SHIFTING RHETORICS INTO REALITY: TRANSFORMING HIGHER EDUCATION FOR SUSTAINABLE DEVELOPMENT – UNIVERSITI SAINS MALAYSIA IN THE APEX FRAMEWORK

Dzulkifli Abdul Razak & Ramli Mohamed
Universiti Sains Malaysia

Abstract

Taking cognisant of the numerous initiatives of the United Nations agencies and others and in order to make higher education relevant to the societal needs in general and sustainable development in particular, Universiti Sains Malaysia (USM) has taken steps to promote sustainable development into its programmes. The approach stems from its inside-out mode (Gratton & Groshal, 2005) in which sustainable development is promoted by manipulating and optimising internal strengths which ensures sustainability of the programmes. At USM, the internal strengths are promoted through (1) Kampus Sejahtera (or Healthy Campus) programme, (2) the University in a Garden, (3) the transdisciplinary approach in promoting teaching and research activities, (iv) community action, and eventually (v) as a global player, e.g. as a Regional Centre of Expertise on Education for sustainable Development, a designation bestowed upon the university by the United Nations University in 2005.

The purpose of this paper is to showcase USM’s approach in promoting sustainable education in every aspect of its programme including teaching and learning, research and development, services, postgraduate studies, and so forth. In most cases, the university is likened to a big tree of knowledge whose roots are continuously being nurtured by dedicated and committed teaching professionals and whose branches represent the holistic development of young minds without abandoning their interconnectedness with nature in a sustainable way. In so doing, USM focuses on the element of sustainability by integrating sustainable operations, policy and practices for the long term in order to make the university a microcosm of the outside world.

Introduction

Since 2000, USM has taken various proactive and productive steps to transform itself as a reputable research-intensive university dedicated to the promotion of wellness and well-being of the human ecosystem. In its latest transformation plan submitted to the government under the Accelerated Programme for Excellence (APEX programme), the university plans to carve innovative inroads into diverse but cutting-edge transdisciplinary fields that will bring about a better and sustainable Malaysia, if not the world.

Sustainability, broadly defined, applies to many disciplines, including economic development, environmental and natural resources management, food production, energy, and socio-cultural dimensions and lifestyles engaged in a transdisciplinary mode. It is within this framework that USM focuses its vision of a sustainable tomorrow while keenly promoting values such as equity, accessibility, availability, affordability and quality as the...
By choosing sustainability-led growth as its destination, USM will embark on numerous transformational journeys, including revamping most of its activities pertaining to nurturing and learning, research and innovation, services, students and alumni and the management of the university as a whole. The university will take steps to improve the three core pillars of its strengths, i.e., talent, resources and supportive governance.

The Problems with Higher Education

More than three decades ago and in his assessment of the roles of higher education, the French professor of philosophy and the sixth Director-General of UNESCO, Rene Maheu (1974), lamented that the problem with higher education institutions is that they were not responding quickly enough and are not proactive to the changing context of the society and the globe. He suggested that it is necessary to regenerate higher education to cope with the changes affecting the society, and to do this, we have to transform higher education to the new needs of the community and the individuals economically, socially and culturally. His view was similarly echoed later by the President of the Club of Rome, Richard Diez-Hogcheitner (1996) who said that “Education must not only be adapted to the needs of our age, it must also make real effort to look ahead some twenty-five years”.

In a similar vein, the President Emeritus of the Massachusetts Institute of Technology (MIT) of the United States, Dr Charles Vest (2007), said that:

“Great universities seek to understand the past, engage the present, and shape the future. Universities that have a strong focus….have a particular responsibility to engage the present and shape the future, but they too must understand the past and learn its lessons to fully comprehend that they are at the core of the flow of human history and essential to human progress….The Massachusetts Institute of Technology (MIT) that I have served for 17 years was established almost 150 years ago. It was founded to be a new and different kind of institution to serve the purposes of the emerging Industrial Age in the United States.”

In a comprehensive thesis of the current trends and problems of higher education, Harry Lewis (2006) attributed to what he called the “malaises” of great universities, such as Harvard, to fulfil their societal roles, responsibilities and obligations to several “struggles” they are undergoing. These struggles, among others, include (i) intense competition in the marketplace for the faculty, (ii) too much attention given to income generation programmes or lack of finance to sustain the basic programmes, (iii) overwhelming focus on science, (iv) weak and superficial grasp of the purpose of higher education, and (v) lack of understanding of morality and humanity.

