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JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

SMART GREEN PolyCC

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English Version

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JPPKK would like to express its highest appreciation to everyone who has contributed ideas and expertise in developing the BSGPC. A commendable effort to BSGPC Committee and all who have involved directly or indirectly in the production of the BSGPC.

It is with great hope that BSGPC will be the main reference in assisting JPPKK, Politeknik and Kolej Komuniti in implementing sustainable initiatives to achieve sustainable TVET aspirations in line with the Sustainable Development Goals (SDGs) agenda

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Blueprint POLYGreen Politeknik Malaysia	A blueprint document that contains guidelines for the implementation of planned green practices, in line with management and operational requirements for a set period of time
Blueprint SmartGreen PolyCC (BSGPC)	A planned document to produce a sustainable project for a sustainable educational institution
Sustainable Development Goals (SDGs) and the 2030 Agenda	The SDGs include 17 key goals to eradicate poverty, protect the planet, and ensure people's well-being by 2030
Sustainable	Able to continue to grow and achieve a good level of performance
Sustainable Development	A development or project that is able to continue to grow and achieve a good level of performance
Sustainable	Remain as it is (about the state of something) or not change
Preserving	Leaving or preserving something to remain as it is
Preservation	Protection from destruction
Green Technology	The use of environmental science to conserve natural resources and control the negative effects of human activities. Sustainable development is at the core of green technology which means solutions need to consider social, economic, and environmental aspects
Project Integrating Sustainable Methods (PRiSM)	PRISM is a method or methodology that uses the P5 framework. P5 is Product, Process, People, Planet, and Prosperity
Green Project Management	Managing projects that involve development, change, and innovation in operational work so that the project is sustainable

LA-21	Local Agenda 21
CPS	Cyber-Physical System
GRI	Global Repairing Initiative
3P	Profit, Planet, and People
PT	Action Plan

BPPM	Blueprint POLYGreen Politeknik Malaysia
BSGPC	Blueprint SmartGreen PolyCC
PRiSM	Project Integrating Sustainable Methods
GPM	Green Project Management
JPPKK	Department of Polytechnic and Community College Education
BT	Area of Focus
TVET	Technical and Vocational Education and Training
BK	Curriculum Division
SDGs	Sustainable Development Goals (SDGs)
PBB	United Nations
IoT	Internet of Things
IIoT	Industrial Internet of Things
ESD	Education for Sustainable Development
IR 3.0	Industrial Revolution 3.0
IR 4.0	Industrial Revolution 4.0
UTP	Agricultural Technology Unit
JERIS	Physical, Emotional, Spiritual, Intellectual, and Social
DTHN	National Green Technology Policy
MKDTHK	National Green Technology Policy Goals

EXECUTIVE SUMMARY

Department of Polytechnic & College Community Education

Play a continuous proactive role in ensuring the success of Sustainable Development Goals Agenda by transforming the Malaysian Polytechnic POLYGreen BSGPC. The Malaysian Polytechnic POLYGreen Blueprint emphasized on green technology in ten areas, however BSGPC covers a wider coverage of 17 Sustainable Development Goals in 7 areas

Blueprint into SmartGreen Polytechnics & Community Colleges(BSGPC)

SGPCCB

This document would ultimately be the reference to all sustainable programmes and activities in all Polytechnics and Community Colleges, the Ministry of Higher Education and all other institutions. All education institutions should play their role not just as a centre that produces knowledgeable and expert graduates but also provide added values such as sustainable management and effective communication. This is to fulfill the needs of a challenging career world - mental and physical challenge, competitive and towering personality in order to be able to practice effective and harmonious interaction with society and environment for a balanced and sustainable life.

Become the Guideline and reference in Strategic Sustainable Management amongst Polytechnics and Community Colleges

Improve sustainable project achievement target towards the recognition of Sustainable Campus

Enhance innovative and creative effort in sustainable development that would increase economic, social and environment impact

Strengthen collaboration between institution and stakeholder, community, industry and the underprivileged

FOREWORD BY THE DIRECTOR GENERAL

بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

Asalamualaikum Warahmatullahi Wabaraktuh and best regards

At the moment, the world is full of environmental pollution and extreme climate changes. This has had a negative effect on the environment, community and economy. The Department of Polytechnic and Community College Education, as the main player of Malaysia's Technical and Vocational Education and Training (TVET), has come up with SmartGreen PolyCC Blueprint (SGPCCB), a guideline for the staff to minimize the negative effects on the environment. The initiative is to support the implementation and development of sustainable management amongst the staff. I would also like to congratulate the Curriculum Division on their success in translating the green initiative into an implementable and measurable guideline as a reference for all the stakeholders in the Department of Polytechnic and Community College Education and also as an example in implementing planned and successful green practices to the society.

Dr. Haji Mohd Zahari Bin Ismail

FOREWORD BY THE DIRECTOR GENERAL

بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

Asalamualaikum Warahmatullahi Wabaraktuh and best regards

First and foremost, congratulations to the Curriculum Division and SGPCCB Committee on their success in publishing the blueprint. BSGPC is the continuation of Blueprint POLYGreen, based on a short term and long term action plan. It is my greatest hope that all staff and stakeholders would practice the blueprint in order to achieve SGPCCB objectives. Apart from that, staff should be more aware and positive on all current issues in order to contribute towards the development of a sustainable environment. The success of the blueprint depends on the continuous implementation and monitoring system. Changes and improvement of the action plan should be proposed in order to ensure integrated sustainable management practice is achievable. Last but not least, may all the effort be implemented successfully. Thank you.

En. Mohd Noor Shahudin

FOREWORD BY THE DIRECTOR CURRICULUM DIVISION

بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

Asalamualaikum Warahmatullahi Wabaraktuh and best regards

Malaysian Polytechnics and Community Colleges are the TVET main players and contribute over 60% of the TVET workforce in Malaysia. In accordance with the Technical and Vocational Education and Training – Education for Sustainable Development (TVET-ESD) initiative, Polytechnics and Community Colleges have been involved in supporting and implementing sustainable development initiatives. I would like to take this opportunity to congratulate the Agricultural Technology Unit, Curriculum Division, Polytechnic and College Community Education Department on their success in publishing the SmartGreen PolyCC Blueprint.. May this blueprint be the main reference to all institutions of DPCCE in achieving their status as sustainable institution
Thank you.

Dr. Zamzam Bin Mohd Walid

FOREWORD BY Chief Editor of SGPCCB

بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

Asalamualaikum Warahmatullahi Wabaraktuh and best regards

In the era of challenging globalization and industrial revolution, an approach towards balancing knowledge and humanization is highly needed in order to produce an excellent work force - physically, emotionally, spiritually, intellectually and balanced personality. SGPCCB is an action plan document consisting of implementation guidelines on sustainable practice in producing skillful, competent and responsible TVET personalities.

As SGPCCB chief editor, I would like to thank those involved in publishing the book. On behalf of them our sincere apologies for our shortcomings. May BSGPCCB be useful for the development and benefit of man.

Thank You.

LAr. Rohaniah Binti Mohd Nor

CHAPTER 1
Introduction

Suziee Binti Sukarti
Dr. Hamidah Binti Ahmad

INTRODUCTION

"Concern are on main resources, degradation of forest, ocean and freshwater, increasing hydro-meteorology and geomorphology, deterioration of food production capability and environmental based economic system. Apart from that, priority should be the issue on weather changes in ethics such as changes due to environment and migration, lacking on sources of sustenance, security and welfare rather than the more marginalized sectors of society" - Tun Dr Mahathir Mohamad, Malaysia Prime Minister during the keynote address of the **Summit on Sustainable Development Goals (SDG) 2030 in Kuala Lumpur**

17 goals of Sustainable Development Goals, Malaysian Development Programme emphasizes on sustainable development elements and the implementation of SDG 2030 Agenda needs immediate action with comprehensive cooperation

The Local Agenda 21 (LA-21), a Global Action Plan towards sustainable development for the 21st Cetury was a product of the Earth Summit Declaration at Rio de Janeiro, Brazil in 1992

178 countries attended the Declaration and the Prime Minister of Malaysia was invited for the signing ceremony

Malaysian Environmental Policy (2002) also supported the idea of continued economic, social, cultural and enhancing Malaysian living quality through the welfare of surrounding nature and sustainable development. In 2019, Ministry of Energy, Science, Technology, Environment & Climate Changes (MESTECC), implemented 73 initiatives comprising 5 sectors - energy, science, technology and innovation, environment and climate changes, organizational excellence and strategic issues

Supporting Malaysian aspiration towards sustainable development, Polytechnics and Community Colleges have been directly involved in implementing initiatives towards sustainable development

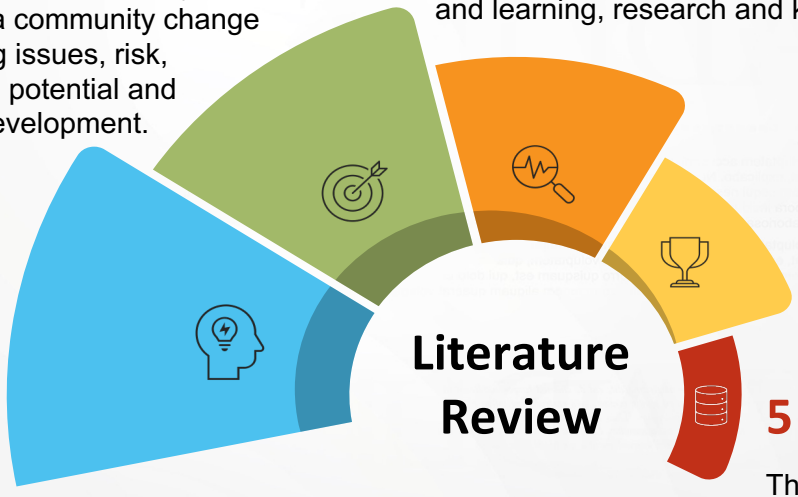
In 2015, Malaysian Polytechnics produced Blueprint POLYGreen, the sole blueprint in Ministry of Education. Blueprint POLYGreen (BPPM) was launched in April 2015

BPPM is an action plan on the implementation of Malaysian Polytechnic preservation agenda

The blueprint is based on Malaysian Green Technology Policy and its goals. In 2019, SGPCCB was launched as a continuation to the sustainable development agenda – so as to ensure Polytechnics and Community Colleges will excel in this challenging globalization era. Due to changes in one direction and objective of government policy, DPCCE needs to review BPPM – so as to ensure the agenda on sustainable Polytechnics and Community Colleges would be a success

SMART GREEN PolyCC

Literature Review



1

Higher education institution is an organization consisting of various subcultures and traditions

2

Polytechnics and Community Colleges are a community change agent in facing issues, risk, environmental potential and sustainable development.

3

They are expected to be the sustainable development agent on innovation in teaching and learning, research and knowledge transfer.

4

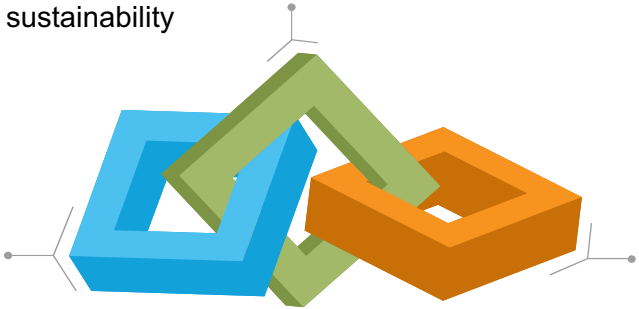
The role of higher education institutions is not only on graduate teaching and learning but also on campus planning, architecture and community relations.

5

The importance of education is to achieve sustainable development or environment.

Sustainable Development

In order to have a sustainable environment; a process, framework and steps for various situations should be stated in achieving sustainability

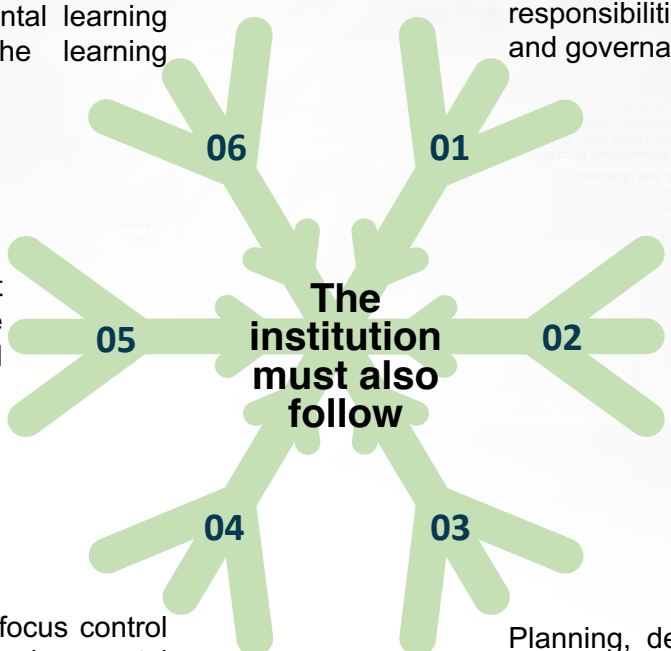


Sustainable concept and sustainable development would also include satisfaction in achieving economic, environmental and social satisfaction

In 2011, a sample of greening campus toolkit - 'Greening Universities Toolkit' was designed at international level as an initiative by UNEP Environmental Education and Training Unit (EETU) together with United Nation agency, experts and researchers on green university - 'Global Universities for Environment and Sustainability (GUPES)'. It is a criterion for sustainable or green campus, including infrastructure management and operational considerations.

Green Campus Toolkit

'Greening Universities Toolkit'



Campus as living laboratory – students' involvement in environmental learning in order to change the learning environment.

Articulation and sound integration on ethical, social and environmental responsibilities in their goals, mission and governance;

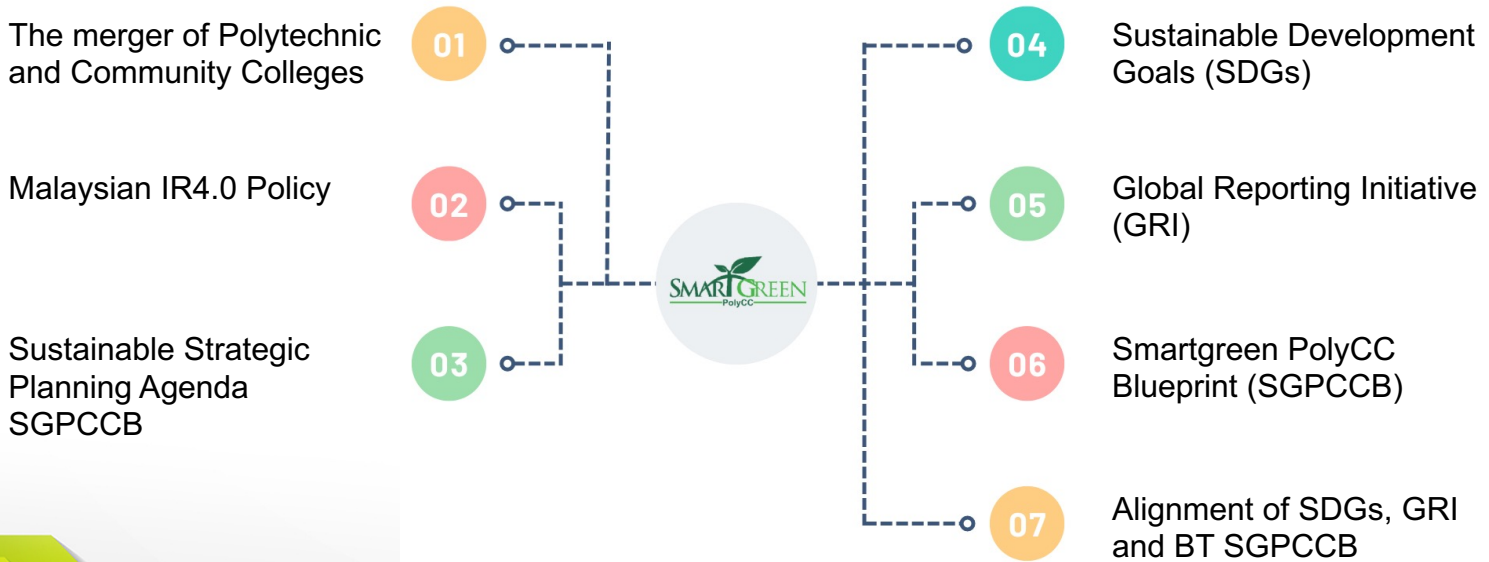
Policies and practices that foster diversity, equity and life quality of students, staff and surrounding community;

Sustainable integration of social, economic and environmental in their curriculum, commitment on critical thinking and sustainable literation as the attributes of graduates;

Physical operation and focus control support in enabling environmental goals, such as continuous reporting and repair monitoring;

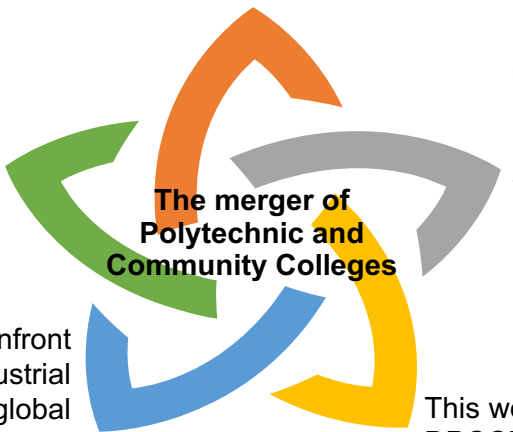
Planning, design and campus development on zero carbon, water and waste;

Direction of Smartgreen PolyCC Blueprint



The merger would enable easier planning, alignment and monitoring of institutions in fulfilling the country's desire in becoming a high-income developed country

In 2018, Polytechnic Education Department and College Community Education Department were merged and known as the Department of Polytechnic and Community College Education



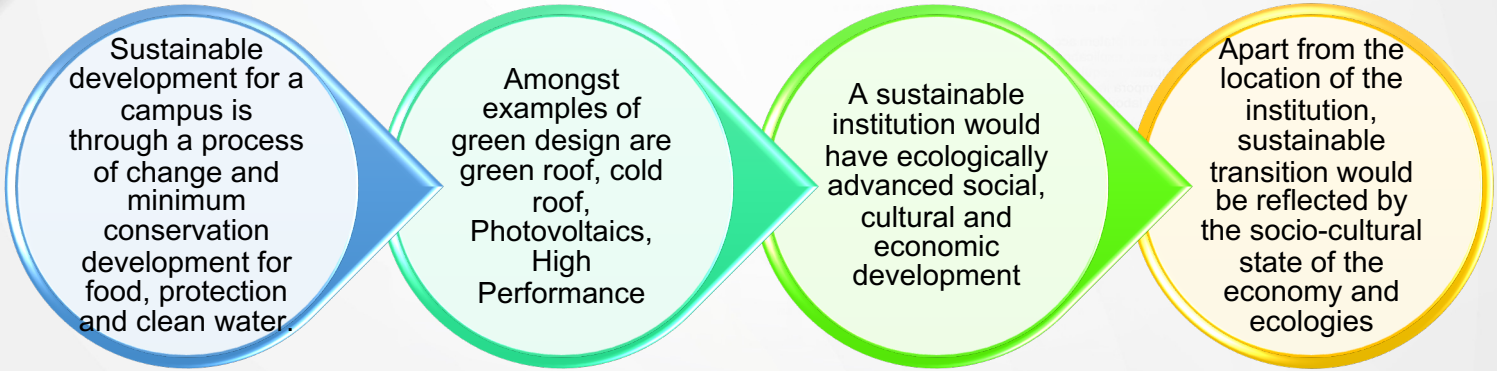
The SGPCCB merged the two institutions in the action plan. The goals have taken into account all the needs and requirements of the staff and community

