An SD-ESD Model for University-Community Engagement: Knowledge Partnerships toward Sustainability

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The Model in a Nutshell

Sustainable development (SD) or sustainability is the imperative of the 21st century. Universities across the world will be expected to play a pivotal role in providing the knowledge base for this global transformation. Protecting our planet, lifting people out of poverty and advancing economic growth are interconnected aspects of the same thing – sustainability. Against this background, Universiti Sains Malaysia’s vision to ‘Transform Higher Education for a Sustainable Tomorrow’ is not only timely but also unique and achievable. Global change research and global summits have repeatedly asserted that the current developmental paradigm that deplete natural resources, increase pollution, change climate, and widen the rich-poor gap is simply not sustainable.

For every domain of sustainable development, be that related to environment, economy or society – the three pillars of sustainable development - there is a crucial need for: (a) Fundamental (basic) research to find innovative solutions, and (b) Knowledge transfer programs (applied/action research) to improve current processes and practices. The former will generate new use-inspired and targeted knowledge required for finding solutions to major sustainability challenges (universities functioning as ‘knowledge base’ institutions) while, the latter will make prudent use of existing knowledge to address relatively easy to solve problems for which cost-effective solutions are at hand (universities acting as knowledge-based institutions). University-community engagement (U-CE) is part of this process – a knowledge partnership. It is for this reason that through systematic realignment of institutional priorities, curriculum changes, use-inspired research and innovative partnerships, universities must actively promote community engagement (CE). When carried out as part of established university frameworks, policies and their enabling provisions, CE will be on par with the other two mission areas of universities – teaching and research.

In order to facilitate this, educational approaches directed primarily towards knowledge and skills development alone should, in addition, reorient to factor perspectives and value systems to create a holistic understanding and appreciation of the environment we live in and the development we do for a living. Education for sustainable development (ESD), which places equal weighting on the three mission pillars of universities is such an innovative approach that will enable universities to play their role as the ‘social conscience’ of societies more meaningfully. A whole new inter-disciplinary field of science called ‘Sustainability Science’ has emerged that integrates both natural and social sciences to comprehensively address sustainability challenges, big and small alike.

Any model of university-community engagement, thus, must on the one hand address community’s development and sustainability challenges and on the other, factor educational approaches most suited for finding solutions to community issues. The ability to sustain this stability seems to define the success of U-CE. This Concept Note presents such a model.

The Model per se, and its pertinent components are presented in a Q&A format.
What is SD?

SD stands for Sustainable Development.

1. The Brundtland Report’s ‘Development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ is the most popular definition of SD.
2. There are, however, other working definitions too: (i) a dynamic process enabling all people to realise their potential and improve their quality of life in ways which simultaneously protect and enhance the earth’s life-support systems; (ii) development that meets human needs satisfactorily without violating long-term natural resource capacities and standards of environmental quality and social equity; or simply, (iii) development that is good for all, forever.
3. The lack of a precise definition is not an indication of SD’s conceptual weakness. Many concepts such as democracy and equity are equally hard to define, yet they are central to world civilizations.
4. It is usually easier to understand what is clearly unsustainable; the current global development paradigm for e.g. is clearly unsustainable in the long run. 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.
5. A global population, currently at 7 billion and rising, will 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, further complicates the situation. This situation widens the gap between the rich and the poor globally. Only by setting human development on a sustainable trajectory, will we safeguard Earth systems for future generations.
6. The irony is that most of the technology needed and financial capacity to address these challenges exist already, but not the will to make things happen. We seem to be in a state of constant denial. It is important to remember that when earth system thresholds are crossed, there is neither revenge nor reward – only consequences; we have entered that period of consequences.
7. Our U-CE must by design reduce the risk the communities face as a result of exposure to global changes and any project intervention needs to build target group resilience so that the risks do not turn out to be disasters if realised.

What is ESD?

ESD stands for Education for Sustainable Development.

