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Towards Sustainable Development

Green Township Policy Initiatives in Malaysia

A green township can be conceived as an integrated planned habitat that gives emphasis to the protection, use and recycling of natural resources, besides promoting public health, safety and general welfare of the urban people. Some key characteristics of future Green Cities are: waste free, transport efficient with widely available public transportation, walkable and cycle-friendly, wholly energy independent with minimal carbon output including reduced fossil-fuel use, adoption of sustainable building practices, promotion of 'green space' and parks as 'lungs of the cities' to ensure clean air quality, implementation of energy-efficient initiatives, and development of well-organised mixed-use neighbourhoods that combine living, working and shopping. Instrumental to green urbanism is community network and cohesion, green consciousness and commitment.

The neighbourhood as a basic module in developing green cities becomes the front line in incorporating efforts in designs and activities to reduce greenhouse gas emissions while meeting a host of other community goals. As the quality of people's homes is influenced by the spaces around them, there is increasing recognition that well-designed, well-managed green spaces by and in between housing are crucial to making neighbourhoods liveable, and contribute to people's quality of life. Green elements such as the network of green spaces and corridors, tree-lined streets, significant private landscaping (including green roofs) or even small scale local community agriculture are examples of good green applications. Thus, buildings in the neighbourhood are often 'green' with excellent environmental performance; area-wide green infrastructure is common place and would include low-impact storm water management to district energy systems.

Most important in planning a green neighbourhood is creating the vision, giving policy directions and guidelines that describe all aspects necessary for a green neighbourhood towards achieving its set of goals. Making a commitment to neighbourhood designs that will support a low-emission lifestyle for all residents would involve the widest possible range of stakeholders and community support to set up and maintain internal systems to ensure continued improvements and refinements as the plan is being implemented.

The Malaysian government has been continually promoting environmental stewardship in all development plans. Since the 8th Malaysia Plan (2001-2005), the incorporation of environmental consideration into planning and development has been intensified. Consequently, the sustainable use of energy has been identified in the 9th Malaysia Plan, highlighting strategies for *using energy* efficiently through the promotion of greater use of renewable energy for power generation by industries and intensifying energy efficient initiatives in the industrial, transport and commercial sectors as well as applications in government buildings. The 10th Malaysia Plan reinforces and places further emphasis on the use of renewable energy and on increasing energy efficiency. Various measures such as relevant guidelines, standards and laws would be introduced to ensure efficient use of energy and to reduce greenhouse gas emissions.

In tandem with the Malaysia Plans and other national policies, the Ministry of Housing and Local Government of Malaysia through its Department of Town and Country Planning, had translated these into spatial form through the National Physical Plan (NPP) and the National Urbanisation Policy (NUP).

National Physical Plan (NPP)

First approved by the National Physical Planning Council in 2005, the goal of the National Physical Plan (NPP) is to establish an efficient, equitable and sustainable national spatial framework to guide the overall development of the country towards achieving developed nation status by 2020. The NPP is prepared in accordance with the provisions of the Town and Country Planning Act 1976 (Act 172). Selected policies supporting the green urbanism concept and initiatives are summarised as follows:

1. Promoting transit-oriented development (TOD)[1] concept as the basis of urban land use planning to ensure viability of public transport, supported by walkway linkages to promote connectivity and to reduce emissions.

2. All urban settlements will be serviced by an integrated network of solid-waste disposal and/or recovery facilities. Waste generation management will be promoted including recycling of waste, solid waste collection and disposal in accordance with the National Solid Waste Master Plan.

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[1] Transit-oriented development is development that clusters around a transit station in order to support public transport usage through optimum threshold and ridership.

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From the desk of the Director General

Towards Sustainable Development

In this issue of IMPAK, we once again return to the central and core idea of sustainability. As it has been said often enough, the bountiful and manifold resources bestowed upon us by Mother Nature can and should be used for the progress and development of humankind. The issue has not been one of not using at all these natural resources but one of using it in a sustainable manner. Sustainable use means simply that the resource is also available for the use of future generations.

However, environmental and ecological problems faced by developing and developed nations indicate the lack of progress on the ground in managing sustainability issues. Policy driven sustainability recommendations and good practices are not always followed or adhered. And where there is a degree of compliance, it is to meet the minimum requirements and not the wholehearted commitment that one would expect. Here in Malaysia too, the government has been continually promoting environmental stewardship in all its development plans commencing from the 3rd Malaysia Plan.

Hence in this issue of IMPAK, we have brought together articles on performance and direction with regard to environmental sustainability. The first article on 'Green Township Policy Initiatives in Malaysia' highlights the pressing need for green urbanisation including land use planning and green transport initiatives that will make more of our towns and cities 'low carbon'. After all, 50% of humanity now lives in urban areas. The policy initiatives are in place via the National Green Technology Policy, 2009. Here again the pressing need is to get going!

What does our performance scorecard indicate about our efforts towards sustainability? Let us trace our efforts. The incorporation of environmental considerations and good practices into these plans has intensified over the years from the 3rd to the 10th Plan. And at the highest macro level, the government has been at the forefront of both domestic and international environmentalism. We have been a consistent contributor to global environment sustainability proceedings. We also seek to comply or have complied with a host of international conventions. Notable among which are The Framework Convention on Climate Change, 1992 and The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989. However the real step-change came in the 10th Malaysia Plan.

In this last named Plan, numerous specific and strategic policy initiatives on environmental sustainability were adopted. But when it comes to the crux of the issue, the implementation of these policies leaves much to be desired. There is much that we can improve upon. There is consensus now that what is needed is an integration of the strategic, legal and economic policy initiatives to spearhead the achievement of environment sustainability objectives. The piecemeal approach is not working. We must draw the line and accept that the policies are in place and what is needed now is both firm implementation and hard enforcement.

An article on green cities shows that sustainable practices can indeed minimise environmental impact, reduce energy consumption, prevent pollution and help achieve energy self-reliance. These cities are now reaping the benefits of being farsighted. And the same applies to achieving sustainable rice production. The success of the 'green revolution' in Malaysia, as in other countries over the past four decades, has led to environmental degradation, increased salinity and pesticide misuse. A radical re-think is in order. A second 'green revolution' is urgently required to ensure sustainable food production.

Similarly, the article on sustainability issues affecting our ecotourism industry is important and timely. Generally speaking, the spectacular growth of the tourism sector as a whole has created an increasing amount of stress at the economic, social and environmental levels. Hence the need for a Responsible Carrying Capacity Framework for Ecotourism. The term is self-explanatory in so many ways. On completion of this carrying capacity study and the drawing up of barometer indicators, suitable policies will be formulated. Once again, an integrated and holistic approach will ensure equitable treatment of all stakeholders. In the long term, it will ensure better self-policing and strict enforceability.

In the article on sustainable forestry in Malaysia, it is indeed heartening to know that gradually we have moved away from exploitative practices to utilitarian practices. We are now on the cusp of achieving an ecosystem-based use of our forests. This is of extreme importance to us given that now only 55% of our land is under forest cover. We have one of the richest biodiversity of fauna and flora in the world, being second only to Indonesia. We play host to some 170,000 different species. Our species richness and endemism is of major global significance. Policies are in place to ensure the long term health of the forest ecosystem that can offer all its stakeholders ecological, social and economic opportunities. Undoubtedly, this will benefit both present and future generations. But the policies in place must be enforced strictly and without let-up.

Certainly, our performance scorecard update, though not flattering, indicates a willingness to take a good hard look on sustainability issues affecting us and the world. It is time to turn things around by working harder on implementation issues.

Dato' Hajah Rosnani Ibarahim
Director General
Department of Environment, Malaysia

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3 As strategic assets, electricity generation plants and distribution mains shall be suitably located to provide a reliable and efficient supply of power to consumers. Renewable energy such as energy from solar, wind, wave and biomass are to be promoted to complement traditional power generation sources.

National Urbanisation Policy (NUP)

Green urbanism has also been reflected in Malaysia's National Urbanisation Policy (NUP) approved by the Cabinet on 8 August 2006. The NUP guides and coordinates planning and urban development in Malaysia by incorporating key areas such as urban growth limit, compact cities, urban regeneration, utilisation of open spaces, solid waste generation/containment, sustainable transport, energy efficiency and renewable energy. The National Urbanisation Policy emphasises the following:

1. Optimal and balanced land use planning for urban development to ensure all development shall be compatible with the surrounding land use and concentrated within the urban growth limit so as to create a compact city.

2. Re-development programmes for brownfield areas and promotion of urban regeneration.

3. Provision of adequate open spaces and recreational areas to meet the requirements of the population, consequently promoting the contiguous and integrated development of green areas in urban centres to reduce carbon emission.

4. Development of an integrated, efficient and user-friendly public transportation system including environmental friendly vehicles, bicycle lanes, and a pedestrian network for efficient connectivity and a reduction in air pollution.

5. Effective and sustainable solid waste and toxic management systems to effect solid waste reduction, full utilisation of bio-degradable materials and encourage recycling programmes for the community.

6. Strategies related to sufficient, affordable housing, taking into account the needs of various groups of society including the disabled and senior citizens.

