

Role of University in Contributing towards Sustainable Development Goals

Professor Dr. Sumiani Yusoff

PRESENTATION OUTLINE

Introduction to
Universiti Malaya



Global
Sustainability &
Environmental
Issues 2019



Environmental
Education through
UM Eco-Campus
and Living Labs
Program



Conclusion



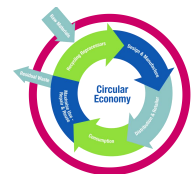
Introduction to
Sustainable
Development
Goals (SDGs)



Roles of Higher
Institutions &
Contributions
to SDGs



Opportunity to
infuse online
course into UM
curriculum



Introduction to University of Malaya



ABOUT UNIVERSITI MALAYA

VISION

To be an internationally renowned Institution of Higher Learning in research, innovation, publication & teaching



UNIVERSITI
MALAYA



MISSION:



To advance knowledge and learning through quality research and education for the nation and for humanity

HISTORICAL FACTS

University of Malaya was established on 1st January 1962.

On June 16th 1962, University of Malaya celebrated the installation of its first Chancellor, Tunku Abdul Rahman Putra Al-Haj, who was also the country's first prime minister. The first Vice-Chancellor was Professor Oppenheim, a world-renowned Mathematician.

Currently, His Royal Highness The Sultan of Perak Darul Ridzuan, Sultan Nazrin Muizzuddin Shah is the Chancellor of the University of Malaya.

YBhg. Datuk Ir. (Dr.) Abdul Rahim Hj. Hashim was appointed as the twelfth Vice-Chancellor of the University of Malaya on 1 November 2017.

Campus Population

2,344

Academic Staff

3,526

Non-Academic Staff

24,463

Students Enrolment
(international & local)

*as of June 2019

Land Area

890.77

acres (excluding Universiti
Malaya Medical Centre)



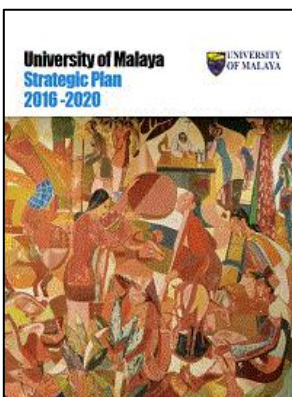
KING EDWARD VII COLLEGE OF MEDICINE



RAFFLES COLLEGE



UNIVERSITY OF MALAYA



Document is available online:
http://portal.um.edu.my/doc/canseler/pptsg_upload/pelan%20strategik/UM%20Strategic%20Plan_2016-2020_07052018.pdf

UMIQUE: ENVIRONMENT & NATURE



BOTANICAL GARDENS / RIMBA ILMU

Rimba Ilmu is an 80-hectare botanic garden located within the Universiti Malaya, campus. The words Rimba and Ilmu are of the Malaysian language that literally means Forest of Knowledge.



INSTITUTE OF OCEAN AND EARTH SCIENCE (IOES)

IOES University of Malaya was established in 2003 in response to the national call for more concerted research in the marine sciences, considering the importance of Malaysia's abundant marine heritage as well as to coordinate and lead all research activities and consultancies in marine and maritime research at the University of Malaya



ULU GOMBAK FIELD STUDIES BIODIVERSITY CENTRE

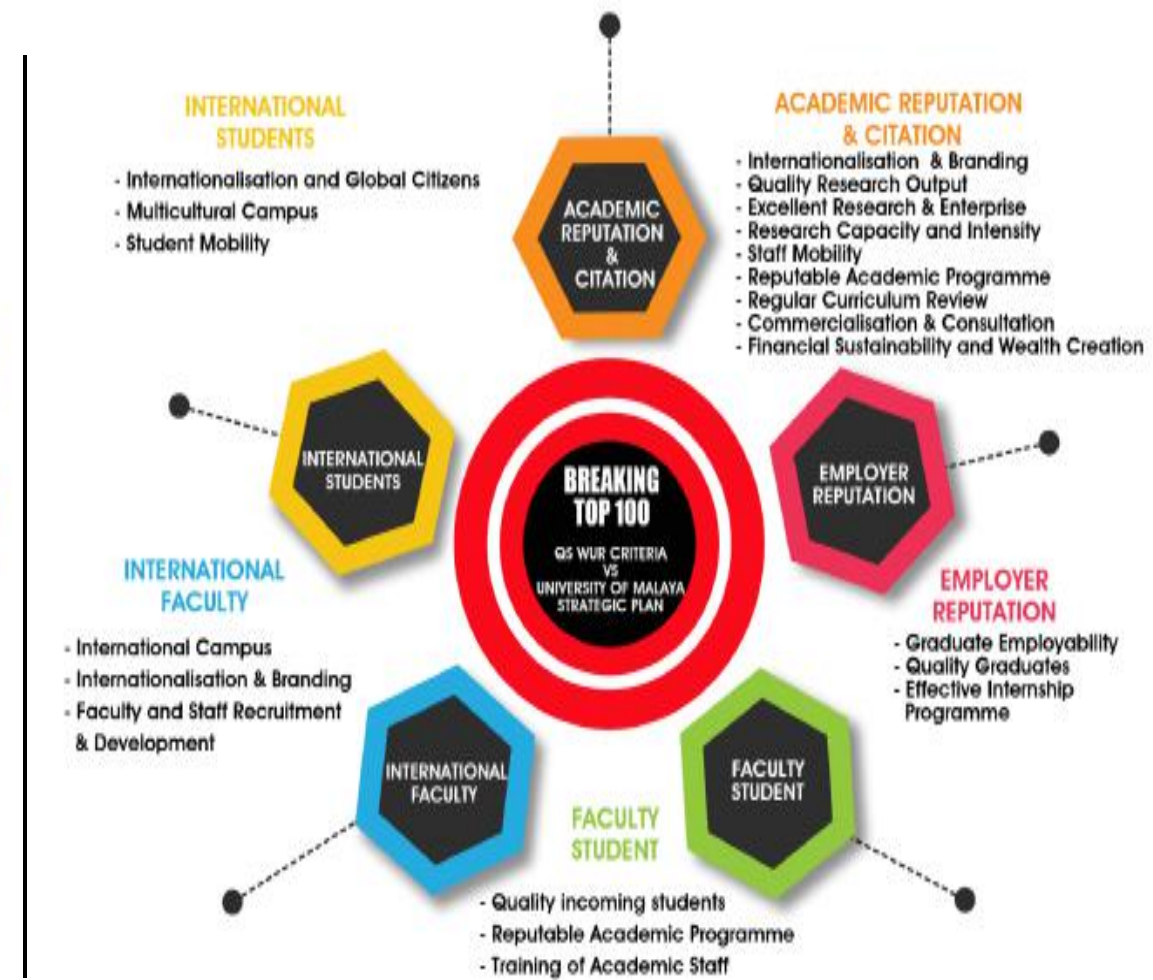
The Universiti Malaya Field Studies Centre of the Ulu Gombak Biodiversity Centre, sited on 120-hectares of secondary and primary forest is a veritable fount of biological & ecological knowledge, with the area's fauna and flora extensively studied and documented throughout the site's 40-year history.



GLAMI LEMI BIOTECHNOLOGY RESEARCH CENTRE

The Universiti Malaya Biotechnology Research Centre located in Glami Lemi, Jelebu Negeri Sembilan is established in 2013; a host to variety of research activities on biotechnology, agricultural and agrofood sectors.

UNIVERSITI MALAYA: RANKINGS AND RATINGS



Introduction to Sustainable Development Goals (SDGs) & Roles of University



GLOBAL SUSTAINABILITY ISSUES 2019

CLIMATE CHANGE



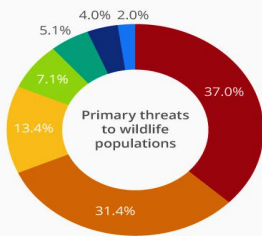
Human activity is now the prime driver of change in the Earth System e.g. greenhouse gas levels, ocean acidification, deforestation and biodiversity deterioration.

