



GREEN PRACTICES  
GUIDELINE FOR  
**SERVICES  
SECTOR**



## **GREEN PRACTICES GUIDELINE FOR SERVICES SECTOR**

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# GREEN PRACTICES GUIDELINE FOR **SERVICES SECTOR**

Malaysian Green Technology and Climate Change Corporation

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ABBREVIATION	
ACE	Air Change Effectiveness
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
BEI	Building Energy Intensity
BEIT	Building Energy Intensity Tool
BOD	Biochemical Oxygen Demand
CFC	Chlorofluorocarbons
CO <sub>2</sub> eq	Carbon Dioxide Equivalent
COP	Conference of the Parties
EB	Existing Building
EC	European Commission
EPA	United States Environmental Protection Agency
EQA	Environmental Quality Act
ETS	Environmental Tobacco Smoke
F&B	Food and Beverage
GBI	Green Building Index
GDP	Gross Domestic Product
Gg	Gigagrams
GGP	Government Green Procurement
GHG	Greenhouse Gas
GSTC	Global Sustainable Tourism Council
GT	Green Technology
GTFS	Green Technology Financing Scheme
GTMP	Green Technology Master Plan 2017-2030
HCFC	Hydrochlorofluorocarbons
HVAC	Heating, ventilation, and air-conditioning

ABBREVIATION	
ISO	International Standard Organisation
IWK	Indah Water Konsortium
NRECC	Ministry of Natural Resources, Environment, and Climate Change
MGTC	Malaysian Green Technology and Climate Change Corporation
MIDA	Malaysia Investment Development Authority
MOTAC	Ministry of Tourism, Arts, and Culture
NCCP	National Climate Change Policy
NGO	Non-Governmental Organisation
NGTP	National Green Technology Policy
NLA	Net Lettable Area
NPP II	Second National Physical Plan 2010-2020
NREB	Non-Residential Existing Building
NRNC	Non-Residential New Construction
OTTV	Overall Thermal Transfer Value
pHJKR	Penarafan Hijau Jabatan Kerja Raya
PWD	Public Works Department of Malaysia
R&D	Research and Development
REHDA	Real Estate and Housing Developers' Association Malaysia
RMK-12	Twelfth Malaysia Plan 2021-2025
RTTV	Roof Thermal Transfer Value
UN SDG	United Nation's Sustainable Development Goals
VOC	Volatile Organic Compounds
WHO	World Health Organisation
SIRIM	SIRIM Berhad
UNFCCC	United Nations Framework Convention on Climate Change

TERMINOLOGIES	
Consumers	Individuals or organisations that purchase and exchange a product or services or value to satisfy their needs.
Green Practices	Environmentally friendly practices in retail consumer usage and how they are perceived in a practical way.
Green Services	Those services which are environment friendly.
Green	The design, commercialisation, and use of processes and products that are feasible and economical while reducing the generation of pollution at the source; and minimising the risk to human health and the environment.
Services	An industry made up of companies that primarily earn revenue through providing intangible products and services. Services industry companies are involved in retail, transport, distribution, food services, as well as other services-dominated businesses. Also called services sector, tertiary sector of industry.



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# FOREWORD

**Welcome to the Green Practices Guideline;** a significant milestone in the ongoing implementation of the MyHIJAU Programme, since 2012 as part of the Green Industry efforts outlined in the Twelfth Malaysia Plan. This programme is under the Ministry of Natural Resources, Environment and Climate Change (NRECC) and coordinated by the Malaysian Green Technology and Climate Change Corporation (MGTC).

Eight Green Practices Guideline were developed for the following sectors: Agriculture & Plantation, Construction, Manufacturing, Mining, Fisheries (Aquaculture), Livestock, Forest Operation, and Services. These guidelines serve as a comprehensive resource for the green industry, providing guidance on the adoption and implementation of sustainable practices at every stage of a company's production and consumption.

The development of these guidelines aligns with the National Green Technology Policy (NGTP) and the Sustainable Consumption & Production (SCP) direction, aiming to promote the use of green technology among local manufacturers, producers, and suppliers, particularly small and medium enterprises (SMEs). By incorporating green practices, we can foster a culture of sustainability and contribute to the government's vision for green development in Malaysia.

These guidelines emphasise the importance of integrating green practices in an organisation's business operations and provide a roadmap for industry players in their pursuit of green technology adoption. By adhering to these guidelines, businesses can tap into the potential of the green sector, explore green product and service offerings, and enhance their operations by incorporating sustainable practices.

In line with SDG 12.6, which advocates for integrating sustainable practices and information sustainability into the reporting cycle, these guidelines outline the requirements that industries, companies, and organisations should follow. They are designed to be a valuable reference for all stakeholders, facilitating the government's objective of promoting and implementing green development initiatives.

As we embark on the Twelfth Malaysia Plan, with a strong focus on accelerating green growth, these guidelines emerge as a catalyst for practical and effective green practices across the industry. By prioritising environmental, social, and governance (ESG) elements in the decision-making processes, companies can significantly reduce their negative impact on the environment while increasing productivity and long-term profitability.

Although Malaysia's contribution to greenhouse gas emissions stands at 0.7 percent, the government remains committed to reducing GHG emission intensity by 45 percent relative to GDP by 2030. This commitment aligns with our aspiration to become a low-carbon nation. By embracing green practices and incorporating knowledge about the benefits and applications of green technology, the industry can play a pivotal role in achieving this goal.

We hope these Green Practice Guidelines will serve as a foundation for industry-wide understanding and adoption of sustainable practices. By embracing the principles outlined within this guide, businesses can gain recognition as leaders in the green industry and contribute to a cleaner, greener, and more sustainable future for Malaysia.

Let us join hands in the pursuit of a thriving green industry and a better world for generations to come.



# ABOUT THE GUIDELINE

The Green Practices Guideline was officially endorsed by the NRECC in 2021 as part of the Twelfth Malaysia Plan (RMKe-12) and fulfilling the United Nations Sustainable Development Goals (SDG) Target 12.6. This particular goal aims to promote the adoption of sustainable practices and the integration of sustainability information into the reporting cycle of companies.

This governmental initiative strongly aligns with Malaysia's commitment to fostering green technology policies and driving sustainable development across various industries and organisations within the nation.

The initial implementation of this guideline primarily focuses on enhancing exposure, perception, knowledge, and capacity building regarding green resources, processes, and technologies. Collectively known as "green practices," these measures are intended to drive positive changes within the industry.

The envisioned outcome of implementing green practices in the industry is the promotion of cleaner, more efficient, and environmentally-friendly operations, processes, and premises throughout Malaysia.

## KEY POINTS:

- Mandate** : The NRECC granted approval through the Twelfth Malaysia Plan (RMKe-12) in 2021.
- Green Policy** : The Guideline supports the advancement of green technology policies to facilitate sustainable development within industries and organisations in Malaysia.
- Purpose** : To provide guidance and recommendations for services sector industries in the implementation of green practices.
- Approach** : The Guideline emphasises the optimisation of natural resource consumption, energy usage, and water management, while concurrently reducing toxic emissions and waste generation.
- Optimise** : Focus on optimising the consumption of natural resources, including raw materials, water, energy, and land use.
- Circularity** : Encourage the adoption of circular economy principles by increasing the reuse, recycling, and reduction of materials, energy, and water.
- Reduce** : Place emphasis on reducing the emissions of toxic or hazardous waste.
- Implement** : Promote the utilisation of innovative green technologies to enhance processes and operations.



1

INTRODUCTION  
TO SERVICES INDUSTRY

# PART 1: INTRODUCTION

## 1.1 ABOUT THE SECTOR

The services sector in Malaysia plays a vital role in driving economic growth, contributing significantly to the country's Gross Domestic Product (GDP) and employment. As Malaysia progresses towards becoming a developed nation, the services sector has emerged as the largest and fastest-growing sector in the global economy. However, the rapid expansion of the services sector has also raised concerns about its impact on climate change and natural disasters.

Recognising the need for environmental protection and sustainability, the Green Practices Guideline for the Services Sector have been developed in alignment with the Green Technology Master Plan (GTMP). These guidelines aim to address the environmental challenges posed by the sector's growth and promote the adoption of sustainable practices.

The services sector encompasses various activities, including healthcare, hospitality, education, transportation, communication, entertainment, financial trading, leasing, and professional services. To ensure the effective implementation of green practices, the guidelines focus on six key indicators: Materials, Waste, Water, Energy, Innovation, and Management.

By incorporating these indicators, the services sector can adopt green practices that enhance resource efficiency, reduce environmental impact, and contribute to Malaysia's sustainable development goals. Here are some examples of how green practices can be applied in specific service sub-sectors:



### WHOLESALE & RETAIL TRADE, FOOD & BEVERAGES, AND ACCOMMODATION:

These sub-sectors can implement practices such as sustainable sourcing of products, reducing food waste through proper inventory management and food donation programmes, implementing energy-efficient technologies and renewable energy sources, and promoting water conservation measures.



### INFORMATION & COMMUNICATION AND TRANSPORTATION & STORAGE:

These sub-sectors can focus on adopting energy-efficient technologies, optimising logistics and transportation routes to minimise fuel consumption and emissions, promoting telecommuting and digital services to reduce the need for physical travel, and implementing green data management practices.



### HEALTH, EDUCATION, AND ARTS, ENTERTAINMENT & RECREATION:

Green practices in these sub-sectors can include energy-efficient building designs for healthcare and educational facilities, waste reduction and recycling initiatives, promoting sustainable tourism practices, and incorporating environmental education and awareness programmes.



### PROFESSIONAL AND REAL ESTATE AGENT:

This sub-sector can implement green building practices, including energy-efficient designs, use of sustainable building materials, waste management systems, and promoting green certification programmes such as Leadership in Energy and Environmental Design (LEED) or Green Building Index (GBI) for real estate developments.

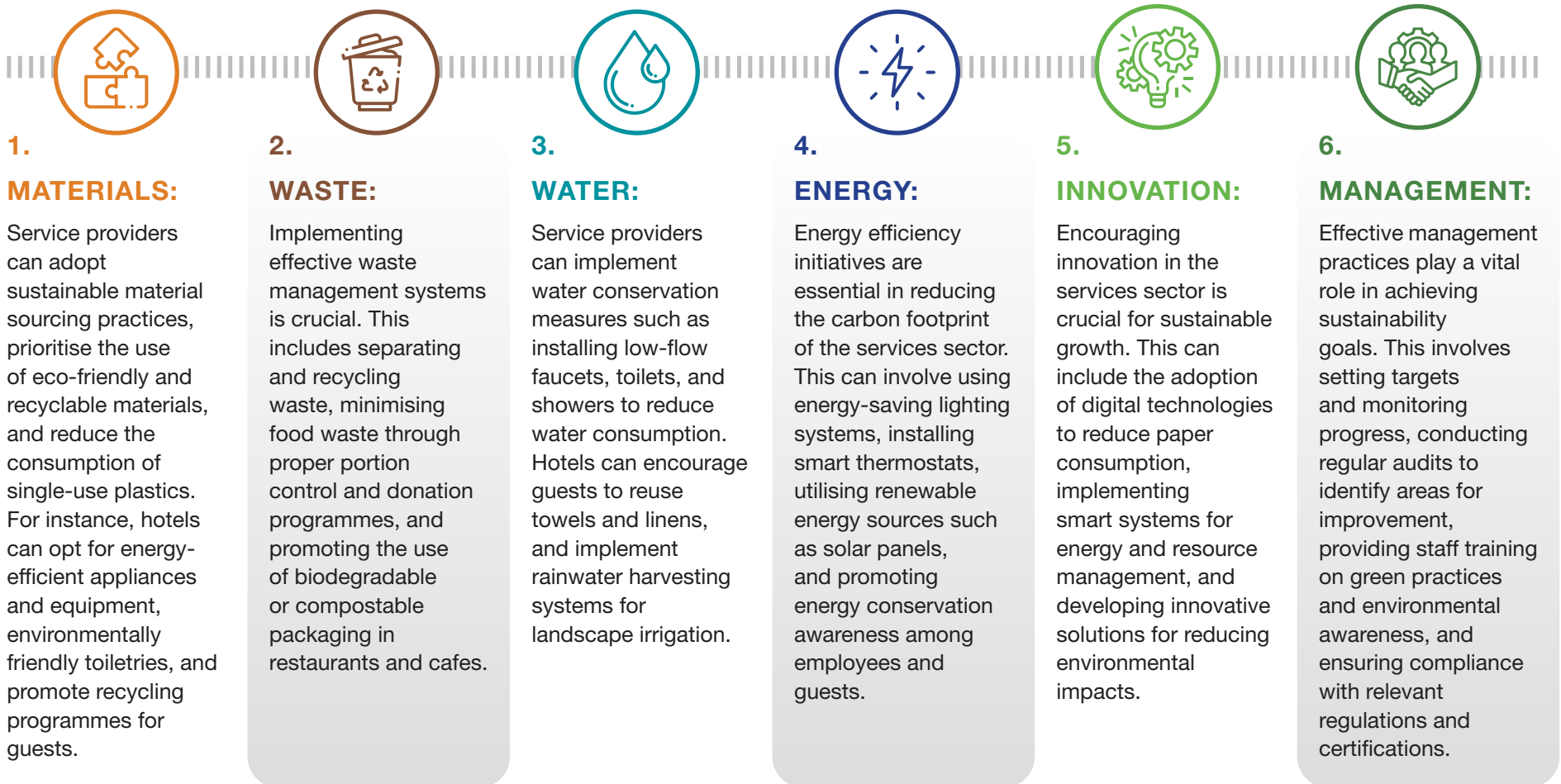
The application of these green practices in the services sector will contribute to environmental protection, resource conservation, and the overall sustainability of Malaysia's economy. It demonstrates the sector's commitment to reducing its carbon footprint, promoting innovation in sustainable technologies, and enhancing the quality of life for both the workforce and society as a whole.

By adhering to the Green Practices Guideline and aligning with the objectives of the GTMP, the services sector can position itself as a leader in sustainable practices, gain a competitive edge in the global market, and contribute to Malaysia's journey towards a greener and more resilient economy.

## 1.2 SCOPE AND APPLICATION

The Green Practices Guideline for the Services Sector in Malaysia have been developed to provide a comprehensive framework for implementing sustainable practices in the services industry. This guide is aligned with the objectives of the Green Technology Master Plan (GTMP) and the nation's sustainability goals. The scope of this guideline primarily focuses on tourism and travel-related services, which include hotels, restaurants, travel agencies, tour operators, tourist guide services, and other related services. However, the guidelines indicated here can be applied across the entire services sector.

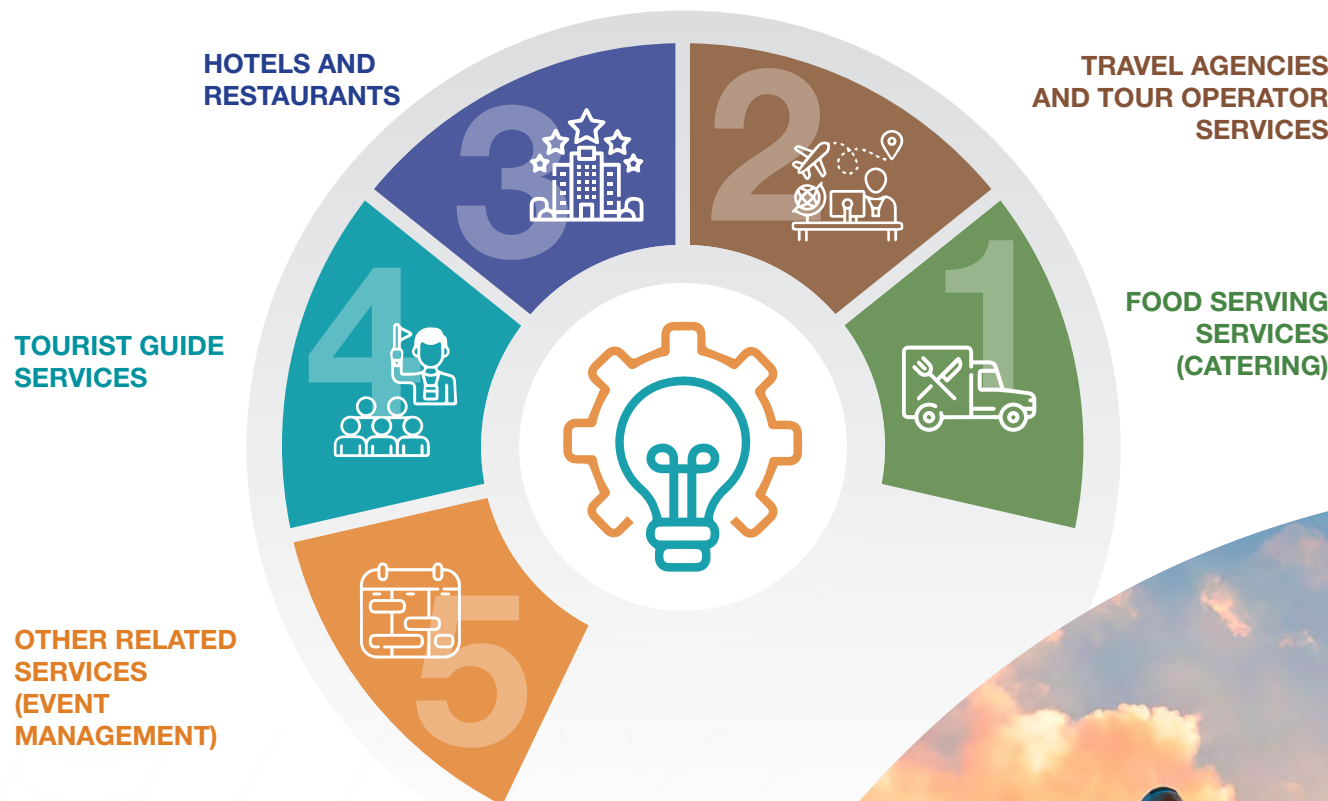
To ensure effective implementation, this guideline emphasise the utilisation of six key indicators: Materials, Waste, Water, Energy, Innovation, and Management. These indicators serve as important benchmarks for measuring and improving the environmental performance of service providers. Let's explore some contextual examples of how these indicators can be applied in the services sector, specifically in tourism and travel-related services in Malaysia:



By integrating these green practices into the services sector, specifically in tourism and travel-related services, Malaysia can promote sustainable tourism, reduce environmental impacts, and enhance its competitiveness in the global market. This guideline provides a roadmap for service providers to implement eco-friendly practices, conserve resources, and contribute to Malaysia's transition to a greener and more resilient economy.

The Green Practices Guideline for the Services Sector facilitate the adoption of sustainable practices, drive innovation, and demonstrate the sector's commitment to environmental stewardship and the achievement of national sustainability objectives. Based on the World Trade Organisation (WTO) definition of Tourism and Travel-Related Services, the Green Practice Guideline for Services Sector encompasses the following scope:

- 1) Services provided by hotels and restaurants (including catering),
- 2) Travel agencies and tour operator services,
- 3) Tourist guide services and
- 4) Other related services.



**SOURCE:**

**TOURISM AND TRAVEL-RELATED SERVICES (WTO, 2022).**



## 1.3 MOTIVATION TO SUSTAINABILITY

Sustainability is of utmost importance in today's global business landscape, including the services sector. As the largest and fastest-growing sector in the world economy, the services sector in Malaysia recognises the need to embrace sustainable practices to ensure long-term success, competitiveness, and create a positive impact on the environment and society.

### ENVIRONMENTAL STEWARDSHIP:

Service providers in the sector have a responsibility to be environmentally responsible. By adopting sustainable practices, they can minimise their ecological footprint, reduce pollution, and conserve natural resources. Demonstrating environmental stewardship showcases a commitment to protecting ecosystems, preserving biodiversity, and addressing climate change.

### COST SAVINGS AND EFFICIENCY:

Implementing sustainable practices in the services sector can lead to significant cost savings and operational efficiency. Energy-efficient technologies, waste reduction strategies, and water conservation measures can lower operational expenses and enhance financial resilience. Embracing sustainable supply chain practices improves resource efficiency, reduces material and transportation costs, and contributes to overall cost savings.

### MARKET DEMAND AND REPUTATION:

Consumers increasingly prioritise businesses that offer environmentally friendly services. By embracing sustainability, service providers can tap into the growing market demand for eco-conscious and socially responsible services. A strong commitment to sustainability enhances reputation, builds trust with customers, and fosters brand loyalty.

### REGULATORY COMPLIANCE AND MARKET ACCESS:

Adhering to sustainability practices ensures compliance with environmental regulations and positions service providers to exceed industry standards. Proactively meeting regulatory requirements helps businesses avoid fines and legal issues. Additionally, adhering to sustainability standards opens doors to international markets with stringent environmental requirements, expanding market access and export opportunities.

### INNOVATION AND COMPETITIVENESS:

Sustainability drives innovation in the services sector. Service providers investing in green technologies, digital solutions, and sustainable practices gain a competitive edge. Embracing sustainability fosters creativity and problem-solving, allowing businesses to adapt to evolving customer needs and stay ahead in a rapidly changing business landscape.

### EMPLOYEE ENGAGEMENT AND PRODUCTIVITY:

Commitment to sustainability enhances employee morale, engagement, and productivity. Working for environmentally responsible organisations becomes a source of pride for employees. Service providers prioritising sustainability attract and retain top talent, leading to increased productivity, job satisfaction, and overall organisational success.

### RESILIENCE TO CLIMATE RISKS:

Incorporating sustainability practices in the services sector builds resilience to climate-related risks. Strategies to mitigate and adapt to climate change impacts, such as extreme weather events or supply chain disruptions, ensure business continuity and protect assets. By preparing for climate risks, service providers can navigate uncertainties and maintain operations even in challenging circumstances.