7. Environmental conservation and improvements to the urban quality of life.

8. Development that reduces the impact of urban heat islands and ensure that urban development will take into account reduction of air, noise and water pollution

9. Use of innovative technology in urban planning, development and urban services management with the aim of reducing the production of waste, promoting the construction of green buildings and encouraging the use of efficient energy and renewable energy.

Planning Guidelines and Circulars

In addition to policy directions and prescriptions in the NPP and NUP, there are other initiatives to encourage green township implementation. These are listed below:

Planning Guidelines for Open Space and Recreation Facilities

This guideline, first prepared in 1997, had aimed to guide local authorities and developers provide adequate open spaces at various levels, locations, sizes and facilities. It also highlights the requirement to provide a minimum of 10% of usable open spaces for all types of developments. This guideline is being reviewed by the Federal Department of Town and Country Planning (FTCPD).

Planning Guideline for Roof Top Gardens

With current rising concerns on reducing our carbon footprint, the green roof is emerging as an adaptation measure in a changing climate. The FTCPD drafted the Planning Guidelines for Roof Top Garden in 1997 and this is currently being reviewed and updated. Originally conceived as part of the open space planning in the urban areas to fully utilise idle spaces, rooftops are now providing opportunities not only in beautification but in energy saving, insulation and air quality improvement and for reducing the effects of urban heat islands. There are successful examples of roof top gardens in shopping malls. These gardens adopt recycling technologies such as chilled water irrigation sourced from the shopping centre's air conditioning system to grow temperate plants and a rainwater harvesting system for general irrigation. As an example, plants can be grown on a soil-mix based on granulated horticultural carbon.

Circular on Rain Water Harvesting System, 1999 (SPAH)

The Ministry of Housing and Local Government produced a Circular in 1999 to instruct local authorities to install a Rain Water Harvesting System [(SPAH) Sistem Penuaian Air Hujan] in buildings. A success story in implementing the rainwater harvesting system, the Municipality of Sandakan, Sabah, imposed a planning requirement in development applications to provide rainwater storage tanks for new residential buildings commencing June 2001. Each tank is able to store a maximum of 400 gallons of rainwater. Further guidelines have been prepared to support this circular.

Land Use Planning and Green Transport Initiatives

Low Carbon City Research

Green urbanism, being the current buzz-word, has led government ministries, institutes of higher learning and local authorities into various research aspects and pilot projects. The FTCPD had identified the low carbon city concept as one of its research initiatives since the 9th Malaysia Plan and had produced related guidelines including one on Sustainable Transportation in Land Use Development in 2007. In a wider context, FTCPD is currently collaborating with a research team from Kyoto University Japan and Universiti Teknologi Malaysia (UTM) to conduct research on a low carbon city.

Public Transport

Sustainable transport is more about accessibility and mobility than about transportation, and about finding ways to move people, goods and information in a manner that reduces its impact on the environment, the economy, and society. Some options include:

- Minimising travel.
- Improving transport choice by increasing the quality of public transport, cycling and walking facilities, services and promoting healthy lifestyles.
- Using cleaner fuels and technologies.
- Using renewable energy.
- Adjusting technologies to make vehicles green (electric cars, hybrid cars, including those using wind and solar).
- Using telecommunications to reduce or replace physical travel such as tele-working, tele-conferencing and tele-shopping.
- Planning the layout of cities to bring people and their needs closer together, and to make cities more vibrant and walkable.
- Land use change to promote public transport, transit-oriented development, smart growth and new urbanism.

The plan is to improve urban public transport and increase the capital share to 13% by 2010 and to 25% by 2012 during the morning peak period by providing an integrated and seamless 'network' of public transport services with improved reliability and journey times, comfort and convenience. Amongst the initiatives are the introduction of Bus Expressway Transit (BET), Bus Rapid Transit (BRT), enhancing Park and

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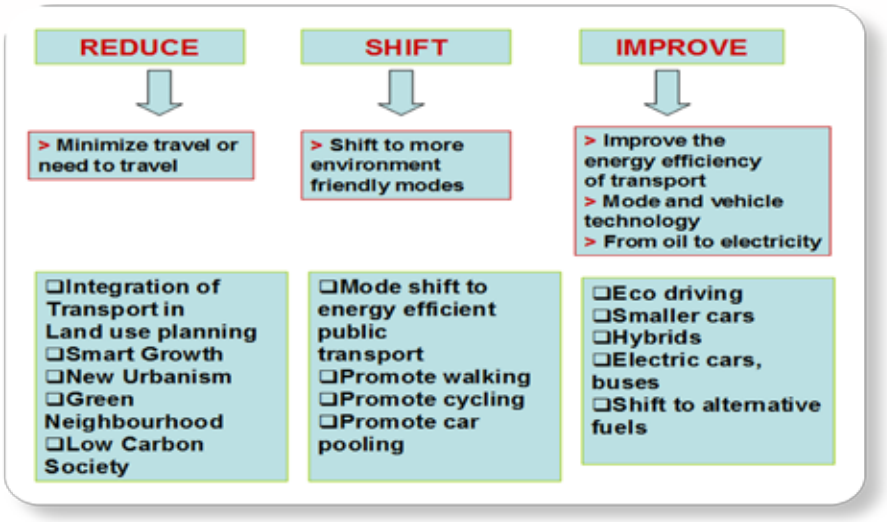
Ride, Integrated Transport Terminals (ITTs), completion of the Klang Valley Mass Rapid Transit system by 2019, and in the longer term, congestion charging.

Mixed Development

Planned mixed development may reduce trip-making by urban residents (to school, home, work, recreation etc.). Creative urban design which improves conditions for non-motorised transport and walking would support good connectivity towards sustainable transport objectives. Mixed use development is also a feature of smart growth. The development of bio-fuels puts us in a better position to develop and use green transport. The promotion of green vehicles is evident in Malaysia's 2010 budget with full import duty and 50% excise duty exemption granted to franchise holders of hybrid cars as well as hybrid electric motocycles. To further encourage ownership of hybrid cars, import duty and excise duty will be exempted. Figure 1 summarises the case for sustainable transport, public transport being instrumental to the equation, with first reducing travel and the reasons for travel, then shifting to more environmental friendly or green modes and improvement to energy use and eco-vehicles.

Figure 1: Reduce, shift and improve initiatives.



Other National Policies

The National Green Technology Policy (NGTP), July 2009

The NGTP is one of the most current platforms supporting green growth. It introduces and proposes the implementation of innovative economic instruments, as well as the establishment of effective fiscal and financial mechanisms to support the growth of green industries. The NGTP is held by four pillars, namely energy, environment, economy and social with four key areas focusing on energy, building, water and waste management and transportation. These areas are expected to promote Foreign Direct Investments (FDI) on green technology to foster Domestic Direct Investments (DDIs) and local industry participation. Implications on green cities have been identified through two strategic thrusts in the NGTP. The first thrust focuses on providing a conducive environment for green technology development with measures to strengthen the understanding of local players in Green Technology industries and their value chain. This would include technology and infrastructure support required for energy efficient neighbourhoods and cities. The NGTP facilitates and infuses funds into sustainability-oriented projects that simultaneously green the economy. The second thrust in the NGTP is to promote education and information dissemination through comprehensive roll-out programmes to increase public awareness on Green Technology.

Malaysian Budget 2010

At the 2010 Budget speech in October 2009, the Prime Minister announced that Malaysia will develop green technologies and encourage the development of green buildings. The development of green technology would be translated by developing Putrajaya and Cyberjaya as pioneer townships in green technology and as a showcase for the development of other townships. These green townships would promote well connected neighbourhoods, reduce carbon footprint through environmentally friendly initiatives including green buildings and using resources efficiently.

Green rating tools have also been mentioned, highlighting the Green Building Index (GBI), where buildings focus on increasing the efficiency of resource use (energy, water and materials) while reducing building impact on human health and the environment during the building's lifecycle. This can be achieved through better design, construction, operation and maintenance of buildings. The framework for this green rating system for single buildings can be further extended to a neighbourhood or township level to create a green rating system for townships and neighbourhoods.

The National Policy on Climate Change

The National Steering Committee on Climate Change (NSCCC) serves as the national focal point for external financial and technical assistance for the climate change programme. The Committee had submitted the National Policy on Climate Change to the Cabinet in November 2009. This policy will drive efforts to reduce emissions and contribute to the larger agenda of reducing climate change impacts. The Blueprint comprises five principles, ten strategic thrusts and forty-three key actions, all focusing on mitigation, adaptation measures and capacity building. In December 2009 at the COP-15, the Prime Minister had announced that Malaysia would adopt a voluntary national reduction up to 40% in terms of GDP emission intensity by year 2020. The Ministry of Natural Resources and Environment (NRE) is currently finalising the road map for Malaysia to achieve the national target reduction of GHG emission by 2020.