HABITAT & BIODIVERSITY LOSS

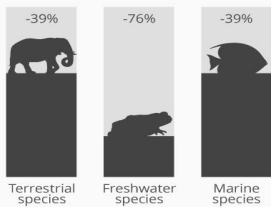
Wildlife Populations Worldwide Have Plummeted

Threats to wildlife and population decline from 1970-2010

■ Exploitation ■ Habitat degradation/change ■ Habitat loss ■ Climate change
■ Invasive species/genes ■ Pollution ■ Disease



Species population decline from 1970-2010



Source: World Wildlife Fund

Forbes statista

AIR POLLUTION

Haze a dilemma for Asean chair, say analysts



The Prime Minister's Office shrouded in haze. The API reading in Putrajaya yesterday reached 110. — Picture by Ahmad Zamzauri

KUALA LUMPUR. — As sitting chair of Asean this year, the perception is that Malaysia should be able to flex its muscle and pressure Indonesia to resolve the growing haze of open burning that is choking its neighbours.

But regional analysts connected by Malay Mail Online said the reality is different, citing the Asean practice of non-interference. They believe the most Malaysia can do would be to push for regular meetings with other Southeast Asian countries on the haze problem, and look towards other organisations like the European Union (EU) and how they address matters involving trans-boundary pollution.

"Actually, there is not much Malaysia can do as chair, Indonesia has just recently continued to delay the signing of a Memorandum of Understanding between Malaysia and Indonesia to cooperate over haze matters," Dr Helen Yarkley, senior lecturer at Universiti Malaysia's Department of International and Strategic Studies, said.

"This shows that Malaysia in the chair does not actually change any of the relationship dynamics of the two countries over the haze. It is unlikely more pressure can be placed on Indonesia during the meetings."

The original intent of Asean still stands — non-interference above all. Even with Indonesia reaffirming the legally-binding Asean Agreement on Transboundary Haze in 2014, nothing much has actually changed because the agreement does not come with any enforcement or punishment mechanisms.

Helen pointed out that several companies implicated in the fires in Indonesia were Malaysian companies, saying the government should "lead by example" by cutting down on the coconers of these companies first.

She said Malaysia and Asean could learn from how the EU managed its own acid rain problem in Europe, where it ratified legally-binding conventions to manage the issue along with enforcement mechanisms.

"Asean needs to go one step further to also have the mechanisms in place to ensure that ratifying states bear real responsibility to enforce their commitments."

Dr Ooi Ewe Hong, deputy director of the Singapore-based Institute of Southeast Asian Studies' Yusef M. Sidani Institute, said the haze issue revealed a weakness on the ability of Asean and the Indonesian government to address the matter.

"The basic truth about Asean is that it is the collective expression of the agendas of 10 countries, the domestic politics of many of which are in a divisive phase," he said.

"What Asean member states rely on is each other's understanding of their delicate situation domestically and globally. Exerting pressure on each other is therefore a difficult thing to do, for fear of generating unwanted responses."

Ooi said Singapore's recent action in issuing preventive measure notices on four Indonesian companies deemed responsible for the latest bout of haze seemed to be the "international legal limit."

"What Malaysia as chair can do is to highlight the haze, and offer region-wide — not just only Malaysia — assistance. The attention is not bad today it may be time for Asean as an organisation to show that it has ability, or at least the ambition, to handle controversial and sensitive issues in a mature fashion," he said.

He was doubtful Malaysia would be able to use the year-end's Asean Economic Committee to confront Indonesia over the haze issue.

William Case, a professor at the Southeast Asia Research Centre of the City University of Hong Kong, said Indonesia was taking steps to prevent the open burning of forests, but it lacked the "institutional and technical capacity" to fully do so.

WATER POLLUTION



Keeping poisons out of our rivers

Leachate from landfills getting into our raw water supply is a serious issue that must be tackled at multiple levels. While the Government wants all parties involved to work on a holistic solution, experts caution that ammonia and heavy metals will pose an increasing danger as the amount of solid waste generated grows exponentially. > See Page 4 for reports by HEMANANTHANI SIVANANDAM and VINCENT TAN

It has been estimated that **2.1 billion** people have lack access to safely managed drinking water services and even over **4.5 billion** people lack safely managed sanitation services.

PLASTIC POLLUTION

Where do the plastics come from?

Top 3 plastic polluters in the world



The US, Canada and Bermuda produce 2.2kg of solid waste per capita per day, the world's highest in 2016



Did you know?

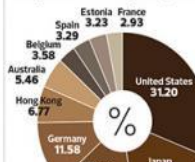
About 4 billion plastic bags are used

MALAYSIA — the world's top dump site for plastic waste

For more than 25 years, China took in 45% of the world's total waste. Things took a turn last year when the country decided to stop importing major plastic waste due to local environmental concerns, and overnight turned Malaysia into the world's largest importer of plastic waste.

According to Greenpeace, much of the imported waste is being dumped in landfills or burned in open air as Malaysia does not have an adequate system to deal with the surge in plastic waste imports. It is worth noting that the government plans to close down 100 illegal plastic waste recycling plants across the country within the first three months of the year.

Top 10 exporters of plastics to Malaysia from January to July 2018



NO	COUNTRY	WEIGHT TONNES	TOTAL VALUE USD
1	United States	951,444.46	128,505,239
2	Japan	104,920.37	79,195,541
3	United Kingdom	95,248.53	76,420,372
4	Germany	72,501.09	52,092,660
5	Hong Kong	42,398.96	47,565,511
6	Australia	34,933.03	24,564,076
7	Belgium	22,417.96	19,979,292
8	Spain	20,586.86	20,144,991
9	Estonia	20,255.91	12,579,480
10	France	18,371.49	16,816,982
TOTAL		626,328.56	482,804,346

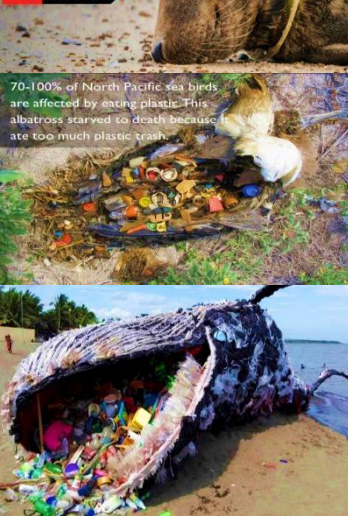
Other exporting countries such as New Zealand, Portugal, Romania, Sweden and Switzerland are not included in the pie chart and listed below.

Source: Greenpeace Malaysia. Data from the Department of Trade and Industry, Malaysia.

800 species worldwide are affected by marine debris, **80%** of that litter is **PLASTIC!!!!**

100,000 MARINE MAMMALS ARE KILLED BY PLASTIC TRASH EVERY YEAR.

ACT NOW #ZeroPlasticWaste



70-100% of North Pacific sea birds are affected by eating plastic. This albatross starved to death because it ate too much plastic trash.

WASTE POLLUTION

Malaysians produce 15,000 tonnes of food waste every day



SUSTAINABILITY TODAY:

UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS (SDGs)



