

Perspective of Sustainable Development in Malaysia

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Abstract- Malaysia is a country which has ratified Kyoto Protocol and has decided to be a developed country by 2020. Therefore, it needs to fulfill the requirements of being a developed country, not only in economic and technology aspect but also in different aspects of sustainable development. Very few studies have been undertaken to show the efforts and initiatives of Malaysia in the realm of sustainability. This study has tried to explore Malaysian efforts and initiatives and find its relevance to sustainability through utilization archival method. It has also proposed a solution to foster the progress towards incorporating sustainability in Malaysia. The result will throw lights for the academicians and policy makers who are working on sustainability topics.

Keywords- Sustainable development, Universities, initiatives, Malaysia

I. INTRODUCTION

Extreme capability of humankind to change has caused numerous ecological, economic, and social systemic perplexities [1]. One of these changes is environmental degradation, which is the major driving force behind social transformation. Social change, in terms of population growth and changing consumption pattern, have amplified the degradation and depletion of resources, society problems, and economical challenges [2]. Throughout the history, two groups of people are constantly in conflict with the allocation of resources. On one side, there are the technocrats, economists, and optimists who champion the need for development. On the other side, there are environmentalists, who stress on conservation of environment [3]. The latter put paramount importance on the environmental constrains to guide development whilst drastically argue against the idea of first group, which imparts the possibility of overcoming resource depletion by imposing suitable policy and technology. Finally, the world reaches to this scientific consensus that the damage of human kind over resources and ecological effects could lead to unacceptable resource depletion and a bridge should be established between environmental concerns, social and economical development [4].

These challenges have led to the evolution of a new concept that is called Sustainable Development (SD). This new concept is a vague concept that is being interpreted differently in different places. This word has different

meanings based on different people's mindsets, in which individuals may conceive it based on their knowledge, background, experience, perception, values and context. This concept is elaborated in various definitions that sometimes skew towards institutional preferences[5].

The concept of SD embeds social, economic, and environmental subjects[6]. This topic is defined as a kind of development, which meets the needs of the present without making limitations for future generations needs[6]. This definition emphasizes on two key words namely "needs," and "limitations." It delineates the eradication of poverty, employing environmental improvements, and social equitability through sustainable economic growth.

The United Nations General Assembly In the last month of 2002 proclaimed a programme namely the UN Decade of Education for Sustainable Development (ECD) [7]. EDC is scheduled between 2005 to 2014 to foster the concept of Sustainable Higher Education (SHE) through the medium of higher education institutions[8]. However, there is no study that shows the efforts and initiatives of sustainable development and SHE in Malaysia for the past 20 year. This paper aims to highlight Malaysia sustainable development initiatives in two aspects of micro scale and mega scale for portraying the need of a local level assessment approach. It discusses Malaysian sustainable development efforts and initiative. It starts with Malaysia's specifications. It additionally illustrates the specific status of Malaysia and its history, sustainable initiatives and efforts. In this regard, the paper highlights, Malaysia National Policies on biological diversity, Malaysia Vision 2020 and the Ninth Malaysia Plan (2006- 2010). This study covers local sustainable assessment approaches, which assess the sustainability of micro scale and mega scale. The necessity of having a local level assessment approach concludes this paper.

II. SD DEFINITIONS

Refraining the researchers from skewing from the main objectives of SD requires understanding of the meaning of SD deeply. However, SD is an intuitive concept and it is very hard to be defined as a concrete and explicit definition. The issue is that, there are more than 70 various definitions and interpretations sharing the core concept of the WCED's Sustainable Development [9]. Many scholars criticize the intuitiveness of SD definition and regard it as a theoretical construct rather than an explicit concept [9]. Besides, some

other scholars and scientists have criticized the vagueness and elusiveness of the concept of SD [9].