1. Universities across the world are beginning to accept their social responsibility recognising the important demand to engage in knowledge transfer programs, in addition to their traditional role of generating and disseminating knowledge. ESD is the educational approach with the highest potential to bring about this transformation. It is a continuous process that enables human beings to develop in four key areas: (i) knowledge, (ii) skills, (iii) perspectives and (iv) value systems to motivate and empower people to work toward a balanced and sustainable lifestyle.
2. While knowledge and skills are critical to address sustainability problems, a clear understanding of the temporal and spatial connectivity of issues (perspectives) and the value systems and world view within which important decisions are made require that we seek integrated solutions, as the complexity of critical sustainability issues demand interdisciplinary approaches than disciplinary or individual feats.
3. In a practical sense, when we strategise to eradicating (completely eliminating) poverty, the focus needs to be on abject or hard-core poverty the continuation of which is inhuman, while in trying to alleviate poverty (making it less painful, severe or more manageable), the focus is more on ‘hardship alleviation’ by providing improved educational facilities, healthcare, access to resources and
empowerment. Taking another example, if we need to address Food Security as a sustainability challenge, we need to take an integrated food system approach covering production, distribution and consumption. Here, land-use, biotechnology & seed varieties, water, climate change, agrochemicals, markets, health and nutrition, poverty, indigenous farming knowledge, governances and related environmental, economic and social factors play important roles. Crucially, none of these individual areas of knowledge is sufficient on its own to solve the challenge of poverty or hunger; all are necessary, and must be used in an interdisciplinary manner.

**How is Sustainability Science (SS) related to ESD?**

1. It may be argued that while ESD addresses the character of the curriculum, SS focuses on its content. SS is primarily use-inspired, as are agricultural and health sciences, with significant fundamental and applied knowledge components, and commitment to moving such knowledge into societal action. It is obvious, therefore, that SS requires a holistic approach involving the classical realms of natural sciences, engineering & health and social sciences & humanities to address the varied aspects of sustainability challenges.

2. Sustainability science is thus neither “basic” nor “applied”, rather, it is an enterprise centered on the “use-inspired basic research” that Donald Stokes characterized as “Pasteur’s Quadrant” of the modern science and technology enterprise (Figure 1). It includes the theorizing of “Bohr’s Quadrant” and pragmatic problem solving of “Edison’s Quadrant.”

**What do ‘Community’ and ‘Engagement’ mean in the SD-ESD Model?**

**Community**

1. In most situations both community and engagement are rather loosely defined making interventions difficult. For modern-day universities that accept students and staff from a wider cross-section of the society, nationally and internationally, a broader definition of community as constituting all major stakeholders has more merit than a narrower consideration. In such an approach, village, industry, non-state actors (all civil society organisations, including NGOs), policy makers & implementers, global change networks and donor agencies are the key partners for community engagement. It may be true that at any given time our focus will only be on a selected number of partners and not all of them together. This of course is a choice we make based on existing priorities and available resources.

**Engagement**

2. Most university-community engagements are limited to outreaches, network activities, consultation and various types of campaigns. This tacitly assumes that the universities are the ‘givers’ and communities are the passive ‘receivers’ thus creating a gap, not conducive for effective involvement. Engagement suggests a different sort of relationship, a welcome change and a stronger message: that communities need to be active partners if activities and solutions are to be rooted in the community’s perception of needs and issues.
3. More importantly it implies a two-way process that has to be ‘developed’. Developed, because in U-CE, the partners may not be on level grounds to start with. Both parties have to take special efforts to understand each other’s background, capacity and needs. While university represents modern knowledge, community comes with considerable traditional or indigenous knowledge. Both are important and must be brought to bear on the engagement with equal importance. For this reason, activities which are top-down often end up as one-offs without much scope for sustainability.
4. This means that through active partnership of all concerned, U-CE projects must become successful pilots that qualify as ‘best practices’ for further up-scaling as demonstration projects or even as national level initiatives.
5. Sustainability ‘best practices’ are defined by the United Nations system bodies and the international global change community as successful initiatives which:
   - are examples of outstanding contributions to improving the living environment and the well-being of people
   - have a demonstrable effect and tangible impact on improving people’s quality of life
   - are socially, culturally, economically and environmentally sustainable
   - are innovative: a best practice develops new and creative solutions to common problems, and
   - have the potential for replication: a best practice can serve as an inspiration to generate policies and initiatives elsewhere.

With this lead-up, the University-Community Engagement Model is presented below:

**What is the SD-ESD Model?**

The importance of this model developed by the Centre for Global Sustainability Studies, USM, is that it factors the major sustainability challenges that span across the three pillars of sustainability — economy, environment, and society — into the university’s mission activities in the three pillar areas of education – teaching, research, and community engagement. The two Venn diagrams, representing SD and ESD and the middle box containing the prioritised sustainability challenges, as shown in Figure 2 on the right, is a visual representation of this integrated SD-ESD model.

