

## Universiti Sains Malaysia's Sustainability Journey: Reflections on a Road Less Travelled

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### Introduction

This paper provides a brief description of Universiti Sains Malaysia's efforts to achieve its new vision of transforming higher education for a sustainable tomorrow. In this journey to become a sustainability-led university of world-class standing, USM wanted to break away from the tactics of rhetoric and act with determination. This is no mere wishful thinking. From USM's experience, it is not only feasible in principle but is also possible in practice; in fact it is the most logical thing to do, like living a holistic life. USM had adopted the 'blue ocean strategy' as a major instrument for its sustainability transition. Aside from being a way to find uncontested 'market place', BOS also offers a way to carve out stronger competitive positions within existing 'red ocean' space through efficiency improvement and innovation.

While we realize that our sustainability pathway may lead us through roads less travelled, we have also learned that it provides several opportunities to internalize the reality that development and sustainability are after all mutually compatible, attainable and inseparable, and higher education has a pivotal role to play in this transformation. With this conviction, USM has embraced a whole-system sustainability transition which means that we will mainstream the social, economic and environmental components of sustainable development into our core activities such as teaching, research and institutional arrangement. Through milestone initiatives such as, Campus Sejahtera, USM-RCE, University in a Garden, and awards such as 'Research University' and the Ministry of Higher education's only 'APEX University', USM is on its sustainability pathway, at times feeling lonely but largely driven by the quest for excellence by doing the right thing – graduating a breed of students who will think and act like sustainability practitioners. Such graduates, while working towards sustained systemic stability than short-term gains in a future world where human pressures on Earth system may move us beyond safe natural boundaries, will also strive to contribute substantially to economic growth in a socially inclusive and environmentally sustainable way. What follows is a synthesis of several articles highlighting the journey of USM towards its new vision.

### Context

According to Gisbert Glaser (Nature, 2012), 'as the climate changes, biodiversity is lost, and ecosystems decline, we are on course to inter-linked environmental, economic and social crises that will make it difficult to provide the growing world population with food, water and energy. Only by setting human development on a sustainable trajectory, will we safeguard Earth systems for future generations.' But the problem lies with the current global development models that rely heavily on fossil based energy generation that turns out to be a major cause of the changing global climate, promote extremely resource intensive production and consumption, generate large scale waste, and accelerate land

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degradation resulting in unprecedented loss of valuable biological diversity. Add to this the impacts of growing population and poverty, current climatic variability signaling impending drastic changes; we have a very difficult situation at hand. Therefore, our vision must be to eradicate poverty, reduce inequality, make growth more inclusive, and future development to be holistic, balancing the three pillars of sustainable development – environment, economy and society. This is why sustainability education and sustainability graduates matter, and matter much.

An analysis of the current sustainability situation (Figure 1) reveals three interconnected realities: (i) economies that promote unsustainable production and consumption, partly justified by *needs* and partly by profit *opportunities*, depend heavily on fossil fuel based energy sources, as available renewable energy options are less attractive under the business as usual growth scenarios; (ii) Such growth makes heavy demands on planetary resources and nature's bio-capacity. It simply means that valuable environmental resource sectors popularized by the UN as WEHAB (water, energy, health, agriculture and biodiversity) are subjected to considerable sustainability pressures. Fossil based energy use has created a global problem of epic proportions, that of a changing climate with all its associated serious ramifications. The current situation is that we are at the 'risk' level for climate change. When this risk is realized, it becomes the 'disaster' we fear. However, this is not a destiny but a choice we seem to be making as with appropriate disaster risk management (DRM) humanity could avert the climate disaster; and (iii) a global population, currently at 7 billion and rising, seem to escalate the economic and ecological challenges we face today. The fact that this population growth is highly uneven across the world, the largest growth being in the developing countries which are already vulnerable to a host of other development challenges, does not seem to help the situation. This scenario widens the gap between the rich and the poor globally and within individual countries.



