

Living Lab UMT



Universiti Malaysia Terengganu

# Living Lab Platform

- Living labs that advance sustainability is a place-based research platform that leverages the college campus as a test-bed for innovation and the co-production of sustainability knowledge.
- Living laboratories have many benefits for universities and their students: facilitating experiential learning and making curricula relevant.





1. LL1:  
Sustainable /  
Green  
Corridor (Dr  
Amirah, Dr  
Afiq & Dr  
Mohd Uzair)

# GREEN LIVING UMT MONTHLY COLLECTION

28 APRIL 2022 THURSDAY BEFORE 10 AM



FSSM



FPEPS

DROP YOUR  
RECYCLABLE ITEMS AT ANY  
COLLECTION POINTS HERE  
BEFORE 10 AM



IMB



KABIN BIRU



KOLEJ KEDIAMAN  
(TEFLON)



FOR MORE INFO, CONTACT:  
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09 668 3838

PLEASE REFER TO RECYCLABLE ITEM AND NON-RECYCLABLE ITEM LIST.

UNIVERSITI MALAYSIA TERENGGANU

ORGANIZED BY:  
ECO-INNOVATION RIG, FSSM, UMT

## Living Lab 1 : Sustainable Arcade



# GREEN LIVING UMT MONTHLY COLLECTION

BARANG YANG BOLEH KITAR SEMULA (RECYCLABLE ITEMS)

## 1) KOTAK/KERTAS



Polapik  
bungkus  
kertas



Kotak  
kadkod



Risalah



Surat khabar



Buku



Kotak  
kertas



Beg kertas



Rol tisu

## 2) PLASTIK



Tupperware



Botol  
mineral



Pinggan



Bekas sabun/  
shampoo



Plastik  
pembalut  
lutsihar



Bekas plastik  
berlogo

## 3) LOGAM



Basikal



Besi



Bateri  
Kenderaan



Tin  
Aluminium



Barangan  
Nikel



Periuk/Kuali

## BAHAN TIDAK DIAMBIL



Baju



Kayu



Kaca



Tisu



Beg Plastik



Perabot



Barangan Kulit



Minyak  
masak  
terpakai



Bateri untuk  
alatan rumah



Produk  
melamin



Plastik  
kurier



Polistren



Styrofoam



Getah

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1. LL1:  
Sustainable /  
Green  
Corridor  
(Upcycling of  
Waste  
Plastics)

# 1. LL1: Sustainable / Green Corridor (Upcycling of Waste Plastics, Dr Afiq)



## 2. LL2: Sustainable Office



# LL3: Energy Management (PPH)

1. To promote the culture of conservation among the campus and greater community
2. To encourage efficient for energy usage
3. To be a leader in energy sustainability



1. Solar Panel  
PIC: PPH



(Penggunaan Lampu LED dan *Motion Sensor*)



Projek Solar NEM 3.0 UMT

- Merupakan sebuah projek kolaborasi antara PPH dan UMT Jaya Holdings bagi tujuan mengurangkan penggunaan tenaga elektrik melalui pemasangan sistem solar photovoltaic (PV) di bumbung2 bangunan UMT.

#### Impak Projek :

- Unjuran Penghasilan tahunan 6,210,256 kwh tenaga elektrik daripada sumber solar (30% dari keseluruhan penggunaan elektrik)

• Penjimatan Kos Utiliti (Elektrik) sebanyak RM1.0 juta setahun kepada UMT (berdasarkan penggunaan semasa)

## LL4: Bio-refining centre (AP Dr Shahrul & Dr Lee Gaik Ee)

- Objectives of the BRC are:
  - 1. To establish a Bio Recycling station for the conversion of Organic Wastes into value-added products in UMT.
  - 2. To develop the campus Sustainability Index for UMT.
  - 3. To apply the social marketing approach of improving the university community's environmental awareness and behavior.
  - 4. To reduce the operating cost of solid waste to the contractor.

### Brief Overview of UMT Biogas Prototype Center



Biogas digester located in University Malaysia Terengganu (UMT) specifically in Prototype and Fabrication Laboratory

Operation of digester started in 2018 with processing capacity of 1-3 kg of kitchen waste per day.