Nevertheless, some scholars believe that it is an excellent political strategy to define a vague concept that could bring consensus rather than a definitive concept, which brings disagreement [9]. Adams (2008) points out that the concept of SD becomes a cliché rather than a practical term [10]. Mebratu, (1998) declares that due to the vagueness of the concept of SD, there are three major following queries evolved;

1. What does SD mean for each specific community?
2. How can one put SD in implementation?
3. How can SD be monitored and assessed?

Therefore, there are some questions about how do we interpret SD, how do we implement SD and finally how do we sustain it.

Despite all different definitions, SD throw insights on human wisdom and have been a major factor in combating the current environmental, social, and economic crises. The most popular definition of SD is Brundtland's definition (1987) which was explained earlier [9]. Pearce *et al.*, (1989) depicts it as a development which involves devising a social and economic system integrated with environmental concerns [9]. SD is realizing the resource potentials is a society development where the costs of development are not paid by the future generations [9]. Mills (2005) defines it as a development that maintains the development but employs technological innovations to improve efficiency and changes people's practices [11].

The University of North Carolina's sustainability office defines SD as deciding and investing in a way that advance economic vitality, ecologic integrity, and social welfare [11]. These definitions differ from each other based on the orientation of each scholar which is towards social, environment or economic. In Malaysia, setting a unique definition of SD has always been regarded as a challenging issue where there are not a compromise between different actors of Malaysian society such as legislature institutions, business and public sector agencies organizations and the public [12]. However, there is a common core concept about SD, which depicts it as a subject that is often set within a life cycle perspective in development, practice, assessment, and maintenance.

The 'Triple Bottom Line' (TBL) Theory is another SD related theory which is very famous in this realm of study [13]. In practical terms, this theory means including ecological and social performances, in addition to financial performance, particularly organization [13]. It could be generalized to Higher Educational Institutions as well. In other words, it imparts that a development is considered as Sustainable Development, which simultaneously contains all three pillars of Sustainable Development, namely Social Development, Economic Development and Environmental Development, or considers the phrases - "people, planet, profit" [13]. This theory is influenced by a famous urban planner, i.e. Patrick Geddes's notion of 'folk work and place', which is the goal of the Sustainable Development.

III. HISTORY OF SUSTAINABLE DEVELOPMENT

In order to understand a phenomenon, it is recommended to study its history and investigate theories that have emerged in this process. The emergence of the SD goes back to old human religious beliefs whereby conservation of resources, and strive for social and economical equity are demonstrated as the duties of faithful people. Historians and Sustainable Development scholars such as Mebratu have described the history of SD in three following eras namely:

1. Pre-Stockholm,
2. from Stockholm to World Commission on Environment and Development (WCED),
3. from 1987 to 2010 or Post-WCED [9].

The history of Sustainable Development embeds deeply in religious beliefs and orders where, humankind were taught to conserve air, land, water, and other living beings as well as strive for just adequate economic needs of the life and good social interactions [9]. For instance, Judeo-Christian explanation about "man's right to master the Earth" is an old religious document in the western societies, which deals with Sustainable Development and beliefs of people. Islam, on the other hand, has strongly emphasized on usage of resources in a sustainable style such as the messages in verse 32 of Aalaraf, and verse 87 of Almaedah in holy Quran. Several environmentalists who had the religious background have emphasized on the sustainable-minded passages in classic Judaism and Christianity books too [9]. Some historians believe that the essence of Sustainable Development in community life even goes earlier than any religious evolution. For instance, Hawaiian nomad tribal community think that humans and nature are integrated where the entire world is as alive as human beings are. In the African nomad tribe's beliefs, the globe is a cycle where the events come and go in the form of minor and major rhythms [9].

The former is found in humankind, animals, and plants, in their birth, and death and the latter is the events of nature, which come and go and are interrelated to each other. In primitive communities, circles are used as a symbol of Sustainable Development and eternity in which human is not the master of the world but human is the centre of a harmony of universe surrounded by nature [14].

All indigenous people, in different time era, believed in the requirement of communication with nature. Indigenous tenet of social life being in harmony with nature is one of the main pillars of the concept of Sustainable Development [9]. The interesting subject is that all those religions and beliefs were the result of many years experience, in which nature taught humankind's life is meaningless without sustainability.