Figure 1. Major global sustainability challenges

Most of the technology needed and financial capacity to address these challenges exist already, but not the will to make things happen, it seems. We are in a state of constant denial. It is important to remember that when earth system thresholds are crossed, there are no revenges or rewards – only consequences. We have entered the period of consequences – warming planet; unprecedented climatic extremes such as Katrina, Sandy, heat waves in Europe, drought in Africa; floods in southeast Asia; HIV/AIDS; SARS; 'economic meltdown'; species loss; melting glaciers; rising sea levels; loss of cultural diversity and widening rich-poor gap – these and others should convince us that we are in a 'no analogue' state?

The world at Rio+20 was convinced that these are real issues, as identified in The Future We Want.

## The sustainability journey of USM

As the second oldest government university, USM has been at the forefront to support major national development initiatives aimed at improving the wellbeing of its citizens while preserving ecological, economic and social harmony. This meant that the university has always been focusing on sustainability education as a matter of strategic priority. Since its inception in 1969, USM has undergone different waves of change (Figure 2). The first among them was the consolidation of teaching and training in a “school” based interdisciplinary approach during the early two decades. In the year 2000 USM introduced a package of activities to promote sustainability which resulted in a second wave of change that focused on achieving excellence in research. This led the university being recognized by the Ministry of Higher Education as a Research University (RU) in 2007, and at present USM stands at the top of Research Universities in Malaysia. This commitment took a more consolidated expression at the turn of the century with a number of focused initiatives, four of which may now be seen as representing university’s third wave of “transforming higher education for a sustainable tomorrow.” These include the Kampus Sejahtera (Campus Well-Being) Programme, USM as a Regional Centre of Expertise (USM-RCE) for education for sustainable development membership, the University in a Garden scenario (a metaphoric expression for a sustainability-led university), and Malaysia’s Accelerated Programme for Excellence (APEX) status. Among these, the APEX award – the sole award under this scheme to any university by the Ministry of Higher Education in Malaysia – is specifically focused on “transforming higher education for a sustainable tomorrow” (USM APEX Report, 2009).

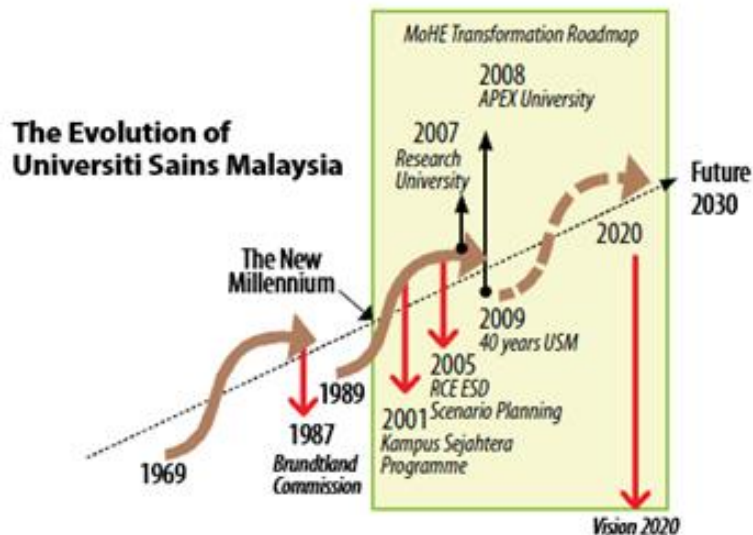


Figure 2. USM’s waves of change.