The merger is an effort to confront national challenges, industrial demand and increasing global technology advancement, apart from the need to produce a skilled and sustainable workforce

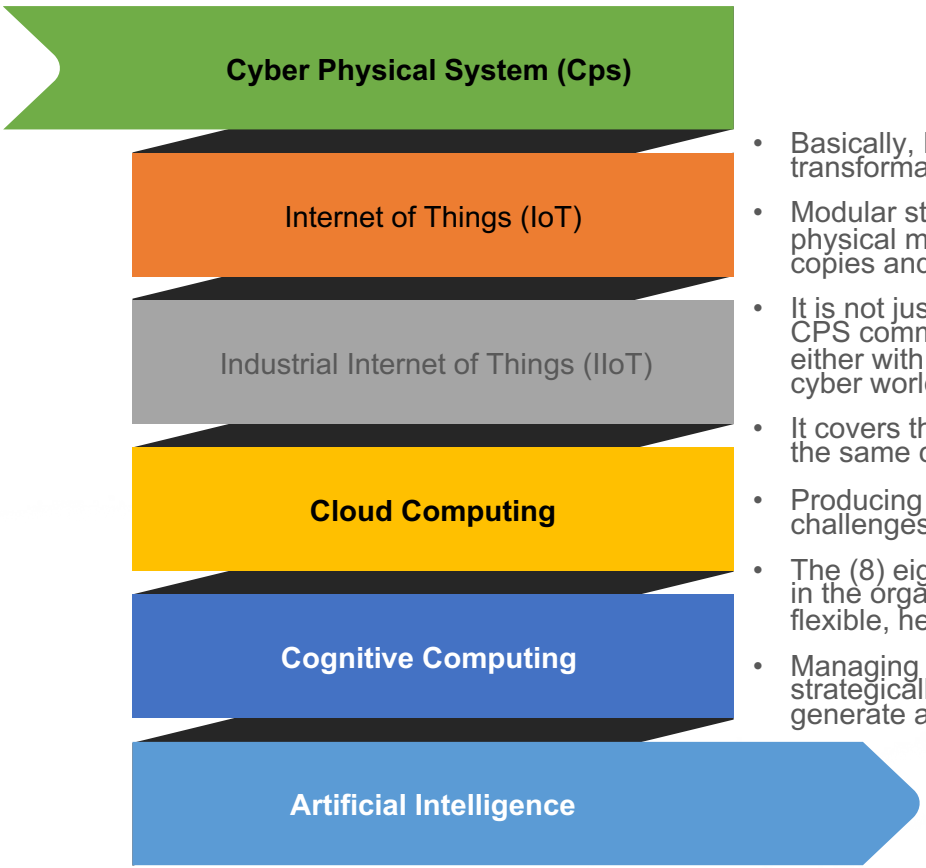
This would help the effort of turning DPCCE into a quality and sustainable TVET hub

Malaysian IR4.0 Policy

- Basically, IR4.0 refers to automation, data transformation and manufacturing technology –
- 1) cyber physical system (CPS),
- 2) Internet of Things (IoT),
- 3) Industrial Internet of Things (IIoT),
- 4) cloud computing,
- 5) cognitive computing and
- 6) artificial intelligence.
- Modular structured smart mill concept is a CPS for physical monitoring, making physical and online copies and making centralized decisions.
- It is not just related to the internet, but IR 4.0 covers CPS communication and is related to one another either with human beings in the real world or in the cyber world.
- It covers the organization services used by those in the same chain.
- Producing green human resources in facing IR 4.0 challenges is really challenging and needed.
- The (8) eight characteristics of green worker sources in the organization are agile, depravity, consistent, flexible, healthy body, sane, balance and productive.
- Managing green human resources needs to be done strategically, systematically and efficient, in order to generate and maintain green human resources


Sustainable development for a campus is through a process of change and minimum conservation development for food, protection and clean water.
Amongst examples of green design are green roof, cold roof, Photovoltaics, High Performance
A sustainable institution would have ecologically advanced social, cultural and economic development
Apart from the location of the institution, sustainable transition would be reflected by the socio-cultural state of the economy and ecologies

Malaysian IR4.0 Policy



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- Managing green human resources needs to be done strategically, systematically and efficient, in order to generate and maintain green human resources

Since 2010, Malaysian Polytechnic had started their journey towards sustainable development by emphasizing on the care of the environment, as stated in BPPM

The transformation supports the Sustainable Development Goals that have taken into account social, economic and environmental aspects that would help in achieving Malaysian sustainable agenda

BPPM used the approach in producing methods/procedures that can be used by all 36 Polytechnics in building their very own sustainable energy group in conserving the environment

The focus of BPPM has been mapped with SDG, GRI and GMP in line with the national needs of institutions and communities to meet the social and economic needs of the environment

BPPM focuses on Green technology elements which refer to development, product application, equipment and systems on conserving the environment by minimizing the negative impact of human activity

SDGs are a sustainability of the development agenda after the Millennium Development Goals (MDGs) in 2015

During the United Nation Summit on 25 September 2015, the Head of Governments and the international community agreed on SDGs as the basis of Agenda 2030 for sustainable development

MDGs stated 8 goals and 21 targets, however SDGs stated 17 goals and 169 targets in order to achieve the agenda 2030 achieving balance in three dimensions of sustainable development in social, economy and environment

The goals and targets are integrated in the implementation at United Nation level in order to balance the three dimensions of sustainable development as stated below:

Diagram 2.1.17 United Nation Sustainable Development Goals

Diagram 2.1 17 United Nation Sustainable Development Goals

Global Reporting Initiative (GRI)

GRI standard is the first global standard for a structured, connected and representing best practices sustainable report that help an organization report various economic, environment and social effects based on activity, product and services (3P – Profit, Planet, and People)

01

The GRI framework enables the third party to evaluate environmental impact from the organization's activity and the source chain. Guideline on the standard report on the environment is included in the GRI Indicator Protocol Set

Diagram 2.2 GRI Report Framework

02

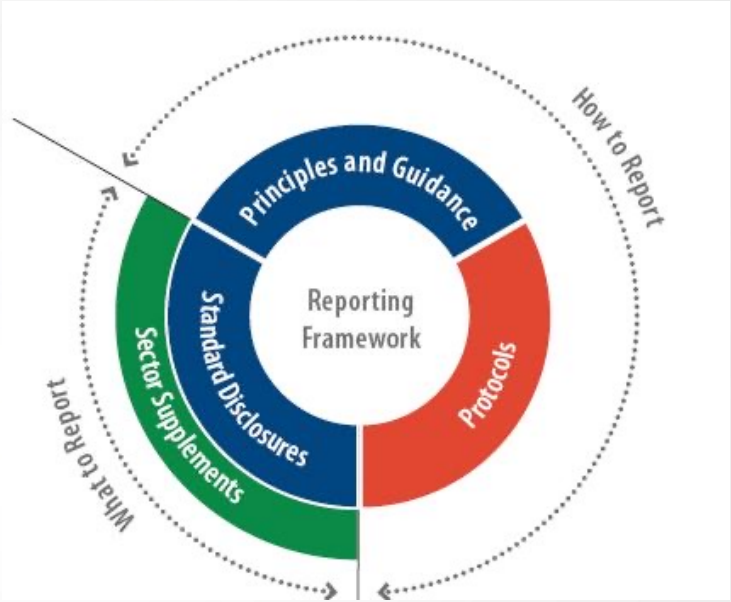


Diagram 2.2 GRI Report Framework

Diagram 2.3: Focus area in SGPCCB

- The vision of SGPCCB is to strengthen green culture and preserve polytechnics and community colleges
- Practical achievable strategic direction is the main reason for the successful achievement of the vision.
- The directions are based on the SEVEN (7) focus areas that need to be implemented mutually - Diagram 2.3: Focus area in SGPCCB
- Revised Focus area based on the experience of implementing Blueprint POLYGreen 2015 2020

Smartgreen PolyCC Blueprint (SGPCCB)

Alignment of SDGs, GRI and BT SGPCCB

- Direction of SmartGreen PolyCC was developed to align with SDGs and GRI as diagram 2.4.
- This alignment is in accordance with the P5TM Standard for Sustainability in Project Management (PRiSM) by Global Project Management (GPM), focusing on sustainable evaluation elements:

I) social (people)

II) environment (planet)

III) economy (profit) aspects with addition on project processes

IV) product encompassing all aspects of sustainable development.

Project Product and Process Impacts				GRI G4 ELEMENT ALIGNMENT	BIDANG TUMPUAN BSGPC
	Prosperity (Economic) Impacts	*Business Case Analysis*	Modeling and Simulation Present Value Direct Financial Benefits Return on Investment Benefit-Cost Ratio Internal Rate of Return	Economic performance	Education and Research
		Business Agility	Flexibility/Optionality Businesss Flexibility	Market preference	Energy & Climate Change
		Economic Stimulation	Local Economic Impact Indirect Benefits	Indirect economic impacts	Environmental and Landscape Management
	Planet (Environmental) Impacts	*Transport*	Local Procurement, Digital Community Traveling and Commuting Logistics	Procurement Practices Transport	Waste Management
		water	Energy Consumption CO2 Emissions Clean Energy Return Renewable Energy	Water	Water Management
		Energy	Biological Diversity Water and Air Quality Water Consumption Sanitary Water Displacemen	Energy Emission	Transportation
		waste	Recyle and Reuse Disposal Contamination and Pollution Waste Generation		Green Procurement
	People (Social) Impacts	*labour Practices and Decent Work*	Employment Labor/ Management Relations and Staffing Project Health and Safety Training and Education Organizational Learning Diversity and Equal Opportunity Local Competence Development	Employment Labor/management relations Occupational health and safety Training and Education Diversity and equal opportunity	
		Society and Customer	Community Support Public Policy/ Compliance Protection for Indigenous & Tribal People Customer Health and Safety Product and Service Labeling Mkt.Comm.and Advertising Customer Privacy	Equal remuneration for men and women Freedom or association and collective bargaining Child labor Forced and Compulsory labor	
		Human Rights	Non Disrimination Age - Appropriate Labour Voluntary Labour	Local Communities Compliance Customer Health and safety Products and services labelling Market Communications Customer Privacy	
		Ethical Behavior	Procurement Practice Anti Corruption Fair Competition	Supplier Environmental assessments Ani Corruption Anti-competition Behavior	

Diagram 2.4: Alignment of SDGs, GRI and SGPCCB

In order to measure the success of SGPCCB implementation, achievement in all focus area has been aligned with the judging criteria from UI Green Metric World University Ranking, GMP and four (4) excellence criteria in campus management (PCCED) :

- green campus
- cultivation of green communities
- green research
- green culture

CHAPTER 2

Direction of SmartGreen PolyCC Blueprint

LAr. Rohaniah Binti Mohd Nor
Fauziah Binti Aliman

Local Agenda 21 (LA-21)

Global Action Plan towards sustainable development for the 21st Century was a product of the Earth Summit Declaration at Rio de Janeiro, Brazil in 1992

Ministry of Energy, Science, Technology, Environment & Climate Changes (MESTECC)

73 initiatives,
5 sectors - energy, science, technology and innovation, environment and climate changes, organizational excellence and strategic issues

Sustainable Development Goals

Sustainable development elements and the implementation of SDG 2030 Agenda needs immediate action with comprehensive cooperation

Malaysian Environmental Policy (2002)

Idea of continued economic, social, cultural and enhancing Malaysian living quality through the welfare of surrounding nature and sustainable development

01

Sustainable development

Supporting Malaysian aspiration towards sustainable development, Polytechnics and Community Colleges have been directly involved in implementing initiatives

Malaysian Polytechnics produced Blueprint POLYGreen, the sole blueprint in Ministry of Education. Blueprint POLYGreen (BPPM) was launched in April 2015

BPPM

02

03

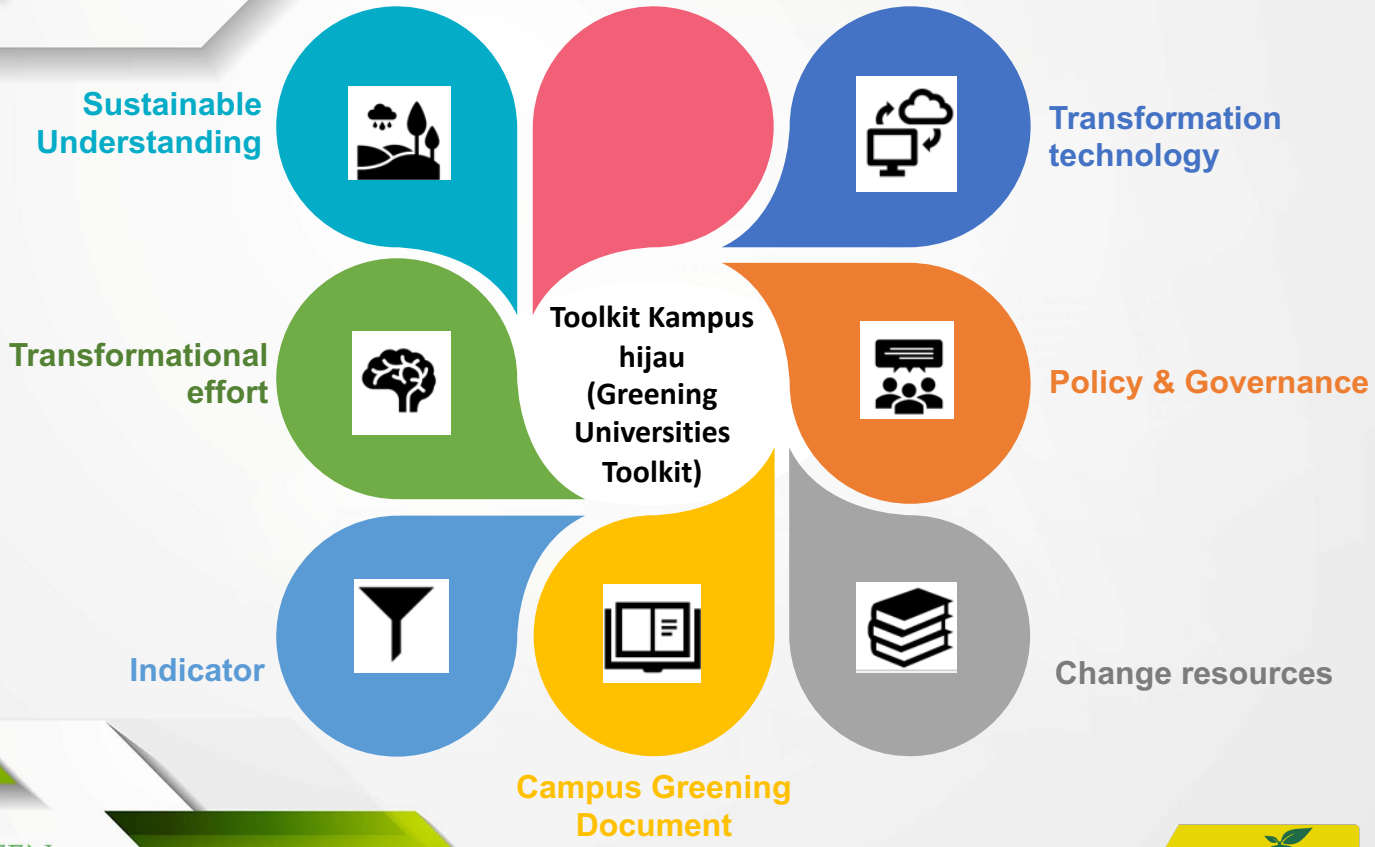
BSGPC

In 2019 BSGPC was launched as a continuation to the sustainable development agenda – Polytechnics and Community Colleges will excel in this challenging globalization era

Due to changes in one direction and objective of government policy, DPCCE needs to review BPPM – so as to ensure the agenda on sustainable Polytechnics and Community Colleges success

DPCCE

04


Sustainable Understanding
Transformation technology
Transformational effort
Toolkit Kampus hijau (Greening Universities Toolkit)
Policy & Governance
Indicator
Campus Greening Document
Change resources

Direction of SmartGreen PolyCC Blueprint

The merger of Polytechnic and Community Colleges

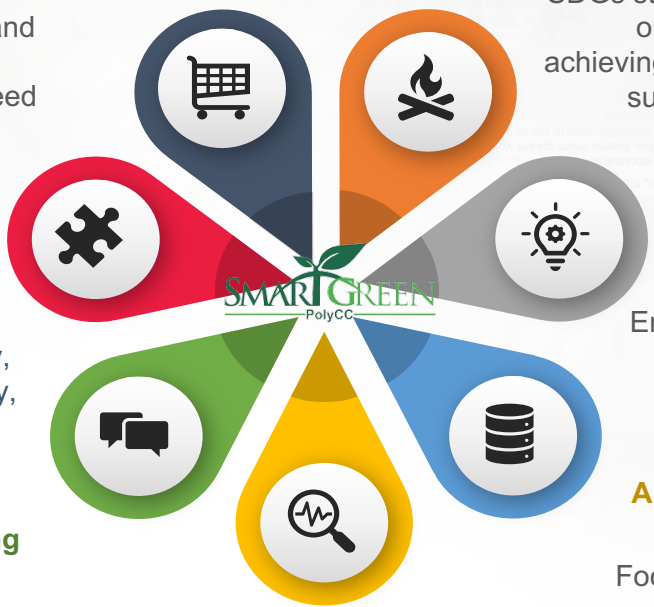
An effort to confront national challenges, industrial demand and increasing global technology advancement, apart from the need to produce a skilled and sustainable workforce

Malaysian IR4.0 Policy

The (8) eight characteristics of green worker sources in the organization are agile, depravity, consistent, flexible, healthy body, sane, balance and productive.