# Shrimp Waste Biorefinery

Prof. Dr. Meisam Tabatabaei, Prof. Ts. Dr. Su Shiung Lam, AP. Ts. Dr. Nor Azman Kasan, Dr. Hajar Rastegari

## Waste management approaches (2021)

To increase shrimp farmers' and shrimp processing companies' income

## Formulation new food/feed products

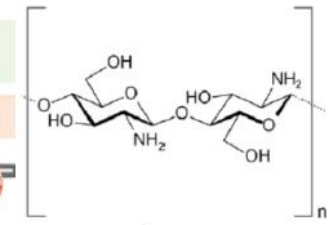
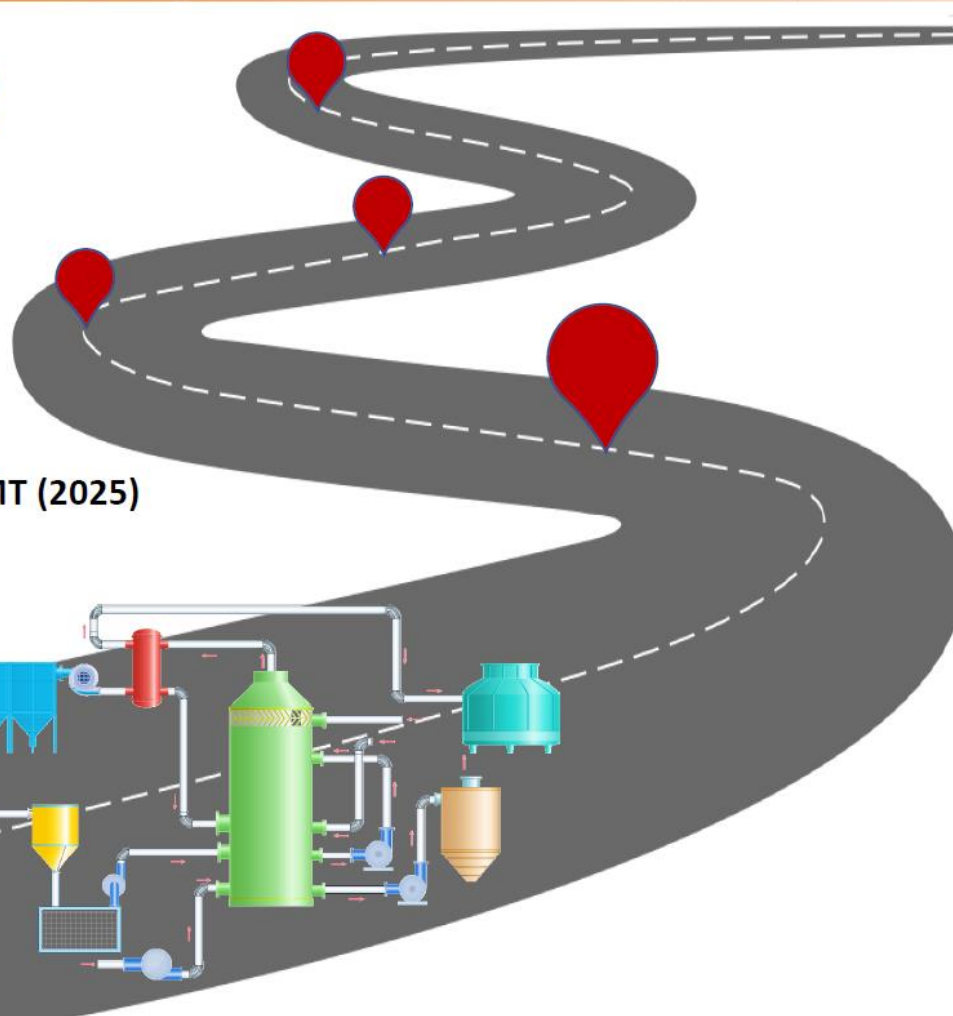
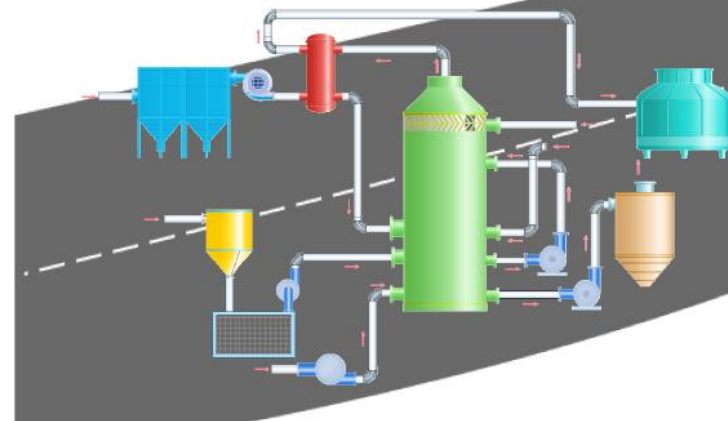
To valorize shrimp waste

