitoring progress is an essential part of the planning process. However, there has not been sufficient commitment made in the effort to

monitor the effects of development plans as they are implemented. Monitoring is fundamental in SEA to ensure that the programmes implemented are consistent with the objectives of the development plan and sustainable development. Monitoring in EIA ensures compliance with the conditions of plan approval and the environmental standards. In simple terms, monitoring helps us to evaluate what we have done and learn something from it to help us do better next time. Similarly, a formal monitoring process should be incorporated into the development plan system to enable a consistent methodology of plan performance evaluation to develop.

SEA is undoubtedly a useful tool in integrating the objectives of sustainable development into development plans. Its effectiveness will depend upon how the tools are utilised in the decision-making process, and how well the plans can be implemented and its impacts monitored. Ideally, SEA should be applied at the various levels of decision-making process. SEA should also be iterative. Only then will it ensure that the objectives of sustainable development are embedded into the development strategies and proposals of the plans. It will ensure that our drive towards progress and development are balanced with our need to conserve and preserve the natural environment. It will ensure that our development plans help to improve the quality of human life and conserves the vitality and diversity of the Earth's natural system.

## REFERENCES

Barrow, C. J. 1997. *Environmental and Social Impact Assessment: An Introduction.* London: Arnold.

Bisset, R. 1996. *Environmental Impact Assessment: Issues, Trends and Practice. UNEP EIA Training Resource Manual.* Nairobi: United Nations Environment Programme.

Carew-Reid, J., Prescott-Allen, R., Bass, S. and Dalal-Clayton, D.B. 1994. *Strategies for National Sustainable Development: A Handbook for their Planning and Implementation.* London: Earthscan Publications.

Commission of the European Communities DG XI (Environment, Nuclear Safety and Civil Protection). 1994. *Strategic Environmental Assessment: Existing Methodology.* Luxembourg: Office for Official Publications of the European Communities.

Commission of the European Communities DG XI. 1997. *Case Studies in Strategic Environmental Assessment: Final Report.* Luxembourg: Office for Official Publications of the European Communities.

Council for Scientific and Industrial Research. 1999. *Strategic Environmental Assessment in South Africa: Guideline Document (Draft Document)*. South Africa: Council for Scientific & Industrial Research (CSIR) and Department of Environmental Affairs & Tourism.

Department of Environment. 1991. *A Handbook on Environmental Impact Assessment Guidelines*. Reproduced by ENSEARCH for EIA Forum, 23 September, 1991, Petaling Jaya Hilton, Petaling Jaya.

Department of the Environment. 1994. *Environmental Appraisal of Development Plans: A Good Practice Guide*. London: HMSO.

Department of the Environment, Transport and the Regions. 1998. *Planning for Sustainable Development: Towards Better Practice*. London: The Stationery Office, National Publishing.

English Nature. 1995. *Strategic Environmental Assessment and Nature Conservation*. Report to English Nature by R Therivel and S Thompson, Peterborough: Oxford Brookes University, English Nature.

European Commission DG XI (Environment, Nuclear Safety and Civil Protection).1998. *A Handbook on Environmental Assessment of Regional Development Plans and EU Structural Funds ProgrammesI* London: Environmental Resources Management.

Ibrahim, A.K.C. 1992. *An Analysis of Quality Control in the Malaysian Environmental Impact Assessment (EIA) Process*. Unpublished MSc. Dissertation, Manchester, UK: University of Manchester.

International Development Research Centre. 1993. *Agenda 21: Green Paths to the Future*. Ottawa: International Development Research Centre.

IUCN/UNEP/WWF. 1980. *World Conservation Strategy: Living resource conservation for sustainable development*. Gland: IUCN, UNEP & WWF.

IUCN/UNEP/WWF. 1991. *Caring for the Earth: A Strategy for Sustainable Living*. . Gland: IUCN, UNEP & WWF.

Md. Jahi, J. 1997. Environmental policies, laws and institutional arrangements: a critique and suggestion. In *State of the Environment in Malaysia*, Consumers' Association of Penang. Penang: Consumers' Association of Penang. 457-463.

Abdul Rahim, K. 1991. *Ekonomi Alam Sekitar: Teori dan Amalan*. Serdang: Penerbit Universiti Pertanian Malaysia.

Manchester University 1995 *Leaflet 13: Strategic Environmental Assessment. EIA Leaflet Series*. Manchester: University of Manchester.

Therivel, R. & Partidaro, M.R. 1999. *The Practice of Strategic Environmental Assessment.* London: Earthscan Publication Ltd.

United Nations Economic Commission for Europe. 1992. *Application of Environmental Impact Assessment Principles to Policies, Plans and Programmes.* UNECE Environmental Series No.5. Geneva: UNECE.

WCED. 1987. *Our Common Future. Report of the World Commission on Environment and Development.* Oxford: Oxford University Press.

WWF. 1992. *UNCED – the Way Forward. WWF Position paper.* Gland: WWF International.

# ENVIRONMENTAL CONCERN IN LOCAL PLANNING PRACTICE

**Foziah Johar**
*Faculty of Built Environment*
*UNIVERSITI TEKNOLOGI MALAYSIA*
*Email: ugisp_bip@yahoo.com*

## Abstract

The town and country planning system has been identified to be one of the key instruments in delivering land use and development objectives that are compatible with the aims of sustainable development. Several areas of actions should therefore be considered in the local planning strategy to achieve a more radical approach to environmental sustainability. These include conservation, shaping the locational pattern of development and accommodating environmentally desirable qualities in all development. This paper considers how far local planning authorities through their development control powers are likely to fulfil this role. Drawing on the content analysis of local plans, this paper identifies the framework for development control particularly on environmental matters. It also examines the conditions that accompanied a planning approval to determine the extent of control pertaining to environmental aspects. The results indicate the lack of consideration given to environmental related matters compared to the traditional concerns of land use planning. Finally the paper discusses the constraint of the present system and prospects to facilitate better management.

**Keywords:**     Environmental Sustainability, Local Planning Strategy, Development Control

## INTRODUCTION

Environmental priorities have assumed an increasingly important place on the development agendas in many parts of the world. Although many planners would claim that the environment has always occupied a prominent place on their list of priorities (Miller, 1990), recent awakening of widespread and public concern for quality of life offers both a challenge and much needed support. It is a challenge because, while the environmental concerns of citizen coincide in general terms with many of the aims of planning, such concerns also encompass aspects of environmental management that are generally considered peripheral to the traditional boundaries of planning practice. The challenge to

planners is to grasp the opportunity to support the demand for enhanced environmental quality and translate it into clearly defined and realisable programmes of action. The recent amendment to the Malaysian planning legislation indicates the growing concern for better environmental management both at development plan and development control levels. This article examines the significance of the recent environmental policy agenda which fall within the remit of the planning system, and then explore how it is practised. Drawing on the content analysis carried out on selected local plans, it identifies the framework for development control particularly on environmental matters. It also examines the conditions which accompany a planning approval to determine the scope of planning control pertaining to environmental aspects.

## ENVIRONMENT AND THE PLANNING SYSTEM

The term *environment* in planning has always been questionable. On the one hand it is commonly employed to imply the economic, socio-cultural and physical attributes of the scenario in which daily activities take place. It is also used to mean specifically the built and natural environment. The term *amenity* is another related concept albeit elusive, and was broadly used in the early planning legislation to signify pleasant surrounding. Consequently the environment in this physical sense becomes a central preoccupation of the planning system. The contemporary environmental agenda however raised considerable challenge to the planning community about how best sustainable concepts can be developed in the system. In the context of environment, it may be understood as the maintenance of environmental capacities, or critical natural capital, over time. These capacities and the environmental factors which contribute to them are, in principle, measurable by recognised indicators such as resource stocks, pollution levels and habitat types. The difficulty with sustainability as a concept and practice is that measuring environmental capacities is not straightforward (Blowers 1992). Several approaches have been developed to operationalize the concept. The following areas of action should be considered in formulating the local planning strategy to achieve a more radical approach to environmental sustainability (Healey and Shaw 1993):

1.  Conservation (of resources and functional/cultural amenities)
    -   of sites
    -   of environmental qualities
    -   of building qualities;
2.  Location of development
    -   to conserve energy/reduce pollution
    -   to promote pollution reduction

- to provide amenities
- to provide diversity
- to limit development within capacity thresholds;
3. Definition of the spatial areas within which capacities are to be limited and targets met;
4. Identification of sites for environmentally desirable development;
5. Promotion of environment-enhancing qualities in all development;
6. Compensation for the distributional effects of strategies which are en vironmentally beneficial in other respect.

Some of these areas have long been established in the planning system in this country. These areas include conservation, shaping the locational pattern of development, promoting particular types of development and enhancing certain qualities in development. Other areas such as pollution control targets and compensation for environmental damage are less familiar. Some of these requirements have also contributed to the changes to the Malaysian planning statute which indicate a strengthening tendency to contribute to a more responsible development with regard to environment.

## THE MALAYSIAN STATUTORY PLANNING SYSTEM

The land use planning system in Peninsular Malaysia is governed by the Town and Country Planning Act 1976 (1976 Act). It was introduced to replace the Town Board Enactment which was deemed to be limited in its scope and flexibility as a planning regulation for a country experiencing rapid development. The Act advocates the planning control system and a comprehensive development plan system of structure and local plans. The act seeks to have a uniform planning legislation and policies and to perform as a principal act regulating the planning and control of development within the framework of national policy in local authorities' area in Peninsular Malaysia. The system consists of a set of procedures for formulating plans and determining applications for development. The objectives and scope of the systems are determined by government policy and local interpretation. As a result, very little is specified as to the scope and content of planning policy, other than that its regulatory focus be on the use and development of land Exactly what this means, and how it could relate to the social and environmental processes which generate land use and development, has always been a matter of controversy. At its minimum interpretation, the system is mainly concerned with the location of development and with its characteristics, with what goes where and on what terms.

# ENVIRONMENTAL ASPECTS IN STATUTORY PLANNING SYSTEM

The planning system uses regulatory power to contribute to the management of environmental change in localities. There is however, no discrete body of control within the planning system relating to *environment*. The following briefly describes the considerations given to environmental components in the development plans and the control system.

## The Development Plan

The structure plans which form the policy basis of local authority development programmes are legally required to include measures for the improvement of the physical environment. The open ended requirement have over the years, been translated in various manner. The contents of the structure plan is translated by the local plan which is considered to be the cornerstone of the development plan system as it will form the basis of development control. The natures of the local plans produced vary according to circumstances prevailing in different local authority area. The amendment to the 1976 Act in 1995 has changed the scope of environmental aspects of the local plan quite considerably. Other than detailed proposals concerning the development and the use of land, the plan must also contained environment-related measures as follows:

- the protection and improvement of the physical environment;
- the preservation of the natural topography;
- the improvement of the landscape;
- the preservation and planting of trees;
- the making up of open spaces; and
- the preservation and enhancement of character and appearance of buildings.

Such requirements is further complemented and enhanced at the development control stage.

## The control of development

The general rule of the 1976 Act is the prohibition on the use of land building otherwise than in conformity with the local plan. A breach of the rule is an offence. The prohibition however leaves several things outside the control of the local planning authority. In particular, there remains the need for the control of actual development of land and building which, although in general conformity with the plan, must take place in a regulated shape or form. Therefore, in addition to the rule, a second layer of control is required, whereby, a person who wants to carry out a development, must have a planning permission from the local planning authority. The latter rules thus enable the

planning authority to control the development in a more detailed manner, for example, by the imposition of conditions. The theory is that conditions are the mechanism by which the development that is generally acceptable in terms of land use can be made specifically acceptable (Booth 1983).

The procedure of obtaining a planning permission has been considerably altered by the 1995 amendment to the Act. Prior to the amendment, an applicant has to provide information relating to the physical dimensions of a building. The current provision requires, in addition, a development proposal report which contains the development concept, land use analysis and the development's impact on surrounding land. The plan must also shows:
  - measures for the protection and improvement of its physical environment;
  - measures for the preservation of its natural topography;
  - measures for the improvement of its landscape;
  - measures for the preservation and planting of trees thereon;
  - the location and species of trees with a girth exceeding 0.8 meter and other vegetation thereon;
  - the proposed earthwork.

Local planning authorities have a wide power to impose conditions on a grant of planning permission (1976 Act, s. 22(3)). It is well established that conditions must serve a planning purpose, be fairly and reasonably related to the subject matter of the application and must not be unreasonable in the administrative law sense (Rowan-Robinson et al. 1995). Theoretically, conditions can be employed to achieve environmental safeguards and could thereby contribute to ensuring that development does not have negative impact on the environment. The 1995 amendment has widened this control to enable local authorities to impose conditions pertaining to the above requirements.

In order to assess land use planning's contribution to environmental management, a more systematic study of planning practice is discussed next. Studies of the operation of the development control system have emphasized the importance of development plan to planning decision. The framework provided by the plan particularly on environmental aspects was examined using 24 local plans. The plans were surveyed using the method of content analysis which is concerned with ensuring a systematic and objective inspection of varied documents (Bruff & Wood 2000). In this study, the environmental content of local plans is identified based on the guidelines of the Manual of Local Plan Preparation (JPBD 1993, 2001). The study concentrates on the policy direction and the guidelines which primarily form the basis for determining planning applications. Content analysis is also used to survey 100 planning permissions

selected on the purposive sampling method to represent planning applications which essentially involved environmental related issues.


## ENVIRONMENTAL ASPECTS IN LOCAL PLANS

Table 1 shows the main environmental issues faced by the local authorities as outlined by the local plans. Policy statements by the local plans to address those issues ranged from general policy such as "industries are encouraged to recycle" to detailed statement such as "using interlocking bricks as impervious surface material". It is however possible to generally categorise them into three groups based on their purpose i.e. forward planning or promotional policies, control and monitoring. Table 1 shows the recommendations of the environmental chapter according to those categories outlined by local plans prepared prior to the 1995 amendment. It is apparent that the environmental chapter concentrates on issues relating to pollution and solid waste disposal. This was in line with the theme of environmental discourse in most structure plans prepared during the late 1980s and early 1990s which emphasised an active environmental care and management (Foziah 2000). The main concern for these plans is to reduce environmental degradation resulting from rapid economic development which has taken place during that period. These structure plans set out the policy framework for 85% of the local plans in this study. It should be noted that other environmental related issues are covered by other chapters of the local plans. The majority of local plans concentrate on measures to improve water quality as this forms a major issue faced by most local authority areas. 70% of the plans recommended that both industrial and domestic waste be treated first before being released to open stream or drains. Other recommendations include provision of silt traps during construction. Table 2 also indicates that policy statements are still broad to enable them to be really useful at the control level. This study further identified guidelines that can be applied at the development control stage and they are shown in Table 3. It can be seen that the scope of guidelines varies from one local plan to another.

The local plans prepared in accordance with the 1995 amendment are more focused, having less written statement and more graphic presentation to illustrate the proposals. The written statements are also accompanied by the development guidelines, often in separate volumes.

TABLE 1:

Environmental related issues in local authority areas

|   | *Environmental issues* | **% of local plan** |
|---|---|---|
| 1 | Water/river pollution | 83 |
| 2 | Inadequate sewerage system | 50 |
| 3 | Encroachment of environmentally sensitive areas | 37 |
| 4 | Inadequate drainage system/flood | 37 |
| 5 | Inadequate and poorly maintained recreational facilities and open space | 37 |
| 6 | Conflicting land uses, obsolete buildings and abandoned land | 37 |
| 7 | Poor solid waste management | 37 |
| 8 | Traffic congestion | 30 |
| 9 | Air pollution | 30 |
| 10 | Inadequate and poorly managed urban landscape | 30 |
| 11 | Noise pollution | 24 |

TABLE 2:

Main proposals on environmental aspects in local plans

| **Forward planning** | **Control** | **Monitoring** |
|---|---|---|
| **Water quality** | | |
| - River beautification for recreational (8%)<br>- Preserving river banks and beach front as ecological area. (25%)<br>- Implementing the Road, Drainage and Building Act 1974 (12%)<br>- Protecting open canals from domestic and industrial waste (8%)<br>- Widen river reserve and putting up dykes to prevent water spill. (29%) | - Teat domestic and industrial waste before being released to river/drain (75%)<br>- Improve drainage system to prevent flooding.(20%)<br>- Install rubbish trap or boom along rivers (33%)<br>- Widen and distribute drains in flood prone area. (8%)<br>- Using 'biodegradable' pesticide (8%) | - Increase number of sampling stations (4%) |

| Air quality | | |
|---|---|---|
| - Cooperate with other local authorities on air pollution control (4%)<br>- Plant trees and paved road to reduce pollution (46%)<br>- Prevent and control open burning (6%)<br>- Locate polluted industries in appropriate area (12%) | - Ensure industries install dust trap mechanism (20%)<br>- Control industrial activities (20%)<br>- Ensure smooth traffic movement especially on busy roads and junctions (12%) | - Increase number of sampling stations (29%)<br>- Levy compound on polluted industries (4%)<br>- Cooperate with Road & Transport Department to test on smoke from vehicles (20%) |
| **Noise quality** | | |
| - Cooperate with Department of Environment and Road & Transport Department in providing buffer zones (12%)<br>- Control level of noise below 55 dBA (16%)<br>- Disperse traffic (8%)<br>- Encourage use of public transport to reduce number of private vehicles (4%) | - Tree planting to reduce high frequency noise 29%)<br>- Enforce related laws 1978 (16%)<br>- Using noise barrier if noise level cannot be controlled (16%) | - Give warnings to vehicles to install noise reducing mechanism (4%)<br>- Carry out noise monitoring test (8%) |

| Waste disposal | | |
|---|---|---|
| - Provide appropriate waste disposal sites (12%)<br>- Waste disposal management carry out according to Department of Environment's standard and guidelines (16%)<br>- Encourage recycling (25%)<br>- Provide site for 'composting' organic waste (16%) | - Enforce related law relating to solid waste management (4%)<br>- Prohibiting waste disposal on river reserve, open area, river/drain and housing areas (12%)<br>- Increase number of rubbish bins in public areas (20%) | - Monitor open burning (20%)<br>- Carry out cleanliness and beauty programs (42%) |

Note: ( ) Percentage of local plans.


TABLE 3:
Guidelines on environmental aspects provided by selected local plans which are applicable at development control stage.

| Aspects | Guidelines | Local plans |
|---|---|---|
| Air quality | − Every factory to install dust control mechanism | Taiping, Bukit Mertajam, Kota Setar |
| | − Tree planting (high density in buffer zone and road side) | Kota Setar, Seremban, Alor Gajah, Padang Lalang, Tampoi-Larkin-Kempas, Bangi-Semenyih-Beranang. |
| | − To pave road, silt trap during construction and ground cover | Kota Bharu, Bandar Maharani, Kota Setar, Bukit Mertajam, Alor Gajah |
| | − Provide buffer zone between conflicting land use. | Kulim-Junjung, Padang Lalang, Kota Bharu, Tampoi-Larkin-Kempas, Melaka, Bangi, Alor Gajah, Kota Tinggi. |
| | − Every manufacturing factory to have treatment system. | Bukit Mertajam, Bandar Maharani |
| | − Carry out EIA for potentially polluted projects and projects more than 50 hectares.. | Kota Setar, Bukit Mertajam, Kota Bharu, Tampoi-Larkin-Kempas, Bangi-Semenyih-Beranang. |

| Aspects | Guidelines | Local plans |
|---------|-----------|-------------|
| Water quality | – Constructions to be carried out during appropriate season. | Seremban, Bangi-Semenyih-Beranang, Batu Burok-Chendering |
| | – Install silt trap during construction. | Bandar Maharani, Padang Lalang |
| | – Provide treatment system for surface water runoff. | Melaka, Padang Lalang |
| | – Provide retention pond | Seremban, Alor Gajah |
| | – Development in accordance with guidelines of Dept. of Drainage and Dept. of Town & Country Planning | Alor Gajah, Bangi-Semenyih-Beranang, Batu Burok-Chendering |
| Noise control | – Provide buffer zone | Kota Setar, Bukit Mertajam, Kota Bharu, Alor Gajah, Skudai |
| | – Tree planting with dense texture. | Kota Bharu, Alor Gajah, Parit Buntar-Bagan Serai, Padang Lalang |
| Solid waste | – Every settlement to provide waste disposal site. | Kota Bharu |
| Environmentally sensitive area | – Prohibit tree felling | Taiping |
| | – Preserve building/area having significant interest. | Kangar |
| | – Development in hilly areas and river reserve to follow guidelines of Dept. of Drainage and Dept. of Town & Country Planning) | Seremban, Batu Burok-Chendering |
| | – Housing density in accordance with slope capacities. | Kulim-Junjung, Batu Burok-Chendering |
| | – Development not allowed on slope of more than 25 degree. | Kulim-Junjung, Alor Gajah, Tampoi-Larkin-Kempas, Batu Burok-Chendering |
| | – Hydraulic study for development near water bodies. | Padang Lalang, Bangi-Semenyih-Beranang. |

In response to the growing awareness to the environmental issues, many government agencies involved in land development have produced their own guidelines according to their area of control and such guidelines have also been included in these local plans. As regards to environmental aspects, these plans generally emphasised the preservation of natural resources and environmentally sensitive area in addition to environmental control. Since the exact areas to be preserved or maintained are not identified, questions can still be raised as to its applicability to the development control stage.

## ENVIRONMENTAL QUALITY AND DEVELOPMENT CONTROL

In order to determine whether a proposed development is viable, it is necessary to weigh up the consequences of what is proposed for the environment in addition to other factors such as economic and social impacts. In many cases, it will be possible to determine the environmental consequences of a proposal with a reasonable degree of confidence. Under Malaysian law, the mechanism to evaluate the potential impact of development on the environment is environmental impact assessment (EIA) which is governed by the Environmental Quality Act (1985 Amendment) and administered the by the Department of Environment. The development control system is however carried out by the local planning authority and may not involve the EIA. As mentioned earlier, the amendment to the 1976 Act required that certain environmental aspects of development should be enhanced and powers given to the local authority to control them accordingly through the imposition of conditions. The sampled planning permission shows that planning conditions can generally be categorised into four main groups according to their purpose. These include i) conditions to improve the physical environment; ii) conditions relating to the design and layout of the development; iii) conditions relating to provision of infrastructure and amenities; iv) conditions to improve the quality of the environment (Table 4). Among the conditions used to improve the physical environment, the most frequently used is the requirement to provide open space and tree planting. More than 70% of the planning permissions in the sample carried these conditions in the "very clear" category compared to other conditions in the same category which are imposed to about 20% of the sample. A large proportion of conditions other than provision of open space are not site specific.

It is interesting to note that more than fifty percent of the permissions do not mention the tree felling prohibition whereas only 5% of them do not carry condition relating to open space.One third of the samples do not carry any

condition relating to preservation of the natural topography or restricting any form of disturbance to the natural resources. Conditions related to measures to improve the quality of environment include: i) Measures to prevent and control water/air/noise pollution; ii) Waste disposal management; iii) Citing and zoning of industries; iv) Traffic management; and v) provision of footpath. All these aspects are generally considered in determining the planning application. However, the detail for these conditions particularly as regards to clarity and coverage is still questionable. The average of planning permissions which carry these conditions in a clear manner is 22.5%, i.e. less than one per cent from those that do not have these conditions at all while another 22% of the samples have these conditions worded in a general manner.

Two possible interpretations emerge from these findings. They could suggest that local authority regard these issues as important and view conditions as powerful means for controlling the physical environment. The highly generalised conditions might suggest, then, a level of understanding of the intention in imposing conditions for the developers, which would ensure implementation. Alternatively, it would be possible to imply that the use of generalised conditions and concern for detail as a reflection of the belief that environmental aspects was only peripherally important in the development control process. This would be consistent with the findings on the provision of local plans which lack clear guidelines. This differs from provisions on design and layout of buildings and guidelines on social facilities which are more site and performance specific. It is also consistent with the performance of conditions related to these matters which generally have a higher frequency than environmental related conditions.

TABLE 4:
Planning conditions according to categories of clarity

| Conditions | Categories (%) | | | |
|---|---|---|---|---|
| | **Site and perfor mance specific** | **Site or perfor mance specific** | **General** | **Not mention** |
| *Conditions to improve the physical environment* | | | | |
| Prohibit damage to the land, its physical environment, natural topography and landscape | 18.0 | 29.0 | 21.0 | 32.0 |
| Prohibit the removal or alteration of any natural features of the land | 19.0 | 24.0 | 24.0 | 33.0 |
| Prohibit the felling of trees of certain characteristics | 11.0 | 24.0 | 12.0 | 53.0 |
| Planting or replanting of trees with certain characterisctics. | 23.0 | 52.0 | 17.0 | 8.0 |
| Making up of open space | 39.0 | 42.0 | 14.0 | 5.0 |
| *Condition to improve the quality of environment* | | | | |
| Prevent water/air/nose pollution during construction | 19.0 | 23.0 | 39.0 | 19.0 |
| Control pollution after construction is completed | 16.0 | 20.0 | 26.0 | 38.0 |
| Adherence to guidelines on sitting and zoning of industries | 27.0 | 38.0 | 18.0 | 17.0 |
| Provide comprehensive footpath system | 12.0 | 24.0 | 28.0 | 36.0 |
| Conditions related to traffic management | 16.0 | 22.0 | 32.0 | 30.0 |
| *Conditions related to layout and amenities* | | | | |
| Conditions related to design and layout | 32 | 21 | 23 | 24 |
| Provision of infrastructure and social amenities | 42.0 | 33.0 | 12.0 | 12.0 |

## CONCLUSION

There is no doubt that land use planning control contributes to better environmental management. It plays significant role in improving the overall amenity especially in the urban areas. This is in line with the traditional concerns of land use planning which is to ensure maximum convenience and beauty while facilitating economic and social well-being (Keeble 1969). However, the achievement of sustainable development requires that planning be environmental-led. In general terms, planning powers are wide enough and the tools of control are sufficiently versatile to ensure that land use and development objectives are compatible with sustainable development, if local planning authorities can be persuaded to use them. There are however several areas of the process where difficulties could arise. First, the general approach to the operation of development control does not fit with the precautionary approach which is very much a part of the approach to sustainable development. The attitude and practice of development control is one where applications should be allowed unless they would cause conflicts to interests of acknowledged importance. Although they may be circumstances in which the development plan can support a precautionary approach, such circumstances will be limited. If sustainable development is to be an important factor in development control, it is necessary to review the extent of the presumption in favour of development. The second difficulty arises from the "once and for all" nature of development control. There is no effective way in which a local planning authority can review the adequacy of control in the light of changing circumstances and advance technology. Consideration needs to be given to providing authorities with effective tools for extending the scope and process to encompass monitoring and review.