Sustainable Strategic Planning Agenda BSGPC

Focus of BPPM has been mapped with SDG, GRI and GMP in line with the national needs of institutions and communities to meet the social and economic needs of the environment



SmartGreen PolyCC Blueprint (BSGPC)

To strengthen green culture and preserve polytechnics and community colleges

Sustainable Development Goals (SDGs)

SDGs stated 17 goals and 169 targets in order to achieve the agenda 2030 achieving balance in three dimensions of sustainable development in social, economy and environment

Global Reporting Initiative (GRI)

Enables the third party to evaluate environmental impact from the organization's activity and the source chain

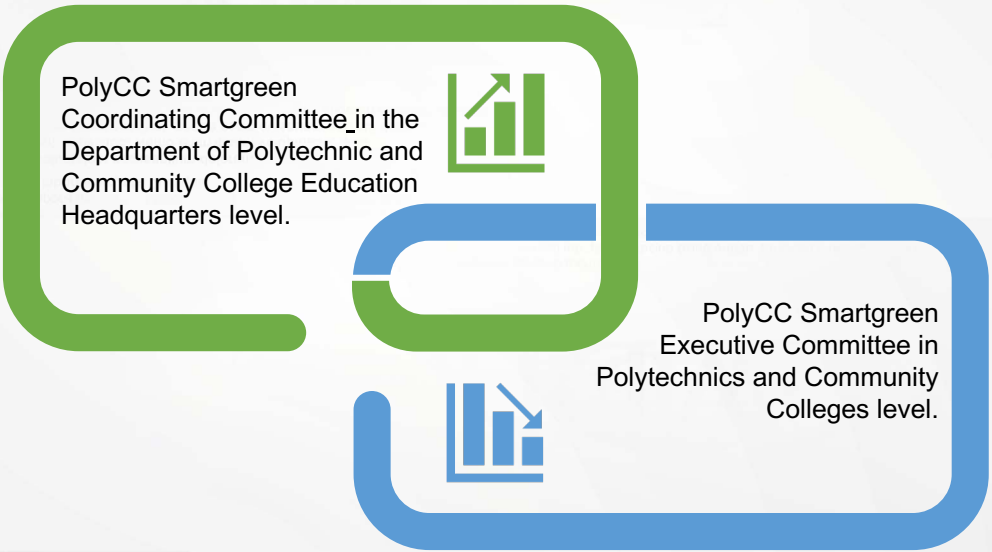
Alignment of SDGs, GRI and BT BSGPC

Focusing on sustainable evaluation elements - social (people), environment (planet), economy (profit) aspects with addition on project processes dan product encompassing all aspects of sustainable development

CHAPTER 3
System Structure

Hassan Bin Siraj
Ts. Murugan A/L Krishnan

In an effort to organize and distribute the sources of the organization, the Steering Committee of Smartgreen PolyCC Blueprint (BSGPC) from the Department of Polytechnic and Community College Education (DPCCE), Ministry of Higher Education, has established two main committees to ensure the execution of the systematically predefined PolyCC Smartgreen Blueprint, namely:



ORGANIZATION CHART

SMART GREEN PolyCC

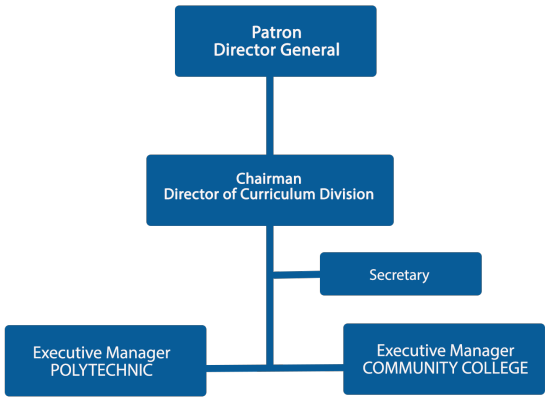


Diagram 3.1: Executive Committee of Department of Polytechnic and College Community

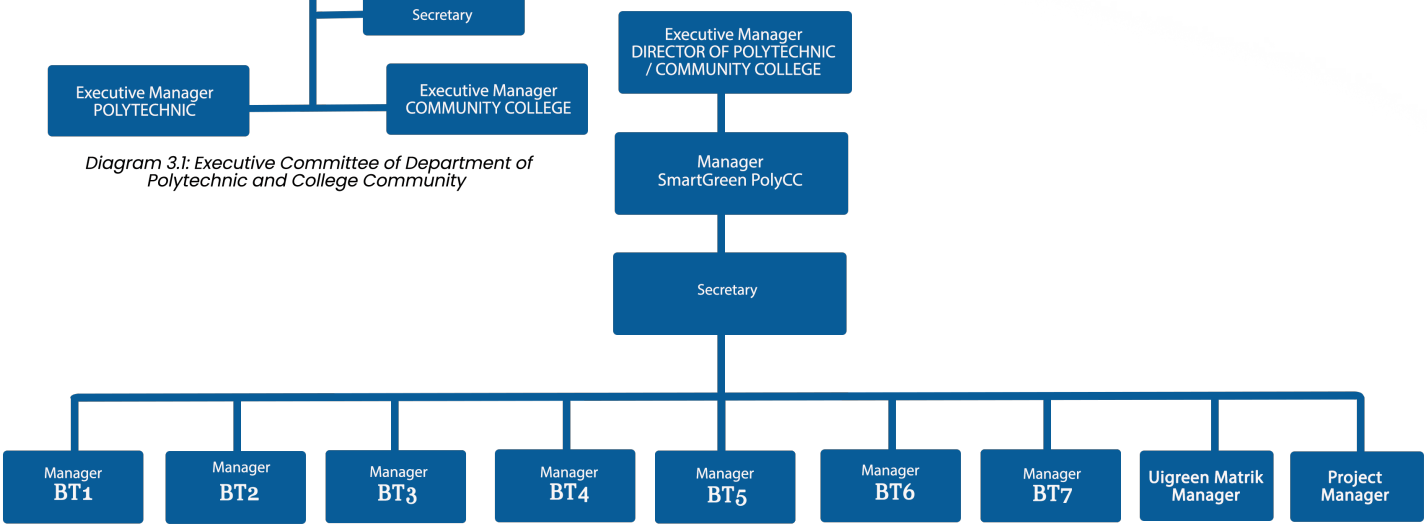


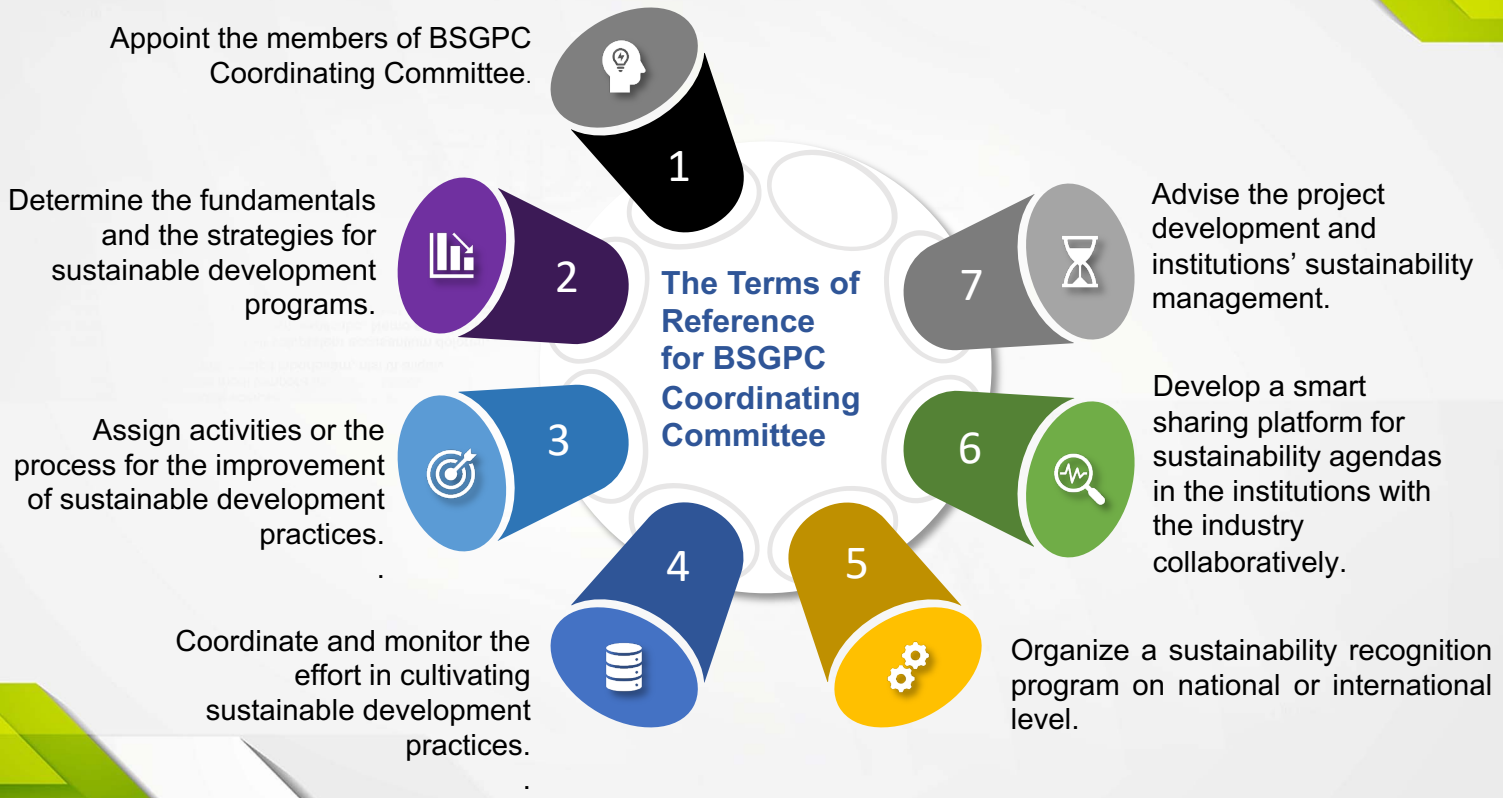
Diagram 3.2: Executive Committee of Institution

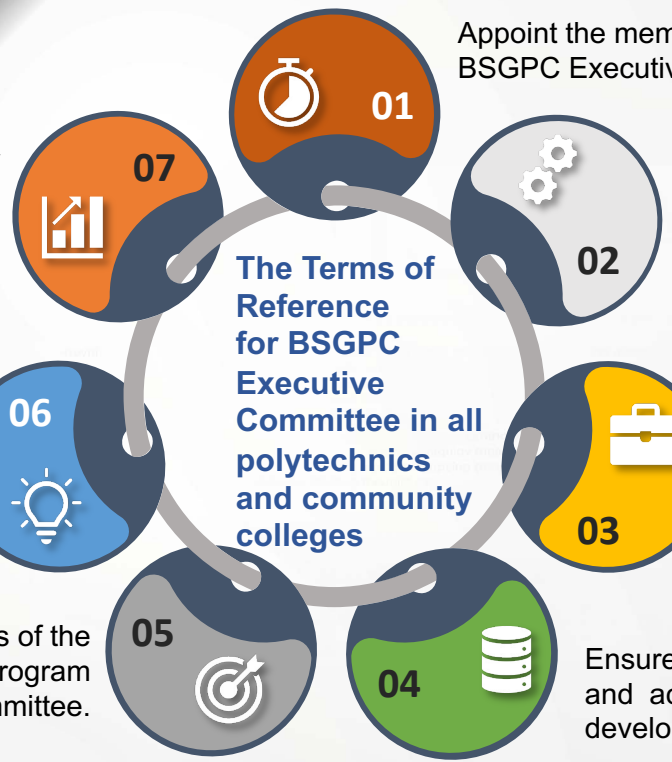
SMART GREEN PolyCC

CHAPTER 4

Polytechnics Sustainability Achievement 2015 -2020

Amalina Kamilah Binti Ibrahim
Nurfadzlina Binti Jamaluddin
Zulhairie Adni Bin Abdul halim


The Terms of Reference for BSGPC Coordinating Committee
1
Appoint the members of BSGPC Coordinating Committee.
2
Determine the fundamentals and the strategies for sustainable development programs.
3
Assign activities or the process for the improvement of sustainable development practices.
.
4
Coordinate and monitor the effort in cultivating sustainable development practices.
.
5
Organize a sustainability recognition program on national or international level.
6
Develop a smart sharing platform for sustainability agendas in the institutions with the industry collaboratively.
7
Advise the project development and institutions' sustainability management.



Appoint the members of BSGPC Executive Committee.

Execute the development of sustainable projects and programs.

Decide on sustainable projects or program proposals submitted by the PolyCC SmartGreen Committee.

Ensure planned projects, programs and activities are in line with the developed framework.

Report the progress of the sustainable development program to the Coordinating Committee.

Ensure efficient sustainability execution, project development and management in the institutions.

Apply smart partnerships for sustainability agendas in the institutions with the industry.

Devise the short-, medium- and long-term plans based on BSGPC guidelines for sustainability development.

Create a platform to share knowledge and experience in the applications of green technology.

Generate products based on green technology by constructing innovative human capital.

Establish collaboration with the ministries, public and private sectors as well as the industry to share expertise and knowledge.

Form a BSGPC Committee that determines the policies and strategies to promote green technology practices.

DPCCE through the Curriculum Division is to impart the elements of green technology into the curriculum of the Polytechnic Education Program.

The Department of Polytechnic and Community College Education (DPCCE) is an advocate in ensuring the smooth running of BSGPC. The roles of DPCCE set forth for the year 2021 - 2026

DPCCE Sustainability Achievements

No	Activities	Target	Acquired Expertise/ Effectiveness Indicators	Implementation Status
1.	BPPM	Malaysia Polytechnics	Sustainable Polytechnics (carbon reduction by 2021 - 2026): ▪ Green campus management ▪ Fostering green communities ▪ Green research ▪ Green cultivation	▪ Malaysia Polytechnics PolyGreen Blueprint is established and to be used as a reference. ▪ The Malaysia Polytechnics PolyGreen Manual is developed and can be downloaded from mypoliteknik.edu.my. ▪ The launch of BPPM. ▪ PolyGreen Master Trainers Workshop is conducted
2.	BSGPC	Malaysia Polytechnics and Community Colleges	Sustainable Polytechnic (carbon reduction by 2021 - 2026): ▪ SDGs ▪ GRI	▪ Transformation of BPPM to BSGPC

No	Activities	Target	Acquired Expertise/ Effectiveness Indicators	Implementation Status
3.	The application of green elements into the curriculum of Malaysia Polytechnics Education Program	Malaysia Polytechnics and industry	Malaysia Polytechnics targets to get the entire polytechnic education programs recognized with green elements by 2020.	▪ Courses conducted: 1. Greening Curriculum Workshop - Awareness. 2. Green Technology Compliance Induction Course ▪ Perform Continuous Quality Improvement (CQI) for: i. The overall program including the application of green elements into the curriculum. ii. The endorsement of green curriculum for polytechnic education program (diploma) commencing in June 2019 session.

No	Activities	Target	Acquired Expertise/ Effectiveness Indicators	Implementation Status
4.	Professional/ Industry Certification: Z050 Green Compliance Course	Malaysia Polytechnics	Green Compliance Officers are accredited with professional certification from the Department of Skills Development.	It is the first recognition for Malaysia Polytechnics in Professional Sustainability Certification.
5.	Green Technology Seminar	Malaysia Polytechnics	▪ Foster an informed society that encouraged the practice of green energy as a better way of life. ▪ Promote ideas and practices related to green technology.	▪ Transformation of BPPM to BSGPC

No	Activities	Target	Acquired Expertise/ Effectiveness Indicators	Implementation Status
6.	Participation and Certification	Malaysia Polytechnics	Campus Sustainability	Merlimau Polytechnic and Mersing Polytechnic are listed in the World University Ranking.
7.	Institutions Sustainability Award	Malaysia Polytechnics and Community Colleges	▪ Sustainable Management ▪ Fostering Sustainable Community ▪ Sustainable Cultivation ▪ GPM Award	To be organized in 2020.

Figure 4.1 : Malaysia Polytechnics Sustainability Activities 2015 -2020

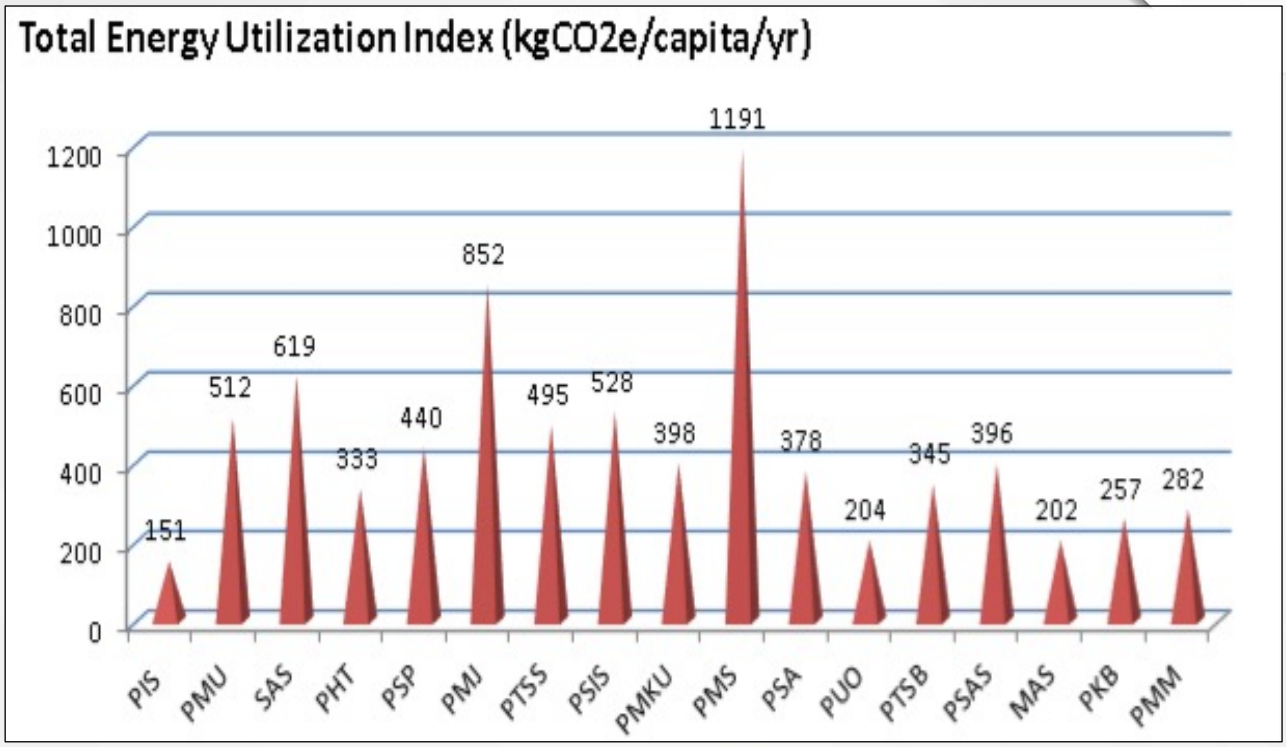


Figure 4.2 : Average Carbon Footprint for 18 Polytechnics

Figure 4.1
Malaysia Polytechnics Sustainability Activities 2015 -2020

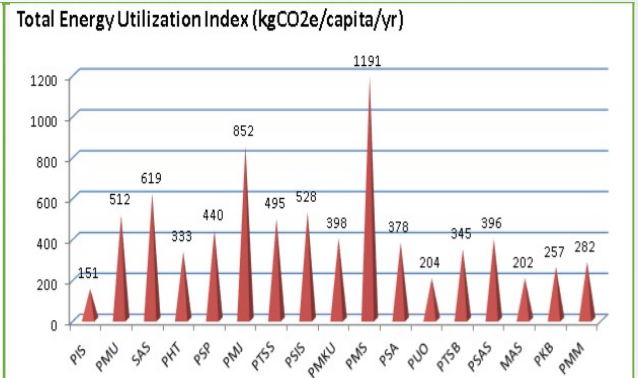


Figure 4.2
Average Carbon Footprint for 18 Polytechnics

Politeknik	Population	kWh	ENERGY ULTIZATION INDEX (kg CO2e/capita/yr)	kgCO2e/Capita/Day
PIS	8,177	1,666,529.72	151	0.41
PMU	5,167	3,573,060.17	512	1.40
PSAS	12,633	10,557,622.13	619	1.70
PHT	845	379,636.36	333	0.91
PSP	7,518	4,459,460.00	440	1.21
PMJ	1,765	2,028,808.54	852	2.33
PTSS	9,040	6,038,809.09	495	1.36
PSIS	7,310	5,211,134.00	528	1.45
PMKU	643	345,482.00	398	1.09
PNS	0	0.00	0	0.00
PMS	5,311	8,538,231.61	1191	3.26
PSA	8,537	4,351,919.00	378	1.04
PUO	11,129	3,064,109.75	58	0.16
PMK	0	0.00	0	0.00
PTSB	9,072	4,220,608.80	29	0.08
PSAS	8,360	4,465,166.00	396	1.08
POLIMAS	11,989	3,269,791.11	202	0.55
PKB	9, 279	3,213,620.43	257	0.70
PMM	12,200	4,640,324.00	282	0.77

Figure 4.3
Total Carbon Footprint According to Polytechnics

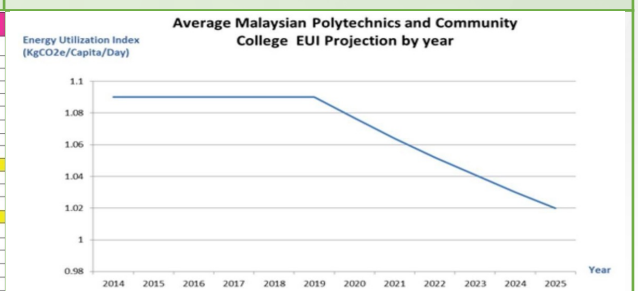


Figure 4.4
Total Carbon Footprint According to Polytechnics

Figure 4.5
Polytechnics Sustainability Awards and Certifications

Figure 4.6
Training, seminars and promotional programs

Rangka pelbagai pelan pastikan Melaka kekal hijau

LIANA SAHABUDIN

DALAM usaha memastikan negeri ini kekal hijau, kerajaan negeri merangka Pelan Tindakan Khas Pembangunan Urban Responsif Retrosfektif bagi persiraman semula Pulau Hutan di kawasan sekeliling Sungai Putat hingga ke pusat pentadbiran kerajaan negeri di Pusat Dagangan Antarabangsa Melaka (MITC).