IV. BACKGROUND OF MALAYSIA

Great Britain establishes colonies in part of South East Asia, which are occupied by Japan from 1942 to 1945 in the

place of current Malaysia [15]. In 1948, it is converted to Federation of Malaya by Great Britain. In the 1957, country announces its independence and in 1963, it is renamed to Malaysia when the Singapore, Sabah, and Sarawak join the Federation. Malaysia experiences a great development and diversifies its economy in manufacturing, services, and tourism, particularly after 1981. Malaysia is regarded as one of the most popular mega diversities of the world in which has been accorded number four behind China, India, and Indonesia [16].

Geography and People of Malaysia

Malaysia is a country with two geographical regions, which one of them is the Peninsular Malaysia, and the second one is the East Malaysia or Sabah and Sarawak. It is located in Southeast Asia consisting of thirteen states [17].



Figure 1 Geography of Malaysia

Malaysia has many different ethnic groups. According to statistical websites and the Department of Statistics Malaysia official website [18], the population of Malaysia is 28.4 million. Based on the world fact book [19], the proportions are; Malay (50.4%), Chinese (23.7%), indigenous (11%), Indian (7.1%) and others (7.8%). The details of racial dispersion are presented in figure 2. The age structure in the country is 0-14 years: 31.4%, 15-64 years: 63.6%, 65 years and over: 5% [19]. This age structure indicates that a sizable population of Malaysia is young and might be potential users of Higher Educational Institutions.

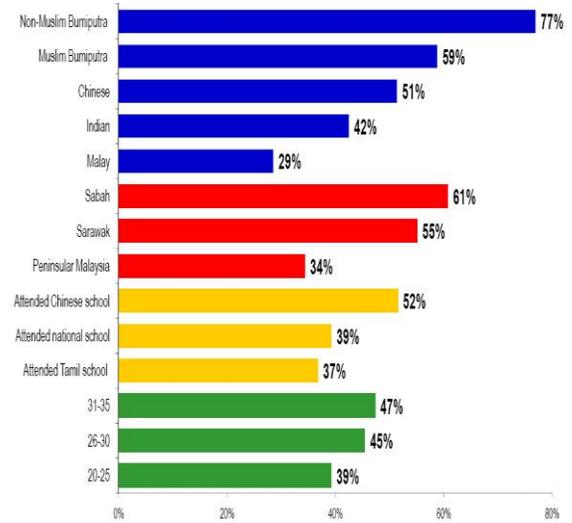


Figure 2 Racial Dispersion in Malaysia

V. SUSTAINABILITY IN MALAYSIA

According to the Ninth Malaysia Plan, 9MP, Sustainable Development in Malaysia has always been considered adequately and made the country be ranked with regard of environmental sustainability 38th among 146 countries worldwide, and the second in Asia with regard to environmental sustainability. In addition, an Environmental Performance Index Study ranked Malaysia as the ninth among 133 countries based on the efforts taken to reduce environmental stress on human health and ecosystem protection vitality. In the 9MP in line with the ninth principle of Islam Hadhari, environmental stewardship continues to be promoted to ensure that the balance between development needs and the environment exist. In Malaysia environmental strategies are also altering from remedial towards sustainable orientation approaches. Environmental programmes are being encouraged to integrate rural and squatter areas management.

Malaysia such as many other developing countries faces conflict between economic growth and conservation of environment [20]. However, it has recognized the concept of sustainable development and has embedded this concept in its policies, vision, mission, and plans [21]. Malaysia is also very active in international sustainability activities, which have been reflected by its participation in the 13th session of the commission on sustainable development in New York in 2005 [21]. Malaysia has also incorporated the principal of Agenda 21 as one of the important sustainable development documents in its planning process [20]. The following sections will explore some of the initiatives of sustainable development in Malaysia.