Lewis observed that there are three areas of competition which has taken its toll on these institutions: professors, students and image. As for the professors, over the years they have become narrowly trained, specialised and “more advanced” in their specialities. In the case of the students, the element of competition amongst universities and colleges has led to the development of an attitude that admission into top-tier universities like Harvard as springboards for a secure future.
Examining the inertia of the professors and the current trend of students admitted into Harvard, Lewis surmised that:

Students are unhappy because too many faculty members are not interested in them, except as potential academic, and the curriculum is designed more around the interests of the faculty then around the desires of the students or their families. Both the university and those attending it miss the larger point: The way to make the university experience more satisfying is to recognise and support its larger education purpose (p.14).

The education system of public universities in Malaysia is also subjected to the pressures described by Lewis although not as intense within the context of Harvard. All Malaysian universities are confronted with stiff competition, especially in generating sufficient income to sustain their teaching and research programmes, meet the expectations of the students for employment at the end of their sojourn, and sensitive about their public image as appears in the mass media. The professors are also subjected to the dictum of ‘publish or perish’ and their promotions are similarly based on what they publish, conduct research, and contribute to the university and community. No consideration for such promotion of these professors is given for their skills or mastery of helping students to become adults.

Juxtapose to this issue of a benign neglect to the development of individuals by higher education institutions, is their inability to respond to the pertinent concerns of the community at large, in particular the issue of sustainable development which encompasses the universal causes of ecology (especially climate change), the economic underdevelopment of the four billion people who are located at the bottom of the pyramid and the socio-cultural development of the populace.

Current Global Issues – Sustainable Development

At the turn of the new millennium, global issues have spurred most countries and governments to take stock of their human resources and infrastructure in order to respond to those issues. At the top of the list is the issue of climate change and its corollary impact on biocapacity and environmental challenges, the breach on the global ecological footprint and the widening gap between developed and developing societies.

With regard to climate change, the concern is over global warming, the depletion of fish stocks and fossil fuel reserves and the irreversible loss of biodiversity. These were brought about by the depletion of the ozone layer in the atmosphere. It is said that climate change is due to the variation within the earth’s climate which has impacted on glaciations, ocean variability and the climate as a whole. Climate change has also been affected by non-climate factors, such as greenhouse effects, plate tectonics, solar variations, orbital variations and volcanism. Human activities have also played a major role in climate change, including the high usage of fossil fuels and aerosols. This is compounded by poor planning and resource utilisation in land use and livestock rearing.

The Inter-governmental Panel for Climate Change (IPCC) Report (2007) states that the impact of climate change will be most brutal on developing countries, including Malaysia. “Warming of the climate system is unequivocal, as it is now evident from observations of increase in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.”

Besides climate change, the Rio Summit of 1992 also addressed the issue of poverty alleviation and economic development, incorporating the principles of equity among people, between countries and between generations. However, until the next IPCC meeting in Johannesburg in 2002, the promises of Rio did not materialise. This then gave birth to Local Agenda 21 and initial discussion of making a Decade of Education for Sustainable Development. Subsequently, at the conference in 2007, Bali provided the roadmap to
address five major areas in terms of capacity building, awareness building, technology development, policy studies and talent cultivation. These areas were further detailed out at the IPCC conference in Bangkok in 2008.

From the standpoint of the ecological footprint, as shown in Figure 1 below, it was reported as early as in the mid-1970s that the demand on the earth’s ecosystem and natural resources has breached human ability to regenerate them. The ecological footprint is an estimate of “the amount of biologically productive land and sea area needed to regenerate (if possible) the resources a human population consumes and to absorb and render harmless the corresponding waste, given prevailing technology and current understanding. Using this assessment, it is possible to estimate how many planet earths it would take to support humanity if everybody lived a given lifestyle” (Venetoulis, Chazan and Gaudet, 2004).

![Figure 1: The World Ecological Footprint, 1961-1999](image)

**Biocapacity breached in mid-1970s**

Source: Venetoulis, Chazan and Gaudet, 2004

With regard to the distribution of world income, the gap between the rich and the poor is becoming wider and more visible. According to the United Nations (2000), almost 60 percent of humanity live on less than USD2.00 a day. Nearly 30 percent of the world’s population suffer some form of malnutrition. The world’s richest 50 million people consume as much as the 2.7 billion poorest people on the planet.

According to Clark (2004) (see Figure 2), the great divide, that is, the gap between developed and developing societies, is often characterised by the latter undertaking action-driven research, using traditional knowledge, being recipients of climate change and having resource shortages, young billions, poor “local people” and poverty. The developed societies, on the other hand, comprise “global people”, possess affluence, aged-millions, rich resource surpluses, are the cause of climate change, have technological knowledge and undertake theory-driven research. While developed and developing nations continue to prosper, we also see “a world where over a billion people live on less than a dollar a day, more than 800 million are malnourished, and over two and a half billion lack access to adequate sanitation” (Great Britain DEFRA, 2005). Increasing wealth has depleted our environmental resources but extreme poverty leaves the poor with no option but to deplete their local environment merely to survive. A world with two extremes of prosperity and poverty is unsustainable.