Kawasan itu telah lama dikenalpasti di negeri-negeri maju. Melaka merupakan negeri pertama di negara ini menggunakan kaedah tersebut sebagai proses rehabilitasi dan meningkatkan semula negeri.

Ia mampu memulihara 'Eko Diversiti' dan 'Ecological Network' supaya kadar kerosion itu tidak berada pada tahap tertinggi bagi menyelesaikan masalah tersebut.

LAKSANA SMART GREEN POLYCC

Dalam laporan MelakaKini Oktober lalu, Smart Green PolyCC telah dilaksanakan Jabatan Pendidikan Politeknik dan Kolej Komuniti (JPPKK) melalui Politeknik Merlimau Melaka (PMM) dalam memperkayakan pelajar hijau dalam kelas.

Ketua Menteri, Adly Zahari berkata, inisiatif itu menjadi panduan bagi semakin hijau bandar yang selaras seperti dengan rancangan kerajaan Melaka dan Kolej Komuniti di Malaysia.

Beliau berkata, program berkenaan selaras dengan kepentingan negeri dan negara Melaka bagi memangani perubahan iklim seperti jerebu dan pencemaran udara.

"Kerjasama antara hijau dan pemeliharaan alam sekitar bertujuan menjadi perhatian kepada negara.

"Perubahan Perbadanan Teknologi Hijau

LAPORAN KHAS

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LANCARAN PELEPASAN BENIH IKAN 'RUMAN ADLY' DILAKSANA

TIADA BANGUNAN TERLARANG TERDAMPAR

PEMBINAAN MASJID TEKNOLOGI HIJAU

ADLY ketika melancarkan prasarana Smart Green PolyCC Perdagbuli Kebangsaan dan Festival Agro Makanan dan Bioteknologi (SGFAMB) 2019 di Politeknik Merlimau, baru-baru ini.

NORHAZLIM ketika melepaskan benih anak ikan ke sungai dalam satu program baru-baru ini.

sungai," katanya.

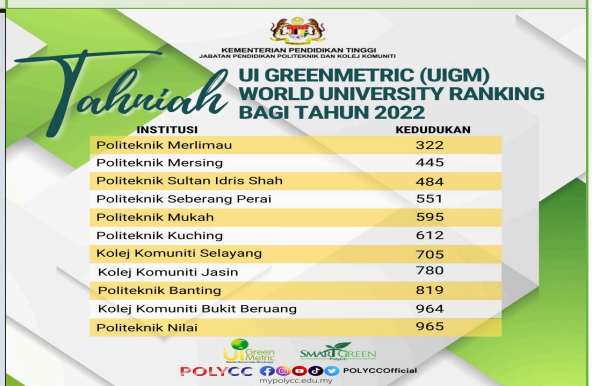


Figure 4.7
The launch of SmartGreen PolyCC Blueprint

Figure 4.8
UI Green Metric World University Ranking
World's Most Sustainable University

Figure 4.9
Planting trees as one of the sustainable initiatives to resist climate change

Figure 4.10
Environmental management through local activities, seminars

Figure 4.11
Polytechnic's energy management activities

Figure 4.12
Waste management activities in polytechni

Figure 4.13
Water management activities in polytechnics

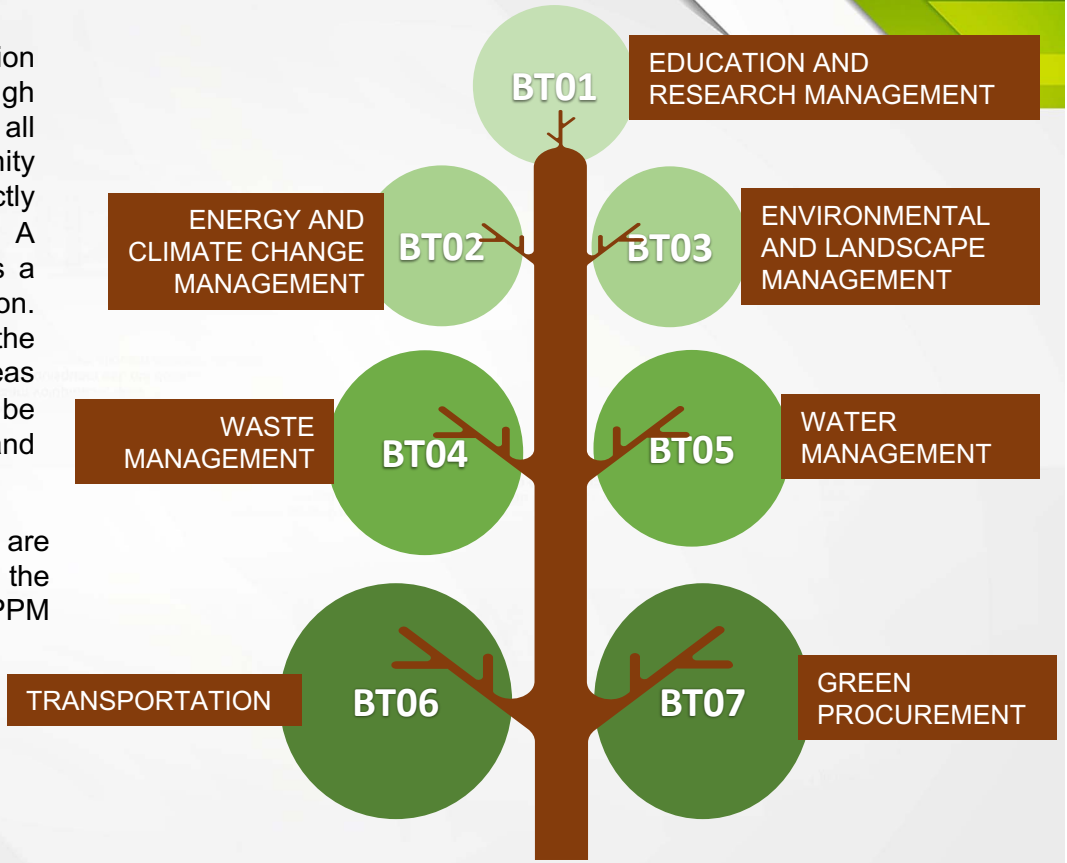
Figure 4.14
Polytechnics' transportation management activities

Figure 4.15
Air quality management activities and devices used

Figure 4.16
Polytechnics' biodiversity and landscape management activities

BSGPC is established with a vision to empower green culture through sustainability programs in all polytechnics and community colleges, as well as to indirectly nurture green collar workers. A practical and strategic direction is a key milestone in realizing the vision. This direction is guided by the implementation of seven BTs (Areas of Focus) that are required to be implemented in tandem and comprehensively.

There are seven BT activities that are continuously improved based on the experience gained during the BPPM 2015 – 2020 phase, specifically:



CHAPTER 5
Area of Focus

Suziee Binti Sukarti
Dr. Halim Bin Hj. Razali
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Hj. Mohamad Yusof Bin Sulaiman
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Hassan Bin Siraj
Ts. Murugan A/L Krishnan
Ts. Mohd Hazwan Bin Mohd Radzi
Syariffah Binti Othman
Fauziah Binti Aliman

INTRODUCTION

According to Othman (2014), there is no single definition agreed upon by many for education management due to its rapid development and the influence of other disciplines such as sociology, political science, economics, and general management. Glatter (1999), on the other hand, stated that education management is related to internal operations of the educational institutions and its relationship with the environment. As for the definition of research, Siti Asmah (2014), concluded that research is a systematic, logical, empirical and scientific process carried out to solve a problem. The relationship between education and research can form an excellent program policy to improve the quality of teaching (Rowland, 2006).

Area of Focus 1: Education and Research Management (BT1-PPP) is the best medium to disseminate the concept of Educational Sustainability Development (ESD) to all Polytechnics and Community Colleges specifically, and to society generally. This is because it covers the entire operation, various disciplines, and the expansion of its environment. Through BT1-PPP in this SGPCCB, many sustainability programs and projects in Polytechnics and Community Colleges can be coordinated to be more focused and to have high impact based on Malaysia Education Development Plan 2015 - 2025 (Higher Education) and further uphold the Polytechnic and Community College Strategic Plan 2018 – 2025. At present, most environmental awareness programs are largely aimed to raise awareness in the environmental, economics and social aspects towards a more sustainable life.

In education, curriculum is a reference document that contains all of the knowledge, skills, values and norms to produce human capital as implored by the stakeholders and the industry. At polytechnics and community colleges, its standard curriculum has undergone a process of continuous quality improvement (CQI) intended for improvement in content such as 4IR, field standards, 21st century learning methods, sustainable agendas and other related elements. Through the application of sustainable development goals (SDGs) into teaching and learning activities guided by the curriculum, it will indirectly be a major contributor to the sustainability achievements aspired by the country.

OBJECTIVE

1. Education and Research Management is formed for the involvement of all DPCCE staff and related parties in all aspects of education and research that lead to sustainability.

ACTION PLAN	SMART GOAL
Formation of Executive Committee	Appointment of the Coordinating and Work Committee of PolyCC SmartGreen in DPCCE and in every polytechnic and community college.

ACTION PLAN	SMART GOAL
Green curriculum implementation	Ensure 100% green elements are incorporated into the curriculum and the teaching and learning process.
Research and publications on sustainability	Analyze the percentage of reduction in resource utilization costs. Specify the number of research and writing productions related to green initiatives. The number of research (green projects/ innovations) and writing produced by students, lecturers, and staff. The number of research partnerships with industry and community as well as sustainability research funding. Extensive sharing of expertise and experience related to green initiatives with industry and community.
Sustainability reporting and communication management	Prepare Standard Operational Procedure (SOP) documents related to green practices. Prepare related files and refine existing files. Establish and strengthen internal and external communication systems.

ACTION PLAN	SMART GOAL
Awareness program and implementation of green culture	Increase the appreciation of green ideals and manage activities/programs for all stakeholders. Provide relevant green training.
Recognition	Organize formal recognition for the achievements of polytechnics and community colleges in their effort towards the green approach. Endorsement of the green image of Polytechnics and Community Colleges. Evaluate the performance of green practices and present awards/ rewards.

INTRODUCTION

Climate is described as a long-term summation of weather over a period of time. Climate change is usually caused by natural phenomena, such as changes in sunlight and volcanic eruptions. It also resulted from human activities which contribute to the increase of greenhouse gas (GHG) emissions. Energy management is one of the measures in controlling and reducing building energy consumption which later allows cost effectiveness to ensure energy sustainability, on top of reducing GHG emissions. Among the steps that can be carried out in managing energy is to perform energy audits and to improve energy efficiency.

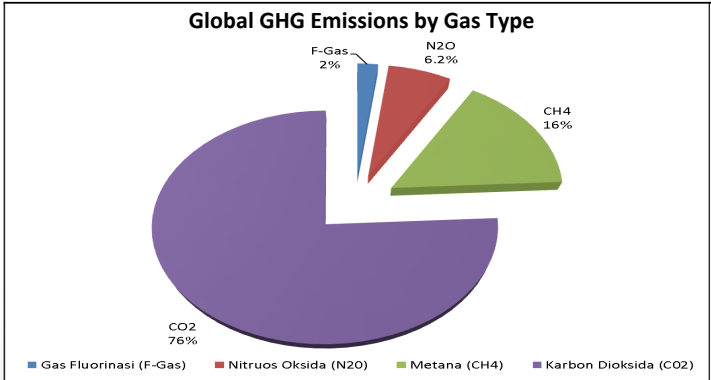


Figure 5.1 : Global GHG Emissions by Gas Types (IPCC, 2014)

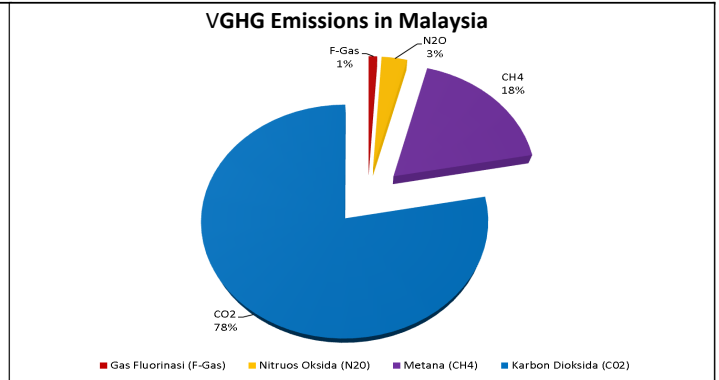


Figure 5.2 : GHG Emissions in Malaysia (Mestecc, 2018)

Fluorinated Gas (F-Gas), Nitrous Oxide (N20), Methane (CH4), Carbon Dioxide (CO2)

Generally, these trapped gases cause global warming. Figure 5.3 shows a simulation of anomalous rise of temperature in Malaysia from 2000 to 2099 (Malaysian Meteorological Department, 2009). The rising temperature triggers serious impacts on global climate change. The effects, for example, are rising sea levels, extreme weather, prolonged droughts, forest fires, and rising sea water temperatures as illustrated in Figure 5.4.

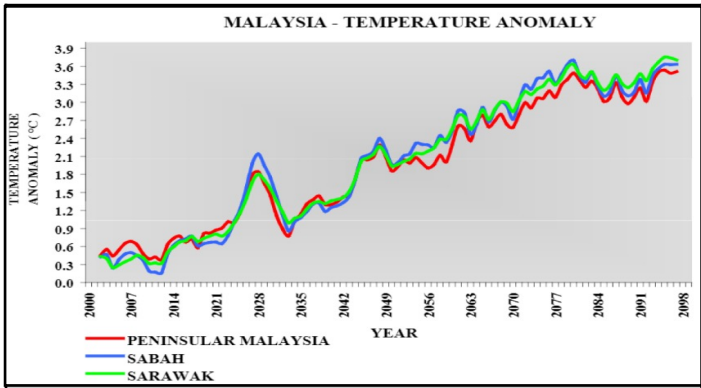


Figure 5.3 : Simulation of Malaysia's Annual Temperature Anomaly for 2001 – 2099 (Malaysian Meteorological Department, 2009)

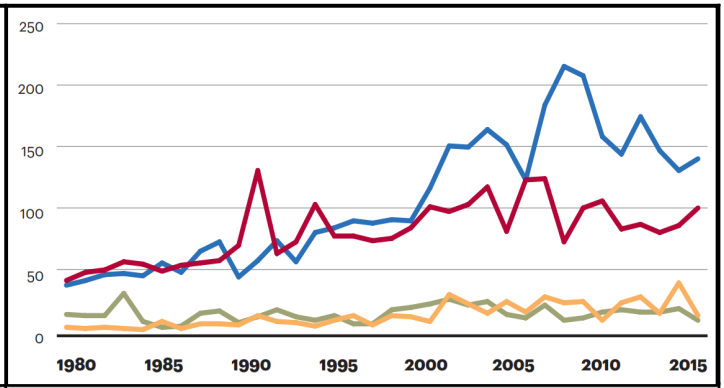


Figure 5.4 : Global Extreme Weather Events (Laudicina & Perterson, 2015)

Flood, Storm, Drought, Extreme Temperature

According to Enerdata (2019), Malaysia recorded an energy consumption of 92 megatons of oil equivalent (Mtoe) in 2018. Five major sectors have been identified as the sources of GHG emissions in Malaysia; energy, waste management, industrial processing, agriculture, and land use land-use change and forestry (LULU-CF) as shown in Figure 5.5. Referring to energy consumption in detail, one of the factors that have been identified as the contributor to carbon dioxide (CO2) emissions is from buildings, especially the ones that are located in urban areas (Wei Huang et. Al, 2016).

In Malaysia, energy consumption in 2012 to 2016 was 262,098 kilotons of oil equivalent (Ktoe). From this total, commercial sectors and residential areas used 14% of the overall sectors or 37,533 Ktoe in sum. Even though the value is not as high as compared to the other sectors such as industry and transportation sectors, Figure 5.6 clearly shows that there is a rise in energy consumption every year. This further fortifies the need for every individual and organization to improve energy saving practices as well as to use energy efficient devices or appliances.

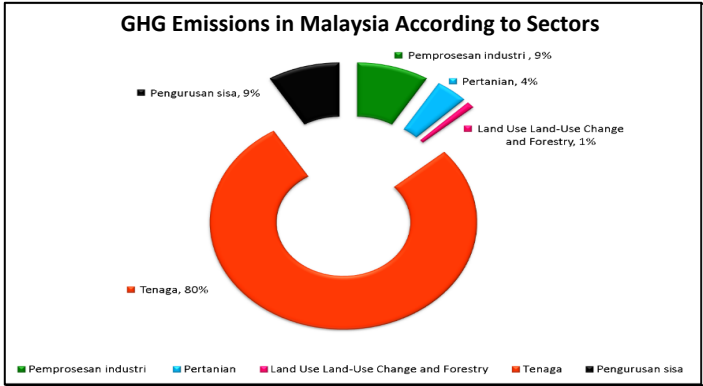


Figure 5.5 : GHG Emissions in Malaysia According to Sectors (Mestecc, 2018)

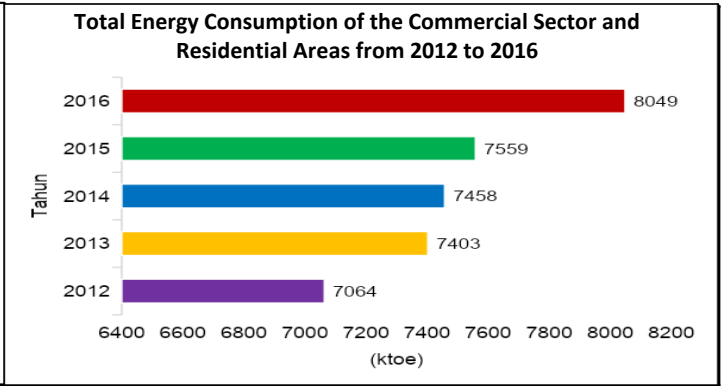


Figure 5.6 : Total Energy Consumption of the Commercial Sector and Residential Areas from 2012 to 2016 (Malaysia Energy Statistics Handbook, 2018)

Each polytechnic and community college needs to formulate strategies in managing energy and GHG emissions efficiently to reduce the effects of climate change. Among the measures that have been taken is to implement knowledge dissemination initiatives through education in the aspect of monitoring the reduction of CO2 and other GHGs through the energy efficiency campaign led by Tenaga Nasional Berhad (TNB). This effort is able to educate people on environmental sustainability through energy conservation. In addition, every polytechnic and community college should consider the prospect of applying passive architecture to lessen the dependence on energy that will also assist in addressing the effects of climate change.

OBJECTIVE

1. Implement knowledge dissemination initiatives through education in the aspect of measuring the reduction of CO2 and other GHG emissions continuously.
2. Define strategies in managing energy and GHG emissions efficiently to reduce the effects of climate change.
3. Maintain and improve energy efficiency as well as promote the use of renewable energy to reduce GHG emissions.