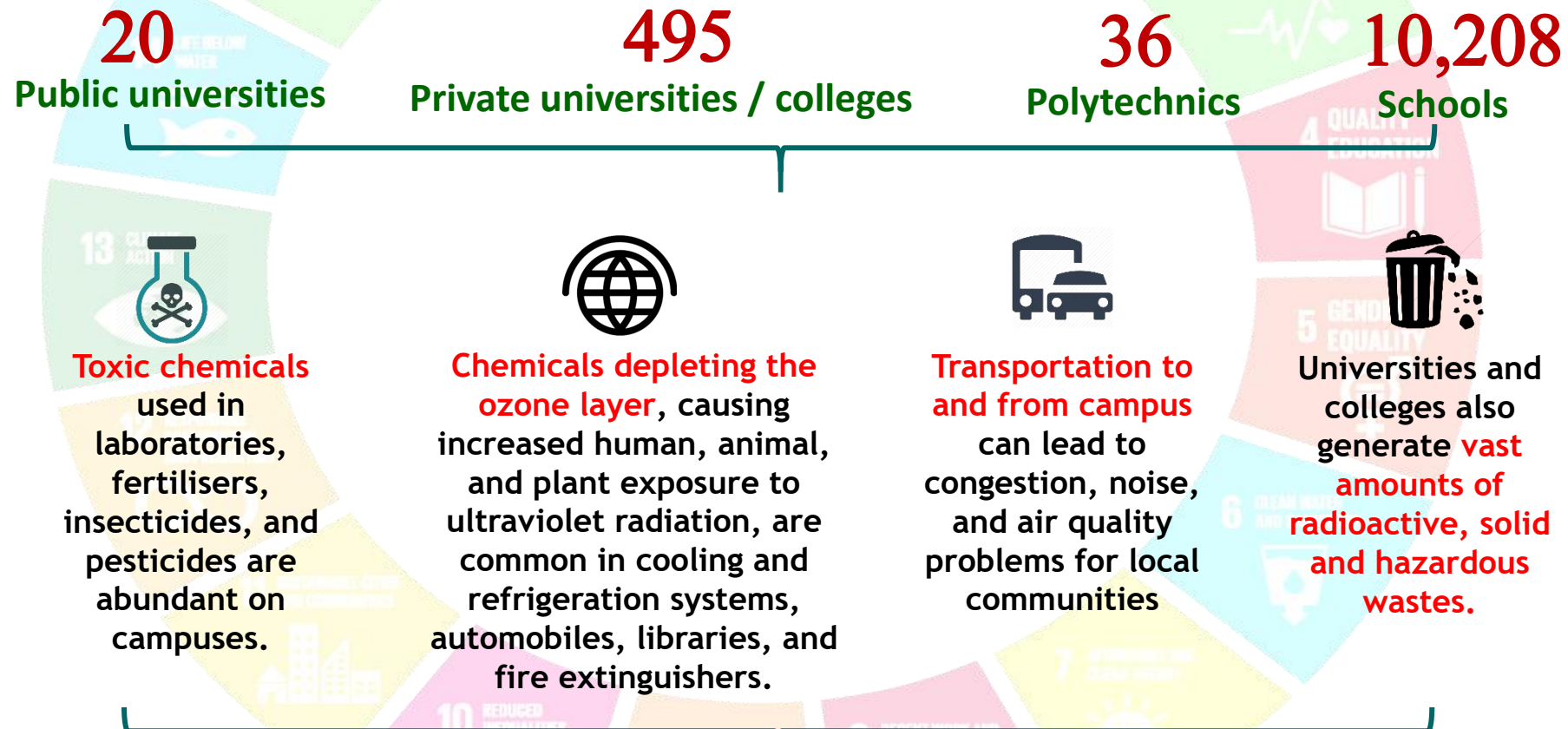
On **September 25th 2015**, countries adopted a set of goals to **end poverty, protect the planet and ensure prosperity for all.**

Each goal has specific targets to be achieved over the next **15 years (by 2030)**

For the goals to be reached, **everyone needs to do their part:** governments, the private sector, civil society and people like you.

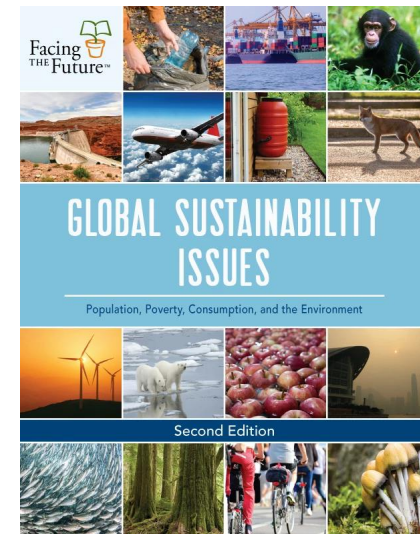
UNIVERSITIES & SCHOOLS IMPACT TO THE ENVIRONMENT

Greening of Campus. Why is it Important?

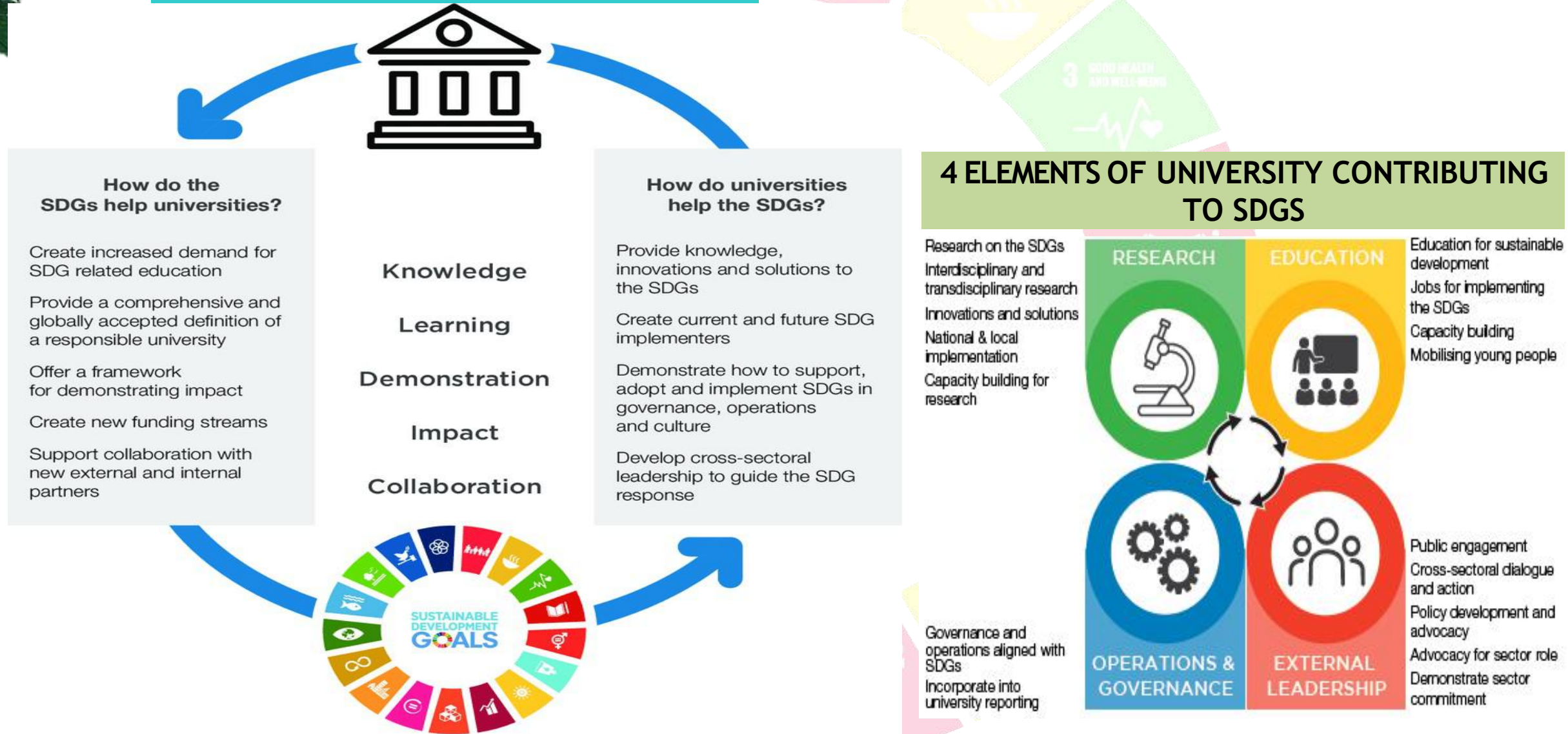


GREENHOUSE GASES (GHG) EMISSION

-
- A diagram illustrating the Three Pillars of Sustainability. It features a triangular roof labeled "Sustainability" supported by three vertical pillars labeled "Social", "Environmental", and "Economic". The pillars are set on a common base.



HOW SDGs & UNIVERSITIES WORK IN SYMBIOSIS?