Malaysia, in this great divide, is saddled between the two components of affluence and poverty. She is therefore in the best position to be the convenor in balancing the two and optimise the positive aspects of the divide.
Sustainability Development and Higher Education

Given the bleak global situation outlined above, it is imperative, therefore, for nations of the world to engage and partake in collaborative endeavours to address these views and issues. While steps have been taken to address them, for instance, the establishment of inter-governmental panels and initiatives such as the Brundtland Commission (1987), the IPCC (1988), the Rio Summit (1992), the Kyoto Protocol (1997) and so forth, the root causes of these issues have yet to be addressed.

One of the challenges is to be involved in sustainable development and to turn it into reality rather than mere rhetoric. This was emphasised some years ago by the former UN Secretary General, Kofi Annan (2001) who said that, “Our biggest challenge in this new century is to take an idea that sounds abstract - sustainability development - and turn it into reality for the world’s people”.

To promote a more sustainable future, we need to change the system of our society. People must work together regardless of status and hierarchy to make their environment more sustainable by integrating sustainable operations, policy and practices for the long term in order to make the immediate environment a microcosm of the outside world.

The starting point is to integrate sustainable development into the educational system so that future generations can be nurtured and imbued with the need to embrace ecological protection, conservation of resources and human development. In addition and as aptly stated by the Brundtland Report (1987), “Sustainable development is meeting the needs of the present without compromising the ability of future generations to meet their own needs”. The emphasis here should be to recognise that the many crises facing the planet are interrelated and are elements of a single crisis of the whole. Therefore, it is important that all sectors of the society consult and actively participate in decisions relating to sustainable development.

Looking back at the progress of the Rio Summit which was held more than a decade ago, or rather its failure to set in motion processes that would lead to genuine sustainable

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3 Press release SC/SM/7739 (201), UN Secretary-General calls for a break in political statement over environmental issues, 15 March 2001.
development, it is incumbent now for the education system, higher education in particular, to be actively involved and to take steps in the promotion and acculturation of sustainable development. Since education is a major vehicle for, and contributor to, national and global development as well as the well-being of the community, it is strategic and appropriate for it to become the conduit for this promotion and nurturing.

It has been argued that education enables people to develop the knowledge, values and skills to participate in decisions about the way we do things, individually and collectively, locally and globally, that will improve the quality of life now without damaging the planet of the future.

The Organisation for Economic Cooperation and Development (OECD, 2007:173-174) suggested that institutions of higher learning can contribute to sustainable development in the following ways:

- generating human capital in the region through their learning and further education programmes in areas of sustainable development;
- acting as a source of expertise through research, consultancy and demonstration;
- playing a brokerage role in bringing together diverse regional actors and elements of capacity to the sustainability process;
- demonstrating good practice through on-campus management and development activities, strategic planning, building design, waste minimisation and water and energy efficiency practice, responsible purchasing programmes and pursuing good citizen type initiatives like the “green campus” concept; and
- offering recognition and reward incentive for staff to be involved in sustainable development leadership groups in the regional community.

This suggestion implies that one has to transform higher education according to the new needs of the community and the individuals both economically, socially and culturally. This transformation requires a re-examination on how we approach and plan education, especially at the tertiary level. We need to strategise higher education for the promotion of sustainable development and growth. To do that, we need to position higher education toward sustainability.

The Framework of USM’S APEX Programme

As a university, USM follows a two-prong approach. First, the university aspires to be world renowned for sustainability. Second, it also aims to be a sustainability-led university (see Figure 3).

A renowned university for sustainability

With regard to the first prong, since 2000 USM has embarked on a series of initiatives to become socially responsible as it develops. It has embraced ecological protection, the conservation of resources and human development and the accepted framework for achieving sustainability on campus. This will provide the platform as the university moves forward in the years to come. To realise this aspiration, the university has taken initial step to refocus and retool its teaching and research programmes and activities toward the need to live within the environmental limits.