ACTION PLAN	SMART GOAL
Strengthen the governance in addressing the effects of climate change.	Establish strategic partnerships with the experts and industry partners to address the effects of climate change.
Training programs and raising awareness on the effects of climate change on a scale and on a continuous basis.	Develop training modules related to climate change.
Carbon footprint reduction.	Set targets, matrices and policies that can contribute to zero carbon footprint by 2025.

ACTION PLAN	SMART GOAL
The right usage and the best practice of energy efficient equipment.	Apply energy efficient practices in every Polytechnic and Community College as a whole.
Enactment of low-energy buildings and passive architecture.	Ensure that all buildings on campus use natural lighting and ventilation optimally
The number of renewable energy applications on campus.	Increase the use of renewable energy sources on campus.
Minimize electricity consumption and tariff payments.	Cultivate energy saving practices among Polytechnic and Community College residents.
The ratio of total carbon emissions to campus students.	Reduce the intensity of students' carbon footprint.
Energy Used Index (EUI) Benchmarking and awards for eligible Malaysia polytechnics and community colleges.	Run a sub-metering system in all buildings within the campus area by 2025.
Best Practices Competition for Reducing the Impact of Climate Change	Increase innovation participation among polytechnics and community Colleges that can contribute to climate change solutions or energy efficient management.

ACTION PLAN	SMART GOAL
Green curriculum implementation	Ensure 100% green elements are incorporated into the curriculum and the teaching and learning process.
Research and publications on sustainability	Analyze the percentage of reduction in resource utilization costs. Specify the number of research and writing productions related to green initiatives. The number of research (green projects/ innovations) and writing produced by students, lecturers, and staff. The number of research partnerships with industry and community as well as sustainability research funding. Extensive sharing of expertise and experience related to green initiatives with industry and community.
Sustainability reporting and communication management	Prepare Standard Operational Procedure (SOP) documents related to green practices. Prepare related files and refine existing files. Establish and strengthen internal and external communication systems.

LAr. Rohaniah Mohd Nor, Hj. Mohamad Yusof bin Sulaiman and Raveendran A/L Ramasamy

INTRODUCTION

Environment refers to anything that surrounds humans at a point in space and time, while landscape is a natural scenery of an area including elements such as mountains, hills, rivers, lakes and vegetation, as the ones in rural or municipal areas for instance. Environmental and Landscape Management (PASL) is a standardized systematic mechanism in an effort to manage nature and its surroundings. The benefits of implementing PASL are, to name a few, improving the image of the institution, saving energy consumption, reducing the production of waste materials – especially ones that gives harmful effects on the environment, saving water consumption, and adding aesthetic value to the environment with the aim to produce a community that is environmentally friendly and able to support sustainability agendas.

An effective PASL system is one that is in compliance with rules and regulations other than to meet all of the requirements pertaining to the environment, such as pollution prevention in particular. Additionally, other requirements include the elaboration of objectives and goals based on the environmental assessment, re-evaluation and modification of policies, objectives and targets for continuous improvement and lastly, the encouragement of good practices towards environmental sustainability. (Omlsted, 1860) stated landscape is both art and science of the connection between human beings and nature, because nature is essential for better morale and happiness. This statement is supported by Hurbbard & Kimball (1917) in which landscape is the art of design that is intended to preserve the beauty of the environment for human's comfort and wellbeing.

Besides, efficient biodiversity and landscape management through conservation and preservation methods accompanied by the master plan of sustainable landscape design enable the institution to maintain the natural beauty of the environment. Good environmental design planning and cooperative programs will subtly bring the community closer to the institution and it is ideally hoped to curb social problems within the community.

OBJECTIVE

1. Integrate environmental management practices into the operation of the institution through predetermined policies and procedures to ensure that best environmental and sustainability practices are applied continuously.
2. Establish clear guidelines on biodiversity and landscape management with emphasis on environmental sustainability.
3. Raise awareness of the local community on the importance of environmental control and management.
4. Create a safe, healthy and attractive environmental design that preserves and conserves local biodiversity.

ACTION PLAN	SMART GOAL
Conduct training and raise awareness on environmental and landscape management.	Carry out briefings on the importance of landscape and environmental management. Clarify the provisions of law on the environment. Raise awareness among the community on the importance of environmental and landscape management.
Preserve plants and natural habitats.	Assemble an inventory of existing plants in and around the campus area. Plant local trees that can contribute to reduction of carbon footprint. Create a lively landscape without threatening the plants and natural habitats. Design the surrounding area according to sustainable landscape design.

ACTION PLAN	SMART GOAL
Conduct research and local actions.	Present environmental studies and existing biodiversity. Discover the impacts of development activities on the environment and existing biodiversity. Provide findings from research on the conservation and restoration of the environment and biodiversity specifically.
Surface water excess management.	Design and build a surface runoff drainage system based on the concept of sustainable development. Provide temporary reservoirs for the purpose of landscape maintenance.
Information and data sharing.	Organize benchmarking visits to foreign agencies / institutions. Develop a website for information sharing.

INTRODUCTION

A waste management system is defined as an efficient and orderly process. The ability to handle solid waste in a systematic, high-tech approach can optimally improve the wellbeing and quality of life. Solid waste is identified as waste materials or excess wastes that are no longer needed. These wastes can be watery with odor that is then released into the air. This situation is common in most disposal areas or landfills wherein there is a presence of foul smell, insurmountable garbage piles and roadsides that smells as a result of leached water from garbage lorries. These conditions can be the factors of polluted environment and worse, they pose health risks to humans and cause major disruption to the ecosystems.

According to the Environmental Quality Act 1974 (Department of Solid Waste Management), solid waste is construed as any scrap material, unwanted excess or rejected output from any process; anything required to be disposed of because it is broken, torn, contaminated or otherwise damaged; any other materials that are in accordance with this act or other written law and are required by the authorities to be disposed of. However, it does not include the scheduled waste materials. Solid waste can be categorized into five parts, namely general solid waste, hazardous waste, agricultural waste and industrial waste. This classification is imperative for the process of identifying the criteria that cover all sources, types of classification and their composition in the waste category.

Dr Halim bin Hj. Razali and Mohamad Nazri bin Ismail

In Malaysia, about 5.5 million tonnes of waste is generated each year and its management is considered to be a predicament for the government, mainly in terms of economic aspects and environmental care. Millions of ringgit is allocated to bear the cost of waste management for residential areas, hotels and business premises (UNEP 2016). Local authorities (PBT) have to spend between 40% to 70% of the annual tax revenue for the purpose of waste disposal management each year. In addition, local authorities face problems in finding suitable yet limited areas to be used as centralized waste disposal centers (Augustine Towonsing, 2017). The centralized waste disposal areas or landfills have also brought about the greenhouse gas emissions and the presence of toxic underground water flow.

This situation poses a high risk to public health and the environment in the open. In Malaysia, 90% of waste management methods are done in the open centralized landfills by the local authorities who are responsible for managing solid waste (Thi et al. 2015). Other methods of waste management that are practiced in developing countries include incineration, anaerobic digestion, composting and animal feed (Thi et al. 2015). These methods have inevitable risks throughout the process, including in terms of high operating costs due to the combustion, excessive power consumption and heat production (combustion), lack of initiative in separating food waste from other solid wastes, (e.g., animal feed) and production of organic materials such as anaerobic digestion and compost (Tsai et al. 2007). It would be a success if the output of these wastes such as methane gases and solid materials can be converted into primary resources to generate alternative energy. Furthermore, the toxic underground water flow and produce from waste fermentation can also be used as organic fertilizer for agricultural use.

AREA OF FOCUS 4 : WASTE MANAGEMENT

Dr Halim bin Hj. Razali and Mohamad Nazri bin Ismail

The concern in managing waste is one of many challenges in this modern age, especially in the urban area. Waste management, or solid waste management in particular, is deemed as a necessity to protect the environment and to ensure sustainability and consequently, maintain good quality of life. In order to face the challenge, a collective effort from both the authorities and community should be emphasized. Success in doing so makes a secure, comfortable and prosperous environment possible.

OBJECTIVE

1. Raise awareness and knowledge of waste management to optimize the use of resources through the measurement of the current waste management performance.

ACTION PLAN	SMART GOAL
Implement recycling programs (Prevent, Reduce, Reuse, Recycle, Treat) at polytechnic and community college on an ongoing basis.	Set up recycling centers at polytechnic and community colleges starting from the year 2020.

ACTION PLAN	SMART GOAL
Carry out programs to minimize the use of printed materials and plastics in Polytechnics and Community Colleges.	Run at least one program per year.
Reduce the disposal of waste at landfills through composting organic waste.	Create a composting machine project for organic waste by 2022.
Execute non-recyclable and non-organic waste disposal	Conduct inorganic waste disposal at least once a year.
Handle and regulate scheduled toxic waste.	Carry out toxic substance's disposal at least once a year.
Wastewater treatment management.	Improve the level of reliability and efficiency of wastewater treatment systems in polytechnics and community colleges.

INTRODUCTION

Water resources management is the optimal planning, development and distribution of water resources activities in the context of preserving people's wellbeing. Failure in development and effective water management will pose an overall economic, environmental and social impact. Water resources management is steered towards the awareness of its sensible use, reducing waste and water harvesting practice alongside wastewater recycling practice.

According to Oridorn, (1977) in his book titled Water Resources and Sustainability, "Water resources management involves planning, analysis, evaluation, usage, impact and forecasting of water resources systematically, efficiently and optimally without waste to ensure continuous clean water supply to consumers". Therefore, the available water resources must be managed and maintained wisely to meet the current and future needs without sacrificing the environment. Thus, the concept of sustainable water resource development should be highlighted.

OBJECTIVE

1. Improve utility knowledge and the practice of water saving methods through the monitoring, control, development of water recycling systems and rainwater harvesting.

ACTION PLAN	SMART GOAL
Implement current water usage monitoring.	Perform water usage monitoring and data collection.
Launch best water practice campaigns.	Awareness campaigns and water harvesting practices are highlighted.
Develop a rainwater collection system.	Identify strategic locations for rainwater harvesting purposes.
Identify water recycling systems and methods of use.	Design system and the use of recycled water mainly for agricultural purposes.

Hassan bin Siraj, Ts. Mohd Hazwan bin Mohd Radzi and Syariffah binti Othman

INTRODUCTION

Most motorized vehicles use petroleum as fuel. The combustion of this fuel releases carbon dioxide (CO2) gas into the air and subsequently leads to an increase in the country's CO2 emission. Area of focus (BT) in the transportation sector emphasized on the aspects of transportation infrastructure, fuel and public transportation. With the advancement of technology, the prestige of the automotive industry has been further elevated to a position that can be considered competent to help solve environmental problems. Nevertheless, according to Prof. Dr. Azhar Abdul Aziz from Universiti Teknologi Malaysia, to see the technology to be truly environmentally friendly, it needs to be understood in terms of reducing CO2 emissions and its impact on greenhouses (Laupa Junus, 2015).

Green (sustainable) transportation refers to any form of transportation that has minimal impacts on the environment or vehicles that emit low CO2, such as vehicles that use renewable energy. Walking, cycling and even hybrid cars (cars that use electricity and solar energy) are also examples of green transportation.

The amplified consumers' awareness of green transportation in most developed countries such as the United States, Europe and Japan has led to greater demand for hybrid vehicles. In the rapidly developed country, China, contrariwise, the demand is due to the severe environmental pollution. Looking from the heat balance point of view, the global warming phenomena indicate the existence of a relatively significant disparity. According to Professor James G. Titus of the United States Environmental Protection Agency, there is a surge in global temperature between 0.4 to 0.5 degrees Celsius in every five years that started out in 1952. It is estimated that the global temperatures will increase to between 0.8 and 3.6 degrees Celsius in the year 1990 to 2025 (Iskandar , 2015).

The government is expected to reduce pollution from transportation as these activities have generated CO2 emissions by 25%. They are, in fact, one of the contributors to global climate change due to greenhouse gases (GHG) emission. Pollution from transportation activities can worsen at a faster rate than other activities, e.g., industrial activities. An aggressive and continuous reduction of GHG emissions is necessary to ensure positive effects on climate change and to help maintain a more sustainable environmental condition.

Pollution from transportation is the largest contributor to global climate change, which constitutes about 25% of the overall CO2 emissions. A study shows that as much as 75% of total CO2 emission is due to road transportation and it is increasing over time. It is found that almost 95% of the transportation sector uses petroleum or diesel as fuel and this brings about 60% of the world's oil consumption (Hashimah, 2017). For that reason, the awareness on the use of green transportation needs to be constantly instilled in the society.

Systematic effort needs to be planned and employed in this sector to reduce air pollution and ideally achieve the sustainable agenda. Therefore, the branding of Green Transportation (GT) is fundamentally based on environmentally friendly transportation activities. In this case, GT will also involve the efficient use of resources and the restructuring of the transport system as a whole.

OBJECTIVE

1. Instill awareness of the importance to reduce pollution in the transportation sector through the implementation of policies and the use of green technology.

ACTION PLAN	SMART GOAL
Encourage carpool or the use of public transportations among Polytechnic and Community College residents.	Save oil consumption and reduce emissions into the air.
Prepare guidelines for the implementation of pedestrian walk and the use of bicycles.	Reduce the number of vehicles entering the campus by 20% starting from January 2020.
Plan a policy on the use of vehicles that can reduce carbon.	Replace official vehicles with Energy Efficient Vehicle (EV) in stages starting from the year 2020. Gazette the use of B10 biodiesel for all diesel powered vehicles.

INTRODUCTION

Green Procurement refers to the purchase of products, services or mechanisms in the civil sector that consider environmental criteria to conserve the environment and natural resources, as well as to minimize and reduce the negative impacts from human activities. Green Procurement is likely to increase the procurement efficiency of polytechnics and community colleges. At the same time, Green Procurement is also able to use the power of free trade to transform the Malaysian economy towards green growth.

In the National Green Technology Policy (NGTP), Government Green Procurement (GGP) is used as an instrument to achieve the government's aspiration. The implementation of GGP will help Malaysia to achieve the target of reducing the level of greenhouse gas (GHG) emissions by 45% compared to Gross Domestic Product (GDP) by the year 2030. 35% of the sum is voluntarily and another 10% is conditional and subjected to receipt of financial assistance, technology transfer and capacity building from the developed countries. (Malaysian Energy Center, 2009).

Government procurement plays an important role as a catalyst to socio-economic development as it represents about 12-15% of GDP. The government has recognized the importance of government procurement, primarily in creating innovation opportunities and boosting the competitiveness of local companies. In addition, government procurement has been identified as an area with the potential to encourage investment and boost business confidence in Malaysia. Government can use the purchasing power to steer towards green growth through the promotion of environmentally friendly procurement, products and services. Ultimately, the government has created the next green market that also plays a part as a role model for private sectors and the general public (Ministry of Energy, 2018).

OBJECTIVE

1. Introduce and adopt green procurement in the polytechnic and community college systems in an effort to support environmental conservation and carbon footprint reduction.

ACTION PLAN	SMART GOAL
Accomplishment of Training of Trainers (TOT).	Officers are identified to be trained as Champions in Green Procurement and recognized as Master Trainers.
Organize training.	Appoint Green Procurement Officers in every Polytechnic and Community College.
Briefing to suppliers and supply chain.	Identify suppliers and supply chains in the green market.
Annual Green Procurement Planning.	Comply with the Government Green Procurement Guidelines. 10% green turnover by 2025.

OBJECTIVE

1. Introduce and adopt green procurement in the polytechnic and community college systems in an effort to support environmental conservation and carbon footprint reduction.

ACTION PLAN	SMART GOAL
Provision of Performance Reports.	The annual performance report includes: a) Evidence of compliance with the Technical Specifications of Products, Services and Job Scope in the Government Green Procurement Guidelines b) Supplier performance c) Supply and service performance (quality)

CHAPTER 6

Management of Sustainable Institution and Assessment

Dr. Norsaidatul Akmar Binti Mazelan
LAr. Rohaniah Binti Mohd Nor

Introduction to Sustainable Management and Assessment

The Sustainable Development Goals (SDGs) are the core agenda for the Sustainable Development 2030. The SDGs are the continuation of the sustainable agenda since the Millennium *Development Goals* (MDGs) that had been achieved in 2015. The MDGs consist of 8 goals and 21 targets, whereas the SDGs have been expanded to encompass 17 goals and 169 targets in achieving the three-dimensional sustainable development equilibrium that includes social, economic and the environment. The 17 SDGs and 169 targets outlined are as follow:

	SD1	Ending all types of poverty
	SD2	Ending hunger, achieving food security and increasing nutrition and promoting sustainable agriculture
	SD3	Ensuring a healthy life and encouraging well-being for all
	SD4	Ensuring an inclusive, fair and quality education and encouraging life-long learning opportunity for all
	SD5	Achieving gender equality, and empowering women and young girls
	SD6	Ensuring water readiness and management and sustainable sanitation

Introduction to Sustainable Management and Assessment

	SD7	Ensuring access towards affordable, sustainable and modern energy for all
	SD8	Encouraging an economic growth that are sustainable and inclusive with full, productive workforce, and suitable jobs for all
	SD9	Constructing robust infrastructure and encouraging an innovative, inclusive and sustainable industries
	SD10	Reducing area inequality
	SD11	Making cities and settlements as an inclusive, safe, resilient and sustainable
	SD12	Ensuring sustainable output pattern and consumption
	SD13	Taking immediate action in dealing with climate change and its effects

	SD14	Rehabilitating and preserving coastal areas and its marine resources for sustainable development
	SD15	Protecting, rehabilitating and encouraging sustainable use of land ecosystem and halting land destruction and its biodiversity
	SD16	Encouraging peaceful and inclusive society for sustainable development at all levels
	SD17	Reinforcing prosperity

Figure 6.1 Description of the 17 elements of the UN Sustainable Development Goals

Sustainable Management and Assessment Objectives

The assessment in observing the success of Green Campus is based on certain criteria and assessment by a qualified panel of jury that have previously adjudicated on related competitions (local or foreign) regarding sustainability. The awards are for the categories of:

1.Sustainable Campus
2.Sustainable Community
3.Sustainable Research
4.Sustainable Acculturation
5.Sustainable Project

Adjudicating Criteria for Sustainability Assessment

The institutional sustainability assessment for the awards in *BSGPC* is reviewed holistically in accordance with the internationally recognised standard on Sustainable Management Project. The Accredited Assessment Officer would assess in detail by employing the criteria and elements stipulated in the checklist of the P5 Work frame in the Sustainable Management Project. Then, the Assessment Officer would scrutinise every activities with the self-adjudication data. Finally, the Assessment Officer would summarise according to the weightage for each given product, process, social, environmental and economic impacts

PROJECT										
Product Impacts								Process (Project Management) Impacts		
Lifespan of Product			Servicing of Product					Effectiveness of Project Processes	Efficiency of Project Processes	Fairness of Project Processes
People (Social) Impacts				Planet (Environmental) Impacts				Prosperity (Economic) Impacts		
Labor Practices and Decent Work	Society and Customers	Human Rights	Ethical Behavior	Transport	Energy	Land, Air, and Water	Consump-tion	Business Case Analysis	Business Agility	Economic Stimulation
Employment and Staffing	Community Support	Non-discrimi-nation	Procurement Practices	Local Procurement	Energy Consumption	Biological Diversity	Recycling and Reuse	Modeling and Simulation	Flexibility/ Optionality	Local Economic Impact
Labor/ Management Relations	Public Policy/ Compliance	Age-Appropriate Labor	Anti-Corruption	Digital Communi-cation	CO2 Emissions	Water and Air Quality	Disposal	Present Value	Business Flexibility	Indirect Benefits
Project Health and Safety	Protection for Indigenous & Tribal Peoples	Voluntary Labor	Fair Competition	Traveling and Commuting	Clean Energy Return	Water Consumption	Contami-nation and Pollution	Direct Financial Benefits		
Training and Education	Customer Health and Safety			Logistics	Renewable Energy	Sanitary Water Displacement	Waste Generation	Return on Investment		
Organization al Learning	Product and Service Labeling							Benefit-Cost Ratio		
Diversity and Equal Opportunity	Mkt. Comm. and Advertising							Internal Rate of Return		
Local Competence Development	Customer Privacy									

