

Sustainable Development Indicator Initiatives in Malaysia - Novel Approaches and Viable Frameworks.

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ABSTRACT

Agenda 21 calls on countries, organizations and non-governmental organizations to develop and use indicators of sustainable development. In Malaysia, work on sustainable development indicators (SDIs) started in 1995 with work undertaken by the Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia which has since published four monographs on SDIs. While the work at LESTARI provided the conceptual-theoretical basis for SDI development, Federal and State government agencies (such as the Economic Planning Unit of the Prime Minister's Department, the Town and Country Planning Department of the State of Selangor), think-tank organizations (such as the Socio-economic and Environment Research Institute – SERI of Penang) and non-governmental organizations (such as the Environmental Protection Society of Malaysia – EPSM) developed more practical approaches. The EPSM initiative is especially relevant at the local government level. Others (e.g. Ministry of Housing and Local Government) commissioned commercial consultancy firms to develop sets of highly specific indicators of sustainability of development in urban areas. Even technical assistance programmes such as the Danish Cooperation on Environment and Development (DANCED) funded projects to develop sets of indicators to reflect sustainability. This paper describes these approaches and discusses their relevance, limitations and viabilities in the long-term in Malaysia.

1. INTRODUCTION

1.1 Agenda 21 calls on countries, organizations and non-governmental organizations to develop and use indicators of sustainable development. This was made in two chapters of Agenda 21, *viz.* in Chapter 35 (*Science for Sustainable Development*) and in Chapter 40 (*Information for Decision Making*). In Chapter 35, Agenda 21 notes that one of the roles of the sciences is to provide information to better enable formulation and selection of environment and development policies in the decision-making process. It recognised that it will be essential to enhance scientific understanding, improve long-term scientific assessments, strengthen scientific capacities and ensure that the sciences are responsive to emerging needs. Agenda 21 recommended that countries with the assistance of international organizations develop, apply and institute the necessary tools for sustainable development including developing quality-of-life indicators covering, for example, health, education, social welfare, state of the environment, and the economy (UN 1993).

1.2 While Chapter 35 addressed the role of the sciences, Chapter 40 focussed on the need to bridge the data gap. It was recognised that more and different types of data needed to be collected at the local provincial, national and international levels that would indicate the status and trends of the planet's ecosystem, natural resources, pollution and socio-economic variables. It was also noted that there was a general lack of capacity in many countries for the collection and assessment of data, for their transformation into useful information and for their coordination and dissemination. Agenda 21 recognized that commonly used indicators such as the gross national product (GNP) and measurements of individual resource flows do not provide adequate indications of sustainability. Methods for assessing interactions between different sectoral environmental, demographic, social and developmental parameters were not sufficiently developed or used. It noted that indicators of sustainable development need to be developed to provide solid bases for decision-making at all levels and to contribute to a self-regulating sustainability of integrated environment and development systems.

1.3 The initiatives taken by Malaysia in response to the needs identified in Agenda 21 as well as those identified through its own development planning and monitoring systems, namely the five-yearly Malaysia Development Plans and the longer-term Outline Perspective Plans, are many (Nordin 1998; Lestari, 1999). It included initiatives undertaken by the Federal Government of Malaysia (the central government), by the State Government of

Selangor and by non-governmental organizations. The approach adopted by each category of stakeholder was unique but appropriate to the mandate and *modus operandi* of the relevant organization. However the frameworks they developed were not always viable.

2. APPROACHES ADOPTED BY THE CENTRAL GOVERNMENT

2.1 Establishment of Environmental Statistics Section, Department of Statistics Malaysia

2.1.1 The establishment of the Environmental Statistics Section in the Department of Statistics Malaysia in 1998 was a crucial institutional strengthening initiative undertaken by the Federal Government of Malaysia, that was necessary towards enhancing national ability to assess progress towards sustainable development in Malaysia. The framework adopted for the development of the required environmental statistics by this new Section was based on the United Nations Framework for the Development of Environmental Statistics (UNFDES). These statistics will serve to address the need for information on two primary concerns of sustainable development *viz.* the depletion of natural resources and neglect of new scarcities, and degradation of environmental quality (Department of Statistics, 1998a). The conceptual framework follows the PSR (pressure, state, response) template developed and used in the OECD countries. With the establishment of the Section, the Department of Statistics became the central repository for all environmental statistics in Malaysia.