Public Awareness and Green Consciousness

One of the keys to successful greening of a city is the commitment of the community towards realising their green objectives. Fundamental to community commitment is awareness, more so, green consciousness towards shared community goals. Often an uphill task, communication, partnership and sharing between all members of the community are instrumental to the creation of successful green cities. Promoting an area-wide green lifestyle such as recycling, waste reduction, working on urban community agricultural plots or community gardens, or even participating in a composting programme or eco-festival for example, are green community activities that require collective synergy. Other green lifestyle changes that would be driven by community rapport are walking, cycling, and initiatives related to the use of household and community green technology.

The Way Forward

Global warming and world climate change had impacted people's life to varying degrees. Sustainable development and the greening of the living habitat has increasingly become a prominent agenda globally. It is estimated that around 50%[2] of the world's population now lives in cities and urban areas and increasingly so in years to come. These large communities provide both challenges and opportunities for

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Environmental Sustainability in Malaysia: A Performance Scorecard Update

'Sustainability' is defined by the Oxford Dictionary as
(1) *"able to be maintained at a certain rate or level"*, for example, 'sustainable economic growth'; and
(2) as *"conserving an ecological balance by avoiding depletion of natural resources"*, for example, *'our fundamental commitment to sustainable development'.*

Given these definitions of sustainability, how serious are we about taking a sustainability path? Perhaps, we can undertake a performance scorecard update on our sustainability efforts and let our readers judge for themselves!

As a fast developing country within the ASEAN and APEC economic barometers, Malaysia has been a consistent stakeholder at the forefront of both international and domestic environmental activism since 1974 and even prior to that. Four decades later, the term *'environmental sustainability'* remains relevant, if not, more pressing than ever. Malaysia has been a consistent player and contributor to global environment sustainability proceedings of the *1997 Kyoto Protocol* and to the principles of the *UNFCCC.* In terms of international environmental co-operation, Malaysia is also engaged in the recent *2009 Copenhagen Climate Change Conference* (COP-15) followed by the *2010 Cancun Climate Change Conference* (COP-16). Malaysia has also complied with several international conventions which include the following:

1. Vienna convention on the Protection of Ozone Layer, 1985
2. Montreal Protocol on Substances that Deplete the Ozone Layer, 1987
3. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989
4. London Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer, 1990
5. United Nations Conference on Environment and Development, 1992
6. Framework Convention on Climate Change, 1992
7. Biodiversity Convention, 1992
8. Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, 1992

Environment Provisions in The Malaysian Plans

In contradiction to the 1st and 2nd Malaysian Plans, the 3th, 4th, 5th and 6th Malaysian Plans until the 9th Malaysian Plans incorporate – to a certain extent – general elements of environmental sustainability in tandem with the National Development Policy of the Second Outline Perspective Plan (1991-2000).

However, it is in the 10th Malaysian Plan that we see an improved effort to elevate the minimum environment sustainability bar to the next level: that environment sustainability must now be an overriding factor in national development blueprints, thus setting an eco-trend for a sustainable path in national economic development in Malaysia.

This momentum was sustained in 1998 through the 1998 National Policy on Biological Diversity which states: "to conserve Malaysia's biological diversity and to ensure that its components are utilised in a sustainable manner for the continued progress and socio-economic development of the nation."

National development blueprints must include integration with environmental sustainability platforms. These integration efforts encompass several strategic sustainability reformation policy thrusts. In fact, the first statement of *Vision 2020* requires national economic development be based on a path of environmental sustainability growth and preservation of our invaluable natural environmental resources.

Sustainable Fuel Diversification Policy

Under this policy, environmental sustainability is given a more holistic meaning especially with regard to the 'fifth fuel' energy resource. This is achieved in part by the promotion of the *Small Renewable Energy Programme* (SREP).

Sustainable Energy Efficiency Products

These products and the various programmes undertaken by the *Energy Commission pursuant to the Energy Commission Act 2001* demonstrate Malaysia's direction to achieve long-term sustainable national development towards Vision 2020 while the promotion of energy efficiency is geared towards the preservation of the environment.

National Biofuels Policy 2006

This Policy dictates that the generation of energy should be carried out in a sustainable manner in tandem with National Transformation Programmes (NTPs) from the environmental governance and responsibility perspective.

National Green Technology Policy 2009

Under the 2009 *Green Technology Policy*[1], the energy and economic sectors and socio-development must take into view the overriding environmental sustainability consideration based on Environmental Sustainability Best Practice Protocols.

Public Awareness of Environmental Sustainability

Reduce, reuse and recycle policy (3Rs)[2] now defines the significance of general environmental sustainability. Thus it can be seen that Malaysia has adopted numerous strategic policies towards the promotion, inculcation and adoption of environment sustainability factors. However, there appears to be a fragmented approach by various parties towards the implementation of these policies. There is a crucial need for an integrated environment sustainability approach within the public-private policy implementation structure.

Legislative and Regulatory Sustainability Measures

The Environmental Quality Act 1974 is, by far, most instrumental in laying the environmental sustainability landscape in Malaysia since 1974. However, it must be noted that not many laws enacted by Parliament take into view the 'symbiotic relationship' of a particular legislation *vis-à-vis* 'environmental sustainability' considerations. However, environmental sustainability is not part of many enacted legislations which are geared towards the stand-alone implementation platform. Examples include the Petroleum Development Act, National Petroleum Policy 1975, Electricity Supply Act 1990, Gas Supply Acts 1993, Electricity Regulations 1994, Gas Supply Regulation 1997, National Depletion Policy 1980 etc. But these acts have considered sustainability in their provisions related to sustainability of water quality performance, sustainability of air quality performance, control of hazardous wastes performance, sustainability of development and construction-related activities.

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All these indicate that there is substantive legislation with regard to compliance with environment sustainability. However, there are many areas which may be enhanced in the light of reported environment and construction-related mishaps such as the *Bukit Antarabangsa* tragedy, the *Ulu Langat* tragedy and the recent *Tanah Rata* tragedy.

Legal and Economic Performance Factors

The outstanding review is that there is a need for a more enhanced strategic, legal and economic policy integration in spearheading environment sustainability objectives in Malaysia. However, it is noted that environmental-related legislation has seen fragmented implementation within the national economic development planning frameworks.

National economic development implementation in the past decades has not taken into view the compulsory environmental sustainability factor or the green factor. It is noted that environment legislation will remain ineffective unless backed by effective legislative implementation. Holistic environmental sustainability can only be achieved if there is real co-operation and understanding between Federal and State authorities. Take the case of energy efficiency. Energy production is now locked in with renewable energy equations (federal level) while energy production and supply will see a setback if there is no efficient utilisation of these resources through wastage and particularly non-productive usage patterns of energy. The approach in the past has been to rely heavily on the energy industry to self-regulate and consumers to exercise efficiency in energy production, transportation, energy conversion, utilisation and consumption through the implementation of awareness programmes.

Regional Eco-Technical Efficiency Co-operation

Malaysia's efforts in both bilateral and regional environmental sustainability to ensure environmental sustainability not just in Malaysia but also to create a green culture of sustainable development within the ASEAN region is remarkable. Towards this end, Malaysia has embarked on numerous strategic co-operation arrangements with its ASEAN and other partners.

ASEAN Joint Government to Government (G2G) Co-operation

Environmental sustainability is not about environmental exclusivity. True environmental sustainability calls for expansive ecology to maintain, promote and preserve the natural environment. The country's numerous co-operative exercises include:

- Malaysia-Singapore Joint Committee on the Environment
- Malaysia-Indonesia Joint Committee on the Environment
- Malaysia-Thailand Joint Committee on Science, Technology and the Environment
- Malaysia-Vietnam Joint Committee on Scientific, Technological and Environment Cooperation
- Malaysia-Brunei Cooperation on Standard Operating Procedure for Oil Spill Combat

International Capacity-building Partners

- Japan-Malaysia Cooperation for Environment and Energy
- Malaysia-Japan Cooperation on Environmental Training
- Malaysia-Germany Technical Cooperation on Specific Environmental Projects
- Malaysia-Australia Cooperation on Specific Environment Projects
- Malaysia-New Zealand Cooperation on EIA Training
- Malaysia-Denmark Cooperation Programme on Environment and Development (DANCED)
- Malaysia-Canada Cooperation Programme on Environment
- Malaysia-USA Environment Improvement Projects

Regional Environment Sustainability Co-operation Declarations

Commencing with the ASEAN Ministerial Meeting on the Environment, and routine Commonwealth Heads of Government Meeting (CHOGM), Malaysia remains committed to the various environment sustainability-related declarations since 1981:

1. Manila Declaration 1981
2. Bangkok Declaration 1981
3. Jakarta Resolution 1987
4. Manila Summit Declaration 1987
5. Kuala Lumpur Accord on Environment and Development 1990
6. Singapore Resolution on Environment and Development 1992
7. The various ASEAN Working Groups such as:
   - Environmental Information, Public Awareness and Education
   - Environmental Management
   - Environmental Economics
   - ASEAN Seas and Marine Environment
   - Nature Conservation
   - Transboundary Pollution
8. Environment Sustainability of Marine/ Oceanic Region, such as the following:
   - UNEP Action Plan on the Seas of East Asia
   - (COBSEA) International Convention of Civil Liability for Oil Pollution Damage 1969
   - UN Conference on the Human Environment 1972
   - Langkawi Declaration on the Environment 1989
   - ASEAN Strategic Plan of Action on the Environment (1994-1998)
   - Revolving Fund Committee on the Safety of Navigation and Control of Oil Pollution in the Straits of Malacca and Singapore (RFC)

Fiscal and Environment Taxation Incentives

Malaysia offers several proactive fiscal and taxation incentives to promote and enhance environment sustainability in the industrial sector. However, there is a need to tweak these green provisions in order to achieve maximum return from both fiscal and taxation perspectives.