## References

Blowers A. 1992. Planning for a sustainable future: problems, principles and prospects. *Town and Country Planning*, 61(5), 132-135.

Bruff, G. E. & Wood, A. P. 2000. Local sustainable development: land use planning's contribution to modern local government. *Journal of Environmental Planning and Management*, 43(4), 519-539.

Foziah Johar. 2000. Environmental considerations in statutory planning: evolving policies in development plans, Proceedings National Seminar on Environmental Management Issues and Challenges in Malaysia, UKM, Bangi, 25-26 July.

Healey, P. & Shaw, T. 1993. The treatment of environment by planners: evolving concepts and policies in development plans. Working paper no 31.

Centre for research in European urban environment, University of Newcastle upon Tyne.

Jabatan Perancangan Bandar & Desa (JPBD). 1993. *Manual    Penyediaan Rancangan Tempatan.* Kuala Lumpur:

Jabatan    Perancangan    Bandar    &    Desa    Persekutuan. Jabatan  Perancangan Bandar & Desa (JPBD). 2001. *Manual Penyediaan Rancangan Tempatan (Pindaan).* Kuala Lumpur: Jabatan Perancangan Bandar & Desa Persekutuan.

Keeble, L. 1969. *Principles and Practice of Town and Country Planning.* London: Estates Gazette.

Miller, C. E. 1990. Development control as an instrument of environmental management. *Town Planning Review,* 6(3), 231-245.

Rowan-Robinson, J., Ross, A. & Walton, W. 1995. Sustainable development and the development control process. *Town Planning Review,* 66(3), 269-286.

# ECOTOURISM PLANNING:
# WHO IS REALLY RESPONSIBLE?

**Badaruddin Mohamed and Abdul Aziz Hussin**
*School of Housing, Building and Planning*
*UNIVERSITI SAINS MALAYSIA*
*Email: bada@usm.my, abdaziz@usm.my*

## Abstract

The potential of tourism as a generator of hospitality industry, employment and income is leading many states in Malaysia to pay increasing attention to this sector. While mass tourism continues to make the headlines, 'new tourism' like ecotourism and agrotourism is fast becoming the buzzword of this new millennium. Joining the ranks of states promoting ecotourism is Kelantan, the focus of this paper. The notion that tourism is the panacea of economic problems is debatable. As illustrated by various examples in this paper, tourism, if not properly planned and managed can create chaos and leave negative impact on nature. This paper also focuses on the issue of laws and policies that govern the use of eco-resources found in Southern Kelantan (Kelantan Selatan), which are believed to contribute to the degradation of the resources.

**Keywords:**    Ecotourism, Products, Law and Policies, Tourism Planning

## INTRODUCTION

Tourism is the second most important sector for the Malaysian economy. Malaysian tourism enjoyed an impressive average growth of 9.26% between 1981 and 2000. The number of international arrivals to Malaysia showed a significant growth in 1990. Malaysia, in 1990 recorded 54% increase in tourist arrivals from the previous year. This tremendous increase was due to the Visit Malaysia Year promotional blitz throughout the world. After taking a dip in 1997 and 1998, Malaysian tourism sector recovered with a 53% increase in international arrivals. Despite the scare created by the September 11, 2001 attack on the United States and global economic downturn, over 12.7 million tourists visited Malaysia last year, generating over RM 24 billion revenue to the economy, an increase of RM7 billion compared to the income in 2000. Major tourist markets for Malaysia have been the neighboring ASEAN nations

especially Singapore, Indonesia, Thailand, and Brunei. Other foreign markets include Hong Kong, Japan, China, and Australia. The main destinations within the country are the major cities of Kuala Lumpur, Malacca, Penang and Johore Bahru with Langkawi, Kuching and Tioman becoming new destinations. In line with the nature theme promoted by Tourism Malaysia worldwide, alternative tourism concepts like ecotourism and agrotourism are regarded as important and potential niche areas to be explored by various state and local authorities in Malaysia.

Malaysia has 54 protected areas of more than 1,000 hectares, totaling 1,483,000 ha. Or about 4.5 % of the land surface of the country. They include 28 districts of nature reserves, where 90,070 hectares are not opened to tourism activity (Norizan, 2000). Among main national parks and protected areas are: Bako National Park, Crocker Range Park, Endau Rompin, Gunung Mulu National Park, Kenong Rimba Park, Kinabalu national park, Kuala Gula Bird Sanctuary, Niah National Park, Rantau Abang Turtle hatchery, Sepilok Orang Utan Sanctuary, Taman Negara and Tunku Abdul Rahman National park.

WWF Malaysia estimates that Malaysia gains RM 655 million per year from ecotourism. This figure, however, is rather small compared to the estimated RM24 billion of tourism brings into the economy (Badaruddin, 2002). Ecotourism was initially defined by Ceballos-Lascurain (1988) as the travels to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals as well as any existing cultural manifestations (both past and present) found in these areas. This definition is further expanded by Ziffer (1989) who suggests ecotourism as: 'a form of tourism inspired primarily by the natural history of an area, including its indigenous cultures. The ecotourist visits relatively undeveloped areas in the spirit of appreciation, participation, and sensitivity. The ecotourist practices a non-consumptive use of wildlife and natural resources and contributes to the visited area through labor or financial means aimed at directly benefiting the conservation of the site and the economic well being of the local residents.

## TOURISM: THE MAJOR PLAYERS

As in other countries new to tourism, the Malaysian Government carries the task of initiating tourist development. The Malaysian government does not only provide the much needed tourist infrastructure but also spends a great amount of money for promotional purposes. Among programs hosted by the Ministry of Culture and Tourism (MCAT) are the year-round promotions (with cooperation of the local governments), the development of medium cost hotels throughout

Malaysia (i.e. the Seri Malaysia Hotel Chain), and specific local product development such as heritage trails and tourism signboards throughout the country. As shown in Figure 1, there are many ministries and departments involved in the planning and management of ecotourism in this country. Besides the Federal Ministries, Unit Perancang Ekonomi Negeri (State Economic Planning Unit) carries the task of planning tourism projects at the state level, together with other agencies like Jabatan Perancang Bandar dan Desa (Urban and Regional Planning Department), Kraftangan Malaysia and the Department of Wildlife Protection & National Park (Perhilitan). At the local level, the role of maintaining tourist sites fall within the jurisdiction of respective local authorities and district offices.
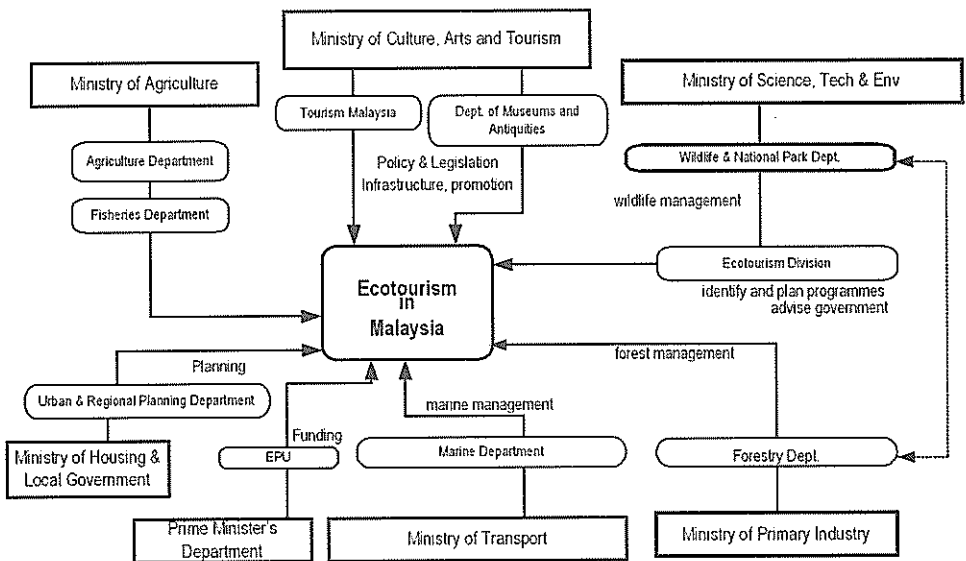


FIGURE 1: Major authorities in ecotourism planning
Source: Badaruddin (2002)

While a significant amount of budget has been allocated for tourist infrastructure development, the allocation for maintenance and management purposes is often lacking (See RM7 allocation in Table 1 for instance). The Federal Government, in many cases, would allocate funds to start a tourism development project, but state governments are expected to fork out the necessary fund to run and maintain the project. In many instances, the failure of the state governments to secure adequate budget for the maintenance of the places has resulted in the deterioration of the places, and the quality of experience supposed to be enjoyed by the visitors.

TABLE 1:
Allocation for Tourism development, 1996-2005 (RM million)

| Programme | RM 7 [1996-2000] | RM8 [2001-2005] |
|---|---|---|
| National Heritage/Historical Preservation | 56.0 | 125 |
| Accommodation | 49.0 | 35.5 |
| Beautification/Cleanliness & Environmental Protection | 89.2 | 295.3 |
| Facilities & Infrastructure | 333.5 | 473.6 |
| Others | 75.8 | 79.6 |
| Total: | 605.5 | 1009.0 |

Source:  The Eighth Malaysia Plan.

This paper is based on a recently completed research, funded by the Intensive Research Priority Area (IRPA) short-term grant, conducted in selected ecotourism sites in Southern Kelantan (hereafter will be referred as *Kelantan Selatan*) (Figure 2).  It will focus on the issue of lacking integrated approach in developing tourist products as well as consequent impacts from the legal tussles found among authorities governing places of interests.

## TOURISM IN KELANTAN SELATAN

Tourism has been an important sector to many states in Malaysia, including Kelantan.  The arrivals of tourists in the state for the past few years have been encouraging.  In 1999 for example, there was 2.53 million tourists visited the state, generating over RM766 million to the state economy.   Most of the visitors (84%) were domestic travelers (especially from nearby states of Trengganu and Pahang), while the rest were international visitors.  The majority of the international visitors come from the neighboring Thailand.
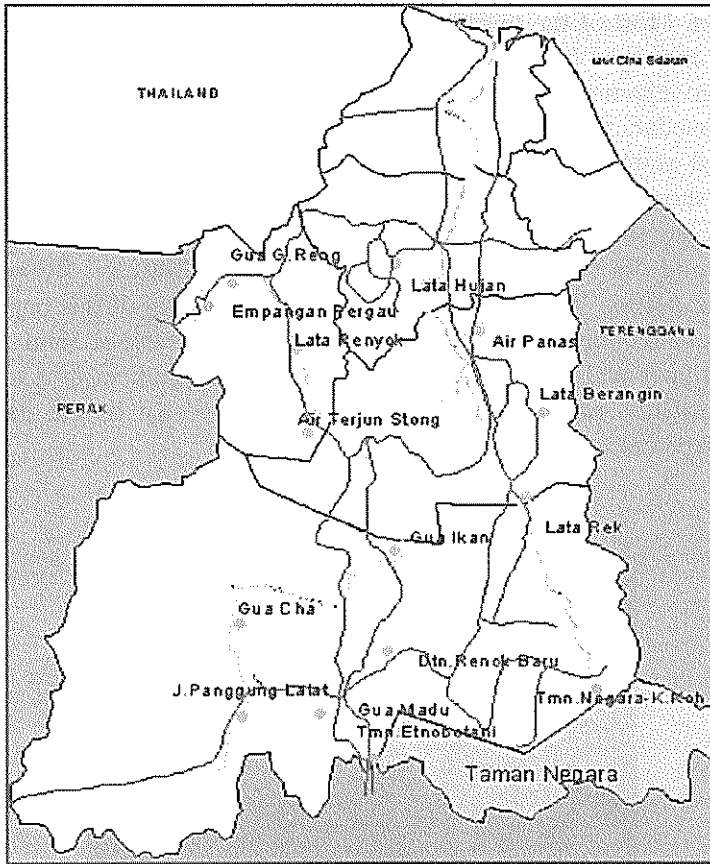
FIGURE 2: Major tourist attractions in Kelantan Selatan

Kelantan is proud of its traditional Malay culture and villages as well as the abundant natural resources found throughout the state. Despite comments that tourism and Islam will not see eye-to-eye, Kelantan regards tourism to be an important sector. Islamic tourism concepts have been promulgated widely, and have been instilled in many aspects of the tourism business. A good example of the implementation of this concept can be observed in Hotel Ansar, in Kota Bharu. According to Wan Mohamad (1998), besides developing Kelantan's tourism based on Islamic principles, the state intends to make the activities of musafir, rehlah, siyahah, hijrah, ziarah, and riadah to be educational as well as to have visitors appreciate the gift of Allah (swt). Tourism, according to him, must protect, conserve, and retain the natural

environment. Most of the tourist attractions in Kelantan Selatan covered in this research is managed by the Lembaga Kemajuan Kelantan Selatan (Kesedar), a federal government agency, established in 1978. As shown in Table 2, besides Kesedar, there are a number of other government agencies—both federal and state—that claim authority over the sites. Despite the fact that there should be many agencies taking care of the places, visits to the sites revealed that most of them are in very disturbing conditions (See Figure 3 and 4) (Abdul Aziz & Badaruddin, 2002). Some are left deserted and putrid. This lead us to the two main focuses of this paper namely: (1) The fact that there are various authorities with various (and sometimes conflicting) laws and regulations complicate the management of a tourist area; (2) The conflicts and unclear regulations may result in the degradation of quality experience tourism supposed to offer.



FIGURE 3: Chalets at this hill resort deteriorate without proper maintenance
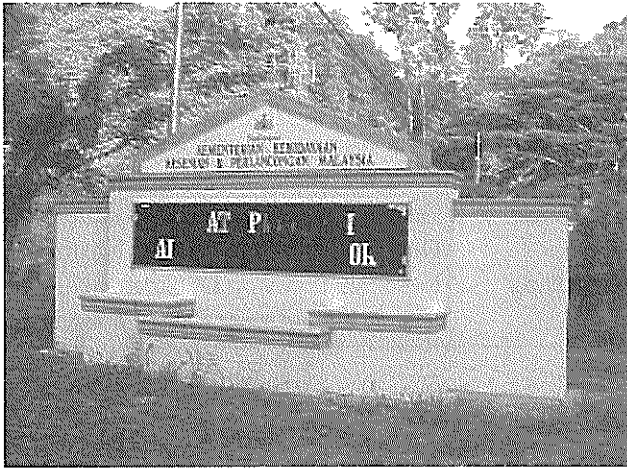
FIGURE 4: This new hotsprings rots before receiving visitors

TABLE 1:
Tourist Products of Kelantan Selatan and the Governing Bodies

| Tourist Product | Agencies In charge |
|---|---|
| Ethno botanical Garden Old Chinese Settlement, Pulai | Kesedar & Gua Musang District Council |
| Gua ChaGua Praling Gua Chawas | Kesedar, Forestry Department & Department of Museum and Antiquities |
| Kuala Koh Kuala Pertang | Kesedar, Forestry Department& Department of Wildlife Protection and National Park |
| Panggung Lalat Waterfall | Kesedar, FELCRA & Gua Musang District Council |
| Gua Ikan | Kesedar & Kuala Krai Selatan District Council |
| Lata Berangin, Kuala Krai | Tenaga Nasional Bhd., Forestry Dept. & Kesedar |
| Lata Renyok, Jeli | Kesedar, Jeli District Council, Tenaga Nasional Bhd. & Tourisms Promotion Board |
| Hotspring Ponds, Batu 14 Jeli | Tourism Promotion Board, Kesedar & Jeli District Council |
| Stong Hill Waterfall, Kuala Krai | Kelantan SEDC, Kesedar, Forestry Department & Kuala Krai Selatan District Council |

| Sultan Ismail Bridge, Kuala Krai | Kesedar & Kuala Krai Utara District Council |
|---|---|
| Gunung Reng, Jeli | Kesedar & Jeli District Council |
| Gua Madu, Gua Musang | Gua Musang District Council, Kesedar & Forestry Department |
| Lata Rek, Kuala Krai | Forestry Dept., Kesedar, Kuala Krai Selatan District Council & Tenaga Nasional Bhd., |
| Nenggiri River Rafting | Kesedar, Forestry Department, Dept. of *Orang Asli* & Department of Irrigation and Drainage |

## POWER VERSUS POWER

As depicted in Figure 1, there are overlapping of more than one government agencies entrusted with the administration and management (development, promotion, control etc.) of the places. These overlapping create various administrative issues and problems. One of the issues is who should plan, prepare budget allocation and later, tender the project. Other issues include the inconsistency of policies between the agencies and the lack of coordination between agencies (especially between federal agencies and state agencies), which complicate the implementation of development, and promotional program. These problems have led to some of the areas being left as "no-man's lands". Some lack maintenance, supervision of tourist activities and become subject of vandalism, etc. Towards the end, these areas are left without caretaker(s) and eventually abandoned by tourists.

## THE TAMAN NEGARA:  ONE STATE ONE ENACTMENT

One of the most attractive tourists' destinations in Kelantan Selatan is Kuala Koh, a part of the National Park (formerly known as King George V National Park). This National Park (Taman Negara) encompasses three states—Pahang, Kelantan, and Trengganu, is gazetted as a wildlife reserve and sanctuary, and is subjected to Wildlife Protection Act (1972). The National Parks Act 1980 (an act for the establishment and the control of National Parks) is not applicable to this National Park (see section 1(2) of the Act). This National Park is subjected to three different statutes: the Taman Negara (Kelantan) Enactment 1938 (for areas located in Kelantan), the Taman Negara (Pahang) Enactment 1939 (for the area located in Pahang), and the Taman Negara (Trengganu) Enactment 1939 (for the area situated in Trengganu).

Besides the flora and fauna and other nature based products, there are also many *Orang Asli* villages found in National Parks, which are subjected to the Aboriginal People Act 1954. Despite the fact that activities like jungle-trekking, animal-watching, visiting the *Orang Asli* (temporary) settlements, and river-cruising (including fishing) have been part and parcels of ecotourism activities in the Taman Negara, visitors need to take extra caution as many of these activities are strictly regulated by the National Park Laws. A recent case of three Japanese tourists who were fined for attempting to smuggle out rare wild orchids of Mulu National Park is a good example of this matter (The Star, April 18 2002). They appealed on ignorance ground, claiming that their act was a sincere mistake and declaring that they did not know that it is an offence (under Sarawak's Wildlife Ordinance, 1998) to buy wild orchids. As usual, the plea of *ignorantia legis neminem excusat* (ignorance of the law excuses no man) is applicable.

## PROMOTION VERSUS DISCOURAGEMENT

It is often said that tourists come and destroy the very things that attract them to the destination. This is very true especially in the case of ecotourism. The widespread opening up of natural areas for ecotourism purposes has subjected the areas to various negative impacts. While ecotourism is encouraged—and believed—to be an environmentally sensitive tourism concept, the preparation to receive greater number and various types of tourists into the protected areas is not sufficient. For instance, despite the fact that camping is encouraged in many protected forests and national parks in Malaysia, no proper dumping sites, garbage bins, or even campgrounds are provided for the campers. Many (including the park authority perhaps) may not aware that improper disposal of wastes is an offence under sections 22 and 24 of the Environmental Quality Act 1974 and also an offence under sections 82 and 83 of the National Forest Act 1984 (if it is a permanent forest reserve area). The Nenggiri River cruise that departs from Kuala Betis and ends at Kg. Setar at Gua Musang illustrates further this complication. Even though boats and canoes are available, bamboo rafting is more popular and widely promoted. During an expedition, recreationists can make stops to do bird watching, fishing, or exploring the animal tracks. While this activity sounds ecofriendly and encouraged, the river sometimes meander into permanent forest reserves where any extraction of the forest produce (including bamboo) is strictly prohibited! Bamboos, which are abundantly found on riverbanks guard the river from erosion are protected (by Section 4, Water Act 1920) and Rivers & Drainage Enactment (Kelantan), 1935. The management of rivers on the other hand, falls within the jurisdiction of the Department of Irrigation and Drainage. Therefore, the question remains

whether is it lawful to promote bamboo rafting (as depicted in some tourist brochure) as a 'nature' activity while we know that engaging in such activity will lead to the destruction of the resources.

## WHO'S RESPONSIBILITY?

Another point of interests in the study area is Gua Cha, which has the potential to be developed into an archeotourism site. The cave is located in a permanent forest reserves in Kelantan (thus, is subjected to National Forests Act 1984). One of the oldest prehistoric remains were found by Department of Museums and Antiquities, which has been carrying out excavation projects in the area for the past few years. Exercising power vested under the Antiquities Act 1978 and Treasure Trove Act 1957, the findings like human bones, ceramics, tools, utensils, and so on were brought back to the National Museum in Kuala Lumpur. Kesedar, on the other hand, operating under the Kelantan Selatan Development Authority Act 1978, together with the cooperation of Ministry of Culture, Arts and Tourism (in which the Dept. of Museums and Antiquities is one of its Departments) continues to develop and promote this cave as an archeological and historical tourist attraction. However, if the excavated items were moved to Kuala Lumpur, what are there left on site for the potential visitors to 'enjoy'? The cave provides a camping site with some basic facilities. According to the villagers, at certain times, wild elephants can be found roaming around the area. While this may sound interesting, it can pose danger to the campers. The question here is: who will be held responsible if campers are attacked by the elephants? Perhaps, the default answer is 'none'.

Finally, visitations to the *Orang Asli* settlements and experiencing their lifestyles have now become part and parcels of ecotourism in Kelantan Selatan, as in many areas in other parts of rural Malaysia. There are many aborigine settlements like Pos Brookes, Kuala Betis, Pos Slim, Kampong Pulat and Kampong Wias found in the study area, especially in areas adjacent to the Taman Negara. However, can *Orang Asli* really be a part of tourism products and natural habitats? The aborigines live in reserved areas and they are protected under the Aboriginal Peoples Act (1954). The Act regulates any entering, experiencing, or conducting anything relating to their land, belongings, and the people. Tourists sometime found wondering around, taking pictures of the aborigines, and encroaching into the settlements, without realizing that their conducts and activities are improper or perhaps undesirable to the *Orang Asli* (and can be subjected to Sections 14 and 19 in Aboriginal Peoples Act 1954). The undesirable gazes by the tourists can potentially result in conflicts between the visitors and the host. Despite all these, ecotourists are

encouraged to sample the lifestyle of the aborigines and the settlements are promoted as part of ecotourism products.


## CONCLUDING REMARKS

Ecotourism can emerge as an important product for Malaysia in general, and for Kelantan Selatan in specific. The area contains tremendous potential to be developed as a nature based destination, considering the various quality natural resources it has to offer. Some of the sites had been developed but due to a range of factors discussed in this paper, failed to survive and abandoned. Some are left unattended and badly managed. Others, including sites recently developed by the Ministry of Culture, Arts and Tourism, have been totally deserted and vandalized. The lack of allocation for maintenance purposes is rather obvious. However, before the resources can be promoted or perhaps revitalized into ecotourism products, several important issues need to be addressed. The study reveals that the sites were improperly planned and integrated. While some of the sites can stand alone as a 'product', many rely on other adjacent sites to justify their existence. Some are just too small or lack amenities to be regarded as ecotourism sites. Thus, it is important that Kesedar integrates or links up compatible locations, turning them into various clusters of attractions based on certain nature-based themes. Basic infrastructure needs to be built or upgraded. A more pressing issue is the overlapping authorities claiming their stakes at the sites, which have complicated development and management of the areas. While attracting international tourists to the area can be rather a challenging task, the relevant authorities should at least start with working hand in hand and at the same time, creating awareness among the local people to help in maintaining the sites.


## ACKNOWLEDGEMENTS

## REFERENCES

Abdul Aziz Husin & Badaruddin Mohamed. 2002. Analisis GIS terhadap Produk-Produk Pelancongan dalam Kawasan Kelantan Selatan. Laporan Penyelidikan IRPA Jangka Pendek. Universiti Sains Malaysia.

Badaruddin Mohamed. 2002. The Development of Ecotourism in Malaysia—Is It Really Sustainable?. Paper presented at the International Year of Ecotourism 2002 Regional Conference in Chiang Mai, Thailand, 3-7 March.

Ceballos-Lascurain, H. 1988. The future of ecotourism. *Mexico Journal, January 17.* Quoted in International Resources Group 1992. *Ecotourism: A viable alternative for sustainable management of natural resources in Africa.* Washington DC:

Malaysia Economic Planning Unit, The Eight Malaysia Plan, http://www.epu.jpm.my/RM8/c15_cont.pdf

Norizan Md. Nor. 2000. Nature Attractions in the Region. Paper presented at Seaceum 7 Seminar, 26-27 September 2000.

The Star. 2002. Tourists Fined for Trying to Smuggle Orchids. April 18, p.5.

Wan Mohamad Wan Konok. 1998. Pembangunan Pelancongan di Kelantan: Perspektif Polisi. Paper presented at Kelantan International Tourism Forum, Kota Bahru, 3-4 Oct 1998.

Ziffer, K.A. 1989. Ecotourism: The uneasy alliance. *Working Paper No 1,* Washington DC: Conservation International.