Those initial steps taken to excel in the issues of sustainability will now be accelerated under the APEX programme. Throughout the programme period, USM will be more assertive in moving toward sustainability by reinvigorating and transforming its teaching and learning programmes, R&D activities and services to produce quality outcomes which are
Figure 3
Framework Of USM’s Apex University Proposal

USM world renowned for sustainability*  
Transforming Education for a Sustainable Tomorrow

USM as a sustainability-led university

Projects, Programmes

Values:  
Quality,  
Equity, Accessibility, Availability, Affordability

Research/Innovation

Enablers:  
Technology, Innovation system, Distribution & Marketing

Services & External Activities

Nurturing & Learning

Talent, Resources, Governance

*Ecology, Socio-culture, Economy

Transforming Education for a Sustainable Tomorrow

Enablers:
Technology, Innovation System, Distribution & Marketing

Values: Quality, Equity, Accessibility, Availability, Affordability

Projects, Programmes

Transformation

USM as a sustainability-led university

Transformation

Nurturing & Learning

Talent, Resources, Governance

Bottom of the Pyramid

Endpoints: Quality of Life - MDG* (2015); EfSD* (2014)

* Millennium Development Goals by 2015; Education for Sustainable Development by 2014

equitable, accessible, available and affordable. The ultimate aim is to support the drive to improve the well-being of humanity, the marginalised bottom of the pyramid in particular (Prahalad, 2006). Eventually our efforts would also contribute toward the attainment of global visions as endorsed by world leaders including Malaysia, such as the Millennium Development Goals (MDGs) by 2015, and Education for Sustainable Development (EfSD) by 2014.

USM as a sustainability-led university

For the second prong, i.e., transforming USM to be a sustainability-led university, the effort started in early 2001 will be rigorously pursued and expanded in order to ensure the campus produces human capital as the seeds of social transformation that is sustainable from amongst staff and students. This endeavour is proposed on the understanding that education is the key to change unsustainable lifestyle and mindset. Students and staff must be provided with learning opportunities in the real world environment to integrate knowledge and concepts of sustainability to local practices, applications and solutions. In turn, outreach programmes by the university will introduce sustainability to the local and global community.

This strategy is congruent to the transformational role played by USM as the UNU-RCE on Education for Sustainable Development (RCE Penang @ USM) since 2005. An RCE is a network of existing formal, non-formal and informal education organisations aiming to deliver education for sustainable development (ESD) to a regional/local community. All RCEs have a common framework aspiring to achieve the goals of the UN Decade of Education for Sustainable Development (DESD, 2005-2014), by translating the global agenda such as the Millennium Development Goals, Climate Change and Education for All into the context of the local/regional/global community in which they operate.
The Transformation Strategies for Sustainability-led University

In the need to strategise itself toward global excellence for the APEX programme, USM will, as a start, emulate and adapt approaches that have been successfully practised elsewhere. Since the early 2000s, the European Commission has set forth a plan to reform the universities based on several critical arguments to make EU universities more dynamic and competitive. In March 2000, the European Council organised a meeting on higher education in Lisbon with the aim of “making Europe and the EU the world’s most dynamic and competitive economy and in respect of higher education, it has particularly focused on the knowledge and learning economy”. Known as the Lisbon Strategy, this conference also aims at connecting innovation to research and development activities (Deem, et al., 2008:87).

As a result of this meeting, in May 2006 the European Commission recommended various strategies to reform higher education to ensure the breakdowns of barriers and impediments to the universities as well as to make European universities and research more visible and attractive in the world. The recommended strategies include:

- Ensuring autonomy and accountability;
- Providing incentives for partnership and business;
- Providing “the right mix” of skills and competencies for the labour market;
- Reducing the funding gap and making funding work more effectively in education and research;
- Enhancing interdisciplinarity and transdisciplinarity;
- Facilitating the interaction of knowledge and society; and
- Rewarding excellence.

The above strategies are obviously aimed at capturing the world class label for the European universities. At another conference held later in London in June 2006, the specific aim then was to position these universities to capture the top spot of the league tables of the Times Higher Education Supplement (THES) and the Shanghai’s Jiao Tong University. For this purpose, the EC’s Director General for Education and Culture suggested three approaches toward modernisation, namely (i) to give them the capacity to run their own lives with less bureaucracy and using block funding, (ii) to be more flexible and competitive about bidding for research funding, and (iii) to increase the scale and global scope (Deem et al., 2006:87).

Another strategy which has been successfully adopted in the business world and which can be used as a model is what is known as the “Blue Ocean Strategy” (BOS) introduced by Kim and Mauborgne (2005). The Blue Ocean Strategy is a concept defined as “[the] untapped market space, demand creation, and the opportunity for highly profitable growth” (Kim and Mauborgne, 2005:4-5) According to the authors, the “blue ocean” connotes the unknown market space which is untainted by competition. It is also a metaphor to describe the wider, deeper potential of market space that is yet to be explored. This strategy requires the industry to expand its existing boundaries and change the rules of the game which, in turn, will render competition irrelevant.