Ministerial Strategy and Private Support

Backed by green directives and policies, government agencies, ministries and units are reminded to uphold environment sustainability as an integral part of ministerial execution process in their duties and responsibilities.

Mammoth economic development project such as the *East Coast Economic Region (ECER)*[3] Project and *Sarawak Corridor of Renewable Energy (SCORE)*[4] Project are more sensitive to environment sustainability compared to practices three decades ago.

The same can be seen with environmental sustainability policies and statements currently undertaken by *Government-linked companies* (G20), public-listed companies, and private companies. Not all the top 100 companies listed on the KLSE and private companies have a dedicated Environmental Policy. However, there is a need for enhanced performance on the environmental aspects besides CSR performance.

Green Building Assessment

In terms of housing development and construction, Pusat Tenaga Malaysia's building (Diamond Building) is acknowledged to be the

first Green Building Index (GBI) rated building in Malaysia but the cost factor remains a barrier for residential construction prospects. The scope of Green Technology Financing Scheme (GTFs)[5] proposed in the Budget Speech 2010[6] should be expanded to include underdeveloped local green technologies. Green technology investment and projects must include the 'environment sustainability factor' and not mere environment maintenance performance.

Environmental Assessment and Performance Scorecard Analysis

Ten years ago, the concept of CSR[7] was a novel concept in the Malaysian industrial and corporate sectors. However, CSR is not the only instrument - *and certainly not a completely effective route* - in achieving environmental sustainability. The CSR platform is not a comprehensive platform and hence a different platform structure such as the *Global Environment Responsibility* paradigm would be preferred due to different performance assessment criteria.

In the case of CSR, companies in Malaysia[8], though accepting in principle, are lukewarm towards the idea of incorporating environment sustainability elements within their strategic corporate expansion. For *Small-and-Medium Enterprises* (SMEs) in Malaysia, environmental sustainability is still a novel theme and efforts are underway to lay the ground works for acceptance and incorporation within the larger industrial players and Multi-National Corporations' (MNCs) alliance.

There is hesitant private sector participation in 'environmental sustainability' due to the 'cost factor' involved. Ongoing efforts in the acknowledgement of environmental sustainability is still rather fragmented, or uncertified in many respects in Malaysia.

Environment Enforcement and Monitoring Assessment

Enforcement and monitoring remains a challenge for enforcement agencies at both Federal and State levels. Joint co-operation should be conducted on a frequent basis to drive home the message of environmental sustainability. There is a need for a *Federal and State strategic enforcement agency* to achieve effective environmental sustainability compliance. State resource utilisation plans especially land use, regional plans, structure plans, and local plans, etc. remain fragmented from the environmental sustainability performance analysis perspective. Inter-governmental agency and federal state co-operation and coordination remains a challenge.

Conclusion

In a global crunch of dwindling natural resources, the environmental sustainability factor is now a dominant denominator in national economic development of both developed and developing countries. To achieve environmental sustainability, all economic expansion programmes must be coupled with 'environmental sustainability factor' considerations. The challenge is in the identification of the scope, nature and objectives of such an environmental sustainability performance paradigm.

Presently, there is no clear scope of *environmental sustainability certification* and no proper *environmental sustainability methodologies* in the assessment exercise in relation to the different economic classes of stakeholders and participants. It will be an uphill task to ever achieve the goals and objectives of environment sustainability unless a clear *Environment Sustainability Index (ESI)* is established. Economic activities and eco-legislation must go hand in hand in order to promote Green Globalisation as the next mega-trend in the *Green Economy Transformation (GET)* for the next millennium.

Footnotes

1 For details, see Malaysia Green Technology Corporation Official Site at *http://www.greentechmalaysia.my/*

2 For details, see green awards such as ACEM Gold Award 2010 and ACEM Engineering Awards 2010 at *http://www.acem.com.my/index.php?option=com_content&task=view&id=57&Itemid=1*

3 "ECER council out to attract RM30b in FDIs", at *http://www.smecorp.gov.my/node/1047*

4 "Score Secures 13 Projects Worth RM26.36 Billion", at *http://www.bernama.com/bernama/v5/newsbusiness.php?id=597063*

5 For details, see Green Technology Financing Scheme at *http://www.gtfs.myc*

6 The Budget Speech 2010 by the Dato' Sri Mohd Najib Bin Tun Haji Abdul Razak Perdana Menteri Malaysia at *http://www.pmo.gov.my/bajet2010/Budget2010.pdf*

7 See the Prime Minister's CSR Awards *(http://www.anugerahcsrmalaysia.org/)* to enhance public-private co-operation in achieving environment sustainability in Malaysia.

8 As an example, see Clarion Group Environmental Policy, at *http://www.clarion.com/my/encompany/profile/policy/e_policy/index.html*

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environmentally conscious urban makers to make cities more sustainable, particularly at the township level. This would involve making a commitment to township designs that will support a low carbon emission life style for all residents; including that of promoting sustainable transportation, involving the widest possible range of stakeholders in green growth with green infrastructure serving as a backbone to support energy efficiency and renewable energy within the water and energy systems. Thus an integrated approach linking all dimension of sustainability is instrumental.

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CITIES:
Reaping the Benefits of Going Green

Green city concepts and initiatives are becoming more important globally. Many cities around the world particularly those of the developed nations have now realised the importance of sustainable development and eco-friendly urban renewal.

The emphasis is on practices that help to minimise environmental impact, reduce energy consumption, prevent pollution, while maximising renewable energy development and achieving self-reliance. Examples of the cities that have started the sustainable path and are now reaping the benefits are given below.

Curitiba, Brazil – Sustainable Urban Planning System

Curitiba in Brazil is considered one of the best examples of urban planning worldwide, having won the Globe Sustainable City Award in 2010. This award recognises cities and municipalities which excel in sustainable urban development around the world. Earlier in 1996, it was praised as the most innovative city in the country by the chairman of the Habitat II Summit in Istanbul.

Urban planning in Curitiba began in the 1940s to tackle the ballooning population. Urban studies professionals were hired to produce the first city plan. There were fears among city dwellers that the growth in population was threatening to change the character of the city. It was not until 1968 that the Curitiba Master Plan was implemented following the adoption of the proposal from the architect, Jaime Lerner, and his team from the Universidade Federal do Parana. His suggestions were to have strict controls on urban sprawl, a reduction in traffic in the downtown area, preservation of Curitiba's historic sector, and a convenient and affordable public transit system.

When the Curitiba Master Plan was enforced, the high pedestrian traffic streets were closed to vehicles and converted to pedestrian-only streets. In order to ease traffic away from the main roads, the city central area growth was limited, while commercial growth along the transport arteries radiating out from the centre was encouraged. Town planning was focused on developing new growth areas at the transit corridors and the development of vehicular-oriented centres was discouraged. Development along the arteries reduced the traditional importance of the downtown area as the primary focus of daily transport activities.

Land within two blocks of transit arteries was zoned for high density, since it generated more transit ridership per square foot, while land further away from these important roads was earmarked for lower density developments. Severely limiting public parking spaces in the downtown area contributed to the success of the transit system.

The Rede Integrada de Transporte (RIT), or Integrated Transport Network in Curitiba was created in 1980 allowing users to commute and transit in the system by paying only a single fare irrespective of distance and time travelled, and payment was done at the bus stop. The bus system of Curitiba is a successful representation of a model of Bus Rapid Transit (BRT) system. The core of a Bus Rapid Transit is to improve bus operating speed and reliability on arterial streets by reducing or eliminating the various types of delay.

This city has the distinction of owning one of the most heavily used, yet low-cost, transit systems in the world. It offers many of the features of a subway system but the only difference is that it is above ground and visible. The efficient system allows vehicle movements to be uninterrupted by traffic junctions and congestion, and passengers can embark and disembark at a more rapid pace with fare collection done prior to boarding. Seventy percent of Curitiba's commuters use the BRT to travel to work, resulting in congestion-free streets and pollution-free air for the 2.2 million inhabitants of greater Curitiba.

In Curitiba city, 1,280 units of buses operate on a daily basis and transport 2.04 million passengers each day. Buses travel every day along all the routes of 385 different lines within the urban and metropolitan areas and visiting five thousand bus stops. In addition to these bus stops, there are 351 tube-stations and 29 integrating terminals. Together with other low-cost changes, this bus system has become the preferred transportation choice for the public.

The transportation system of Curitiba has become well-known worldwide, inspiring similar systems in Bogota (Colombia), Guayaquil (Ecuador), Guatemala City (Guatemala) and Los Angeles (United States).