Ninth Malaysia Plan and Sustainable Development

Ninth Malaysian Plan or “Rancangan Malaysia ke-9” is a planning blueprint of Malaysia, which approves by the Malaysia government from the year 2006 to 2010. This comprehensive blue print covers the budget allocation of

Malaysia in different sectors as well as main policies of Malaysia. According to 9MP [22], Malaysia is a country that has considered sustainable development in its policies. Besides, an Environmental Performance Index Study ranks Malaysia, ninth among 133 countries based on efforts taken to reduce environmental stress on human health and ecosystem protection vitality [22]. However, there are three main pressures threaten Malaysia; that is land-use change, pollution, and introduction of exotic species, which may lead to be future un-sustainability [16]. In the Ninth Malaysia Plan, in line with the Ninth Principle of Islam Hadhari environmental stewardship is going to be continued and promoted by the government to ensure that the balance between development needs and the environment exist.

Malaysia's National Development Policy

Malaysia's National Development Policy is a main governmental policy, which focuses on programmes aimed at eradicating poverty. These programmes are integrated into the national planning process when the Sixth Malaysia Plan [23]1991-1995 was reviewed in 1993. Malaysia's National Development Policy is to maintain economic development but implement environmental and social consideration, which roots in the philosophy of sustainable development. This policy target promoting economic, social, and cultural progress through sustainable development.

National Conservation Policy

Malaysia possesses a National Conservation Policy that has been formulated to function as a framework for natural resource development [21]. Efforts continue to be made to improve the balance between economic growth and environmental considerations. Greater emphasis is being given to incorporate environmental considerations into all aspects of planning and management. These considerations encouraged the writing of new governmental consideration with especial attention to sustainable development called Agenda 21.

Malaysia National Vision Policy

Malaysia has a National Vision Policy namely "Malaysia National Vision Policy" or "NVP", which is processed through the Third Outline Perspective Plan and has been defined for a time period of five years from 2001 to 2010. NVP has embedded the concept of sustainable development, which has been depicted in its second, fourth and last articles as;

1. Encouraging more equitable society, 2. Sustaining economic development, 3-Pursuing environmentally protection [24].

Malaysia Vision 2020 or "Wawasan 2020"

Malaysia has another landmark-planning concept entitled Malaysia Vision 2020 or "Wawasan 2020. "

The vision calls for converting Malaysia from a developing country to a developed country by 2020. The Vision 2020 calls for fully development not only in economic, but also in political, social, spiritually, psychological and cultural aspects [21].

Issues of SD Assessment in Malaysia

Although Malaysia has taken many initiatives and has addressed sustainable development in its policies and plans, there is a weakness in the realm of sustainable development, which has been cited frequently [25]. This shortcoming refers to intuitiveness of sustainable development definition, which makes interpretation of sustainable development and setting indicators a challenging process [25]. This weakness has been regarded as the absence of comprehensive approaches or frameworks and lack of sufficient sustainable development indicators.

VI. MALAYSIA SUSTAINABLE ASSESSMENT APPROACHES

Malaysian scholars and policy makers have recognized the importance of assessment of Sustainable Development, have taken some initiatives, and have adapted some tools and frameworks [16]. Frameworks and tools are mediums, which enable different institutions and organization, assess the level of sustainable development. Some examples of those assessment approaches are as follows:

Malaysia Quality of Life Index (MQLI)

MQLI is an assessment approach that has been developed by the Economic Planning Unit of the Prime Minister in 1999 [26]. MQLI was updated in 2004 and has encompassed 14 rubrics namely:

1. Air quality index, 2. Deforestation, 3. Clean water index, 4. Income, 5. Working life, 6. Transportation and communication, 7. Health, 8. Education, 9. Housing, 10. Environment, 11. Family life, 12. Social participation, 13. Public safety, 14. Culture and leisure [27].

This approach has viewed the subject in national level or mega scope level. Since the majority of rubrics are related to social, economic, and environmental sustainable development, it is considered a sustainable development assessment approach.