The authors suggested that rather than fight over space and competition as is happening in what they referred to as the “Red Ocean” (in which the boundaries of the industries are defined and accepted and the competitive rules of the game are known), businesses and institutions should create their own market space and demand. A blue ocean is created when a company achieves value innovation that creates value simultaneously for both the buyer and the company. One has to find the value that crosses conventional market segmentation and offers value and lower cost. Demand is created rather than fought over and there is ample opportunity for every entity to grow. On this note, the authors argued,

“To maximise the size of their blue oceans, companies need to take a reverse course. Instead of concentrating on customers, they need to look to noncustomers. And instead of focusing on customer differences, they need to build on powerful commonalities in
what buyers value. That allows companies to reach beyond existing demand to unlock a new mass of customers that did not exist before” (Kim and Mauborgne, 2005:102).

This suggests that it is almost impossible for fledgling businesses and institutions, including universities, to play the catch-up game and be at par with more advanced and established competitions. In this regard, Kim (2005) said that

“….never try to imitate anybody, because as long as you benchmark with somebody, at the best you will be like them. Meanwhile, the person you benchmark is ahead of you. You'll never close the gap.”

Some examples used by Kim and Mauborgne (2005) to support this strategy which has created new market spaces are **Cirque du Soleil** (which blends opera and ballet with the circus format), **Southwest Airlines** (which offers flexibility of bus travel at the speed of air travel using a secondary airport) and **Home Depot** (which offers competitive prices for a range of lumber yard products hand-in-hand with consumers classes to help buyers with DIY projects). In higher education, USM could take a leading role in transforming itself using the BOS. Sustainability in higher education, for all intents and purposes, is a blue ocean opportunity.

Another strategy would also include the bringing in of towering professors who can stimulate the impetus of research at USM towards sustainability with the balanced approach of social and economic impact. These solutions when practiced and shared among Asian countries may finally turn around the world impact of having Asia in the lead.

Looking back at the approaches available, it is therefore apparent to USM that its transformation strategy will consist of two primary foci:

- Transforming the three pillars of a world-renowned higher education institution, namely the concentration of talent, the abundance of resources and the acculturation of supportive governance, and
- Transforming the output/outcome necessary to be world renowned.

Underlying these focussed areas is the overall paradigm of blue ocean thinking as well as the approach taken by the European universities. This means that USM will realign itself in the transformation process to move into uncharted space and untapped market. This allows the university to grow and innovate untainted by competition, through the creation of new demands by introducing new value innovation and opportunities.

In so doing, the university will seek greater autonomy, provide the right mix of skills and competencies for the sustainable economy, reduce funding gaps and make funding work more effectively in education and research, enhancing interdisciplinarity and transdisciplinarity, facilitate the interaction of knowledge and society and reward excellence. All these will be carried out within the context of sustainability-led education and research.

To realise this strategy and as shown in Figure 4, USM-APEX (in blue dotted line) will undertake a strategy to innovate to promote new “markets” for knowledge by introducing sustainability-led education through creating new demands which focus on the needs of the masses at the bottom of the pyramid. Following the blue ocean strategy, USM will take steps to transform itself by eliminating or reducing bureaucracy, reducing the funding gap, wastages and damages, whilst raising the global agenda, autonomy and accountability, quality and future relevance, creating “people-led” local solutions for global problem, thus creating sustainability, in conformance to the indicators exemplified by the MDGs and EfSD.
The above strategies suggest that in order to navigate USM toward sustainability-led education, the university will adopt a stance that conducts science for humanity which in essence fuses science and technology with the arts and humanity. The focus will now be on research outcomes that will enhance sustainability that includes reducing inequity and increasing availability, affordability, accessibility and quality of our innovations to those who need them most – the people in the bottom billion. In addressing local problems, USM will in essence also provide solutions to global problems. It is therefore important that USM’s strategy is focused on addressing global problems such as energy security, water security, food security and the wellness paradigm, to name a few. The current global food and energy crises are cases in point. This requires urgent attention. In channeling the energy to work on a bigger agenda, the university will encourage the fundamental and the applied with researchers working together towards a common goal. Working on local problems will finally create the significant impact that society needs to see from local researchers.