Curitiba city also paid careful attention to preserving and caring for its green areas, where its residents played their part in planting 1.5 million trees along the city streets.

Curitiba is referred to as the ecological capital of Brazil, with a network of 28 parks and wooded areas, boasting some 52 square metres of green space for each resident.

Other commendable green initiatives included tax break incentives for builders who built green areas in their projects, flood water diversion into new lakes in parks to solve flooding problems and protect valley floors and riverbanks, and providing aesthetic and recreational value to the thousands of people who use city parks.

Buildings at flood prone areas were flattened and the land was converted into parks. People were encouraged to plant trees while residential developments were to have gardens and open spaces were to be permeable. Cutting down a tree without a permit is not permissible, and if permission is granted, it needs to be replaced with two trees.

Hamburg, Germany – European Green Capital of 2011

Hamburg is the German city with the most number of nature conservation areas and it is so much greener in comparison with other cities, similar in size. It holds the distinction of being one of the few cities with its own national park, and at the moment is working towards recognition of the sensitive ecosystem of the Wadden Sea National Park as a UNESCO World Heritage Site.

Hamburg has successfully struck a balance between being a livable city while serving as an industrial metropolis and hub for trade and transportation. Though it is a major transportation hub, the air quality in the city is generally good. The city's 'green march' has seen it achieving forest, recreational and green spaces conservation that makes up 16.7% of the area, with over 8% of the areas protected. Besides, almost all citizens have access to public transport within 300 metres of their location.

The European Commission awarded Hamburg the title of "European Green Capital 2011", having scored good points for all ten categories with highest achievement in the climate protection, sewage and administration categories. It combines comprehensive approaches, policy-commitment and the necessary funding needed to resolve the urban challenges. On the whole, it has an integrated and participative planning strategy and a strong commitment towards a 'green' vision.

Hamburg's ambitious plan is to reduce its carbon dioxide emissions by 40% in 2020 and 80% by 2050. CO_2 emissions per person have been reduced by about 15% when compared to 1990, with annual energy savings of some 46,000 MWh. Besides, the Hamburg-based Energy Agency (HAMEA) is developing climate strategy model projects for the households, and targeting to strengthen support for climate protection measures among the society.

There is also a systematic structure for green areas which allow citizens easy accessibility. For the 2013 International Garden Show, Hamburg is poised to offer an undisturbed eco-friendly travel throughout the city when the network of green areas that connects parks, playgrounds, sports fields, gardens and cemeteries are developed in a 100 hectare park in the centre of the Elbe Island of Wilhemsburg.

Other Cities with Green Initiatives

Kristianstad, Sweden

Kristianstad, with a population of 80,000 is essentially a self-sustaining city in relation to energy use. The people of Kristianstad do not use oil, natural gas or coal to heat their homes and businesses, even during the winter. They managed to reverse the trend within 20 years, by generating energy from farming by-products such as potato peels, manure, used cooking oil, stale cookies and pig intestines.

A processing plan located on the outskirts of Kristianstad uses a biological process to transform the ingredients into biogas, and the gas is burned to create heat and electricity, or is refined as fuel for cars. Wood waste from the paper and wood industry, as well as tree prunings from its municipal parks are all collected and delivered to a heating plant.

Wood pellets used as fuel in Kristianstad

The wood by-products are mixed and formed into pellets, which could burn more efficiently than oil, coal and logs. They are burned to provide heat that is fed into an underground network of heating pipes. They warm almost all buildings in the area. These efforts have reduced the city's dependency on fossil fuel by half and reduced the CO_2 emissions by one-quarter in the last decade.

This has been such a successful innovation that homes in the region no longer use oil gas or coal for heating, while oil tankers now deliver wood pellets, rather than oil.

Paris, France

Paris is one of the cities that aims to be a green city by reducing its CO_2 emissions. This is being done by providing private car users with alternatives to switch to public transport. Within a radius of a few hundred metres, everyone can find an entrance to the underground, a rental bike and soon, a car for hire.

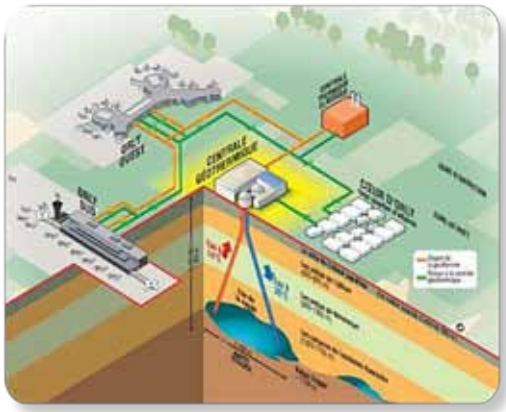
Bike rental stations have become a common sight in the city centre, as there is a bike for rent station every 300 metres. The Paris bike rental project, *Vélib,* sees 50,000 to 90,000 people getting around with rental bikes daily in the French capital. In the entire city and into the outlying districts approximately, 20,000 bicycles are available at 1,800 renting stations.

Another novel idea is to encourage city dwellers to share cars. This project, known as *Autolib* is underway in Paris, and there will be up to 5,000 electric cars available across 1,000 self-service charging stations located throughout the city. The concept of picking up from the hiring station and dropping off at any other station should encourage users as in the case of bike rentals.

Continued on page 10

From page 9

In Paris Orly airport, renewable energy is harnessed from Earth's natural heat in the form of underground geothermal energy. The airport is sitting on an enormous chamber of hot water located two kilometres under and the heat derived from it covers approximately 30% of the airports heating needs. This energy gives an equivalent replacement of approximately 4,000 metric tonnes of crude oil and CO_2 saving of 9,000 metric tonnes per year. Not only is geothermal energy efficient, it is environmentally clean and cost effective.



The underground geothermal energy reservoir of Paris

Antwerp, Belgium

Beginning 2010, all new and renovated flat roofs in Antwerp are required to have greenery. Many advantages are presented by these green measures such as a better living condition from insulation offered by the plants. Better insulation helps in reducing both energy consumption and noise level in the building. Besides, there is increased green recreational areas when the rooftop is utilised. For Antwerp, the rooftop full of plants is a good retention pond for rain water storage. This will reduce the risk of flooding in this flood-prone city.

Antwerp has successfully tapped into the potential of its landfill and turned it into a green power station, and this can be seen in the Hooge Maey station that served as a waste dump for household and industrial waste. The accumulated methane gas released from the organic garbage dump is captured and used to generate electricity. In addition, leached and contaminated water from the landfill undergoes cleaning in a processing plant before being released back to nature.

Zurich, Switzerland

Zurich has set itself some important targets for power consumption reduction by the year 2050, and this pledge is embedded in the city's constitution. The target is to reduce power consumption from 5,000 watts to 2,000 watts per capita, while CO_2 emission from 5.5 metric tonnes to 1 metric tonne. The framework has been set to make this successful through efficient technologies, economic handling of resources, renewable energies, and emphasis on eco-friendly homes for its residents.

Like many green cities around Europe, public transportation and walking is encouraged in Zurich which has seen a rapid expansion of dedicated bus lanes, bicycle lanes and foot paths. The city centre itself is accessible by foot, bicycle or public transport, as nearly 80% of the journey within the city's limits is done this way. Driving downtown has been made a hassle with exorbitant parking charges and limited parking spaces which has stimulated use of buses and train to commute.

Munich, Germany

Munich is focusing on the development of renewable energies, and its aim is to achieve production of enough eco-power in its own geothermal plants to support the entire city's consumption by 2025, as well as the neighbouring cities through eco-friendly long distance heating. This will make Munich the world's first city of a million residents to achieve this climate target. The Renewable Energies Development launched by the Munich Department of Works will supply sufficient power for all Munich households as well as the underground and street cars.

In terms of solar energy harnessing, the city seeks to increase the maximum performance of its photovoltaic plans from the current 20 to above 300 megawatts by 2030 through the Munich solar initiative. It is targeted that some 15% of households could be supplied by solar power by then.

Munich has also embarked on city bicycling and aims to increase bicycle traffic by another 20% by 2015. No wonder it has been dubbed the bike-friendliest city in Germany.

Oslo, Norway

Oslo aims to reduce its CO_2 emission in 2030 to 50% of 1990 levels. The city is promoting the expansion of long distance heating as well as a variety of energy efficiency projects. The current level of renewable energy usage is 65%, and Oslo benefits from the country's large hydroelectric power plants. The 'Oslo Renewable Energy and Environment Cluster' is based on Norwegian competence in clean technologies such as sun and wind power as part of the solution to the climate challenge.

As cars are the main contributor to the city's emissions of CO_2, Oslo developed an environmental zone for vehicles over 3.5 metric tonnes, and imposed a fee for users who are under Euro 4 in exhaust standard. The local public transportation has also being revamped by replacing old trains with aluminium bodied new trains powered by electricity which use 30% less energy.

Conclusion

There is a need for cities around the world to acknowledge and accept the need to go green. By setting targets to reduce energy dependence and increase environmental protection in a fixed time frame, it is easier for the people to gauge the effectiveness of the measures taken and revamp the unproductive actions.