Malaysia Urban Quality of Life (MUQL)

Malaysia Urban Quality of Life is another assessment approach, which has been developed by the Economic Planning Unit of the Prime Minister in 2002 [28]. MUQL is similar to MQLI but its focus is mostly on four major Malaysia cities. This approach has 19 indicators and 14 rubrics namely:

1. Income, 2. Working life, 3. Transportation and communication, 4. Health, 5. Education, 6. Housing, 7. Environment, 8. Family life, 9. Community participation, 10. Public safety, 11. Culture and leisure, 12. Urban

service, 13- River quality index, 14- Solid waste per capita [28].

Although this assessment approach has used bar chart to compare the finding, which is more understandable, it covers limited subjects for environmental sustainability and is not comprehensive. This assessment approaches functions in city level.

Compendium of Environment Statistics

Malaysia Department of Statistics has proposed Compendium of Environment Statistics approach in 2001 aiming to present ongoing issues relevant to Sustainable Development to planners [25]. This approach embeds four rubrics namely; Air, Water, Land, Environment (inland and marine). This approach is very complicated and only focuses on environmental issues.

Malaysian Urban Indicator Network (MURNINet)

The Federal Town and Country Planning developed Malaysian Urban Indicator Network (MURNINet) for urban areas. It aims to test a set of urban indicators for moving the urban development towards Sustainable Development. This approach has 11 rubrics namely: 1. Land use, 2. Population, 3. Household, 4. Economic, 5. Social-economic development, 6. Infrastructure, 7. Transport, 8. Environmental management, 9. Local government, 10. Affordable housing, 11. Housing provision [29]. It is the first assessment approaches in Malaysia, which link indicators to benchmark [25].

Malaysia Sustainable Development Approaches at State Level

There are some state assessment approaches, which have been developed in the state level to track the Sustainable Development in different states. Sustainable Development Indicators for Selangor, Klang Valey, Regional Sustainability Quality of Life Index, Health Cities Indicators of Johor Bharu and Sustainable Penang Initiatives are among those approaches [28].

Green Building Index (GBI)

Malaysian experts embark to develop a local assessment tool in building level, which is called Green Building Index (GBI). The objective of development of GBI is to save energy, resources, recycle materials and harmonize the building with the Malaysia climate, traditions, culture and its environment as well as maintaining the capacity of the ecosystem at local and global levels [30].

Green buildings improve quality of life, says Chor

KUALA LUMPUR: The construction of environmentally-friendly townships and neighbourhoods is important to provide a high quality of life for the public, said Housing and Local Government Minister Datuk Chor Chee Heung.

He said the introduction of the Green Building Index (GBI) Township Tool and Residential New Construction (RNC) Tool (Version 2) was timely in achieving this goal.

"More than 150 projects have applied for GBI certification from the GBI Accreditation Panel and 20 of them have received the GBI provisional certification," he said at the launch of the GBI Township Rating Tool and RNC Tool (Version 2) here yesterday.

Out of the applications, 38% were new residential buildings and 60% new non-resi-

dential buildings with another 2% existing non-residential buildings.

Buildings will be awarded the GBI rating based on six key criteria – energy efficiency, indoor environmental quality, sustainable site planning and management, material and resources, water efficiency and innovation.



Figure 3: GBI improve quality of life

GBI contains six different rubrics, which are:

1. Energy Efficiency, 2. Indoor Environmental Quality, 3. Sustainable Site Planning and Management 4. Materials and Resources, 5. Water Efficiency, 6. Innovation [31].

GBI is an influential medium to promote Sustainable Development in the built environment. It aims to raise awareness among developers, architects, engineers, planners, designers as well as public and contractors regarding Sustainable Development.

VII. MALAYSIA UNIVERSITIES SUSTAINABLE EFFORTS

Majority of the campus users' needs, such as banking facilities, restaurants, swimming pool, sports complex, grocery shops, stadium, laundry, tailor shops, binding and photography services, mosque, clinic, and even petrol stations, as well as shopping malls, have been catered for inside the campus or places which can be reached in less than five minutes by cycling [11]. Even the hostels and different faculties have housed the essential needs of their users independently and it is common to see courts for various sports such as tennis, volleyball, and basketball, football fields, as well as laundry and grocery shops, cafés and restaurants, parks, and study areas provided at these hostels [11].