\*\*\*

# TOWARDS A SUSTAINABLE BUILT ENVIRONMENT: ENVIRONMENTALLY CONSCIOUS PLANNING, DESIGN AND CONSTRUCTION

**Norhayati Mahyuddin**
*Faculty of Built Environment*
*UNIVERSITY OF MALAYA*
*Email: hayati@um.edu.my*

## Abstract

Cities, urban areas and other built-up areas must possess a good, healthy living environment which contributes to the general well-being of the regional and global environment. This can be achieved if buildings and other man-made objects are planned and designed in an environmentally appropriate fashion to promote sustainability. This paper is directed towards the ultimate outcome of providing a better built-environment. It reviews how we can enhance environmentally-conscious planning, design and construction in the built environment involving all building professionals.

**Keywords:** Buildings, Sustainability, Built Environment, Building Professional.

## INTRODUCTION

The planning, design, construction, and maintenance of buildings have a tremendous impact on our environment and our natural resources. Buildings in particular, are a major source of pollution causing urban air quality problems and contribute to climatic change. How wonderful it will be if only a small surface area could accommodate a large number of people and new large traffic routes but yet sustain a good living environment? How does all this add up? Can the building professionals plan in order to encourage public transport? Or to conserve endangered species? If building professionals do not show their concern for the environment today, the children and grandchildren of tomorrow will have a high price to pay for the environmental degradation which our present generation failed to stop.

It is not easy to be concerned with every aspect of development. What is the best way to plan, design and construct which will safeguard the good living environment now and in the future? And how do we know that we are on the right track?

"Consider the environment when you plan, design and construct!". It is easy to say, but more difficult to realise. There is plenty of know-how but building professionals must be able to use it in practice. However, building professionals such as planners, architects, surveyors and many others do not speak the same language. How can they get to understand each other? It is a question of building up an image of what is to be achieved, asking the right questions and assessing the different options.

Yet, the building sector is increasingly facing criticism from its clients and a threat from environmental legislation. Nevertheless, unlike most other processed products, a building and its constituent parts often remain significantly longer in use. In addition, a building has to meet changing society and organizational needs before it is finally replaced. Inevitably too, buildings may be altered, or undergo successive fit-outs during their life span.

There may also be a significant number of instances, where a building and/or its facilities become obsolete, redundant, surplus, or abandoned. One must also bear in mind the possibility that a new use may or could be found, especially if the planning responses are favorable and this could extend the life of a building.

Sustainable development has taken on a global dimension, even if in recent years it has increasingly been acknowledged that there is a close mutual interaction between local and global processes. Building professionals, politicians, economists and practitioners have realised that regional differences and particularities have become very important for building a people-based development which is not only goods-based.

## PRESENT UNDERSTANDING OF SUSTAINABILITY

Sustainability is arguably the most vital concern in the design of the built-environment today. As the world becomes ever more densely populated, with the majority of people now living in cities, it is essential for architects, engineers and urban planners to be fully aware of the impact of their activities on the natural environment, as well as the effects of buildings on their occupants. Therefore, sustainability is a new way of thinking that addresses the problems caused by the built environment. Some useful definitions of sustainability and its development-related concept are:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of needs, in particularly the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitation imposed by the state of technology and social organization on the environment's ability to meet present and future needs."
*(Source: WCED-World Commission on Environment and Development (1987). Our Common Future, Oxford University Press, Great Britain)*

"Sustainability is a system state in which no internal or external constraints are violated that would threaten the stability of the system into the foreseeable future. Given this definition, a sustainable system is one in which the following constraints are met:
1)      Stakeholder Satisfaction ≥ Basic needs met
2)      Resource Base Impact ≥ No or neutral impacts
3)      Ecosystem Impact ≥ No or neutral impacts."
*(Christopher McCarthy & Guy Battle, 2001)*

Before building professionals begin to explore ways to make the built-environment more sustainable they must first develop an operational definition of sustainability as it applies to built-facilities. A useful way of defining how sustainability compares to traditional ways of planning, designing and constructing is illustrated by the following figure 1.
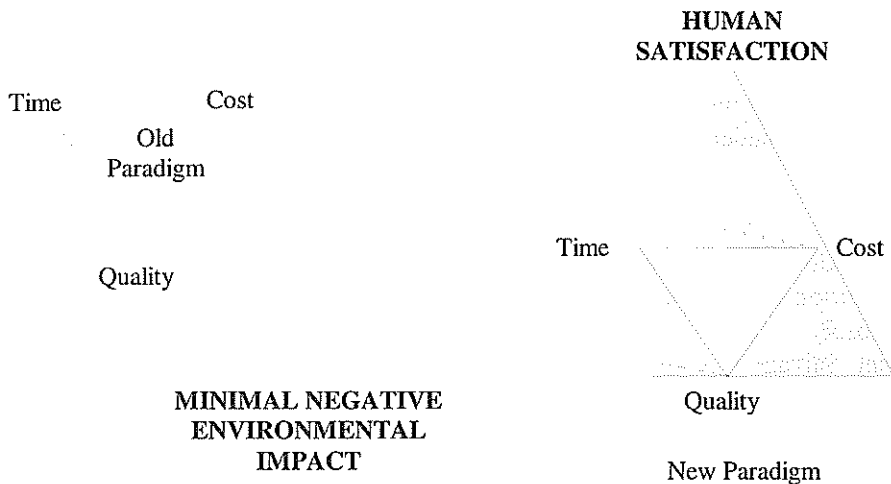


FIGURE 1: A Paradigm Shift to Sustainable Built Environment
Source: J. O'Rourke & Martin N. (1982)

The figure illustrate that, while building professionals should continue to value concepts such as time, cost and quality as ways of evaluating built environment projects, they must now embed them within a larger context of considerations.

| External Stakeholders | | Internal Stakeholders |
|---|---|---|
| **Direct** | | **Direct** |
| Planners, Developers | PLANNING/ PRE-DESIGN | Owners, Land Developers |
| Design Team: Architects, Engineers, Interior Designers, Landscape Architect: Project Managers | DESIGN | Owners, Land Developers |
| Construction Team: Contractors, Consultants, Subs, Utilities, Financiers, Project Managers, Surrounding Community | CONSTRUCTION | Owners |
| Surrounding Communities, Utilities, Financiers | OPERATION/ MAINTE- NANCE | Owners, Users/Tenants, Facility Managers, Operators, |
| Surrounding Communities, Demolition Contractor, Disposal Agent, Salvage Agents, Developers | DECONS- TRUCTION/ DEMOLITION/ DISPOSAL | Owners |

FIGURE 2: Stakeholders of the Built Environment

## A SUSTAINABLE BUILT ENVIRONMENT

The built environment is often the most visible sign of 'development' in its widest sense. It has many significant environmental, social and economic impacts. In order to ensure that development at this level is sustainable, it 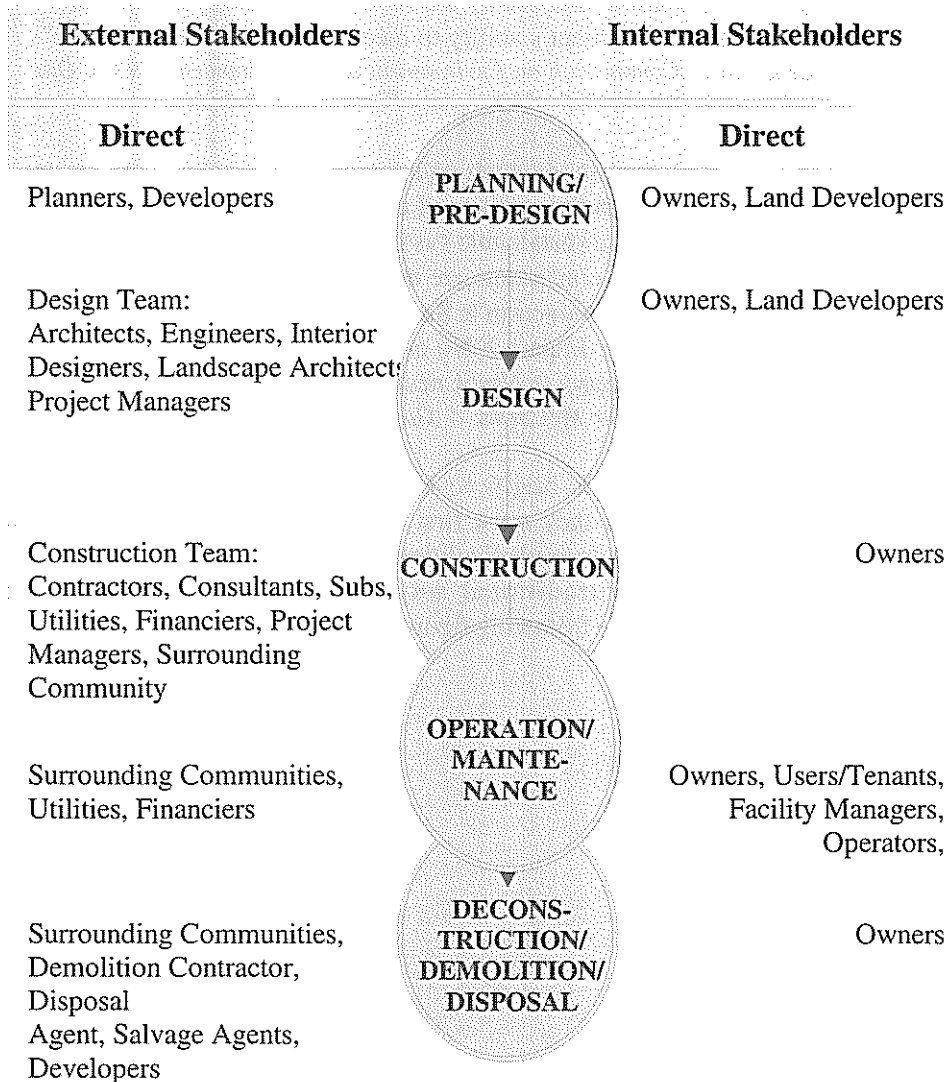must address all the policies and issues which have already been mentioned. Development must be planned, designed, built, maintained and altered in ways that: protect natural resources, reduce or prevent pollution, enable access to facilities, prevent crime, protect biodiversity, meet local needs and protect distinctiveness. Action is needed at local levels to ensure this occurs at each stage of the development. Much can be done to ensure that all these considerations are implemented in a coordinated fashion. For instance, we need to understand the life cycle of the built environment and its stakeholders (figure 2).

Building professionals should also be aware of all operational criteria for achieving sustainability at the global level which includes whatever that they plan, design, construct, operate, maintain and deconstruct.

Thus, the term sustainability could be defined as "the suitability or inclination to be kept in existence or maintained" (Esmond Reid, 1988). This definition of sustainability leads to the following questions:
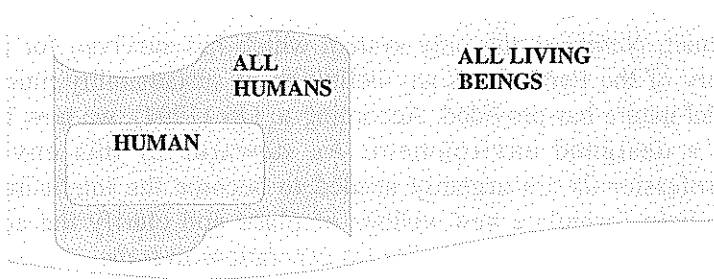
1) Who or what should be sustained?

FIGURE 3: Possible Sets of Beneficiaries

2) Who or what should be doing the sustaining?

Role of natural ecosystems:
 ❖ Replenishing resource bases
 ❖ Assimilating waste and converting it into useful things

Role of human:
 ❖ Protecting the regenerative capacities of ecosystems
 ❖ Maintaining basic life support systems (air, water, land)
 ❖ Creating and maintaining human infrastructure and institutions to distribute and protect the resources generated by the life support systems, i.e., meet human needs (anthropocentrism)

Since building professionals are humans and humans are the beneficiaries of anthropocentric sustainability, they should therefore, assume responsibility to maintain that sustainability. In terms of the built environment, stakeholders in all roles must have the interest in sustainability for reasons ranging from potential profit to a simple conviction that it is the right thing to do. These stakeholders include users, owners, planners, designers and constructors of built environment, as well as the academic and research community which supports its continued evolution.


## SUSTAINABILITY FOR THE GLOBAL EARTH SYSTEM

On this planet, *Nature* is the only system which has survived for almost the entire history of the Earth. Thus any definition of sustainability must be based on the model nature has provided. According to Orr (1994), we now live almost totally in a designed environment. As stewards of this environment, building professionals are urgently needed to become the intellectual leaders who might help formulate new visions of place and clarify the actions that will preserve the nation's quality of life for generations to come.

In terms of built environment, there are three objectives of sustainability from the perspective of Earth as a whole (Christopher McCarthy & Guy Battle, 2001) (Figure 4).
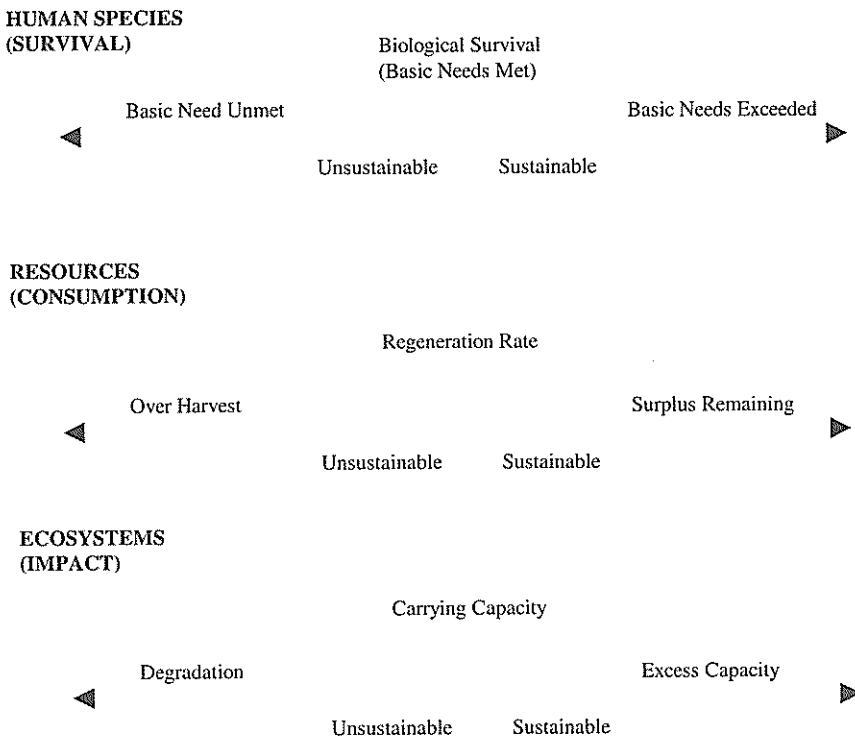
**HUMAN SPECIES
(SURVIVAL)**

Biological Survival
(Basic Needs Met)

◀ Basic Need Unmet                                          Basic Needs Exceeded ▶

Unsustainable        Sustainable


**RESOURCES
(CONSUMPTION)**

Regeneration Rate

◀ Over Harvest                                                Surplus Remaining ▶

Unsustainable        Sustainable


**ECOSYSTEMS
(IMPACT)**

Carrying Capacity

◀ Degradation                                                 Excess Capacity ▶

Unsustainable        Sustainable


FIGURE 4: Three Objectives of Sustainability.


## CONCLUDING REMARKS

The challenge for all building professionals is that they will have to be able to undertake smart planning, design, construction and maintenane in the context of environmental consciousness. Therefore, they should use a minimum of non-renewable energy, produce a minimum of pollution, and incur a minimum of energy dollars, while increasing the comfort, health, and safety of the people who live and work in them.

The achievement of a sustainable built environment requires the interaction of all stakeholders within the ecological, social and economic aspects. If only one part is achieved but the other two are not, this could mean that other goals have been neglected. Therefore, the physical structure, or how building areas, traffic routes are located, is a key issue in the work towards achieving a sustainable

built environment. As a result, planners, architects, contractors and numerous other building professionals need to know how to develop, operate and maintain essential human, physical and natural urban assets with appropriate and innovative technologies in order to ensure the quality of urban life and environment.

## REFERENCES

Christopher McCarthy & Guy Battle. 2001. *Sustainable Ecosystems and The Built Environment.* John Wiley & Sons Publications

Esmond Reid. 1988. *Understanding Building: A Multidisciplinary Approach.* MIT Press, Reprint Edition

J. O'Rourke & Martin N. Fabrick. 1982. *Environmental Planning For Design & Construction.* John Wiley & Sons Publications

Orr, D. 1994. *Earth in Mind: On Education, Environment, and the Human Prospect.* Washington, DC: Island Press.

\*\*\*

# RURAL SUSTAINABILITY: AN EXAMINATION OF THE PRACTICE OF SUSTAINABLE DEVELOPMENT PRINCIPLES IN A RURAL COMMUNITY IN MALAYSIA

**Ibrahim Ngah**
*Faculty of Built Environment*
*UNIVERSITI TEKNOLOGI MALAYSIA*
*Email: b-ibrhim@fab.utm.my*

## Abstract

This paper examines the extent to which sustainable development principles are practiced in rural life in Malaysia. The first part of the paper defines the concept and principles of rural sustainability. The second part highlights the findings of a case study on rural sustainability practice of a rural community in Malaysia. These include the practice of recycling and reuse of materials, utilization of electricity, water and chemical substances, mode of transport, diversification of economic activities and social cohesion. The study indicates that the level of awareness and the practice of sustainability principles are still low among rural people. Few measures are suggested to promote greater awareness and the practice of rural sustainability in rural areas.

**Keywords:** Sustainable Development, Quality of Life, Rural Sustainability, Community.

## INTRODUCTION

Sustainable development is a concept, which encompasses a wide area of concerns, integrating environmental, social and economic dimensions. Table 1 provides some of the definitions on sustainable development. A simple conception of sustainable and unsustainable development is illustrated in Figure 1 and 2. Unsustainable development is inequitable development that depletes non-renewable resources, consumes renewable resources at a rate faster than the ecosystem can regenerate them, and undermines the productive and reproductive capacities of the natural environment through pollution (Leman and Cox, 1991). On the contrary, sustainable development is the process of equitable economic, social, cultural and technological betterment in a way that does not pollute ecosystems and deplete natural resources.

TABLE 1:
Definitions of Sustainable Development

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (*World Commission on Environment and Development);*

Something which must improve the quality of life, improve the living and working environment of all people, provide adequate shelter for all, create sustainable energy, transport and construction activities and stimulate human resources development and capacity building required to achieve the goals (*Rio Earth Summit 1992);*

Development that meet the criteria of affordability, accountability and reliability. It relates on improving and maintaining health and social status, standards and levels of living as well as equity (e.g. more equitable distribution of income, enhanced quality of life and social justice) (*The World Bank, Washington 1994);*

Sustainable development involves the simultaneous pursuit of economic prosperity, environmental quality and social equity (*World Business Council on Sustainable Development);*

## RURAL SUSTAINABILITY

Although sustainability has become a major theme of current development efforts, the sustainability of the rural areas has not been given much attention compared to urban areas. Rural sustainability is a concept which falls within the general principles of sustainability, but which emphasizes certain elements, issues and goals for rural development, particularly with regard to the utilization and conservation of rural resources and enhancement of rural communities. The concerns of rural sustainability may also differ from one region to another due to differences of the problems experienced by the society as well as level of development. At global level the production of food and food security are the major issues of rural development in which Chapter 14 of the Agenda 21 provide guidelines for actions in addressing the issues. A report on "Planning for Sustainable Environment" of the Town & Country Planning Association, UK (1993), also provides some guidelines on achieving environmental sustainability in the rural areas (see Tables in the appendix for various indicators/ guidelines on sustainable rural development).

## ECOSYSTEM

High demand · **extraction** Resource depletion

pollution pollution

**Defunct institutional mechanisms** ▶ **Processing**

**Consumption** ◀

inequality pollution

**Distribution**

Unsustainable
Development

## ECOSYSTEM

conservation **Extraction** resource substitution

recycling
resource
rehabilitation treated waste

**Reformed institutional mechanism** ▶ **Processing**

**Consumption** ◀

treated waste
Equitable
resource **Distribution** treated waste
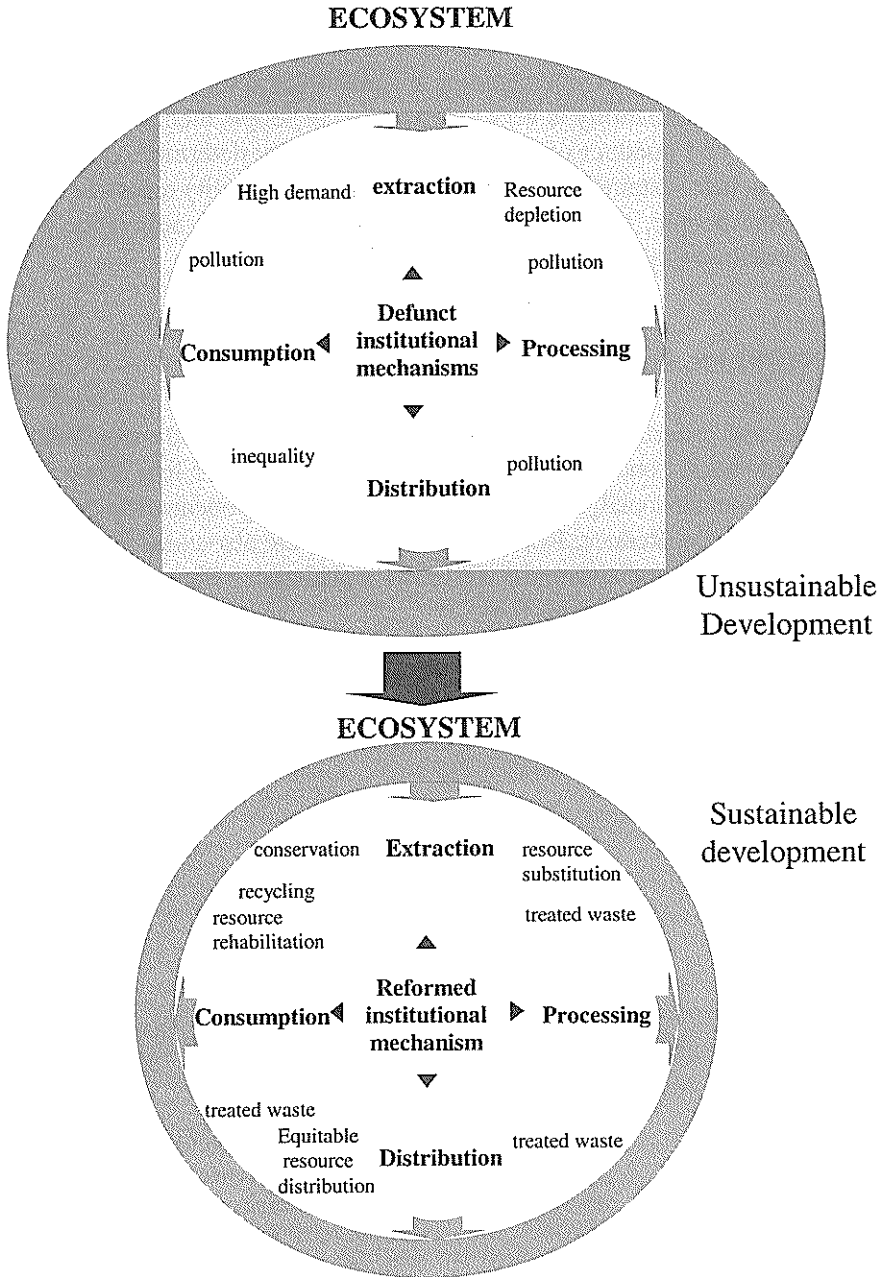distribution

Sustainable
development

FIGURE 1: Conception of sustainable and unsustainable development.
Source: Adapted from Leman & Cox (1991).

This paper, however, is more concerned with sustainability of the rural households based on examination of the practice of principles of sustainable development among rural households in a village. Understanding sustainability at the level of household is important since sustainability is very much rooted in people themselves. It is the values, behaviors and conduct of the people that actually determine outcome of development whether sustainable or not. To achieve sustainability means to change the values of the people, their behaviors and conduct towards adherence to the principles of sustainability.

## THE PRINCIPLES AND CRITERIA

The principles and criteria of rural sustainability used in this study were adapted from various literatures on sustainable development. Figure 2 lists some of the general principles under social, economic and ecological components. The principles of 5R (Reuse, Recycle, Reduce, Rethink and Repair) were also considered. Other elements on knowledge and awareness were also considered as important principles to achieve rural sustainability (See Table 2).

Growth
Equity
Efficiency
Economic

Social

Ecological

Empowerment
Participation
Social mobility
Social cohesion
Cultural identity
Institutional development

Ecosystem integrity
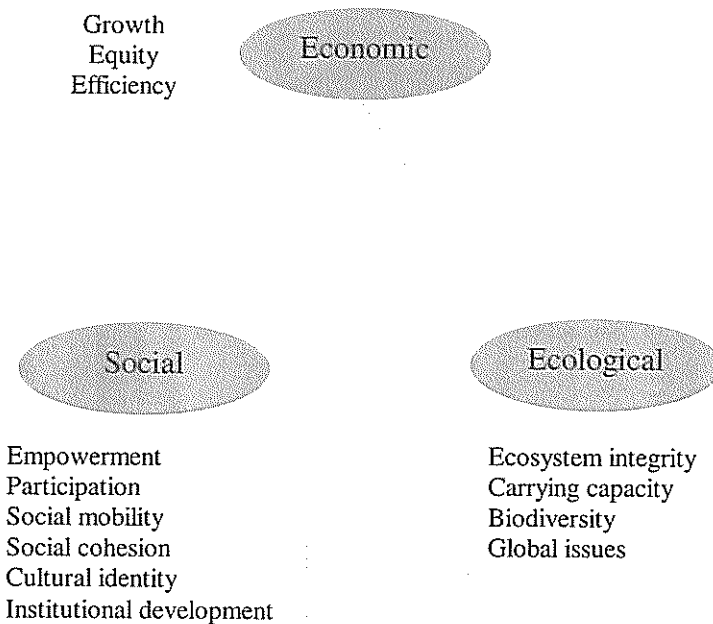Carrying capacity
Biodiversity
Global issues

FIGURE 2: General Principles of Sustainable Development
Source: Adapted from Serageldin Ismail, pp.2.