In Malaysia, the adoption of such green practices is still at an early stage and the progress is rather slow compared to the European countries. Though such practices may require a new set of infrastructural investment and a strong will for lifestyle change, cities such as Kuala Lumpur and Penang would definitely benefit from the good quality environment and better living conditions that result from going green.

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Achieving Sustainable Rice Production

After the 2008 food crisis, 'food security' is a buzz word again in Malaysia after a comfortable food supply in the prior three decades. The definition of food security has undergone refinement since the last definition in 1983. The World Food Summit in 1996 defines food security as existing when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. In other words, food security is multidimensional in nature encompassing food accessibility, availability, utilisation and stability. For food security to exist, all the four components must exist simultaneously at a global, national, house and individual level. The definition is sharper now, but the challenges ahead have never been gloomier.

Status of Food Security

The Green Revolution (GR) of the 1970s developed new varieties of rice based on new genes for dwarfing that made high yielding varieties (HYVs) shorter, more responsive to fertiliser, and less prone to falling over or lodging when fertilised and irrigated. Subsequent varieties also carried genes that gave increased pest and disease resistance and improved taste and grain quality. By addressing the productivity issue and hence production, GR was instrumental in assuring 'security' of adequate rice to producers and consumers alike in the country.

Like in other parts of the world, the success of GR in Malaysia began with the realisation that investment in increasing agricultural productivity was a prerequisite to economic development including food security. This vision was translated into Research & Development (R&D) in rice productivity enhancement and infrastructure and institutional development by the public agencies. Private initiatives have been supportive in providing credit facilities and agribusiness functions. The move was proven right as indicated by the increase in productivity, farmers' income and consumer welfare.

Between 2000-2009, the government dished out RM9 billion worth of subsidies into the industry to achieve 65-70% self-sufficiency in rice production. The allocation for R&D was a meagre percentage of this value. As proven elsewhere, interventionist measures are distortive and economically inefficient besides the high budgetary burden to the government/tax payers. Despite all these, the strategy has been able to ensure a relatively stable supply of rice which is an important ingredient for social and political harmony in the country as rice is a staple food for the majority of its population. This trade-off is a costly one indeed.

The investment in food in general has reduced significantly as imports were much cheaper than if they were to be grown locally. Further, the implications of changes in the consumption sector have been overlooked by many. Food demand is influenced by population growth, urbanisation, income and associated changes in dietary preferences. As income grows, consumers are shifting their diet from largely dependent on rice to a more diversified diet comprising meat, milk, fruits, vegetables and processed foods. These needs are met through imports which are showing an increasing trend resulting in large deficits at about RM11 billion last year. In the last three decades, Malaysia's rice import has hovered around 30% of the local requirement without much progress. Of course, in the short term Malaysia has enough foreign exchange to import rice and other food items, but in the long term this strategy may not hold anymore. Without major breakthroughs, demand could easily outstrip the overly stressed supply sector.

Despite the successes, the downsides of GR are potentially serious. The technology developed in the 1970s may no longer be relevant in the current environment.

After four decades of GR application (with minimal modifications), the intensification of agriculture and chemical input use has led to environmental degradation, increased salinity, and pesticide misuse. In particular, the excessive use of pesticides is destroying the environment.

Lately, the frequent weather and natural hazards occurrence has made climate change an important variable in the supply equation. The GR has already run its course.

Resource Overuse

Evidence of resource overuse is no longer mere allegations. Rice production will have to address major challenges. Water will become a major constraining factor because quality and quantity of water will decline as a result of pollution, forest degradation, and increased agricultural, domestic and industrial use. Continuous urbanisation will lead to loss of paddy land to residential and industrial development and decline in the number of workers. Most paddy producers work on small farms. Overuse of chemical fertilisers and pesticides reduces soil fertility and water quality and harms the environment. Production increases will have to be achieved by increasing yields in a sustainable way to conserve diminishing and degraded natural resources. Thus increased rice production will have to be achieved by using less water, labour and cultivated land. This requires new varieties with high yield potential, water use efficiency and resistance to pest and diseases. These challenges have to be addressed by modern science such as biotechnology as the magic of old GR is on a down trend with diminishing returns.

To institute a radical change in rice productivity, a new green revolution is an imperative. It may be called "Green Revolution II" or Doubly Green Revolution as proposed by Gordon Conway and supported by Asian Development Bank. Whatever the name, the new wave of revolution must achieve a new objective this time, that is, agricultural productivity that is sustainable to the environment and mankind. And, it should start now.

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A National Framework for Responsible Rural Tourism Carrying Capacity

In line with Malaysia's goal to achieve high-income-nation status by 2020, the Tourism Transformation Plan 2020, with 12 New Key Economic Areas (NKEA) in the Economic Transformation Programme (ETP), has a bullish target to achieve 36 million tourist arrivals and RM168 billion (USD$48 billion) in tourism receipts by 2020 (PEMANDU, 2010). It is projected that by then, tourism will be the most important income contributor for the nation.

Status of Ecotourism and Rural Tourism

Under the big tourism umbrella, ecotourism and rural tourism has been growing at a rate of 30% per year and Malaysia is known as one of the best ecotourism destinations in the region. Nonetheless, in the last decade, the concept of ecotourism and rural tourism has melted into mainstream tourism to lose its distinctness (UNEP, 2010). The tourism industry's interest in appearing to be 'green' or 'sustainable' has increased in exponential proportions over the past year. Although tourism is a profitable business (if managed well), the industry is taking a toll on the environment (not to mention the social impact on the local communities). For many people today, going on a 'green-holiday' is an increasingly central feature of the travel patterns that has spread across the globe. Consequently, the tourism industry's growth throughout the years has created an increasing amount of stress economically, socially and environmentally as the carrying capacity of these destinations are not checked or adhered.

Hence, the development of sustainable rural tourism is dependent on fulfilling the objectives of all stakeholders in the system. The inter-relationships among the stakeholders must be fully identified since each stakeholder's needs may be different from the other. Thus, it is imperative to have a holistic understanding of the impact of these mega development plans on key natural destinations, i.e. ecotourism and small-medium enterprises that make up 75% of the tourism industry in Malaysia.

Moving Towards High-Yield Tourism

Thus, the Ministry of Higher Education Malaysia has funded a nation-wide study that is deemed essential for the rural tourism industry in Malaysia to move towards high yield tourism (see Box 1).

This ministry-funded study is segmented into two sub-programmes – Responsible Tourism Framework and Carrying Capacity Framework. These two frameworks address the three pillars of sustainable development - the economy, social and the environment (Figure 1).

Box 1: About the Research Study

This RM9 million national study is funded under the Ministry of Higher Education's Long Term Research Grant Scheme (LRGS) and is scheduled for completion in 5 years. The stakeholders for this collaborative interdisciplinary and multi-institutional study are the government, universities, NGOs and tourism professionals who will play a holistic role in sustaining the fragile rural tourism industry of Malaysia. The programme is led by Taylor's University, Malaysia with three other project leaders within the programme, namely Universiti Sains Malaysia, Universiti Teknologi Malaysia and Universiti Putra Malaysia. Other associate researchers working on this project come from Universiti Malaya, Universiti Utara Malaysia, Universiti Malaysia Sarawak, Universiti Malaysia Sabah, Universiti Islam Antarabangsa, Universiti Kebangsaan Malaysia and Universiti Teknologi MARA. The project will also work closely with Wild Asia, a social enterprise group specialising in responsible tourism, Ministry of Tourism, Malaysia and other foreign universities namely University of Surrey, Washington State University and Rikkyo University, Japan. The programme is expected to generate a working application that can transform the fragile rural tourism of Malaysia into a responsible and sustainable tourism subsector.

The Research Study

Objectives

1. To discover the various models used in economic, socio-cultural and environmental responsibility and carrying capacity in rural tourism destinations.
2. To develop appropriate economic, socio-cultural and environmental models to measure stakeholders' impacts on rural tourism destinations.
3. To investigate all stakeholder's perspectives on the economic, socio-cultural and environmental responsibility and carrying capacity in rural tourism destinations.
4. To develop economic, socio-cultural, and environment-responsible and carrying capacity indicators for rural tourism destinations.
5. To develop a tourism barometer to assess and monitor the economic, socio-cultural and environmental impact of rural tourism destinations using an integrated decision support system.