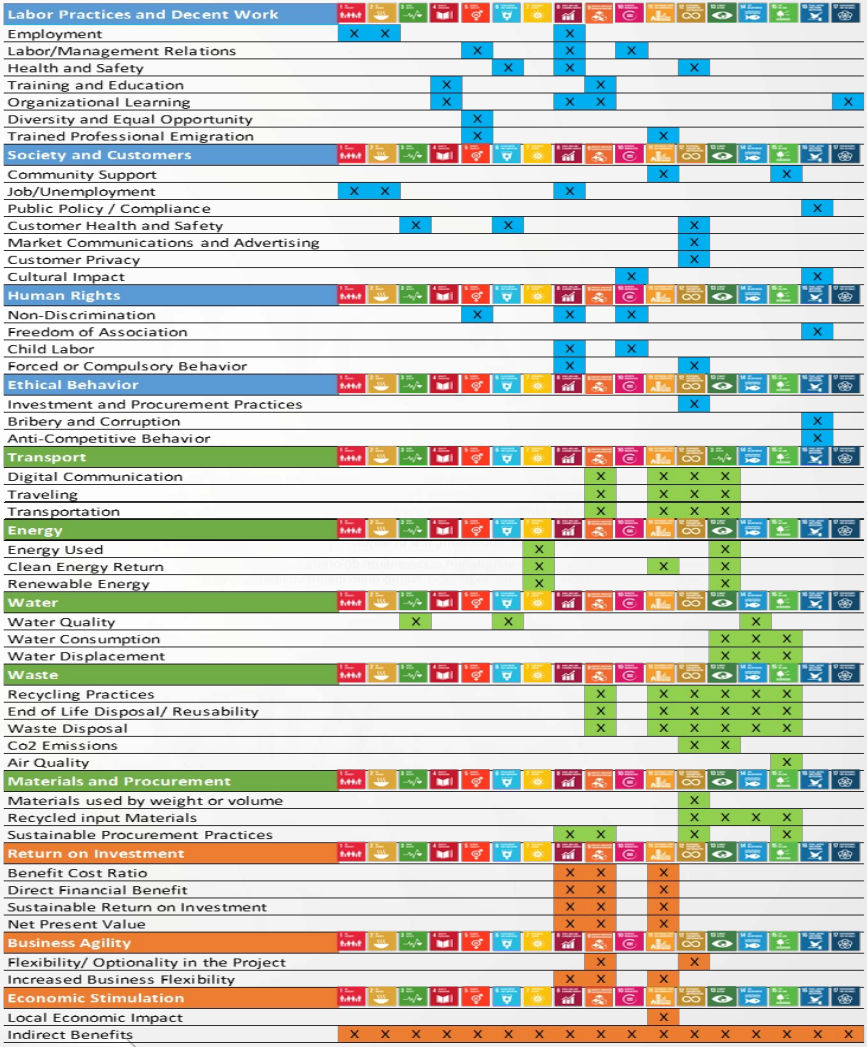
Figure 6.2 Impact on Sustainability (Social, Environment, Economy, Product and Process) under P5 Work Frame

Project Sustainability is based on Social Impact, Environmental Impact and Economic Impact, where each of the impact is detailed below:

Project Sustainability
Social Impact: **1.** ***Labour Practices and Decent Work*** (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), **2.** ***Society and Customers*** (Community Support, Public Policy/Compliance,), **3.** ***Human Rights*** (Non-discrimination), **4.** ***Ethical behaviour*** (Procurement Practices).
Environmental Impact: **5.** ***Transport*** (Local Procurement), **6.** ***Energy*** (Energy Consumptions, CO_2 Emissions), **7.** ***Water*** (Water Consumption), **8.** ***Consumption*** (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).
Economic Impact: **9.** ***Impact on Investment (***Direct Financial Benefits), **10.** ***Business Agility*** (Flexibility / Optionality, Business Flexibility), **11.** ***Economic Stimulation*** (Indirect Benefits).

SDG INDICATOR

Figure 6.3 SDG Indicator



ADJUDICATION WEIGHTAGE

For each adjudication in the assessment, the achievement of the sustainable project must be given due consideration to its appropriate weightage holistically. Each weightage would be first linked to its identified category. The report template would be developed based on each category's activities in tandem with the adjudication's weightage and the scoring rubric.

ASSESSMENT FROM ASSESSMENT OFFICER

In ensuring that each participation is subject to the international standard, the Accredited Assessment Officer needs to make verification based on GPM 360 principles, which is within the ambit of GPM Global certification. Every sustainable project activity adjudication exercise would be combined with GPM Sustainable Project Management adjudication, the P5 Work Frame – which falls under PRISM method, as well as other methods identified based on each competition category. Both self-adjudication data from the certified Assessment Officer would then become the cumulative score.

SUSTAINABILITY ACHIEVEMENT REPORT

All sustainability achievement reports would be included in a report that would give an overall picture of the analytical data of the sustainable project activity together with the weightage measurements that are used by the respective polytechnics and community colleges, as well as the Authorised Assessment Officer. The sustainability achievement report must have a relationship with the 17 goals of the UN-SDGs.

RESULT OF THE COMBINATION OF SELF-ASSESSMENT AND ASSESSMENT OFFICER

The result of the assessment derived from the combination of self-assessment from the respective polytechnics and community colleges and the assessment from the Accredited Assessment Officer would then be verified by the Certified Verifier.

ACCREDITATION CERTIFICATE

For each competition category, each polytechnics and community colleges would receive an Accreditation Certificate from the respective accrediting bodies. The result from the sustainability level report produced by the respective polytechnics and community colleges is assessed based on international standards.

The standards adopted are based on impacts toward social, environment and the economy. The impacts are directly related with the 17 goals of the UN-SDGs.

AWARD FOR BEST IMPLEMENTATION OF SUSTAINABLE PROJECT

The final decision on the winner of the *SmartGreen PolyCC* would be made according to the most effective and astounding impact (*wow factor*) that goes along with the aspirations of UN-SDGs.
The final assessment is done through a special presentation from the representative of the respective polytechnics and community colleges that would present their Sustainable Management Project in front of a panel of selected adjudicators.

GREEN CAMPUS SUSTAINABLE AWARD – CRITERIA AND SELECTION PROCESS

The sustainable campus award is to highlight sustainable practices in the campus. Entries are open to anyone in assessing the involvement of the community (staff and students) in engaging with the outside communities for their Corporate Social Responsibility or Enterprise Social Responsibility activities from the aspect of economy and environment, as well as producing huge impact towards existing resources (new or spent). Presented programs could be assessed based on the reduction of the new or spent resources used, awareness and behavioral change or the ability to produce ideas that could increase or recover innovative products/services. It should reflect changes to policies, energy usage or environmental impact that includes procurement and monitoring, measurement and changes toward positive values. These programs do not just assess the quantitative data obtained, but also towards behavioral change based on sustainability factors. The assessment criteria include the types of documents submitted, the data received during the appropriate time, and to what extent the increase in exacting the changes through the campus activities had been understood, made aware of and continued together with both communities.
The assessment is also made based on the effect of influence of the outside community towards the environment and the community in the campus. Initial screening needs to be made in making way for programs that have fulfilled the criteria and the characteristics of sustainable management.

NOTIFICATION AND IMPLEMENTATION OF THE COMPETITION AWARD

The Panel of Assessor consists of those who are accredited and aware of the practices of sustainable management and its impact towards social, economy, and the environment. Eligible institutions for the competition would be notified by email. The first screening would be made to screen the participants. Institutions that have received the letter of approval for joining the competition would need to provide feedback in joining the competition. All entries that have passed the first screening would receive the invitation letter for joining the competition from next year onwards.
The criteria that the panel of adjudicator is looking for are:

•

Excellent achievement and / or innovations in project management with best practices.
•Achievement and / or innovations in implementing best practices in sustainable management.

Entries should have 3 aspects of project management that needs to be handled as individual or group, as well as showcasing the practice of sustainable project management in these following aspects:

- Competency in project management / subject matter mastery in the field of study.
- Issues or challenges related with the 17 SDGs.
- Innovations that are suggested in ideas.

SMART GREEN PolyCC

SUMMARY

Nurul Najwa Bin Md Yusof

SUMMARY

The BSGPC is the continuation of BPPM that had been launched in 2015. It is the guideline that contains the action plans that acts as a reference point for every polytechnics and community colleges. The planned guideline is able to achieve the Vision, Aspirations, Strategic Objectives, Action Plan and Key Performance Indicators required in attaining the recognition as sustainable campus for Polytechnics and Community Colleges. A total of seven (7) Focus Fields had been created in ensuring every sustainability aspect could be achieved in line with the UN-SGD agenda. In ensuring the success of the BSGPC implementation, DPCCE has created a steering committee headed by the Director-General with all DPCCE directors as its members. At the Polytechnic and Community College level, the implementation committee would be created and headed by the Director of the respective institutions. This committee is responsible for ensuring that all the action plans and smart goals are achieved and implemented.

The efforts of making both Polytechnics and Community Colleges sustainable had already begun in 2010. Among the efforts done is holding workshops in producing POLYGreen Master Trainers. There are 66 officers from 33 polytechnics who have been appointed as master trainer and green technology program implementation coordinators in polytechnics. Apart from that, the monitoring of carbon emission has also been intensified in each polytechnic. In particular, the carbon footprint report needs to be recorded and sent for analysis twice a year beginning 2021-2025. In the latest development, as an initiative to increase the awareness among the DPCCE, polytechnics and community colleges, the element of sustainable development has been adopted in the new curriculum effective June 2019. The aim for such a move is to ensure that the graduates produced would have the knowledge on the current need and being responsible towards the use of raw materials, energy, water and the environment so that the graduates would not jeopardise the needs of the future generations.

The BSGPC also places emphasis towards the polytechnic and community college's Green Campus components from all aspects based on the 17 SDGs. Recognition would be given to the respective polytechnic and community college through the main awards such as Sustainable Campus, Sustainable Community, Sustainable Research, Sustainable Acculturation, and Sustainable Project. The adjudication will be made by GPM accredited auditor and the certification is GPM-recognised.

Efforts that are made in improving the standing of the institution on the international level would be assessed through the UI Greenmetric World University Ranking. This is part of the polytechnic and community college's activities in becoming a main player in the sustainability agenda.

Finally, the success of this blueprint rests on the delivery system and good periodical monitoring. In addition, constant improvement could be made at each implementation level in ensuring that the target is attained. It is hoped that the DPCCE, Polytechnics and Community Colleges could combine their efforts and resources, while committing in earnest for achieving the goal of making Malaysia a low carbon developed country in 2030.

SMART GREEN PolyCC

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SMART GREEN PolyCC

APPENDICES

FOCUS AREA 1: EDUCATION AND RESEARCH MANAGEMENT

ACTION PLAN 1: Establishment of the Implementation Committee

Problem Statement	CO_2 Reduction (tons)			
There are no Implementation Committees established and appointed at Polytechnics and Community Colleges to carry out planned activities, make reports, monitor performance, promote and make improvements in the future.	2020		2023	
	2021		2024	
	2022		2025	
Project Owner	**Project Scope**			
DPCCE PolyCC SmartGreen Committee, Polytechnic and Community College	Appoint the main committee and implementing committee at the DPCCE level as well as the working committee at the Polytechnic and Community College level			

Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						

Project Description
The Director General appoints the SmartGreen PolyCC Main Committee at DPCCE to determine the direction and performance level of SmartGreen PolyCC.
The Director General appoints the SmartGreen PolyCC Working Committee at DPCCE to promote, receive reports and monitor the performance of SmartGreen PolyCC.
The Director of Polytechnic appoints the SmartGreen PolyCC Implementation Committee at Polytechnic and Community College to report, monitor performance, promote and make improvements to SmartGreen PolyCC Malaysia.
Project Sustainability
Social Impact: 1. *Labour Practices and Decent Work* (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), **2. *Society and Customers*** (Community Support, Public Policy/Compliance, **3. *Human Rights*** (Non-discrimination), **4. *Ethical behaviour*** (Procurement Practices)
Environmental Impact: 5. *Transport* (Local Procurement), **6. Energy** (Energy Consumptions, CO_2 Emissions), **7. *Water*** (Water Consumption, Sanitary Water Displacement), **8. *Consumption*** (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation)
Economic Impact: 9. *Impact on Investment* (Benefit-Cost Ratio), **10. *Business Agility*** (Flexibility / Optionality, Business Flexibility), **11. *Economic Stimulation*** (Indirect Benefits).
SDG Indicators
Achievement and Timeline
Appointment of committee and setting of scope of work (December 2019)
Gazetting the committees that have been appointed at the Polytechnic and Community College level to the Main Committee (January 2020)

ACTION PLAN 2: Green Curriculum Implementation

Problem Statement	CO_2 Reduction (tons)			
The implementation of Teaching and Learning that provides exposure to green technology and initiatives has not yet been fully implemented.	2020		2023	
	2021		2024	
	2022		2025	
Project Owner	**Project Scope**			
Curriculum Division, DPCCE	Implementing Green Curriculum based on 3 methods.			

Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						

Project Description
Method 1: Identify appropriate special courses that have sustainable/sustainable elements to be included in the program curriculum.
Method 2: Implement sustainable/sustainable elements in the program either through teaching & learning and assessment
Method 3: Develop rubrics related to the sustainable agenda based on the needs of the study program
Project Sustainability
Social Impact: 1. *Labour Practices and Decent Work* (Training & Education, Organisational Learning, Local Competence Development)
Environmental Impact: 8. *Consumption* (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation),
Economic Impact: 10. *Business Agility* (Flexibility / Optionality, Business Flexibility),
SDG Indicators
Achievement and Timeline
Special courses that apply sustainable elements are developed and included in the program curriculum according to the needs of the field (Year 2025)
Existing polytechnic and community college study programs incorporate sustainable elements in the program either through teaching and learning as well as assessment (Year 2025)
Rubrics related to the sustainable agenda based on the needs of the study program are developed (Year 2025)
50% of polytechnic and community college study programs implement the Green Curriculum by 2025.

ACTION PLAN 3: Sustainable Research and Publication

Problem Statement	CO_2 Reduction (tons)			
Set the latest indicators as well as baseline selection and preparation of the latest analysis format.	2020		2023	
Establish clear gazetting and guidelines in setting the definition and number of green projects/products/writing.	2021		2024	
Add special allocation to polytechnics and community colleges for sustainable research funding.	2022		2025	

Project Owner	Project Scope
DPCCE PolyCC SmartGreen Committee	Establish key performance indicators in research, sustainable publishing and strategic collaborations with industry experts and partners.
Polytechnic and Community College	Implement key performance indicators in sustainable research and publishing as well as strategic collaborations with industry experts and partners.

Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						

Project Description
The PolyCC SmartGreen Committee at DPCCE identifies and provides guidelines to set the definition and number of projects/products/green writing in polytechnics and community colleges as well as set targets that can contribute to the reduction in resource use for the production of projects/products/green writing.
The evaluation indicators and analysis format are set by an evaluation panel consisting of the Master committee and the work of SmartGreen PolyCC at DPCCE.
Polytechnics and Community Colleges need to identify and promote activities related to green practices that can be carried out together with experts from the relevant industry or agencies and implement key achievement indicators from DPCCE.
Project Sustainability
Social Impact: 1. *Labour Practices and Decent Work* (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), **2. *Society and Customers*** (Community Support, Public Policy/Compliance,), **3. *Human Rights*** (Non-discrimination), **4. *Ethical behaviour*** (Procurement Practices).
Environmental Impact: 5. *Transport* (Local Procurement), **6. Energy** (Energy Consumptions, CO_2 Emissions), **7. *Water*** (Water Consumption), **8. *Consumption*** (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).
Economic Impact: 9. *Impact on Investment* /Direct Financial Benefits), **10. *Business Agility*** (Flexibility / Optionality, Business Flexibility), **11. *Economic Stimulation*** (Indirect Benefits).
SDGs Indicators

Achievement and Timeline
Evaluation indicators and analysis format based on focus areas (January 2020).
Establishment of project/product/green writing guidelines in Polytechnics and Community Colleges (January 2020).
Provide allocation for sustainable research funding from 2020 to 2025.
Generate resource utilization analysis report and cooperation report between Polytechnic and Community College with industry/agencies as well as project/product/green writing production report starting end of 2020.

ACTION PLAN 4: Report Management and Sustainable Communication

Problem Statement	CO_2 Reduction (tons)			
Sub -optimal commitment from top management in strengthening governance for documentation management, centralized data and websites.Weaknesses of communication systems for internal and external.	2020		2023	
	2021		2024	
	2022		2025	

Project Owner	Project Scope
DPCCE PolyCC SmartGreen Committee	SOP Governance Transformation / Implementation manual / Desk File refinement.
DPCCE PolyCC SmartGreen Committee	Strengthening the centralized communication system and dissemination of feedback.
DPCCE PolyCC SmartGreen Committee, Polytechnic and Community College.	Centralization of data and reports received from Polytechnics and Community Colleges.

Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						

Project Description
Develop a complete SOP document / Implementation Manual / Refinement of Desk File based on the latest areas of focus and distributed to Polytechnics and Community Colleges by the Main Committee and the work of SmartGreen PolyCC at DPCCE.
Develop internal and external communication systems (formal and informal) that are easily accessible to all stakeholders such as centralized reporting, develop regularly updated websites, *e-mail, twitter*, blogs, videos and others.
Project Sustainability
Social Impact: 1. *Labour Practices and Decent Work* (Employment & Staffing, Training & Education, Organisational Learning, Local Competence Development), **3. *Human Rights*** (Non-discrimination), **4. *Ethical behaviour*** (Investment & Procurement Practices).
Environmental Impact: 5. *Transport* (Digital Communication).
Economic Impact: 10. *Business Agility* (Flexibility / Optionality, Business Flexibility
SDGs Indicators
Achievement and Timeline
Complete SOP document /Implementation manual /Purification of table file and distributed to Polytechnics and Community Colleges (January 2020).
Internal and external communication plan (May 2020).
Collection of reports and data for each action plan from the focus areas by the end of 2020.

ACTION PLAN 5: Green Culture Awareness and Application Program

Problem Statement		CO_2 Reduction (tons)				
Low awareness and understanding of the concept of sustainability among stakeholders.		2020		2023		
		2021		2024		
		2022		2025		
Project Owner		Project Scope				
DPCCE PolyCC SmartGreen Committee, Polytechnic and Community College.		Implement activities and programs that can increase awareness and adoption of green culture based on the Sustainable Development Goals (SDGs)				
Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						
Project Description						
The PolyCC SmartGreen Committee will conduct courses, workshops or training on a regular basis to all Polytechnic and Community College staff.						
The PolyCC SmartGreen Committee will implement a campaign to promote sustainability that can appeal to all stakeholders and the community.						
The DPCCE PolyCC SmartGreen Committee sets indicators that can show increased awareness on sustainability.						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety, Market Communications and Advertising), 3. Human Rights (Non-discrimination, Age – Appropriate Labour, Voluntary Labour), 4. Ethical behaviour (Investment & Procurement Practices).						
Environmental Impact: 5. Transport (Digital Communication, Logistics) 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).						
Economic Impact: 9. 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicators						
Achievement and Timeline						
Action plan for activities/programs/campaigns (January 2020).						
Establish indicators that can indicate increased awareness of sustainability and be evaluated (January 2020).						
Generate reports for activities implemented at the end of 2020.						