2.1.2 The first compendium of environmental statistics by the Department of Statistics Malaysia was published in conjunction with the establishment of the Environmental Statistics Unit in 1998 (Department of Statistics, 1998b). The activity to produce the compendium was undertaken with support from a technical assistance grant from the Asian Development Bank (Regional Technical Assistance No. 5555 – Institutional Strengthening and Collection of Environmental Statistics in Selected Developing Member Countries). Initially it focussed on four main environmental issues *viz.* air/atmosphere, water/aquatic environment (inland and marine), land/terrestrial environment and urban environment/human settlements.

2.1.3 The approach undertaken to develop the Environmental Statistics Section and to publish the Compendium on Environmental Statistics is largely central and traditional in

nature. It nevertheless takes advantage of existing infrastructure and requires minimal new investments. The activity is anticipated to be sustainable in the long-term. A reliable and lasting mechanism for the collection and deposition of environmental statistics is crucial for the development of a viable system of sustainable development indicators at a national scale.

2.2 The Malaysian Quality of Life Index

2.2.1 This indicator initiative was undertaken by the Economic Planning Unit (EPU), Prime Minister's Department of Malaysia which is the central government agency that has ultimate responsibility for national development planning and coordination in Malaysia. It produces the highly regarded five-year development plans (The Malaysia Plans) and determines major policy directions for the country as a whole. It first published the Malaysian Quality of Life Index (MQLI) in 1999 (Economic Planning Unit 1999). The initiative took almost two years of preparation. The preparation of the MQLI coincided with the call in Chapter 35 of *Agenda 21* "...that countries with the assistance of international organizations develop, apply and institute the necessary tools for sustainable development including developing quality-of-life indicators covering, for example, health, education, social welfare, state of the environment, and the economy".

2.2.2 The MQLI was prepared without external assistance. It is a composite index that aggregated indices for 10 variables (see Table 1) spanning a 19-year period (1980-1998). The year 1990 was demarcated as the base year for comparisons.

2.2.3 The MQLI and its component indices provide a means of tracking progress towards development that is economically sound and sustainable in a broad sense. It relies on data routinely collected and published by the Department of Statistics Malaysia, the Department of Environment Malaysia and by other government departments. The MQLI report is accompanied by technical notes that explains the way data is used to calculate the indices. The process is thus relatively transparent. The approach in the development and publication of the MQLI is rather traditional in nature. It was primarily undertaken by the EPU without public or multiple-stakeholder participation. The next MQLI report will be published in the first quarter of 2002 (EPU personal communications).

3. SECTORAL APPROACHES BY CENTRAL GOVERNMENT AGENCIES

3.1 Federal Town and Country Planning Department

3.1.1 The Federal Town and Country Planning Department (TCPD-F) is responsible for physical planning at the national level. Although its mandate encompasses entire states they have the most relevance in urban areas and policies they adopt can influence rather significantly, the patterns of urban development in Malaysia. It has offices in the States of Malaysia and the Federal Town and Country Planning Act has been adopted, largely *in toto*, by the state legislatures. In this way there is some uniformity between states in physical planning policies and their implementation. The conceptual and theoretical basis of indicators of sustainability in tropical cities was reviewed recently by Peterson, Sham and Nordin (1999).

3.1.1 The TCPD-F is developing urban sustainability indicators based on information gathered from five cities (Georgetown, Kuantan, Kuching, Batu Pahat and Pasir Mas) of varying achievements and urban densities from plans originally developed in 1998 (Zainuddin bin Mohammad 1998). Georgetown has been identified as one of the most livable cities in Asia. It is also a heritage city. Kuantan is run by one of the few Municipal Councils in Malaysia that is ISO9002 certified, while Kuching is one of the most beautiful low density city in Asia. Batu Pahat and Pasir Mas were chosen to represent cities that are less developed in terms of supporting infrastructure and social amenities.

3.1.2 A total of fifty urban sustainability indicators in 11 categories of activities have been selected and are being tested (Table 2). Data for these indicators were obtained from existing sources in all relevant government agencies including state and local government agencies.

3.1.3 Early impressions of the viability and success of this initiative is published in Sham Sani (2001) who views its achievements as “a mixed bag”. Not all indicators could be constructed easily. Absence of readily available data and the need to re-sort and re-calculate values were cited as some of the more common impediments to a successful initiative. It should be noted that this indicator initiative is a study and it has yet to be put into practice and replicated at the national scale, should it be decided that the framework is the appropriate framework to adopt in monitoring progress towards sustainability in urban areas. The list of

indicators is still being reviewed and modified and the final outcome of the study has yet to be published.