TABLE 2:

Principles and Criteria of Rural Sustainability Used in the Study

| Principles | Criteria | Measurement of sustainability |
|---|---|---|
| Reuse/recycle | Reuse/recycle of various household materials such as wrapping materials, newspaper, old clothing etc. | Percentage of households who reuse/ recycle materials |
| Reduce use of resources | Reduce use of electricity, water, fuel, and chemical | Percentage of households who practice methods of reducing use of resources |
| Rethink/behaving in sustainable manner | Method of waste disposal, mode of transport | Percentage household/respondents behaving in sustainable manner |
| Social cohesion | Mutual help, trustworthiness, tolerance, contact, adherence to traditional value/culture | Percentage of respondents practice the traits |
| Economic sustainability | Reduce spending, diversify source of income, part-time job | Percentage of households who practice |
| Knowledge on sustainability | Environmental vocabulary, knowledge on environmental/sustainability programs | Percentage of respondents who understand/aware the programs |

## THE CASE STUDY

The present study was done by an undergraduate student, supervised by the author. A survey was carried out in January 2001 in which 100 respondents among the head of households in a village were interviewed using structured questionnaires.

### Background of the study area
The village selected for the study is Kampung Kanchong Darat which is situated in Kuala Langat District, Selangor about 1.6 km from Banting and 5 km from Morib beach (see Figure 3). It covers an area of 1,500 hectares, largely under agriculture.
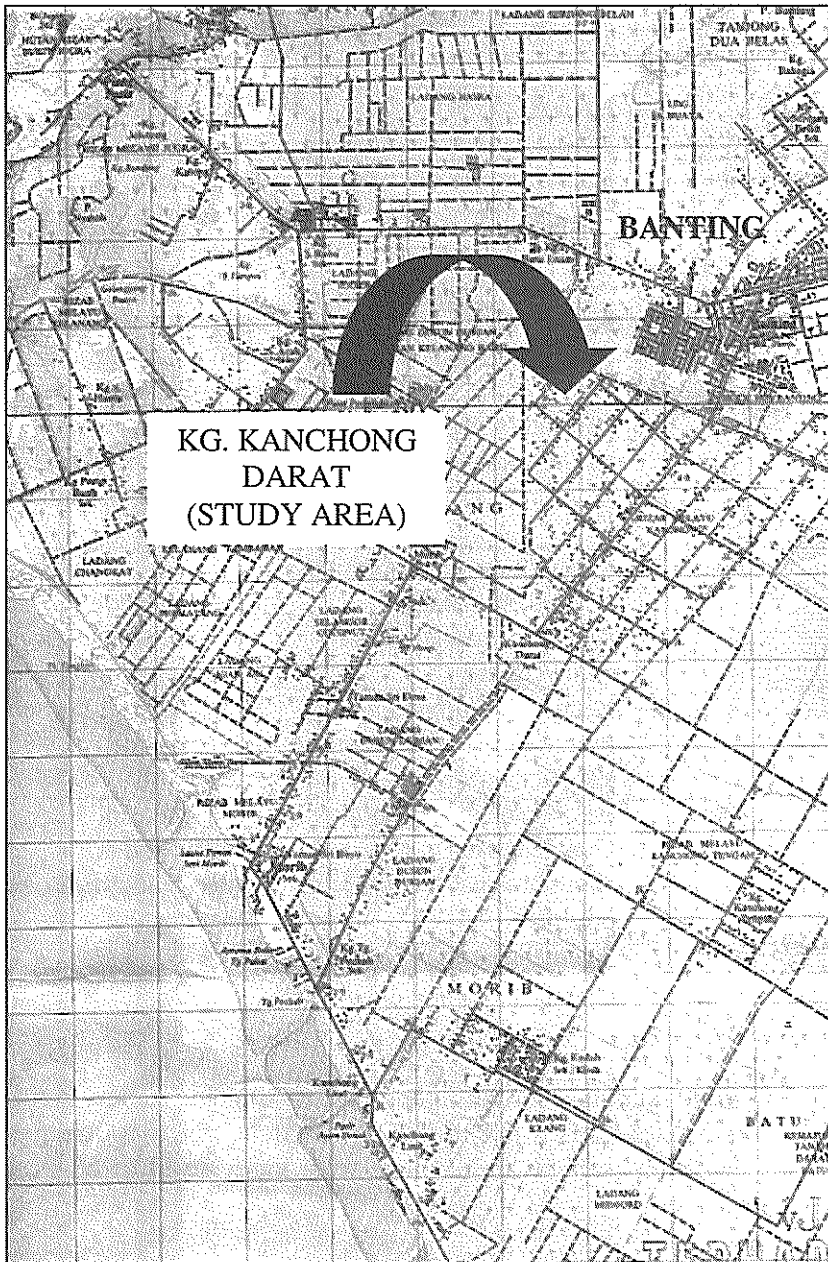
FIGURE 3: Location of the study area (in Kuala Langat district, Selangor)

Land-use with oil palm, coconut, coffee and orchard is the main form of cultivation. The village was opened around 1904 by migrants from Java. In 1911, there were about 15 families settled in the village, consisting largely of Javanese and Banjar descent. The population gradually increased from year to year and currently there are 1,767 houses with about 7,800 inhabitants.

The administration of land and development of village as a whole is under the jurisdiction of Kuala Langat Land and District Office. However at community level, the village is administered by a *Jawatankuasa Kemajuan dan Keselamatan Kampung* (Village Development and Security Committee) or better known as JKKK, headed by a Village Head, appointed by the Government. Since the land area of the village is quite big, the Kanchong Darat Village is divided into 14 sections and each section has a representative appointed in the JKKK. The JKKK is basically the machinery in which information or directives from the top (State Government and District Office) are channeled to the village people and vice versa, a means by which the Government can obtain feedback from the people. The JKKK also plays an important role in planning and implementing certain development programs, projects and solving societal problems as they arise.

The village is well equipped with social facilities comparable to urban settlements. All houses are supplied with electricity and piped water.

## FINDINGS OF THE STUDY

### *The Practice of Reuse and Recycle*
Table 3 shows the percentage of respondents who practiced the principle of reuse. Generally the percentage of respondents who reuse the materials was quite low except for bottles for which 27 percent  sold to dealers and old clothing donated to either  family members or others in need. Majority of the respondents throw away, burn or buried the materials after using them (except clothing in which majority kept them when no longer in use).

### *Reduced Use of Resources*
The respondents were also asked on whether they practice any methods of reducing the consumption of electricity, water and fuel.

Majority of household used 101-130 KW of electricity per month. Of this 47% did practice ways to reduce the consumption of electricity such as switching on light only when required and switching off while sleeping at night.

TABLE 3:
Reuse of Household Materials

| Materials | Ways of re-use | Percentage of respondents |
|---|---|---|
| Bottle | Store water | 5% |
| | Decorate garden | 1% |
| | Sell to dealers | 27% |
| Tin container | Decorate garden | 1% |
| | Planting | 1% |
| | Sell to dealers | 1% |
| Plastic bags | Packing rubbish | 10% |
| | Use again for shopping | 1% |
| | Packing food | 1% |
| Polystyrene | Container for serving food to animal | 1% |
| Newspaper | Wrapping food | 4% |
| | Wrapping rubbish" | 1% |
| | Food mat/cover" | 2% |
| | Sell to dealers | 10% |
| Old Clothing | For cleaning | 8% |
| | Reuse by other members of family | 8% |
| | Give to others | 11% |

On the utilizing of water, about half of the respondents practiced some methods for reducing use of water through reuse of water from cleaning to water plants, storing rain water and constructing small pond (*kolah*). This finding concurs with the figure recorded by *Jabatan Bekalan Air* Selangor which indicated that about 75% of the dwelling units in the rural areas consumed less than the standard figure set by the department.

Of the respondents 89% used gas, 10.5% used electricity and 0.5% used gasoline for cooking. The majority of the respondents did not practice any method for reducing the use of fuel; only 12 percent practiced reducing fuel by cooking less number of times per day and using bigger pot or kettle for boiling water.

## Use of Chemical Substances

The situation is more sustainable if households use less chemical substances. From the survey 19 percent of the respondents used inorganic fertilizer for gardening, only 11 percent used organic fertilizer and the rest used both organic and inorganic fertilizer.

The study also found that 90 percent of the respondents used chemical substances to abate mosquitoes, flies and cockroaches.

### *Solid Waste disposal*

The number of households who practiced sustainable ways of waste disposal i.e. disposing them at rubbish bins to be collected by the authority is still low. Many burned the rubbish at their house compounds, which is less sustainable since it contaminates the atmosphere (see Table 4).

TABLE 4:
Method of Waste Disposal

| Method of waste disposal | Percentage |
|---|---|
| Burn | 62% |
| Bury | 7% |
| Public rubbish bin | 26% |
| Unused pond/bush | 5% |
| **Total:** | **100%** |

### *Mode of Transport*

The survey shows that private motor vehicles such as motorcycle and car were most common mode of transport for journey to work and shopping. The use of private motor transport tends to be a less sustainable means of traveling (see Table 5).

TABLE 5:
Mode of Transport

| Type of Journey | Mode of transport | Percentage |
|---|---|---|
| Place of work | Bus | 9% |
| | Car | 26% |
| | Lorry | 4% |
| | Van | 5% |
| | Motorcycle | 43% |
| | Bicycle | 13% |
| | Walking | 0% |
| Journey to School | Bus | 18% |
| | Car | 14% |
| | Lorry | 1% |
| | Van | 8% |
| | Motorcycle | 33% |
| | Bicycle | 20% |
| | Walking | 6% |

| Shopping (in village shops and nearby towns) | Bus | 0% |
|---|---|---|
| | Car | 46% |
| | Lorry | 0% |
| | Van | 2% |
| | Motorcycle | 43% |
| | Bicycle | 1% |
| | Walking | 8% |

## Social Cohesion and Cultural Identity

Table 6 indicates the prevalence of strong social cohesion and identity within the community.

TABLE 6:
Indicators on Social Cohesion and Cultural Identity

| Indicators | | Percentage |
|---|---|---|
| Willingness to contribute to community | Material means | 74% |
| | Manpower | 20% |
| | Material + manpower | 5% |
| | Not willing to contribute | 1% |
| Trustworthiness of neighbors | Very trustworthy | 21% |
| | Trustworthy | 58% |
| | Less Trustworthy | 12% |
| | Not trustworthy | 9% |
| Social visit (friends/neighbor) | Always | 41% |
| | Seldom | 46% |
| | Never | 13% |
| Practice of traditional culture (dress, language, food, norms) | Regularly practice | 38% |
| | Partially practice | 61% |
| | Never practice | 1% |

## Economic Sustainability

Diversification of economic activities or sources of income and reduced spending are among criteria of economic sustainability. The practice of the principles was quite encouraging by the respondents particularly on reducing spending.

TABLE 7:
Indicators on Economic Sustainability

| Activities | Involvement | Percentage |
|---|---|---|
| Part-time Job | None | 80% |
| | Business | 5% |
| | Village labor | 12% |
| | Others | 3% |
| Supplementary economic activities to increase income (other members of the household) | None | 70% |
| | Farming | 7% |
| | Selling food | 5% |
| | Tailoring | 6% |
| | Baby sitter | 5% |
| | Others | 7% |
| Practicing method of reducing spending | None | 49% |
| | Planned budget | 6% |
| | Buy things only when needed | 9% |
| | Restrain from purchasing | 35% |
| | Saving | 1% |
| Economic activities in housing compound | Planting fruit trees/ vegetables | 15% |
| | Rearing animals/poultry | 5% |
| | Others | 4% |

## *Knowledge and Awareness*

The level of understanding of the terminology related to sustainable development concept was still low among village people in the study area.

TABLE 8:
Knowledge and Awareness

| Aspects | Items | Percentage |
|---|---|---|
| Awareness/heard about the following terminology | Environment | 95% |
| | Ecology | 43% |
| | Green House effect | 34% |
| | Sustainable | 40% |
| | development | 100% |
| | Pollution | |

| Aspects | Items | Percentage |
|---------|-------|------------|
| Understanding the meaning of the terminology | Environment | 88% |
| | Ecology | 15% |
| | Green House effect | 15% |
| | Sustainabledevelopment | 14% |
| | Pollution | 99% |
| Awareness on the environmental programs/ campaigns | Love our rivers | 8% |
| | Love our environment | 6% |
| | Millennium planting | 6% |
| | Recycling | 7% |
| | Gotong Royong | 15% |

## CONCLUSION

Sustainable development is a multi-dimensional concept encompassing social, economic and ecological components. Although the concept had been propagated widely throughout the world, it has not reached or is poorly understood by many people particularly in rural areas as revealed by the case study in a village in Malaysia. The practice of the principles of sustainability among rural households in the study area is not so apparent, except on social cohesion, although the culture and tradition of the Malays, rooted from the teaching of Islam, uphold the principles of sustainability and encourage its followers to practice them. The concept of rural sustainability has to be propagated and channeled properly through the existing village institutions such as the mosques, schools, the Village Development and Security Committee (JKKK), and various social groups in villages. Agencies involved with implementing the concept should work closely with the rural people in a 'trans-active manner' so that all parties could share the knowledge and experience in overcoming problems in implementing the concept.

## REFERENCES

Blower, Andrew ed. 1993. *Planning for a Sustainable Environment, A report by the Town and Country Planning Association.* London: Earthscan Publication.

*Earth Summit 1992.* The Regency Press.

Elliott, Jennifer A. 1994. *An Introduction to sustainable Development.* Second Edition. London: Routledge

Fairlie, Simon. 1999. Defining Rural Sustainability, Town and Country Planning, March 1999.

Leman, Edward and Cox, John E. 1991. Sustainable Urban Development: Strategic Considerations for Urbanizing Nations. *Ekistics*, Vol. 348, May/june 1991. pp.216-224.

McHarry, Jan. 1993. *Reuse, Repair Recycle*. London; Gaia books Limited.

Nor Zaliza Mohd Puzi. 2001. Aplikasi Pembangunan Mampan di Desa, Kajian Kes: Kg. Kanchong Darat, Selangor. Unpublished Research Report. Universiti Teknologi Malaysia.

Sargent, Frederic, O et.al. 1991. *Rural Environmental Planning For Sustainable Communities*. Washington: Island Press.

Serageldin, Ismail and Steer, Andrew eds. 1994. *Making Development Sustainable, From Concepts to Action*. Washington: World Bank.

The World Resource Institute. 1992. *World Resources*. New York: Oxford University Press.

# APPENDIX

## TABLE A1:
### Conditions for Sustainable Agriculture and Rural Development as outlined in Chapter 14 of Agenda 21

| | |
|---|---|
| a. | Agricultural policy review, planning and integrated programes in the light of multifunctional aspects of agriculture, particularly with regard to food security and sustainable development; |
| b. | Ensuring people's participation and promoting human resource development for sustainable agriculture; |
| c. | Improving farm production and farming system through diversification of farm and non-farm employment and infrastructure development; |
| d. | Land-resource planning, information and education for agriculture; |
| e. | Land conservation and rehabilitation; |
| f. | Water for sustainable food production and sustainable rural development; |
| g. | Conservation and sustainable utilization of plant genetic resources for food and sustainable agriculture; |
| h. | Conservation and sustainable utilization of animal genetic resources for sustainable agriculture; |
| i. | Integrated pest management and control in agriculture; |
| j. | Sustainable plant nutrition to increase food production; |
| k. | Rural energy trasition to enhance productivity; |
| l. | Evaluation of the effects of ultraviolet radiation on plants and animal caused by the depletion of the stratospheric ozone layer. |

TABLE A2:
Sustainability Indicators for Land-Based Rural Activities

1.  The project has a management plan which demonstrate how the site will contribute towards the occupiers' livelihoods;
2.  The projects provide affordable access to land and/or housing;
3.  The projects provide public access to the countryside;
4.  The project can demonstrate how it will be integrated into the local economy and community;
5.  The project can demonstrate that no activities pursued on the site shall cause undue nuisance;
6.  The project has a strategy for the minimization of motor vehicle use;
7.  The development and any buildings associated with it are appropriately sited in relation to local landscape, natural resources and settlement patterns;
8.  New buildings and dwellings are not visually intrusive and are constructed from materials with low environmental impact and preferably from locally sourced materials;
9.  The project is reversible, in so far as new buildings can be easily dismantled and the land easily restored to its former condition;
10. The project plans to minimize the creation of waste and reuse and recycle as much as possible on site;
11. The project has a strategy for energy conservation and the reduction, over time, of dependence on non-renewable energy sources;
12. The project aims over time for the autonomous provision of water, energy and sewage disposal and shall make no demands upon the existing infrastructure;
13. Agricultural, forestry and similar land-based activities are carried out according to sustainable principles;
14. The project has strategies and programmes for the ecological management of the site, including:
    a.  the improvement of soil structure;
    b.  the conservation or enhancement of semi-natural habitat;
    c.  the efficient use and re-use of water; and
    d.  the planting of trees and hedges.
15. The project can show that affordability and sustainability are secured, for example, by the involvement of a housing association, co-operative, trust or other social body.

Source: Simon Fairlie, Defining Rural Sustainability, Town and Country Planning, March 1999.

TABLE A3:
Remote Rural Areas: Changes Needed for Future Sustainability

1.  Expansion of total biomass through increasing forests, tree planting along field boundaries and roadside verges, and protection of areas of natural vegetation;
2.  Increasing biological diversity, including avoidance of monocultures and protection of wildlife habitats;
3.  Growth of groundwater reserve, protection of watersheds;
4.  Reduced pollution of streams and ground-water;
5.  Increased composting of organic wastes and reduce use of artificial fertilizers;
6.  Increasing production of energy from renewable sources: wind, wave, tide, geothermal;
7.  Reduced consumption of fossil fuels;
8.  Progressive upgrading of all buildings to meet new sustainability standards for energy efficiency;
9.  Improved public transport in terms of frequency and convenience, improved accessibility, more attractive traveling conditions;
10. Reducing in long-distance commuting;
11. Growing self-sufficiency of local economy in terms of the capacity of the sub-region to provide a greater variety of job opportunities and to supply daily goods and services from local sources;
12. Better telecommunications to aid homeworking;
13. Publication of regular audits on waste, pollution, energy and water;
14. Regularly updated plans for integrating land management, settlements, transport, and resource development.

Source:  Andrew Blowers ed. 1993. Planning for a Sustainable Environment: A report by the Town and Country Planning Association. UK pp.182.

\*\*\*

# MANAGING URBAN DEVELOPMENT PROCESS BY USING SPATIAL INFORMATION SYSTEM:
## A Case Study of *I-Space*[1]

**Alias Abdullah**
**Muhammad Faris Abdullah**
*Kulliyyah of Architecture and Environmental Design*
**Fauzan Nordin**
*Kulliyyah of Information and Communication Technology*
*INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA*
*Email: dralias@iiu.edu.my, faris1@pd.jaring.my, fauzan@iiu.edu.my*

## Abstract

The advancement in Information and Communication Technology (ICT), particularly in relation to Geographical Information System (GIS), Computer Aided Design (CAD), Database Management System (DBMS), and Facility Management System (FMS), has provided the opportunity for urban government to adopt innovative and effective technologies to aid and improve the management and decision-making in urban development process.

Among the obstacles that hamper effective management and decision-making in urban development process are the absence of integration between the works of the professionals involve in such process and the unavailability of immediate and reliable data to form the basis for sound decision-making. Thus, this paper proposes that a city-wide spatial information system to be developed comprising two major elements: a common platform for integrating the works of the various built environment professionals and a city-wide built environment database. While the common platform will help to streamline the works of the professionals, the database will assists urban government in making sound and informed decision in relation to planning, management, maintenance, and monitoring of the urban built environment.

This paper highlights the efforts of the International Islamic University Malaysia (IIUM) in developing its spatial information system. The system is designed to provide information on the IIUM property that covers buildings, infrastructure, facilities, and space to decision-makers and managers to help them in making sound decision and in implementing effective property management scheme.

**Keywords:** ICT, GIS, CAD, FMS, *I-Space*, TSIS, Planning Support System.

---

[1] *I-Space* refers to International Islamic University Malaysia Spatial Information and Facility Management System.

## INTRODUCTION

Urban development process is a complex and time-consuming process. Managing it using conventional tools and systems is, without a doubt, a daunting task. Fortunately, the advancement in information and communication technology (ICT) has provided the opportunity for urban managers to invent and adopt innovative and effective systems to aid them in performing their tasks. In Malaysia, several local authorities, as the managers of urban development process, have embarked on developing ICT-based systems to manage urban development process. Some have achieved considerable success while others were not so fortunate.

This paper looks at the problems of paper-based systems in managing urban development process and also identifies some of the weaknesses of the ICT-based systems developed by the local authorities for similar purpose. It recommends that a Total Spatial Information System (TSIS) to be developed as a tool to help achieve effective and efficient management of urban development process. It also draws examples from efforts of International Islamic University Malaysia (IIUM) in developing its own TSIS in managing its properties, facilities and assets.

## URBAN DEVELOPMENT PROCESS

Urban development process is a complex, interactive, and time-consuming process. It generally begins with the notion to undertake a development project, which then followed by various stages that can be broadly categorised into planning and design, construction, and operation/management stages. It also involves numerous actors whose decisions and influences determine the pattern and trajectory of the development.

Local authorities are key players in urban development process, acting as enablers, decision-makers, managers, and service-providers. Local authorities are the ones entrusted to make decisions on urban development on behalf of the public. During planning and design stage of the urban development process, local authorities play important roles as approving authority. The grant of planning permission, building plan approval, and development order are all under the jurisdiction of local authorities. For instance, for planning application, developers will submit the required plans and documents to local authorities (usually to town planning department or unit) who will then investigate and scrutinise those plans and documents before deciding whether to grant planning permission or reject the proposed development.

Local authorities also manage urban development process so as to ensure controlled and sustained urban development. This is achieved through preparation of development plans and development control guidelines that guide the development of an area.

As a service provider, local authorities are responsible in provision of urban services during the operation stage of development. Among the services commonly provided by local authorities are, for instance, solid waste collection and disposal, landscaping and area beautification, and maintenance of urban roads.

In Malaysia, many local authorities took the task of managing urban development process conventionally that is relying on paper-based systems (Nor Asma, 2002). Over the years, these systems have been identified to possess several inherent problems that give rise to inefficiency and ineffectiveness.


## THE PROBLEMS OF PAPER-BASED SYSTEMS

Central to effective and efficient management of urban development process is prompt and accurate decision-making. However, prompt and accurate decision-making can only be achieved if sound and sufficient data and information are readily available to decision-makers. This is where paper-based systems of managing urban development process suffer the most. The problems lie in data flow, storage, updating, and retrieval.

Smooth and swift flow of data and information between the various stages of urban development process is highly desirable if not crucial. However, with paper-based system, this is difficult to achieve. Data and information are being presented to local authorities in files and folders. These files and folders need to be physically moved from one officer to another and from one department to another. Additionally, a file or folder can only be accessed by one officer at a time. This contributes to increasing the possibility of delay in making decision. Not to mention that the 'physical' movement of files and folders can also lead to them being lost along the way. This, unfortunately, is not an unusual occurrence in local authorities' departments. 'Loss of file' further accentuates the delay in decision-making. Paper-based systems also require large space for data or file storage. For instance, a development proposal report submitted to local authority in planning application can easily exceed 50 pages of A3 size paper. Building plans are submitted in A1 or A0 size paper and the number of plans per submission is very much dependent on the requirements of local authorities as well as the height of building. At the very least, a minimum number of 3 sheets of plan

are required per submission for development of a bungalow and the number is much higher for development of multi-storey building. Local authorities keep at least a copy of all the documents and plans submitted for approval. Thus, with the bulky nature of paper-based submission, it is not surprising that some local authorities have to resort to renting a room in another building just for the purpose of storing all the submitted documents and plans.

With paper-based systems, movement of data and information is not only incoherent but also slow. Because of procedures and bureaucracies, a file located in one department may take several days to reach an officer in another department. This affects the ability of local authorities to make prompt decision. Thus, for quick and easy access to data and information, it is a common practice among the departments in local authorities to maintain their own set of data record. So, several records containing similar data might be kept separately by the departments in a local authority. For example, the town planning department might keep a record on the name and address of building owners to determine affected parties of a proposed development. The health and licensing department might also keep a separate record of similar information for licensing purposes. The valuation department might also have a record of similar information for rate assessment purposes. This very practice of departments keeping their own separate records of data and information creates wastage and undermines the consistency and accuracy of data used in decision-making. Maintaining several separate records of similar data creates wastage in terms of space required for storage, the personnel required to maintain the data record, and duplication of jobs. Additionally, manual updating of one data record does not necessarily affect similar update of other data records. This contributes to data inconsistencies that can affect the speed of decision-making process. Inconsistencies in data presented to decision-makers by the departments must be resolved first before any decision can be made. This would involve rechecking of the recent updates among the departments and identifying whose data is the most recent and correct.

Data retrieval under paper-based systems is also time-consuming and problematic. Paper-based systems do not allow ad hoc queries to be made on the data records. Therefore, data searching is done manually and because of the large number of data stored, it would take some time before the required data can be located and analysed for decision-making purposes. Data retrieval can turn out to be more problematic if the data records are not properly maintained. In such cases, data retrieval can take unnecessarily long time or even the required data cannot be located at all.