USM’s roadmap for sustainability mainstreaming across its entire range of operations is based on this generic model. It is flexible enough to accommodate various combinations of engagement for any given sustainability issue through teaching (formal, non-formal and informal), and research (process, basic, applied or use-inspired basic research). Importantly, various modalities of community engagement aimed at the CE stakeholders discussed above are an equal determinant of this model as are teaching and research. 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.
A Model for U-C Engagement: Concept Note

When used as a model for CE, the entries in the central box may be replaced by the priorities of the user, project teams or other higher educational institutions as the case may be.

The institutional pillar, sometimes considered to be the fourth component of SD or ESD, is the ever present glue that provides system stability. The institutional component comprises mainly the top management and other administrators, the constitution, strategies, policies, committees, services centres, infrastructure, utilities and finance, or simply put the entire governance and corporate system that provides the overall enabling environment, including its monitoring and evaluation mechanisms, within which the other three components can operate efficiently.

The Model expanded

In order to clarify the application of this model for community engagement where the focus is on a civil society group for e.g., the USM model above, is slightly expanded by adding another Venn diagram of 3 Hs in which the ESD cluster is connected to the Exposed Community (EC) cluster represented by the Head, Hand, and Heart. The bridge is one that connects the major ethical challenges of sustainability as valued by the civil community. This extension of the USM model may be modified further in scope with another branching to accommodate the industry and the business community's sustainability challenges through the CSR focus on the 3 Ps – People, Planet and Profit. This expanded model is shown in Figure 3.

In a similar way it is even possible to connect the New Economic Model (NEM) of Malaysia with its High income, Inclusiveness and Sustainability pillars as representing economy, society and environmental pillars of SD (Figure 4) to Figure 3 to highlight the need for sustainability education and capacity building for the efficient implementation of NEM.

In order to implement the 'SD-ESD model' in universities for community engagement, faculties that focus on environment are needed, along with faculties that are involved with industry, business, economic sectors, and faculties that relate more closely to the human community, culture, ethics and spirituality. Such an approach will result in a broader form of education envisaged by ESD. This is
also the kind of education that the university in a garden model of USM purports to promote by emphasising the critical role of science, social sciences, and humanities. This expanded version clearly shows the centrality of ESD in promoting education in its broadest form that builds capacity to address the major ecological, economic, and social challenges in a coherent and interdisciplinary way.

This model will also connect Agenda 21 & its global sustainability focus with Local Agenda 21, and the recommendations of The Future We Want (Rio+20), including their implementation in business sector and the community.

While volunteerism is an important individual and institutional driver of service to communities, taken at the level described above, it is much more involved and engaged than can be accomplished through volunteerism alone. Approached this way, all community focused engagement need not necessarily be free service but cost effective partnerships.

**What would be the U-CE Strategy?**

The major strategy for engagement is based on the premise that community risk resulting from global change challenges will be reduced through resilience building, which is essentially what most CE projects are designed for and eventually achieve as overall impact. Often, projects at the community level may not solve the issues completely once and for all, but will successfully reduce the adverse impacts of the problems and build capacity to manage any residual risks. This is also akin to the clinical approach adopted by the medical world in managing major health risks of communities or individuals. Seen in this light:

1. Every sustainability challenge, regardless of its origin, has an in-built risk level and a disaster stage. For example, we are in an advanced stage of risk as far as global climate change is concerned, and we are bordering on disaster stage as far as loss of biological diversity is concerned. It is this risk that needs to be reduced urgently than wait to settle all the arguments about uncertainties (Precautionary Principle). Considering poverty, it may be a serious risk or disaster depending on where we look; examples abound globally.
2. For every domain of sustainable development, therefore, there is a crucial need for:
   a. Fundamental (basic) research to find innovative solutions, and
   b. Knowledge transfer programs (applied/action research) to improve current processes and practices.
3. Science, technology and value system based approaches to community problems will produce lasting solutions.
4. Building meaningful community partnerships for innovative value-addition to on-going activities and new initiatives in gap areas, factoring intellectual property rights (IPR) and economics of engagement would be a key implementation strategy for success and sustainability.
5. Empowerment of communities towards sustainable living is fundamental to U-CE strategy.
6. Overall, for projects to be sustainable, U-CE should be people-led (both from the university and community sides), though the university and other formal parties can and should play important roles in coordinating the projects.
7. Formal university recognition of CE programs and projects through relevant processes of monitoring and evidence based evaluation will be needed to alleviate staff concerns about the real role of CE in their workload. This might be so self-evident that difficulties in doing just this are apt to be underestimated.
What would be the U-CE Process?