These Universities, by assisting students to organize different associations for foreign students, embarked to distinguish the different needs of their international students and provide them with special needs such as restaurants serving Middle Eastern food and delicacies. All these result in lesser need for transportation and lower Green Gas Emission (GGE).

Transportation service has been boosted by buying new shuttles and providing comfortable bus stops. Moreover, covered sidewalks are also provided, with more green plants grown to encourage students to walk. Gardens, parks

and ponds are specially designed and provided in campuses; these do not only refine the air and produce oxygen, but also provides a good habitat for different species and help biodiversity. These Universities have also planted trees and plants, and this leads to the formation of a unique flora and fauna which is aimed to use indigenous plantation and sustainable landscape. Moreover, the communication between campus users is sternly done via electronic, whereas most of the communications, from students to lecturers and staff (and vice versa), are done through email.

The assessment system and students' marks are done through the electronic portal which reduces the use of a lot of paper and thus helps conserve the environment. Every university has provided other facilities such as electronic system for campus users to transfer funds, pay tuition fees, water and electricity bills, purchase their daily necessities like telephone top up, books, etc. Sustainability issues have not been neglected in research and development of Malaysian Universities. However it has not been utilized in practice properly whereby despite of an abundance of renewable energy resources such as solar, wind, hydro and biomass, most of these renewable energy resources are not fully exploited [32].

Malaysia Higher Educational Institutions system has already recognized the concept of Sustainability in Higher Education whereby the pioneer Universities that function as the university leaders and research Universities have taken many sustainable initiatives. Although conducting a comprehensive study over all aspects of Sustainability in Higher Education in the mentioned Universities is not in the scope of this study, this part can throw some insight for grasping the existing situation of Malaysian Higher Educational Institutions in terms of Sustainability in Higher Education. The following section will describe these issues.

University Malaya Sustainable Initiatives

The most obvious Sustainable Development efforts are observable in Universities official statements such as vision, mission, and goals. UM's mission and vision are respectively to advance knowledge and learning through quality research and education for the nation and for humanity, and be an internationally renowned institution of higher learning in research, innovation, publication and teaching. University Malaya has 10 core values namely - integrity, respect, academic freedom, open mindedness, accountability, professionalism, meritocracy, teamwork, creativity, and social responsibility.

From the university's statement it is interpreted that the social aspect of Sustainable Development has been considered in university's mission and vision, which are reflected by emphasizing on humanity in UM's vision. One of the core values of the UM has been imparted as social responsibility, where its fourth clause is to respect to environment and Sustainable Development. University Malaya has included *Integrated Approaches to Sustainable*

Development Practice as one of its major policies. This university has joined *Global Classroom programme* that targets at helping to create bold new pioneers, by offering a Master's level course known as *Integrated Approaches to Sustainable Development Practice* which connects leading problem solvers with hundreds of graduate students all over the universe through web technology. Some programmes taught in University Malaysia, contains Sustainable Development issues. Bachelor of Environmental Engineering, Bachelor of Environmental Science and Management, Bachelor of Ecology and Biodiversity, are among the undergraduate programmes, which contain various topics on Sustainable Development.

In the post graduate programmes, Master of Safety Health and Environment, Master and PhD of Environmental Technology are other programmes which address Sustainable Development. *Centre for Research in Biotechnology for Agriculture* is a physical and virtual centre which teaches Sustainable Development issues and researches. UM has established the *Centre for Equatorial Sustainable Design* and the *Centre for Research in Biotechnology for Agriculture*, which aims at enabling researchers to better coordinate inter-disciplinary collaboration in the pursuit of sustainable research excellence, as well as offering distance-learning programmes. The designation of funds to students, such as various fellowships, scholarships and grants, are among some of the actions to move the Malaysia Higher Educational Institutions' community towards economic sustainability. Such fund allocated for the Post Doctoral research in Sustainable Development ranges from MYR66,000 to MYR90,000 annually.