Environmental Education through UM Eco-campus and Living Labs Programs

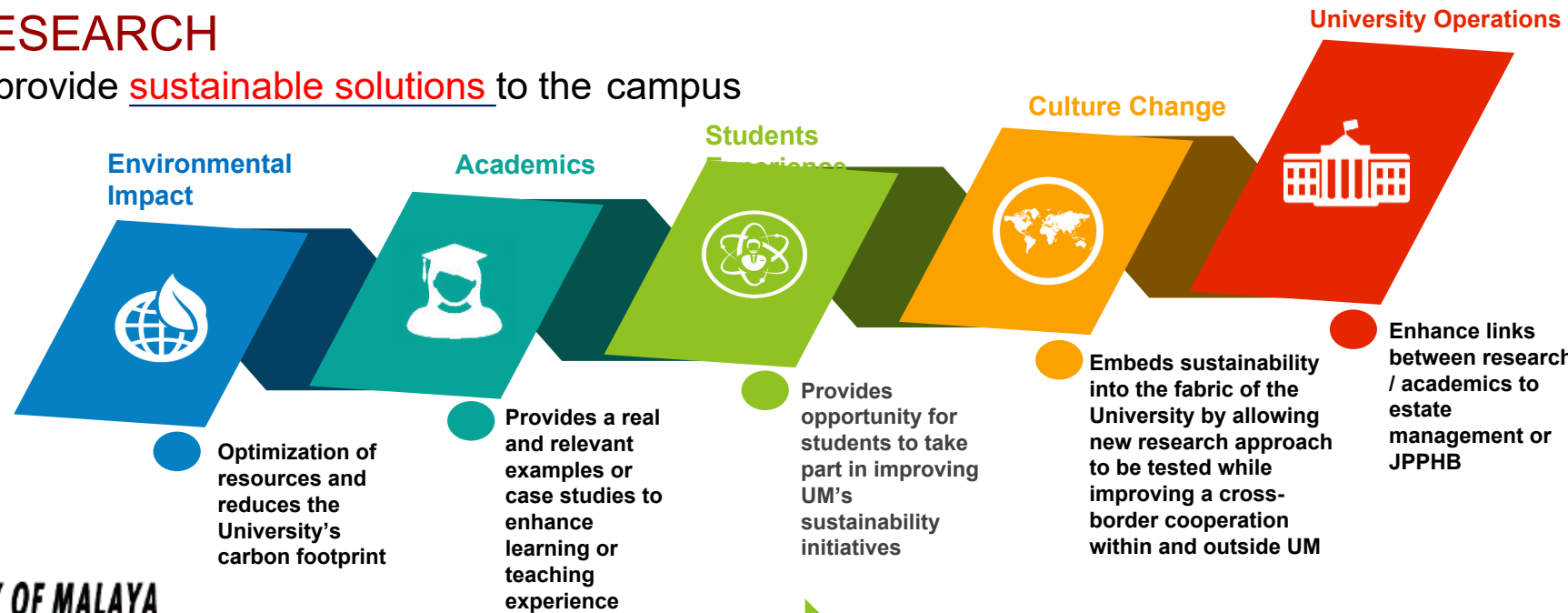
UM Living Lab



Grant programme

ACTION-ORIENTED & TRANSLATIONAL RESEARCH

to provide sustainable solutions to the campus



From laboratory research



To real life solutions



From laboratory research



To real life solutions

Categorization of research projects according to

8 Core Areas of UM Eco-Campus Blueprint



UM AS A LIVING LABORATORY

AIMS TO GENERATE OUTPUTS FOR THE BENEFITS OF CAMPUS

COMMUNITY

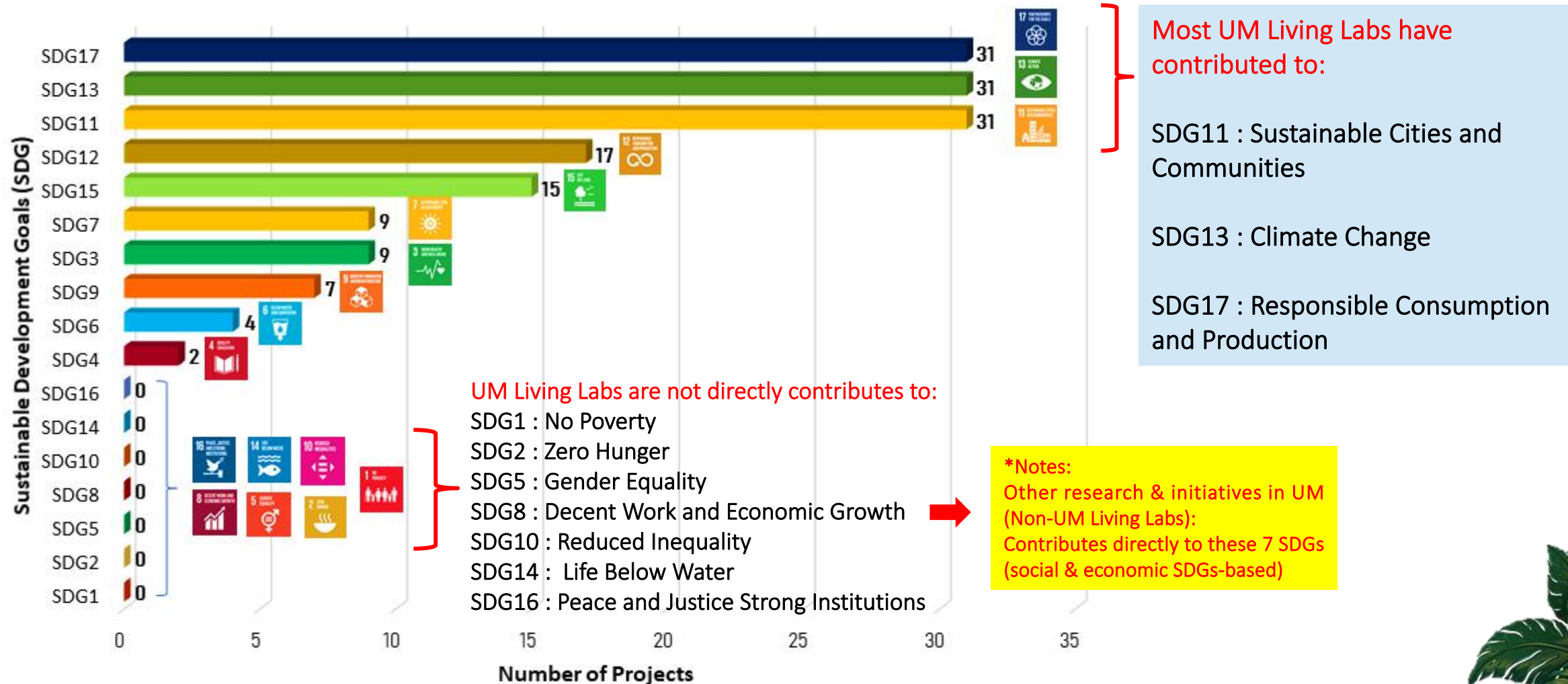


THE GLOBAL GOALS
For Sustainable Development

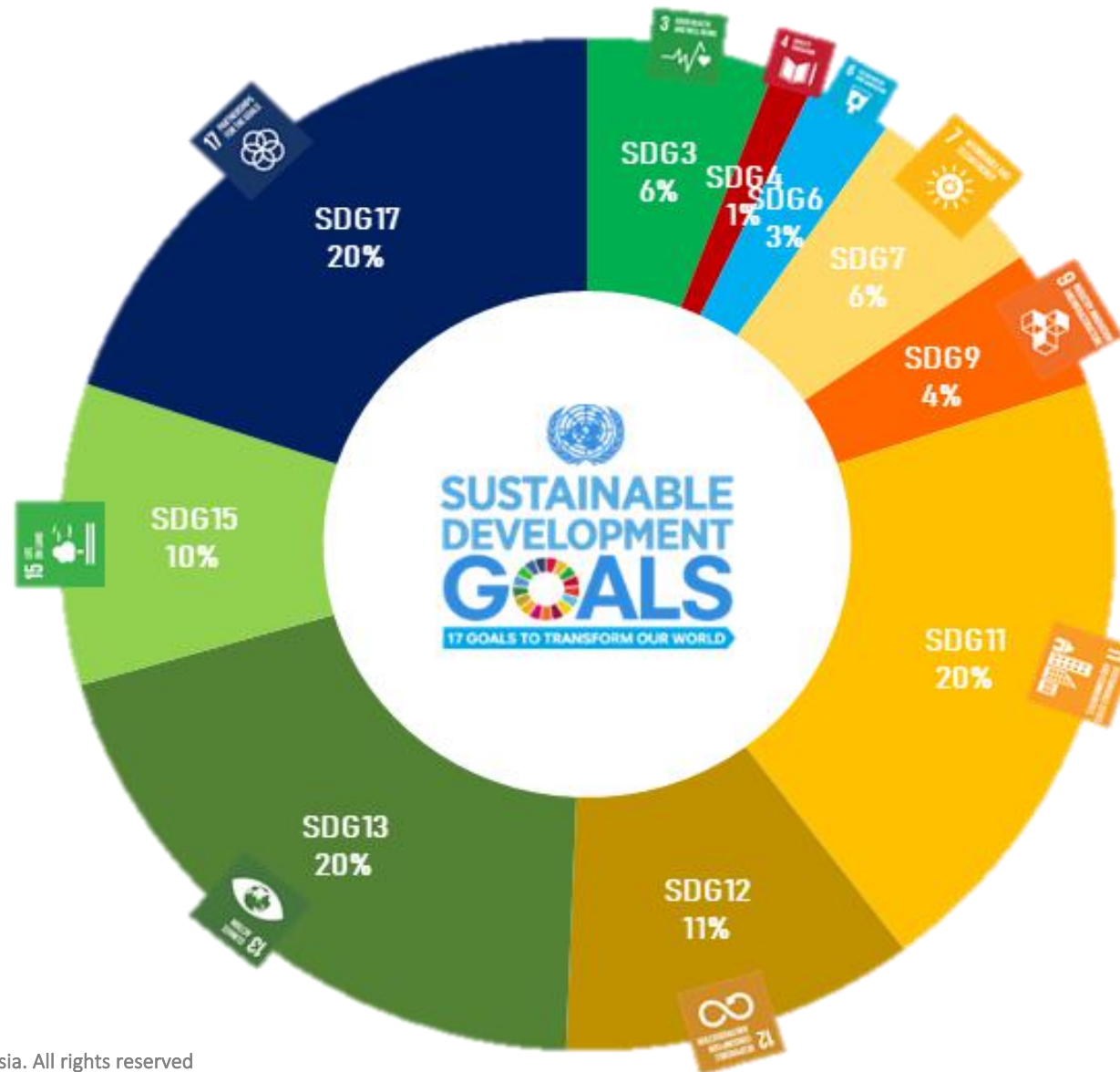


#GLOBALGOALS

UM LIVING LAB PROJECT CONTRIBUTIONS TO SDGS (2015- PRESENT)



SUMMARY OF UMLL CONTRIBUTIONS TO SDGS



1 The RIMBA Project: Biodiversity conservation by reconciling cities and nature



Core Area
01
**Landscape
& Biodiversity
Management**



3 GOOD HEALTH
AND WELL-BEING



11 SUSTAINABLE CITIES
AND COMMUNITIES



13 CLIMATE
ACTION



15 LIFE
ON LAND



17 PARTNERSHIPS
FOR THE GOALS



Guided walks



City nature challenges



Rimba Ilmu Visits



MOU Signing with
DBKL



Providing solutions on sustainability issues
for biodiversity & landscape management

2

Healthy Soil for a Healthy Environment; Reducing Dependency on Chemical Fertilizer Consumption in University Malaya Using Organic



Kursus Pengurusan Pembajaan dan Penggunaan Bahan Organik untuk Tanaman bersama UM



UM Living Labs Site Visits



World Scout Environment Programme (WSEP) and Transfer Knowledge Programme with Pertubuhan Peladang Port Dickson



Awareness on importance of organic amendment in environment during UNIVERSITY OF MALAYA RESEARCH CARNIVAL (UMRC)



Providing solutions on landscape management : Soil treatment, organic compost, Biochar

3 EcoSlope: Slope eco-engineering technique towards sustainable and green landscape



Demonstration on plants transplanting with ISB staffs &



Students involvement: Transplanting exercise during practical



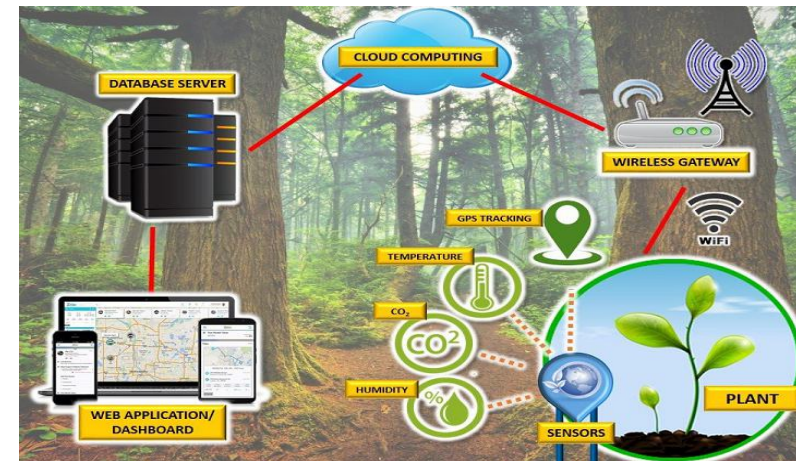
Keynote speaker: The 23rd Biological Science Graduate Congress



National Consultation Project UM-Plus

Reducing soil erosion and increasing soil carbon storage and green surface

4 Carbon Storage Mapping Initiatives through Real Time GPS Tracking and IOT



