



Case Studies of Transfer of ESTs

**WIPO Regional Forum on
Intellectual Property (IP) and
Environmentally Sound
Technologies (ESTs)**

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Zeeda Fatimah Mohamad

Senior lecturer

Department of Science & Tec Studies,
Faculty of Science

Fatimah Kari

Associate Professor

Centre for Poverty Studies and Development
Faculty of Economics
University of Malaya,
MALAYSIA

BASED ON SUSTAINABILITY (e.g. CLIMATE CHANGE) RELATED POLICIES

POLICY MAKERS
Top down Technology Needs

Global Level



- Mitigation
- Adaptation



National Level



Local technology providers

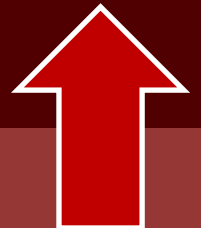
Local Level

Local technology users






Bottom up Technology Needs
LOCAL COMMUNITIES

BASED ON EVERYDAY TECHNOLOGY NEEDS OF DIFFERENT COMMUNITY



Overall Sustainable development and livelihoods

Industrial-led Green Growth

	Needs of providers			Needs of Users
	Generation (R&D)	Export Market Deployment	Local Market Deployment	Diffusion (Adoption & Adaptation)
Low-income and isolated communities	X	X	X	- Meeting & greening everyday needs 
Low-income and well-connected communities	X	X	X	- Meeting & greening everyday needs 
High & Middle income and well connected communities	X	X	X	- Greening everyday needs
Universities / Research Institutes	Research outputs/ Consultancy	X	X	- Greening everyday needs - Example to the community 
SMEs / University & RI Spin-offs	New business (for profit & strategic CSR)			- Greening everyday needs
Large firms (GLCs)	New business (for profit & strategic CSR)			- Greening everyday needs - Example to the industry



WIPO: Tech Transfer & IP Support



Different Challenges ??

Content



Case Study I:
Solar Home system for
Indigenous community



Case Study II:
Community greening of
Low-income urban community

Case Study III:
Sustainable campus



UM CARES 



Case Study I:

**Solar Home system:
Indigenous community**

Overall Sustainable development and livelihoods

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C1



WIPO: Tech Transfer & IP Support



Different Challenges ??



Background

- Since 1980s, Malaysia has put in place a **Rural Electrification Programme** aimed at providing electricity supply to homes, villages and indigenous communities, that are beyond the operational areas of local authorities.
- One of the key technology is the **Solar Home System (SHS)**. The SHS is used to assist communities with the following characteristics:
 - No proper road leading to the area
 - Will not be receiving any grid line extension in the next 5 years
 - Public amenities will be given priority
 - No potential for mini/micro hydro system
 - For housing unit, maximum output is 100-150W capacity
- The SHS programme for the indigenous, however, has not been very successful. Researchers from UM has been asked to advise the government to improve the programme.

Motivation: Meeting basic energy needs



Technology transfer: Resettlement & Solar Energy System



Rejection of green technology??





Insights

Key issues identified by the researchers:

- The SHS were given ‘**readily installed**’ to the community – with inadequate planning to provide long term support to maintain and improve the technology
- Very little explanation about the technology within the specific environmental (**tanah rayau**), social (**education**) and economic (**employment of youth**) needs and worldview of the indigenous community.
- Lack of vision to **empower** the community to manage the technology themselves, whilst the government does not have enough resources to adequately maintain the technology for them.



Insights

- **Top down technology transfer needs to be strategised according to the actual needs of the indigenous community.**
 - (i) **Incorporating their worldview in the technology transfer process**
 - (ii) **Ensure proper capacity building to adopt, maintain and (maybe) diffuse the technology in the long run.**
- **Opportunities for south-south technology transfer especially in incorporating indigenous knowledge and worldview in the adoption and diffusion of EST.**



Case Study II

A Greening project of
Low-income urban
community

Overall Sustainable development and livelihoods

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C2



WIPO: Tech Transfer & IP Support



Different Challenges ??



Background

- A collaborative **CSR effort** between the University with the CSR unit of two large companies Unilever, and elekom Malaysia Berhad to transform a low income high rise urban community in Kuala Lumpur (Kondo Rakyat) into a greener community.
- The ultimate objective of the programme is to develop Kondo Rakyat into a **model green community**. The long-term prospect is to use their experience to inspire and extend similar transformation to other low-income high rise communities in the vicinity.
- The programme has continued until now - with the community starting with simple technologies and now having more confidence to adopt more complex ESTs.