Sub-programme 1

For Sub-programme 1, the study seeks to develop the fundamental knowledge to understand economic, social and environmental responsibility, their indicators and models in ten rural tourism destinations selected as case studies to develop the management framework. All stakeholder's perspectives will be investigated using both quantitative and qualitative approaches. Based on this fundamental knowledge, a tourism barometer to assess and monitor the economic, socio-cultural and environment-responsible impacts of rural tourism destinations using an integrated decision support system will be structured. The new responsible model will ensure the optimal use of resources and simultaneously maintain the

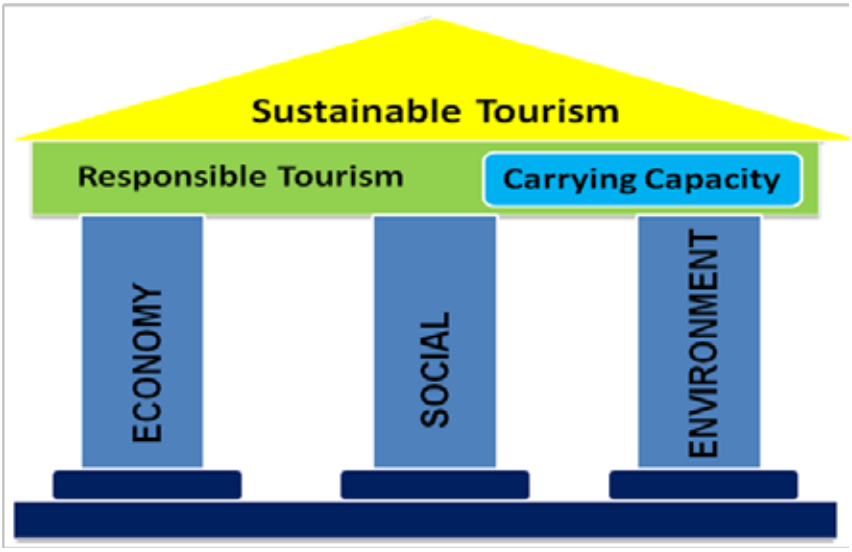

Figure 1: General project framework.

balanced ecological processes that can help in the conservation of natural heritage.

The fundamental indicators that will be extracted from the current practices will track changes in key economic, social and environmental components of the tourism industry, informing the achievements of the sustainability goals and measuring impacts of the tourism industry over time. These indicators will be used to measure the responsibility and sustainability of the rural tourism sites. Some examples of these indicators developed by Wild Asia to measure the commitment of stakeholders include commitment towards (i) supporting local development; (ii) respecting local cultures and sensitivities; (iii) staff; (iv) protecting rights of children; (v) protection of the environment; (vi) conservation efforts; (vii) efficient use of resources; (viii) responsible waste management; and (ix) responsible tourism. Only by being committed to addressing these issues can responsible tourism be achieved.

Sub-programme 2

For Sub-programme 2, the concept of eco-tourism carrying capacity serves as the main concept in a process of seeking (and selecting) 'appropriate' (desirable, acceptable and feasible) types of tourism development. Carrying capacity in the rural tourism context basically means the ability for a rural tourism site to accommodate certain numbers of visitors in a particular time before it creates a negative impact. Pulau Sipadan in Sabah is an example of what can happen when the number of tourists (scuba divers and snorkellers) exceeded the capacity for the regeneration of the corals (which was once regarded as one of the best in the world). Today, the local government has successfully implemented the maximun number that the island has the capacity to cope per day for diving. The local government has also shut down most of the hotel operators in the island, resulting mainly in day tripers.

Taking selected rural tourist destinations as main case studies, Sub-programme 2 investigates the physical environment and the socio-economic carrying capacity of these destinations. It seeks to define the indigenous concept of carrying capacity and to come out with the appropriate methodological framework, models and indicators for assessing physical and socio-economic carrying capacity.

As to how the two sub-programmes on Responsible Rural Tourism Framework and Rural Tourism Carrying Capacity Framework are bridged is shown in the conceptual framework of Figure 2.

Projects under the Sub-programmes

The two sub-programmes have been further broken down into six projects. They are as follows:

Sub-Programme 1: Responsible Rural Tourism Framework (RRTF)

Project 1: Socio-Cultural Responsible Rural Tourism Framework
Project 2: Economic Responsible Rural Tourism Framework
Project 3: Environmental Responsible Rural Tourism Framework
Project 4: Modelling and Management of Responsible Rural Tourism Framework

Sub-Programme 2: Rural Tourism Carrying Capacity Framework (RTCCF)

Project 1: Socio-Economic Rural Tourism Capacity Framework
Project 2: Physical and Environmental Rural Tourism Capacity Framework

The core studies in both the sub-programmes (Responsible Tourism and Carrying Capacity) will look at the three main dimensions or pillars of sustainable eco tourism – physical/ environment, socio-cultural and economics.

For the projects under Sub-programme 1 Responsible Rural Tourism Framework, dimensions investigated will include the environment, socio-cultural aspects and economics.

For the projects under Sub-programme 2 on Rural Tourism Carrying Capacity Framework, dimensions investigated will include socio-economic, physical aspects and the environment. Project 1 evaluates the threshold or the limit of acceptable change in the socio-cultural and economic activities of the local communities due to tourism development. While increased tourism activities can bring economic benefits, it will also create pressure on the environment, creating various environmental impacts. Project 2 analyses the physical impacts due to tourist activities and the limit of acceptable change that can take place. This project will propose various indicators of carrying capacity and the level of carrying capacity of the sites. Towards this end, the project will also formulate strategies and approaches to manage and increase the capacity of the local populations.

A tourism barometer will be developed to use the indicators conceptualised from the project as an integrated management system for evaluating and monitoring the status of all rural tourism sites in Malaysia. The tourism barometer will ideally be a real-time observatory centre that will monitor the environmental, socio-cultural and economic changes for both the human aspects (feedback from tourists, local communities, operators and local governments) and the science aspects (quality of the environment). The barometer can be pro-actively used by the enforcement unit in tackling any impact and degradation of any of these rural tourism sites. In short, the system will produce the 'report card' for each rural tourism site in the country.

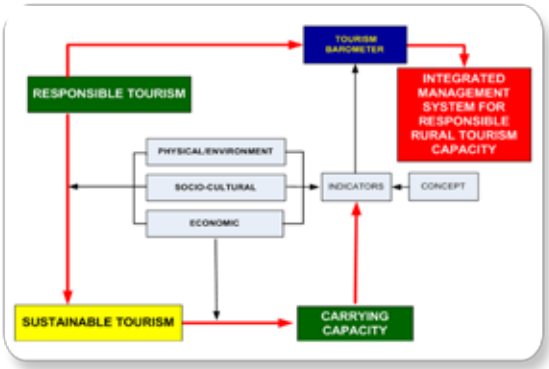

Figure 2: Bridging Responsible Rural Tourism and Rural Tourism Carrying Capacity Frameworks.

Conclusion

The six projects under the two sub-programmes will work hand in hand to achieve the common objectives outlined in the project. This fundamental study will play an important role in innovating new approaches by developing indicators to holistically measure the multi-dimensional relationships between different tourism models and the linkages to local economies and the environment in key natural and rural destinations in Malaysia. After all, if we do not conserve the nature, culture and attractions that tourists come to Malaysia for in the first place, there will be no tourism business in the future. The project will indeed contribute to developing a high-yield ecotourism industry. By having systematic management of all rural tourism sites in Malaysia which is one of the main pull factors for tourists to visit the country, the quality and management of these sites will be exceptional. Hence, we would be able to attract tourists that have high disposable income to experience rural tourism in its natural setting.

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Sustainable Forestry Practices in Malaysia

Malaysia is characterised as having one of the most forested lands among developing countries. According to available statistical data, 18.25 million hectares of its land area (55%) are under forest, of which 5.89 million hectares are located in Peninsular Malaysia, 4.30 million hectares in Sabah and 8.06 million hectares in Sarawak. (see Figure 1). Tree cover increases to almost 74% (24.31 million hectares) if crops such as rubber, oil palm, cocoa and coconut are taken into consideration. Other land usage amounts to 26%.

Of the total 18.25 million hectares of forested land, almost 80% (14.45 million hectares) are gazetted as Permanent Reserved Forests (PRFs) under the National Forestry Act 1984 (amended in 1993) and relevant Sabah and Sarawak's state enactments and ordinances. Another 1.36 million hectares outside the PRFs are gazetted as National Parks, Wildlife and Bird Sanctuaries under various legislations. These 15.88 million hectares are forests to be maintained in perpetuity by law. Within the PRFs, around 22% are designated as protection forest while the remaining 78% constitute production forest, where commercial harvesting of timber on a predetermined rotational cycle is permitted (Figure 2). Production forests in general represent more than half of the total forested area.

Figure 1: Forested land area in Malaysia

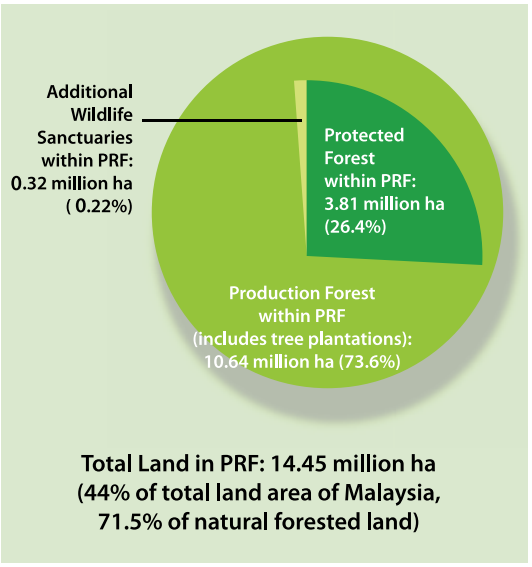

Figure 2: Land distribution within the Permanent Reserve Forest (PRF)

Trends of Forest Depletion and Conversion in Malaysia

According to the World Development Indicators, Malaysia has, on one hand only 0.2% of the land mass of the world, and on the other, has one of the richest biodiversity of fauna and flora in the world (second only to Indonesia in the South-east Asia region). In line with the Global Diversity Outlook, Malaysia is recognised as one of the 12 mega diversity countries in the world being the hosting ground to more than 170,000 species of fauna and flora. The wet tropical climate is conducive to species growth and evolution; there is a great diversity of ecosystems of seas, mangrove swamps, rivers, lakes, forests and mountains. South-east Asia's rainforests are believed to be the oldest ecosystems on Earth, at 70-100 million years old according to fossil records. The long standing tropical rainforests facilitate evolutionary diversification.