## USM-APEX

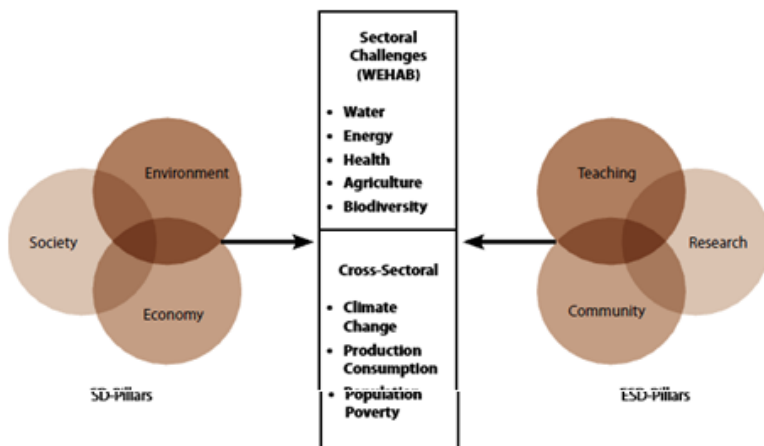


Figure 3. USM’s model for sustainability mainstreaming.

The integration of sustainability into the core of a university’s business requires a whole system enterprise that links major sustainability challenges on one hand with different educational approaches on the other. The sustainability challenges have to be selected very judiciously by each institution. Figure 3 illustrates such an integrated approach followed at USM currently. USM’s roadmap for

sustainability mainstreaming across its entire range of operations is based on this model. It factors the major sustainability challenges that span the three pillars of sustainability – economy, environment and society, as mentioned earlier, on the one hand and the university’s mission activities in the three pillar areas of education – teaching, research, and community engagement on the other. The specific sustainability challenges to be addressed are presented in the middle box. This provides for various combinations of engagement for any given sustainability issue through a variety of educational approaches. Also, this model allows an entry point for all sections of both academic and non-academic staff to be involved in sustainability activities, regardless of the section of the university for which they work.

Figure 4 is a slightly expanded version of the USM model, adding two sets of Venn diagrams. At the bottom right, the 3 Hs representing the Head, Hand, and Heart approach of the Earth Charter for sustainability is attached to the central ESD cluster. In this case, the bridge connecting the major *ethical challenges* (EC), as encoded in the Earth Charter, and ESD is represented by the box. At the bottom left is another branching to include the industry and the business community’s sustainability challenges through the CSR focus and its 3 Ps – People, Planet and Profit.

### Research and Community engagement

For more than a decade, the key thrust in promoting sustainability has been to work closely with industry, community and policymakers through various knowledge transfer programs. Some examples help illustrate how the university is pursuing its mandate to work with community, industry and policymakers:

- Reconstructive surgery for cleft lip and palate project (CLIPP) patients by USM medical staff, in collaboration with Mercy Malaysia, in Indonesia, Malaysia and Bangladesh (Figure 5a).
- CGSS project aimed at reducing climate change and flood-related food security challenges in Kuala Nerang, Malaysia, empowering communities through adaptation measures (Figure 5b).
- Enhancing Sustainable Living within Universiti Sains Malaysia and its Neighbouring Communities, promoted collaboration on integrated waste management, recycling and awareness-building by working

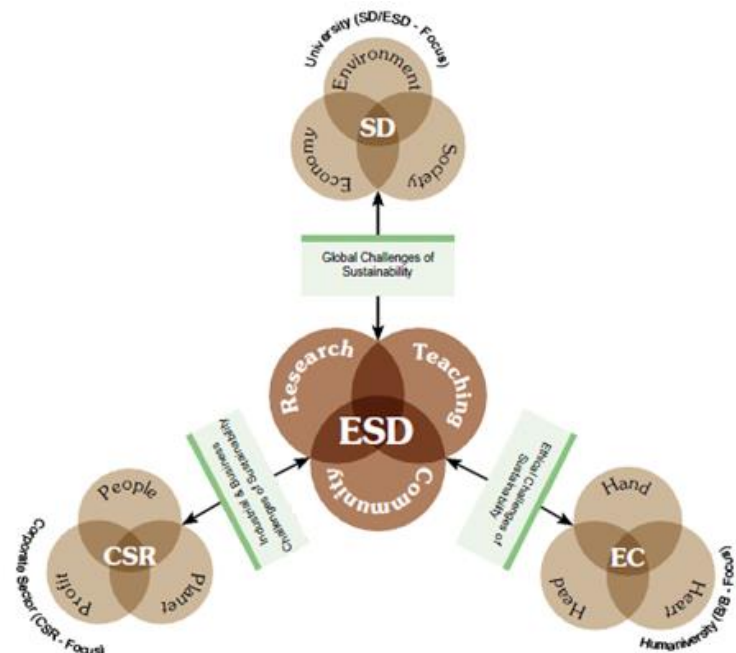


Figure 4. The centrality of ESD for sustainability promotion.