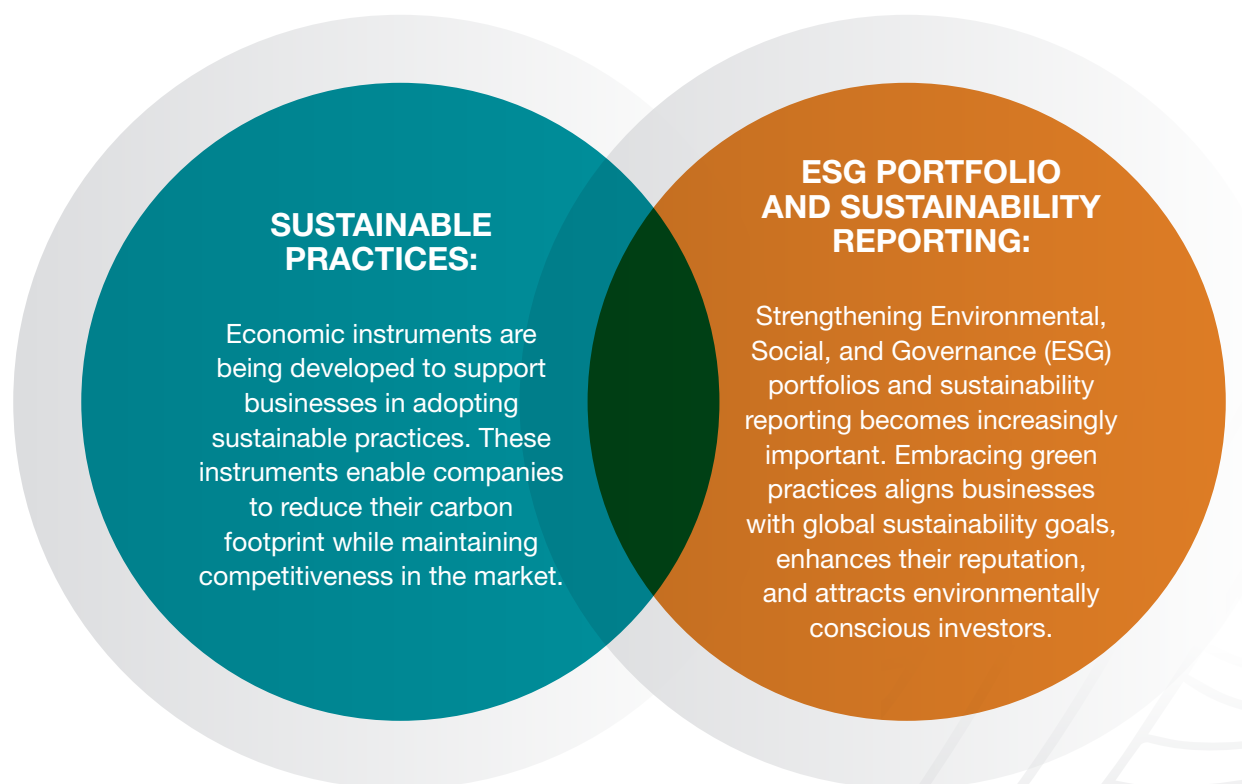
By embracing sustainable practices, the services sector in Malaysia can contribute to the achievement of the Green Technology Master Plan (GTMP) objectives, foster a sustainable economy, and align with national and global sustainability efforts. This guideline provides a roadmap for service providers to adopt green practices, drive innovation, enhance competitiveness, and make a positive impact on the environment and society.

### 1.3.1 CLIMATE CHANGE

Climate change presents a significant challenge for the services sector in the 21<sup>st</sup> century. It is essential to recognise that economic development should not come at the expense of the environment. Controlling greenhouse gas (GHG) emissions is crucial to mitigate the impacts of climate change for the well-being of present and future generations.

In the services sector, Malaysia currently contributes 0.7% to global GHG emissions, with the manufacturing and construction industries being the third largest sources of emissions (Malaysia BUR3 UNFCCC Report, 2020). As part of its commitment to climate action and green technology, Malaysia aims to become a low-carbon nation by 2050. This includes a commitment to reduce GHG emissions (against Gross Domestic Product: GDP) by 45% by 2030 compared to the 2005 level.

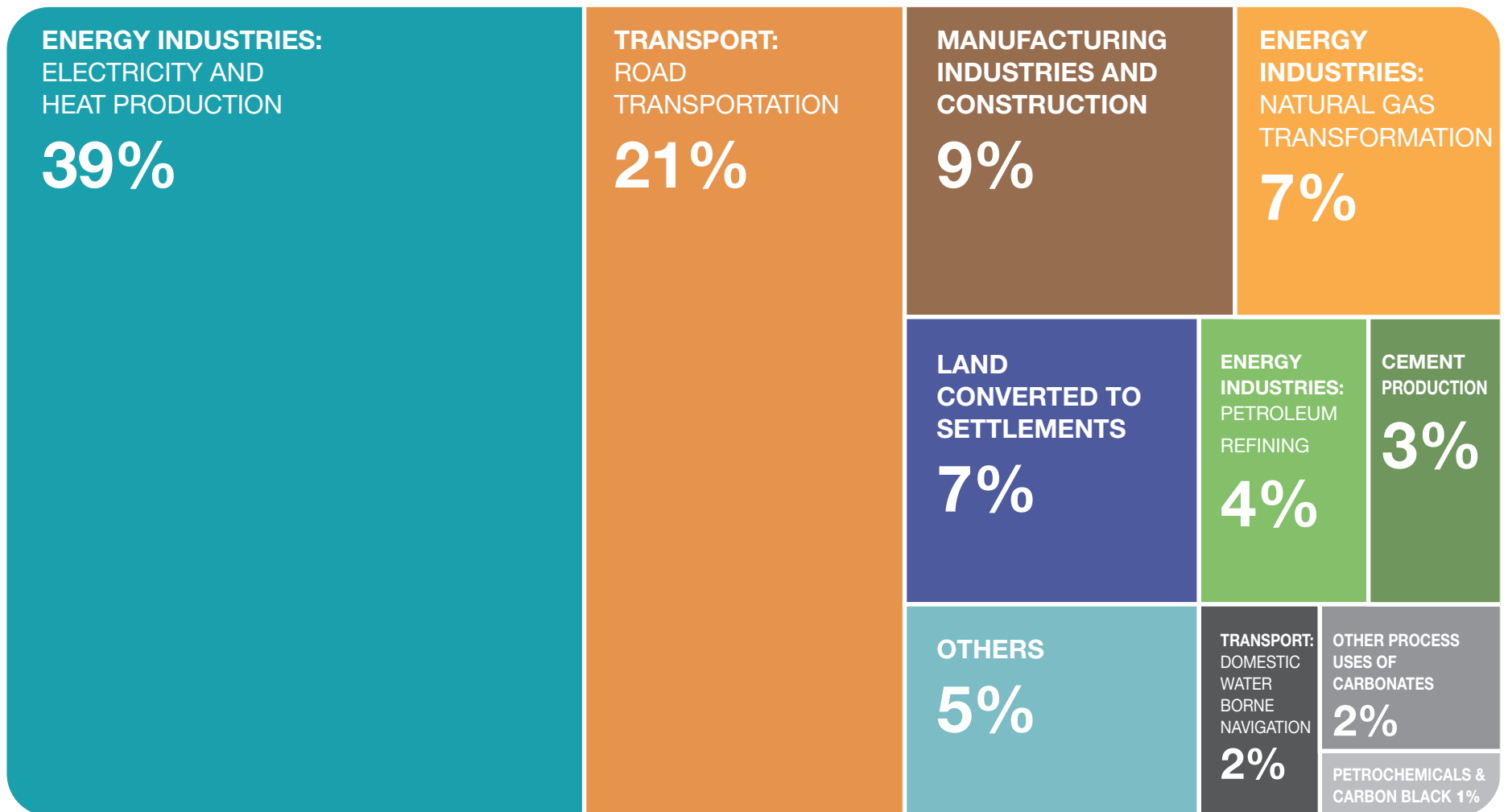
This national aspiration presents opportunities for businesses in the services sector, particularly in areas such as:



The issues of climate change and environmental protection are crucial for the survival of Malaysia. The government, along with its ministries, departments, and agencies, has implemented various measures and initiatives to address these challenges. These efforts primarily focus on three major themes: energy, waste, and forestry.

Within the services sector, it is imperative for companies to prioritise the reduction of carbon emissions. As businesses face an increasingly environmentally conscious world, adopting green practices in their operations becomes the logical next step. By embracing sustainability, companies can ensure their survival and performance in a world that values environmental consciousness.

#### Total GHGs Emission in Malaysia in 2020



**RENEWABLE ENERGY (RE)****FIT-IN-TARIFF**

Mechanism under the Renewable Energy Policy & Action Plan to catalyse generation of Renewable Energy (RE) up to 30MW in size.

**Emission avoidance:**

460.52 Gg CO<sub>2</sub> eq

**HYDROPOWER**

Hydropower is poised to play an increasingly important role in meeting Malaysia's energy and climate goals.

**Emission avoidance:**

6,535.99 Gg CO<sub>2</sub> eq

**NATIONAL ENERGY EFFICIENCY ACTION PLAN (NEEAP)**

This plan was introduced targeting the residential, commercial, and industrial sectors. Key initiatives under NEEAP:

- 5-Star rated appliances
- Minimum Energy Performance Standard (MEPS)
- Co-generation
- Energy audits and energy management in buildings and industries
- Energy Efficient Building Design

**Emission avoidance:**

458.02 Gg CO<sub>2</sub> eq

**ENERGY EFFICIENT VEHICLES (EEVs)**

Malaysia aims to become a regional hub for energy-efficient vehicles (EEVs) through strategic investments and adoption of high technology. The EEVs include fuel-efficient internal combustion engines (ICE) vehicles, electric vehicles, hybrid & alternative-fueled vehicles.

**Related policy:**

The National Automotive Policy 2014

**Emission avoidance:**

90.65 Gg CO<sub>2</sub> eq

**GREEN BUILDING RATING SCHEME**

Focus on promoting natural-gas vehicles in the public transport sector, in particular for taxis and buses.

**EXISTING STANDARD:**

- Malaysian Carbon Reduction & Environmental Sustainability Tools (MyCREST)
- Green Performance Assessment System (PASS)

**Emission avoidance:**

143.47 Gg CO<sub>2</sub> eq

**GREEN CERTIFICATION:**

- Green Building Index (GBI)
- GreenRE

**URBAN RAILED-PUBLIC TRANSPORT**

The implementation of public transport initiatives is important to reduce the use of private vehicles on the road.

**Existing plan:**

- National Land Public Transport Master Plan
- The Tenth and Eleventh Malaysia Plan

**Emission avoidance:**

212.93 Gg CO<sub>2</sub> eq

## NATURAL GAS VEHICLES (NGVs)

Focus on promoting natural-gas vehicles in the public transport sector, in particular for taxis and buses.

### Benefits of programme:

- Lower retail prices
- Incentives
- Road tax reduction
- Import duty and sales tax exemption

### Emission avoidance:

114.77 Gg CO<sub>2</sub> eq

## BIODIESEL

Biodiesel has received great attention as an alternative fuel, considering its abundant resources and environmental benefits.

### Related policies and Acts:

- The National Biofuel Policy
- Malaysian Biofuel Industry Act

### Emission avoidance:

1,127.34 Gg CO<sub>2</sub> eq

## OIL & GAS OPERATIONS

PETRONAS, as the national oil and gas company of Malaysia is committed towards reducing its carbon footprint.

### Emission reduction in oil & gas operations can be achieved through:

- Zero continuous flaring and venting in all operations for fugitive emissions
- Continuous improvement and plant efficiency in natural gas transformation
- Enhance improvement in plant efficiency of oil refining industries

## WASTE PAPER RECYCLING

Target of 40% waste redirection from waste disposal sites:

- 22% through recycling
- 18% through waste treatment

### IMPACT:

Increase in recycling rate materials from 17% in 2015 to 21% in 2017.

### Emission avoidance:

3,937.76 Gg CO<sub>2</sub> eq

### RELATED POLICY:

- National Solid Waste Management Policy 2006
- Eleventh Malaysia Plan

## BIOGAS RECOVERY FROM PALM OIL MILL EFFLUENT (POME)

- Biogas plays a crucial role in driving Malaysia's move towards adopting renewable energy and environmental sustainability.
- Target includes equipping mills with biogas entrapment facilities to generate electricity for supply to the grid or for self-consumption.

### IMPACT:

As of 2017, out of 454 palm oil mills, 104 of them were fully equipped with biogas capture facilities.

### Emission avoidance:

2,377.84 Gg CO<sub>2</sub> eq

### RELATED POLICY:

Entry Point Project  
– Developing Biogas Facilities at Palm Oil Mills

### RELATED PROGRAMME:

Economic Transformation Programme 2010

## AGRICULTURE

Malaysian Organic Scheme (SOM) or Malaysia Organic (MyOrganic) is a certification that recognises farms that practice good agricultural practices and organic farming based on Malaysian Standard MS 1529:2015.

### IMPACT:

253 farms have been certified with MyOrganic certification with an area of 2,045.60 hectares.

### Emission avoidance:

114.77 Gg CO<sub>2</sub> eq

## SUSTAINABLE MANAGEMENT OF FOREST

Forest certification scheme that allow the annual allowable cut in the Permanent Reserved Forest (PRF) is capped at 85 m<sup>3</sup>/ha for the period of Tenth & Eleventh Malaysia Plan.

### IMPACT:

Malaysian Criteria and Indicators for Forest Management Certification 2001.

### Emission avoidance:

20,307.50 Gg CO<sub>2</sub> eq

## CONSERVATION OF BIODIVERSITY AND ECOSYSTEM SERVICES

### RELEVANT INITIATIVE:

Malaysia's Protected Area (PA) Network

### TARGET:

Increase the Protected Area to at least 20% by 2025.

### IMPACT:

Protected Area increased from 2.757 to 3.171 million ha between 2014 and 2016

## FOREST ENRICHMENT PROGRAMMES

### AIMS:

- Improve degraded forest sequestration capacity
- Enhance connectivity between forests through two distinct initiatives

### EXAMPLES:

- Central Forest Spine (CFS) Programme in Peninsular Malaysia
- Heart of Borneo (HoB) Programme in Sabah and Sarawak

### 1.3.2 CIRCULAR ECONOMY

The services sector in Malaysia has a significant opportunity to embrace the principles of the circular economy. The circular economy concept focuses on resource reuse, waste prevention, and reducing material loss to promote long-term resilience and sustainable economic growth.

Adopting a circular economy approach in the services sector offers several benefits, including enhanced resource efficiency, cost-effectiveness, waste reduction, and addressing climate change. This can be particularly relevant for industries such as hospitality, logistics, and consulting, which can play a crucial role in advancing the circular economy.

Key aspects and initiatives related to the circular economy in Malaysia's services sector include:

# 1

#### **POLICY AND REGULATORY FRAMEWORK:**

The Malaysian government has recognised the importance of transitioning to a circular economy and has implemented policies and regulations to support this shift. The Twelfth Malaysia Plan (2021-2025) aims to transform the country's linear economy model into a sustainable circular economy model, mitigating environmental harm.

# 2

#### **WASTE MANAGEMENT AND RECYCLING:**

Efficient waste management and recycling systems are essential for a circular economy. Malaysia has made progress in waste management through initiatives such as the National Strategic Plan for Solid Waste Management. Programmes promoting waste reduction, recycling, and proper disposal, including waste separation at source, have been implemented.

# 3

#### **PRODUCT DESIGN AND EXTENDED PRODUCER RESPONSIBILITY (EPR):**

Encouraging sustainable product design and implementing extended producer responsibility schemes are crucial for achieving a circular economy. Guidelines integrating eco-design principles into service development are being established to minimise the environmental footprint throughout the service lifecycle. Exploring EPR policies for various services, such as IT equipment maintenance, transportation, and event planning, ensures that service providers take responsibility for the environmental impact of their operations.

## 4

**SUSTAINABLE CONSUMPTION  
AND PRODUCTION:**

Promoting sustainable consumption and production patterns is a key focus area for advancing the circular economy in Malaysia's services sector. Efforts are underway to raise consumer awareness about the environmental impact of their choices and encourage the adoption of eco-friendly and durable services. Additionally, there are various initiatives supporting resource-efficient processes, eco-labelling schemes, and green procurement in the service industries.

## 5

**INNOVATION AND TECHNOLOGY:**

Innovation and the adoption of advanced technologies play a crucial role in facilitating the transition to a circular economy. Malaysia actively encourages research and development in waste-to-energy conversion, digital platforms for sharing services, and sustainable materials. The government, through agencies like the Malaysian Green Technology and Climate Change Corporation (MGTC), provides support and funding for innovative projects contributing to a circular economy in the services sector.

## 6

**COLLABORATION AND  
STAKEHOLDER ENGAGEMENT:**

The successful implementation of a circular economy requires collaboration among various stakeholders, including government agencies, businesses, academia, and civil society. Malaysia fosters partnerships and engages stakeholders through platforms such as the Malaysia Circular Economy Conference (MyCEC) and industry associations. These collaborations aim to share knowledge, best practices, and resources to drive the circular economy agenda forward in the services sector and beyond.

By embracing circular economy principles, the services sector in Malaysia, including industries such as hospitality, logistics, and consulting, can optimise resource use, minimise waste, and promote sustainable practices. This will lead to long-term environmental and economic benefits, contributing to a more resilient and sustainable future.

### 1.3.3 IMPACTS OF ESG TOWARDS THE INDUSTRY

# ESG

ESG, an abbreviation for Environmental, Social, and Governance, is a vital element for the services sector in Malaysia to consider integrating in its sustainability information reporting. It is a set of criteria or factors that measures the ethical and sustainability impact of an investment in a company, and it plays a significant role in ensuring long-term success and sustainability.

The Ministry of Finance has outlined strategies to empower and enable Small and Medium Enterprises (SMEs) in the services sector to adopt ESG practices. This includes implementing Principles for Good Governance for government-linked investment companies (GLICs) and introducing specific financing measures such as the Low Carbon Transition Facility by Bank Negara, matching grants for NGOs and social enterprises, and allocations to support initiatives like Kasih Suri under EPF and SOCSO. The establishment of the Malaysia Sustainable Development Goals Trust Fund (MySDG Fund) further supports ESG efforts in the services sector.

The services sector, which includes industries such as hospitality, consulting, and logistics, faces various challenges related to environmental impacts, resource efficiency, and greenhouse gas emissions. Compliance with ESG principles has become increasingly important for the long-term survival and success of businesses in these industries. It aligns with the expectations of trading partners, capital markets, and financial institutions.

At COP26, developed countries pledged USD 100 billion annually to support climate efforts in developing countries, in line with the goals of the Paris Agreement and the United Nations Framework Convention on Climate Change (UNFCCC) until 2025. This climate finance includes local, national, and transnational funding for mitigation and adaptation actions, providing businesses with opportunities to align with existing ESG frameworks and receive financial support.

Globally, a growing number of investors prioritise ESG frameworks when making investment decisions. Energy efficiency, waste management, greenhouse gas emissions, water consumption, and the use of biodegradable materials are key concerns for global finance. These aspects fall within the three focal factors of ESG, which evaluate the sustainability and ethical impact of investments.

Businesses in the services sector that neglect to address ESG components may face risks in their operations, increased financing costs, and fluctuating share price performance. To address environmental protection, climate change, and sustainable development, companies in the services sector should consider adopting green technologies in their operations and management.

By embracing ESG principles, the services sector in Malaysia can enhance its environmental performance, social responsibility, and governance practices. This ensures long-term viability and competitiveness in an increasingly sustainable-focused global landscape.

### 1.3.4 SUSTAINABLE DEVELOPMENTS GOALS

The services sector in Malaysia has a significant role to play in contributing to the achievement of the United Nations Sustainable Development Goals (SDGs). Adopted in 2015, the SDGs provide a universal framework for ending poverty, protecting the planet, and ensuring peace and prosperity by 2030.

The SDGs encompass social, economic, and environmental aspects of sustainability, offering a comprehensive approach to addressing global challenges and promoting sustainable development. Each goal is accompanied by specific targets and indicators to measure progress.

In the services sector, businesses can actively support the SDGs by embracing sustainable practices and integrating sustainability into their operations and reporting. By doing so, they can contribute to various SDGs, such as:



#### SDG 7: AFFORDABLE AND CLEAN ENERGY -

Businesses can promote the generation and use of clean and renewable energy sources, reducing reliance on fossil fuels.



#### SDG 9: INDUSTRY, INNOVATION, AND INFRASTRUCTURE -

Embracing innovation and sustainable practices can help businesses contribute to responsible resource extraction and support the development of sustainable infrastructure.



#### SDG 13: CLIMATE ACTION -

By implementing strategies to reduce greenhouse gas emissions and adopting sustainable land use practices, businesses can contribute to climate mitigation efforts.



#### SDG 15: LIFE ON LAND -

Emphasising responsible practices and biodiversity conservation can help protect ecosystems, promote land restoration, and support sustainable land management.



#### SDG 17: PARTNERSHIPS FOR THE GOALS -

Collaboration between businesses, government bodies, and civil society can foster partnerships and initiatives that drive sustainable development efforts and achieve the SDGs.



# SUSTAINABLE DEVELOPMENT GOALS



## 1.4 THE NEED FOR GREEN PRACTICES

### 1.4.1 WHAT ARE GREEN PRACTICES (GP)?

Green Practices are any target or initiative set out by industries that is in line with the target outlined in the Green Technology Master Plan (GTMP).