The Sensor Design



Reducing global energy use while absorbing and fixing CO₂ from the source or atmosphere

1 UM Zero Waste Campaign

Waste Management



Core Area
02

11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



15 LIFE ON LAND



17 PARTNERSHIPS FOR THE GOALS



UM ZWC
Organic
Compost



As an income generation to the university



**ZWC's
Guidelines on
Food, Green &
Wood Waste
Separation and
Collection**



ACHIEVEMENTS OF UM ZWC SINCE INCEPTION (2009 - now)

Environment

Total waste diverted:

> 900 ton

Total carbon

emission reduction:

> 4,917,493 KG CO₂-eq

Economy

Total waste disposal cost saved

: >RM365,220

Income generation

from training and compost sale:

>RM29,000

Social

• Total revenue / charity sponsor:

>RM35,000

• Total visitors:

>11,000

2

Managing kitchen waste using Black Soldier Fly (BSF): An Alternative Approach Towards Zero Waste in Campus



The system

Feed with fish Feed with kitchen waste



After 1 week



After 24 hour



40 larvae = 4.19g



**Total BSF
collected: ~5kg**



Whole Dried Black Soldier Fly Larvae (1Kg) - PET and ANIMAL FEED

RM 75.00 from Lazada Malaysia

Whole Dried Black Soldier Fly Larvae (1Kg) - PET and ANIMAL FEED



Protein Powder Black Soldier Fly Larvae (200g) - PET and ANIMAL FEED

RM 23.00 from Lazada Malaysia

Protein Powder Black Soldier Fly Larvae (200g) - PET and ANIMAL FEED

**Reduce environmental problem (kitchen
waste) while BSF and fly larvae can be
commercialized for income generation**


3

Safe Disposal of Unused Medications - Working Towards a Green Pharmacy in the University of Malaya Medical Centre



World Pharmacy Day
(Exhibition)



Health Promotion
Campaign



**Total amount of
medicine donated
back to UMMC
(706kg)**

**Reduce
environmental
problem by disposing
medications properly
while reducing
medicine wastage**



UM Living Lab Site Visit at University of
Malaya Medical Centre (UMMC)

Recycled Plastic Aggregate as Replacement for Conventional Aggregates in Concrete

4



80% of green plastic replacement



80% of blue plastic replacement



Sustainable design for low-cost house from plastic aggregates



Control

80% of black plastic replacement



UM Living Lab Site Visit



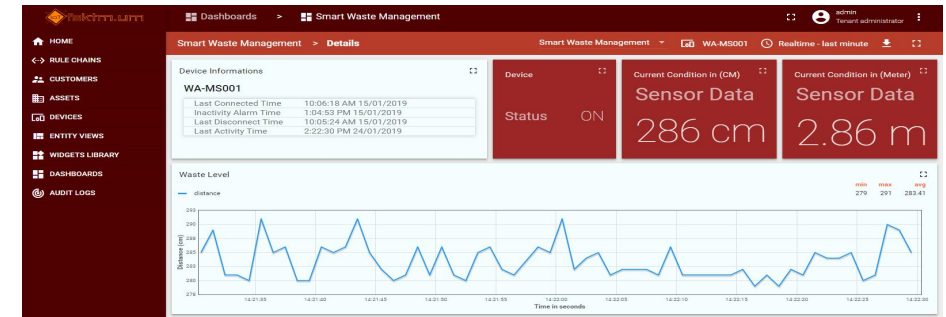
Dissemination of Plastic Aggregates Utilization Workshop