Figure 5a. CLIPP patients and staff.

Figure 5b. Boats and life jackets provided by CGSS.

with USM staff and students on campus, as well as students at six local schools, customers of a hypermarket, those living in nearby residential areas and industries located within 8 km of the Minden campus (Figure 5c.).

- Philips-CETREE energy-efficient mobile show home.
- The ENDEAVOR-Mobile project is an Android-based teleradiology platform for image analysis and visualisation that brings the power of computing into the healthcare field.
- USM's Asia-Pacific University Community Network (APUCEN), launched in 2011.



Figure 5c. Hands-on training for composting and recycling.

### 'Satu USM' – 1 USM

In his speech to the university community in January 2012, Vice-Chancellor, Professor Dato' Omar Osman, reinforced the university's determination to stay the sustainability course and deliver on all its promises. Emphasizing USM's triple status as one of 20 government universities guided by the National Higher Education Strategic Plan (Pelan Strategik Pengajian Tinggi Negara, PSPTN), one of four recognized Research Universities (RUs) within the plan, and the APEX university, he said these are not competing interests, instead the synergy among the varied activities these foci will generate makes USM unique and deliver as one.

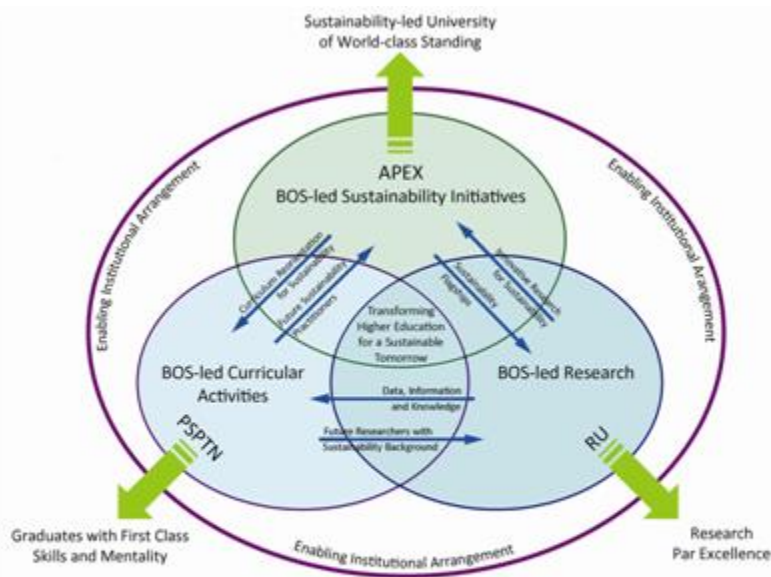


Figure 6. USM delivering as one as it fulfills PSPTN, RU and APEX responsibilities. BOS = Blue Ocean Strategy.

As Figure 6 shows, for example, the three facets operating interactively, represent the higher educational transformation achieved through outstanding teaching under PSPTN, state of the art research under RU and holistic sustainability within the APEX focus, alongside each sector providing mutual reinforcement to the others. Relationships between the three are cyclical and quality of output improves with iteration. This results in graduates with first class skills

and thinking, excellent research products and services, and best practices in sustainability that will make USM a university of world class standing.