Examples of green practices in the services sector are:

- Implementation of programmes to reduce energy consumption in the premise
- Adoption of technologies to reduce energy consumption
- Adoption of sustainability elements in building design and orientation
- Improving ventilation and thermal comfort in buildings
- Implementation of waste reduction strategies such as 3Rs
- Implementation of green procurement within business operation

### 1.4.2 GP IN THE SERVICES SECTOR

The services sector in Malaysia plays a crucial role in the country's economy, contributing significantly to the Gross Domestic Product (GDP). As the sector continues to grow, it becomes increasingly important to incorporate green practices to align with sustainability goals and address environmental challenges.

Within the services sector, various industries such as healthcare, hospitality, education, transportation, communication, entertainment, and financial trading have the opportunity to adopt green practices. These practices aim to minimise environmental impact, promote resource efficiency, and support sustainable development. Examples of green practices in the services sector include:

#### 1

##### ENERGY EFFICIENCY:

Implementing energy-saving technologies, optimising energy consumption, and utilising renewable energy sources to reduce carbon emissions. For instance, hotels can adopt energy-efficient lighting and heating systems, and transportation services can invest in electric or hybrid vehicles.

#### 2

##### WASTE MANAGEMENT:

Implementing waste reduction and recycling measures to minimise the generation of waste and promote responsible disposal. Businesses can introduce recycling programmes, reduce single-use plastics, and implement proper waste segregation and management practices.

#### 3

##### WATER CONSERVATION:

Implementing water-saving technologies and promoting responsible water usage to conserve this vital resource. Hotels can install water-efficient fixtures, promote guest awareness about water conservation, and adopt water reuse systems for landscaping or cleaning purposes.

## 4

### INNOVATION AND DIGITALISATION:

Embracing innovative technologies and digital solutions to streamline operations, reduce paper usage, and minimise physical resources. Online platforms can be utilised for virtual meetings, e-commerce transactions, and digital documentation to reduce the need for physical resources and travel.

## 5

### SUSTAINABLE SUPPLY CHAIN:

Collaborating with suppliers to ensure responsible sourcing practices, promote sustainable materials, and reduce environmental impacts. Service providers can prioritise working with suppliers that uphold social and ethical standards, use eco-friendly materials, and implement sustainable production practices.

## 6

### ENVIRONMENTAL EDUCATION AND AWARENESS:

Promoting environmental education and awareness among employees, customers, and stakeholders. Training programmes, awareness campaigns, and initiatives can be implemented to educate staff and customers about sustainable practices and encourage their active participation.

By integrating these green practices, the services sector in Malaysia can achieve multiple objectives. It can reduce its environmental footprint, conserve resources, enhance operational efficiency, and contribute to the national Green Technology Master Plan (GTMP) objectives. Additionally, adopting green practices can enhance the sector's reputation, attract environmentally conscious customers, and create a competitive advantage in the market.

The incorporation of green practices in the services sector demonstrates a commitment to environmental stewardship, sustainable development, and the well-being of society. By embracing these practices, Malaysia's services sector can contribute to broader national and global efforts towards sustainability, while ensuring its own long-term growth and success.

### 1.4.3 EXISTING NATIONAL POLICIES & GUIDELINES

The services sector in Malaysia operates within a regulatory framework that promotes sustainable development and environmental protection. These policies and guidelines provide the foundation for responsible practices. Here are some key policies and guidelines relevant to the services sector:

**NATIONAL POLICY ON THE ENVIRONMENT (DASAR ALAM SEKITAR NEGARA):** This policy sets the direction for environmentally sound and sustainable development. It aims to achieve economic progress while enhancing the quality of life for Malaysians. The policy provides the framework for environmental management in the services sector.

**ENVIRONMENTAL QUALITY ACT 1974:** This act focuses on pollution prevention, abatement, and control, as well as the enhancement of environmental quality. It establishes regulations and standards for managing environmental impacts in various sectors, including the services sector. Compliance with environmental requirements is essential for businesses operating in this sector.

**WATER SERVICES INDUSTRY ACT 2006 (ACT 655):** This act regulates the water supply and sewerage services sector. It establishes a licensing and regulatory framework to ensure efficient and sustainable water use. Compliance with the act's objectives is crucial for businesses in the services sector that rely on water supply or manage sewerage services.

**GOOD MANUFACTURING PRACTICE (GMP):** GMP is a prerequisite for manufacturing licenses and product registrations in industries such as pharmaceuticals, cosmetics, food, and veterinary products. Compliance with GMP ensures the production of safe, quality products. Adherence to environmental and safety standards is an integral part of GMP for businesses in the services sector.

**INTERNATIONAL STANDARD ORGANISATION (ISO) STANDARDS:** ISO develops international standards applicable across industries. Several ISO standards are relevant to the services sector, including ISO 14001 for Environmental Management System, ISO 45001 for Occupational Safety and Health, and ISO 50001 for Energy Management System. These standards provide guidelines for environmental stewardship, occupational health and safety, and efficient energy management.

**MALAYSIAN STANDARD: MS1525:2019:** This standard focuses on energy efficiency and the use of renewable energy in non-residential buildings. It provides guidance for reducing energy consumption and promoting the use of renewable energy sources. Building owners in the services sector can adopt the practices outlined in this standard to create a sustainable and comfortable environment.

Compliance with these national policies, acts, standards, and guidelines is crucial for the services sector in Malaysia. They ensure responsible and sustainable practices, protect the environment, and promote the well-being of workers and communities. By adhering to these policies and guidelines, businesses in the services sector can contribute to the long-term viability of the industry and align with global sustainability goals.

#### 1.4.4 BENEFITS OF GREEN PRACTICES

Green practices in the services sector in Malaysia offer numerous benefits that contribute to improved efficiency, reduced resource consumption, and enhanced sustainability. By adopting these practices, businesses in the sector can achieve the following advantages:

**INCREASED EFFICIENCY AND RESOURCE CONSERVATION:** Green practices result in improved efficiency, reducing the consumption of materials, energy, and water. Through optimised processes and technologies, businesses can minimise waste generation and achieve a lower intensity of resource usage. Examples include implementing energy-efficient equipment, adopting sustainable procurement practices, and optimising water usage, leading to cost savings and reduced environmental impact.

**SUPPORT FOR GREEN INNOVATIONS:** Embracing green practices fosters an environment conducive to innovation in technology and processes. The services sector can drive the development and adoption of sustainable technologies, such as eco-friendly service delivery methods and renewable energy integration. These innovations not only contribute to sustainability goals but also position businesses at the forefront of technological advancements.

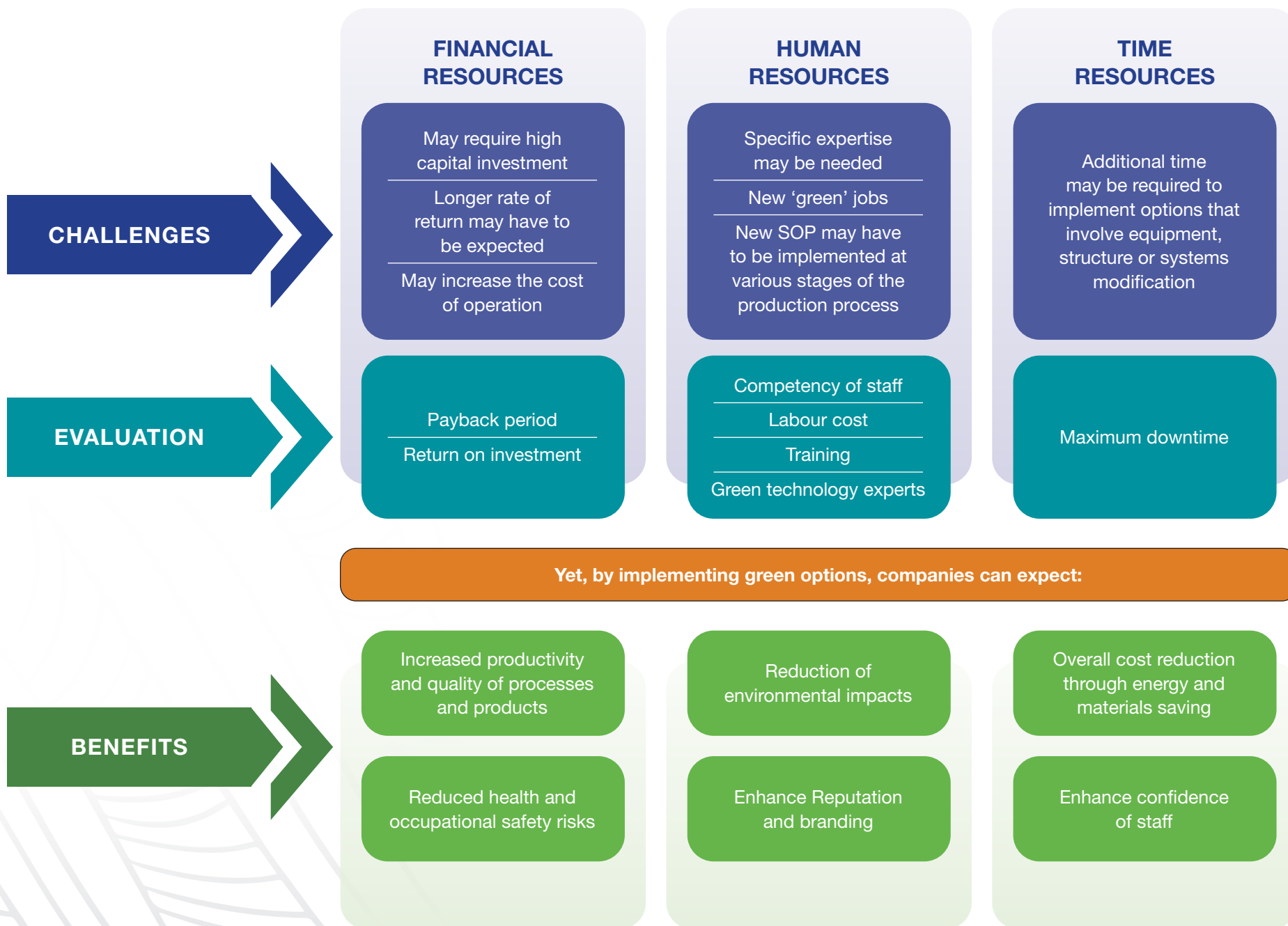
**ENHANCED HUMAN RESOURCE UTILISATION:** Green practices promote better utilisation of human resources. By investing in employee training and education on sustainable practices, businesses can develop a skilled workforce capable of driving efficiency, implementing environmental safeguards, and adapting to evolving sustainability requirements. This improves productivity, job satisfaction, and retention rates.

**INCREASED PRODUCTIVITY AND REVENUE:** Adopting green practices often lead to increased productivity and revenue. Streamlining processes, reducing waste, and optimising resource utilisation can improve overall operational efficiency. Moreover, incorporating sustainable practices enhances the company's reputation, attracting environmentally conscious customers and investors, and potentially expanding market opportunities.

**SUPPORT FOR ESG ASPIRATIONS AND SUSTAINABILITY REPORTING:** Green practices align with Environmental, Social, and Governance (ESG) aspirations and sustainability reporting. By integrating the specific indicators outlined in green practice guidelines, businesses can review, manage, and plan for more sustainable business decisions. This ensures alignment with ESG goals, enhances transparency, and promotes responsible corporate citizenship.

**ADAPTATION TO GLOBAL INITIATIVES:** The global trend of green consumerism and increasing focus on sustainability require closer scrutiny of greener and sustainable practices in the services sector. Initiatives related to carbon emissions reduction and environmental impact mitigation are gaining traction worldwide. By proactively adopting green practices, businesses in the services sector can position themselves for compliance with evolving regulations and tap into emerging opportunities related to sustainability-focused markets and carbon-neutral supply chains.

Implementing green practices in existing operations and processes brings direct and indirect benefits to the services sector. Beyond environmental protection, it increases long-term productivity, profitability, and resilience. By achieving ESG objectives, businesses can ensure their long-term survival and reputation while contributing to a sustainable future for the industry and the nation as a whole.



## 1.5 OUTCOME FROM GREEN PRACTICES

In order to determine the level of GP implemented in an organisation, the initiatives related to GP shall be assessed according to the method described in Chapter 2 in the guideline, and results from the assessment shall be translated into the following Star-Rating system:



**(60% - 70%)**

Comply to all  
regulatory requirements

---

Demonstrate leadership  
in developing systematic  
environmental reporting practical



**(71% - 80%)**

Exhibit characteristics  
of being resource efficient

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Demonstrating positive  
impacts from green practices

---

Incorporate and implement continuous  
quality improvement initiatives  
throughout business operations



**(81% - 100%)**

Demonstrate integration of  
governance framework related to  
sustainability and circular economy

---

Demonstrate capacity in contributing  
towards achieving national  
decarbonisation targets

---

Demonstrates leadership in  
developing, expanding and applying new  
technology related to green practices



2

**ASSESSMENT**

## PART II: ASSESSMENT

### 2.1 ABOUT THE ASSESSMENT OF GREEN PRACTICES

Green practices in the services sector in Malaysia aim to foster innovation, minimise resource usage, eliminate or minimise toxic substances, reduce waste generation, and achieve net-zero greenhouse gas emissions throughout the entire service life cycle. Recognising the importance of sustainability, businesses in the services sector are committed to adopting green practices to ensure long-term viability and environmental stewardship.

This guideline has been specifically developed considering the unique capacities, operations, and environmental impacts of diverse sectors within the services industry. It provides a framework for implementing green practices that are applicable and beneficial across various service operations in Malaysia.

The goals of green practices in the services sector include:



#### RESOURCE CONSERVATION:

Businesses aim to conserve valuable resources such as energy, water, and materials. By optimising resource usage, adopting efficient technologies and processes, and promoting responsible consumption, companies in the services sector can minimise their ecological footprint and reduce resource depletion.



#### REDUCTION OF TOXIC AND HAZARDOUS MATERIALS:

Green practices focus on minimising the use of toxic and hazardous materials in service operations. Businesses can adopt alternative materials, promote safer practices, and implement sustainable procurement policies to minimise emissions and waste generated during their service delivery processes.



#### GREENHOUSE GAS EMISSION REDUCTION:

The services sector aims to reduce greenhouse gas emissions. By implementing cleaner and more energy-efficient technologies, optimising energy consumption, and exploring renewable energy options, businesses can contribute to mitigating climate change impacts.

The guideline provides general recommendations that can be applied across different sectors within the services industry. It emphasises the importance of businesses adopting and implementing green practices in Malaysia. These recommendations enable companies to develop action plans and implementation strategies tailored to their specific capabilities, operations, and long-term sustainability goals.

By following the outlined steps, businesses in the services sector can develop comprehensive action plans for integrating green practices into their existing and future operations. The approach takes into account the sector's current capabilities and strategies, ensuring a practical and achievable transition towards sustainability and responsible resource management.

Overall, embracing green practices in the services sector in Malaysia is crucial for conserving resources, minimising environmental impacts, reducing greenhouse gas emissions, and promoting the sector's long-term viability in alignment with global sustainability goals.

## 2.2 GUIDELINE IMPLEMENTATION

To successfully integrate green practices into existing operations and processes, manufacturers in the services sector are recommended to follow the following three steps:



### STAGE 1:

## ASSESSMENT

**Understand the Assessment Requirements:** Familiarise yourself with the assessment criteria outlined in the Green Practices Data Collection Form (Appendix 2) for the six indicators described in Section 2.3. Refer to the Indicator Instrument Factsheet (Appendix 3) for detailed information on each indicator, including goals, targets, terminologies, data sources, and collection methods.

**Prepare Relevant Documents:** Gather the necessary documents and records as evidence of green practices implementation. These may include utility bills, purchasing records, contract documents, and other relevant information specified in the Indicator Instrument Factsheet and Green Practices Data Collection Form.

**Conduct Assessment:** Evaluate green practices according to the criteria established for each sub-indicator. Present the relevant documents as proof of implementation during the assessment process. Scores will be assigned based on the criteria, and the overall mark for each indicator will be calculated by multiplying the sum of sub-indicator scores with their assigned weightage. The weightage reflects the applicability and importance of the indicator to the services sector. The total score will be translated into a Star Rating system described in Section 1.5.



## STAGE 2: SET TARGETS FOR IMPROVEMENT

**Define Clear Objectives:** Based on the assessment conducted in Stage 1, establish clear objectives that describe the desired outcomes of implementing green practices in the services sector. These objectives may include reducing carbon emissions, promoting sustainable procurement, and more. Identify areas of improvement required to achieve the objectives based on the assessment results.

**Set Realistic and Attainable Targets:** Align targets for each sub-indicator with the goals and targets outlined in the Indicator Instrument Factsheet and the scoring criteria in the Green Practices Data Collection Form. Assign deadlines or timelines to each target to ensure progress can be measured effectively.



## STAGE 3: IMPLEMENT GREEN PRACTICES

**Formulate an Action Plan:** Develop a detailed action plan that outlines the necessary steps and timelines for implementing green practices in the services sector. Refer to the examples provided in Section 2.3 for guidance. Break down the goals into smaller, manageable tasks and assign responsibilities to individuals or teams. Include milestones and performance indicators to track progress effectively. Allocate resources, such as budgets and personnel, to support the implementation efforts.

**Engage Employees:** Foster employee engagement at all levels to drive the successful implementation. Raise awareness about the importance of sustainability and provide training and education on green practices. Encourage employees to contribute ideas and suggestions for improving sustainability efforts. Recognise and reward environmentally conscious behaviors and achievements to cultivate a culture of sustainability within the services sector.

**Collaborate with Suppliers and Partners:** Engage with suppliers and partners to promote sustainable practices throughout the supply chain in the services sector. Encourage them to adopt environmentally friendly practices and prioritise suppliers with strong sustainability credentials. Collaborate on initiatives such as joint recycling programmes or sharing best practices to collectively reduce the environmental footprint of the services sector.

**Measure, Evaluate, and Improve:** Establish a system for measuring and evaluating the effectiveness of green practices in the services sector. Monitor key performance indicators (KPIs) to track progress toward sustainability goals. Regularly review and analyse data to identify areas for improvement. Use this information to refine strategies and adjust implementation plans as needed, ensuring continuous improvement in the sector's green practices.

By following these steps, businesses in the services sector can effectively integrate green practices into their operations, promoting sustainability, minimising environmental impact, and contributing to the long-term viability of the services industry in Malaysia.

## 2.3 INDICATORS

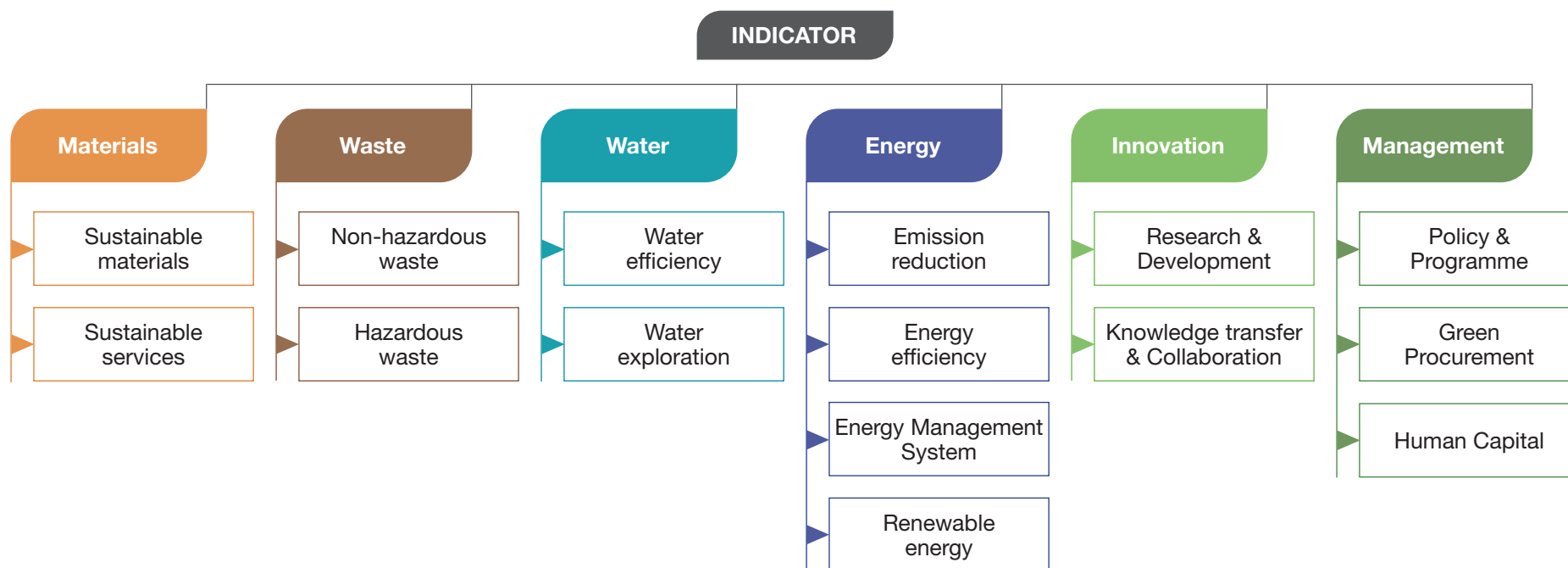
Indicators are crucial for evaluating and comparing performance of industries in adopting green practices. These indicators provide a standardised framework for assessing environmental sustainability efforts across various sectors. In order to ensure a comprehensive and meaningful evaluation, a set of six indicators and sixteen sub-indicators have been identified based on three key requirements: applicability, measurability, and representativeness.

The selected indicators and sub-indicators were carefully chosen to capture the key aspects of green practices and their impact on sustainability. Applicability ensures that the indicators are relevant and applicable to a wide range of industries, allowing for consistent evaluation across different sectors. Measurability ensures that the indicators can be quantified or assessed using objective criteria, enabling meaningful comparisons between industries. Representativeness ensures that the indicators encompass a comprehensive set of factors that reflect the overall performance of green practices.