Insights

In the beginning...

- **Initial EST options** recommended by the intermediaries need to be negotiated with the community in order to establish trust and proper localisation of technology options from the beginning.
- Usually start with **simple options** that could be easily understood and discussed. Negotiation may require a few weeks, not in one meeting!
- The trust building process will usually results into the identification of **EST proponent(s)** within the community. They will be the main contact point by the intermediary.





Motivation: Meeting and greening of needs





Technology transfer





Technology transfer:

We want to start with simple technologies!





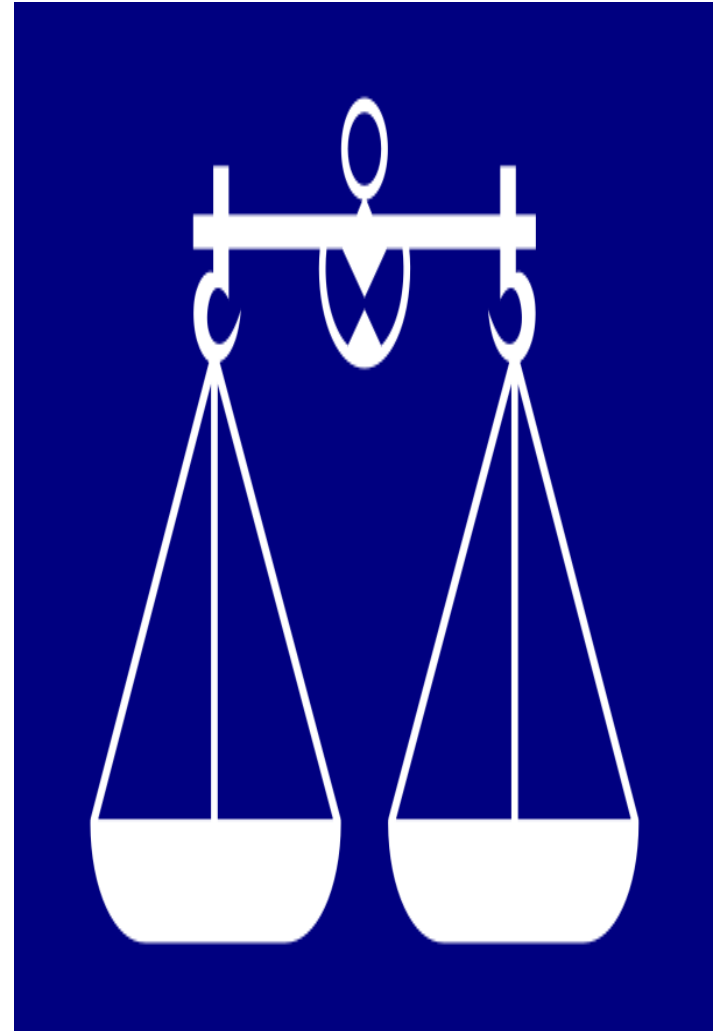
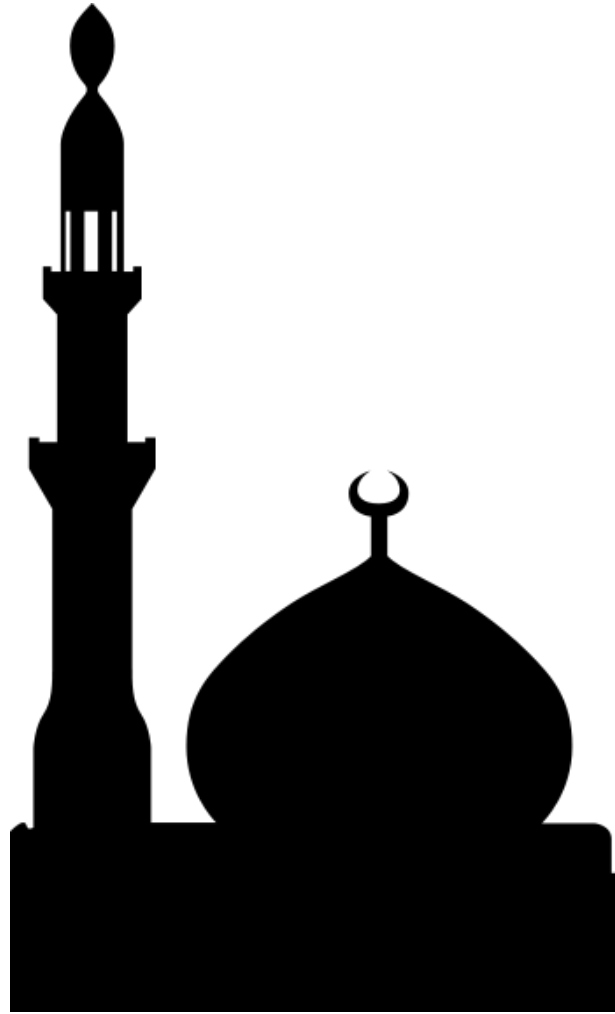
Early adoption and adaptation