## USE OF ICT IN MANAGING URBAN DEVELOPMENT PROCESS

Since the last few years, several local authorities in Malaysia have embarked on developing systems based on information technology (IT) to aid management of urban development process. Perbadanan Putrajaya has come up with its systems known as SUMBER-PUTRA, short for 'Sistem Pengurusan Berkomputer Pembangunan Bandar – Putrajaya (Computerised Urban Development Management System – Putrajaya). The Selangor State Town and Country Planning Department has also introduced its SEPAS (Selangor Electronic Planning Approval System). Kuala Lumpur City Hall is also coming up with its own system as well as Pulau Pinang Municipal Council.

The decision to develop and adopt IT-based systems for managing urban development process can be attributed to several factors. First is the availability of suitable technology. The advancement in IT, particularly in relation to computer aided design (CAD), geographical information system (GIS), database management system (DBMS), as well as in terms of hardware, has provided the opportunity for local authorities to adopt innovative and effective technologies to aid and improve the management and decision-making in urban development process. With CAD, maps and plans can now be prepared digitally. DBMS allows all the maps, plans and other data to be properly kept and easily retrieved. Using GIS, digital data represented on the maps and plans can then be retrieved and spatially analysed for decision-making purposes.

IT-based systems can also overcome the problems of paper-based systems aforementioned. For instance, under IT-based systems, digital data and information can be transferred using electronic mail or the internet. In such cases, data only takes seconds to reach users. Data can also be kept in one network server where users can access from their own computer and retrieve the required data.

With IT-based systems, data is stored in digital format and thus, storage is easy and requires little 'physical' space. Data is now kept on a magnetic disk (hard drive) roughly the size of an adult palm. Technology has also allowed tremendous increase in terms of storage capability of the disk although its size remains the same. One whole room of data stored under paper-based systems is now possible to be crammed into only one single disk.

With IT-based systems, data can be stored in a central database. Therefore, data update only concerns with one set of data record located only in one location, which is the central database. Update of data will also trigger update of other relevant data.

Government policies and initiatives also help to spur the use of IT-based systems in managing urban development process among the local authorities. The National IT Agenda (NITA), for instance, which was launched in 1996, identifies the need to transform Malaysia into information society and knowledge-based society. Towards this end, NITA provides the foundation and framework for the utilisation of IT in five strategic thrust areas, which were then translated into various initiatives. *Electronic government* or *e-government* is one of these initiatives and currently is one of the flagship applications of the Multimedia Super Corridor.

## WEAKNESSES OF EXISTING IT-BASED SYSTEMS

Looking at the IT-based systems already being adopted by the local authorities, or even those that are still in development, one can identify several weaknesses that can hamper the success of those systems as tools in managing urban development process. One of the weaknesses is that they were adopted in fragments. Except for Perbadanan Putrajaya's SUMBER-PUTRA, IT-based systems of other local authorities were developed at departmental, or even sub-departmental, level. The danger is that, by being developed at this level, there is a possibility that the top management of the organisation or institution might not be fully aware of the systems and might not fully appreciate the benefits of such systems. Such situation would result in less support, morally and financially, is given by the top management on the development, operation, and maintenance of the systems.

Because the systems were developed at departmental level, their design was piecemeal in approach. Most of the systems were designed only to handle the tasks relevant to a specific stage of the urban development process which the department is concern about. For instance, the Selangor State Town and Country Planning Department deals mostly with development control, and therefore, developed SEPAS, which only deals with planning application and approval. But planning application and approval is only a part of the planning and design stage in the urban development process. Focussing IT-based systems

to specific stages or process of urban development limits the functions and the number of users of the systems, and therefore, the benefits of the systems. Systems developed by one department will be of no use at all to other departments. Users of the systems are usually restricted to the specific department staff, and perhaps consultants, who are required to submit their application electronically via the systems. Public access to the systems is totally non-existence.

To develop IT-based systems for management of urban development process is not easy. Therefore, most local authorities engage IT consultants to design and develop their systems. The problem is that local authority officers are generally unfamiliar with the cutting edge technology of IT, and thus, unable to clearly and precisely define the type of system to be developed by the consultants that can accommodate their workflow and decision-making process. On the other hand, consultants are unfamiliar with the workings of local authority. So, both parties begin the development of the system with limited understanding of what the output should be like. Over the course of the project, and as things become clearer, changes and amendments will have to be made. Thus, systems development usually takes a long time because consultants have to keep amending of redesigning the systems. There has been a case where consultants have to close shop because they cannot sustain the unexpected prolonged period and additional work they have to undertake in developing the system (Lee, 2000).

## TOTAL SPATIAL INFORMATION SYSTEM

Although IT-based systems can benefit local authorities in managing urban development process, the true benefits of the systems can only be achieved if the systems are developed in total. This is what we termed the 'Total Spatial Information System' (TSIS). TSIS is a non-fragmented and integrated system that utilises spatial/geographically-referenced data (as well as non-spatial data) to enhance the management of and decision-making in urban development process. Four elements are necessary in making a TSIS. They are organisation, procedure, technology, and data (Reeve D. 1999).

### *Organisation*
TSIS must be developed at organization or institution level. Decision to develop such system must be made by the top management of the organization and such decision must be disseminated to departmental level. This is to ensure that

everyone in the organization is aware of the project and to garner full support for the development, operation and management of the system.

Vital to the TSIS is the users of the system. Users of the system must not be limited to those within the organisation but also the clients and public. For local authorities, clients such as consultants and developers should be able to use the system to submit their applications, monitor the application approval progress and status, and submit queries. The public should also be able to use the system, for example, to check on proposed development in their area, to make objections to proposed development that affect them, and to submit queries and complaints to local authorities.

To encourage use among people outside the organisation, the system must be designed to incorporate easy to use graphics user interface (GUI). The system can also incorporate means to restrict access to data and information depending on who the users are and how sensitive the data is. Nevertheless, it has to be noted here that over-secrecy or over-protection of data might encourage the use of the system among the public, as they cannot gain useful information through it.

### *Procedure*
TSIS must be designed to cater all the tasks or job scope of the organisation. In the case of local authorities, the system must be able to incorporate all the stages of the urban development process from planning and design to construction to operation/management. Including the whole of the urban development process would increase the functionality, as well as benefits, of the system.

What works under paper-based systems does not necessarily appropriate under IT-based systems. Therefore, essential to TSIS is the reengineering of the organisation workflow in order to take advantage of the capability and functionality of the system.

Before reengineering of the workflow can take place, it is only logical for the system developers (either in-house expertise or consultants) to study the existing workflow of the organisation and its departments. It is important to understand what their tasks are and how they go about completing the tasks. Users must also be made aware of the efforts to develop the system and to get their feedback on what they expect from the system. From here, the system developers can begin to modify the workflow where necessary to capture the advantages of the system and to introduce innovative features into the system that can simplify or expedite the workflow.

## Technology

Technology refers to the hardware and software for use in the system operation. Appropriate hardware and software must be acquired to ensure the system can be use to its full potential. Hardware includes networking to connect the system to users, network server to keep the database and the system engine, personal computers for accessing the system and retrieving data and information from the system, printers and plotters for printing data and information retrieved from the system, and scanners for scanning data and information into the system. Software includes all tools or computer programmes useful for data management and transmission as well as analysis. What constitute appropriate hardware and software depends on various factors such as the size of data and information to be handled, data analysis capability, simplicity of use, and also availability of funds.

It is important for local authorities to recognise that TSIS is a 'living' system. It will require maintenance and system capacity building from time to time. Accordingly, sufficient funding must be made available. Funding is required for manpower to operate and maintain the system, and for capacity building, which include hardware and software upgrades as well as the overall improvement of the system.

## Data and databases

Urban development process deals with both spatial and non-spatial data. Thus, TSIS must be able to handle both types of data successfully. This includes data storage, data retrieval, data analysis, data update, and data sharing. Appropriate tools must be designed within the system to perform these data handling tasks.

Data retrieved and analysed under TSIS is useful for decision-making in urban development process. The more accurate the data, the more reliable the decision made. Hence, local authorities cannot accept data they received at face value. It is necessary that the accuracy of those data be verified on the ground, especially spatial data. Accurate spatial data does not only lead to accurate and sound decision, but also can save costs. Future development can be planned and designed straight from the data retrieved from the system database without the need to conduct another ground survey. And these plans, having being drawn using accurate spatial data can also be used for tender purposes (i.e., e-procurement), which helps to expedite the process.

# IIUM SPATIAL INFORMATION SYSTEM

IIUM Spatial Information and Facility Management System or known as *I-Space* is an integrated, ICT-based decision support system of properties and assets inventories developed through a combination of several sub-systems including geographical information system (GIS), computer aided design (CAD), image management system (IMS), facilities management system (FMS), and database management system (DBMS). The system allows management of IIUM properties, facilities, and assets to be undertaken based on geographically referenced data and projection. The system aims to reduce wastage, enhance efficiency and effectiveness, and create a better working environment through computerisation of tasks and procedures of development of plans, documentation, production of letters and reports, procurement, space utility planning, inventory, and supplies.

The system is planned to be adopted at all IIUM campuses. However, its development is being carried out in several phases. The first two phases will cover the IIUM main campus at Gombak, Kuala Lumpur, and the following phases will cover other IIUM campuses. The first phase was completed in July 2002 and the second phase is due to commence in 2003.

The development of the first phase of *I-Space* was undertaken through three main stages, which are:
  i.   preparation of inventory and development of central database related to land and properties of the project area;
  ii.  development of applications or system's interfaces related to planning, management, commissioning and monitoring of buildings, facilities, and activities within the project area; and
  iii. development of communication networking and accessibility to the system through arrangement of information and communication technology (ICT) facilities at each identified hub.

In order to ensure that the benefits are wide-ranging and long-lasting, the system was developed incorporating the four essential elements of a TSIS (see Figure 1 for the data model).
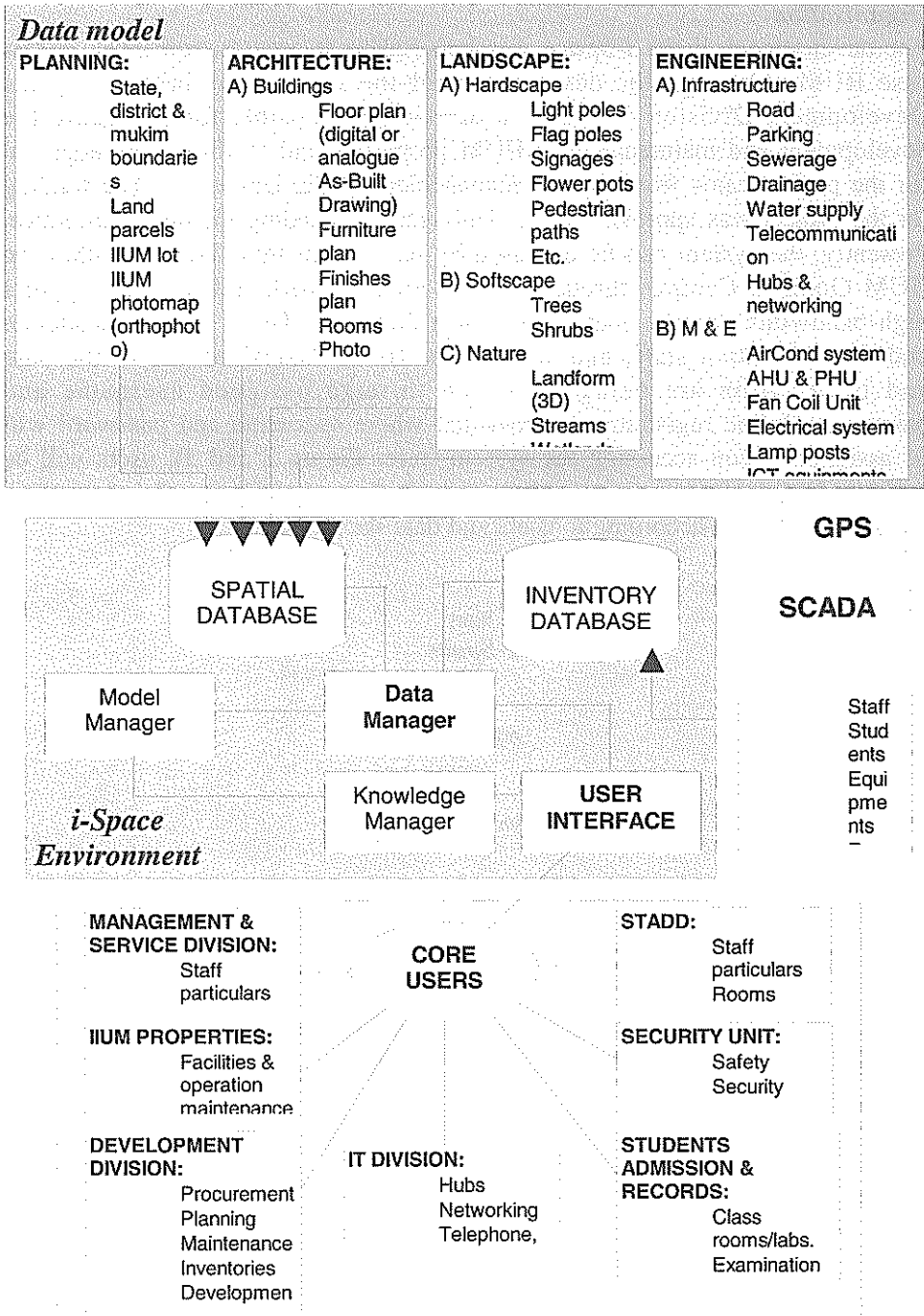
## Data model

| PLANNING: | ARCHITECTURE: | LANDSCAPE: | ENGINEERING: |
|---|---|---|---|
| State, district & mukim boundaries Land parcels IIUM lot IIUM photomap (orthophoto) | A) Buildings Floor plan (digital or analogue As-Built Drawing) Furniture plan Finishes plan Rooms Photo | A) Hardscape Light poles Flag poles Signages Flower pots Pedestrian paths Etc. B) Softscape Trees Shrubs C) Nature Landform (3D) Streams Wetlands | A) Infrastructure Road Parking Sewerage Drainage Water supply Telecommunication Hubs & networking B) M & E AirCond system AHU & PHU Fan Coil Unit Electrical system Lamp posts ICT equipments |

GPS

SCADA

SPATIAL DATABASE

INVENTORY DATABASE

*i-Space Environment*

Model Manager

**Data Manager**

Knowledge Manager

**USER INTERFACE**

Staff Students Equipments

**MANAGEMENT & SERVICE DIVISION:**
Staff particulars

**CORE USERS**

**STADD:**
Staff particulars
Rooms

**IIUM PROPERTIES:**
Facilities & operation maintenance

**SECURITY UNIT:**
Safety
Security

**DEVELOPMENT DIVISION:**
Procurement
Planning
Maintenance
Inventories
Development

**IT DIVISION:**
Hubs
Networking
Telephone,

**STUDENTS ADMISSION & RECORDS:**
Class rooms/labs.
Examination

FIGURE 1: *I-Space* structure and data model.

## Organisation

The development of the *I-Space* was undertaken at organisation level, in this case IIUM. Although the development of the system was initiated by the Development Division of IIUM, a division responsible for managing the development and maintenance of IIUM properties and facilities, the approval for the project came from the top management of the University. The funding for the project was approved by the University's Standing Finance Committee. Presently, the system can be accessed by users from hubs located within the IIUM Gombak Campus through a local area network (LAN) that supports high-bandwidth communication for short distances. Users include academic and administrative staff, and students of IIUM. Users' access to the data and information are being restricted through assigned username and password. Online registration is provided where username and password will be assigned. Upon accessing the system (refer Figure 2 and 3), users will be prompted to enter username and password. Access to data and information are being restricted according to users and data sensitivity.

Start
*I-Space*

▼

Login Screen

▼

Main IIUM Map

▼                             ▼                             ▼
*I-Space* Customised          Map by Department             Generic GIS Tools
Tools

▼

Select Map Base On Categories:
1. Administrative Office
2. Kulliyyah
3. Services
4. Centre For Excellences
*Apply to* ▶ 5. Mahallat ◀ *Apply to*

▼

Exit System
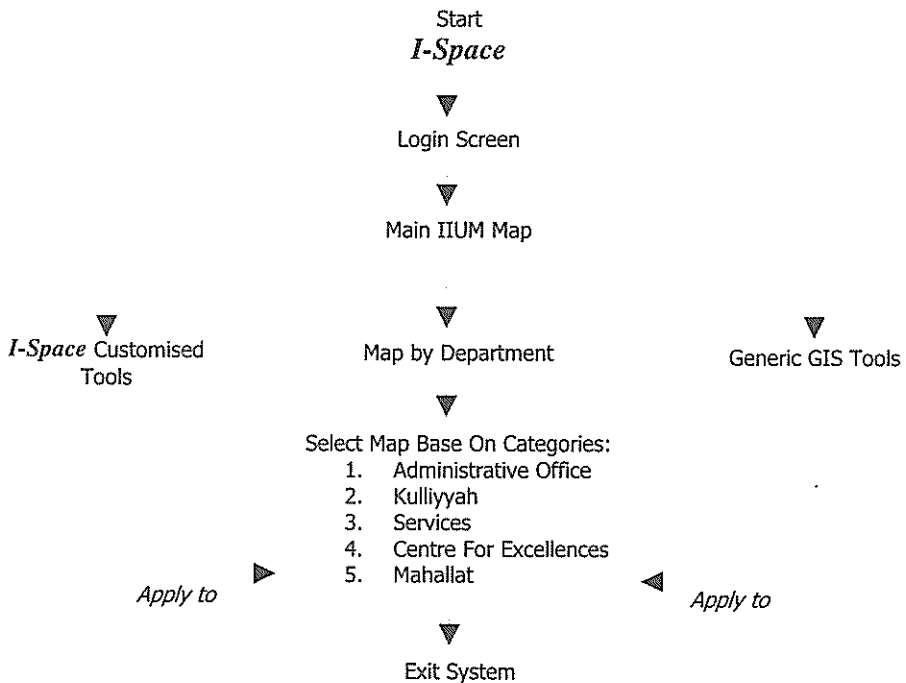
FIGURE 2: General system flow of *I-Space*.

FIGURE 3: Start of *I-Space* screen.

It is anticipated that the userbase of the system would increase once the system is made available on the internet. The second phase of the system development internet. Once on the internet, the public can use the system for a variety of purposes such as direction-finding and facilities-booking.

### Procedure
A team of consultant, comprising mainly lecturers from the IIUM Kulliyyah of Architecture and Environmental Design, and officers from IIUM IT Division, was appointed to develop the system. Prior to undertaking of system development works, the team conducted a user need study where a meeting was arranged with representatives of the users in order to inform them about the project, the benefits of the system, and also to get their feedback on what they expect from the system. Findings from this meeting become one of the important inputs in devising appropriate workflow for the system.

*Technology*

In developing the system, the team realized that it is important to acquire hardware and software with the right capability and functionality to perform users required tasks. In terms of software, the primary desktop application used in system development includes MapInfo, AutoCAD, MapBasic, and Visual Basic.

The system employs the client-server network technology where data are being kept in a centralise database. For database management system, the system uses Oracle as the main engine.

Two key hardware components required by the system are personal computers, from where users access the system, and network server, where the database is being kept. Most personal computers available in the market would be able to access the system. The only apparent difference between using high performance computers and low performance computers in accessing the system would be the speed of data download. The speed of data download for low performance computers would be significantly slower than high performance computers. In terms of network server, at present the system is using a network server with the following specification.

- Processor – Intel Xeon 1800 Mhz/512K
- Network Card – Integrated Broadcom Gigabit Network Card
- Processor 2 – Intel Xeon 1800 Mhz/512K
- Memory – 1024 Mb
- Hard drive – 36 Gb, U3/U160 SCSCI
- Monitor – 15" colour monitor
- CD-ROM drive – 12/24X Max

Besides providing sufficient budget to acquire the required hardware and software for the initial development of the system, the University has also decided to allocate budgets for system operation and future capacity building of the system. Operating budget will be used towards recruitment and training of personnel to maintain and manage the system. The personnel will be positioned in the Development Division where the network server will be located. The capacity building or system budget will be used for purchasing hardware and software upgrades when necessary and also for system improvement as a whole. Another network server may need to be purchased when the data storage capacity of the existing one is already at the maximum. New software or software upgrades may need to be acquired when more functions are to be included into the system. For instance, the second phase of the system development will see a new function added into the system, which is 3D spatial

analysis. At the moment, the system is only capable of performing 2D spatial analysis. However, due to the undulating landscape of the study area, it is necessary that 3D spatial analysis to be added into the system. Therefore, new software that can generate 3D data from the existing 2D will have to be purchased. A new application tool also needs to be designed and developed to allow users to perform the 3D analysis. Inclusion of this new 3D analysis is seen as an improvement to the system as a whole.

## Data and Databases

*I-Space* utilises both spatial and non-spatial data. The data model adopted by the system is as shown in Figure 1 above. Data has been classified into planning, architecture, landscape and engineering.

Data collection involved two main stages. First stage (data collection stage) was where spatial data were gathered from construction and as-built drawings of IIUM. In the following stage (data verification stage), the accuracy of the data obtained from the drawings was then verified on the ground through built survey. Any discrepancies between data obtained from drawings and from survey were rectified before those data were input into the database.

Visual representations of the spatial data were also captured in the form of photographs. Availability of photographs would help users in identifying the data on the ground and also help users in making selection of the facilities they want to book or use. For instance, users who would like to use IIUM's seminar or conference room can check the photographs of the rooms before deciding on the one they preferred. The photographs would give a clearer picture on, for example, the layout of the room, the lighting or furniture design, and the wall finishes (refer Figure 4, 5, 6, 7, 8 and 9; and Photograph 1 and 2).

A number of tools were designed and incorporated into *I-Space* to allow easy data retrieval and analysis. These tools are presented to users in clear and easy to use GUI. Several customised and powerful query tools were also included for advanced users who wish to perform a more complicated analysis of the data and information. Selected MapInfo tools such as query, ruler, and select tools were also included in the system. Figure 5 below highlights the location of the tool buttons on the system application window.
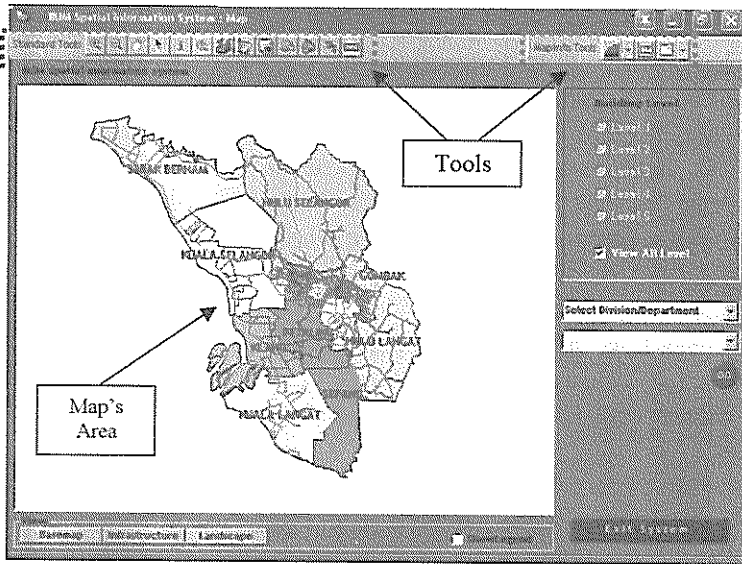
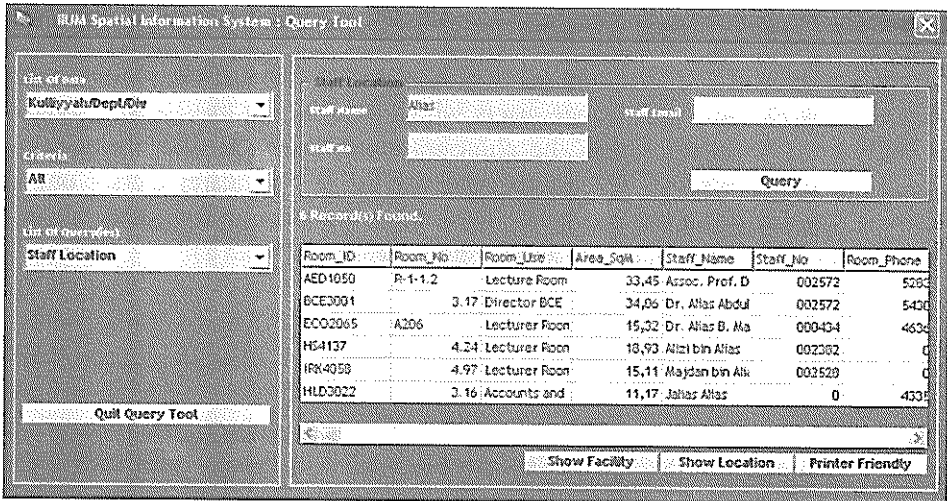FIGURE 4: The *I-Space* GUI and tools.
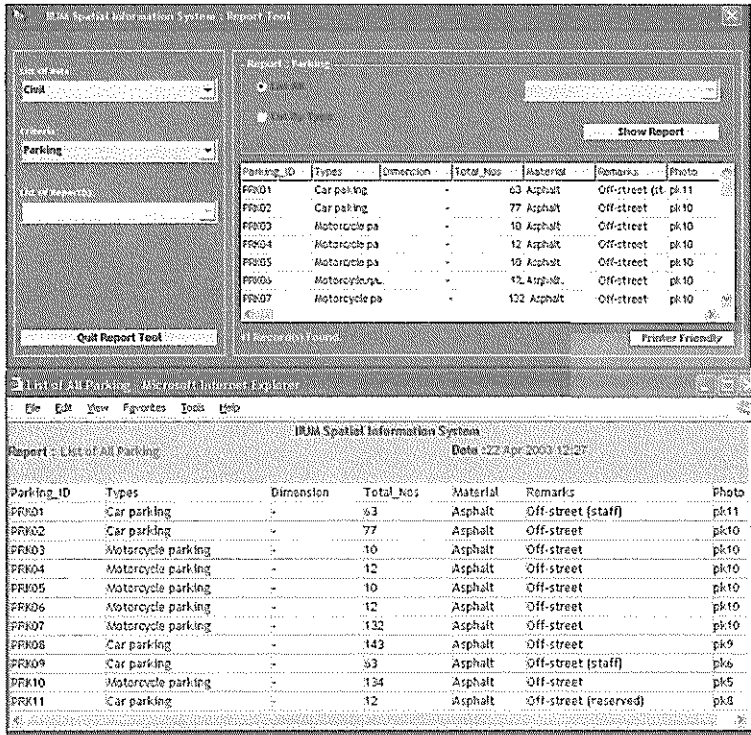


FIGURE 5: *I-Space* Query Tool.