By utilising these indicators, stakeholders can effectively gauge the extent to which industries are implementing green practices and contributing to sustainable development. The indicators provide a structured approach to measure and monitor progress in key areas such as resource conservation, emissions reduction, waste management, and sustainable operations.

These indicators serve as a valuable tool for decision-making, enabling industries to identify areas for improvement, set targets, and track their performance over time. Furthermore, they facilitate benchmarking exercises, allowing industries to compare their performance against sector peers and best practices.

The use of indicators promotes transparency and accountability, enabling stakeholders to assess the environmental performance of industries and make informed choices. It also provides an opportunity for recognition and incentives, as industries that demonstrate strong performance in adopting green practices can be acknowledged and rewarded for their efforts.



### 2.3.1 MATERIALS

The Material Indicator for Green Practices focuses on the responsible and sustainable management of materials utilised across industries. Industries use various types of materials in their processes, with some relying exclusively on virgin materials while others incorporate recycled materials. The efficient consumption of materials is essential for the long-term survival and success of industries, as it directly impacts resource availability and overall material efficiency.

The Material Indicator within the Green Practices framework encompasses two sub-indicators: Sustainable Materials and Sustainable Services.

#### **SUSTAINABLE MATERIALS:**

This sub-indicator assesses the demonstration of purchasing and utilisation practices related to sustainable materials within industries. It requires industries to showcase a clear direction and vision toward sustainable material utilisation, along with the implementation of self-regulation measures that align with sustainability goals. Additionally, recognition or certification from reputable third-party entities or certification bodies further validates the commitment to sustainable material practices.



**SUSTAINABLE SERVICES:**

This sub-indicator evaluates the purchase and utilisation of sustainable services within industry operations. It encourages industries to demonstrate a specific direction and vision regarding the use of sustainable services. The implementation of self-regulation measures that align with sustainability goals should be evident, and recognition or certification from reputable third-party entities or certification bodies can further validate the adherence to sustainable service practices.

By addressing the Material Indicator and its sub-indicators, industries can enhance their material management practices, promoting the use of sustainable materials and services. This not only supports environmental conservation and resource preservation but also aligns with industry-wide sustainability goals. It demonstrates a commitment to responsible material utilisation and contributes to the long-term viability and success of industries across diverse sectors.

The scope for Materials in the Services sector includes two sub-indicators: Sustainable Materials and Sustainable Services.

SUB-INDICATOR	REQUIREMENT	OBJECTIVE EVIDENCE FOR ASSESSMENT	EXAMPLE GREEN PRACTICES
<b>SUSTAINABLE MATERIALS</b>	Demonstration on purchase or use of sustainable materials	<ul style="list-style-type: none"> <li>Company sustainability report</li> <li>Organisation sustainability policies</li> <li>Sustainability monitoring activity</li> <li>Certification or recognition of sustainable material</li> </ul>	<ul style="list-style-type: none"> <li>Use natural products such as using biochar as a water filter, in building operations and activities.</li> <li>Use bio-based materials such as replacing plastic bag to biodegradable plastic as packaging material.</li> </ul>
<b>SUSTAINABLE SERVICES</b>	Demonstration on purchase or use of sustainable services	<ul style="list-style-type: none"> <li>Company sustainability report</li> <li>Organisation sustainability policies</li> <li>Sustainability monitoring activity</li> <li>Certification or recognition of sustainable services</li> </ul>	<ul style="list-style-type: none"> <li>Employing service from companies that utilise biodegradable materials.</li> </ul>



### 2.3.2 WASTE

Waste refers to any material that is discarded or released by the generator or holder, posing various environmental risks based on its chemical composition and physical state. In green practices, the focus is on the prevention or reduction of waste at its source, employing strategies and approaches distinct from end-of-pipe treatment.

The definition of industrial waste, as stated in Section 2 of the Environmental Quality Act 1974 (Act 127) and Regulations, encompasses matter prescribed as scheduled wastes or any solid, semi-solid, liquid, gas, or vapour emitted, discharged, or deposited in the environment in quantities, compositions, or manners that cause pollution.

Implementing an effective waste management plan necessitates strategic measures that encompass all stages of waste management. Manufacturers should conduct a thorough analysis of the current collection, handling, treatment, and disposal processes to identify existing or potential issues. Based on this assessment, specific goals and action plans can be developed and implemented, with regular monitoring and review to ensure progress.

The waste management plan should also prioritise the enhancement of stakeholders' knowledge through the effective dissemination of technical information and research findings concerning the environmental impacts of the waste generated. By promoting awareness and understanding, stakeholders can actively participate in waste reduction and proper waste management practices.

To guide waste management efforts, the following goals and targets have been established:

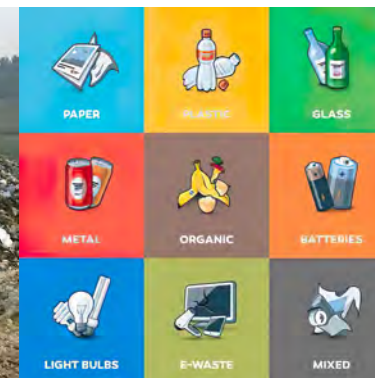
- By 2030, achieve 100% recycling of sludge.
- By 2030, recycle 33% of treated effluent.
- By 2025, achieve a 40% recycling rate of solid waste from total non-hazardous waste generated.
- By 2030, achieve a 50% recycling rate of hazardous waste from the total hazardous waste generated.
- By 2025, completely eliminate waste disposal in landfills.
- By 2030, establish 180 biogas capture facilities.

These goals provide clear targets for waste reduction, recycling, and resource recovery, contributing to the overall objective of sustainable waste management. By striving to meet these targets, manufacturers can significantly reduce their environmental impact, conserve resources, and promote a circular economy approach in the handling of waste.



The scope for Waste in the Services sector includes two sub-indicators: Non-hazardous and Hazardous Waste.

SUB-INDICATOR	REQUIREMENT	OBJECTIVE EVIDENCE FOR ASSESSMENT	EXAMPLE GREEN PRACTICES
<b>NON-HAZARDOUS WASTE</b>	<ul style="list-style-type: none"> <li>Targeted percentage of non-hazardous waste recycled achieved by the organisation</li> <li>Number of biogas capture facilities within the organisation</li> </ul>	<ul style="list-style-type: none"> <li>Records on monitoring non-hazardous waste generated and recycled in the organisation</li> <li>Number of biogas facility</li> </ul>	<ul style="list-style-type: none"> <li>Composting of the damaged and unsold food products.</li> <li>Enhance the 3R's concept among staff and workers.</li> <li>Reducing the use of auxiliary materials for packaging enables less waste to be produced.</li> </ul>
<b>HAZARDOUS WASTE</b>	Targeted percentage of hazardous waste recycled achieved by the organisation	Records on monitoring hazardous waste generated and recycled in the organisation	<ul style="list-style-type: none"> <li>Avoid overbuy when purchase chemical products such as pesticides and biocides.</li> <li>Recycle scheduled waste such as spent engine oils, hydraulic oils, solvent, light bulbs and batteries whenever possible.</li> <li>Re-use or repurpose contaminated glove, rags, clothes and overalls.</li> </ul>



### 2.3.3 WATER

Water scarcity and quality issues are prevalent despite water covering two-thirds of the Earth's surface and being renewable on a global scale. Local shortages and degradation of water bodies occur frequently, posing significant challenges. With increasing demand, the withdrawal of water for industrial processes without returning it to the same water source in its original quantity and quality can lead to severe depletion of rivers, lakes, and groundwater tables.

Certain industrial processes and products necessitate the use of water, which may vary in quality requirements. While water may not be directly consumed in the production process, it is often indirectly utilised for cooling, heating, or washing purposes. Enhancing the rate of recirculation and minimising evaporation can substantially reduce overall water consumption, lessening the reliance on municipal water supplies, groundwater sources, or surface waters. It is recommended that facilities accurately measure and monitor the amount of water being recycled or recirculated within their operations.

By prioritising water conservation measures, industries can mitigate the impact on local water resources and contribute to sustainable water management. Implementing efficient water usage practices, such as optimising recirculation systems, reducing water losses, and implementing technologies that minimise water requirements, can help decrease water consumption and preserve water resources. Additionally, adopting water management strategies that prioritise water reuse and recycling can further contribute to sustainable water practices.

Considering the finite nature of freshwater resources, industries play a crucial role in promoting responsible water stewardship. By implementing measures to reduce water demand, enhance recycling and recirculation, and monitor water usage, industries can contribute to the conservation and sustainable management of this vital resource, ensuring its availability for future generations.



The scope for Water in the Services sector includes two sub-indicators: Water Exploration and Water Efficiency.

SUB-INDICATOR	REQUIREMENT	OBJECTIVE EVIDENCE FOR ASSESSMENT	EXAMPLE GREEN PRACTICES
<b>WATER EXPLORATION</b>	Targeted percentage of alternative water used by the organisation	Records on monitoring city water and alternative water use	<ul style="list-style-type: none"> <li>• Adopt efficient water usage techniques and utilise water efficient techniques and technologies such as timed faucets.</li> <li>• Installation of rainwater harvesting system reduce dependence to treated water.</li> </ul>
<b>WATER EFFICIENCY</b>	Targeted percentage of water consumption reduction achieved by the organisation	Records on monitoring city water use	<ul style="list-style-type: none"> <li>• Installation of nozzles to reduce water consumption for cleaning.</li> <li>• Practice good planning of operations such as laundry wash loads to ensure optimum water consumption per load.</li> </ul>



### 2.3.4 ENERGY

Energy consumption plays a pivotal role in achieving decarbonisation and driving green practices in industries. Globally, electricity and power generation continue to be major contributors to greenhouse gas (GHG) emissions. Therefore, focusing on energy efficiency and transitioning to low-carbon energy sources is crucial for sustainable development.

The adoption of electrification is gaining momentum in numerous decarbonisation efforts. By shifting from traditional fossil fuel-powered systems to electric alternatives, industries can significantly reduce their carbon footprint. Electric vehicles (EVs), for instance, offer a greener transportation solution compared to internal combustion engine (ICE) vehicles. Furthermore, integrating renewable energy sources such as solar, wind, hydro, and geothermal power into electricity generation is essential for reducing reliance on fossil fuels and achieving a cleaner energy mix.

In Malaysia, the planned National Energy Policy includes ambitious targets to increase the generation of renewable energy from sources like solar, biomass, and biogas. This renewable energy capacity expansion aligns with the nation's commitment to reducing carbon intensity and achieving sustainable energy practices.

To drive decarbonisation and achieve long-term environmental sustainability, industries must prioritise energy-saving measures and the adoption of energy-efficient technologies. This includes optimising manufacturing processes, implementing smart energy management systems, and investing in energy-efficient equipment. Additionally, exploring innovative solutions like energy recovery systems, waste heat utilisation, and energy conservation initiatives can contribute to significant energy savings and emissions reduction.

By setting clear goals and targets, such as those outlined in the Nationally Determined Contribution (NDC), industries can actively contribute to the national and global efforts to reduce carbon intensity. Meeting the NDC target of carbon intensity reduction by a certain percentage compared to a baseline year demonstrates the commitment to sustainable practices and aligns with the broader goals of the Paris Agreement.

Energy plays a critical role in decarbonisation and achieving green practices in industries. By embracing electrification, adopting renewable energy sources, and implementing energy-saving measures, industries can drive the transition to a low-carbon economy, reduce GHG emissions, and contribute to a sustainable and resilient future.



The scope for Energy in the Services sector includes four sub-indicators: Energy Efficiency, Renewable Energy, Energy Management System, and Emission Reduction.

SUB-INDICATOR	REQUIREMENT	OBJECTIVE EVIDENCE FOR ASSESSMENT	EXAMPLE GREEN PRACTICES
<b>ENERGY EFFICIENCY</b>	Targeted percentage of electricity and fuel consumption reduction achieved by the organisation	<ul style="list-style-type: none"> <li>• Meter energy usage readings</li> <li>• Bills of quantities for fuels</li> <li>• Certificate of Analysis (COA) for fuels</li> </ul>	<ul style="list-style-type: none"> <li>• Optimise energy flow in the production processes through heat optimisation.</li> <li>• Reduce energy consumption and emissions from building operation and activities.</li> </ul>
<b>RENEWABLE ENERGY</b>	Targeted percentage of renewable energy used by the organisation	<ul style="list-style-type: none"> <li>• Meter energy usage readings</li> <li>• Bills of quantities for fuels</li> <li>• COA for fuels</li> </ul>	<ul style="list-style-type: none"> <li>• Utilisation of renewable energy from process residues (waste materials, waste heat or solid waste), or from auxiliary facilities (solar, wind or equivalent).</li> <li>• Application of waste-to-energy technologies.</li> <li>• Installation of solar panel for energy supply to reduce electricity consumption.</li> </ul>
<b>ENERGY MANAGEMENT SYSTEM</b>	Demonstration of an Energy Management System set up within the organisation	Records supporting the setup, operation, and performance achieved by the Energy Management System	<ul style="list-style-type: none"> <li>• To establish policy or standard in the organisation which clearly indicates the green practice in mission and vision statement.</li> <li>• Periodically report on energy usage as a monitoring tool.</li> <li>• Developing and implementing a systematic procedure for energy management system.</li> </ul>
<b>EMISSION REDUCTION</b>	Targeted percentage of emissions reduction achieved by the organisation	GHG Inventory reports	<ul style="list-style-type: none"> <li>• Switching to low emission fuels.</li> <li>• Reduce energy use by utilising renewable energy.</li> </ul>



### 2.3.5 INNOVATION

Innovation plays a crucial role in driving green practices within the industry as manufacturers strive to adapt their business processes and activities to meet the demands of a competitive global market. By prioritising innovation, businesses can develop marketable, viable, and effective products that align with sustainability objectives.

One of the key indicators of innovation in green practices is research and development (R&D) efforts focused on green technology. Manufacturers invest in R&D to explore and develop innovative solutions that improve environmental performance and reduce the ecological footprint of their operations. This includes advancements in energy-efficient processes, waste reduction techniques, sustainable materials, and eco-friendly manufacturing methods.

Additionally, innovation in green practices encompasses the product development phase, which involves incorporating green product design principles. Manufacturers aim to create products that have minimal environmental impact throughout their lifecycle, from sourcing and production to use and disposal. This involves considering factors such as energy efficiency, recyclability, reduced resource consumption, and the use of environmentally friendly materials.

Setting goals and targets for innovation in green practices can drive organisational progress. Establishing robust research and development processes, output, and policies enables organisations to streamline their innovation efforts and focus on sustainable solutions. Increasing investment and incentives to support innovation in green practices further promote the commercialisation of environmentally friendly products. This can involve securing intellectual property rights, receiving awards and recognition, and fostering a culture of innovation within the organisation.

Strategic partnerships, collaborations, joint ventures, and knowledge transfer programmes are also vital for fostering innovation in green practices. By collaborating with other organisations, sharing knowledge and expertise, and leveraging collective resources, manufacturers can accelerate the development and implementation of sustainable solutions. These partnerships can lead to the commercialisation of innovative green products, technologies, and practices.

In conclusion, innovation is a critical measure of green practices in the industry. By prioritising research and development efforts, incorporating green product design principles, and establishing strategic partnerships, manufacturers can drive the adoption of sustainable solutions, reduce their environmental impact, and contribute to a greener and more sustainable future.



The scope for Innovation in the Services sector includes two sub-indicators: Knowledge Transfer & Collaboration and Research and Development (R&D).

SUB-INDICATOR	REQUIREMENT	OBJECTIVE EVIDENCE FOR ASSESSMENT	EXAMPLE GREEN PRACTICES
<b>KNOWLEDGE TRANSFER AND COLLABORATION</b>	Demonstration of knowledge transfer and strategic collaboration occurring in the organisation	Records and documentation such as MoU, MoA, IP, etc.	<ul style="list-style-type: none"> <li>Strategic partnership or collaborative project to commercialise green product for commercialisation, to create social value in targeted community and to improve current green practice.</li> <li>Develop strategic partnership/collaborated project MoU/MoA and proved ROI in building operations and activities to optimise lifetime of building services system within building compound area.</li> </ul>
<b>RESEARCH AND DEVELOPMENT (R&amp;D)</b>	Demonstration of R&D activities occurring in the organisation	Records and documentation such as organisation charts, procedures, blueprints, proposals, etc.	<ul style="list-style-type: none"> <li>Develop and implement policies related to allocation of resources towards R&amp;D within the organisation.</li> <li>Making strategic investment in R&amp;D and innovations that enable green technologies to be embedded into existing infrastructure, systems, and processes.</li> </ul>



### 2.3.6 MANAGEMENT

Management plays a crucial role in driving and implementing green practices within the industry. The administration of an organisation, company, or business is responsible for creating forward-thinking policies and strategies that support the development of a more sustainable form of business. By embracing environmentally responsible practices, businesses can minimise the negative impacts of their manufacturing processes on the environment and contribute to a greener future.

Going beyond compliance with legal requirements, being environmentally responsible means investing in human capital and adopting management practices that actively contribute to the industry's green initiatives. This involves fostering a culture of sustainability within the organisation, where all stakeholders, including employees and customers, are engaged in reducing environmental impacts. Effective management practices focus on integrating sustainable principles into decision-making processes, resource allocation, and operational strategies.

The global shift towards a green economy, driven by ESG frameworks and investment systems, is transforming the landscape of job creation, skills development, and job quality. Businesses that prioritise green practices and demonstrate commitment to environmental sustainability are better positioned to thrive in this evolving economic landscape. By proactively adopting green manufacturing principles, manufacturers can align their initiatives with the goal of achieving a greener future.

Manufacturers have the flexibility to choose and prioritise their initiatives within the realm of green manufacturing based on their level of readiness and business objectives. This includes focusing on green energy solutions, developing green products, and implementing green processes. By incorporating renewable energy sources, reducing carbon emissions, and optimising resource usage, manufacturers can enhance their environmental performance while improving operational efficiency.

The government has developed various initiatives to support and propel the adoption of green practices in the industry. Programs such as the MyHIJAU SME & Entrepreneur Development Programme, Energy Audit Grant for the industrial sector, Energy Management Gold Standard (EMGS), Enhanced Time of Use tariff (EToU), and ISO14001 certification provide valuable resources and incentives for businesses to embrace sustainability. These initiatives encourage manufacturers to actively engage in green practices, implement energy-saving measures, adopt environmentally friendly technologies, and strive for continuous improvement in their environmental performance.



In conclusion, effective management practices are essential for driving green practices within the industry. By adopting forward-thinking policies, fostering a culture of sustainability, and embracing green initiatives, businesses can minimise their environmental footprint, meet the demands of a changing economic landscape, and contribute to a more sustainable future.

The scope for Management in the Services sector includes three sub-indicators: Green Procurement, Policy & Programme, and Human Capital.

SUB-INDICATOR	REQUIREMENT	OBJECTIVE EVIDENCE FOR ASSESSMENT	EXAMPLE GREEN PRACTICES
<b>GREEN PROCUREMENT</b>	Demonstration of green procurement practices occurring in the organisation	Records and documentation such as policies and standards, agreements, purchase records, etc.	<ul style="list-style-type: none"> <li>• Include environmental requirements in specifications with contractors, suppliers, and service providers.</li> <li>• Establish a mechanism to determine level of greenhouse gas emissions generated by suppliers.</li> </ul>
<b>POLICY AND PROGRAMME</b>	Demonstration of policies and programs practices occurring in the organisation that support Green Practices	Records and documentation such as MoU, MoA, IP, etc.	<ul style="list-style-type: none"> <li>• Promotion of recycling and reuse practices to raise awareness of responsible and sustainable consumption.</li> <li>• Develop green policies or operating standards to integrate sustainability in business operations across several departments, foster innovation, and boosts engagement.</li> </ul>
<b>HUMAN CAPITAL</b>	Demonstration of a human capital development programme in the organisation that supports Green Practices	Records and documentation such as policies and standards, records of training, etc.	<ul style="list-style-type: none"> <li>• Open opportunities to the current workforce to become competent person for environmental management and green practices.</li> <li>• Development of career paths for competent person related to environment protection and climate action such as environmental auditor and that of similar roles.</li> </ul>












3






## IMPLEMENTATION OF GREEN PRACTICES

### 3.1 INDICATOR ALIGNMENT

In this section, a framework is introduced to help industries in recognising various certificates, recognitions, and benefits that exist within Malaysia. Using this framework, businesses can refer to the specific guidelines and best practices that support the application of green practices in the industry. Businesses can also refer to the indicators that align with the various existing initiatives.