### Sustainability Audit

The old adage, 'that which cannot be monitored, cannot be managed' is true of any major initiative at universities and USM's sustainability performance is no exception. Accordingly, the Centre for Global

Sustainability Studies has developed an indicator-based sustainability assessment tool in order to monitor changes and assess progress toward sustainability.

The first part of this tool, SAM - 'Sustainability Assessment Methodology', assesses the sustainability content of existing/completed courses and projects. This three-step method involves a *screening* step consisting of three generic questions, an *identification* step with twenty four questions and a *classification* step where results thus obtained are classified into Green (High), Amber (Medium) and Red (Low) categories. Application of SAM for 'USM Sustainability Audit' reveals that 45% of the courses have elements of at least one pillar of the 'Triple Bottom Line' sustainability model, 26% has elements of two pillars and 9% has elements of all three pillars.

The second part - the *Indicator Framework and Worksheets* - guides various stakeholders with targets, tasks and timelines for sustainability implementation, thus serving as an effective feedback loop to revamp sustainability infusion at all levels based on the outcome of part 1. Together, the results may be used either for *rating* or *ranking* of sustainability performance.

### **Soul search for action after Rio+20**

The global reaction to the recently concluded Rio+20, the United Nations Conference on Sustainable Development, has been mixed. Majority believe that Rio+20 lacked ambition, urgency and decisive action, at a critical time when there is unequivocal evidence to show that the continued functioning of the Earth system as it has supported the well-being of human civilization for years is at risk.

While it is true that the summit did not come up with any spectacular breakthroughs, it has not been a total loss either. Spread out in the 283 paragraphs of the outcome declaration are a host of ideas and recommendations for 'making things happen', which if followed-up with commitment by all stakeholders, at all levels will enable us get 'what we want'.

It is worth mentioning that the role of Higher Education in the promotion of sustainability received special mention in paragraphs 233, 234 and 235 of the Rio+20 outcome, stated as:

*...We resolve to promote education for sustainable development and to integrate sustainable development more actively into education beyond the United Nations Decade of Education for Sustainable Development...*

*...We strongly encourage educational institutions to consider adopting good practices in sustainability management on their campuses and in their communities with the active participation of, inter alia, students, teachers and local partners, and teaching sustainable development as an integrated component across disciplines...*

*...We underscore the importance of supporting educational institutions, especially higher educational institutions in developing countries, to carry out research and innovation for sustainable development, including in the field of education, to develop quality and innovative programmes, including entrepreneurship and business skills training, professional, technical and vocational training and lifelong learning, geared to bridging skills gaps for advancing national sustainable development objectives'.*

As everywhere else, we at USM are also asking if there are parallels between Rio+20 and the sustainability commitment of Higher Educational Institutions (HEIs) in general? Are there missed opportunities and untackled obstacles in our sustainability journey? Is skepticism opposing optimism in making progress? Or is it a case of optimists seeing opportunity in every challenge while pessimists see challenge in every

opportunity? It helps to pause and take stock, evaluate achievements, face new & emerging challenges and adjust course to stay focused on our sustainability journey.

### **USM's Centre for Global Sustainability Studies**

Even with good intentions, a situation can arise where sustainability promotion is seen as in everybody's interest, but nobody's responsibility. USM's CGSS was established to circumvent this hurdle. The centre works with all other sections of the university and its stakeholders to promote sustainable development, paying particular attention to the needs of the disempowered community while operating at the nexus between the scientific world and the policy community. Established in 2009, the initial priority of the centre was to lay the foundation for structured sustainability integration at the university level by coordinating the development of the sustainability roadmap, developing multi-disciplinary training and a postgraduate programme (Masters in Development Practice, MDP), in collaboration with Columbia University, New York and conducting community focused research, initiating a policy discussion series, and engage in elaborate networking at all levels. With this, the Centre has entered a new phase, that of focused research and publication. As an established Centre of Excellence (CoE) of the Ministry of Higher Education, CGSS will be fast tracking all forms of research – process, action and fundamental – by building teams to take sustainability research to a solution oriented level.