Transforming USM into a Sustainability-led University

In transforming USM for the APEX programme, the university is reviewing its activities in all areas, including nurturing and learning (commonly known as teaching and learning), research and innovation, consultancy and services, postgraduate studies, and students and alumni.

a. Nurturing and Learning

Under the rubrics of nurturing and learning, USM has selected the approach to educate the young so that they can achieve sustainable development rather than teaching them about sustainable development. Hence, the learning model to be used would be the constructivist paradigm in which learning is a facilitated social and cognitive activity with multiple ways of interaction between the teachers and learners.
The education model to be adopted would be more suited for the rapid changes of the knowledge society and is subscribed to by the *Four Pillars of Education* as advocated by UNESCO (1998). This model looks at education in terms of:

- **Learning to know** – i.e., education is used to enable people to better understand the world around them in order to live with dignity, develop skills for employment and to communicate with others;
- **Learning to do** – i.e., education is to equip people with skills to do the jobs of the future which are changing from the skill-based jobs to economies which turns knowledge into innovations to generate new businesses and new jobs;
- **Learning to live together** – i.e., education is an enabler for people to collaborate and engage in lively debates, discussions and forums which nurtures openness and helps promote common goals and causes rather than focus on differences, competitions and conflicts; and
- **Learning to be** – i.e., education which can contribute to the holistic development of an individual – mind and body, intelligence, sensitivity, aesthetic appreciation and spirituality by equipping them to develop their own independence, critical thinking and judgement so that they can make up their minds on the best course of action in the different circumstances in their lives.

Following this model, the strategy would then be to create an educational programme which will promote non-traditional entry requirements, open courseware and enhanced open learning system while raising its orientation toward student-centred curricula, market relevance, alternative modes of assessment (while eliminating or reducing the emphasis on examinations and rote-learning). At the same time, the university hopes to promote an educational system that will focus on technology-enhanced learning (TEL), nurturing skills/competencies, linking research to learning and increase sustainability development curricula.

**b. Research and Development**

Since late 2000, USM has taken numerous steps to reinvigorate its R&D activities. It began with an extensive and comprehensive exercise to audit all its research programmes and projects with the aim of formulating a strategy to acculturate and nurture programmes which have the potential to become world class and incubate those which show the potential to reach this level. The outcome of this audit shows that USM has several niche areas which could anchor its path for excellence in R&D as well as a renowned university for sustainability research. The top five areas which have reached or are on the verge of world class standing are medical biotechnology, ecological drainage, vector control, anti-infective drug research and aquaculture research.

As a result of this audit too, USM has taken other initiatives to introduce new managerial, administrative and logistical innovations to improve its R&D programmes and activities, including the introduction of a research management office known as the Research Creativity and Management Office (RCMO), refocusing the concentration into research clusters in order to promote borderless research platforms and multi-disciplinary research as well as to increase collaboration and cooperation among researchers, the establishment of Research Dean positions in order to provide leadership for the research platforms and the introduction of numerous research incentives such as travel grants, honorariums, awards and fellowships, waiver of teaching duties, attendance at international conferences and so forth.

To facilitate further growth of R&D, USM has extended the usual innovation nexus of R-D-C to have additional elements of E for enterprise and P for Innovation Park. For this
purpose, USM established an Innovation Office to be the champion and custodian of innovation system as well as to collaborate with industrial partners so as to intensify the commercialisation of research products discovered at the university.

On 22 June 2008, the university launched the Science and Arts Innovation Space, or SAINS@USM. This is yet another milestone which will enable the researchers to draw expertise and address the problems of sustainability. This project combines the talents of USM’s faculty members from all centres and schools such as engineering, housing, building and planning, the arts and culture and business to create an environmentally-friendly innovation space. Their work is truly at the cutting-edge of each of their disciplines, and the integrated whole will definitely be more than the sum of their parts.

SAINS@USM acts beyond just being an incubator for the nurturing of the life and earth sciences. It is also a space that fuses innovative ideas in a transdisciplinary way. This is emphasised in the layout plan of SAINS which blends three main types of space. The common space at the forefront of SAINS provides the first node for interaction between the visitors and occupiers of SAINS. The design welcomes the visitors to venture into SAINS through the provision of friendly and attractive public amenities such as the outdoor café and shaded open spaces. The intermediate space mediates between the public and private, allowing for limited public access to the area for the more serious and discerning visitors or clientele. Finally, located further into the recesses of SAINS @ USM is the private customised space within a highly secured area where specialised activities and research are conducted almost exclusively by the occupiers of SAINS @ USM. In addition, there are other spaces called “satellites”, which are areas and facilities physically located outside SAINS @ USM as the hallmark of USM’s research and collaboration centres which are invariably linked to SAINS @ USM. Ultimately, all our initiatives on SAINS @ USM will be the inspiration for the development of a new resource management system that can act as a model to our commercial and industrial society.