This includes performing on-going research, which address the different installations of Sustainable Development, such as Sustainable Tourism Facilities on Eco-sensitive Sites in the Tropics, a PhD thesis, *Advocating for Barrier-Free Built Environment*, a funded research project, and *Eco-Literacy School Conservation*, Doctor of Philosophy in Environmental Conservation, Doctor of Philosophy in Environmental Management are some of the programmes which address Sustainable Development issues. Another financial example is the allocation of funds by Sime Darby, a private company, amounting to USD 830000¹ funding for Sustainable Development research. There are also local and international collaborations with other Universities to research on Sustainable Development, such as *Problem-Oriented Project Based Learning in Environmental Management and Technology* between Malaysia, Denmark and the Netherland.

In terms of operation, Recycle Project has been considered as an effective action of Sustainability in Higher

¹ USD 1= RMY 3

Education in parts of UM. Specific needs of the campus users based on their tastes such as the Middle Eastern restaurants have been established on the campus. This restaurant allows the sizable number of Middle Eastern students to cater for their favourite foods inside the campus without travelling and producing emissions of green gas. Parts of the lighting system at UM equip fluorescent lamps, which consume less energy and are efficient. Moreover, UM has attempted at conserving the energy use in its buildings using reflective colours in the facades to decrease the heating absorption.

UM campus not only has been covered by municipality transportation fleet but also by private shuttles with the aim to encourage people to use public transportation.

University Kebangsaan Malaysia Sustainable Initiatives

UKM has a Sustainable Development programme, i.e. Sustainable UKM Charter, which aims to step forward Sustainable Development. Some institutes, such as the Faculty of Science and Technology as well as other centres at UKM, are teaching and researching on issues related to Sustainable Development. The School of Environmental and Natural Resource Sciences is among the institute that has programmes, which entail Sustainable Development.

In particular, the Institute for Environment and Development (LESTARI) specially provides opportunities for students to carry out various researches pertaining to Sustainable Development. The main goal of this Institute is to fulfil the aspiration of the university, as envisioned by the United Nation's Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, i.e. to conceptualize the aim of Sustainable Development through research and capacity development. Currently, these are three main researches being focused on at this institute; these are Research Centre for Sustainability Science and Governance, Research Centre for Environmental, Economic and Social Sustainability and Langkawi Research Centre.

For instance, LESTARI embeds a variety of topics, comprising of five sub-groups related to Ecosystem Studies, Sustainability Assessment and Planning, Urban Ecosystem Sustainability, Malaysia Mountain Ecosystem Research Initiatives, and Malaysian Network for Integrated Management of Chemicals and Hazardous Substances for Environment and Development. Lake Chini Research Centre, which researches on restoring the Pahang Biosphere Reserve Lake and its surrounding wetlands, is another institute of UKM.

UKM has also housed the Institute of Solar Energy Research (SERI), which researches on issues related to Sustainable Development. Proposing a new design paradigm for green zero energy public toilet is another achievement in the realm of Sustainable Development in this university. UKM has obtained USD 7630000 research grants in 2009 from different sources, in which a big portion part of it was paid to the students to work on some

specific topics, which contribute, to Sustainable Development. For instance, in the experimental and applied research grant, six projects have been defined to research on Energy and have so far received a total of USD 428000, and nine projects on Environment which received USD 639000.

Although UKM recycling bins are provided only in limited areas, the university has recognized the use of recycling bins as an effective action of the Sustainability in Higher Education. In terms of energy, UKM encourages the students to turn off the lights and computers at some faculties, as well as constructing buildings, which use passive ventilation for their cooling.

VIII. CONCLUSION

Based on the above facts, it is observed that Malaysia has already developed comprehensive assessment approaches and indicators for national level, state level, and building level. However, there is a gap between these mega scope level (national, city) and micro level (building) level. Therefore Malaysia needs to work on developing a tool for assessing sustainability in local level such as campus.

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