ACTION PLAN 6: Recognition

Problem Statement		CO_2 Reduction (tons)				
No official recognition and performance appraisal is given to polytechnics and community colleges that have successfully implemented sustainability in their respective institutions		2020		2023		
		2021		2024		
		2022		2025		
Project Owner		Project Scope				
DPCCE PolyCC SmartGreen Committee		Establish formal recognition of the achievements of Polytechnics and Community Colleges towards the green approach. Verification of the green image of Polytechnics and Community Colleges.				
DPCCE PolyCC SmartGreen Committee		Establish formal recognition of the achievements of Polytechnics and Community Colleges towards the green approach. Verification of the green image of Polytechnics and Community Colleges.				
DPCCE PolyCC SmartGreen Committee		Evaluate the performance of Green Practices and give awards / rewards				
Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						
Project Description						
The DPCCE SmartGreen PolyCC Committee will identify the types, requirements and categories of recognition required and prepare a recognition report according to the recognition applied for.						
The DPCCE PolyCC SmartGreen Committee established a committee to evaluate the performance of green practices in Polytechnics and Community Colleges.						
The DPCCE PolyCC SmartGreen Committee sets the performance indicators to be evaluated.						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development).						
Environmental Impact: 5. Transport (Digital Communication, Timeline and Commuting).						
Economic Impact: 10. Business Agility (Flexibility / Optionality, Business Flexibility).						
SDGs Indicators						
Achievement and Timeline						
Polytechnics and community colleges obtained recognition and certification throughout 2020 - 2025.						
Polytechnics and community colleges received awards during 2020 - 2025.						
Generate award, recognition and certification reports for 2020 - 2025.						

FOCUS AREA 2: ENERGY CHANGE AND CLIMATE CHANGE

ACTION PLAN 1: Strengthen Governance in Addressing the Impacts of Climate Change and Energy Efficient Management.

Problem Statement	CO_2 Reduction (tons)			
Sub-optimal commitment from top management in strengthening governance to address the changing effects of climate change as well as energy efficient management.	2020		2023	
	2021		2024	
	2022		2025	

Project Owner	Project Scope
DPCCE PolyCC SmartGreen Committee Polytechnics and Community Colleges PolyCC SmartGreen Committee	Integrate risks and opportunities related to the effects of climate change as well as energy efficient management into risk management, strategy and business plan. Establish strategic partnerships with experts and industry partners to determine and review the capabilities and technical needs of institutions to address the effects of climate change and energy efficient management. Adopt and adapt criteria of agencies that have successfully reduced the effects of climate change as well as energy efficient management.

Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						

Project Description
Polytechnics and Community Colleges identify and implement activities related to green practices that can be carried out in conjunction with relevant industries or agencies.
Project Sustainability
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety. Product and Service Labeling, Market Communications and Advertising, Customer Privacy), 3. Human Rights (Non-discrimination, Age – Appropriate Labour, Voluntary Labour), 4. Ethical behaviour (Investment & Procurement Practices, Bribery & Corruption).
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (Energy Consumptions, CO2 Emissions, Clean Energy Return, Renewable Energy), 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).
Economic Impact: 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).
SDG Indicators
Achievement and Timeline
Report on cooperation between polytechnics and community colleges with industries/agencies that have successfully reduced the effects of climate change as well as energy efficient management starting in 2020.
Production of a business plan that involves reducing the effects of climate change and energy efficient management from 2020.

ACTION 2: Continuous Training Program and Raising Awareness on the Impact of Climate Change

Problem Statement	CO_2 Reduction (tons)			
Lack of understanding about the effects of climate change in polytechnics and community colleges. Lack of cultivating practices that help reduce the effects of climate change.	2020		2023	
	2021		2024	
	2022		2025	

Project Owner	Project Scope
DPCCE PolyCC SmartGreen Committee	Develop training modules related to climate change and energy efficient management.
Smart Green Committee of PolyCC Polytechnics and Community Colleges	Implement awareness-raising exercises and practices that can help address the effects of climate change as well as energy efficient management.

Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						

Project Description
The PolyCC SmartGreen Committee will conduct regular courses, workshops or training for all polytechnic and community college staff on the impacts of climate change as well as energy efficient management.
Project Sustainability
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Public Policy/Compliance),
Environmental Impact: 5. Transport (Digital Communication, logistics)
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).
SDGs Indicator
Achievement and Timeline
MoU between DPCCE and Malaysia Green Technology in 2020.
Setting indicators that can show increased awareness of the effects of climate change as well as energy efficient management to be evaluated starting in 2020.
Generate report on the level of understanding on the effects of climate change and energy efficient management from 2020.

ACTION PLAN 3: Carbon Footprint Reduction.

Problem Statement		CO_2 Reduction (tons)			
Carbon balancing is important in keeping carbon emissions at a minimum. This can be done through the investment of a carbon offset program (for example: a large-scale replanting program).		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen Committee of PolyCC Polytechnic and Community College		Setting targets, matrices and policies that contribute to zero carbon footprint by 2025. Working with stakeholders in reducing carbon intensity to improve environmental sustainability. Conducting working visits once a year to agencies that have successfully implemented carbon offsetting activities.			
Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						
Project Description						
Preparing baseline setting of carbon footprint						
Reduction of carbon footprint						
Offsetting of carbon footprint						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety, Market Communications and Advertising), 3. Human Rights (Non-discrimination, Voluntary Labour), 4. Ethical behaviour (Investment & Procurement Practices).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (Energy Consumptions, CO_2 Emissions, Clean Energy Return, Renewable Energy).						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicators						
Achievement and Timeline						
Preparing carbon footprint calculation and baseline report by June 2020.						
Preparing carbon footprint reduction plan and implementation schedule by August 2020 at the latest.						
Preparing carbon footprint offsetting plan & implementation schedule by October 2020.						

ACTION PLAN 4: Practice and Use of Energy Efficient Equipment.

Problem Statement		CO_2 Reduction (tons)			
Not using energy efficient equipment comprehensively in the Polytechnic and Community College area.		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen Committee of PolyCC Polytechnic and Community College		Determining the value of specific energy consumption (SEC) for all energy-consuming equipment at each Polytechnic and Community College starting in 2019. Ensure all purchases of new equipment or spare parts have a lower SEC value compared to existing equipment.			
Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						
Project Description						
Data collection for air conditioning systems, refrigerators and other electrical appliances.						
Study of internal energy efficiency specifications as contained in MS1525.						
Study of the installation of energy-saving equipment such as Variables Speed Drive (VSD) for motors, pumps, fans, motorized chilled water valves, and others.						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, , Market Communications and Advertising), 3. Human Rights (Non-discrimination, Voluntary Labour), 4. Ethical behaviour (Procurement Practices).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (Energy Consumptions, CO_2 Emissions, Clean Energy Return, Renewable Energy), 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits, Net Present Value), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicators						
Achievement and Timeline						
Reports on electricity consumption for air conditioning systems, refrigerators and other electrical appliances and proposals to upgrade equipment to more electricity-efficient ones starting in 2020.						

ACTION PLAN 5: Implementation of Low Energy Buildings and Passive Architecture.

Problem Statement	CO_2 Reduction (tons)			
Does not maximize the use of daylight for office lighting, lecture rooms and laboratories during the day. Does not maximize the use of natural ventilation cycles in offices, lecture rooms and laboratories.	2020		2023	
	2021		2024	
	2022		2025	
Project Owner	**Project Scope**			
Program and Institutional Planning Unit, DPCCE.	Identifying potential daylight harvesting proposals with a minimum of 50% of the affected areas getting direct light by 2022.			
Polytechnic and Community College Development and Maintenance Unit.	Identifying the potential of natural ventilation to reduce dependence on low air conditioning temperatures without sacrificing the comfort of staff and students.			
Workshop/laboratory/lecture room Coordinator.	Identifying the potential for combining the use of fans and natural ventilation in reducing discomfort due to hot weather.			

Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						

Project Description
Identifying daylight sources for offices, lecture rooms, halls and laboratories.
Study on the use of light tubes, sky lights, light tray.
Schedule the implementation of the use of daylight according to the suitability of the place.
Identifying the potential of natural ventilation and the suitability for combining natural ventilation with a fan.
Project Sustainability
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety. Product and Service Labeling, Market Communications and Advertising, Customer Privacy), 3. Human Rights (Non-discrimination, Freedon of Association, Exploitative Child Labor, Anti Competitive, Forced or Complusory Labour), 4. Ethical behaviour (Investment & Procurement Practices, Bribery & Corruption, Anti-Competitive Behaviour).
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (Energy Consumptions, CO_2 Emissions, Clean Energy Return, Renewable Energy), 7. Water Water Quality, Water Consumption, Sanitary Water Displacement), 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits, External Rate of Return, Internal Rate of Return, Net Present Value), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).
SDGs Indicators
Achievement and Timeline
Preparing study report on the use of daylight by June 2020.
Preparing report on the use of light tube and sky light by June 2020.
Preparing report on the impact of the implementation of the use of daylight starting in October 2020.
Preparing report on the potential of natural ventilation and the suitability of combining natural ventilation with fans by June 2021.

ACTION PLAN 6: Number of Renewable Energy Applications on Campus.

Problem Statement	CO_2 Reduction (tons)			
Lack of use of renewable energy in the campus area.	2020		2023	
	2021		2024	
	2022		2025	
Project Owner	**Project Scope**			
SmartGreen Committee of PolyCC Polytechnics and Community Colleges	Identify renewable energy sources.			
	Ensure that 10% of the total energy consumption on campus is using renewable energy.			

Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						

Project Description
Study of solar energy use.
Study of wind energy consumption.
Study of the use of hydraulic water pumps.
Achievement and Timeline
Solar energy consumption study report and opportunities for Feed-in Tariff (FIT) by 2021.
Wind energy consumption study report by June 2021.
Study report on the use of hydraulic water pumps by 2022.

ACTION PLAN 7: Minimize Electricity Consumption and Tariff Payment.

Problem Statement	CO_2 Reduction (tons)			
Every month,polytechnics and community colleges still have to pay high prices for energy consumption.	2020		2023	
	2021		2024	
	2022		2025	

Project Owner	Project Scope
SmartGreen Committee of PolyCC Polytechnic and Community College	Identifying potential for energy saving practices.
	Regularly hold energy saving campaigns so that it becomes a practice and culture for every member of the Polytechnic and Community College.

Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						

Project Description
Reducing overall energy costs.
Viewing past and current data in identifying reimbursements as well as identifying savings opportunities that can be made based on energy consumption trends that can be derived from bills.
Performing room temperature and light audits in 2021
Identifying sources of energy waste.
Project Sustainability
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance,), 4. Ethical behaviour (Investment & Procurement Practices).
Environmental Impact: 5. Transport (Digital Communication, Timeline and Commuting, Logistics), 6. Energy (Energy Consumptions, CO_2 Emissions, Clean Energy Return, Renewable Energy),
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits, External Rate of Return, Internal Rate of Return, Net Present Value), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).
SDGs Indicators
Achievement and Timeline
Implementation of optimal tariffs by 2021.

ACTION PLAN 8: Ratio of Total Carbon Emissions to Campus Students .

Problem Statement	CO_2 Reduction (tons)			
The number of student vehicles is increasing. There is an increase in student activities outside of PdP time.	2020		2023	
	2021		2024	
	2022		2025	

Project Owner	Project Scope
SmartGreen Committee of PolyCC Polytechnics and Community Colleges	Reducing the intensity of each student's carbon footprint by 20% by 2025.
	Regularly hold energy saving campaigns so that it becomes a practice and culture for every Polytechnic and Community College student.

Financial Costs (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Amount						

Project Description
Energy saving practice campaign.
Use of energy efficient appliances.
Vehicle sharing campaign.
Vehicle -free day campaign.
Achievement and Timeline
Actively implementing energy saving practice campaigns starting in January 2020.
Using energy efficient appliances at least 5% of all equipment starting from June 2020.
Cultivating vehicle sharing practices and implementing vehicle -free day campaigns starting in January 2020.

ACTION PLAN 9: Energy Used Index (EUI) Benchmarking and Awards for Eligible Polytechnics and Community Colleges.

Problem Statement				CO_2 Reduction (tons)		
Polytechnics and community colleges do not have a baseline as a reference to determine whether the austerity practices made are effective or not. Absence of energy consumption index in polytechnic buildings (offices, libraries, dormitories, halls, workshops, lecture rooms).				2020		2023	
				2021		2024	
				2022		2025	
Project Owner				Project Scope			
SmartGreen Committee of PolyCC Polytechnics and Community Colleges				EUI benchmarking of sub-metering system implementation to 50% of buildings within the campus area by 2025.			
				Ensure that 95% of all Polytechnics and Community Colleges achieve 5% of the benchmark value by category by 2022.			
Financial Costs (RM)	2020	2021	2022	2023	2024	2025	
Item 1							
Item 2							
Item 3							
Item 4							
Item 5							
Amount							
Project Description							
EUI benchmark setting by 2021.							
Performing energy consumption audits.							
Implementing energy saving initiatives.							
Project Sustainability							
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 4. Ethical behaviour (Investment & Procurement Practices).							
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (Energy Consumptions, CO_2 Emissions, Clean Energy Return, Renewable Energy), 8.							
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits, External Rate of Return, Internal Rate of Return, Net Present Value), 10. Business Agility (Flexibility / Optionality, Business Flexibility).							
SDGs Indicators							
Achievement and Timeline							
Audit reports before and after the implementation of sub-metering.							
Ensuring that 20% percent of all buildings in the campus area have used sub-metering by 2022.							
Ensuring 50% percent of all buildings in the campus area have used sub-metering by 2025.							

ACTION PLAN 10: Best Practice Competition to Address the Impact of Climate Change.

Problem Statement				CO_2 Reduction (tons)			
Polytechnics and Community Colleges lack activities that can stimulate creativity and motivation of citizens to address the effects of climate change.				2020		2023	
				2021		2024	
				2022		2025	
Project Owner				Project Scope			
DPCCE PolyCC SmartGreen Committee.				Hold competitions every year starting in 2020.			
SmartGreen Committee of PolyCC Polytechnics and Community Colleges.				Encourage innovation among citizens that can contribute to climate change solutions or energy efficient management.			
Financial Costs (RM)	2020	2021	2022	2023	2024	2025	
Item 1							
Item 2							
Item 3							
Item 4							
Item 5							
Amount							
Project Description							
Energy saving practice campaign.							
Use of energy efficient appliances.							
Project Sustainability							
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety. Product and Service Labeling, Market Communications and Advertising, Customer Privacy), 3. Human Rights (Non-discrimination, Freedon of Association), 4. Ethical behaviour (Investment & Procurement Practices).							
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (Energy Consumptions, CO_2 Emissions, Clean Energy Return, Renewable Energy), 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).							
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits, External Rate of Return, Internal Rate of Return, Net Present Value), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).							
SDGs Indicator							
Achievement and Timeline							
Hold an annual competition involving all Polytechnics and Community Colleges starting in 2020.							

FOCUS AREA 3: ENVIRONMENTAL AND LANDSCAPE MANAGEMENT

ACTION PLAN 1: Implementation of Training and Awareness Towards Environmental and Landscape Management

Problem Statement		CO_2 Reduction (ton)			
Deficiency of awareness about the importance of environmental and landscape management. Lack of understanding on the relationship between the environment and its sustainability.		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen PolyCC Committee Polytechnic and Community College		Providing awareness briefing on the benefits of environmental and landscape management. To explain the legal or law provisions related to the environment.			
Financial cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Total						
Project Information						
Organizing workshops, seminars, related campaigns						
Organizing programmes with the external communities and within the institution						
Preparing effectiveness report						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Training & Education, Organisational Learning, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Protection for Indigeneous and Tribal Peoples), 3. Human Rights (Non-discrimination, Age – Appropriate Labour, Voluntary Labour), 4. Ethical behaviour (Procurement Practices, Anti-Corruption).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (CO_2 Emissions), 8. Consumption (Recycling & Reuse).						
Economic Impact: 9. Impact on Investment, (Direct Financial Benefits),10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Indirect Benefits).						
SDGs Indicator						
Achievements and Timeline						
Preparing exercise modules to master trainers of the year 2020						
Effectiveness report on workshops and seminars						
Awareness program with the community						

ACTION 2: Preserving Plants and Natural Habitat

Problem Statement		CO_2 Reduction(ton)			
No data and record regarding the availability of plants in the campus environment.		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen PolyCC Committee Polytechnic and Community College		Impose existing plant inventory Planting local plants which gives a strong impact on carbon footprint reduction Establishing a cheerful landscape without disturbing the habitat and natural plants Designing master plan based on a sustainable landscape			
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Total						
Project Information						
Creating local plants and natural habitat document						
Establishing programs with external and internal communities with institutional related NGOs						
Preserving and conserving local plants alongside natural habitat						
Designing a master plan based on a sustainable landscape						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Project Health & Safety, Training & Education, Organisational Learning, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Protection for Indigenous and Tribal Peoples, Customer/Health & Safety), 3. Human Rights (Non-discrimination, Age – Appropriate Labour, Voluntary Labour), 4. Ethical behaviour (Procurement Practices, Anti-Corruption).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (CO_2 Emissions), 8. Consumption (Recycling & Reuse, Contamination & Pollution).						
Economic Impact: 9. Impact on Investment, (Present value, Direct Financial Benefits), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Local plants and natural habitat report						
Teamwork effectiveness report						
Sustainable landscape master plan						

ACTION PLAN 3: Conducting Local Studies and Measures

Problem Statement				CO_2 Reduction(ton)		
Lack of understanding on the relationship between the environment and biodiversity with sustainable landscape.			2020		2023	
			2021		2024	
			2022		2025	
Project Owner			Project Scope			
SmartGreen PolyCC Committee Polytechnic and Community College			Preparing environmental and existing biodiversity studies Detecting environmental and existing biodiversity impact as an effect of development activities Providing findings of research on preservation and conservation Suggesting measures on the impact of destruction related to the environment.			
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Total						
Project Information						
Creating documents on the impact of environment towards surrounding development						
Conducting programs with external and internal communities alongside institute related NGOs						
Conserve and preserve local plants and natural habitat						
Establishing a guideline dan the measures taken towards the impact of destruction related to environment						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Project Health & Safety, Training & Education, Organisational Learning, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Protection for Indigenous and Tribal Peoples, Customer/Health & Safety), 3. Human Rights (Non-discrimination, Age – Appropriate Labour, Voluntary Labour), 4. Ethical behaviour (Procurement Practices, Anti-Corruption).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (CO_2 Emissions), 8. Consumption (Recycling & Reuse, Contamination & Pollution).						
Economic Impact: 9. Impact on Investment, (Present value, Direct Financial Benefits), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Local plants and natural habitat report						
Teamwork effectiveness report						
Guideline and measures report						

ACTION PLAN 4: Developing Rainwater Reservoir System/Temporary Storage Reservoir.