EXISTING INITIATIVES	AGENCY/ INSTITUTIONS REFERENCE	DESCRIPTION	CRITERIA FOR ASSESSMENT	GREEN PRACTICES INDICATOR	BENEFITS	SCAN FOR LINK)
<b>GREEN INVESTMENT TAX ALLOWANCE (GITA)</b>	MIDA	Incentives or companies that undertake Green Technology projects involving capital investments.	Renewable Energy (RE); Energy Efficiency (EE); Green Building; Green Data Centre; Integrated Waste Management		Tax allowance	
<b>GREEN INCOME TAX EXEMPTION (GITE)</b>	MIDA	Incentives for companies that carry out services that support the implementation and operation of Green Technology projects.	Renewable Energy (RE); Energy Efficiency (EE); Green Building; Green Data Centre; Green Certification and Verification; Green Township; Electrical Vehicle		Tax exemption	
<b>MyHIJAU MARK</b>	MGTC	A government initiative to promote the sourcing and purchasing of green products and services in Malaysia.	Existing Green Label Certification or Performance Standard Compliance report from an independent certification body that meets the minimum standards recognised by MGTC		Eligibility for Government Green Procurement (GGP), Green Private Purchasing (GPP), and may be eligible for GITA or GITE	
<b>ECO-LABELLING SCHEME</b>	SIRIM	This labelling gives eco-friendly products a competitive advantage over similar products.	Compliance with product standards or specifications and the relevant eco-labelling criteria, as well as relevant provisions in the Environmental Quality Act		Boost acceptance of products in international “green markets” that favour green products with a premium price	

EXISTING INITIATIVES	AGENCY/ INSTITUTIONS REFERENCE	DESCRIPTION	CRITERIA FOR ASSESSMENT	GREEN PRACTICES INDICATOR	BENEFITS	SCAN FOR LINK)
<b>ANUGERAH INDUSTRI HIJAU</b>	Dept. of Environment (DOE)	An initiative by the DOE to provide special recognition and encouragement to SMEs for the efforts of implementing green industry practices.	Green activities and initiatives on water usage, electricity, fuel, raw materials, packaging materials, waste production, product loss, raw materials lost, and wastewater production		Improved reputation and branding	
<b>NATIONAL ENERGY AWARDS (NEA)</b>	MGTC	A platform to provide recognition and rewards to Malaysia's industry leaders in the growing green technology-related products, services and energy services sectors for adopting and implementing sustainable energy practices.	Energy Efficiency (EE), Renewable Energy (RE)		International recognition and eligible to represent Malaysia at the annual ASEAN Energy Awards, Southeast Asia's highest energy awards	
<b>PRIME MINISTER'S HIBISCUS AWARDS</b>	ENSEARCH, FMM & MICCI with recognition from NRECC	Provide an opportunity for public recognition of businesses and industry's environmental commitment, management, and performance	Leadership; Priority and commitment; Managing environmental issue; Training and communication; Legal and other compliance; Environmental emergencies; Employee participation; Supply chain; Environmental social programme; Environmental accounting; Eco-design; Carbon footprint		National recognition with a Plaque and Certificate of Participation, and eligibility to include the award's logo for promotional activities	
<b>NATIONAL GREEN TECHNOLOGY POLICY (NGTP)</b>	NRECC *previously developed under KeTTHA	This policy recognises green technology as a driver to accelerate the national economy and promote sustainable development	Energy sector; Building sector; Water and waste management sector; Transportation sector		Reduction in the rate of GHG emission	

EXISTING INITIATIVES	AGENCY/ INSTITUTIONS REFERENCE	DESCRIPTION	CRITERIA FOR ASSESSMENT	GREEN PRACTICES INDICATOR	BENEFITS	SCAN FOR LINK)
<b>LOW CARBON CITIES FRAMEWORK (LCCF)</b>	NRECC	Provide a framework to achieve sustainable development that will help in reducing carbon emissions by measuring the impact of development decisions in terms of carbon emissions and abatement.	Urban Environment; Urban Transport; Urban Infrastructure; Building		Reduction performance will be awarded an environmental performance rating	
<b>FEED-IN TARIFF (FIT)</b>	SEDA	The mechanism under the Renewable Energy Policy to catalyse generation of Renewable Energy (RE) up to 30 MW in size.	Biogas; Biomass; Small Hydropower; Solar Photovoltaic		Reduce CO <sub>2</sub> emissions and secure domestic energy supply, and guarantee investment security for renewable energy investors	
<b>GREEN ELECTRICITY TARIFF (GET)</b>	NRECC	Encourage the use and purchase of green electricity from large-scale solar and hydroelectric plants along with supporting the nation's aspiration to reduce net-zero GHG emissions by 2050.	Residential customer (100kWh per block); Non-residential customer (1000kWh per block)		Subscribers able to receive Malaysia Energy Certificate (mREC) based on international REC standards and exempted from ICPT charge	
<b>MALAYSIA ELECTRICITY SUPPLY INDUSTRY TRUST ACCOUNT (MESITA)</b>	NRECC	Funding for programmes or projects that support the development of the national power industry including renewable energy R&D, human resources, and energy efficiency.	Electricity supply		Funding for programmes and projects	
<b>ENERGY MANAGEMENT GOLD STANDARD (EMGS)</b>	MGTC	Certification system delivered under the ASEAN Energy Management Scheme (AEMAS) based on excellence in energy management.	Energy management		Recognised as a leader in energy management	

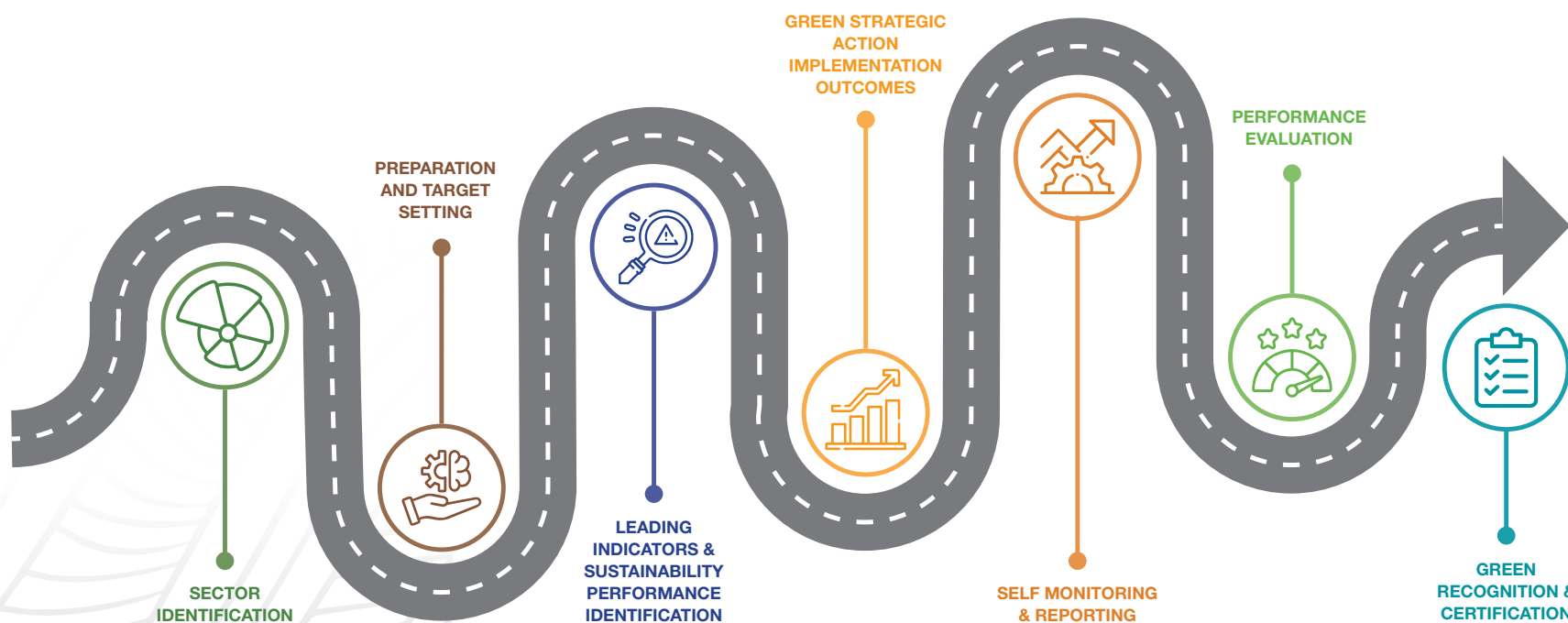
## 3.2 TOWARDS GREEN RECOGNITION

This guideline presents recommendations and proposed actions for the industry to implement green practices in their daily operations. It is driven by the vision of establishing a Green Certificate that recognises and rewards sustainable practices within the industry.

To support the industry in implementing green practices, a comprehensive Green Certificate Roadmap has been developed. This roadmap serves as a strategic guide, assisting industry players in adopting and implementing sustainable practices within their operations. It provides a structured approach to ensure that the industry is equipped with the necessary knowledge and resources to effectively integrate green practices.

The long-term goal is to enable industry players who have successfully implemented green and best practices to apply for the Green Certificate. This certification would serve as a formal recognition of their commitment to sustainability and environmental stewardship. As part of the proposed roadmap, industry players meeting the eligibility criteria for the Green Certificate may also benefit from proposed financing incentives and support.

By establishing the Green Certificate and associated benefits, the industry is encouraged to prioritise and embrace sustainable practices. This initiative not only acknowledges the efforts of the industry in adopting green practices but also serves as a catalyst for knowledge sharing and collaboration across the sector. Ultimately, the Green Certificate aims to drive widespread adoption of sustainable practices, promote environmental protection, and contribute to the overall sustainability goals of the services sector in Malaysia.



### 3.3 WAY FORWARD

To remain competitive and contribute to environmental protection in the service sector, businesses must proactively stay ahead of emerging trends and market requirements. Adopting circular business models, embracing ESG disclosure, transitioning to renewable energy sources, implementing carbonisation efforts, and exploring green financing and investment opportunities are critical steps forward.

The integration of green practices within a business's operations is essential for fulfilling environmental responsibilities and aligning with the broader ESG framework. Investors increasingly consider ESG factors when making decisions, recognising the value of sustainable and responsible business practices. Regulatory requirements and stock exchange listings reinforce the importance of ESG disclosure for companies in the service sector.

By incorporating ESG disclosure, companies in the service sector can communicate their environmental initiatives, such as implementing energy-efficient operations, implementing waste reduction measures, utilising renewable energy sources, and undertaking efforts to mitigate climate change. Effective ESG disclosure enhances a company's reputation, attracts socially conscious investors, ensures regulatory compliance, and contributes to long-term value creation.

In evaluating the long-term sustainability and resilience of service businesses, it is crucial to consider ESG factors alongside financial performance. This holistic approach enables companies to assess their environmental impact, social responsibility, and governance practices, ensuring alignment with sustainable development goals, investor expectations, and regulatory requirements.

Embracing ESG factors and integrating green practices in the service sector not only positions businesses as responsible environmental stewards but also provides a competitive edge in the market. By proactively addressing environmental challenges, adopting sustainable practices, and incorporating ESG considerations, service companies can secure their long-term viability, attract investment, comply with regulations, and contribute positively to the transition towards a sustainable and resilient economy.



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## CASE STUDIES

Exploring How Current Practices of  
Hotel Operators in Langkawi UNESCO  
Global Geopark Reduce Waste  
Generation through Sustainable Food  
Waste Management



## DESCRIPTION:

This case study delves into the current practices of hotel operators in Langkawi UNESCO Global Geopark and how they effectively manage to reduce waste generation through sustainable food waste management. As a vital contributor to the local economy and employment opportunities, the hotel sector in Langkawi faces the challenge of addressing the environmental and social impact caused by food waste. Implementing sustainable food waste management practices becomes crucial to mitigate these issues while optimising resource utilisation and reducing operational costs.

## EFFORTS:

To examine the existing practices, structured and self-administered questionnaires were used to gather data from 42 hoteliers in Langkawi. The study scrutinised the entire spectrum of food waste management, encompassing the purchasing of food resources, storage, food preparation, serving, management of leftover food and plate waste, and disposal. The findings highlighted a lack of emphasis on food wastage policies and unsustainable consumption patterns among guests, underscoring the need for improvement in sustainable food waste management practices within the hotel sector.



KILIM GEOFOREST PARK

## REDUCTION STRATEGIES:

Despite the challenges, several strategies employed by hotel operators in Langkawi have proven effective in reducing waste generation such as:

1. **SMART PURCHASING:** Hoteliers are encouraged to only procure food ingredients according to their immediate needs, reducing the likelihood of excess perishable items and subsequent waste. Additionally, they prioritise checking the quality and expiry dates of purchased food resources to ensure optimal usage.
2. **EFFICIENT STORAGE:** Hotel operators adopt the “first-in, first-out” principle to organise food ingredients, minimising the chances of spoilage and waste. Proper labeling of items, including expiry dates and storage instructions, further assists in maintaining food quality and reducing unnecessary discarding.
3. **CONTROLLED FOOD PREPARATION:** Hoteliers strive to prepare precise quantities of food, avoiding overproduction and subsequent wastage. Guest demands are taken into account during preparation, ensuring customer satisfaction while minimising excess food.
4. **MINDFUL SERVING PRACTICES:** Effective communication between wait staff and guests plays a significant role in reducing plate waste. Clear explanations of cooking methods, ingredients used, and portion sizes help guests make informed choices and avoid ordering more than they can consume.
5. **MANAGEMENT OF LEFTOVERS AND PLATE WASTE:** While challenges exist due to strict hotel policies and food safety standards, hotel operators explore alternatives for managing leftover food. Options include repurposing leftovers for staff meals, donating to charitable organisations, and implementing penalties for excessive plate waste. Encouraging guests to take home leftovers further reduces waste.
6. **SUSTAINABLE DISPOSAL:** Practices such as composting organic kitchen waste and segregating food waste contribute to sustainable disposal methods. Additionally, pursuing food waste reduction programmes and conducting waste audits help identify areas for improvement.

## CONCLUSION:

The current practices of hotel operators in Langkawi UNESCO Global Geopark exemplify a holistic approach to sustainable food waste management, targeting various stages of the waste generation process. Through strategic measures, including smart purchasing, efficient storage, controlled food preparation, mindful serving practices, and sustainable disposal, hotel operators successfully reduce waste generation. These efforts promote environmental protection, optimise resource utilisation, and minimise the strain on landfills, ultimately contributing to a more sustainable hotel sector. By adopting these practices, hotel operators can serve as role models within the tourism industry and inspire others to implement similar initiatives in their respective destinations.





## APPENDIX

# GLOSSARY

## ASSESSOR

An individual or a group of people assigned to conduct green practices assessment in order to measure the level of green practices performance of an organisation.

## CIRCULAR ECONOMY

A circular economy is an economic system in which resources are used, reused, and recycled in a closed loop, rather than being extracted, used, and then discarded as waste. It is based on the principles of reducing, reusing and recycling, and it is designed to minimise waste and pollution while conserving natural resources.

## ENVIRONMENTAL, SOCIAL AND GOVERNANCE

Set of criteria that measures the ethical and sustainability impacts of an investment in a company or business.

## GREEN PRACTICES GUIDELINE

A document that provides guide for the industry in implementing green practices within their operations.

## GREEN PRACTICES

Environmentally friendly actions, which promote environment protection and sustainable development.

## GREENHOUSE GAS

Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, but are not limited to, water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrochlorofluorocarbons (HCFCs), ozone (O<sub>3</sub>), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). See carbon dioxide, methane, nitrous oxide, hydrochlorofluorocarbon, ozone, hydrofluorocarbon, perfluorocarbon, sulfur hexafluoride.

## INDICATOR

A metrics concerning energy, water, waste, material, innovation and management that measures level of green practices of an organisation.

## INSTRUMENT

A tool comprises of data collection form, instrument factsheet and rubric that is used by assessor to evaluate level of green practices in an organisation.

## RUBRIC

A set of sustainable criteria for assessing level of green practices in an organisation.

## SUSTAINABLE DEVELOPMENT GOALS

A universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.







# ACRONYM

<b>3R</b>	Reduce, Reuse, Recycle	<b>IPCC</b>	The Intergovernmental Panel on Climate Change
<b>CO<sub>2</sub></b>	Carbon Dioxide	<b>LCA</b>	Life Cycle Analysis
<b>COP26</b>	The 2021 United Nations Climate Change Conference	<b>LCC</b>	Life Cycle Costing
<b>CQI</b>	Continuous Quality Improvement	<b>MGTC</b>	Malaysian Green Technology and Climate Change Corporation
<b>DSTIN</b>	Dasar Teknologi dan Inovasi Negara	<b>NDC</b>	Nationally Determined Contribution
<b>ESG</b>	Environmental, Social and Governance	<b>SDG</b>	Sustainable Development Goals
<b>FGD</b>	Focus Group Discussion	<b>SME</b>	Small Medium Enterprise
<b>GDP</b>	Gross Domestic Product	<b>SOP</b>	Standard Operating Procedure
<b>GHG</b>	Greenhouse Gas	<b>SPAN</b>	Suruhanjaya Perkhidmatan Air Negara
<b>GP</b>	Green Practice	<b>TE</b>	Technical Expert
<b>GT</b>	Green Technology	<b>UN</b>	United Nations
<b>GTMP</b>	Green Technology Master Plan	<b>UNFCC</b>	The United Nations Framework Convention on Climate Change

## DATA COLLECTION TEMPLATE

GENERAL INFORMATION		
AUDIT INFORMATION		
AUDIT	ITEMS	DESCRIPTION
1	Objective	:
2	Scope	:
3	Auditor's Name	:
INFORMATION OF PREMISE		
AUDIT	ITEMS	DESCRIPTION
1	Name of Premise	:
2	Address	:
3	Total No. of Employee	:
4	Operation Hours	:
5	Type of Sector	:
6	Year of Operation	:
7	History of DOE Enforcement Involvement	:

## INDICATOR MATRIX

INDICATOR SUB INDICATOR		WEIGHTAGE BY SUB-INDICATOR	WEIGHTAGE BY INDICATOR
 MATERIALS	Sustainable Materials	50	10
	Sustainable Services	50	
 WASTE	Wastewater	N/A	20
	Non-Hazardous Waste	80	
	Hazardous Waste	20	
 WATER	Water Efficiency	70	20
	Water Exploration	30	
 ENERGY	Emission Reduction	30	30
	Energy Efficiency	30	
	Energy Management System	10	
	Renewable Energy	30	
 INNOVATION	Research and Development	50	10
	Knowledge Transfer & Collaboration	50	
 MANAGEMENT	Policy & Programme	30	10
	Green Procurement	40	
	Human Capital	30	
		TOTAL	100

## EVALUATION INDICATOR MATRIX

INDICATOR	SUB INDICATOR	WEIGHTAGE BY SUB-INDICATOR	MARK BY SUBINDICATOR (A)	INPUT MARKS HERE	WEIGHTAGE BY INDICATOR (B)	MARK BY INDICATOR $\Sigma(A) \times (B) / 100$
MATERIALS	Sustainable Materials	50	$x / 4 \times 50$	x	10	
	Sustainable Services	50	$x / 4 \times 50$	x		
WASTE	Wastewater		N/A		20	
	Non-Hazardous Waste	80	$x / 4 \times 80$	x		
	Hazardous Waste	20	$x / 4 \times 20$	x		
WATER	Water Efficiency	70	$x / 4 \times 70$	x	20	
	Water Exploration	30	$x / 4 \times 30$	x		
ENERGY	Emission Reduction	30	$x / 4 \times 30$	x	30	
	Energy Efficiency	30	$x / 4 \times 30$	x		
	Energy Management System	10	$x / 4 \times 10$	x		
	Renewable Energy	30	$x / 4 \times 30$	x		
INNOVATION	Research and Development	50	$x / 4 \times 50$	x	10	
	Knowledge Transfer & Collaboration	50	$x / 4 \times 50$	x		
MANAGEMENT	Policy & Programme	30	$x / 4 \times 30$	x	10	
	Green Procurement	40	$x / 4 \times 40$	x		
	Human Capital	30	$x / 4 \times 30$	x		
TOTAL					100	
<b>STAR RATING</b> (Please tick based on the star rating assessment criteria)					1-Star	
					2-Star	
					3-Star	

## STAR RATING (ASSESSMENT CRITERIA)



**(60% - 70%)**

Comply to all  
regulatory requirements

Demonstrate leadership  
in developing systematic  
environmental reporting practical



**(71% - 80%)**

Exhibit characteristics  
of being resource efficient

Demonstrating positive  
impacts from green practices

Incorporate and implement continuous  
quality improvement initiatives  
throughout business operations



**(81% - 100%)**

Demonstrate integration of  
governance framework related to  
sustainability and circular economy

Demonstrate capacity in contributing  
towards achieving national  
decarbonisation targets

Demonstrates leadership in  
developing, expanding and applying  
new tech related to green practices

MARKS	STAR RATING
0	No Star
60	1 Star
71	2 Star
81	3 Star
100.1	Invalid

## DATA COLLECTION FORM

## MATERIALS INDICATOR

## INDICATOR: MATERIALS

## SUB-INDICATOR: SUSTAINABLE MATERIALS

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	Demonstration on purchase/utilisation of sustainable materials utilisation WITH specific direction/vision; WITH self-regulation implementation (evidence on correlation on sustainability goals); and received recognition/certification from third party/ies certificate body	<i>Company Sustainability Report:</i> A report published by a company or organisation about environmental, social, and governance (ESG) impacts containing specific policy statements or guidelines or instructions for green material application as well as the practice of self-regulation on the application (through monitoring) to show the correlation with the sustainability goal and to provide evidence of related certificate or proof of recognition.	
	3	Demonstration on purchase/utilisation of sustainable materials utilisation WITH specific direction/vision; WITH self-regulation implementation (evidence of correlation on sustainability goals)	<i>Company Sustainability Report:</i> A report published by a company or organisation about environmental, social, and governance (ESG) impacts containing specific policy statements or guidelines or instructions for green material application as well as the practice of self-regulation on the application (through monitoring) to show the correlation with the sustainability goal.	
	2	Demonstration on purchase/utilisation of sustainable materials utilisation WITH specific direction/vision	<i>Company Sustainability Report:</i> A report published by a company or organisation about environmental, social, and governance (ESG) impacts containing specific policy statements or guidelines or instructions for green material application.	
	1	Demonstration on purchase/utilisation of sustainable materials utilisation	<i>Company Sustainability Report:</i> A report published by a company or organisation about environmental, social, and governance (ESG) impacts.	
	0	None	No initiative at all	

## INDICATOR: MATERIALS

## SUB-INDICATOR: SUSTAINABLE SERVICES

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	Demonstration on purchase/utilisation of sustainable services utilisation WITH specific direction/vision; WITH self-regulation implementation (evidence on correlation on sustainability goals); and received recognition/certification from third party/ies certificate body	<i>Company Sustainability Report:</i> A report published by a company or organisation about environmental, social, and governance (ESG) impacts containing specific policy statements or guidelines or instructions for green services application as well as the practice of self-regulation on the application (through monitoring) to show the correlation with the sustainability goal and to provide evidence of related certificate or proof of recognition.	
	3	Demonstration on purchase/utilisation of sustainable services utilisation WITH specific direction/vision; WITH self-regulation implementation (evidence of correlation on sustainability goals)	<i>Company Sustainability Report:</i> A report published by a company or organisation about environmental, social, and governance (ESG) impacts containing specific policy statements or guidelines or instructions for green services application as well as the practice of self-regulation on the application (through monitoring) to show the correlation with the sustainability goal.	
	2	Demonstration on purchase/utilisation of sustainable services utilisation WITH specific direction/vision	<i>Company Sustainability Report:</i> A report published by a company or organisation about environmental, social, and governance (ESG) impacts containing specific policy statements or guidelines or instructions for green services application.	
	1	Demonstration on purchase/utilisation of sustainable services utilisation	<i>Company Sustainability Report:</i> A report published by a company or organisation about environmental, social, and governance (ESG) impacts.	
	0	None	No initiative at all	

## WASTE INDICATOR

INDICATOR: WASTE				
SUB-INDICATOR: NON-HAZARDOUS WASTE				
SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	Initiative/technology available (e.g., biogas capture facility and etc.); implemented; WITH monitoring in place; WITH $\geq$ 40% recycle rate; and WITH validation/certification/recognition	<i>Validation/certification/recognition:</i> Refers to documents issued by third party that confirms performance and achievement in meeting certain standard or criteria.	
	3	Initiative/technology available (e.g., biogas capture facility and etc.); implemented; WITH monitoring in place; WITH $\geq$ 40% recycle rate	<i>Monitoring records:</i> Refers to documents/records used as evidence and primary data for the purpose of calculating the intended goals and targets. Examples of records that can be referred to are record of wastes generated, recycled, reused, repurposed, disposed. Examples of CQI evidence including positive outcome to cost saving; OR profit generation; OR reduce environmental impact.	
	2	Initiative/technology available (e.g., biogas capture facility and etc.) implemented; WITH monitoring in place	<i>Relevant contract agreements:</i> Documents referred to as evidence for indicating mutual obligations between the parties. Examples are agreement made by the organisation with the intention to manage non-hazardous waste in a sustainable manner.	
	1	Initiative/technology available (e.g., biogas capture facility and etc.)	<i>Purchasing records and documents:</i> Documents that serve as evidence of the organisation acquiring services or/and products/systems.	
	0	NO initiative of waste diversion to disposal	<i>Installation/maintenance records:</i> Documents that serve as evidence for installation and maintenance of technologies in the organisation.	