## Convert the existing single-product shrimp processing companies' to multi-product systems

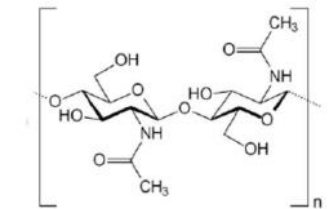
To increase their incomes

## Establish a biorefinery pilot plant in UMT (2025)

Sustainable valorization of shrimp waste into valuable products



Chitosan



Chitin



Proteins and pigments



Minerals (e.g. calcium carbonate)



# LL5: Green Schools



- Green school is one of the sustainable campus initiatives which aim to educate all level of school childrens in kindergarden, elementary, primary, secodary and high school students regarding sustainability concepts and issues. With various platforms such as workshop, exhibition, and sustainable activity, educate the young generation regarding the importance of sustainability. It is expected that young generations who understand the concept and importance of sustainability will give a positive impact towards the THREE sustainable elements in the future, which is Human, Nature, and Economy. UMT is the most preferrable condusive centre to collaborate among other Sustainable School, especially at the eastcoast part of Peninsula Malaysia and contributed most impactful program in sustainability.
- List of program: Ocean hope program, microplastic program and etc...

# LL6: Green Community

- Green community is one of the campus initiative which aim to assist the society problems by providing a sustainable solution, beside helping the community by using sustainable approach. This is include some of the program/initiatives by stakeholders in engaging the action plan in phases, which must ensure the activity sustain in a long period. Green community initiative is also to educate the public or society regarding the importance of sustainability environment and several issues related to it such as carbon minimization and waste management. Green Community embraces the internal and external stakeholders to enhance the spirit of togetherness across the boundary. It shall not by project or program related to environment, but more extremenly in smart-partnership of educational framework and Social Responsibility, such as community services, NGO's collaboration and volunteerism activity
- With Green community initiative, its expected that participated community can understand the concept and importance of sustainability will give a positive impact towards the 3 sustainable element in the future, which is human, nature and economy.



# LL7: Sustainable Transport (PPH)

- Concept of sustainable transport in UMT will emphasize on few strategies:
- Improving the Public Transport (UMT Shuttle Bus) within campus.
- Promoting an eco-lifestyle campus experience to the campus stakeholders via providing a comprehensive plan on pedestrian walk, OKU amenities, Electric Bike, and Electric Vehicle/e-Cars
- Encouraging the full utilization of public transport services (pool efforts) and pedestrians walk to the academic buildings, rather than private transportation.





## LL8: Bio-diversity (AP Dr Chong Ju Lian)

- Universiti Malaysia Terengganu is surrounded with forests and mangroves which are rich in wildflowers and trees that excrete natural plant resins. We saw this an opportunity to reintroduce more local flora and fauna. Stingless bees hives is one of the open LL in UMT area. This is a part of the open area preservation, where flowering plants to sustain the stingless bees colonies. UMT also aimed to be a breeding ground of stingless bees using alternative methods such as using stingless bee bait boxes and hive splitting techniques.



## LL9: Opulent Ocean

- The South China Sea Repository and Reference Centre (RRC) functions as a 'marine natural history museum' in INOS. Established in 2004, RRC is focused on the collection of marine diversity found in Malaysian waters (South China Sea and Strait of Malacca). The RRC vision is to be the principal repository and reference centre for marine collection in Malaysia for research and education. To date, more than 30,000 marine specimens are deposited at RRC. Moreover, 52 specimens from the total specimens are unique (type). Specimens are divided into four categories including biology, geology, palaeontology and genomic. All specimens are kept in either wet, dry or genomic collection rooms. All curatorial system at RRC follows the standard from the National Park Service, USA.
- Most of the specimens deposited at RRC are coming from research done by UMT researchers. Nonetheless, more specimens, especially type are deposited by non-UMT researchers from local and foreign institutions. At the same time, RRC is recognised by the Malaysian Government as the main repository centre for marine specimens. Internationally, RRC is certified by the Australian Government for biological specimen exchange/loan centre with Australian institutions. RRC also the main contributor for MyBIS (Malaysian Biodiversity Information System) and also the Malaysian node for OBIS (Ocean Biodiversity Information System).

14 LIFE  
BELOW WATER





# LL10: Agro-ecology and Organic Agriculture

- The Kompleks Pertanian UMT Bukit Kor aims to make the best use of the available agricultural area for research on agroecology and organic agriculture. Coordination between the partners (government and private) of the use of the available acreage is valuable for setting up research in different conditions. Also, investing in cooperation with farms in setting up trials can also further promote the real-life aspect of experiments. This is an important principle of a living lab.