3.2 Other Sectoral Agencies

3.2.1 The Department of Environment of the Ministry of Science, Technology and Environment Malaysia produces an annual state of the environment (SOE) report that has increasing relevance as SDI literature. These reports are valuable in tracking progress towards sustainability especially in relation to environmental degradation. Similarly, annual reports produced by the Federal Department of Forestry, Drainage and Irrigation Department and by several other government agencies contain information relevant for tracking progress towards sustainable development in sectoral terms. These range from information on changes in the pattern of health and diseases, characteristics of the labour market to information on trade and economic statistics published by the Central Bank of Malaysia. In many ways the information these sectoral agencies publish are relevant to initiatives to develop SDIs in Malaysia. Although these agencies deposit data in the central repository of data at the Department of Statistics Malaysia, there is no common framework that seeks to unify sets of information into a coherent whole that specifically relate to any of the frameworks for developing SDI suggested by international agencies such as the United Nations.

3.2.2 A potentially viable framework for SDI development that would take a holistic approach was suggested to the EPU in 1999 (LESTARI, 1999a). The framework consisted of indicators of economic sustainability, environmental and resource sustainability, social sustainability and legal and institutional sustainability. It was envisaged that a national working committee consisting of all relevant central government agencies will be constituted under the guidance of the EPU and contribute data for the construction of the the initial set of SDI for Malaysia. The set consisted of a total of just 25 indicators, 7 for economic sustainability, 14 for environmental and resource sustainability and 4 for social sustainability (see Table 3). Indicators for legal and institutional sustainability had yet to be identified but it was recognised that there was a need to move decision-making process and procedures from traditionally narrow sectoral approaches towards greater cross-sectoral co-ordination and co-operation (Lestari,1999a).

4. A HOLISTIC APPROACH BY THE STATE GOVERNMENT OF SELANGOR

4.1 The state of Selangor is the most developed state in Malaysia. It aims to achieve the status of a developed state with an income per capita of not less than RM20,000 by the year 2005. Development planning in Selangor is co-ordinated by the State Planning Committee (SPC), a multi-sectoral committee chaired by the Chief Minister. Its Secretariat is within the Selangor Town and Country Planning Department and its members are drawn from key state government agencies *viz.* the State Secretary, State Financial Officer, the head of the State Planning Unit and selected members of the State Legislative Assembly. Heads of Department of all state agencies and Federal agencies operating in the state attend all meetings of the SPC but are not themselves members. The Director of the state Town and Country Planning Department is the Secretary to the SPC.

4.2 In 1998 the State commissioned a suite of studies aimed at shifting the development paradigm in Selangor towards that of sustainable development. Phase one of the study involved the determination and inventorying all environmentally sensitive areas (ESA) in Selangor (LESTARI 1999b). A strategy for sustainable development was developed in the second phase (LESTARI 2000). In the third and final phase of the study, an action plan for sustainable development in Selangor known as *Agenda 21 Selangor* was developed (LESTARI 2001), along with pilot studies at two municipalities for developing *Local Agenda 21* plans in each municipality. Chapter 12 of *Agenda 21 Selangor* addresses the issue of sustainable development indicators. A conceptual framework as well as an implementation plan was described in considerable detail in this chapter (LESTARI 2001).

4.3 An initial set of 103 indicators of sustainable development was developed in consultation with all major stakeholders from the public, private and NGO/CBOs communities in Selangor. Of these 14 were indicators of economic sustainability, 16 for environmental, 11 for natural resource and 52 for social sustainability (see Table 4). The time frame required for the development of each indicator was given as short- (immediate to 3 years), medium- (3-5 years) or long-term (5-10 years) prospects. Indicators of social sustainability was given emphasis as it was perceived that continual social adaptation and reduction in the development and manifestation of negative social trends within communities were crucial in making progress towards sustainable development in Selangor.

4.4 Institutional and procedural changes are being instituted in Selangor to enable the implementation of a proposed monitoring programme to track progress towards sustainable development using SDIs. This consists of the establishment of a state-level Sustainable Development Unit (SDU) within the office of the State Secretary. All state level government agencies will establish Sustainable Development Units that will serve to coordinate all programmes, projects and activities towards the achievement of objectives designed to make development more sustainable. They will produce annual sustainability reports with indicators that will be submitted to the State SDU. All local authorities will similarly establish sustainable development units and report annually to the state SDU. The State SDU will be primarily responsible for developing and using indicators relevant for monitoring three key elements in sustainable development in Selangor *viz.*:

1. the sustainability of all ESAs (environmentally sensitive areas);
2. the build up of human resource capacity within the state government SDU, its agencies and local authorities capable of implementing sustainable development strategies, plans and projects as outlined in *Agenda 21 Selangor*; and
3. a set of key thematic indicators of sustainable development relevant for overall monitoring of progress towards sustainability in the State of Selangor.