## INDICATOR: WASTE

## SUB-INDICATOR: HAZARDOUS WASTE

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	Initiative/technology available; implemented; WITH monitoring in place; WITH $\geq 50\%$ recycle rate; and WITH validation/certification/recognition	<i>Validation/certification/recognition:</i> Refers to documents issued by third party that confirms performance and achievement in meeting certain standard or criteria.	
	3	Initiative/technology available; implemented; WITH monitoring in place; WITH $\geq 50\%$ recycle rate	<i>Monitoring records:</i> Refers to documents/records used as evidence and primary data for the purpose of calculating the intended goals and targets. Examples of records that can be referred to are record of wastes generated, recycled, reused, repurposed, disposed. Examples of continuous quality improvement (CQI) evidence including positive outcome to cost saving; OR profit generation; OR reduce environmental impact.	
	2	Initiative/technology available; implemented; WITH monitoring in place; WITH $\geq 50\%$ recycle rate	<i>Relevant contract agreements:</i> Documents referred to as evidence for indicating mutual obligations between the parties. Examples are agreement made by the organisation with the intention to manage hazardous waste in a sustainable manner.	
	1	Initiative/technology available	<i>Purchasing records and documents:</i> Documents that serve as evidence of the organisation acquiring services or/and products/systems.	
	0	NO initiative of waste diversion to disposal	<i>Installation/maintenance records:</i> Documents that serve as evidence for installation and maintenance of technologies in the organisation. Other initiatives including minimising the feed to avoid over generation of hazardous waste.	

## WATER CONSERVATION INDICATOR

## INDICATOR: WATER

## SUB-INDICATOR: WATER EXPLORATION

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	30% of Alternative Water used	Metered water usage readings (i.e., m <sup>3</sup> ), utility bills (i.e., m <sup>3</sup> ), or any other documents recording the water consumption for the organisation.	
	3	20% of Alternative Water used	Metered alternative water consumption readings (i.e., m <sup>3</sup> ), utility bills (i.e., m <sup>3</sup> ), or any other documents recording the alternative water consumption for the organisation. In the event that consumption data for alternative water is not available, alternative water production readings can be used.	
	2	10% of Alternative Water used		
	1	5% of Alternative Water used		
	0	No Alternative Water used		

## INDICATOR: WATER

## SUB-INDICATOR: WATER EFFICIENCY

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	30% of water savings	Metered water usage readings (i.e., m <sup>3</sup> ), utility bills (i.e., m <sup>3</sup> ), or any other documents recording the water consumption for the organisation.	
	3	20% of water savings		
	2	10% of water savings		
	1	5% of water savings		
	0	No water savings		

## ENERGY INDICATOR

## INDICATOR: ENERGY

## SUB-INDICATOR: EMISSION REDUCTION

SCORE PLEASE TICK (✓)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	45% emission reduction achieved	GHG Inventory reports prepared in accordance to nationally or internationally recognised standards.	
	3	35% emission reduction achieved		
	2	25% emission reduction achieved		
	1	15% emission reduction achieved		
	0	No emission reduction achieved		

## INDICATOR: ENERGY

## SUB-INDICATOR: ENERGY EFFICIENCY

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	8% of energy savings	<i>Energy consumption:</i> Meter energy usage readings (i.e., kWh, kJ, MMBTU), utility bills (i. e. kWh, kJ, MMBTU), or any other documents recording the energy consumption for the organisation.	
	3	6% of energy savings	<i>Fuel consumption:</i> Bills of quantities for fuels (i.e., litres of fuel, kg of fuel, cu.ft. of gases), or any other documents recording the fuel consumption for the organisation.	
	2	4% of energy savings	<i>Certificates of analysis (COA):</i> COA for fuels shall be referred to determine calorific values of fuels used (if applicable).	
	1	2% of energy savings		
	0	No energy savings		

## INDICATOR: ENERGY

## SUB-INDICATOR: ENERGY MANAGEMENT SYSTEM

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	External certification received for energy management system	<i>Organisation energy policies:</i> Organisation policies or guidelines specific to energy or main policy documents which specifically address energy efficiency plan and target.	
	3	Energy saving measures implemented; WITH systematic reporting and monitoring system; WITH energy policies in place	<i>Organisation mission and vision statements:</i> Organisation mission and vision statements specific to energy or main policy documents.	
	2	Energy saving measures implemented; WITH systematic reporting and monitoring system; WITHOUT energy policies in place	<i>Energy management activity:</i> Records and documentation related to energy management activity that include the energy management committee and energy audit.	
	1	Energy saving measures implemented; WITHOUT systematic reporting and monitoring system; WITHOUT energy policies in place	<i>Data related to energy management activity:</i> Records and documentation of energy consumption, renewable energy, energy saving and performance within the organisation.	
	0	No energy management system	Reports, reviews by third parties, or certifications received by the organisation based on locally or internationally recognised standards.	

## INDICATOR: ENERGY

## SUB-INDICATOR: RENEWABLE ENERGY

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	40% of Renewable Energy used	<i>Energy consumption:</i> Metered energy usage readings (i.e., kWh, k.J, MMBTU), utility bills (i.e. kWh, k.J, MMBTU), or any other documents recording the energy consumption for the organisation.	
	3	30% of Renewable Energy used	<i>Renewable energy consumption:</i> Metered renewable energy production readings (i.e., kWh, k.J ), utility bills (i .e., kWh, k.J, MMBTU), or any other documents recording the renewable energy consumption for the organisation.	
	2	20% of Renewable Energy used	<i>Fuel consumption:</i> Bills of quantities for fuels (i.e. litres of fuel, kg of fuel, cu.ft. of gases), or any other documents recording the fuel consumption for the organisation.	
	1	10% of Renewable Energy used	<i>Certificates of analysis (COA):</i> COA for fuels shall be referred to determine calorific values of fuels used (if applicable).	
	0	No Renewable Energy used		

## INNOVATION INDICATOR

## INDICATOR: INNOVATION

## SUB-INDICATOR: RESEARCH AND DEVELOPMENT (R&amp;D)

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	Visible Return on Value based on R&D process/initiative/output managed by innovation unit/department/personnel, resulting in commercialisation/intellectual property filing/registration and award	<b><i>Proof of in-house R&amp;D Process</i></b>	
	3	Established in house R&D process relating to Green Practices/Sustainable Initiatives with proven investment managed by Innovation unit/department/personnel	<i>Organisational Structure:</i> Refers to systems which outlines how innovation activities are formalised through functions within an R&D unit within the boundaries of the organisations under evaluation, OR	
	2	Established inhouse R&D process relating to Green Practices/Sustainable Initiatives managed by Innovation unit/department/personnel	<i>Appointment Letter or Minutes of Meeting:</i> indicating specific person-in-charge of an R&D project related to Green Practices, OR	
	1	Established inhouse R&D process relating to Green Practices/Sustainable Initiatives	<i>Project Charter:</i> A document that describes an innovation project in its entirety that includes an overview, an outline of scope, an approximate schedule, a budget estimate, anticipated risks, and key stakeholders.	
	0	None	<b><i>Proof of R&amp;D Investment</i></b>	
			<i>Grant Proposal:</i> A document proposing a research project requesting for sponsorship of that research, OR	
			<i>Grant Award Document:</i> A written agreement between the organisation and a grantee as the official notification of grant approval with evidence for contractual grant reporting, OR	
			<i>Investment records:</i> Financial documents/records used as evidence for internal and external investment of technology or system which enables innovation process/research/practise/development in the organisation	

## INDICATOR: INNOVATION

## SUB-INDICATOR: RESEARCH AND DEVELOPMENT (R&amp;D)

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
			<b><i>Proof of R&amp;D Outcome</i></b>	
			<i>Intellectual Property (IP):</i> Provisional IP application document/ e-filing document/published detailed of invention on intellectual protection within copyright, trademark, patents, geographical indications, plant varieties, industrial designs and semiconductor integrated circuit layout designs, OR	
			<i>Recognition/Award/Certification:</i> Refers to the state or quality innovation product/process/service that are recognized or acknowledged by certified bodies, OR	
			<i>Proof of Return on Value</i> <i>Economic Value:</i> Project completion report or Financial accounting report outlining investment, revenue and net profit based on commercialisation/marketing attribution success of innovative green products/services, OR	
			<i>Proof of Return on Value</i> <i>Social Value:</i> Project completion report with evidence of applied/ implemented/reviewed innovation practices which leads to, preset goals that are measurable improvements on existing practices of identified community.	
			<i>Proof of Return on Value</i> Project completion report with evidence of improvement on productivity/practice/system and resource and material efficiency leading to improved air and water quality/fewer waste/more renewable energy sources and other sustainable conditions	

## INDICATOR: INNOVATION

## SUB-INDICATOR: KNOWLEDGE TRANSFER AND COLLABORATION

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	Strategic partnership/Collaborative project <b>with signed MoU+MoA and visible Return on Value</b>	<i>Contract Agreements:</i> Documents indicating mutual obligations between two or more parties such as LOI/NDA/MoU/MoA.	
	3	Strategic partnership/Collaborative projects <b>with signed MoU+MoA</b>	<b><i>Proof of R&amp;D Outcome</i></b>	
	2	Strategic partnership/Collaborative projects <b>with signed MoU</b>	<i>Intellectual Property (IP):</i> Documents related to intellectual protection such as copyrights, trademarks, trade secret, industrial design, utility innovation or patent, OR	
	1	Strategic partnership/Collaborative projects <b>with NDA/LOI</b>	<i>Proof of Return on Value</i> <i>Economic Value:</i> Project completion report or Financial accounting report outlining investment, revenue and net profit based on commercialisation/marketing attribution success of innovative green products/services, OR	
	0	None	<i>Proof of Return on Value</i> <i>Social/Value:</i> Project completion report with evidence of applied/implemented/reviewed innovation practices which leads to preset goals that are measurable improvements on existing practices of identified community.	
			<i>Proof of Return on Value</i> Project completion report with evidence of improvement on productivity/practice/system and resource and material efficiency leading to improved air and water quality/fewer waste/more renewable energy sources and other sustainable conditions	

## MANAGEMENT INDICATOR

## INDICATOR: MANAGEMENT

## SUB-INDICATOR: POLICY AND PROGRAMME

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	A presence of policy related to sustainability, participate in any sustainability programme, produce a report related to the sustainability programme, and receive recognition at National and International level.	<i>Policy or standards:</i> Refers to a written policy and/or international/national standards used/implemented within the boundaries of the organisation.	
	3	A presence of policy related to sustainability, participate in any sustainability programme, produce a report related to the sustainability programme and receive recognition or certification.	<i>Monitoring records:</i> Refers to documents/records used as evidence and primary data for the purpose of achieving the intended goals.	
	2	A presence of policy related to sustainability, participate in any sustainability programme, and produce a report related to the sustainability programme.	<i>Contract Agreements:</i> Documents referred to as evidence for indicating mutual obligations between the parties.	
	1	A presence of policy related to sustainability and participate in any sustainability programme.		
	0	None		

## INDICATOR: MANAGEMENT

## SUB-INDICATOR: GREEN PROCUREMENT

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	A presence of policy and practice of green procurement, record of purchases as evidence including eco-label certified services or/and products/systems.	<i>Policy or standards:</i> Refers to a written policy and/or international/national standards used/implemented within the boundaries/organisations.	
	3	A presence of policy and practice of green procurement and record of purchases as evidence.	<i>Monitoring records:</i> Refers to documented agreement on green procurement related to services or/and products/systems (LoI/MoU/MoA).	
	2	A presence of policy and practice of green procurement.	<i>Contract agreements:</i> Documents referred to as evidence for indicating mutual obligations between the parties.	
	1	A presence of green procurement policy.	<i>Purchasing records and documents:</i> Documents that serves as evidence of the organisation acquiring services or/and products/systems.	
	0	None		

## INDICATOR: MANAGEMENT

## SUB-INDICATOR: HUMAN CAPITAL

SCORE PLEASE TICK (/)	POINT	SCORE CRITERIA	DATA SOURCES/EVIDENCE	ATTACHMENT REFERENCE
	4	A presence of human capital development policy to establish lifelong learning culture on green practices.	<i>Policy or standards:</i> Refers to a written policy and/or international/national standards used/implemented within the boundaries/organisations.	
	3	Key performance indicator that is related to human capital development of green practices.	<i>Monitoring records:</i> Refers to documents/records used as evidence and primary data for the purpose to achieve the intended goals.	
	2	Mission and vision of the organisation related to human capital development of green practices.	<i>Contract agreements:</i> Documents referred to as evidence for indicating mutual obligations between the parties.	
	1	Minutes of meetings related to human capital development of green practices.		
	0	None		

## INDICATOR INSTRUMENT FACTSHEET

# INDICATOR: MATERIALS

## SUB-INDICATOR: SUSTAINABLE MATERIALS

### 1. INDICATOR INFORMATION

#### 1.1. GOALS AND TARGETS

Goal 1: Encourage companies to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

The goal of this instrument is mapped to the following global goals and National targets:

#### United Nations Sustainable Development Goals

*SDG 12:* Ensure sustainable consumption and production patterns

- a) *SDG Target 12.4:* Responsible management of chemical and waste
- b) *SDG Target 12.6:* Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
  - i) *SDG Target Indicator 12.6.1:* Number of companies publishing sustainability reports.

#### 1.2. INDICATOR

Materials

#### 1.3. SUB-INDICATOR

Sustainable Materials

#### 1.4. LAST UPDATE

3 January 2023

#### 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Services
- Fisheries (Aquaculture)
- Manufacturing
- Livestock
- Mining
- Forest operation
- Construction
- Agriculture & Plantation

### 2. DEFINITIONS AND CONCEPTS

#### 2.1. DEFINITION

*Organisation:* The entity undergoing the evaluation.

*Baseline year:* A reference point in time against which a measure of consumption and/or production in the present and/or future is measured.

*Sustainable material:* Sustainable materials are materials that are produced and used in a way that minimises environmental impact and reduces the depletion of natural resources. These materials are often produced using renewable resources, are non-toxic, and are biodegradable or recyclable, for example, clay, rock, sand, bamboo, or materials with eco-label.

*Circular economy:* A circular economy is an economic system in which resources are used, reused, and recycled in a closed loop, rather than being extracted, used, and then discarded as waste. It is based on the principles of reducing, reusing and recycling, and it is designed to minimise waste and pollution while conserving natural resources.

*Life Cycle Assessment:* Life Cycle Assessment (LCA) is a methodology used to evaluate the environmental impact of a product or service over its entire life cycle. This includes the extraction of raw materials, production, transportation, use, and disposal or recycling of the product.

*ESG:* ESG stands for Environmental, Social and Governance. It is a set of criteria used to evaluate the sustainability and societal impact of an investment in an organisation.

*Certification:* Certification is the provision by an independent body or an authorised agency of written assurance that the product, service, or system in question meets specific requirements.

*Reporting period:* The time span for which the instrument assesses the organisation. Unless required otherwise time span should be one year.

## 2.2. CONCEPT

Not applicable.

## 2.3. UNIT OF MEASURE

Not applicable.

# 3. METHODOLOGY

## 3.1. DATA SOURCES

*Company sustainability report:* A report published by a company or organisation about its environmental, social and governance (ESG) impacts.

*Organisation sustainability policies:* Organisation policies or guidelines specific to sustainability addressed in the company's sustainability report.

*Sustainability monitoring activity:* Self-regulation implementation to show correlation with sustainability goals.

*Certification or recognition of sustainable material:* Certifications attained by the organisation (including from third parties) related to sustainable materials.

## 3.2. DATA COLLECTION METHOD

Reference and citation to sections, parts, and/or entire documents as evidence. Documents cited shall specifically address the following aspects:

1. Evidence of company sustainability report.
2. Evidence of policy for the application of green materials.
3. Evidence of self-regulation implementation relating to sustainability goals.
4. Evidence of certification or recognition from other parties including third parties.

## 3.3. ASSUMPTIONS AND UNCERTAINTIES

Not applicable.

# 4. OTHER METHODOLOGICAL CONSIDERATIONS

## 4.1. COMMENT AND LIMITATION

There are no limitations to this indicator.

## 4.2. VALIDATION

1. Global Reporting Initiative (GRI) Standards
2. Sustainability Accounting Standards Board (SASB) Standards

## 4.3. QUALITY MANAGEMENT

- ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework.
- ISO/CD 59004 Circular Economy – Terminology, Principles and Guidance for Implementation.

# 5. REFERENCES

1. National Energy Efficiency Action Plan 2016-2025.
2. Malaysia Renewable Energy Roadmap (MyRER).
3. Malaysia National Energy Policy (NEP) 2022-2040.
4. The Sustainable Development Goals (SDGs).

## INDICATOR INSTRUMENT FACTSHEET

# INDICATOR: MATERIALS

## SUB-INDICATOR: SUSTAINABLE SERVICES

**1. INDICATOR INFORMATION****1.1. GOALS AND TARGETS**

Goal 1: Encourage companies to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

The goal of this instrument is mapped to the following global goals and National targets:

**United Nations Sustainable Development Goals**

*SDG 12:* Ensure sustainable consumption and production patterns

- a) *SDG Target 12.1:* Implement the 10-year sustainable consumption and production framework.
- b) *SDG Target 12.6:* Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle
  - i) *SDG Target Indicator 12.6.1:* Number of companies publishing sustainability reports.
- c) *SDG Target 12.8:* By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

**1.2. INDICATOR**

Material

**1.3. SUB-INDICATOR**

Sustainable Services

**1.4. LAST UPDATE**

18 January 2023

**1.5. RELATED SECTORS**

This indicator instrument applies to the following sectors:

- Services
- Fisheries (Aquaculture)
- Manufacturing
- Livestock
- Mining
- Forest operation
- Construction
- Agriculture & Plantation

**2. DEFINITIONS AND CONCEPTS****2.1. DEFINITION**

*Organisation:* The entity undergoing the evaluation.

*Baseline year:* A reference point in time against which a measure of consumption and/or production in the present and/or future is measured.

*Sustainable material:* Sustainable service is a service that fulfils customer needs and can be perpetuated for a long period of time without negatively influencing the natural and social environments. For example, certification or recognition like ISO 14000 or MyHijau, strategy/planning, technical support, testing, and verification.

*Sustainable framework:* A written document describing a framework for action to enhance international cooperation and accelerate the shift towards sustainable consumption and production (SCP) patterns in both developed and developing countries.

*Life Cycle Assessment:* Refers to increasing the sustainable management of resources and achieving resource efficiency along both production and consumption phases of the lifecycle, including resource extraction, the production of intermediate inputs, distribution, marketing, use, waste disposal and re-use of products and services.

*Sustainable development:* Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

*Reporting period:* The time span for which the instrument assesses the organisation. Unless required otherwise time span should be one year.

## 2.2. CONCEPT

Not applicable.

## 2.3. UNIT OF MEASURE

Not applicable.

# 3. METHODOLOGY

## 3.1. DATA SOURCES

*Company sustainability report:* A report published by a company or organisation about environmental, social and governance (ESG) impacts

*Organisation sustainability policies:* Organisation policies or guidelines specific to sustainability addressed in the company sustainability report.