FIGURE 6: *I-Space* Reporting Tool.
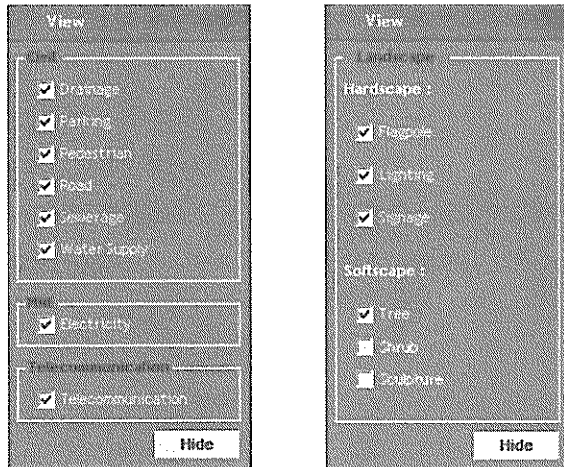


FIGURE 7: *I-Space* Viewing Tools for engineering and landscape aspects.

FIGURE 8: Reporting – Area statistic of the faculty.



FIGURE 9: Reporting – M&E statistic of the faculty.

PHOTOGRAPH 1: *I-Space* Thumbnail Viewer



PHOTOGRAPH 2: Enlarged photograph of a lecture room.

## EXPERIENCE DEVELOPING *I-Space*: DATA ACCURACY

One of the main objectives of developing *I-Space* is to allow management decisions to be made based on accurate, geographically-referenced spatial data. In fact, there have been proposals that data retrieved from *I-Space* should be fit for tender purposes. Thus, to the team developing the system, the accuracy of the spatial data is given utmost importance.

During the early stages of the system development, it was thought that as-built drawings would be the main resource for accurate spatial data since these drawings were drawn based on pre-computation plans. Thus, the team continued to gather and compile all the as-built drawings for all development projects within IIUM main campus. However, it was later discovered that not all drawings were available for use by the team. Some of the drawings (especially the old ones) were badly damaged and some were already lost and could not be traced. As a result, the team decided that it was necessary to conduct a comprehensive built survey. However, the built survey only involves capturing data on topographical features (such as location of trees, lamp poles, and roads) and building perimeter. Thus, to complete the information on buildings floor plans, the as-built drawings (for buildings which as-built drawings were not available, the building floor plans were redrawn) were overlaid on top of the building perimeter obtained from the survey. However, the team experienced difficulties in overlaying the as-built drawings onto the building perimeter as many of the as-built drawings did not fit onto the building perimeter. Upon further inspection, it was found that many of the as-built drawings were actually inaccurate and did not reflect the actual constructed buildings on the ground[2].

The overlay technique actually revealed the inaccuracies that persisted in the as-built drawings. It was rather fortunate that some of the as-built drawings were missing or badly damaged; otherwise, the team would have not carried out the built survey and would have not discovered the inaccuracies within the as-built drawings. Further discussion with professionals in the built environment revealed that it is quite common for discrepancies to occur in as-built drawings. Therefore, to others who wish to develop similar system, the team, to an extent, would recommend that a comprehensive built survey to be conducted if accuracy of spatial data is of significance in the context of the system development.

---

[2]   A separate study will be done in future on commercial, residential and office as-built drawing with a reference to the JUPEM developed cadastral database and built survey parameters. This will determine the appropriateness of using as-built drawing for managing urban development process and e-submission (procurement).

## CONCLUDING REMARKS

It is hoped that this paper has been able to demonstrate the deficiencies of paper-based systems in managing urban development process and to highlight the shortcomings of existing IT-based systems developed by local authorities for similar purpose. While IT-based systems hold many advantages over the conventional paper-based systems in the context of management of urban development process, they have to be developed taking into account the four elements of total IT-based system before their true benefits can be reaped. Incorporating the four elements of TSIS will increase the functionalities and capabilities of the system, increase its support and userbase, and ensure its benefits are wide-ranging and long-lasting.

IIUM's *I-Space* is an example of TSIS developed at a project level (at university level). It can become the model for systems to be developed by local authorities at a more strategic level (urban level). Nevertheless, some modifications would be required to suit the system to the requirements of local authorities' roles and functions, the types and amount of data, and the larger number of public users.

## ACKNOWLEDGEMENTS

## REFERENCES

Azizan Mohd Sidin and Alias Abdullah. 2002. Strategi Perancangan DEGIS dan Pusat Geo-Data Negeri Selangor. *Bengkel Rancangan Strategik Pembangunan Mampan Geo-Data Negeri Selangor*. Bangi, 14 April 2002.
Greene R. W. 2000. *GIS in Public Policy*. Redlands: ESRI Press.
Ian Masser. 1998. *Governments and Geographic Information*. London: Taylor & Francis Ltd.

IIUM Development Division. 2002. IIUM Spatial Information & Facilities Management System (Phase 1): Final Report. IIUM Gombak.

Kerajaan Negeri Selangor. 2002. *Buletin DEGIS*. Pusat Penyelidikan dan Pembangunan, UPEN Selangor.

Lee Lik Meng & Mohamed Jamil Ahmad. 2000. Local Authority Networked Development Approval System. *Planning Digital Conference*, Pulau Pinang, Malaysia, 28-29 March 2000.

Mahadi Ngah. 2001. Sistem Kawalan Pembangunan, Jabatan Perancang dan Kawalan Bangunan: Aplikasi dan Cabaran. *Seminar on ICT*, DBKL Kuala Lumpur, 3-6 July 2001.

National Information Technology Council (undated). *National IT Agenda*. Retrieved September 1, 2002 from the World Wide Web: http://www.nitc.org.my/nita/index.shtml

Nor Asma Abdul Rahman. 2002. A Study on the Effectiveness of Electronic Method of Layout Plan Submission: A Case Study of Perbadanan Putrajaya. Unpublished Research Project. Kuala Lumpur: International Islamic University Malaysia.

Rechard K. Brail and Richard E. Klosterman, eds. 2001. *Planning Support Systems*. Redlands: ESRI Press.

Reeve D. and Petch J. 1999. GIS *Organisations and People: A Socio-Technical Approach*. London: Taylor & Francis Ltd.

William J. Douglas. 2001. Environmental GIS: Applications to Industrial Facilities. London: Lewis Publishers.

\*\*\*

# USM PUSHING THE FRONTIERS OF TOWN PLANNING

**Lee Lik Meng**

*School of Housing, Building and Planning*
*UNIVERSITI SAINS MALAYSIA*
*Email: lmlee@usm.my*

## Abstract

The USM Campus in Penang is arguably one of the most beautiful in Malaysia set amidst undulating terrain with a rich treasure trove of exotic flora and fauna and panoramic views. But this former Military Camp has been subjected to 30 years of unrelenting development threatening its unique assets. Efforts are being made to protect those treasures in line with the aspirations of Agenda 21 but rather than following the conventional path, the USM Campus Planning Project has attempted to chart new frontiers in the use of ICT for planning and realigning the philosophy towards sustainable development. Amongst the innovations introduced are "publish as we plan", online surveys and the notion that we should "only take what we need" from nature up to a maximum threshold beyond which further development will be considered detrimental to the well-being of the campus community.

**Keywords:**   Agenda 21, ICT, Sustainable Development

## INTRODUCTION

USM has one of the most (if not *the* most) beautiful campus in Malaysia set amidst undulating terrain overlooking the sea and enriched with exotic flora and fauna and panoramic views. It is a gazetted bird sanctuary with more than twenty protected species. As a former British Military Camp it inherited numerous elegant heritage buildings and majestic trees 3 or 4 storeys high. On the West Side, the campus is set amidst jungle on hill slope reaching up to 200 m above sea level. A large portion of this area has been cultivated as fruit orchards for several generations by previous owners. Covering a total of 236 hectares, the Universiti Sains Malaysia Penang Campus is a major landmark strategically located at one of the main gateways (Penang Bridge) to Penang Island.

Relentless construction over the previous 30 years to satisfy the need for ever increasing demand for more floor space has however taken its toll on the

campus. While it has retained much of its charm, students, staff, alumni, visitors as well as the University's Top Management are alarmed that continued development at this rapid pace has placed USM's treasures under threat of being further degraded. A group of concerned lecturers[1] proposed to the Vice-Chancellor various actions to "tackle the rot" including the setting up of a high-powered body to control campus development and the initiation of a campus planning project.

## USM CAMPUS PLANNING

USM has had its share of campus plans dating back to the early days of the University. The first two (1974 and 1976) were typical of the master plans of the past with their grand designs and little regard for the protection of natural and man-made heritage. Two subsequent plans followed (1979 and 1984) and while these promoted the protection of green areas there were no coherent guidelines or policies to ensure compliance. As a government institution, the university also seemed to be immune from all laws governing development. The lack of an agenda to protect our treasures and the absence or non-adherence to a formal structure for reviewing and approving projects based on approved policies have generally contributed to continuous degradation of the campus environment. The priority was to develop or create more space to meet rapid growth in student and staff population. In this regard, USM is not unique as a review of any Structure Plan or Development Plan in Malaysia will reveal the message that "development is good" and "more development is better" for the community.

An enlightened leadership has now brought about a re-examination of the old approach and philosophy towards development. There is now a moratorium against construction of new buildings in order not to further reduce the soft and green surfaces. The Vice-Chancellor has also articulated the concept of a Garden Campus[2] for USM where ecology and development must be considered hand-in-hand to ensure that future generations will continue to enjoy a high quality of environment conducive to learning and working in USM[3]. The

---

[1] The group which was headed by Professors A. Ghani Salleh and Ahmad Yusoff was given the task of making recommendations to the Vice-Chancellor. Amongst the major recommendations implemented by the university was the setting up of a Development Committee Chaired by the VC. This group has now been formalised as the "Technical Committee for Campus Development and Environment".

[2] The Vice-Chancellor Professor Dato' Dzulkifli Abdul Razak outlined this vision to the Press at the launching of USM Healthy Campus project (The Star Online, 3rd Dec 2001).

[3] This was re-emphasised by the USM VC at a presentation and dialogue with the Campus Planning Team on 2nd August 2002.

current USM Campus Planning Project is the follow-up to realign the development philosophy for USM. The project started in January 2002 and has developed a conceptual framework for the development of the campus as proposed in the document *The University in A Garden: Policies and Guidelines*[4] submitted to the University for consideration in October 2002. The biggest challenge for the Campus Planning Team was to implement a planning project that will not suffer the same fate as all the other plans – decorative items on the shelf. The Team henceforth resolved to do it differently. It was felt that a major goal for the Team would be to keep campus planning as a continuous activity as opposed to a one-off project that would die a natural death upon completion. It must be kept alive by innovative projects that will sustain planning as a priority of the University towards the eventual attainment of the goals expressed in the concepts and philosophy for the development. And most of all, it must create a critical mass of interested individuals and groups who will contribute ideas and keep the University on its toes by monitoring developments and actively "pressuring" the University Administration to honour its commitments expressed in the campus planning doctrine, policies and principles for development.

This paper discusses the extraordinary efforts made by the Campus Planning Team to "push the frontiers" of town planning. In particular, efforts to achieve sustainable development on the USM Penang Campus and innovative use of ICT to make information accessible to all stakeholders are discussed.

## ONLINE PLANNING

The term online planning could conjure up different visions of how planning is or should be undertaken. Obviously, to be online requires that we be connected in someway but whether we should always be connected (which is possible with broadband) is not a critical issue at this stage in our embrace of ICT for planning. The more important concern is how the activity of planning is or should be carried out. Is it sufficient, for instance, to merely have the plans published on the World Wide Web to qualify for the exalted status of having conducted online planning? That would be a major and significant step but only one of the many on the road to online planning.

These are two major ways we are making a difference through the USM Campus Planning Project:

---

[4] The document is available for download from http://www.hbp.usm.my/usm/

- **Publish as we plan** - As we conduct our studies, the results of our analysis are published through our website as the respective experts complete their assignments. Proposals and ideas are published online for all interested parties to comment or as just a part of the process of information dissemination. Materials published or made available include data, text-based reports, live maps and other relevant information including resources on the WWW. A major focus of this project is to ensure that the data collected, the reports generated and the Concept Plan itself are all maintained in form which will facilitate continued usage into implementation. The attraction and major benefit of this approach is accessibility and timeliness of information but a major difficulty will be to ensure that published materials are not taken out of context especially in a culture and society where open discussion is not yet the norm. The USM Campus Planning Website was activated on 1$^{st}$ March 2002

- **Continuous participation from start to finish** - With ICT, we are now able to offer continued and sustained participation by any interested party. We realise that a project like this will require input from numerous parties from the top management to the support staff as well as from the students and members of the public. Whether the participants will have the energy, interest and perseverance to go the distance with the Project Team is a finding that will hopefully guide others in similar ventures.

Other major efforts to encourage participation include:

- An Online Discussion Forum where anyone can participate, even without registering.
- More than 10 different sets of structured questionnaires were prepared and made available online (staggered over a period of three months) through the website. The responses are stored directly into a database on the server. Only registered participants can take the surveys but they are still given the choice not to identify their completed forms with their Personal ID.
- Interactive, searchable live GIS maps of the campus for access to the Building Inventory and other maps. Eventually this will incorporate the Trees Inventory and Planning Policies and Guidelines relevant for each building or area.
- The Campus GIS maps (ArcView shapefiles) are available for download. Maps are critical for understanding the spatial context of the issues and problems in planning.
- An online Photo Gallery to showcase the treasures and pride of the USM Campus.

Much of what we propose to do or have done in terms of integrating ICT into planning have been tried in one form or another in other parts of the world but the extensiveness of what we are doing in terms of online planning puts us amongst the pioneers in the world. We acknowledge that campus planning may be a world apart from planning by a local planning authority particularly in terms of the higher expectations and level of active involvement by stakeholders. We have discovered that response to online surveys is very disappointing (see discussion below) but we have nevertheless achieved the objective of our experiment to report on the level of participation through use of innovative technology.

Various technologies are being used for this project:

- **Webservers** – originally, two Pentium-based servers are used running Windows NT, IIS 4.0 and MS Transaction Server. One is an "aging" HP LC Netserver with 256 MB RAM on a 450 Mhz processor. The other is actually a HP Workstation with 128 MB RAM converted into a server. We have now acquired a new server (Dell Pentium 4, dual 2.0 Gigahetz processors, 1 Gigabyte RAM) and migrated the Campus Planning website and other services to this server. Front-page Server Extensions are installed for remote publication of the websites.

- **Internet MAP Server** - ArcIMS 3.1 is installed on the HP LC as well as the new Dell server to serve the maps over the WWW. Various HTML, Java and customised dynamic and searchable websites incorporating photographs of buildings are now available (prototypes).

- **Database** - MS Access 2000 is the backbone for all the databases that we are developing. The data for the Online Surveys are all stored on a backend Access dB. Two major prototype GIS-enabled databases (Building Inventory and Tress Inventory) have been developed.

- **Web Publishing Tool** - Front-page 2000 is the main authoring tool for creating the websites including major portions of the Online Survey website involving creation of forms for questionnaire surveys and retrieval and display of results. Other software used includes Flash and Photoshop.

- **GIS** - ArcView 3.2a and its extensions (3D and Spatial Analyst) are used for the data capture and analysis. We will be migrating to ArcGIS 8 in due time to take advantage of its geodatabase capabilities.

Other technology especially 3D animation and visualization will be explored to provide the user a richer experience and better understanding of the issues. A proposal is being prepared to undertake the creation of 3D animations of the heritage buildings as part of the historical documentation of the university's treasures.

Online planning obviously embraces much more than what we have accomplished in this project. Our goal is to make the use of ICT as the preferred technology for the all-planning activities in the campus.


## THE PARTICIPATORY PROCESS

A central theme of *Agenda 21*[5] is concerned with the concept of good governance facilitated by principles of transparency in decision-making, the consultative process and access to information. This is generally translated into the Local Agenda 21 as depicted in the diagram below (Figure 1).

**Private Sector**
Industry & Commerce

**Local Agenda 21**
Sustainable
Development through
Public Participation

**Local Authorities**
- City Halls
- Municipal Councils
- District Councils
- Other Government Depts

**Community**
Public
Consumers
NGO
CBO
Residents' Association
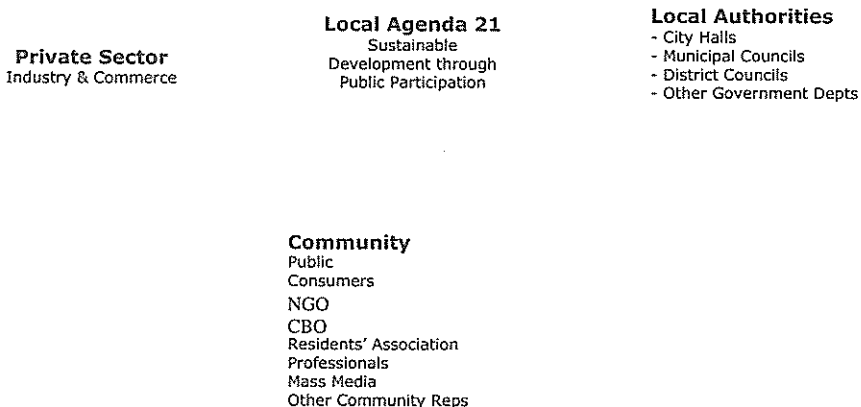Professionals
Mass Media
Other Community Reps

FIGURE 1: Participants and Stakeholders in Local Agenda 21

The TCP Act 1976 also requires various levels of public participation in relation to the preparation and adoption of Structure Plan (s. 10(5)) and Local Plan (13(3)) but the concept of participation is generally limited to submitting *objections* after the draft plan have been prepared by the planning authority. The planning authorities are usually able to overcome these objections using

---

5   United Nations Sustainable Development Website
    http://www.un.org/esa/sustdev/agenda21.htm. The number "21" refers to the 21st Century.

various arguments or justifications. Added to the fact that most objections are personal in nature (typically for higher potential value of their property) it is not surprising that the rate of success of such objections is very low[6]. Exhibitions of draft plans are well publicised involving a lot of effort and expense and generally attract a fair number of visitors but the actual number of feedback and submissions by the public remain small averaging around 11 submissions per plan (Table 1).

It does not help professionals (including town planners, architects, engineers, etc) from the old school view participation as merely a necessary legal formality[7]. In fact, professionals are generally protective of their tuft and believe they know what is best for the community. Other obstacles towards effective participation are the culture of secrecy and confidentiality of government documents and operations, and deference and subservience towards authority inculcated in the school system as well as inherited from traditions and norms.

TABLE 1:
Exhibitions and Public Participation for Structure and Local Plans
(1996 – 1998)

| Type of Plan | Number of Exhibitions | Number of Visitors | Total Number of Public Participation |
|---|---|---|---|
| Structure Plans | 50 | 15,745 | 386 |
| Local Plans | 16 | 18,135 | 296 |
| Structure Plans (Review) | 6 | 2,769 | 127 |

Source: Ministry of Housing and Local Government
http://www.kpkt.gov.my/statistik/perangkaan1998/jadual5-1.html

Public participation in the urban planning process is not a simple operation. It is notoriously difficult to operationalise - it means different things to different

---

[6]   In the case of the Bukit Bendera (Penang Hill) Local Plan, Penang there were slightly more than 20 objections but only one was successful (submitted by a statutory body).
[7]   In Penang, the legal advice given was that the planning law does not require the local planning authority to publish the reasons for the acceptance or rejection of objections to a draft plan (as such the reasons were not published). However, in Selangor the State Planning Officer has taken her own initiative to make available the planning authorities response to objections.

people. Opportunities created by legislation and the considerable amount of time and effort to promote participation are necessary but not sufficient conditions for effective and meaningful citizen participation in the planning process[8]. We have always assumed that every citizen needs to participate and that public participation is good and even critical to the success of a plan[9]. In reality, it is neither possible nor desirable for everyone in the community to be involved in the formulation of development plans. Most people are contented with what they are, or are too busy, or too complacent to take the trouble to organize their thoughts, to commit their views on paper and take that extra effort to be sent them to the relevant authorities.

In USM, we are extremely fortunate that the Chief Executive (namely the Vice-Chancellor) have not only supported participatory planning but was himself the brainchild of the USM Healthy Campus Agenda which encourages members of the USM community (including staff and students) to voluntarily contribute to the betterment of the campus environment. In fact, one of the two instructions given to the Campus Planning Team at the start of the project was to "involve the community"[10].

The following are among the specific efforts taken to encourage participation:

- More than five campus walkabouts to appreciate the beauty and issues confronting the campus. These walkabouts are given advance publicity on our website with an invitation for all to participate but response was poor. Nevertheless, the University itself organised a Merdeka Walk (2002) while the Vice-Chancellor himself has walked around the campus to inspect development projects with heads of departments in tow.
- A publicity blitz was undertaken in campus through posters and mass emailing to all lecturers and news items in the local newspaper inviting ideas and participation.
- A small group dialogue for selected participants on the impact of ICT on campus planning was held.

---

[8]   Goh Ban Lee. 1991.*Urban Planning in Malaysia. History, Assumption and Issues.*Selangor: Tempo Publishing (M) Sdn. Bhd.

[9]   For instance, JB Cullingworth in his book "Town and Country Planning in Britain" (1989, 9th Ed.) writes that "Citizen participation is more than a desirable feature to the new system (of planning) – it is an essential feature. If citizen participation fails, so will the system".

[10]   The other instruction was to undertake research related to the project. Apart from these two "instructions", the Team was left very much on their own to innovate and explore the frontiers for campus planning.

- We took part in a static exhibition in conjunction with Planning Student Assembly Week at USM (July 2002) attended by all planning schools in Malaysia as well as invited guests and the Malaysian Institute of Planners Council Members.
- Presentations and dialogues with the USM Technical Committee for Campus Planning
- A dialogue and discussion was held between the Vice-Chancellor and Team (August 2002) to discuss preliminary findings and recommendations.
- We offered specially designed T-shirts for the most active online participant.
- Presentation of a working paper at the Agenda 21 Symposium in Universiti Malaya (August 2002).
- Presentation of proposed Concept Plan and policies (as contained in *The University in A Garden: Policies and Guidelines*) to the USM Development Committee chaired by the Vice-Chancellor (October 2002)
- On-site presentation (and picnic) of landscaping and pedestrianisation proposal for the Sungei Dua Entrance attended by the Vice-Chancellor and invited guests. The response was encouraging with around 40 participants turning up.
- A two-week exhibition at the USM Library with feedback forms and dialogue sessions officiated by two Deputy Vice-Chancellors and attended by the Vice-Chancellor. The exhibition was extended for another one month on the instructions of the Vice-Chancellor to allow greater participation.
- Participation of the Team members at the Annual USM Healthy Campus Convention in terms of presentations and exhibition (January 2003) to inform and generate interest in the activities of campus planning.

## Response to the Online Surveys

As of 6th August 2002 (after 5 months after the survey went online) there were 108 registered participants on our Online Survey section (after discounting repeat registrations)[11]. This would seem an insignificant number compared to the 1000 academic staff and some 18,000 students in the USM Penang campus. The profile of the registered participants shows a high percentage of males (62%) compared to female. In terms of ethnicity the percentages are Chinese

---

[11] There has been no further significant increase in the number of registered users as at 31st Dec 2002.

49%, Malays 41%, Indians 8% and others 10%. USM students (65%) out-numbered USM staff (18%), USM Alumni (10%) and the Public (7%).

On the question of anonymity, we offered the participants the choice of allowing us (or refusing) to publish their profiles. Half the participants chose to reveal their identities.

We had followed up with email to the registered participants (on 1st August 2002) tasking them how they know about the USM Campus Planning Project. Only 11 of them replied. Six of them knew about the project from the USM official website, 3 of them from receiving emails, 1 of them saw the poster and also 1 of them was told by somebody else. The results cannot be considered conclusive but it indicates that the traditional methods of publicity may not be very effective (or that we probably have not done it well enough).

Among those who participated in our Online Surveys, only one of them has filled in all the 13 survey forms[12]. There are 61 of them (more than half) who have not filled up a single survey form at all after registration. The rest of them have only filled up a few of the survey forms.

There were 19 records in the General Comments section and 15 records in the Discussion Forum in August 2002 (and has not changed since). Generally, the participants raised issues on:

- Building conditions in the campus
- Trees, landscape and the natural environment in USM
- Campus traffic conditions
- Other suggestions, for instance to build a water fountain, create a cat sanctuary in the campus, and build a guardhouse besides every hostel.
- Some of them commented on the USM Campus Planning Project itself (generally praises), and we also received some criticisms on development projects in the campus.

These initial findings point to various issues with regard to participation and the use of Online Surveys to effect participation but it will require more research and experimentation. Although the actual reasons for the poor rate of participation must be studied further, we believe that these maybe the possible causes:

---

[12] This was in fact one of the Research Officers.