- The technology transfer process requires **continuous interaction** between intermediaries, EST proponents and larger members of the community. This would enable a continuous process of learning and “adaptation/finetuning” of the technology for the local context.
- **Capacity building on the basic technique and skills** to use and handle the technology is very important to increase adoption.
- Communication about the technology needs to suit the **communication style** of the local community e.g. local lingos, “meeting while having teh tarik”, the assistance of local NGOs.











Insights

...long-term adoption and diffusion?

- More **sophisticated and systemic EST technology** can only be introduced once the EST proponents in the community have an appreciation of EST technologies, good understanding of related socio-technical issues and some level of recognition by key members of the community. It is at this level that communities start to feel receptive in seeking new information and partners to enhance the transfer EST.
- At this phase the **role of intermediaries can be reduced** as EST proponent feels more empowered and confident to lead the agenda.
- **EST proponents** in one community could act as agents of technology transfer to other members of the community, and other similar communities.





Case Study III:

Sustainable Campus
Campus community

Overall Sustainable development and livelihoods

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C3



WIPO: Tech Transfer & IP Support



Different Challenges ??



Background

- **UMCARES**, a sustainable campus NGO was established in October 2009 to transform University of Malaya into a more **sustainable campus**. Currently run by like-minded staff and student volunteers, with some financial and institutional support by the university.
- **Our mission is to:**
 - (1) Develop **medium and long term strategies** to transform UM into an environmentally sustainable campus
 - (2) Plan and provide **assistance** in the implementation of environmental activities to increase environmental awareness, understanding, appreciation and action among the campus community
 - (3) Provide **coordination and institutional support** to enhance the effectiveness of campus environmental activities.
- At present we are involved in various EST projects involving students, academic staff, NGOs, government agencies, technology practitioners and individual entrepreneurs. Tackling the issue of technology transfer and IP is becoming an important part of the task.



Motivation:

Greening of needs and example to the community

**UM community
(at all levels)**

Students & Staff
Residential Colleges
& Other Ptj

Nearby community

Other stakeholders

Community

**Nature and
Biodiversity**

Waste

**Energy and Low
Carbon**

Water

**Sustainable
Lifestyle**

Environmental sustainability

Teaching

Research

Publication

Campus operations

**Community
engagement and
Social Responsibility**

University outputs

UM Zero Thrash Campaign: The Veecycle Recycling project



- The VEECYCLE project has gained full participation and commitment from all final year Environmental Engineering students through the EIA and Waste Management subject for two consecutive years.
- The team has set up **50 sets of PRO bins retrofitted from existing rubbish bins** with a total cost of 88% lower than the cost to purchase 50 sets of new recycling bins available in the market which serve the same purpose of separation at source.
- Has contributed to an increase of **4%** of recyclable items collected over two years.
- The project was able to enhance the co-operation and positive involvement of not only Environmental Engineering students, but the campus community as a whole in raising the awareness about the importance of source separation among the community members.

UM Zero Thrash Campaign:

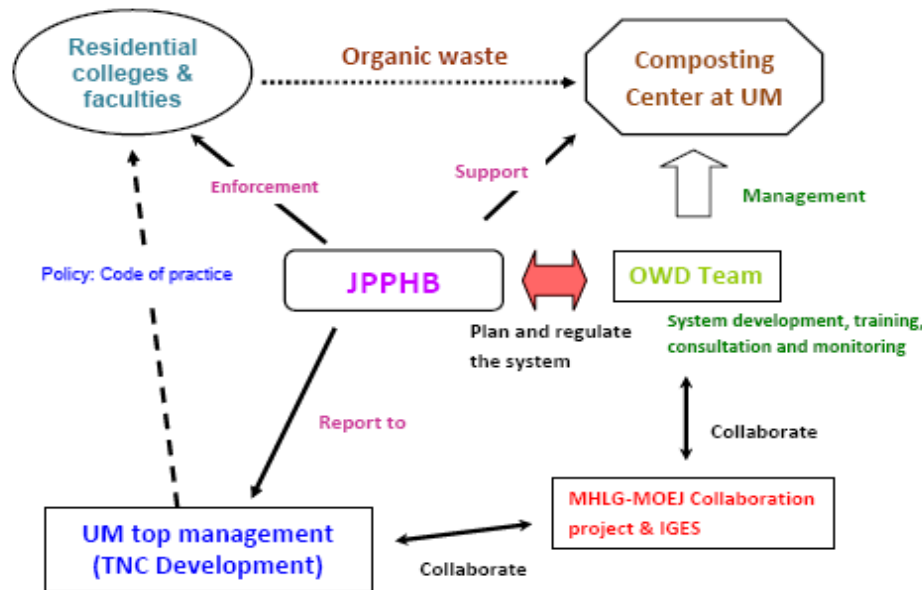
The Organic Waste Diversion (OWD) project

Key players:

- **Initiated and implemented by** the OWD Team (Lecturer and Student)
- **Technology provider and advisor:**
 - Early stages:
 - TAKAKURA METHOD: National consultant on food waste management, Ministry of Housing and Local Government & Institute for Global Environmental Strategies (IGES)
 - Late stages:
 - Anaerobic Digester from the Faculty of Engineering UM
 - Anaerobic Digester from a private company
- **Institutional support:**

DVC of Development and UMCARES
- **Technology users:**
 - Residential colleges (1st, 2nd, 3rd, 5th, 6th, 7th & 8th)
 - Future: Nearby communities (e.g. Kondo Rakyat)

UM Zero Thrash Campaign: The Organic Waste Diversion (OWD) project



Positive outcomes of OWD Project:

- **Positive environmental benefits with the reduction of food waste to landfill: reduction of carbon emission from methane and water pollution (from leachate).**
- **Improved waste management system (source segregation, systematic transfer and in-house composting). Production of quality compost which is a valuable resource from the recycling of nutrient of food waste.**
- **Green initiative in a higher learning institute with the recovery of food waste for composting. OWD is now a national case study and a good example of multi-stakeholder cooperation in the technology transfer of EST.**
- **We are now enhancing the project by converting the organic waste by biogas using in-house AD technology and a commercial AD from a local SME.**

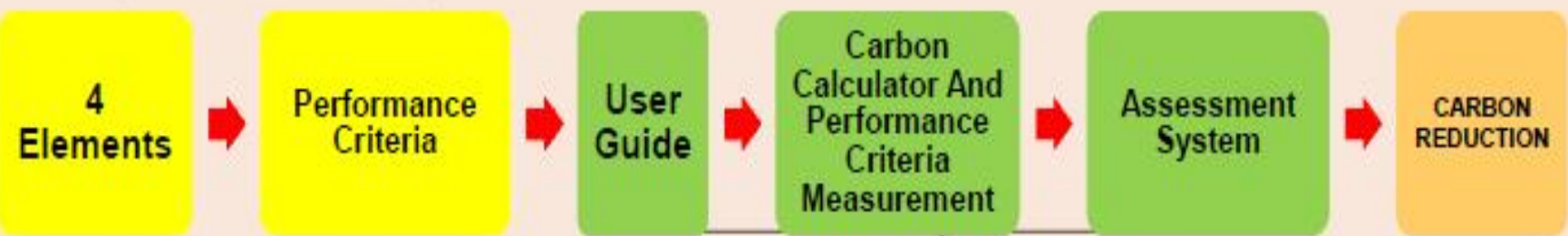
Energy and Low Carbon: Low Carbon Cities Framework and assessment system