*Sustainability monitoring activity:* Self-regulation implementation to show correlation with sustainability goals.

*Certification or recognition of sustainable material:* Certifications attained by the organisation (including from third parties) related to sustainable services.

## 3.2. DATA COLLECTION METHOD

Reference and citation to sections, parts, and/or entire documents as evidence. Documents cited shall specifically address the following aspects:

1. Evidence of company sustainability report
2. Evidence of policy for the application of green services.
3. Evidence of self-regulation implementation relating to sustainability goals
4. Evidence of certification or recognition from other parties including third parties

## 3.3. ASSUMPTIONS AND UNCERTAINTIES

Not applicable.

# 4. OTHER METHODOLOGICAL CONSIDERATIONS

## 4.1. COMMENT AND LIMITATION

There are no limitations to this indicator.

## 4.2. VALIDATION

1. Global Reporting Initiative (GRI) Standards
2. Sustainability Accounting Standards Board (SASB) Standards
3. House Rule

## 4.3. QUALITY MANAGEMENT

- ISO 14040:2006 Environmental Management — Life cycle assessment — Principles and framework.
- ISO/CD 59004 Circular Economy – Terminology, Principles and Guidance for Implementation.

# 5. REFERENCES

1. National Energy Efficiency Action Plan 2016-2025.
2. Malaysia Renewable Energy Roadmap (MyRER).
3. Malaysia National Energy Policy (NEP) 2022-2040.
4. The Sustainable Development Goals (SDGs).

## INDICATOR INSTRUMENT FACTSHEET

## INDICATOR: WASTE

## SUB-INDICATOR: NON-HAZARDOUS WASTE

## 1. INDICATOR INFORMATION

## 1.1. GOALS AND TARGETS

1. Goal 1: 40% recycling rate of solid waste from total non-hazardous waste generated by 2025.
2. Goal 2: 100% avoidance of waste to landfills by 2025.
3. Goal 3: 180 unit of biogas capture facility by 2030.

The goal of this instrument is mapped to the following global goals and National targets:

**United Nations Sustainable Development Goals**

*SDG 12* - Sustainable consumption and production.

*SDG Target 12.3:* By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

**National Commitment at the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC).**

## 1.2. INDICATOR

Waste

## 1.3. SUB-INDICATOR

Non-hazardous waste

## 1.4. LAST UPDATE

11 April 2023

## 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Services
- Fisheries (Aquaculture)
- Manufacturing
- Livestock
- Mining
- Forest operation
- Construction
- Agriculture & Plantation

## 2. DEFINITIONS AND CONCEPTS

## 2.1. DEFINITION

*Baseline year:* A reference point in time against which a measure of consumption and/or production in the present and/or future are measured.

*Biogas Capture Facility:* A facility that capture biogas released as a result of waste degradation.

*Boundary:* A defined border that accounts and limits the key business activities and processes which forms a basis of the study or analysis within the reporting period.

*Functional Unit:* A specific/selected amount of feed or product or service defined as a basis of calculation, such as mass (weight), volume, and units.

*Non-Hazardous Waste:* Any form of materials that are discarded from a process/activity, and in this document, specifically refers to solid form of waste materials.

*Non-hazardous waste loss:* Any leakage/spills along the waste stream before or after treatment process.

*Recycling:* Process in converting waste materials into new materials or objects.

*Reporting period:* The time span for which the instrument assesses the organisation. Unless required otherwise time span should be one year.

## 2.2. CONCEPTS

Not applicable.

## 2.3. UNIT OF MEASURE

1. Percentage (%) of recycling of non-hazardous waste within the organisation.
2. Number of biogas capture facility

# 3. METHODOLOGY

## 3.1. DATA SOURCES

*Validation/certification/recognition:* Refers to documents issued by third party that confirms performance and achievement in meeting certain standard or criteria.

*Monitoring records:* Refers to documents/records used as evidence and primary data for the purpose of calculating the intended goals and targets. Examples of records that can be referred to are record of wastes generated, recycled, reused, repurposed, disposed. Example of CQI evidence including positive outcome to cost saving; OR profit generation; OR reduce environmental impact.

*Relevant contract agreements:* Documents referred to as evidence for indicating mutual obligations between the parties. Examples are agreement made by the organisation with the intention to manage hazardous waste in a sustainable manner.

*Purchasing records and documents:* Documents that serve as evidence of the organisation acquiring services or/and products/systems.

*Installation/maintenance records:* Documents that serve as evidence for installation and maintenance of technologies in the organisation.

## 3.2. DATA COLLECTION METHOD

*Observations:* Observations are made during the site visit to understand the actual case scenario of the green initiative implementation within the boundaries of the organisation.

*Interviews:* Interviews with respondent carried out to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Questionnaires/surveys:* A set of questions designed for respondent to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Documents reviews:* Documents reviewed during the site visit to support the observation.

*Evidence:*

1. Initiative proposal: Business or project planning with budget allocation.
2. Evidence of initiatives:  
Dedicated space/storage of non-hazardous waste; purchasing record, or installation record; transportation record (e.g., no trips/schedule to transport the waste to dedicated disposal/recycling premise) presence of initiative/unit/facility/equipment/system being validated.

3. Policy in place, documented (e.g., minutes of meeting/policy document/annual budget approval) and disseminated.
4. Monitoring record - look for the current record and check for frequency monitoring.
5. Data availability at selected baseline year on the amount of non-hazardous waste recycled, amount of non-hazardous waste disposed, and amount of non-hazardous waste generated. At least any two data listed must be available to allow calculation on non-hazardous waste recycled.
6. Evidence of recycling by third parties e.g., receipt/invoice/financial report etc.
7. Validation of recycling by third parties e.g., contract/validation report/audit report.
8. Evidence of continuous quality improvement (CQI) exercise such as minute of meeting/CQI report. Example of CQI is performance of the selected contractor.
9. Evidence of recognition by third party such as validation or certification or award.

### 3.3. COMPUTATION

Selecting a baseline year:

$$\begin{array}{l} \text{Percentage (\%)} \\ \text{of recycling} \\ \text{non-hazardous} \\ \text{waste} \end{array} = \frac{\text{Amount of} \\ \text{hazardous waste recycled}}{\text{Total amount of} \\ \text{non-hazardous waste generated}} \times 100$$

whereby,

Amount of hazardous waste recycled = Amount of hazardous waste generated – Amount of hazardous waste disposed.

Total amount of non-hazardous waste generated is the summation of all wastes generated from the process/activity within the boundary.

### 3.4. ASSUMPTIONS AND UNCERTAINTIES

Non-hazardous waste loss during the activities within the defined boundary is assumed to be negligible.

Secondary data will be used in the event of primary data is unavailable.

## 4. OTHER METHODOLOGICAL CONSIDERATIONS

### 4.1. COMMENT AND LIMITATION

There are no limitations to this indicator.

### 4.2. VALIDATION

Not applicable.

### 4.3. QUALITY MANAGEMENT

ISO 14040:2006 Environmental Management — Life cycle assessment — Principles and framework.

## 5. REFERENCES

1. Green Technology Master Plan (GTMP) 2017 – 2030.
2. Sustainable Development Goals (SDG) 2030.

## INDICATOR INSTRUMENT FACTSHEET

# INDICATOR: WASTE

## SUB-INDICATOR: HAZARDOUS WASTE

**1. INDICATOR INFORMATION****1.1. GOALS AND TARGETS**

Goal 1: 50% recycling rate of hazardous waste from the total hazardous waste generated by 2030

Goal 2: 40% recycling rate of solid waste from total waste generated by 2025

Goal 3: 100% avoidance of waste to landfill/zero waste to landfill by 2025

The goal of this instrument is mapped to the following global goals and National targets:

**United Nations Sustainable Development Goals**

*SDG 12: Sustainable Consumption and Production.*

*SDG Target 12.3* - By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

**National Commitment at the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCC).**

**Green Technology Master Plan (GTMP) 2017-2030.**

**1.2. INDICATOR**

Waste

**1.3. SUB-INDICATOR**

Hazardous waste

**1.4. LAST UPDATE**

8 May 2023

**1.5. RELATED SECTORS**

This indicator instrument applies to the following sectors:

- Services
- Manufacturing
- Livestock
- Mining
- Forest operation
- Construction
- Agriculture & Plantation

**2. DEFINITIONS AND CONCEPTS****2.1. DEFINITION**

*Baseline year:* A reference point in time against which a measure of consumption and/or production in the present and/or future are measured.

*Boundary:* A defined border that accounts and limits the key business activities and processes which forms a basis of the study or analysis within the reporting period.

*Functional Unit:* A specific/selected amount of feed or product or service defined as a basis of calculation, such as mass (weight), volume, and units.

*Reporting period:* The time span for which the instrument assesses the organisation. Unless required otherwise time span should be one year.

*Recycling:* Process in converting waste materials into new materials or objects.

*Scheduled Waste:* Scheduled waste is any waste that has hazardous characteristics that have the potential to negatively impact the public and the environment. A total of 77 types of scheduled waste are listed under the First Schedule, Environmental Quality (Scheduled Waste) Regulations 2005, and the management of such waste shall be in accordance with the provisions under the above Regulations.

*Waste loss:* Any leakage/spills along the waste stream before or after treatment process.

## 2.2. CONCEPT

Not applicable.

## 2.3. UNIT OF MEASURE

Percentage (%) of recycling of hazardous waste within the organisation.

# 3. METHODOLOGY

## 3.1 DATA SOURCES

*Validation/certification/recognition:* Refers to documents issued by third party that confirms performance and achievement in meeting certain standard or criteria.

*Monitoring records:* Refers to documents/records used as evidence and primary data for the purpose of calculating the intended goals and targets. Examples of records that can be referred to are record of wastes generated, recycled, reused, repurposed, disposed. Example of continuous quality improvement (CQI) evidence including positive outcome to cost saving; OR profit generation; OR reduce environmental impact.

*Relevant contract agreements:* Documents referred to as evidence for indicating mutual obligations between the parties. Examples are agreement made by the organisation with the intention to manage hazardous waste in a sustainable manner.

*Purchasing records and documents:* Documents that serve as evidence of the organisation acquiring services or/and products/system.

*Installation/maintenance records:* Documents that serve as evidence for installation and maintenance of technologies in the organisation. Other initiatives including minimising the feed to avoid over generation of hazardous waste.

## 3.2 DATA COLLECTION METHOD

*Observations:* Observations are made during the site visit to understand the actual case scenario of the green initiative implementation within the boundaries of the organisation.

*Interviews:* Interviews with respondent carried out to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Questionnaires/surveys:* A set of questions designed for respondent to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Documents reviews:* Documents reviewed during the site visit to support the observation.

*Evidence:*

1. Initiative proposal: Business or project planning with budget allocation.
2. Evidence of initiatives:
  - Dedicated space/storage of scheduled waste; valid licence from regulatory body (special management) permit; purchasing record, or installation record; maintenance record; transportation record (e.g., no trips/schedule to transport the waste to dedicated disposal/recycling premise) presence of initiative/unit/facility/equipment/system being validated.
  - Policy in place, documented (e.g., minutes of meeting/policy document/annual budget approval) and disseminated.

- Monitoring record - look for the current record and check for frequency of monitoring.
  - Data availability at selected baseline year on the amount of scheduled waste recycled, amount of scheduled waste disposed, and amount of scheduled waste generated. At least any two data listed must be available to allow calculation on the scheduled waste recycled.
3. Evidence of recycling by third parties e.g., receipts/invoices/financial reports, etc.
  4. Validation of recycling by third parties e.g., contract/validation report/audit report.
  5. Evidence of continuous quality improvement (CQI) exercise such as minutes of meeting/CQI report. Example of CQI is performance of the selected contractor.
  6. Evidence of recognition by third party such as validation or certification or award.

### 3.3 COMPUTATION

$$\text{Percentage (\%) of hazardous waste recycled} = \frac{\text{Amount of hazardous waste recycled}}{\text{Amount of hazardous waste generated}} \times 100$$

whereby,

Amount of hazardous waste recycled = Amount of hazardous waste generated – Amount of hazardous waste disposed.

The total amount of hazardous waste generated is the summation of all hazardous waste generated from the process/activity within the boundary.

### 3.4 ASSUMPTIONS AND UNCERTAINTIES

- Instrument applicability is limited to the activities within the defined boundary.
- Secondary data will be used in the event of primary data is unavailable.

## 4. OTHER METHODOLOGICAL CONSIDERATIONS

### 4.1 COMMENT AND LIMITATION

There are no limitations to this indicator.

### 4.2 VALIDATION

Not applicable.

### 4.3 QUALITY MANAGEMENT

- ISO 14040:2006 Environmental Management — Life cycle assessment — Principles and framework.
- ISO/CD 59004 Circular Economy – Terminology, Principles and Guidance for Implementation.

## 5. REFERENCES

1. Green Technology Master Plan (GTMP) 2017 – 2030.
2. Sustainable Development Goals (SDG) 2030.
3. “Malaysia - High-Level Segment Statement COP 26.” Unfccc.int, 11 Nov. 2021, <https://unfccc.int/documents/310827>

## INDICATOR INSTRUMENT FACTSHEET

## INDICATOR: WATER

## SUB-INDICATOR: WATER EXPLORATION

## 1. INDICATOR INFORMATION

## 1.1. GOALS AND TARGETS

Goal 1: To reduce dependency on potable water by exploring the consumption of other water resources such as rainwater and recycled water.

The goal of this instrument is mapped to the following global goals and National targets:

**United Nations Sustainable Development Goals**

- *SDG 12*: Ensure sustainable consumption and production patterns.
- *SDG Target 12.6*: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
  - *Target 12.6.1*: Number of companies publishing sustainability reports.

## 1.2. INDICATOR

Water

## 1.3. SUB-INDICATOR

Water Exploration

## 1.4. LAST UPDATE

16 March 2023

## 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Agriculture
- Aquaculture
- Construction
- Livestock
- Manufacturing
- Mining
- Services

## 2. DEFINITIONS AND CONCEPTS

## 2.1. DEFINITION

*Organisation*: The entity undergoing the evaluation.

*Water*: Refers to water that meets quality standards for various processes and applications within the industry.

*Potable water*: Refers to clean and safe drinking water that meets quality standards for various processes and applications within the industry – for the purpose of this Guideline, this also refers to water supplied as city water.

*Water conservation*: Refers to the practice of reducing water usage, improving efficiency, and implementing sustainable strategies to minimise the overall water footprint within processes.

*Water efficiency*: Refers to the optimisation and reduction of water usage throughout industrial processes to minimise waste and improve resource conservation.

*Water saving*: A water consumption reduction measured against a baseline year.

*Water consumption:* An energy usage by the organisation and its sub-entities for its operations and activities.

*Alternative water:* Refers to water from alternative sources such as rainwater or reclamation processes.

*Baseline year:* A reference point in time against which a measure of consumption and/or production in the present and/or future are measured.

*Reporting period:* The time span for which the instrument assesses the organisation. Unless required otherwise time span should be one year.

## 2.2. UNIT OF MEASUREMENT

Percentage (%) of alternative water used with reference to the total water used within the organisation.

## 3. METHODOLOGY

### 3.1. DATA SOURCE

*Water consumption:* Metered water usage readings (i.e., m<sup>3</sup>), utility bills (i.e., m<sup>3</sup>), or any other documents recording the water consumption for the organisation.

*Alternative water consumption:* Metered alternative water consumption readings (i.e., m<sup>3</sup>), utility bills (i.e., m<sup>3</sup>), or any other documents recording the alternative water consumption for the organisation. In the event that consumption data for alternative water is not available, alternative water production readings can be used.

### 3.2. DATA COLLECTION METHOD

*Water consumption:*

- Metered water usage reading showing a consumption of water over a period of time. Typically, meter reading is provided with a monthly time span. The total water consumed shall be computed by taking the total meter readings for individual months over the period of the reporting year. In the event that more than one water source is available, the sum of the metered readings shall be considered.

- Bills of quantities of water purchased shall be used to represent consumption of water over a period of time. The total water consumed shall be computed by taking the total quantities for the period of the reporting year. In the event that more than one water source is consumed, the sum of the quantities of water consumed shall be considered.
- Other forms of evidence acceptable include purchase invoices, bills of lading, and other similar documents.
- Other documents that can be used as evidence are purchase invoices received by utility providers or suppliers for water purchased with the assumption that the water purchased is consumed within the reporting period.

*Alternative water consumption:*

- Metered alternative water usage reading showing a consumption of alternative water over a period of time. Typically, meter reading is provided with a monthly time span. The total alternative water consumed shall be computed by taking the total meter readings for individual months over the period of the reporting year. In the event that more than one alternative water source is available, the sum of the meter readings shall be considered.
- Bills of quantities of alternative water purchased shall be used to represent consumption of alternative water over a period of time. The total alternative water consumed shall be computed by taking the total quantities for the period of the reporting year. In the event that more than one alternative water source is consumed, the sum of the quantities of alternative water consumed shall be considered.
- Other forms of evidence acceptable include purchase invoices, bills of lading, and other similar documents.
- Other documents that can be used as evidence are purchase invoices received by utility providers or suppliers for alternative water purchased with the assumption that the water purchased is consumed within the reporting period.

*Observations:* Observations are made during the site visit to understand the actual case scenario of the green initiative implementation within the boundaries of the organisation.

*Interviews:* Interviews with respondent carried out to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Questionnaires/surveys:* A set of questions designed for respondent to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Documents reviews:* Documents reviewed during the site visit to support the observation.

### 3.3. COMPUTATION

The alternative water percentage for the reporting period can be calculated using the following equations:

Percentage (%) of alternative water consumption =

$$\frac{[\text{Alternative water consumption (i.e., m}^3\text{)}]}{[\text{Total water consumption (i.e., m}^3\text{)}]} \times 100\%$$

### 3.4. ASSUMPTIONS AND UNCERTAINTIES

Any and all averaging approach to consumption data shall be noted and wherever practicably possible the uncertainties shall be quantified.

Total water consumed for the reporting period shall be calculated based on the actual consumption of water for each month within the reporting period. In the event of data unavailability, average consumptions can be provided. Averaging approaches and assumptions made should be described in sufficient detail.

Total water consumed for the year of reporting shall be calculated based on the actual consumption of water for each month within the reporting period. Each source of water should be calculated separately.

## 4. OTHER METHODOLOGICAL CONSIDERATIONS

### 4.1. COMMENT AND LIMITATION

Not applicable.

### 4.2. VALIDATION

Measurement and Verification (M&V) report to verify savings endorsed by certified M & V professional.

### 4.3. QUALITY MANAGEMENT

Not applicable.

## 5. REFERENCES

1. SO 46001:2019 Water Efficiency Management System.
2. Green Technology Master Plan Malaysia 2017–2030.
3. The Sustainable Development Goals (SDGs).

## INDICATOR INSTRUMENT FACTSHEET

# INDICATOR: WATER

## SUB-INDICATOR: WATER EFFICIENCY

### 1. INDICATOR INFORMATION

#### 1.1. GOALS AND TARGETS

Goal 1: To increase water efficiency and improve water saving in operations.

The goal of this instrument is mapped to the following global goals and National targets:

#### United Nations Sustainable Development Goals

- *SDG 12*: Ensure sustainable consumption and production patterns.
- *SDG GOAL 12.6*: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
- Target Indicator 12.6.1: Number of companies publishing sustainability reports.

#### 1.2. INDICATOR

Water

#### 1.3. SUB-INDICATOR

Water Efficiency

#### 1.4. LAST UPDATE

16 March 2023

#### 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Agriculture
- Aquaculture
- Construction
- Forest operation
- Livestock
- Manufacturing
- Services

### 2. DEFINITIONS AND CONCEPTS

#### 2.1. DEFINITION

*Organisation*: The entity undergoing the evaluation.

*Water*: Refers to water that meets quality standards for various processes and applications within the industry.

*Water conservation*: Refers to the practice of reducing water usage, improving efficiency, and implementing sustainable strategies to minimise the overall water footprint within processes.

*Water efficiency*: Refers to the optimisation and reduction of water usage throughout industrial processes to minimise waste and improve resource conservation.

*Water saving*: A water consumption reduction measured against a baseline year.

*Water consumption*: An energy usage by the organisation and its sub-entities for its operations and activities.

*Baseline year:* A reference point in time against which a measure of consumption and/or production in the present and/or future are measured.

*Reporting period:* The time span for which the instrument assesses the organisation. Unless required otherwise time span should be one year.

## 2.2. UNIT OF MEASUREMENT

Percentage (%) of water consumption reduction measured against the baseline year.

## 3. METHODOLOGY

### 3.1. DATA SOURCE

Water consumption: Metered water usage readings (i.e., m<sup>3</sup>), utility bills (i.e., m<sup>3</sup>), or any other documents recording the water consumption for the organisation.

### 3.2. DATA COLLECTION METHOD

*Water consumption:*

- Metered water usage reading showing a consumption of water over a period of time. Typically, meter reading is provided with a monthly time span. The total water consumed shall be computed by taking the total meter readings for individual months over the period of the reporting year. In the event that more than one water source is available, the sum of the meter readings shall be considered.

- Bills of quantities of water purchased shall be used to represent consumption of water over a period of time. The total water consumed shall be computed by taking the total quantities for the period of the reporting year. In the event that more than one water source is consumed, the sum of the quantities of water consumed shall be considered.
- Other forms of evidence acceptable include purchase invoices, bills of lading, and other similar documents.
- Other documents that can be used as evidence are purchase invoices received by utility providers or suppliers for water purchased with the assumption that the water purchased is consumed within the reporting period.

*Observations:* Observations are made during the site visit to understand the actual case scenario of the green initiative implementation within the boundaries of the organisation.

*Interviews:* Interviews with respondent carried out to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Questionnaires/surveys:* A set of questions designed for respondent to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Documents reviews:* Documents reviewed during the site visit to support the observation.