In the process, the participation of all relevant stakeholders will be sought through multi-stakeholder workshop sessions. In developing a holistic view of progress towards sustainability in Selangor, the state SDU will collate all indicators sent in by the state government agencies and local authorities with its own sets and produce and publish an annual report on sustainable development in Selangor. The report will be issued by the office of the State Secretary, on an annual basis.

5. INITIATIVES USING BOTTOM-UP APPROACHES

5.1 The Sustainable Penang Initiative is a pilot “community indicators project” coordinated by the Socio-economic and Environmental Research Institute (SERI) of Penang. SERI is an NGO that serves a “think tank” for the State Government of Penang in Malaysia.

The project was supported by the Canadian International Development Agency (CIDA) and endorsed by the UNDP and UN ESCAP. Its aimed to establish a broad set of indicators to monitor development in Penang. It was also envisaged that these indicators will be used in integrated development planning and to educate the public about sustainable development and the ways by which it could be achieved. The project involved people from many walks of life including staff of state government agencies and local authorities, state assembly representatives and parliamentarians, business community and industrialists NGOs and community-based organisations, academics and concerned individuals.

5.2 A comprehensive report was produced that elaborated on the five key elements of sustainable development *viz.* ecological sustainability, social justice, economic productivity, cultural vibrancy and popular participation (see <http://www.seri.com.my/spi>). It identified indicators on the environment (14 indicators), community well-being (12 indicators), economy (6), culture (4) and participation (4). Being people oriented, it also produced a “people’s report card” on 40 issues of concern to the people of Penang. These included matters related to the economy, environment, community, culture and participation. Very little is known as to whether the indicators examined in the Sustainable Penang Initiative ever became incorporated in development planning and management in Penang.

5.3 Other “bottom up” approaches had narrower focus. For example the Petaling Jaya Local Agenda 21 project confined its activities on security in local neighbourhoods and recycling of domestic solid waste. It is not known that the project developed indicators of sustainable development that reflected the holistic approach that is required for achieving sustainable development.

5.4 In the city of Kuching in Sarawak, a sustainable urban development project undertaken with the guidance of the Natural Resources and Environment Board of Sarawak, was also narrowly focused on indicators for urban waste and for water quality in the Sarawak River especially in stretches that passes through the city of Kuching. Although these narrow use of indicators contribute to the assessment of sustainability of the particular systems they represent, it is unlikely that on their own they can reflect the sustainability of development at a larger provincial, state or national scale.

6. CONCLUDING REMARKS

6.1 Simple indicators can assist analyses of status and trends of single issues and sectors. However in planning for sustainable development, a holistic multi-sectoral perspective is required and is more apt. Decision-makers are becoming increasingly aware of the need to address the uncertainties and complexities of sustainable development more realistically. In order to do this, indicators must reflect the nature of relationships between disparate issues adequately.

6.2 Second generation sustainable development indicators are needed to enable adequate assessment of strategic performance towards sustainable development. The development of such indicators requires the participation of policy- and decision-makers, scientists and the knowledgeable public in a joint initiative that would result in better choices of indicators that capture the inter-linkages between sectors towards achieving national sustainable development targets. As in most activities, it would be desirable to start with relationships that are already well understood and for which some data are already collected on a sustained basis.

6.3 The development and use of indicators to assess progress towards sustainable development requires continual commitment and activities. In Malaysia this has been the role of government agencies working in isolation or as part of a larger group of government agency stakeholders. Even then success has been mixed and the publication of truly cross-sectoral integrated indicators such as the MQLI has not been as regular as one would have anticipated. A successful regional initiative on SDI would require the involvement of a strong anchor organization that has at its disposal sufficient financial and human resources to initiate and service the indicator initiative in the long-term. Any other arrangement will not be capable of producing a lasting impact.