### **Are we on course?**

Sustainability education (ESD) is not a mere project or even program with a clear beginning and an end; rather, it is a new way of doing business at HEIs. It has two major dimensions:

- Sustaining best practices and refining them to stay competitive in the 'red ocean' environment,
- Internalising sustainability principles and practices as articulated by UN and all its member countries through the RIO process and its outcomes such as Agenda 21, Johannesburg Plan of Implementation (JPOI) and The future We Want. This will move us to the 'blue ocean' sphere where innovation, invention and ingenuity are the anchor. Such pathways represent roads less travelled and shunned by those less equipped, but those who dare, lead.

In a recent USM sustainability seminar series, conducted by CGSS, aimed primarily at academics, administrators and technical staff, the question, 'Are we sustainability transformed?' was asked. For comparison, we took the average performance of USM during its first three decades was taken as a baseline.

Comparing this with the period following the dawn of the new millennium, and the variety of new sustainability driven initiatives that followed, such as:

- Campus Sejahtera Initiative
- Student-led Sustainability projects –campaigns against Styrofoam and plastic on campus
- RCE-Penang Secretariat activities
- USM Scenario Planning process the choice of 'University in Garden' scenario for the future
- Research University status
- 'Excellent' (or 5-star) University award
- APEX University – MoHE's award in recognition of USM's sustainability track record and potential for transformation, and within APEX, and adding to this the latest initiatives presented below, we will have basis to answer the question posed in the beginning of this section.

## New initiatives

The following is a selected list of USM's sustainability new implementation measures as articulated by Vice-Chancellor Prof. Dato' Omar Osman during his annual university addresses of 2012, and 2013.

- Having secured autonomous governance, USM adopted a new Constitution in July 2011 to create a better environment for promoting sustainability. This constitution created new structures for USM's Board of Governors, Senate, Ombudsman and Student Consultative Assembly.
- Green procurement will be mandated and promoted in all possible areas.
- The campus Sustainability Office will be strengthened so that all USM Centers and Schools can be audited for sustainability performance and outcome and impact.
- Along with excellence in teaching and proactive community industry knowledge transfer engagements, as a research university, USM will focus on medical diagnostics, natural products & medicine, stem cells, brain science, renewable energy, tissue culture, nanotechnology, polymers, pests, local wisdom, aquaculture, entrepreneurship, Islamic development, community wellbeing etc to mention a few areas.
- Based on the assessment of USM's strength, weakness, gaps and the opportunities that emerge from them, USM is on the verge of entering a second phase of APEX to start in 2014 when the current phase ends. Based on the vision of university to transform higher education for a sustainable tomorrow, and basing in the success so far and lessons learned, APEX Phase II will provide a better 'enabling environment' involving Human Governance, Financial Sustainability, Research and Innovation, Global Citizens, Academic, Services, and Institutional Positioning.

Now to the question – 'are we sustainability transformed' on this road less travelled, the answer from the group was - 'Yes, we are', realising that, this is akin to the scenario where someone only moderately health conscious transforming genuinely to a holistic lifestyle for overall wellbeing. Then the next question was posed – Can we stay this course steadfast? And the answer was, 'Yes, we can'. Sounds a bit like Obama's campaign slogan? May be yes, but with it he made history! In our sustainability journey we have come a long way but we are also aware how far we need to go to make history.

## Lessons learned

A higher educational institution that opts to live in the past cannot be an agent of change in an ever-changing world. We admit that there are significant barriers, both perceived and real, in terms of staff awareness, attitudes, expertise and institutional commitment to accelerating the sustainability embedding processes at USM. However, we have learned that today's universities can no longer afford to be oblivious to the problems faced by the people, within our own shores or in the world beyond our borders.

## Conclusion

In a world that values economic competitiveness over ethical considerations mostly, USM's comparative advantage in articulating a new form of globalisation that benefits from socio-cultural heritage as much as education will hopefully be seen as the 'best of both worlds' approach.



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