Reduce environmental pollution due to the release of poisonous chemicals from

Smart Waste Management System using Internet-of-Things (IOT)

5



Waste detection sensor is an initiative of UM Living Labs to manage waste



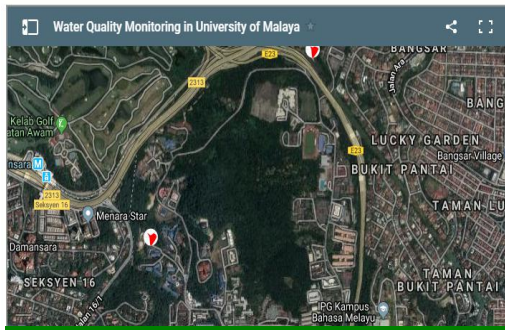
UM Living Lab Site Visit



Optimization of waste collection efficiency

1

UM Water Warriors



Pollution Mapping of Campus Watershed



Sungai & tasik clean up



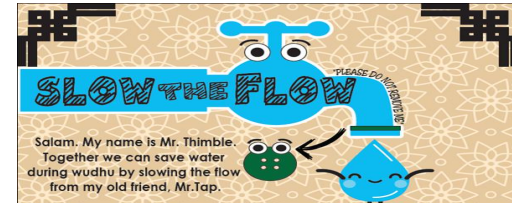
Rainwater Harvesting System



Wetland & Stream Constructions as part of water bodies conservation



Upcycling of 'gasing' from plastic bottle opener

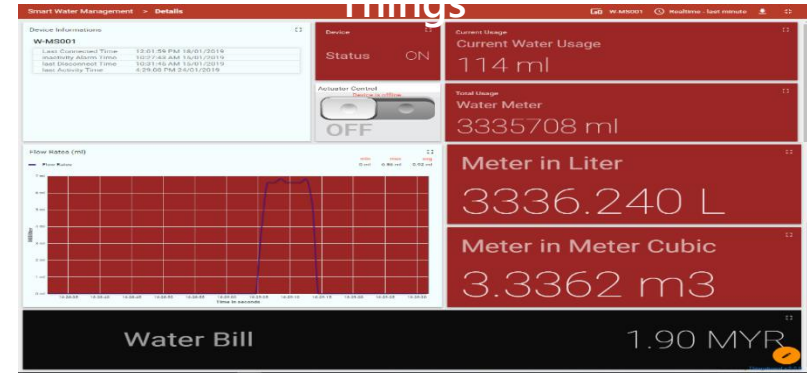


Installation of 'Mr. Thimble' to each Surau in campus to reduce water consumption

Reduce water consumption and improve water quality management in campus

2

Water monitoring via Internet of



Water sensors at FSKTM (Research prototype)



Water Monitoring via Internet of Things



Poster presentation during UMRC to educate people and increase awareness

UM Living Lab's new initiative to control water consumption efficiently

1 Energy Conservation Culture in University of Malaya Campus



Workshops, brochures, button badges and etc to educate people and increase awareness

Energy management for sustainable resource

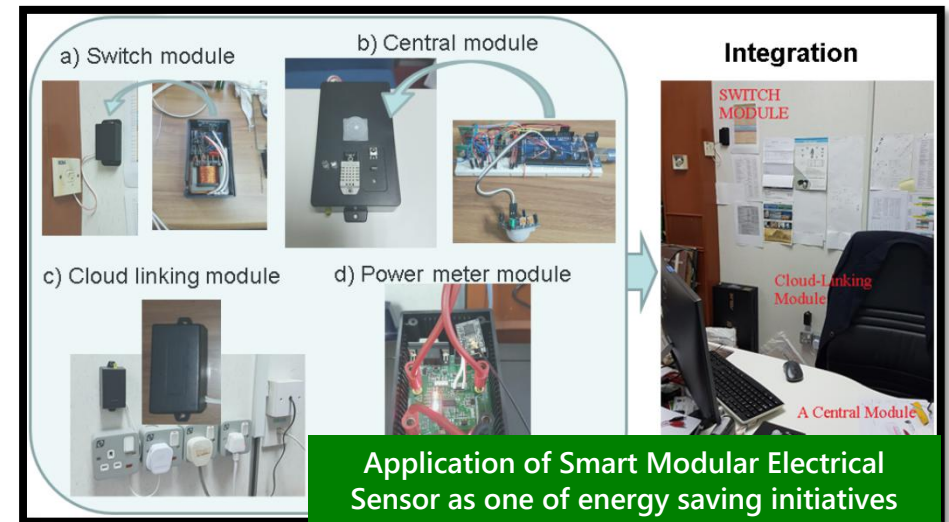
2 Optimising Energy Cost With Evolution Computing Based Building Energy Management System



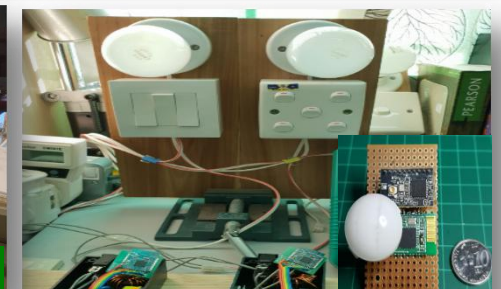
Solar panel at rooftop of WISMA R&D parking areas

Generating renewable energy through solar panel

3 Smart Modular Electrical Energy Monitoring and Management System



Customized Energy



Switch & Central

Modules
UM Living Lab's initiative to control energy consumption from lights and air conditioners as well as to increase its efficiency



Brief demonstration during UMLL Site Visit

Integrating Green Into The University of Malaya's Procurement Process: A Move Forward



Bike-in-lane signage



Sharrows markings



Handbook for bus



Bus tracking apps



Informative sign poles



Bicycle maintenance



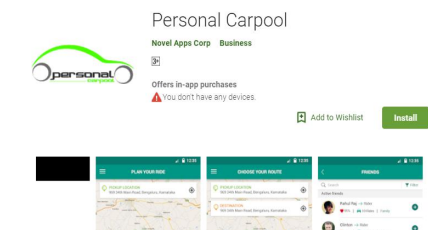
Bicycle workshops and maintenance



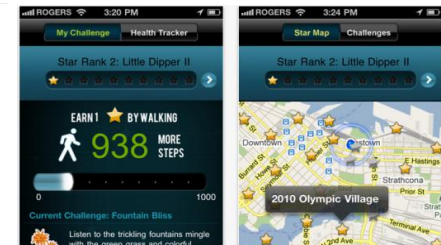
Shuttle buses as main public transport in UM campus



Exhibitions to raise



UMCarpool Program



UMWalker Initiative Challenge

Minimize the motorized vehicle number within campus and reduce transportation carbon footprint.