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Table 1. Values of indices used in preparing the Malaysia Quality of Life Index (MQLI) and the MQLI for the years 1989 and 1998

Index	1980	1998	Change (%)
1. Income And Its Distribution	77.39	105.82	36.7
2. Working Life	106.13	118.94	12.1
3. Transport And Communications	87.36	112.78	29.1
4. Health	83.24	109.58	31.6
5. Education	85.97	117.31	36.5
6. Housing	90.52	107.72	19.0
7. Environment	103.86*	100.94	-2.8
8. FamilyLife	85.46	113.86	33.2
9. Social Participation	81.55	97.98	20.1
10. Public Safety	78.40	72.11	-8.0
MQLI	86.22	105.71	22.6

*1985 value

Source: Economic Planning Unit 1999

Table 2. List of indicators being tested in the JPBD-F sustainable cities project

Category	No.	Indicator
Demography	1. 2. 3. 4. 5.	Percentage of urban population Population density Proportion of population with tertiary education Population growth rate Dependence ratio of Local Authority
Housing	6. 7. 8. 9.	Ratio of house price to income Ratio of house rent to income Available floor space per person Rate of production of private dwellings
Economy	10. 11. 12. 13. 14.	Unemployment rate Employment growth rate Workforce Urban poverty Income distribution
Utility and Infrastructure	15. 16. 17. 18. 19.	Water use per 1000 people Water loss Flood affected areas Total solid waste Number of houses connected to central sewage system
Social Amenities And Recreational Facilities	20. 21. 22.	Hospital beds per 1000 people Recreation areas per 1000 people Number of pupils per teacher in primary schools
Environment	23. 24. 25. 26. 27. 28.	Yearly allocation for environmental-health-sanitation (%) Astma cases per 1000 persons Yearly allocation for landscape and tree planting activities River water quality above preset thresholds Total solid waste recycled Number of complaints from noise disturbance
Sociology and Social Impacts	29. 30. 31. 32. 33.	Poverty Health Crime Divorce cases per 1000 population Social deviance
Land Use	34. 35. 36.	Plan approval time Area of stateland available for public amenity development Number of residential homes in city centre (%)
Urban Form and Heritage	37. 38.	Area of city allocated for beautification programmes Area allocated for conservation
Transportation	39. 40. 41. 42. 43. 44.	Number of students cycling to schools Percent of public transport users at peak hours Area allocated for foot paths and cycle lanes Number of SOV in city centre during peak hours Number of vehicular accidents per 1000 population Time used in commuting to workplace

Management and finance	45.	Local Authority revenue per person
	46.	Percent revenue collected
	47.	Level of cash flow for emoluments
	48.	Capital expenses per capita per annum
	49.	Population to staff ratio at local government level
	50.	Local Authority operating cost per capita

Modified from Sham Sani (2001)

Table 3. Potential indicators for inclusion as sustainable development indicators for Malaysia developed for the EPU's consideration

Sustainability Category	Element	Descriptor	Indicator
Economy	Income measure	Adjusted net domestic product	Time series of ANDP and GDP
	Genuine savings	Environmentally adjusted savings	Time series of GS as % GDP
	Sustainable timber yield	Timber resources	Stock and g, Regeneration rate
	Maximum sustainable yield	Fisheries resources	Stock and g, Regeneration rate
	Resource rents for oil and gas	Oil and gas resources	Stock and depletion allowance
	Income distribution	Income inequality	GINI coefficient
	Expenditures on environmental improvement	Expenses in preventive maintenance, mitigatory and replacements	Expenses on environmental improvements VS annual budget
Environment and Resources	Air quality	Air pollution	Air pollutant index
	Ozone depletion	Ozone depleting substances (ODS)	Progress in ODS phase-out
	Greenhouse gases	Change in emission in a period of time	Trends in emission of greenhouse gases
	Emission of SO _x and NO _x	Change in emissions over a period of time	SO _x and NO _x emission intensities
	Land availability for food production	Agricultural land	% agricultural land for food production VS total land area
	Environmentally safe agricultural practices	Use of fertilizers and pesticides	Extent of fertiliser and pesticides use per unit amount of produce
	Solid waste disposal	Recycling, collection, safe disposal	Solid waste recycling programmes, waste generated and collected, waste disposed in sanitary landfills
	Safe hazardous waste handling	Hazardous waste treated of amount generated	% treated VS generated
	Fresh water quality	Number of clean rivers	Extent of clean rivers

	Renewable energy	Sustainable energy use	Renewable energy VS total energy use
	Mangrove deforestation	Rate of loss	Loss of mangroves VS mangrove area in baseline year
	Cover of forest area	Area of forest cover	Forested area VS total land area
	Biodiversity protection	System of protected area	Totally protected area VS total forest area Vs total land area
	Public transport	Usage of public transport	Passengers in public transport VS in private transport
Social	Population distribution	Trends in urbanization	Urbanization rates
	Wealth distribution	Incidence of poverty and hard-core poverty	Poverty rates
	Spending on education	Improvement in tertiary education	GDP spent on tertiary education
	Public security	Incidences	Theft and burglary rates

Source: LESTARI 1999a