# LL11: Blue Economy



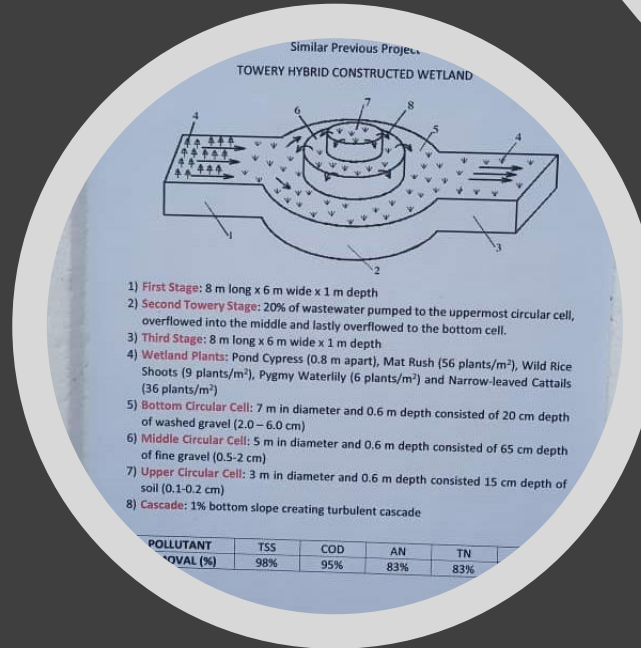
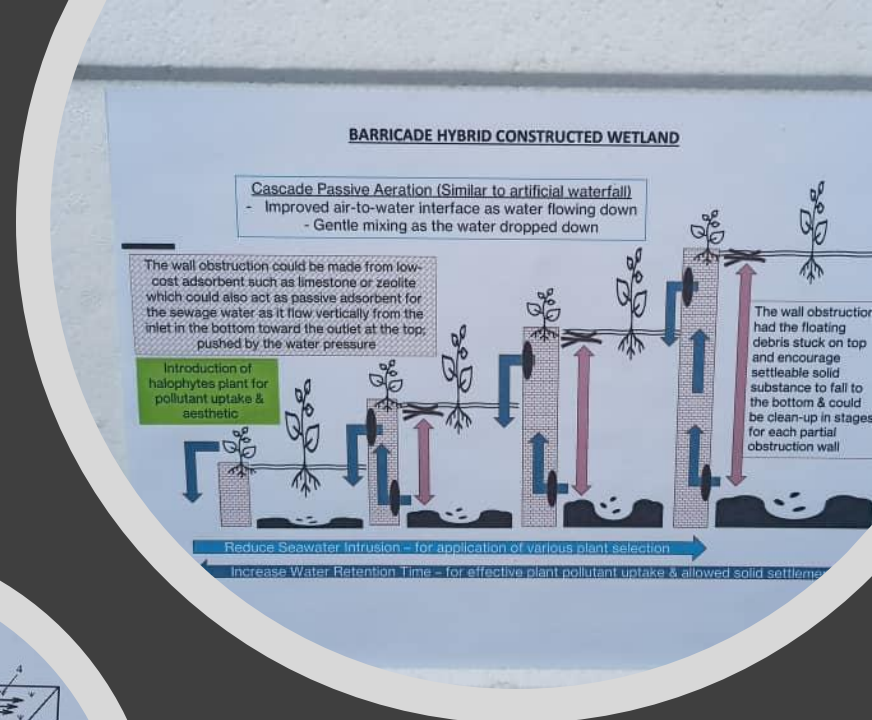
- Aquaculture is identified as a Blue Growth priority to ensure the sustainable supply of seafood to help meet increased food demands of the growing global population. Recognizing that wild capture fisheries are often fully exploited, yet demand for sustainably sourced seafood continues to rise, UMT aquaculture workstream aims to contribute to the Malaysia's capacity to grow a diverse pool of aquatic species in environmentally and economically responsible ways.





# LL12: Constructed Wetland (Dr. Shahril)

- Constructed wetlands have been used as tertiary treatment, focused on 'polishing' the discharge by removing further biochemical oxygen demand (BOD), solids, and nutrients. Wetlands also may be used for secondary treatment, decreasing the oxygen demand in wastewater. Recognizing that the constructed wetland can be installed to treat agricultural wastewater and runoff, UMT ecocampus team aims to investigate the innovative application of plants which can be used as constructed wetland. Additionally, they want to encourage farmers and landowners as environmental service providers and make it possible for them to use constructed wetlands for their own economic benefit while also saving the future of upcoming generations.



# Living lab as a support to trust for co-creation of value.



A row of approximately 15 wooden figures, resembling stylized people, arranged in a line on a white surface. The figures are light-colored wood, except for the one in the center, which is painted a vibrant red. The background is a soft, light blue gradient. The text "Thank You" is overlaid in white, centered over the red figure.

Thank You