Following the Blue Ocean strategy, USM will undertake to eliminate and/or reduce (a) the traditional research labels such as “physicists, biologists or chemists” in preference for a transdisciplinary mindset through the clustering approach, (b) the boundaries and silos which are impediments to collaboration and creativity, (c) the school/centre-based research and discrete disciplines, (d) recruitment of staff based solely on their teaching abilities (while giving equal emphasis on their ability to conduct research thrusts of the university), and (e) reduce the administrative roles and responsibilities of researchers.

Instead, in the need to transform the university into a renowned sustainability entity, we will seek to raise and create the thrust toward (a) the diversity of talents to foster innovation in research and teaching, (b) the recruitment of quality staff (some in the category of “towering personality”) and graduate students to promote quality research, fundamental research in particular, (c) the improvement of publication infrastructure, international collaborations, (d) creating incentives and opportunities such as fellowships, outreach programmes, new research horizons, research-focused curriculum (as opposed to teaching-focused), flexible remuneration structure and so forth.

c. Services and External Activities

In line with its need to transform the institution into a sustainability-led university, numerous programmes and activities have been and are being planned to be implemented in order to establish a strong functional and institutional linkage between USM and the communities locally or even internationally. Some of them are:

- **University in a Garden** concept in which the governance and management of the university is guided by the “garden” metaphor for a university of tomorrow. This concept is now expanded to embrace other issues, including garden and the people,
garden of knowledge, garden of vistas, garden of nature, garden of heritage and the garden of tomorrow.

- **Kampus Sejahtera (Healthy Campus) Programme** which is built for the University in a Garden concept based on the wellness principle of mind, body and soul which is also the ultimate aim of sustainability.

- **The White coffin Campaign**, the latest student-centred activities where they are encouraged to take the lead against the use of polystyrene (a petrochemical materials widely used in food containers for take away food) on campus.

- **The Campus-Wide Recycling Project** which is aimed at raising students’ awareness on recycling as one of the important activities in environmental sustainability.

- **The Tree Planting Project** which has become an annual activity during the orientation week of newly admitted students.

- **Early Hour and Earth Day** in which USM participated as the Earth hour on 28 March 2008 as an awareness exercise to save energy and the World Earth Day on 22 April 2008.

- **Going Bananas: A Lesson on sustainability** is a major attempt in promoting transdisciplinary projects that bridge the university and the community. The idea is to transfer the university's R&D projects to benefit the community. The project is to “recycle” the entire banana tree, for example, the biomass can be turned into paper suitable for simple printing or writing but also for decorative purposes such as lamp shades and lanterns.

- **The Worm Composting Project** which has already benefitted the community by increasing their income by up to a 100 percent. Using technology developed by USM scientists, the community was able to produce compost using wastes from paddy, cow dung and general wastes from the village. The same technology is now being promoted at the kindergarten that operates in the university.

- **Sustainable Penang Initiative II** a project which was started in 1999 in which USM has been assigned to develop a framework for sustainability in the state of Penang.

- **Educational and Promotional Service to the Community on Energy Efficiency and Renewable Energy**, another transdisciplinary flagship project of USM carried out by the Centre for Education, Training and Research in Renewable Energy and Energy Efficiency (CETREE). It serves as an excellent example of a university-community project. Apart from providing textbooks for schools to teach about renewable energy, CETREE through its mobile unit has introduced the subject of renewable energy and energy efficiency to 2.5 million school children nationwide. It has also exhibited its mobile unit to 150,000 members of the public via community centres. The programme is now forging a strong corporate social responsibility spirit of PHILLIPS.

In the transformation plan, USM has developed a roadmap to eliminate and/or reduce the use and wastage of resources as well as the indifferent and uncaring attitudes towards the environment while raising awareness that resources are finite, inculcate consciousness on the importance of recycling as well as creating passionate public attitude towards conservation and a love for the environment and a new mindset within industries that they must at all times internalise the external cost (i.e. the cost to the environment and health) in all their procedures and operations.
Key Performance Indicators

The key performance indicators (KPIs) of the transformation plans discussed above is not necessarily based just on the numbers but also on the quality of individuals. They include the students, the academic staff, the researchers and the support personnel. Among the measurements for talents are the issues of quality, quantity, productivity, diversity as well as the role they play in terms of academic leadership and involvement in the community. For productivity, performance can be measured in numerous ways which are commonly used for world renowned measures such as publications, research projects and grants, inventions, marketable patents and commercialisation, policy papers and impact, awards, learning modules produced and technology transfer, in particular, transfer to the class room and to the community.

In terms of academic leadership, some measurement indicators can also include the participation and acceptance among peers at the global level, for example, presentation of invited keynote addresses, acting as track chairs in academic conferences, as chief editors of academic journals, holding positions in academic associations and heading national or international bodies. At the organisational level, this would include the recognition accorded to USM as referral centres known for its excellence worldwide.