The overall project level activities may be designed to follow the globally accepted project management strategy known as “Logical Framework Approach (Analysis)”, LFA. The Project levels involve a 7 step process as shown in Figure 5:

- Steps 1 and 2 are pre-project stages usually done in the development of the project.
- Initial advisory team & community consultations, site screening & selection – “initial site assessment“, and awareness sessions form a major part of step 3.
- In step 4, assessment of the vulnerability of community or sites to the impacts of the selected sustainability challenge/s and the capacity of the exposure units (components of the community) with response measures will be evaluated.
- Steps 5 and 6 involve extensive planning for the implementation of prioritised measures followed by actual on-site implementation.
- While monitoring and corrective adjustments are an essential component of all steps, step 7 is designed specifically for a thorough evaluation of the project in terms of its deliverables and resource management.

Implementing all the priorities identified during step 5 may not be within the scope of any single project. The assumption here is that by the end of the project, sufficient capacity will be built at the community level so that the project cycle may be repeated, with each iteration improving the next cycle through the experience gained and the lessons learned.

How can we measure deliverables - outcomes and impact?

A successful U-CE will benefit both university and community as equal partners. Best practices arising out of such engagement will create lasting impacts.

1. Technically, outcomes and impacts are indicator based terms while the corresponding logframe (or project planning) terms are goals and targets. Whereas the former would lend themselves easily to indicator based assessments, the latter represent altered states that are created by the project intervention and as such harder to quantify.

2. If the U-CE has been planned using an established project management tool such as LFA, built into it are several steps covering Situation Analysis (stakeholder analysis, problem analysis, and objective analysis), Planning Phase (intervention logic, assumptions and risks, indicators) and Implementation Phase (preparation of activity schedule, cost schedule and project level activities) that systematically enable project planners to establish goals (overall objective) that deliver project.
impacts to beneficiaries, targets (purpose, or specific objectives) that result in outcome to target groups, and activities or tasks that produce the outputs which are the tangible products or services delivered by the project.

3. Built into the logframe thus developed are objectively verifiable indicators, and their sources of verification. These indicators may be designed in such a way that they remain operative throughout the course of the project represented by the planning, implementation and evaluation stages.

4. When U-CE is a knowledge based intervention, there are a hierarchy of levels at which we will be able to engage; involving mainly knowledge generation, dissemination or transfer. ‘Knowledge’ here includes data, information, knowledge, understanding and wisdom – the Akoff’s hierarchy. See Figure 6. below:

- **Data and information** provide facts and figures to answer questions relating to ‘who’, ‘what’, ‘when’ and ‘where’, while **knowledge** applies data and information to answer questions on ‘how’. A lot of exploratory community engagements take place at this level. **Knowledge and skills** that universities normally promote are the most essential attributes for success here.

- Yet to be truly useful to the community, we need to move beyond data, information and knowledge to **understanding** and **wisdom**, asking questions of ‘why’, and evaluating our own understanding. This is the level at which tangible solutions to root causes of community problems may be found. And this is where the **perspective** of issues we are addressing and the **values, ethics, and morals** that underpin these, and the overall world-view within which decisions are made & implemented come into focus. Sometimes, this level is even misunderstood. For example, if handouts are distributed to the poor, that will be applauded as kind heartedness or a philanthropic act. But asking ‘why’ we have poor among us may be misunderstood as being too critical or an expression of extreme activism!

**Figure 6. Akoff’s knowledge hierarchy**

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**Summary and conclusion**

With large pools of disciplinary experts, high quality research facilities, excellent infrastructure and students with varied academic interests; Malaysian universities have a considerable comparative advantage in promoting sustainability in their communities. Sustainable development being a very complex process has no standard recipe for the whole world. Universities, with their core functions as seekers of truth, knowledge and innovation, have a profound role to play in developing students’ talents to competency and capacity to adaptively manage a changing world. That is when the Malay equivalent of community engagement - **Libatsama Komuniti** - becomes deeply meaningful as ‘Libatsama’ carries in it the inherent meaning that it is an act of ‘involving as equals’; and that’s what U-CE should be.

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