- The number or sizes of the posters around the campus are not big enough to attract attention.
- Students may have difficulty accessing to the Website due to limited access points (even though the campus is fully wired). However, there is no excuse for lecturers who are all connected to the network from their offices.
- Some of them who received the emails or have seen the posters but may have forgotten the website address.
- They may feel that this kind of participation does not benefit them.
- Those who are not related to the planning field have less interest and knowledge on public participation and campus planning.
- Others may be put off by the need to register, especially through the Internet.
- There are too many survey forms
- The questionnaire requires the respondent to think and reflect before they respond and hence takes time (the problem of priorities).

We do not regard this low response rate as a failure of the project to encourage participation nor do we regard this as reflecting badly on the community's concern for issues affecting their everyday lives. In fact, the results raise issues on how we should or can be more effective in encouraging more effective participation. In a culture where public participation and "speaking ones mind" is not a way-of-life, it is certainly not sufficient to merely provide the opportunities for participation, albeit through state-of-art ICT[13].

We have not carried out any detailed study on the causes of the low rate of response and at this stage of our project we are not concerned with the numbers[14]. However, a subsequent survey carried out in conjunction with the Exhibition at the USM Library in December 2002 revealed that in fact about 41% of the respondents were aware of the existence of the USM Campus Planning website[15] indicating that the publicity in relation to the project had

---

[13]   Amongst authors who have called for greater integration of ICT for public participation is Roger Bristow, 2001, "2K Planning in the United Kingdom: With Asean Implications" in *Proceedings of the Living Cities in the K-Economy*, Kuala Lumpur.

[14]   The USM VC has advised the Team not to be overly "concerned with the numbers" as he sees that a sustained effort will have to be made over a long period of time to get the community involved.

[15]   The total number of respondents was around 400 at the time of writing. Amongst those who were aware of the campus planning website, 63% new about it from the USM's Main Website (www.usm.my), 40% were told by others, 28% knew about it from posters while 8% were informed through email (respondents could choose more than one category of response). Other results are being analysed and will be reported elsewhere.

reached quite a large section of the campus community but requires more effort to convert them into actual participants.

## *Website Traffic*

The statistics on registered participants however does not provide the whole picture of the interest in the Campus Plan. Since the Campus Planning website was launched on 1$^{st}$ March 2002, the main or default page was visited about 7700 times (until 31$^{st}$ July 2002)[16] which translated into an average of about 1500 visits each month with the highest recorded in April (the second month of operation). We have not yet analysed the direct traffic to the other pages but hope for a few surprises as sophisticated surfers using search engines may have been directed straight to the specific pages of interest.
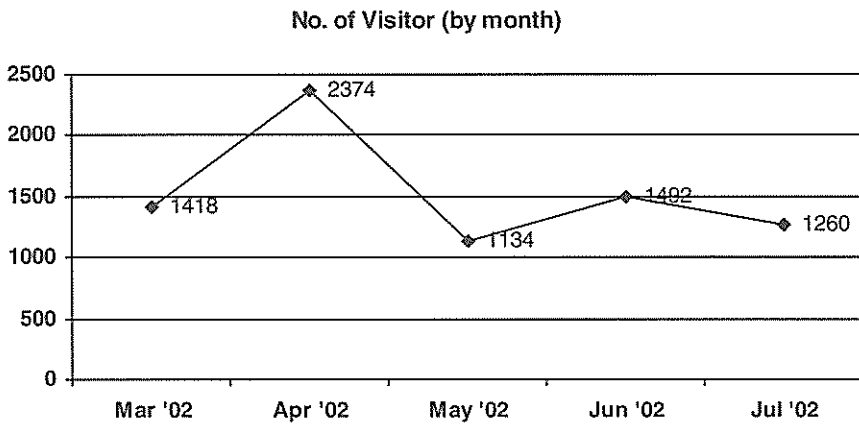
**No. of Visitor (by month)**



FIGURE 2: Web Visitors to Campus Planning Website by Month

A more detailed examination of the daily logs reveals interesting patterns (Figure 3). During the first two months, the traffic appeared to have peaked and then started to drop towards the third month (May)[17]. Interest on the website seems to have picked up again towards the end of May and early June and this can be attributed to the publication of a special feature in the local newspaper ("A Dream Campus", The Star, 29$^{th}$ May 2002). Traffic is heaviest during weekdays and this can be attributed to the fact that the majority of traffic originates from within the campus (73%) comprising 34% from within the

---

[16] This is based on the number of times the default page for www.hbp.usm.my/usm was downloaded from the webserver as recorded in the weblog.

[17] We are still analysing the weblog but assume that the high volume of traffic in the first 2 months can be attributed mainly to Team Members during intensive development of the website.

Housing, Building and Planning School (HBP) local area network and about 39% from outside of HBP (mainly through USM's Central Proxy Server). We consider the 27% traffic originating from outside campus as very important but at this moment we are not able to read very much into its significance.

The 26th March 2002 recorded the highest number of visitors (149) but we are unable to attribute it to any event. On the other hand, on the days when email was send to all lecturers inviting them to participate there was no spike in the traffic[18]. In appears that mass emailing may have become an ineffective tool for drumming up support and interest, perhaps because the recipients have started ignoring email which are unsolicited, considered junk mail or even applied filters on accounts which they had previously encountered unpleasant experiences. We have met close colleagues who appeared to have no recollection of receiving the email inviting them to participate.
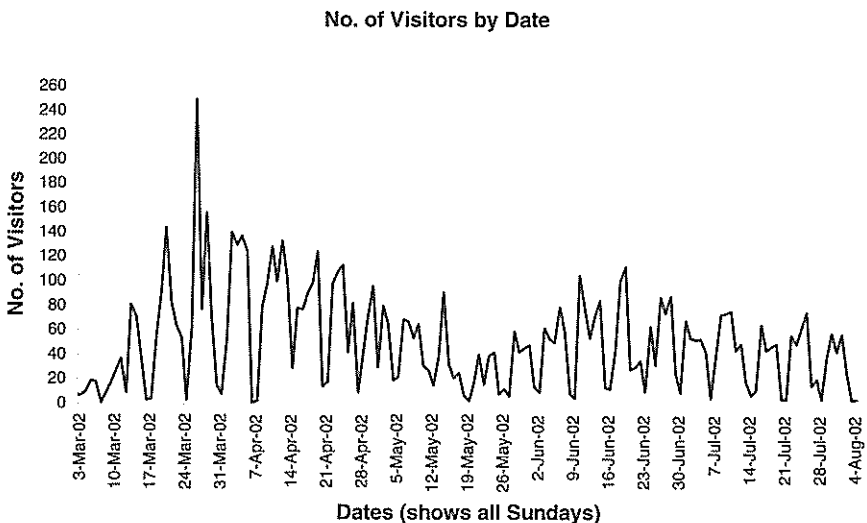
**No. of Visitors by Date**



FIGURE 3: Daily Fluctuations in Web Traffic to Campus Planning Website

Traffic to the Campus Planning Website has now stabilised, indicating a group of diehards (and they are more just the Team Members) who constantly monitor our activities through the web. We are delighted to note that the Vice-

---

[18] On March 28 2002 an email was sent to all HBP lecturers and then on April 1st another email was sent to all USM lecturers via USM Computer Centre. An initial attempt to obtain the email addresses of all USM students was abandoned as it was found that most students preferred to use free email services (e.g. Hotmail, Yahoo, etc) because of problems with continuity of accounts after graduation and other issues.

Chancellor has told us that he makes use of whatever little opportunities he has to visit our website to keep in touch with developments.

Perhaps the bright spark in our promotion of ICT for participation is the surprisingly large number of downloads of the two reports in *pdf* format which we have made available through the website, namely the "Preliminary Report for Campus Planning"[19] and "Proposal for Health Centre". Since the first report was published in April 2002, we have recorded a total of 835 downloads (up to August 2002) for the earlier reports (statistics on later reports will be analysed soon).

In our effort to be environment-friendly, we have only printed 12 hardcopies of the Preliminary Report and 2 hardcopies of the Health Centre Report for distribution (mainly to USM Top Management). Everyone else is encouraged to download the electronic version of the report. The high rate of download shows that this method of distribution can increase accessibility to information with minimal cost (mainly download time). It is estimated that printing 400 copies of the Preliminary Report in full colour would have cost close to RM10,000. Even though the web visitor is made aware of the large size of the *pdf* files, they still made the effort to download the reports hence indicating a high level of interest on the subject matter.

However, we have not received any feedback in any form at all (none on the Online Discussion Forum and no email communication) regarding the Reports. Again, it appears that Malaysians are satisfied with just being observers and passive participants. Or perhaps we have done such a good job that they have nothing to complain about. Nevertheless, we are most excited about this high rate of download of reports, as one of the aims of public participation is to inform and to facilitate access to information. We just have to work harder to draw them out into the open to give their views.

### Exhibitions and Feedback
Following the presentation to the USM Development Committee in October 2002, the Vice-Chancellor invited the Team to organise a yearlong exhibition to promote the work of the campus-planning project to the entire USM community. An initial 2-week exhibition and participation event[20] was organised in conjunction with the USM Library and the Students Affairs Section. To encourage more participation from the Top Management, one

---

[19] The Preliminary Report was offered as a complete set (Pre.Report) or in two sections (Pre.Report 1 and 2).

[20] This event was headed by Lim Yoke Mui, a member of the Campus Planning Team.

Deputy Vice-Chancellor was invited to open the Exhibition and while another was invited to chair the Dialogue with the Student bodies while the Vice-Chancellor attended as a participant. Even though all heads of department were invited to all the events, only a handful showed up (while one pleaded ignorance of the events when he encountered the Vice-Chancellor at the dialogue).The greatest disappointment was the no-show by any of the elected student representatives on the Student Council[21].

Nevertheless, the Exhibition was a resounding success. Some 600 visitors completed and returned a 2-page questionnaire on the ideas proposed in the campus plan (especially on the USM Walkable Campus Project) while another 400 returned a one-page questionnaire concerning online participation. The Vice-Chancellor on the second last day instructed that the exhibition be extended by another month to enable even greater participation. In addition, the VC offered the walls leading to the Main Library as a permanent exhibition area for activities related to campus planning. This area has possibly the highest pedestrian traffic in campus as well as being strategically located in the foyer of the Convention Hall (Dewan Tuanku Syed Canselor) frequented by tens of thousands of parents and members of the public each year.

The Team in a continuous effort to better understand the mindset of "participants" have put the same questionnaires online during the extended period (January 2003) of exhibition to see how the campus community as well as members of the public would respond.

### *Further Efforts Towards Greater Participation*

Public participation in the planning process should not be considered as one-off events. Planning itself is a continuous process (often referred to as a "cyclical process") and participation as such should logically be a continuous activity through dialogues and open communications between the community, stakeholders, planners and decision-makers.

It is our intention that the Campus Planning Website will become the vehicle for that dialogue and communication. At anytime in the near or distant future, visitors should be able to visit the website and fill in the survey forms (repeatedly if so desired) and planners can then analyse the results and perhaps be even able to understand and perceive changes in the attitudes and preferences of the community. The website will also be a permanent reference for the

---

[21] We attributed this to the transmission resulting from the just completed student elections. However, another effort will be organised to engage them in a dialogue.

community to know what we have planned. We intend to encourage and mobilise the campus community to be the eyes and ears in monitoring the developments on the ground to ensure compliance with approved campus policies and guidelines.

As researchers, we also need to better understand what motivates the "protestors" (or objectors). The current controversy in Penang over the Penang Outer Ring Road (PORR) has seen well-organised opposition to the project employing more sophisticated arguments including raising issues on whether the project fulfills the criteria of sustainable development as well as transparency and accountability of public funds. The more affluent neighbourhoods in Petaling Jaya have also in recent months gained considerable publicity for their assertive actions to make their preferences known to the local planning authorities as well as demanding access to minutes of meeting to know how the decisions affecting their neighbourhoods are made. In Penang, various interest groups have called for the Committee Meetings of the local authorities to be opened to the public in the name of good governance[22]. Penang is well known for its vocal residents and highly active interest groups and NGOs but surprisingly none have come forth to offer their views on how we should develop or protect the treasures of USM despite the open invitation in the mass media. We can speculate that only if it affects their life and properties personally will they come forth to complain or object.

It is obvious that online participation is still ahead of its time registering only 100 odd "participants" (who in fact did not bother to provide feedback) while the good old-fashion pen and paper managed to generate some 800 completed responses. But our intention is not to agitate the population to complain and to protest. We want the community, both within and outside the campus, to work together with us to chart the directions for the development of the campus. The Campus Planning Team will continue to organise activities to gather all the relevant parties and stakeholders together to both sensitise the community to the issues confronting the sustainability of the campus environment as well as to draw on the expertise and knowledge of all the experts to build a culture of caring for our environment and giving back to the community in a lifelong partnership. One such effort is to participate in a Convention being initiated by

---

[22] The local authorities have chosen to interpret that the Local Government Act 1976 does not oblige or compel them to do so while the State Government have not given any directive to the local authorities to do so. Nevertheless, the Penang State Government has set up the Local Government Consultative Forum comprising government officers and representatives from various interest group but its effectiveness is yet to be assessed.

the USM Healthy Campus Group[23] (January 2003) to inform and to mobilise the campus community to the take active part in protecting our treasures.

We should have no illusions that public participation will result in all and every decision favouring our particular position or stand, for there are diverse values and interests, each of which has its justifications. But we should all agree that decisions should balance the need for development and ecological protection.


## THE UNIVERSITY IN A GARDEN AGENDA

*Agenda 21* is the global blueprint for sustainable development arising from the Earth Summit Conference in Rio de Janeiro in 1992. The message to the world is that we must protect and conserve our planet's resources for future generations. Take only what we need and make sure that there is enough for our children and for many generations after that. The questions for planners and decision-makers are "How much is enough?" and "How much is too much?"

The Town and Country Planning (TCP) Act 1976 and its several amendments (1995, 2001) are the legislative mandate given to town planners and the planning authorities to plan and to control development. Even though the planning law requires developers to respect the natural topography and protect flora and fauna, the concept of sustainable development and the ecological approach has not been embedded into the legislation. Land is generally treated as a commodity (to sell and to profit) rather than as a scarce resource (to treasure and to conserve), while housing is not treated as a basic need but as an investment and hedge against inflation and a major engine of growth for the local and national economy. This is in conflict with the objectives of Agenda 21.

Even though USM has not formally adopted Agenda 21, the Campus Planning Team has embraced the ideals of the Agenda. *The University in A Garden* that we have in mind certainly will have abundance of trees and vegetation. But it must also subscribe to the various principles and practices of an ecologically vibrant community where man and nature co-exist in harmony.

The difficulty for the Campus Planning Team is the lack of data as well as yardsticks to measure that harmonious relationship. Getting answers to "how

---

[23] The Healthy Campus agenda covers landscape, food, management, health, disability, security and others. It stresses on volunteerism in making the campus a healthy environment for learning and working.

much is enough" or "how much is too much" will involve much more research and even soul-searching but in the meantime, we must implement policies and take measures to protect what we still have.

Since 1998, USM has implemented a policy to discourage the use of motorcycles amongst students on campus even though the policy has been very unpopular. The university offered the campus shuttle bus service as an alternative means of transport but even the Top Management is unhappy with the service and operations[24] but must provide a safe and conducive walking environment before the bus service can be phased out.

The University has also adopted as a matter of policy that there will be no more new buildings that will further reduce our open spaces. New buildings must be justified and should preferably take over the footprints of existing buildings. In a major paradigm shift, the University has accepted the recommendations that when the new Health Centre is completed the existing building should be demolished and the site given back to nature (as an extension of our Durian-Bird Valley forest). We are propagating the notion that protecting the existing forests only is not enough.

USM has indeed taken steps to embrace the ideals of Agenda 21 but much more needs to be done. In particular, a comprehensive set of planning policies and guidelines must be adopted and diligently adhered to and respected by all sections of the campus community as a common vision for the campus. These are contained in the document *The University in A Garden: Policies and Guidelines* (October 2002) but have yet to be adopted officially by USM.

## THE I-CAMPUS DOCTRINE
This doctrine espouses the many facets of how the campus should develop (see Figure 4). It takes the form of a web, a direct influence from the complexities in the ecological web and the web of life. In the current age of information, the web also encapsulates the campus as a borderless entity facilitated by ICT and the World Wide Web.

USM is represented by the purple hexagon surrounded by a green hexagon to signify the embrace of nature and green practices. But the campus is not just the physical campus. It stretches far beyond. The emphasis on integration of

---

[24] The big coach buses are clumsy, noisy and generally an intrusion into the tranquility of the campus. It is often crowded and the comfort level is low and the routing inadequate.

ICT into the planning of the campus will help increase accessibility and reduce commuting (two objectives Agenda 21).

The letter *i* stand for the intelligent campus both in the *intellectual* (academic) sense as well as a reference to a *wired* community. It also stands for *I* as in *my* campus (to create a sense of belonging and attachment).
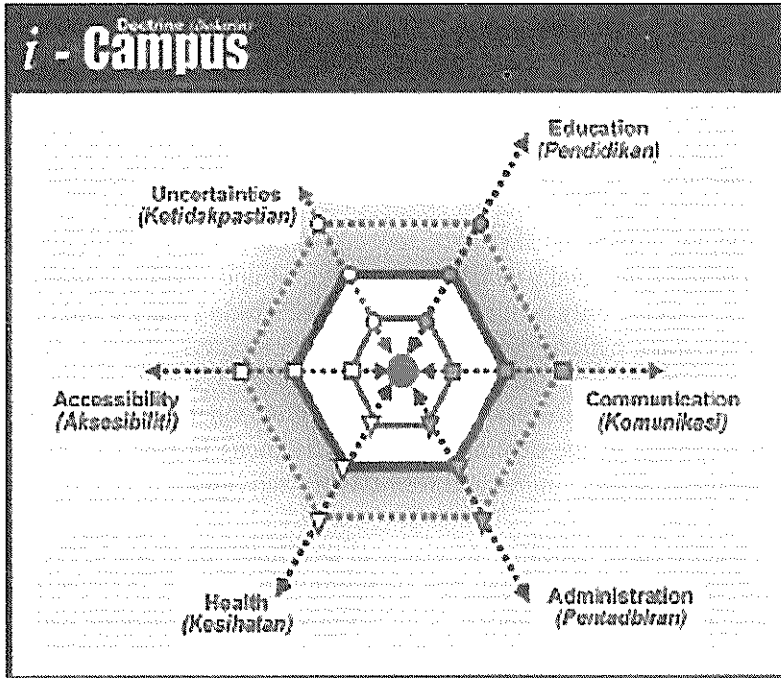


FIGURE 4: The *i*-Campus Doctrine for USM

*(Note: the original graphic is in colour)*

## THE PLANNING PRINCIPLES

In line with the goals for sustainable development, the following planning principles were formulated:

1.     USM's Treasures in terms of the flora and fauna, vistas and architectural heritage must be protected, rejuventated and enhanced.

2. An ecologically-friendly approach to development and good practices must sustain the ability to provide a consistently high quality of environment for present and future generations.

3. Networking of buildings and outdoor spaces between the disparate units of the University to create an intellectual community and promote interdisciplinary interactions.

4. A pedestrian-oriented focus with priority for activities which encourage walking will support our harmonious existence with USM's Treasures and promote the lifestyle of a Healthy Campus.

5. Spaces must be designed for both the able-bodied and disabled users.

6. Vehicular movement should be reduced or curtailed to eliminate noise and air pollution especially near the academic core and environmentally sensitive areas. Parking only in allocated designated parking lots should be explored to encourage park-and-walk in pedestrian precincts.

7. ICT infrastructure must be an integral component of the planning and development of the campus with specific focus in terms of reducing the pressure to release more land for building activities.

8. To ensure consistency in the physical development of the Campus, a clear and efficient framework for decision-making on matters related to development and protection of its heritage should be established.

## THE CONCEPT PLAN

Various alternative concept plans are being considered. Certain types of land use are already well established such as the Core Academic Area where the Schools and Lecture facilities are located. The University had also decided that the student hostels would eventually concentrate on the western section of the campus. This structure has helped to allow more walking between lectures but the problem is the long commute between the hostels and the lecture halls. It is hoped that a comprehensive network of well-shaded pedestrian walkways will overcome this problem. The specific location of other proposed land uses are subjected more discussion of the issues and needs of each activity. For instance, would it be better to site the new Student Affairs Building closer to the hostels or near the academic core? Would a research park make better use of the tranquil environment around the current Desa Cahaya area to better stimulate creativity?

Regardless of how the concept plan will eventually take shape, each of the alternatives nevertheless share a common emphasis on protection of forests, habitats and natural and local landscapes.

We have also reevaluated our original concept plan for the USM Extension Area (West Side) situated on steep hill slopes rich with jungle and thriving fruit farms. Our analysis reveals that it may be possible to protect up to 70% of the West Side by concentrating developments on the foothills in a compact form. Such an approach would be consistent with the objective of leaving only a small ecological footprint, taking only what is enough. The needs for "future development" should be evaluated when the need arises in the future, and reexamined based on needs and priorities.
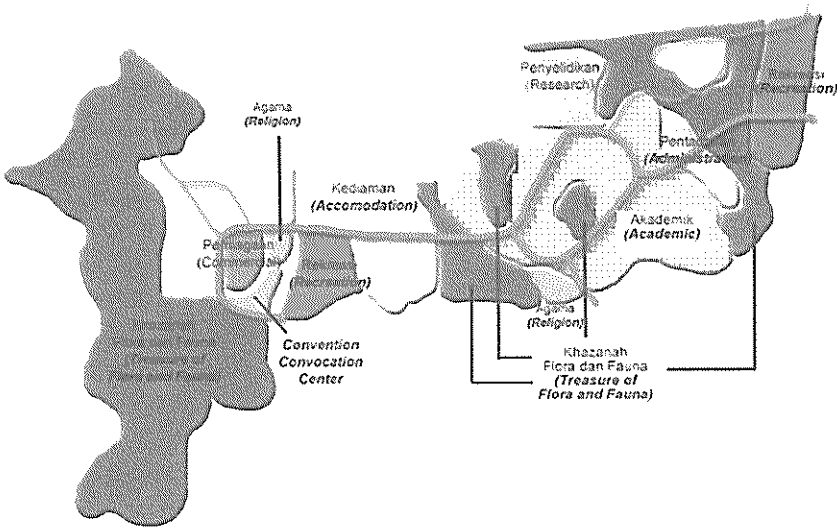


FIGURE 5: The Preferred Alternative Concept Plan
*(Note: the original graphic is in colour)*

These ideas and concepts have been presented to the VC and University's Top Management during the Development Committee Meeting in October 2002 and will be will be further refined as we engage in further dialogue with the rest of the campus community.

## ECO-YARDSTICKS AND PRINCIPLES

The campus (and any settlement) is a dynamic entity where there will be constant and continuous demands and pressures to expand and to increase physical space and development. It is, therefore necessary to develop some form of eco-yardstick, which will allow the University to gauge where it stands in terms of its usage of environmental resources. Essentially, the University would need to have some form of measurements to decide, "how much is enough" and "how much is too much".

### Soft-Hard Surface Ratio

Currently, the hard surface on the East Side (original part of campus) is around 31% (see Table 2 below).

The question confronting the University is 'what is the optimum level of hard surface in order to maintain and even enhance the garden campus image'. By way of comparison, our analysis of the established housing area of Minden (adjacent to the campus on the north side), shows that a housing estate comprising semi-detached and bungalow units can range from 40 to more than 50% hard surface. In highly built-up areas (such as George Town), the percentage could reach 80% or higher. There is no magic figure but as a guide, it should not exceed the optimum level for efficient storm water runoff (about 37%)[25]. However, we have recommended that the 35% hard surface cut-off limit (giving it a small margin for errors) should be used rigorously to monitor future development. As such, we have almost reached the upper limit of the ratio and the moratorium on new buildings is a most appropriate policy response. Meanwhile, there should be more research to present scientific evidence to suggest an appropriate ratio for a garden campus taking into consideration heat emissions, energy efficiency, storm water runoff, pedestrian comfort, campus population size and the image of a garden.

An appropriate computer-based (preferably GIS) system will be necessary to quickly generate the statistics required for decision-making by the university.

---

[25] There are however communities which are adopting even more stringent standards of only 25% hard surface.

TABLE 2:
Hard and Soft Surfaces on USM Penang Campus (East Side)

| | | | Area | |
| --- | --- | --- | --- | --- |
| | | | **Hectares** | **%** |
| **Hard Surface** | | | | |
| Buildings | Existing | 17.41 ha | | |
| | Under Construction | 0.77 ha | 18.18 | |
| Roads & Parking | | | 22.65 | |
| Sport Facilities | Stadium | 1.47 ha | | |
| | Others (Hokey, Tennis) | 2.35 ha | 3.82 | |
| | | **Sub-Total (Hard)** | **44.65** | **31.02** |
| | | | | |
| **Soft Surface** | | | | |
| Field (Main Gate) | | | 8.80 | |
| Water Element | Lake | 1.38 ha | | |
| | Main Drainage Sys. | 0.45 ha | 1.83 | |
| Conserved Area | Durian Valley, etc | 16.06 ha | | |
| | Arboretum | 1.93 ha | 17.99 | |
| | | **Sub-Total (Soft)** | **28.62** | **19.89** |
| | | | | |
| **Unbuilt-up Areas** (Including Spaces around Buildings) | | | **70.65** | **49.09** |
| | | | | |
| **Total Area of Existing Campus** (East Side) | | | **143.92** | **100.00** |

## Space Audit

Integrated into the GIS system would be functions for space audit in which usage statistics (lecture halls, tutorial rooms, office space, etc) would be reviewed to justify proposals for additional buildings and floor space. The USM Campus Planning Project is developing a prototype version of the GIS-based Building Inventory System, which will eventually provide for space audits[26].