In the final analysis, the talents should be measured for their diversity and resourcefulness in every facet of their job description, including teaching, research and leadership. We are mindful of the intangible dimensions, in particular aspects of values, ethics, attitudes and relationships that are equally significant in the nurturing of talents.

Conclusion

Under the circumstances, USM realises that it is almost impossible to play a catch-up game with established universities and break into the stranglehold of their dominance in the world league table. Judging by their human resource and resources, USM believes that we simply cannot play the same game in order to be excellent. As defined by their “rules”, we chose a different path to strategically be eminent and excellent measured in different terms and contexts. Adapting to the Blue Ocean Strategy, we chart a canvas which will embolden us to navigate into the unknown horizon and do what others are not doing and will not do.

For this purpose, USM has chosen to position itself as a world renowned university for sustainability with relevance to the future, nurturing, learning, conducting research and services towards the stated goal. With the support given during the programme, USM will be able to transform itself as a leading sustainability-led university. Through sustainability, we intend to orient higher education towards a growth and development model that safeguards environmental and natural resources, food security and energy production as well as socio-cultural diversity and lifestyles engaged in a transdisciplinary mode. In choosing this sustainability path forward, we hope to embrace the protection of the multiple ecosystems, the conservation and restoration of resources as well as the heightening of human and intellectual capitals. Further, USM will position itself to facilitate the meeting of existing and other future global and universal aspirations, as stated in its mission statement, towards the betterment of the billions trapped at the bottom of the socio-economic pyramid. The unfolding events of impending global food and energy crises as well as economic recession are among the compelling reasons why USM, as a global university of consequence, should venture in this direction.

This overarching philosophy of sustainability will eventually lead to a talent pool of students who do not only fulfil the human capital needs for the future national development of Malaysia, but who are also more involved, committed and dedicated for the sustainable wellness of the institution, community and global environment. We hope this path will further enhance our initial attempts to instil values that will shape a new generation of ethically-responsible and morally sound adolescents endowed with “new” knowledge and mindset of
the day. Their presence in our midst will then uplift the level of corporate social responsibility in tandem as global citizens with strong social commitment.

By taking the uncharted course towards sustainability and in pursuit of the spirit of the UNDecade of Education for Sustainable Development (2005-2014), USM hopes to be:

- the source of expertise through research, consultancy and advocacy;
- bring together diverse actors and elements of capacity to embed the sustainability process;
- a model institution to demonstrate good practices through on-campus management and development activities; and
- magnanimous in recognising and awarding incentives to staff who are involved in the development of sustainability as leaders and champions.

USM is well-poised to take up this challenge and is confident in proposing the numerous transformation plans to realise the sustainability vision it has set out to be. In so doing, we hope to be autonomous and independent in our stance and provide new and better platform for partnerships with the industry and community, and the right mix of skills, attitude, value, and knowledge for a sustainable world.

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**About the Authors**

**Dzulkifli Abdul Razak**

Dzulkifli Abdul Razak is a Professor and Vice Chancellor of Universiti Sains Malaysia (USM) since 2000 and the President of the Association of Southeast Asia Institution of Higher Learning (ASAHL) since 2007. He also serves in several international academic organisations in various capacities, including Asia-Europe Meeting (ASEM), Education Hub Advisory Committee, Association of Commonwealth Universities (ACU), International Associations of Universities (IAU) and the Advisory Committee of World Universities Forum. He is also a member of the World Health Organisation (WHO) Expert Advisory Panel on Drug Policies and Management since 1995 and WHO Scientific Committee on Tobacco Product Regulations from 2002 to 2004. At the national level, he serves in the capacity of the chairman for the following academic institutions: the Malaysian Vice Chancellors' Council; the Malaysian Examination Council; and the Multimedia Technology Enhancement Operations Sdn. Bhd. (METEOR); and Co-Chairman of the Malaysian Industry-government High Technology Council (MIGHT) as well as an Advisor to the National Higher Education Research Institute (IPPTN) and a board member of the National Higher Education Council (IPPTN) and the Open University of Malaysia.

**Ramli Mohamed**

Ramli Mohamed is a Professor in the School of Communication, Universiti Sains Malaysia (USM). He has served at USM in various capacities, including the Dean of the Graduate School (2002-2005) and as a founding Dean of the School of Communication (1995-2000). Since 1984, he served as a consultant to the Food and Agriculture Organization (FAO) of the United Nations (UN) where he was sent on missions to train agriculture extension officials and field workers in Asia, Africa and the Caribbean. He also lectured for several years at the Continuing Education Center of the Asian Institute of Technology (AIT), Thailand.