Integrating Green Into The University of Malaya's Procurement Process: A Move Forward



Reduce environmental impacts through buying green products



Cleanup Activities



Lestari Shop



Installation of Rainwater Harvesting System



Providing solutions on sustainability issues for Surau & Muslim Community in UM : Efficient use of Energy and Water, Sustainable Waste Management, Enhance green landscape, education (green usrah)



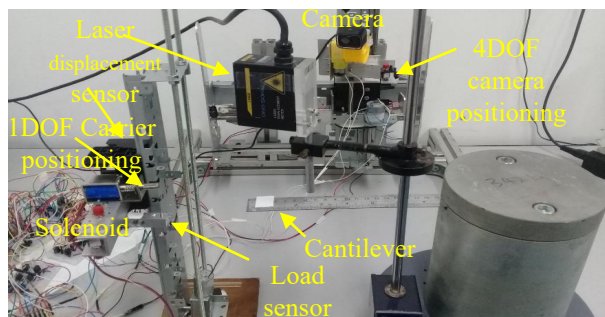
Recycling Bins at Recycling Centre



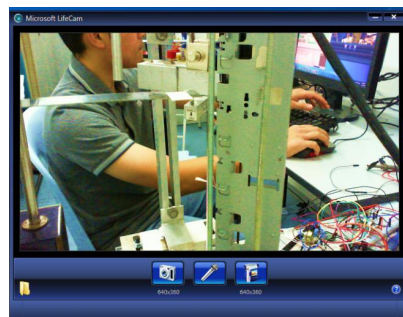
Urban Garden



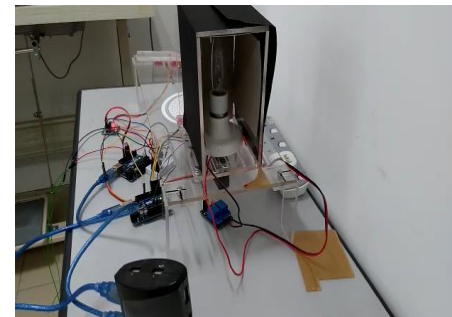
Recycled Tires Garden



Modified set-up research prototype



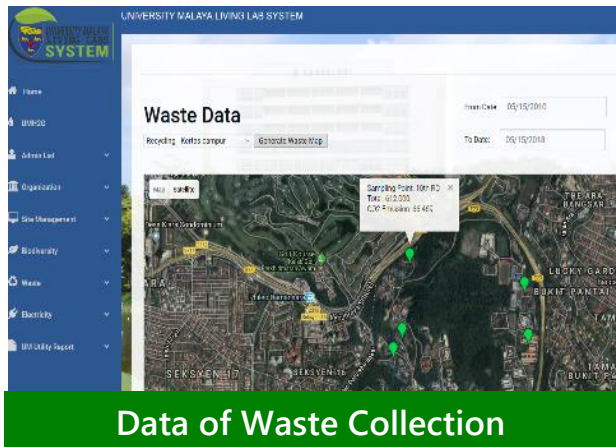
Rainbow spectrum experimental set-up



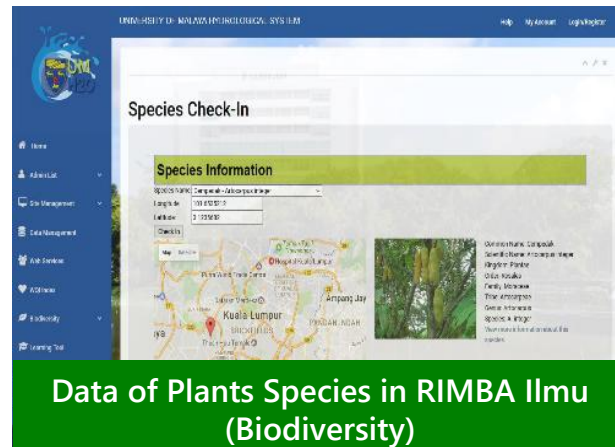
Increase learning efficiency by developing remote experimental facility

1

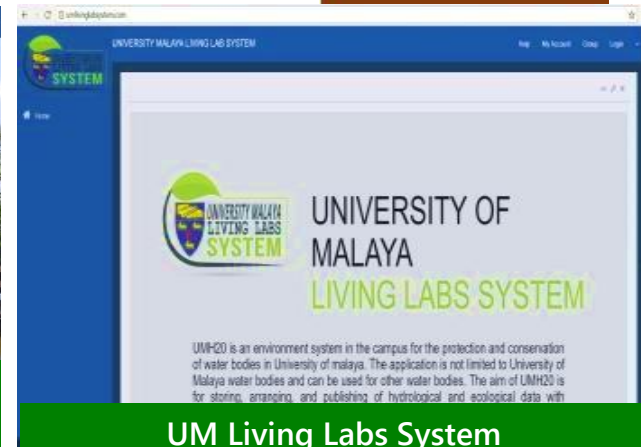
University of Malaya Ecological and Hydrological Data Warehouse Prototype System



Data of Waste Collection



Data of Plants Species in RIMBA Ilmu (Biodiversity)



UM Living Labs System

Providing database system that can store & analyse data collectively

2

The Faculty Sustainability Report Card: Documenting Faculty Sustainability Initiatives Towards UM Eco-



Focus Group Discussion to share and brief ideas on implementation of sustainability report cards around campus PTJs



An initiative that implemented sustainability reporting & documentation



UM ECO-CAMPUS ACHIEVEMENTS

UM RANKED 36TH WORLD'S MOST SUSTAINABLE UNIVERSITY IN UI GREENMETRIC WORLD UNIVERSITY RANKINGS 2018

Improved by 12.2% as compared to 2017 achievements. Maintained the status as the **1st Most Sustainable City-Centre University in Asia**, Malaysia's Best Water, Waste, Education & Research, and Energy & Climate Change Management. **UM Eco-Campus Standing Committee (UMECS)** is established in 2016



UM ACKNOWLEDGED AS 1 OF THE 5 NATIONAL ECO-CAMPUS UNIVERSITY

UM, 1 of the 5 universities in Malaysia awarded with the Special Award for *'Kelestarian Kampus Hijau'*: 25 May 2017 by SWCorp



ESTABLISHMENT OF UM SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK (UM SDSN)

UM is a member of **SDSN Malaysia Chapter** since 2014
Currently hosted by Sunway University's Jeffrey Sachs Centre for Sustainable Development



UM AWARDED WITH DIAMOND RATING FOR LCCF

UM was awarded **'Diamond Rating: Best Practice 1'** by KeTTHA at IGEM 2017 (13 Oct 2017): LCCFAS aims to support the government policy in reducing 45% of carbon emission per GDP per capita by the year 2030



UM RECEIVED THE GREEN ERA AWARD 2015

UM (UM Zero Waste Campaign) received The **Green Era Award** at in Berlin, Germany – 2015: recognize true global sustainable exemplars that have been innovative & creative in pursuing the sustainable imperative



UM APPOINTED AS OFFICIAL TRAINER FOR KL2017 SEA GAMES & ASEAN PARA GAMES GREEN VOLUNTEERS



Training on environmental issues, sustainable waste management, recycling and Separation-at-Source (SAS) for KL2017 Green volunteers consist of 1000 university and college students





UM Living Labs Grant Programme

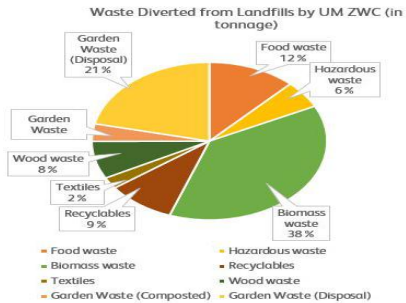


CONTRIBUTIONS OF UM LIVING LABS

ENVIRONMENTAL PERFORMANCE OF UM LIVING LABS

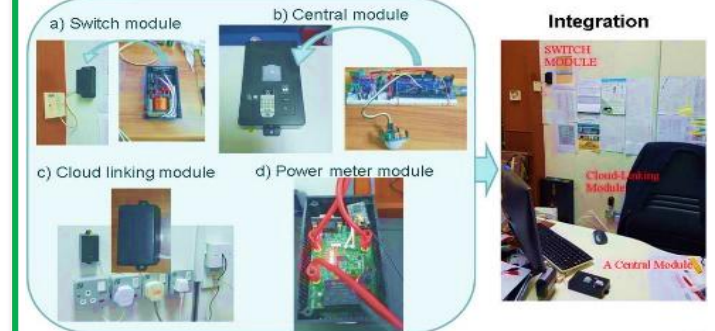


Wood Waste Collection: **5-12 ton/month**
Total Recyclable Textile Waste: **15,564kg**



Total CO₂ emission reduction :
> 4,917,493 KG CO₂-eq

Total Solid Waste Diverted from Landfills in a year: **>900 tonnes**



- **34% reduction** of energy usage for lightings
- **47.8% reduction** of energy usage for air-conditioning

978kg of returned unused medicines
28% safely disposed



100 trees have been planted at Samali Tree Area to **increase Campus' biodiversity area**



Increment of Surau green area **by 10%**



SOCIAL IMPACT OF UM LIVING LABS



UM ZWC:
Community
Composting at Block
P20 Pantai Dalam,
Bario Sarawak
and Sunway SPK
community
Damansara



Imarah
Eco-Surau
Programme with
Residential
Colleges and
outside
stakeholders

(e.g : JAWI, IKIM,
JAKIM)



River & Tasik
Varsity
volunteering
clean up
programmes
Fishing
programme



UM Living Labs Site Visits,
Demo & Trainings

UM ZWC received
>11,000 visitors



RIMBA Ilmu Guided
Walks, Trainings and
City Nature
Challenge





98

HUMAN CAPITAL
DEVELOPMENT

(PhD, Masters, Undergraduates, RAs)



161

SEMINARS/
WORKSHOP/
TRAINING/ DEMO



130

NETWORKING
& LINGKAGES

(Local & International)



130

PUBLICATIONS

(Journal, Book, Chapter in Book, Policy
Papers, Proceedings, Guideline)



UM LIVING LABS SUMMARY ACHIEVEMENTS (2016-2018)

14

AWARDS /
RECOGNITION



32

MEDIA
APPEARANCE

(Radio, Newspaper,
Television)



UM LIVING LABS PUBLICATION




Besides article journals, UM Living Labs also emphasize on other type of publications such as books, guidelines, training modules, brochures, interactive maps and coffee table book.