Problem Statement				CO_2 Reduction(ton)		
Wastage of water for the purpose of watering crops			2020		2023	
			2021		2024	
			2022		2025	
Project Owner			Project Scope			
SmartGreen PolyCC Committee			Reducing water bill			
Department of Polytechnic and Community College (DPCCE)			Maximizing the usage of rainwater for the purpose of landscape and for non-drinking water usage.			
Polytechnic and Community College						
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Identifying the area of rainwater accumulation						
Building the rainwater reservoir system						
Developing water delivery system for the purpose of landscape and campus						
Providing report on the effectiveness of rainwater accumulation						
Project Sustainability						
Social Impact: Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 7. Water Water and Air Quality, Water Consumption), 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).						
Environmental Impact: . Transport (Local Procurement, Digital Communication), 7. Water (Water and Air Quality, Water Consumption), 8. Consumption (Recycling & Reuse, Contamination & Pollution).						
Economic Impact: 9. Impact on Investment, (Present value, Direct Financial Benefits), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Implementation of building rainwater reservoir system at the latest by June 2020						
Usage of rainwater effectiveness annual report						

ACTION PLAN 5: Information and Data Sharing

Problem Statement	CO2 Reduction(ton)			
Lack of understanding towards the method used to ensure the success of programs related to environmental and landscape management.	2020		2023	
	2021		2024	
	2022		2025	

Project Owner	Project Scope
SmartGreen PolyCC Committee	Identifying the successful agency or institution
Department of Polytechnic and Community College (DPCCE)	Organizing work field trips
Polytechnic and Community College	

Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						

Project Information
Adopt and adapt successful criteria and methods
Preparing effectiveness report
Project Sustainability
Social Impact: 1. Labour Practices and Decent Work (Project Health & Safety, Training & Education, Organisational Learning, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Protection for Indigenous and Tribal Peoples, Customer/Health & Safety), 3. Human Rights (Non-discrimination, Age – Appropriate Labour, Voluntary Labour), 4. Ethical behaviour (Procurement Practices, Anti-Corruption).
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (CO_2 Emissions), 8. Consumption (Recycling & Reuse, Contamination & Pollution).
Economic Impact: 9. Impact on Investment, (Present value, Direct Financial Benefits), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).
SDGs Indicator
Achievement and Timeline
Visit report and mitigation recommendations

FOCUS AREA 4: SOLID WASTE MANAGEMENT

ACTION PLAN 1: Organizing Recycling Program (Prevent, Reduce, Reuse, Recycle, Treat) continuously at Polytechnic and Community College.

Problem Statement		CO_2 Reduction(ton)			
Lack of understanding about the concept of recycling. The materialization of the recycling program is not held thoroughly at Polytechnic and Community Colleges. Implementation of the recycling program is not carried out periodically.		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen PolyCC Committee		Solid waste reduction			
		Solid waste recycling			
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Organizing solid waste recycling program which consists of paper, plastic, glass and aluminum						
Implementing recycling program periodically						
Recording recycling substances in kilogramme unit (kg)						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety. Market Communications and Advertising), 3. Human Rights (Non-discrimination, Freedom of Association), 4. Ethical behaviour (Investment & Procurement Practices, Bribery & Corruption, Anti-Competitive Behaviour).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (CO_2 Emissions), 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Executing recycling program as early by January 2020						
Recycling program should be implemented at least once a year						

ACTION 2: Implementing Program that Minimizes the Use of Printed Materials and Plastics at Polytechnic and Community College

Problem Statement		CO_2 Reduction(ton)			
The usage of paper for printing materials used in Teaching and Learning stands high in the context of Polytechnic and Community College. The usage of plastic and polystyrene is still widely percolated in the level of public institutions of higher learning.		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen PolyCC Committee		Decrease of paper and plastic usage in Polytechnic and Community College			
		Encouraging awareness and innovation towards the usage of "paperless"			
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Organizing a program that minimizes usage of paper as predominant of printed materials.						
Encouraging cultivating goals of IR4.0 by practicing the ability of internet at an optimum level, applying online and digital services, and also fulfilling the criteria or needs of national strategic direction plan on internet of things led by MIMOS						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Market Communications and Advertising) 3. Human Rights (Non-discrimination, Freedom of Association,), 4. Ethical behaviour (Investment & Procurement Practices).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 8. Consumption (Recycling, Recycling & Reuse, Disposal, Waste Generation).						
Economic Impact: 9. Impact on Investment (Present value, Benefit-Cost Ratio, Direct Financial Benefits, External Rate of Return, Internal Rate of Return, Net Present Value), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
January 2021						

ACTION PLAN 3: Reducing Organic Waste Disposal at Disposal Site Through Organic Waste Compost.

Problem Statement		CO_2 Reduction(ton)			
Lack of knowledge on organic waste compost. Less awareness on the importance of compost fertilizer No facilities available for organic steel compost in institution		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen PolyCC Committee		Recycling organic waste as compost steel either conventionally or modernly. Purchasing or developing a compost steel machine innovation project in Polytechnic and Community College.			
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Cooperating closely with the cafeteria and canteen operators to segregate waste food that can be made into compost steel						
Carrying out compost steel projects in each institution.						
Developing compost steel machines through students' innovation projects.						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety. Market Communications and Advertising), 3. Human Rights (Non-discrimination, Freedom of Association), 4. Ethical behaviour (Investment & Procurement Practices).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation), .						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
January 2021						

ACTION PLAN 4: Implementing Disposal of Non-Recyclable Inorganic Waste

Problem Statement		CO_2 Reduction(ton)				
Wastage of water for the purpose of watering crops		2020		2023		
		2021		2024		
		2022		2025		
Project Owner		Project Scope				
SmartGreen PolyCC Committee		Reducing water bill				
Department of Polytechnic and Community College (DPCCE)		Maximizing the usage of rainwater for the purpose of landscape and for non-drinking water usage.				
Polytechnic and Community College						
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Identifying the area of rainwater accumulation						
Building the rainwater reservoir system						
Developing water delivery system for the purpose of landscape and campus						
Providing report on the effectiveness of rainwater accumulation						
Project Sustainability						
Social Impact: Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 7. Water Water and Air Quality, Water Consumption), 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).						
Environmental Impact: . Transport (Local Procurement, Digital Communication), 7. Water (Water and Air Quality, Water Consumption), 8. Consumption (Recycling & Reuse, Contamination & Pollution).						
Economic Impact: 9. Impact on Investment, (Present value, Direct Financial Benefits), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Implementation of building rainwater reservoir system at the latest by June 2020						
Usage of rainwater effectiveness annual report						

ACTION PLAN 5: Operating and Controlling Scheduled Toxic Waste.

Problem Statement		CO2 Reduction(ton)			
Disposal is not performed in a correct manner. Lack of knowledge on the methods of scheduled waste disposal.		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen PolyCC Committee		Disposing the wastes using the right method			
		Abiding by the act which is currently enforced			
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Performing disposal or non-organic waste using the right in accordance to the Environmental Quality Act 1974 (Akta Kualiti Alam Sekeliling 1974)						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance), 3. Human Rights (Non-discrimination, Freedon of Association), 4. Ethical behaviour (Investment & Procurement Practices, Bribery & Corruption).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 8. Consumption (Disposal, Contamination & Pollution, Waste Generation).						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
January 2020						

ACTION PLAN 6: Wastewater Treatment Management

Problem Statement		CO2 Reduction(ton)			
The awareness on wastewater management is still very low among those who are in the institution. Public's perception towards wastewater especially those who are in the institution.		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen PolyCC Committee		Awareness campaign on wastewater			
		Wastewater recycling project			
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Organizing an awareness campaign on wastewater management as an alternative source of water.						
Organizing wastewater treatment recycling project as non-drinking water purpose.						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety. Market Communications and Advertising), 3. Human Rights (Non-discrimination, Freedon of Association), 4. Ethical behaviour (Investment & Procurement Practices, Bribery & Corruption,).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (Energy Consumptions, CO2 Emissions, Clean Energy Return, Renewable Energy), 7. Water Water Quality, Water Consumption, Sanitary Water Displacement), 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
January 2020						

FOCUS AREA 5: WATER MANAGEMENT

ACTION PLAN 1: Operate Current Water Usage Monitoring

Problem Statement	CO2 Reduction(ton)			
Less attention given on handling issues of water wastage especially in students' dormitories at Polytechnic and Community College.	2020		2023	
	2021		2024	
	2022		2025	

Project Owner	Project Scope
SmartGreen PolyCC Committee	Identifying factors that lead to water wastage.
Department of Polytechnic and Community College (DPCCE)	Developing a water monitoring mechanism in the campus.
Polytechnic and Community College	

Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						

Project Information
SmartGreen PolyCC Committee helps establish water surveillance mechanisms, monitoring, making reports and assessments alongside recommending measures towards effective water management.
Project Sustainability
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety, Market Communications and Advertising), 3. Human Rights (Non-discrimination, Freedon of Association), 4. Ethical behaviour (Investment & Procurement Practices).
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics, 7. Water Water Quality, Water Consumption, Sanitary Water Displacement), 8. Consumption (Contamination & Pollution).
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits,), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).
SDGs Indicator
Achievement and Timeline
Providing monitoring results as latest by June 2020

ACTION 2: Launching Water Consumption Reduction and Awareness Campaign

Problem Statement	CO2 Reduction(ton)			
Less awareness in prudent usage of water. Lack of knowledge in the application of effective water usage methods.	2020		2023	
	2021		2024	
	2022		2025	

Project Owner	Project Scope
SmartGreen PolyCC Committee	Developing awareness and prudent water use measures
Department of Polytechnic and Community College (DPCCE)	
Polytechnic and Community College	

Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						

Project Information
Organizing awareness campaign and prudent water use measures
Measuring the effectiveness of the practice before and after the campaign is performed.
Preparing campaign effectiveness report
Project Sustainability
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety. Market Communications and Advertising), 3. Human Rights (Non-discrimination, Freedon of Association) 4. Ethical behaviour (Investment & Procurement Practices).
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 7. Water Water Quality, Water Consumption, Sanitary Water Displacement)
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits,), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).
SDGs Indicator
Achievement and Timeline
Once in a semester
Organizing campaign as early by 2020

ACTION PLAN 3: Developing Rainwater Accumulation System

Problem Statement			CO2 Reduction(ton)			
High water bill Rainwater wastage		2020		2023		
		2021		2024		
		2022		2025		
Project Owner		Project Scope				
SmartGreen PolyCC Committee		Reducing water bill				
Department of Polytechnic and Community College (DPCCE)		Maximizing usage of rainwater for the purpose of landscape and non-drinking use.				
Polytechnic and Community College						
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Identifying area of rainwater accumulation						
Developing rainwater accumulation system						
Developing rainwater accumulation system for the purpose of campus and landscape						
Providing rainwater usage effectiveness report						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety), 3. Human Rights (Non-discrimination, Freedon of Association), 4. Ethical behaviour (Investment & Procurement Practices).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 7. Water, Water Quality, Water Consumption, Sanitary Water Displacement),						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits, External Rate of Return, Internal Rate of Return, Net Present Value), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Development of rainwater accumulation system as latest by June 2020						

ACTION PLAN 4: Identifying Recycling System and The Method of Use

Problem Statement			CO2 Reduction(ton)			
The quantity of water wasted		2020		2023		
		2021		2024		
		2022		2025		
Project Owner		Project Scope				
SmartGreen PolyCC Committee		Recycling wasted water which is in the" greywater" category for the purpose of plants watering				
Department of Polytechnic and Community College (DPCCE)		The use of recycled water for toilet tanks				
Polytechnic and Community College						
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Segregation of "greywater" from "black water"						
Wastewater treatment						
Storage of treated wastewater						
Flow of treated water to the crop area						
Preparing Recycled Water System Commencement report						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety.), 3. Human Rights (Non-discrimination, Freedon of Association), 4. Ethical behaviour (Investment & Procurement Practices, Bribery & Corruption).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (Energy Consumptions), 7. Water, Water Quality, Water Consumption, Sanitary Water Displacement).						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits, External Rate of Return, Internal Rate of Return, Net Present Value), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Recycling System development planning latest by June 2020						
Establishing Water Recycling System latest by June 2021						

FOCUS AREA 6: TRANSPORTATION

ACTION PLAN 1: Encourage Carpooling or Use of Public Transport out of the Area.

Problem Statement		CO2 Reduction(ton)			
Lack of attention towards the role of vehicles as a source of GHG release towards the atmosphere.		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen PolyCC Committee,Department of Polytechnic and Community College (DPCCE), Polytechnic and Community College		Special Parking spot for 'green vehicle' and car-pool			
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
SmartGreen PolyCC Committee, DPCCE, Polytechnic and Community College organize briefing where outstation working employees need to carpool or use public transport.						
5% of the parking space near office will be allocated to employees who carpool.						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance,), 3. Human Rights (Non-discrimination, Freedon of Association), 4. Ethical behaviour (Investment & Procurement Practices).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 6. Energy (Energy Consumptions, CO_2 Emissions).						
Economic Impact 9. Impact on Investment (Benefit-Cost Ratio), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Number of travelling claims versus number of employees involved report (January 2020)						
Gazette a special parking space reserve for vehicles involved in carpooling (January 2020)						

ACTION 2: Provision of Guidelines for the Implementation of Pedestrians and the Use of Bicycles

Problem Statement		CO2 Reduction(ton)				
No pathway for bicycle		2020		2023		
No covered parking facilities for bicycles		2021		2024		
Less walkway space for pedestrians		2022		2025		
Lack of covered walkway facilities						
Project Owner		Project Scope				
SmartGreen PolyCC Committee, Department of Polytechnic and Community College (DPCCE), Polytechnic and Community College		Bicycle usage facilities Pedestrians facilities				
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
SmartGreen PolyCC Committee, DPCCE, Polytechnic and Community College identify walkways and parking, covered for pedestrians and cyclists.						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety), 3. Human Rights (Non-discrimination), 4. Ethical behaviour (Investment & Procurement Practices).						
Environmental Impact: 6. Energy (CO_2 Emissions).						
Economic Impact: 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Providing covered walkways to pedestrians and also cyclists. (July 2020)						

ACTION PLAN 3: Provision of Carbon Reducing Vehicle Policy

Problem Statement		CO2 Reduction(ton)				
Less attentive to vehicles that require Energy Efficient Vehicle (EEV).		2020		2023		
		2021		2024		
		2022		2025		
Project Owner		Project Scope				
SmartGreen PolyCC Committee,Department of Polytechnic and Community College (DPCCE) , Polytechnic and Community College		Vehicle Specification of EEV that fulfils NAP The usage of biodiesel/biopetrol for department's official vehicle				
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
SmartGreen PolyCC Committee, DPCCE, Polytechnic and Community College identify the number of vehicles close to the date of disposal						
Providing specification of EEV characterized new department's vehicle for procurement						
Proclaim the usage of biodiesel B10 for all diesel-engine vehicles						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Customer/Health & Safety, Market Communications and Advertising), 3. Human Rights (Non-discrimination, Freedom of Association), 4. Ethical behaviour (Investment & Procurement Practices, Bribery & Corruption).						
Environmental Impact: 5. Transport (Local Procurement, Timeline and Commuting, Logistics), 6. Energy (Energy Consumptions, CO_2 Emissions, Clean Energy Return),						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Biodiesel usage for department vehicle report (January 2020)						
The number of vehicles close to the date of disposal report (May 2020)						
Make procurement of new departmental vehicles that feature EEV characteristics and meet requirements of National Automotive Policy (NAP)						

FOCUS AREA 7: GREEN PROCUREMENT

ACTION PLAN 1: *Training of Trainer* (TOT) Implementation

Problem Statement		CO2 Reduction(ton)			
Green Procurement is a new policy below government procurement management		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen PolyCC Committee, Department of Polytechnic and Community College (DPCCE), Polytechnic and Community College		Trainings given to identified officers related to Green Procurement			
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
SmartGreen PolyCC Committee, DPCCE, Polytechnic and Community College identified officers will be elected as Master of Trainer to be trained to become a Champion in the Green Procurement						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, , Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 3. Human Rights (Non-discrimination),						
Environmental Impact: 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits, External Rate of Return, Internal Rate of Return, Net Present Value), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Identified Coach/Trainer (Master Trainer) (June 2021)						

ACTION 2: Training Organization

Problem Statement		CO2 Reduction(ton)			
Procurement officers do not have knowledge or information on Green Procurement.		2020		2023	
		2021		2024	
		2022		2025	
Project Owner		Project Scope			
SmartGreen PolyCC Committee,Department of Polytechnic and Community College (DPCCE), Polytechnic and Community College		Trainings given to all procurement officers in DPCCE, Polytechnic and Community College			
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Briefings and workshops handled by champions trained every year						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance), 3. Human Rights (Non-discrimination, Freedom of Association).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics)						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
JPPKK, Polytechnic and Community College produce procurement officers (June 2021)						

ACTION PLAN 3: Briefing to Suppliers and *Supply Chain*

Problem Statement		CO2 Reduction(ton)				
Suppliers are less exposed to Green Procurement		2020		2023		
		2021		2024		
		2022		2025		
Project Owner		Project Scope				
SmartGreen PolyCC Committee, Department of Polytechnic and Community College (DPCCE), Polytechnic and Community College		Briefing to suppliers and supply chain				
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Briefing covers green turnover policy and tax incentives are provided to all existing active suppliers and supply chain liaising with DPCCE, Polytechnic and Community College every year						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance, Product and Service Labeling, Customer Privacy), 3. Human Rights (Non-discrimination, Freedon of Association), 4. Ethical behaviour (Investment & Procurement Practices, Bribery & Corruption, Anti-Competitive Behaviour).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication, Timeline and Commuting, Logistics), 8. Consumption (Recycling & Reuse, Disposal, Contamination & Pollution, Waste Generation).						
Economic Impact: 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Suppliers and supply chain in an identified green area (June 2022)						

ACTION PLAN 4: Annual Green Procurement Planning

Problem Statement		CO2 Reduction(ton)				
Green Procurement has not been planned		2020		2023		
		2021		2024		
		2022		2025		
Project Owner		Project Scope				
SmartGreen PolyCC Committee, Department of Polytechnic and Community College (DPCCE), Polytechnic and Community College		Developing Annual Green Procurement Planning				
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Procurement Officer, DPCCE, Polytechnic and Community College allocated a certain percentage from the total procurement cumulatively to achieve a 10% green procurement target on the year 2025: • 2021 – 2% • 2022 – 4% • 2023 – 6% • 2024 – 8% • 2025 – 10%						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Diversity and Equal Opportunity, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance), 3. Human Rights (Non-discrimination, Freedom of Association), 4. Ethical behaviour (Investment & Procurement Practices, Bribery & Corruption).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication).						
Economic Impact 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
List of annual materials/service through Green Procurement (December 2021)						

ACTION PLAN 5: Provision of Performance Report

Problem Statement		CO2 Reduction(ton)				
The Green Procurement is a new way of procurement		2020		2023		
		2021		2024		
		2022		2025		
Project Owner		Project Scope				
SmartGreen PolyCC Committee, Department of Polytechnic and Community College (DPCCE), Polytechnic and Community College		Provision of Performance Report				
Financial Cost (RM)	2020	2021	2022	2023	2024	2025
Item 1						
Item 2						
Item 3						
Item 4						
Item 5						
Total						
Project Information						
Performance Report declares: a. CO_2 Reduction which results from green procurement b. Suppliers' performance c. Supplies and service (quality) performance						
Project Sustainability						
Social Impact: 1. Labour Practices and Decent Work (Employment & Staffing, Labor/Management Relations, Project Health & Safety, Training & Education, Organisational Learning, Local Competence Development), 2. Society and Customers (Community Support, Public Policy/Compliance), 3. Human Rights (Non-discrimination), 4. Ethical behaviour (Investment & Procurement Practices, Bribery & Corruption).						
Environmental Impact: 5. Transport (Local Procurement, Digital Communication).						
Economic Impact 9. Impact on Investment (Benefit-Cost Ratio, Direct Financial Benefits), 10. Business Agility (Flexibility / Optionality, Business Flexibility), 11. Economic Stimulation (Local Economic Impact, Indirect Benefits).						
SDGs Indicator						
Achievement and Timeline						
Annual Performance Report (starts from 2023 and every year after that)						

KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

SMART GREEN PolyCC

DEPARTMENT OF POLYTECHNIC EDUCATION AND COMMUNITY COLLEGE EDUCATION (JPPKK)