The species richness and endemism of Malaysia are of major global importance. Hence, it is not surprising that Malaysia has had a long and active involvement in conservation. The first forest reserves were set up in the 19th century and the first wildlife reserve in 1902. Taman Negara, the country's first national Park, was gazetted in 1938. Generally speaking, nearly all forested land is owned and managed by the government. Some of it is on State land, but most of it is contained within forest reserves that are managed by the respective Forestry Departments in Peninsular Malaysia, Sarawak and Sabah.

Past deforestation in the country can be attributed to development activities within the State land forest which is largely a result of urbanisation and agriculture expansion. Deforestation in Malaysia has since slowed, somewhat in tandem with industrialisation. On the other hand, commercial logging had resumed within the forest reserves and continued bringing in a significant source of income to the governing States. A scenario of continued exploitation of forest for timber means that one day (in future) most of the primary forests outside the protected areas may have been logged out; reducing and/or impacting its ecosystem values and functions.

Moving towards Sustainable Forestry Practices in Malaysia

Foreseeing the problems related to unsustainable forestry practices, current activities undertaken by Malaysia through its Regional Forestry Departments include economic analysis on reduced impact logging, review of forest charges, formulation of procedures and guidelines for forest resource accounting, and development of management options for recreational services provided by forests (Box 1). Malaysia also appreciates the role of co-operation and collaborative projects in the enhancement of sustainable forest management. There are a few bilateral collaborative projects with various international agencies that are currently being implemented in Malaysia.

BOX 1: SUSTAINABLE FORESTRY

Sustainable forestry is based on the idea that resource use should ensure that current and future generations have a functioning, resilient forest that can provide a wide array of benefits and resources. These benefits and resources are ecological (e.g., clean air and water), economic (e.g., fair price for the timber), and social (e.g., allow for transfer of land between generations). A healthy forest maintains and sustains its ecosystem. Indicators of healthy forests include biodiversity change, resilience (the ability to recover after a disturbance), diverse wildlife habitat, aesthetic appeal, and resource sustainability. But common problems faced by developing and developed nations are the lack of sustainability practices, assuring that resources are consumed in the most economic manner that minimises wastage.

Furthermore, to relieve pressure on over-harvesting the natural forests and the loss of biological diversity, Malaysia is promoting the involvement and investment of the private sector in plantation forestry by granting full tax exemption under Pioneer Status for ten years, or 100% tax exemption under the Investment Tax Allowance for five years. Privatisation of existing forest plantations is also encouraged, particularly in Peninsular Malaysia.

In Malaysia, there is separation of power in land matters. Under Article 74(2) of the Malaysian Constitution, forestry comes under the jurisdiction of the respective state governments. As a result, each state is empowered to enact laws on forestry, to formulate forestry policies independently and decide over the use and allocation of resources. Each state has its own forestry department and other institutions to implement forestry policies. Meanwhile the federal government's role includes the provision of advice and technical assistance to the states. In addition, the federal government has power to establish departments or ministries for resource conservation of national parks and wildlife sanctuaries as well as trade policies. The National Forestry Policy was introduced in 1978 and later updated in 1992, to provide direction on sustainable forest management and has been fully adopted by all states within Peninsular Malaysia. Sabah and Sarawak have adopted similar policies. Despite attempts to converge forestry laws, implementation and enforcement varies greatly amongst the states.

In 1998 the National Timber Certification Council (NTCC) was established and subsequently became the Malaysia Timber Certification Council (MTCC). Its mission is to develop and implement a national timber certification scheme to ensure sustainability of forest management and to develop and implement the standards related to timber certification. By the end of 2006, eight forest management units (FMUs) in Peninsular Malaysia and one FMU in Sarawak had been certified under the MTCC timber certification scheme. Sabah began experimenting with forest management certification in its model forest, the Deramakot Forest Reserve, which obtained certification in 1997 against the Malaysian Criteria and Indicators for Forest Management Certification (MC&I) and the Forest Stewardship Council (FSC) accredited Société Générale de Surveillance (SGS) QUALIFOR Programme. According to ITTO Report 2011, almost 5 million hectares of tropical forest have already being certified in Malaysia.

With timber certification, there is legality and acceptability that the product comes from a sustainably-managed forest. The Malaysian certification standards are based on internationally agreed criteria and indicators for Sustainable Forest Management (SFM). Malaysia is an active proponent of SFM and places great weight on the conservation and sustainable use of forest products, watersheds and water catchments with strong regard for the promotion of sustainable forest products such as herbal and medicinal products, ecotourism and bio-prospecting activities. Consequently, the National Physical Plan (NPP) 2005 - 2010 was adopted to further enhance integrated land use planning. The NPP envisages further development of capacity in environmental and natural resources management, methodology to improve land use planning and the use of hyper-spectral remote sensing technology. Other strategies include monitoring, management and protection of Environmentally Sensitive Areas (ESAs) and the use of Strategic Environment Assessment (SEA).

The latter is part and parcel of the ecosystem based (or sustainable) approach, which considers multiple uses of forests, based on values that ensure the long-term health of forest ecosystems and provide ecological, social and economic opportunities for the benefit of present and future generations (Box 2).

BOX 2: TREND OF FOREST MANAGEMENT OVER TIME IN MALAYSIA

Exploitation (after World War II)

Resources used as intensively as possible to provide the greatest profit to the user with no consideration for the sustainability of the wood supply.

Utilitarian (beginning late 1970s)

Sustained yield by managing the renewable resources so that they will never run out. Once a forest has been logged using clear cutting and/or selective cutting, the site must be reforested to provide timber for future generations.

Ecosystem Based or Sustainable Approach

Includes multiple uses from forest based on our values to ensure the long-term health of forest ecosystems that provides ecological, social and economic opportunities for the benefit of present and future generations.

Sustainable Forestry for the Future

The national income from utilising these natural resources have allowed Malaysia to develop both socially and economically. However, the country's excessive dependence and consumption of natural resources in favour of economic growth will lead to an economic meltdown when these resources are depleted. Malaysia has to wean off from its excessive consumption habits and learn to adapt a sustainable style of living, with a shift towards other sources of income generating activities, thus protecting our natural resources for future generations.

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Event Highlights

June 2011

The Sekolah Lestari-Environment Award 2009/2010 Ceremony

This award giving ceremony was held in conjunction with the 2011 World Environment Day (WED) Celebration, which was themed, "Forests: Nature at Your Service". Held on 16 June 2011 at SM St Michael, Penampang, Sabah, the ceremony was officiated by YB Tan Sri Datuk Seri Panglima Joseph Kurup, Deputy Minister of Natural Resources and Environment. About 500 people from different sectors, including school children, participated in this event.

The Sekolah Lestari Award for 2009/2010 went to SM St Michael, Penampang, Sabah in the secondary school category while for the primary school category, the award was won by SJK (C) Tung Hua, Sibu, Sarawak. Each school received a plaque and a certificate signed by the Minister of Natural Resources and Environment and Minister of Education and a cash prize of RM10,000.00.

Besides the award giving ceremony, several activities were held in the school to commemorate WED. These activities included the presentation of 20 bicycles to selected students who are Rakan Alam Sekitar members, a tour of the ongoing activities in the school, environmental exhibition and tree planting by some of the guests. The Department of Environment hopes to inculcate a sustainable living culture among the school community through greater participation of schools in this prestigious award.

June 2011

Workshop on ASEAN Eco-School Programme

This workshop, held from 26 to 28 June 2011 in Kota Kinabalu, Sabah was organised by the Department of Environment (DOE) in collaboration with the ASEAN Secretariat, ASEAN-US Technical Assistance and Training Facility and the Hanns Seidel Foundation. It was attended by 40 participants from all ASEAN Member States (AMS) except Myanmar.

The three-day workshop was organised to share information and take stock of the existing national eco-schools criteria/programmes in ASEAN countries and also to develop regional eco-schools criteria/programme based on the commonalities of the national criteria/programmes.

On the second day of the workshop, DOE organised a visit to SM St Michael, Penampang, Sabah which had won the Sustainable School-Environment Award 2009/2010. This visit gave the participants a clearer picture of the sustainable activities/programmes conducted in this award-winning school.

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