RM 5,946,102

TOTAL
MONETARY
GAIN

(Direct, Indirect & Calculated from
GHG Assessment)



7,051,612 (kg CO₂ -
eq)

GREENHOUSE
GASES ASSESSMENT



UM LIVING LABS MEDIA APPEARANCES



Tasek Varsiti as the Heart of UM

Water Warriors berganding bahu dengan penuntut IKR12 bersihkan Sungai Pantai di UM

12

MISI SI PENCINTA SUNGAI

Water Warriors berganding bahu dengan penuntut IKR12 bersihkan Sungai Pantai di UM

12

SCHOOL TIMES

NATURE IN OUR MIDST

12

SELEPAS PAGI MALAYSIA

12

Ecowatch

Help protect our urban biodiversity

12

Conservation Conversation

Whither nature conservation in rapid development?

12

INSPIRASI INFORMATIKA

ANALISIS

12

Sinar

Metrai MoU tambahan Projek Kebun Kejiranan LA21

12

UNIVERSITI MALAYA

SALAMAT PAGI MALAYSIA 22 SEPTEMBER 2018 | 9 AM

12

Peranti mudah alih ukur karbon dioksida

12

Ramadan: 20,000 tan makanan dibazir

12

KEMPAK SIFAR SISA UNIVERSITI MALAYSIA

12

setempat

KAMPAN MAHAL 'Tarikan' industri RM30b

12

Peranti Pemantau Alam Sekitar

12

UM Eco Freemarket santuni komuniti PPR Kerinchi

12

INFINITI

INOVASI • SAINS • GAJET

12

KAMPUS UOLS

12

Opportunity to infuse online course into UM curriculum





UM'S BACHELOR OF SCIENCE IN ENVIRONMENTAL MANAGEMENT

To produce graduates in the field of Environmental Science and Management who:

- 1) Possess wide knowledge in the field of Environmental Science and Management.
- 2) Are able to apply the technology learned and to use scientific equipment appropriately.
- 3) Are able to carry out responsibility to improve society's knowledge, awareness and necessities.
- 4) Possess positive values and attitude in solving environment-related problems and able to show conduct themselves responsibly, ethically and professionally.
- 5) Are able to communicate efficiently via verbal or writing and function as a responsible team player.
- 6) Possess skills in problem solving and analysis.
- 7) Possess skills in information management and knowledge advancement that lead to self-efficacy development.
- 8) Are able to further studies to higher levels in any field of Environmental Science and Management.





UM'S BACHELOR OF SCIENCE IN ENVIRONMENTAL MANAGEMENT COURSE STRUCTURE

PROGRAMME CORE COURSES:

Life Processes

Cell Biology

Biology of Organisms

Population Biology

Biology Practical

Environmental Chemistry

Plant and Environment

Research Methods

Scientific Writing Method

Soil Science

Environmental Pollution*

Instrumentation for Environmental Chemical Analysis

Biological Monitoring

Principles of Waste Management*

Environmental Health and Safety

Introduction to Geographic Information System

Ecology

Environmental Ethics, Policy and Law

Environmental Impact Assessment

Environmental Management Systems

Integrated Waste Management*

Sustainable Development*

Research Project

ELECTIVE COURSES:

Limnology

Management of Coastal Resources

Climate Change and Energy Science*

Renewable Energy Processes

Environmental Forensic

Slope Eco-engineering Techniques

Geospatial Analysis

Agriculture and Environment

Green Technology and Pollution Prevention*

Water and Wastewater Management

Industrial Ecology

Bioclimatic Concept and Applications

Environmental Risk Assessment

Technology and Management of Hazardous Wastes

*** relevant subjects**



UNIVERSITI MALAYA CENTER FOR CONTINUING EDUCATION (UMCCED)



Background:

The University of Malaya Centre for Continuing Education (UMCCed) is an academic Centre of Responsibility (CoR) under the University of Malaya Chancellery which was established in 1998, specifically to pioneer the concept of “**Lifelong Education**” by offering various educational and training programs for all levels of society. These programs include Diploma and Executive Diploma, Professional Certificates and short courses in various fields. For the purpose of promoting lifelong education among working adults, most programmes offered are conducted on a part time basis and tailored according to individual and corporate needs. At the international arena, UMCCed also provides training opportunities to overseas participants through study tours and short courses tailored specifically to the needs of participants. These short-term training programs are also offered abroad including in the Philippines, Hong Kong and Indonesia.





PROGRAM OFFERED IN UMCCED



Executive Diploma

Career advancement programmes conducted over weekends for working adults.



Diploma

Full-time programmes for school leavers with SPM/O-Level qualifications.



Bachelor Degree (Through SATU)

Special channel for admission of students into Bachelor Degree programmes.



Islamic Studies

Courses specially designed for skills and knowledge enhancement in the related field of studies.



Professional Certificate & Short Courses

Specialised training programmes to produce high-calibre and highly-trained professionals.



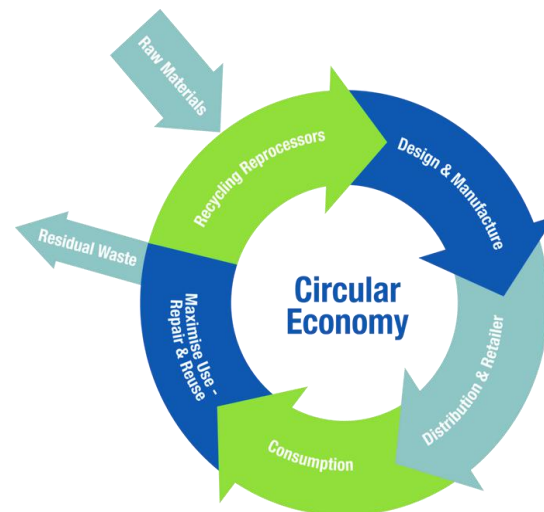
Skills & Language Course

Enhance language proficiencies either in English or Bahasa Melayu as part of the requirements to enrol into Malaysians Higher Education Institutions or for job confirmation requirement in Malaysia.

CONCLUSION

Way Forward

- Sustainability is **everyone's responsibility**.
- Campus sustainability **should not be an option**.
- All learning must **be translatable and impactful** for campus environment performance, economic growth, and societal well-being.
- Sustainability initiatives **should be rewarded and recognized with proper reward mechanism**.



Recommendation

- Specific contexts and target depending on the targeted groups.*
- Addressing the steady increase in the numbers of those wishing to obtain a university education;*
- The existence of various sources to obtain knowledge and the fast growth thereof*
- The ability of modern communication and information technology to spread knowledge among educated people, in several ways*
- Adoption of the principle of lifelong learn-ing and self-education*

Thank You for Your Generous Attention

PROFESSOR DR. SUMIANI YUSOFF

Director

Institute of Ocean and Earth Science (IOES)

Office of Deputy Vice-Chancellor (Research & Innovation)

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**UM PLEDGED TO SUPPORT AND COMMITTED TO
SUSTAINABLE DEVELOPMENT GOALS (SDGs)**