A corresponding shift in the way we measure the "success" or "status" of a public university must be made. Most universities would trumpet the huge amount of allocation it received for development (mainly new buildings) to show that it is progressive, of high standing and important. But these new projects may not have been evaluated within the overall vision of the image of the campus resulting in undue pressure to locate the buildings even when the campus has no more space for development. Universities must use measures, which are eco-friendly – the more money we obtain to fund eco-friendly developments the more successful we are.

---

[26]   A student in the M. Sc. Planning Programme it undertaking this project for his dissertation.

Apart from these measures, we have also proposed that projects should be subject to review by a Design Review Panel comprising not only professional-technical persons but be represented by a cross-section of the campus community. This will allow the airing of various views and values as well as inculcate transparency and a sense of collective contribution to the well being of the campus community.


## *The Walkable Campus*

One of the major projects proposed by the USM Campus Planning Team is the creation of a Campus Square, which will give priority to pedestrians. The focus of this project is to give back the streets to the people with priority for pedestrians over vehicles. The main road (Jalan Universiti) is proposed to be reduced from a 4-lane road to 2-lanes and made into a one-way street. In the process it will release land for planting and pedestrian walkways. The proposal also calls for the extension of the current pedestrianised mall in front of Dewan Budaya (Permatang Pelajar) with restrictions on vehicle entry, centralised car parking, disabled-friendly access and the creation of a conducive environment for students to congregate (e.g. use of steps for seating, wireless network access, central location of bank ATMs and other services). The car park around the Post Office and Dewan Tuanku Syed Putra is to be reduced and the shaded area given back to nature and the people.

The project also calls for the bringing back of nature through the re-creation of an original stream which has now being reduced to a concrete pipe buried under the ground at the *Pesta Convo* site. The car and motorcycle parking in front of the mosque is proposed to be removed or reduced and replaced with a mall with water fountains and landscaping in harmony with the image and function of the mosque as place of worship.

The *Walkable Campus Project*[27] is currently underway to design and eventually develop a network of pedestrian-friendly walkways throughout the whole campus. It will give emphasis to the pedestrians rather than vehicular traffic to promote walking as the preferred mode of transport. This is in support of the USM Healthy Campus Agenda to promote a healthy lifestyle amongst the campus community as well as the general community.

---

[27] The project is being headed by another member of the Campus Planning Team (Dr. Aldrin Abdullah).

The thought which will cross in every town planners' mind (especially those in government service) reading this paper will probably be "this is not going to work in reality". In particular, we have attempted to chart new frontiers for participation and access to information that will require radical shifts in attitudes as well as institutional structures before it can take place. Planners will also have to shift their focus from promoting more development to managing growth (also called smart growth) with emphasis on taking (from nature) only what is necessary to maintain a high quality of life for the community.

There are many hurdles confronting the successful adoption of Agenda 21 in Malaysia. Our hope for sustained and significant results lies in the systematic training of future planners who subscribe to the ideals of Agenda 21. We also need to develop the communities' interest and skills in articulating their concerns and pursuing the ideals of eco-friendly development.

## CONCLUSIONS

USM hopes to contribute and show leadership in the implementation of the ideals of Agenda 21 through its various innovative approaches. We are proud to be the first and only university in Malaysia undertaking such a project as described above and hope that other universities will follow suit so that we can share and exchange ideas and experiences in a long-term research effort to adopt smart growth, not only for the campus but also for the country.

Various measures have been proposed to promote planning as a sustained effort in USM including the eventual establishment of a Planning Office as well as creation of Design Review Panels to advise and monitor the quality of developments on campus. The Vice-Chancellor has announced that a Secretariat for Campus Planning is being established under the Healthy Campus Agenda and, while this falls short of the Planning Office proposed, it is nevertheless a significant milestone for campus planning in Malaysia[28]. He has also announced that USM will not prepare a Masterplan but all developments will nevertheless be evaluated according the USM's development policies. This position is consistent with the views of the Campus Planning Team as a detailed masterplan is inappropriate for a highly developed campus like USM. The next major goal for the Team would be to instigate, agitate and facilitate the eventual adoption of the proposed *Policies and Guidelines* as

---

[28]  Unlike universities in developed countries such as the United States of America, local universities in Malaysia do not have a Planning Office or Department.

official policies of USM which will be sustained for the long-term and not subject to arbitrary modifications or being ignored at will by unsympathetic university administrators in the future. Much more remains to be done and the moment of writing, the Team was in the midst of producing a coffee table book entitled *The University In A Garden*, which will showcase the beauty within USM.

## ACKNOWLEDGMENTS

## REFERENCES

Goh Ban Lee. 1991. *Urban Planning in Malaysia. History, Assumption and Issues.* Selangor: Tempo Publishing (M) Sdn. Bhd.
JB Cullingworth. 1989. "Town and Country Planning in Britain" (9th Ed.)
Ministry of Housing and Local Government Malaysia (Statistics on Exhibition and Public Participation in Structure Plans and Local Plans, 1996 – 1998) http://www.kpkt.gov.my/statistik/perangkaan1998/jadual5-1.html
Roger Bristow, 2001, "2K Planning in the United Kingdom: With Asean Implications" in *Proceedings of the Living Cities in the K-Economy*, Kuala Lumpur.
United Nations Sustainable Development Website, AGENDA 21 http://www.un.org/esa/sustdev/agenda21.htm
USM Campus Planning Website. Various reports in electronic format can be downloaded from this website. Includes interactive maps of USM and GIS data available for download. http://www.hbp.usm.my/usm/

\*\*\*

# THE SUBURBANISATION OF THE KUALA LUMPUR METROPOLITAN REGION

**Jamalunlaili Abdullah**

*Faculty of Architecture, Planning and Surveying*
*UNIVERSITI TEKNOLOGI MARA*
*Email: bota65@yahoo.com*

## Abstract

The Klang Valley has been experiencing rapid urbanisation especially during the past two decades. The area has expanded to become a larger entity known as the Kuala Lumpur Metropolitan Region (KLMR). But this development comes at the expense of Kuala Lumpur. The city had consistently recorded net-out migration during the period. This development has consequences on the urban fabric of the city and can lead to the problem of urban sprawl and a host of problems, especially those relating to the environment.

**Key words:**  Industrialisation, Urbanisation, Suburbanisation, Urban Sprawl, Privatization, Urban Planning.

## INDUSTRIALISATION AND URBANISATION IN MALAYSIA

In 1992, Malaysia officially became an urban nation when more than 50 percent of her population resided in urban areas. This trend has continued and by the year 2000, the urbanisation rate of Malaysia had reached 61.8 percent (8th Malaysia Plan, 2000). It was estimated that by the year 2002 more than 75 percent of her population would be urbanites.

This is in contrast to much of the history of the nation where the country was rural in nature relying on agricultural commodities such as palm oil and rubber for exports. The urbanisation trend follows closely the economic strategies of Malaysia where manufacturing was actively promoted especially since the 1980s. It was a strategic switch from import-substitution to export-oriented industrialisation (Jomo, 1990). In 1980, Manufacturing constituted only 15.7 percent of total employment in the country. By the year 2000, it made up the largest percentage of employment at 47.6 percent. During the same period, the percentage of the people employed in the Agriculture, Forestry and Fishing dropped drastically from 40 percent to a mere 15.2 percent. In 1987, Manufacturing, for the first time in history, replaced Agriculture as the main

contributor of the Gross Domestic Products (GDP). These changes are illustrated in Table 1.

| Sector | 1957 | 1965 | 1970 | 1980 | 1995 | 2000 |
|---|---|---|---|---|---|---|
| Agriculture Forestry & Fishing | 1245 (58.5%) | 1,350 (52.1) | 1,915 (47.6) | 1,911 (39.7%) | 1,493 (18.7%) | 1,408 (15.2%) |
| Mining & Quarrying | 59 (2.8%) | 66 (2.5%) | 88 (2.2%) | 80 (1.7%) | 40 (0.5%) | 41.2 (0.4%) |
| Manufacturing | 136 (6.4%) | 217 (8.4%) | 448 (11.1) | 755 (15.7%) | 2,028 (23.3%) | 2,558 (47.6%) |
| Construction | 68 (3.2%) | 90 (3.5%) | 160 (4.0) | 188 (4.4%) | 717 (9.0%) | 755 (8.1%) |
| Electricity, Gas & Water | 12 (0.5%) | 16 (0.6%) | 24 (0.6%) | 270 (5.6%) | 67 (0.8%) | 75 (0.8%) |
| Transport, Storage & Communication | 75 (3.5%) | 101 (3.9%) | 181 (4.5%) | 31 (0.6%) | 395 (4.9%) | 462 (5.0%) |
| Wholesale & Retail Trade, Hotel & Restaurant | 195 (9.2%) | 287 (11.1%) | 482 (12.0%) | 210 (4.3%) | 1,324 (16.5%) | 1,584 (17.1%) |
| Finance, Insurance & Real Est. | | | 39 (1.0%) | 78 (1.6%) | 373 (4.7%) | 509 (5.5%) |
| Government | 320 (15.7%) | 463 (17.9%) | 520 (12.9%) | 658 (13.7%) | 886 (11.1%) | 981 (10.6%) |
| Other Services | | | 163 (4.1%) | 147 (3.1%) | 677 (8.5%) | 899 (9.7%) |
| Total Employed | 2,126 | 2,590 | 4,020 | 4,817 | 7,999 | 9,271 |

Sources: Jomo, 1990 &
Government of Malaysia, 8ᵗʰ Malaysia Plan, 2000

In terms of total employment growth, the agriculture sector grew by a mere 13.1 percent while manufacturing grew by a whopping 1781 percent between 1957 and 2000. More importantly, between 1995 and 2005, while manufacturing is expected to account for 40 percent of the net job creations, the agriculture sector would experience a job reduction of 6.5 percent. In between the two extremes, the Wholesale and Retail Trade, and Hotels and Restaurants would grow by 18.7 percent while the "Other Services" sector is projected to record a similar growth of 18.5 percent. Since these activities are mostly urban based, the flock into urban areas is expected to continue. On the other hand, jobs in Agriculture, Forestry and Fishing which are rural-based are expected to decrease by 101,000 resulting in a further reduction in the percentage of rural-based population (Malaysia, 2000).

As the economy grows it is only natural that more people would flock to the urban areas. This is due to the theory of elasticity of demand of which the Services sector has the greatest elasticity followed by Manufacturing and lastly Agriculture. This means that as the income of the people increases they would spend the largest proportion of the increased income on service products followed by manufactured goods. Both of these sectors are located mainly in urban areas, a pull factor that encourages migration into urban areas.

The economic growth of the Manufacturing and Services sectors naturally lead to further urbanisation of the country. As expected the Klang Valley experienced most of this urban growth since it is the economic centre of the nation. However, what is interesting is that most of the population growth since the 1980s in the Klang Valley did not occur within the City of Kuala Lumpur itself. Rather, the growth occurred mostly in areas outside the cities especially within the State of Selangor (refer Table 2). This process is called the suburbanisation of the Klang Valley.

Between 1980 and 1991, Kuala Lumpur grew from a population of 919,610 to 1,145,342. Its population growth rate was 2.00 percent per year. This rate declined to 1.39 percent per year between 1991 and 2000. On the other hand, the Selangor State population grew by 4.33 percent per annum between 1980 and 1991 and 6.02 percent per annum in the following decade (1991 and 2000). Thus, the State of Selangor grew at a rate which was more than three times higher than that of the City of Kuala Lumpur.

In 1980, the Petaling District population was only a third of Kuala Lumpur's (360,056 for Petaling compared to 919,610 for Kuala Lumpur). Twenty years later, Petaling had caught up with Kuala Lumpur in terms of total population (1.18 million for Petaling and 1.30 million for Kuala Lumpur). In the past

decade, while Kuala Lumpur grew by a mere 1.39 percent per annum, Petaling District grew by 6.47 per annum and the Petaling District is expected to surpass Kuala Lumpur's population by 2005 (Table 3).

TABLE 2:
Urbanisation Rate by States, 1995 – 2005

| STATES | Urbanisation Rate (%) | | | Average Annual Growth Rate of Urban Population (%) | |
|---|---|---|---|---|---|
| | *1995* | *2000* | *2005* | *7MP* | *8MP* |
| **More Developed State:** | **66.5** | **73.4** | **77.7** | **4.9** | **3.8** |
| W.P. Kuala Lumpur | 100 | 100 | 100 | 2.0 | 2.2 |
| Selangor | 80.8 | 88.3 | 92.7 | 7.3 | 5.0 |
| Penang | 77 | 79.5 | 83.3 | 2.7 | 3.1 |
| Malacca | 49.5 | 67.3 | 75.3 | 7.5 | 3.2 |
| Johore | 54.4 | 63.9 | 69.1 | 5.7 | 3.8 |
| Perak | 56.2 | 59.5 | 65.3 | 1.9 | 3.0 |
| Negeri Sembilan | 47.3 | 55.0 | 58.2 | 4.4 | 2.3 |
| **Less Developed States:** | **37.4** | **42.1** | **45.9** | **4.7** | **3.9** |
| Sarawak | 41.8 | 47.9 | 54.6 | 4.4 | 4.8 |
| Sabah | 39.8 | 49.1 | 53.2 | 7.7 | 4.9 |
| Trengganu | 46.6 | 49.4 | 50.1 | 2.7 | 1.6 |
| Pahang | 35.0 | 42.1 | 44.0 | 5.2 | 2.2 |
| Kedah | 35.1 | 38.7 | 43.3 | 3.9 | 3.9 |
| Perlis | 29.6 | 33.8 | 38.9 | 3.5 | 3.7 |
| Kelantan | 33.5 | 33.5 | 36.7 | 0.5 | 2.8 |
| **Malaysia:** | **55.1** | **61.8** | **66.9** | **4.8** | **3.8** |

Source: 8th Malaysia Plan, 2000

Another high growth area in the Klang Valley is the Ulu Langat District in the State of Selangor. Its population grew from a mere 177,877 in 1980 to 865,514 in 2000. Its population growth rate during the two decades was around 8 percent per annum. In the 1990s, it grew more than four times faster than Kuala Lumpur. Should this trend continue, and there is not much evidence to suggest otherwise, Ulu Langat District would be able to boast of a population higher than that of Kuala Lumpur in the next census. Sepang is another district which grew rapidly since the 1991 census, averaging 6.47 percent per annum. However, its population in 2000 was still relatively small at 97,896. The

Gombak and Klang Districts grew at rather rapid rates as well, at 5.01 and 5.18 percent per annum, respectively.

TABLE 2:
Population and Annual Growth Rate, Selangor and Kuala Lumpur,
1980–2000

| State & District | Population | | | Average Growth 1980- 1991 | Annual Rate 1991- 2000 |
|---|---|---|---|---|---|
| | 1980 | 1991 | 2000 | | |
| SELANGOR | 1,436,250 | 2,297,159 | 3,947,527 | 4.33 | 6.02 |
| Gombak | 166,059 | 352,649 | 553,410 | 6.85 | 5.01 |
| Klang | 279,349 | 406,994 | 648,918 | 3.42 | 5.18 |
| Kuala Langat | 101,578 | 130,090 | 189,983 | 2.25 | 4.21 |
| Kuala Selangor | 110,366 | 123,052 | 157,288 | 0.99 | 2.73 |
| Petaling | 360,056 | 633,165 | 1,181,034 | 5.13 | 6.93 |
| Sabak Bernam | 103,261 | 99,824 | 110,713 | -0.31 | 1.15 |
| Sepang | 46,025 | 54,671 | 97,896 | 1.56 | 6.47 |
| Ulu Langat | 177,877 | 413,900 | 865,514 | 7.68 | 8.20 |
| Ulu Selangor | 81,679 | 82,814 | 142,771 | 0.13 | 6.05 |
| W.P KUALA LUMPUR | 919,610 | 1,145,342 | 1,297,526 | 2.00 | 1.39 |
| MALAYSIA | 12,136,109 | 17,563,420 | 22,202,614 | 2.64 | 2.60 |

Source: Department of Statistic Malaysia, 2000

The high growth rates of these suburban populations are due mainly to the out migration of Kuala Lumpur residents. The 1991 Census determined that one third of out-of-state migrants into Selangor between 1986 and 1991 were from Kuala Lumpur (109,334 out of 290,000 migrants). Also, during the same period, for every resident of Selangor whom Kuala Lumpur gained, it lost two of its own to the State.

Based on inter-state migration between 1986 and 1991, Kuala Lumpur had a net migration of -3.7 percent which was the second highest net out-migration after Perak at -3.8 percent. On the other hand, Selangor had a net in-migration of 6.8 percent during the same period. According to the Kuala Lumpur Structure Plan, there was a reversal in net in-migration of about 9,000 people for the period 1975 to 1980 to a net out-migration of about 4,280 persons per annum for the

period 1991 to 1997. Between 1982 (when the out-migration trend started) and 1997, Kuala Lumpur had a net out-migration of about 125,000 people. The Draft Structure Plan Kuala Lumpur 2020 identifies "the high rate of net out-migration and low population growth rate" as the main issue for the population sector (page 4-3).

TABLE 4:
Distribution of Ex-Kuala Lumpur Residents in Selangor, 1986 - 1991

| DISTRICT | Migrants from Kuala Lumpur |
| --- | --- |
| Gombak | 25,351 |
| Klang | 4,978 |
| Kuala Langat | 785 |
| Kuala Selangor | 1,034 |
| Petaling | 31,925 |
| Sabak Bernam | 501 |
| Sepang | 656 |
| Ulu Langat | 43,123 |
| Ulu Selangor | 955 |
| Unknown | 26 |
| **Total:** | **109,334** |

Source: Department of Statistic Malaysia, 2000

Due to the high migration rates, the Petaling District which was only a third the size of Kuala Lumpur in 1980 is now almost equal the size of the city population; Ulu Langat grew from only 20 percent the size of Kuala Lumpur to about 75 percent of the size of the nation's capital during the same twenty-year period.

This trend which started in 1982 is expected to continue in the future as more land is opened up in the Klang Valley and better transportation infrastructure is put in place.

## CONSEQUENCES OF SUBURBANISATION

The process of suburbanisation, especially in the Klang Valley, had started in the 1980s and picked up momentum in the 1990s. The trend is expected to continue in the 21st Century due to the building of more efficient transportation access, such as the New Klang Valley Expressway, and the KESAS and ELITE Highways in areas surrounding Kuala Lumpur and the opening of new areas such as Putrajaya, Cyberjaya as well as vast tracts of land in Ulu Langat and

Sepang. The opening up of these areas had expanded the urbanisation process beyond the Klang Valley to other new growth areas. These newly urbanised areas are referred to in the Kuala Lumpur Structure Plan 2000 as the Kuala Lumpur Metropolitan Area (KLMR). Its physical size is about 40 percent larger than the size of the Klang Valley.

Suburbanisation can be said to be fueled by three factors that are abundant in the Klang Valley since the 1980s. These are supply, demand and accessibility. The demand for housing and other land developments is the result of the higher income of the Malaysian population as well as increase in the population. The population of Klang Valley as a whole grew faster than the Malaysian average. Supply comes from the opening up of more areas made available through the building of better and more efficient transportation networks. These transportation networks had improved accessibility into many parts of the Klang Valley previously considered too remote to be developed.

These are the same factors that led to the suburbanisation of the United States after World War II. The building of highways for defense purposes, the demand for housing by the newly-affluent post war population and the opening up of vast tracts of land after the completion of the highways were ingredients for rapid suburbanisation which led to the problems of urban sprawl in that nation.

It should be noted that suburbanisation in the Klang Valley picked up pace after the introduction of privatization by the Mahathir administration in the mid 1980s. While the interstate highways in the U.S. were built by the government for defense purposes, those built by the private companies in Malaysia were mostly for commercial reasons, supported by government policies for private sectors initiatives. Capitalizing on greater demand for real estate by the increasingly middle class society of Malaysia, many private developers actively developed more areas especially outside Kuala Lumpur due to low land prices in these areas and opportunities to create new townships and integrated urban development. Consequently, incidences of leapfrogging in urban developments became inevitable in this process of urbanisation which was largely influenced by capitalist motivations.

The immediate concern for urban planning is how to reconcile the private sector appetite for profit against the public planning desired for the common good of the society. While in some respects the two may share common goals, in terms of suburbanisation and the resultant urban sprawl, there may be urgent needs to slow its spread.

Urban sprawl leads to wastage of resources. Leapfrogging of urban development requires more infrastructure and take up more open spaces. Some of these areas were traditionally the water catchment areas of the city. A good example is the Ulu Langat District which experienced population boom and loss of agricultural land and open spaces to other land uses.

Suburbanisation and urban sprawl also lead to the situation where certain older parts of the cities are abandoned and become haven for undesirable activities. While some may argue that it is part of the natural process of the urban ecology, planners should take cognizance that in our zeal to approve as many development projects as possible in the outer areas of the cities, the inner parts are likely to be abandoned. New shopping complexes, with the exception of Suria KLCC, were built outside of the Kuala Lumpur city centre. These included the Sunway Pyramid, One Utama, the Mines and the Mid-Valley Shopping Complex. Most of the shopping centres expansions announced recently are in the suburbs, not in the middle of Kuala Lumpur. American cities which have struggled since the 1970s to revive their inner cities to their former glory have almost always ended up in failure. Kuala Lumpur may experience the same problem if the current trend is continued unabated.

# REFERENCES

Jomo, K.S. 1990. *Growth and Structural Change in the Malaysian Economy.* Hong Kong: McMillan Press.

Malaysia. 2001. Eighth Malaysia Plan 2001-2005. Kuala Lumpur: Percetakan Nasional Malaysia.

Department of Statistics, Malaysia. 1995. *General Report of the Population Census*, Volume 2, 1991. Kuala Lumpur: Dept. of Statistics.

Department of Statistics. 2000). *Preliminary Count Report of Population and Housing Census 2000*. Kuala Lumpur: Dept. of Statistics.

\*\*\*

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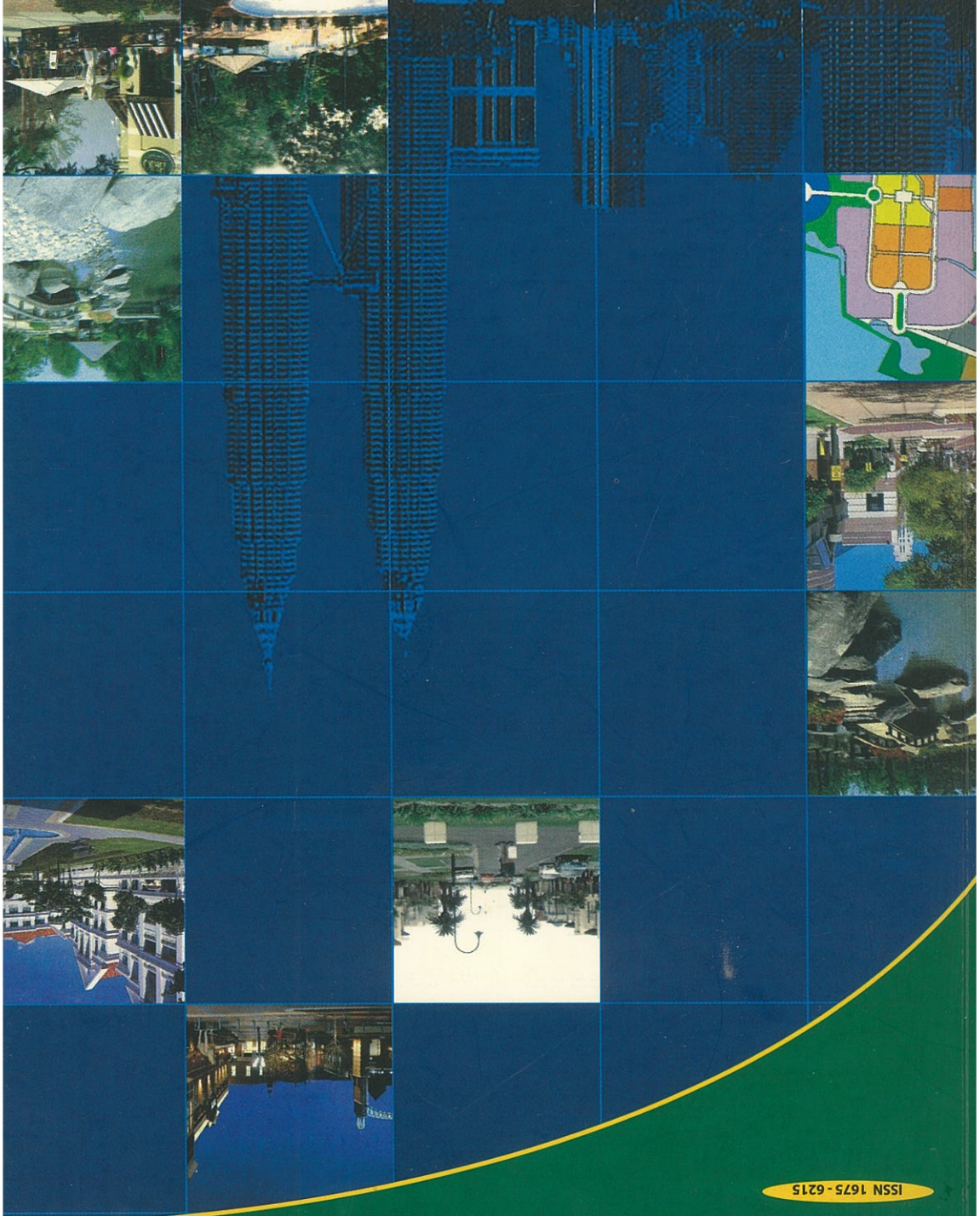
**Fair play**
Manuscripts shall be evaluated solely on their intellectual merit.

**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

# PLANNING MALAYSIA

Journal of the Malaysian Institute of Planners

MALAYSIAN INSTITUTE OF PLANNERS