LOW CARBON CITIES FRAMEWORK & ASSESSMENT SYSTEM

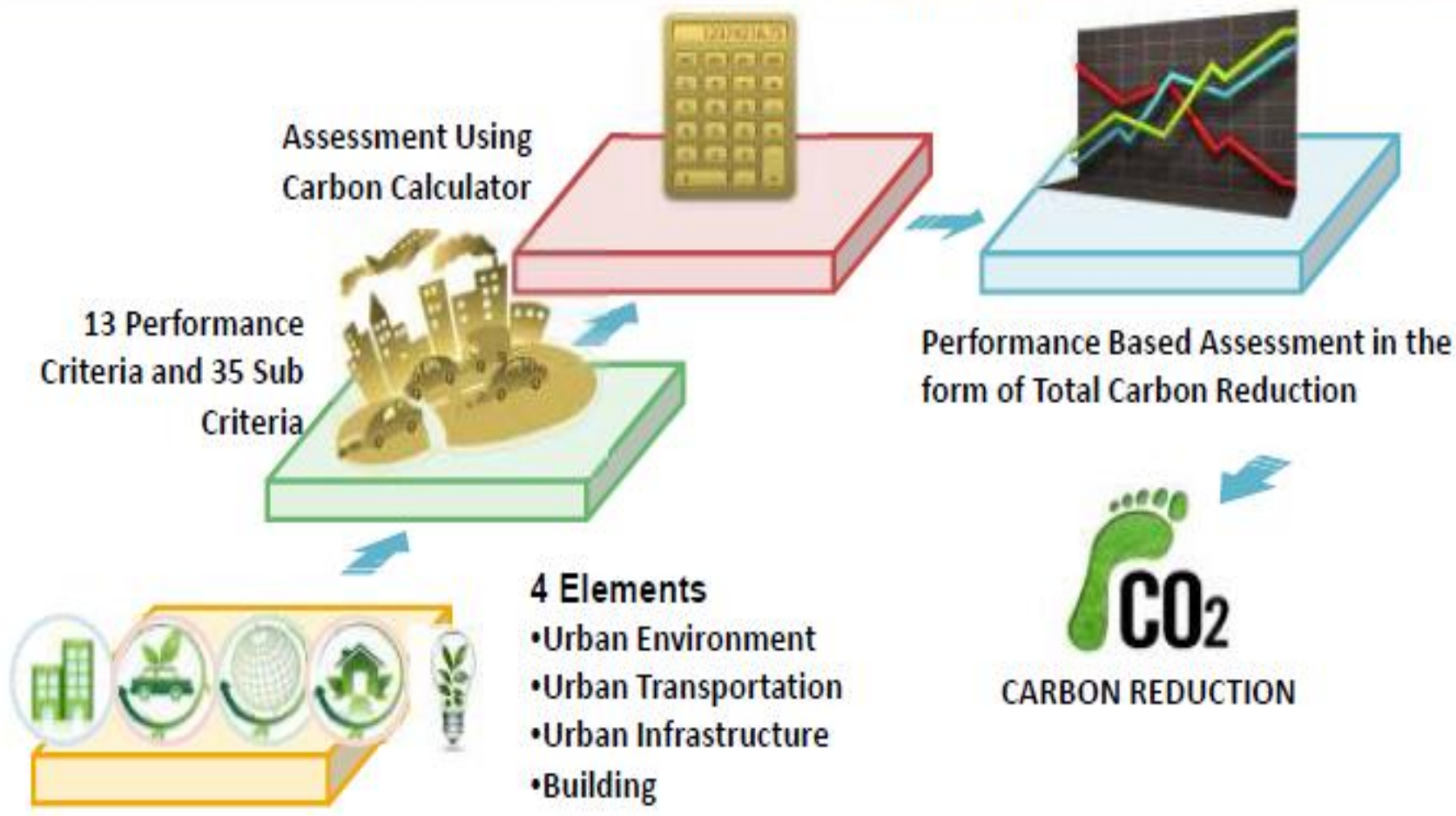


**LOW CARBON CITIES FRAMEWORK &
ASSESSMENT SYSTEM (LCCF)**

PART 1 – LCC FRAMEWORK



PART 2 – LCC CALCULATOR



PILOT PARTNERS



UPEN TERENGGANU



KEN HOLDINGS BHD

1MDB
Malaysia Development Berhad





Conclusions

There are ample opportunities for universities to be the “intermediary” for technology transfer of ESTs:

- (i) As a platform for interaction between different technology provider and users, be it within the university and larger society.**
- (ii) Demonstration site for promising ESTs;**
- (iii) Data collection and action research on technology transfer of EST**

Interaction and sharing of experience and collaboration between universities in Asia could be one way forward to enable the technology transfer of ESTs in the region.



Reflection

**Based on this insights how can WIPO
(specifically WIPO Green,
as a database and information tool)
can be used to improve the
technology transfer process?**



Don't be a part of the problem

Be a part of the solution

High Moon

Terima kasih

zeeda21@um.edu.my

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- (7) Dr Chua Kok Hua, UNITEN
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