### 3.3. COMPUTATION

The water saving for the reporting period can be calculated using the following equations:

Percentage (%) of water saving =

$$\frac{\text{Total water consumed for the year of reporting (m}^3\text{)} - \text{Total water consumed for the baseline year (m}^3\text{)}}{\text{Total water consumed for the baseline year (m}^3\text{)}}$$

*Remark: Negative percentage (%) indicates there is savings, positive percentage (%) indicates there is no savings.*

### 3.4. ASSUMPTIONS AND UNCERTAINTIES

Any and all averaging approach to consumption data shall be noted and wherever practicably possible the uncertainties shall be quantified.

Total water consumed for the reporting period shall be calculated based on the actual consumption of water for each month within the reporting period. In the event of data unavailability, average consumptions can be provided. Averaging approaches and assumptions made should be described in sufficient detail.

Total water consumed for the year of reporting shall be calculated based on the actual consumption of water for each month within the reporting period. Each source of water should be calculated separately.

## 4. OTHER METHODOLOGICAL CONSIDERATIONS

### 4.1. COMMENT AND LIMITATION

Not applicable.

### 4.2. VALIDATION

Measurement and Verification (M&V) report to verify savings endorsed by a certified M & V professional.

### 4.3. QUALITY MANAGEMENT

Not applicable.

## 5. REFERENCES

1. ISO 46001:2019 Water Efficiency Management System.
2. Green Technology Master Plan Malaysia 2017–2030.
3. The Sustainable Development Goals (SDGs).

## INDICATOR INSTRUMENT FACTSHEET

## INDICATOR: ENERGY

## SUB-INDICATOR: EMISSION REDUCTION

## 1. INDICATOR INFORMATION

## 1.1. GOALS AND TARGETS

Goal 1: Nationally Determined Contribution (NDC) of 45% carbon intensity reduction in 2030 compared to 2005 level.

The goal of this instrument is mapped to the following global goals and National targets:

**United Nations Sustainable Development Goals**

- *SDG 12*: Ensure sustainable consumption and production patterns.
- *SDG Goal 12.6*: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
- *Target Indicator 12.6.1*: Number of companies publishing sustainability reports.

**National Commitment at the COP to the UNFCCC:**

- Nationally Determined Contribution (NDC) of 45% carbon intensity reduction in 2030 compared to 2005 level.

## 1.2. INDICATOR

Energy

## 1.3. SUB-INDICATOR

Emission Reduction

## 1.4. LAST UPDATE

3 January 2023

## 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Agriculture & Plantation
- Aquaculture
- Construction
- Forest operation
- Livestock
- Manufacturing
- Mining
- Services

## 2. DEFINITIONS AND CONCEPTS

## 2.1. DEFINITION

*Organisation*: The entity undergoing the evaluation.

*Energy*: Energy resources, which refer to substances like fuels, petroleum products, heating and cooling, and electricity in general, because a significant portion of the energy contained in these resources can easily be extracted to serve a useful purpose.

*Energy consumption*: Energy usage by the organisation and its sub-entities for its operations and activities.

*Energy savings*: Energy consumption reduction measured against a baseline year.

*Emission:* Emission herein refers to greenhouse gas (GHG). GHG is a gas that absorbs and emits radiant energy within the thermal infrared range, causing the greenhouse effect. The primary greenhouse gases in Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone. GHG emissions herein refers to all the GHGs and are collectively reported in carbon dioxide equivalent (CO<sub>2</sub>e).

*Baseline year:* A reference point in time against which a measure of consumption and/or production in the present and/or future are measured.

*Reporting period:* The time span for which the instrument assesses the organisation. Unless required otherwise time span should be one year.

*GHG inventory:* A list of emission sources and the associated emissions quantified using standardised methods.

*Scope 1:* Direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organisation (e.g., emissions associated with fuel combustion in boilers, furnaces, vehicles).

*Scope 2:* Indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling.

*Scope 3:* Indirect GHG emissions associated with activities from assets not owned or controlled by the reporting organisation.

## 2.2 UNIT OF MEASURE

Percentage (%) reduction in emissions by an organisation within its operations in percentage with reference to a selected baseline year.

## 3. METHODOLOGY

### 3.1 DATA SOURCES

GHG Inventory reports prepared in accordance to nationally or internationally recognised standards.

### 3.2 DATA COLLECTION METHOD

*GHG Inventory:*

1. The emissions for the reporting period shall be the total GHG emissions generated by the organisation for the reporting period in CO<sub>2</sub>e.
2. The total GHG emissions generated shall consider the total of Scope 1 and Scope 2 emissions generated by the organisation for the reporting period.
3. If present, the Scope 3 emissions shall be considered for computing the total emissions.
4. Reports generated by the “Sistem Pengurusan dan Pemantauan Industri Hijau” provided by the Department of Environment Malaysia can serve as evidence to represent the total GHG emissions for the organisation for the reporting period.
5. Reports and certification by national or international standards such as the ISO 14064 can serve as evidence to represent the total GHG emissions for the organisation for the reporting period.

*Observations:* Observations are made during the site visit to understand the actual case scenario of the green initiative implementation within the boundaries of the organisation.

*Interviews:* Interviews with respondent carried out to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Questionnaires/surveys:* A set of questions designed for respondent to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Documents reviews:* Documents reviewed during the site visit to support the observation.

### 3.3 COMPUTATION

The emission reduction can be calculated using the following equation:

$$\text{Emission reduction} = \frac{\left[ \begin{array}{cc} \text{Total emissions} & \text{Total emissions} \\ \text{for the reporting} & \text{for the baseline} \\ \text{period (kg CO}_2\text{e)} & \text{year(kg CO}_2\text{e)} \end{array} \right] - \text{Total emissions for the baseline year (kg CO}_2\text{e)}}{\text{Total emissions for the baseline year (kg CO}_2\text{e)}}$$

### 3.4 ASSUMPTIONS AND UNCERTAINTIES

The uncertainties reported within the organisation's GHG inventory shall be noted.

Any and all averaging approach to GHG data shall be noted and wherever practicably possible the uncertainties shall be quantified.

GHG emissions shall account for Scope 1 and Scope 2 emissions for the organisation.

Scope 3 emissions may be included in the calculation. If Scope 3 emissions are included, values of Scope 3 emissions shall be considered throughout all the expressions.

Any omissions shall be clearly noted with justifications.

Calculation methods to comply with GHG Protocol Standards or IPCC standards or ISO 14064 standards or any other internationally recognised standards.

## 4. OTHER METHODOLOGICAL CONSIDERATIONS

### 4.1 COMMENT AND LIMITATION

There are no limitations to this indicator.

### 4.2 VALIDATION

The review or validation of information and GHG inventory by the organisation shall be noted.

### 4.3 QUALITY MANAGEMENT

Any certification obtained with regard to the organisation's carbon emissions and management shall be noted.

## 5. REFERENCES

1. National Energy Efficiency Action Plan 2016–2025.
2. Malaysia Renewable Energy Roadmap (MyRER).
3. Dasar Tenaga Negara (DTN) 2022–2040.
4. The Sustainable Development Goals (SDGs).

## INDICATOR INSTRUMENT FACTSHEET

## INDICATOR: ENERGY

## SUB-INDICATOR: ENERGY EFFICIENCY

## 1. INDICATOR INFORMATION

## 1.1. GOALS AND TARGETS

Goal 1: Energy saving; meeting the national energy savings target of 8% by 2025.

The goal of this instrument is mapped to the following global goals and National targets:

**United Nations Sustainable Development Goals**

- *SDG 12*: Ensure sustainable consumption and production patterns
- *SDG Goal 12.6*: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
  - *Target Indicator 12.6.1*: Number of companies publishing sustainability reports.

**National Energy Efficiency Action Plan 2016–2025:**

1. 52,233 GWh of energy savings (8.0%)
2. 37,702 kt CO<sub>2</sub> equivalent reduction

## 1.2. INDICATOR

Energy

## 1.3. SUB-INDICATOR

Energy Efficiency

## 1.4. LAST UPDATE

3 January 2023

## 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Agriculture & Plantation
- Fisheries (Aquaculture)
- Construction
- Forest operation
- Livestock
- Manufacturing
- Mining
- Services

## 2. DEFINITIONS AND CONCEPTS

## 2.1. DEFINITION

*Organisation*: The entity undergoing the evaluation.

*Energy*: Energy resources, which refer to substances like fuels, petroleum products, heating and cooling, and electricity in general, because a significant portion of the energy contained in these resources can easily be extracted to serve a useful purpose.

*Energy consumption*: An energy usage by the organisation and its sub-entities for its operations and activities.

*Energy savings*: An energy consumption reduction measured against a baseline year.

*Baseline year*: A reference point in time against which a measure of consumption and/or production in the present and/or future are measured.

*Reporting period*: The time span for which the instrument assesses the organisation. Unless required otherwise time span should be one year.

*Certified M & V Professional*: A certified professional that qualifies to conduct measurement and verification activities according to guidelines or standards for reporting energy savings.

**2.2. CONCEPT**

Not applicable.

**2.3. UNIT OF MEASURE**

Percentage (%) of electricity and fuel consumption reduction measured against the baseline year.

**3. METHODOLOGY****3.1. DATA SOURCES**

*Energy consumption:* Meter energy usage readings (i.e., kWh, kJ, MMBTU), utility bills (i.e., kWh, kJ, MMBTU), or any other documents recording the energy consumption for the organisation.

*Fuel consumption:* Bills of quantities for fuels (i.e., litres of fuel, kg of fuel, cu. ft of gases), or any other documents recording the fuel consumption for the organisation.

*Certificates of analysis (COA):* COA for fuels shall be referred to determine calorific values of fuels used (if applicable).

**3.2. DATA COLLECTION METHOD**

*Energy consumption:*

1. Metered usage reading showing a consumption of energy over a period of time. Typically, meter reading is provided with a monthly time span. The total energy consumed shall be computed by taking the total meter readings for individual months over the period of the reporting year. In the event that more than one energy source is available, the sum of the meter readings shall be considered.
2. If there are more than one type of energy being consumed, a common energy unit shall be utilised. (e.g., MWh, MJ)
3. Other documents that can be used as evidence are purchase invoices received by utility providers or suppliers for energy purchased with the assumption that the energy purchased is consumed within the reporting period.

*Fuel consumption:*

1. Bills of quantities for fuels purchased shall be used to represent consumption of fuel over a period of time. The total fuel consumed shall be computed by taking the total quantities for the period of the reporting year. In the event that more than one fuel source is consumed, the sum of the quantities of fuel consumed shall be considered.
2. Other forms of evidence acceptable include, purchase invoices, bills of lading, and other similar documents.
3. If there are more than one type of fuel being consumed, a common energy unit shall be utilised. (e.g., MWh, MJ)
4. The energy unit of fuels shall be computed by multiplying the calorific value (e.g., J/kg, kJ/l) of the fuel with the quantity (e.g., kg, l). Refer to the Appendix for the list of common calorific value that can be used as reference. In the event of fuels not listed in the Appendix, the assessor shall request from the organisation for such information accompanied by respective reference document (e.g., certificates of analysis for fuel calorific value, literature reference).
5. Other documents that can be used as evidence are purchase invoices received by utility providers or suppliers for fuel purchased with the assumption that the energy purchased is consumed within the reporting period.

*Observations:* Observations are made during the site visit to understand the actual case scenario of the green initiative implementation within the boundaries of the organisation.

*Interviews:* Interviews with respondent carried out to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Questionnaires/surveys:* A set of questions designed for respondent to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Documents reviews:* Documents reviewed during the site visit to support the observation.

### 3.3. COMPUTATION

The energy and fuel saving for the reporting period can be calculated using the following equations:

Percentage (%) of energy saving =

$$\frac{\text{Total energy consumed for the year of reporting (unit for energy)} - \text{Total energy consumed for the baseline year (unit for energy)}}{\text{Total energy consumed for the baseline year (unit for energy)}} \times 100\% \quad (1)$$

Percentage (%) of fuel saving =

$$\frac{\text{Total energy consumed for the year of reporting (unit for fuel)} - \text{Total energy consumed for the baseline year (unit for fuel)}}{\text{Total energy consumed for the baseline year (unit for fuel)}} \times 100\% \quad (2)$$

*NB: Negative (%) indicates there is savings, positive (%) indicates there is no savings*

### 3.4. ASSUMPTIONS AND UNCERTAINTIES

Wherever fuel characteristic information is used for calculations, it shall be noted that the averaging of such characteristics (i.e., calorific value) contributes to uncertainties.

Any and all averaging approach to consumption data shall be noted and wherever practicably possible the uncertainties shall be quantified.

Total energy consumed for the reporting period shall be calculated based on the actual consumption of energy for each month within the reporting period. In the event of data unavailability, average consumptions can be provided. Averaging approaches and assumptions made should be described in sufficient detail.

Total fuel consumed for the year of reporting shall be calculated based on the actual consumption of fuel for each month within the reporting period. Each type of fuel should be calculated separately.

Suggested unit for fuel as follows:

- Liquid fuel (i.e., petrol, diesel, oil, etc.): litres of fuel
- Solid fuel (i.e., coal, woodchip, etc): kg of fuel
- Gaseous fuel (i.e., natural gas, LPG, etc.): MMBTU or cu. ft. of gases

If the organisation is reporting both energy and fuels, the energy units should be standardised in MWh or MJ and reported in combination.

## 4. OTHER METHODOLOGICAL CONSIDERATIONS

### 4.1. COMMENT AND LIMITATION

There are no limitations to this indicator.

### 4.2. VALIDATION

Measurement and Verification (M&V) report to verify savings endorsed by certified M & V professional.

### 4.3. QUALITY MANAGEMENT

Not applicable.

## 5. REFERENCES AND DOCUMENTATION

1. National Energy Policy (2022–2040).
2. National Energy Efficiency Action Plan 2016–2025.
3. The Sustainable Development Goals (SDGs).

## INDICATOR INSTRUMENT FACTSHEET

## INDICATOR: ENERGY

## SUB-INDICATOR: ENERGY MANAGEMENT SYSTEM

## 1. INDICATOR INFORMATION

## 1.1. GOALS AND TARGETS

Goal 1: To achieve the national energy savings target of 8% by 2025.

The goal of this instrument is mapped to the following global goals and National targets:

**United Nations Sustainable Development Goals:**

- *SDG 12:* Ensure sustainable consumption and production patterns
- *Goal 12.6:* Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
  - *Target Indicator 12.6.1:* Number of companies publishing sustainability reports.

**National Energy Efficiency Action Plan 2016-2025**

1. Target of 52,233 GWh of energy savings (8.0%)
2. Target of 37,702 kt CO2 equivalent reduction

**Malaysia Renewable Energy Roadmap (MyRER)**

- National aspiration of 31% renewable energy (RE) capacity by 2025 and 40% by 2035

**Dasar Tenaga Negara (DTN) 2022-2040**

- National target set for RE at 18,431MW in 2040.

## 1.2. INDICATOR

Energy

## 1.3. SUB-INDICATOR

Energy Management System

## 1.4. LAST UPDATE

3 January 2023

## 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Agriculture & Plantation
- Aquaculture
- Construction
- Forest operation
- Livestock
- Manufacturing
- Mining
- Services

## 2. DEFINITIONS AND CONCEPTS

## 2.1. DEFINITION

*Organisation:* The entity undergoing the evaluation.

*Energy:* Energy resources, which refer to substances like fuels, petroleum products, heating and cooling, and electricity in general, because a significant portion of the energy contained in these resources can easily be extracted to serve a useful purpose.

*Renewable energy:* Energy resources that is collected from renewable resources that are naturally replenished on a human timescale. It includes sources such as sunlight, wind, the movement of water, and geothermal heat.

*Energy consumption:* An energy usage by the organisation or any sub-entities for its operations and activities.

*Energy Management System:* A set of policies and procedures integrated and put into practice to track, analyse, and plan for energy usage in an organisation.

*Energy savings:* An energy consumption reduction measured against a baseline year.

*Baseline year:* A reference point in time against which measure of consumption and/or in the future are measured.

*Reporting period:* The time span for which the instrument assesses the organisation. Unless required otherwise time span should be one year.

## 2.2. CONCEPT

Not applicable.

## 2.3. UNIT OF MEASURE

Not applicable.

# 3. METHODOLOGY

## 3.1. DATA SOURCES

*Organisation energy policies:* Organisation policies or guidelines specific to energy or main policy documents which specifically address energy efficiency plan and target.

*Organisation mission and vision statements:* Organisation mission and vision statements specific to energy or main policy documents which specifically address energy efficiency.

*Energy management activity:* Records and documentation related to energy management activity that include the energy management committee and energy audit.

*Data related to energy management activity:* Records and documentation of energy consumption, renewable energy, energy saving and performance within the organisation.

Reports, reviews by third parties, or certifications received by the organisation based on locally or internationally recognised standards.

Company policies, mission, and vision statements for continuous improvement.

## 3.2. DATA COLLECTION METHOD

*Organisation energy policies:*

1. Organisation policies or guidelines specific to energy or main policy documents which specifically address energy efficiency plan and target.
2. Statements within the policy describing an energy management system can be used as evidence. Statements describing targets for energy reduction, energy efficiency efforts, and any statements describing efforts or targets in achieving energy efficiency, increasing renewable energy mix, increasing renewable fuel mix shall also be considered.

*Organisation mission and vision statements:*

1. Organisation mission or vision statements specific to energy or organisation aspiration documents which specifically address energy efficiency plan and target.
2. Statements within the mission or vision statements describing an energy management system can be used as evidence. Statements within mission or vision statements describing targets for energy reduction, energy efficiency efforts, and any statements describing efforts or targets in achieving energy efficiency, increasing renewable energy mix, increasing renewable fuel mix shall also be considered.
3. Organisation mission and vision statements specific to energy or main policy documents which specifically address energy efficiency.

*Energy management activity:*

1. Documents, records, logbooks, minutes of meetings, and any written documentation related to energy management activity. This may also include documents describing activities by the energy management committee and energy audit.
2. Any form of documentation, including media such as videos and pictures related to energy management activity may also be considered as evidence.

*Data related to energy management activity:*

1. Records and documentation of energy consumption, renewable energy, energy saving and performance within the organisation.
2. Documents, records, logbooks, minutes of meetings, and any written documentation of data related to energy management activity. This may also include documents recording data activities by the energy management committee and energy audit.

*Organisation mission and vision statements:* Organisation mission and vision statements specific to energy or main policy documents which specifically address energy efficiency.

*Energy management activity:* Records and documentation related to energy management activity that include the energy management committee and energy audit.

*Data related to energy management activity:* Records and documentation of energy consumption, renewable energy, energy saving and performance within the organisation.

Reports, reviews by third parties, or certifications received by the organisation based on locally or internationally recognised standards.

Company policies, mission, and vision statements for continuous improvement.

Reference and citation to sections, parts, and/or entire documents as evidence. Documents cited shall specifically address the following aspects:

1. Evidence of a policy for more efficient use of energy.
2. Evidence of fixed targets and objectives to meet the policy.
3. Evidence of the usage data to better understand and make decisions about energy use.
4. Evidence of the performance of the policy.
5. Evidence of a continuous improvement in energy management.

**3.3. COMPUTATION**

Not applicable.

**3.4. ASSUMPTIONS AND UNCERTAINTIES**

Not applicable.

**4. OTHER METHODOLOGICAL CONSIDERATIONS****4.1. COMMENT AND LIMITATION**

There are no limitations to this indicator.

**4.2. VALIDATION**

1. ISO 50001:2018 Energy Management System.
2. AEMAS Energy Management Gold Standard.

**4.3. QUALITY MANAGEMENT**

Not applicable.

**5. REFERENCES**

1. National Energy Efficiency Action Plan 2016–2025.
2. Malaysia Renewable Energy Roadmap (MyRER).
3. Dasar Tenaga Negara (DTN) 2022–2040.
4. The Sustainable Development Goals (SDGs).

## INDICATOR INSTRUMENT FACTSHEET

## INDICATOR: ENERGY

## SUB-INDICATOR: RENEWABLE ENERGY

## 1. INDICATOR INFORMATION

## 1.1. GOALS AND TARGETS

Goal 1: National target of 31% RE (renewable energy) capacity mix in 2025, and 40% by 2035.

The goal of this instrument is mapped to the following global goals and National targets:

**United Nations Sustainable Development Goals**

- *SDG 12*: Ensure sustainable consumption and production patterns.
- *SDG Goal 12.6*: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle
  - *Target Indicator 12.6.1*: Number of companies publishing sustainability reports.

**National Energy Efficiency Action Plan 2016 – 2025:**

1. 52,233 GWh of energy savings (8.0%)
2. 37,702 ktCO<sub>2</sub> equivalent reduction

**Malaysia Renewable Energy Roadmap (MyRER)**

- National aspiration of 31% renewable energy (RE) capacity by 2025 and 40% by 2035.

**Dasar Tenaga Negara (DTN) 2022 – 2040**

- National target set for RE at 18,431MW in 2040.

## 1.2. INDICATOR

Energy

## 1.3. SUB-INDICATOR

Renewable Energy

## 1.4. LAST UPDATE

13 May 2023

## 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Agriculture & Plantation
- Aquaculture
- Construction
- Forest operation
- Livestock
- Manufacturing
- Mining
- Services

## 2. DEFINITIONS AND CONCEPTS

## 2.1. DEFINITION

*Organisation*: The entity undergoing the evaluation.

*Energy*: Energy resources, which refer to substances like fuels, petroleum products, heating and cooling, and electricity in general, because a significant portion of the energy contained in these resources can easily be extracted to serve a useful purpose.

*Renewable energy*: Energy resources that is collected from renewable resources that are naturally replenished on a human timescale. It includes sources such as sunlight, wind, the movement of water, and geothermal heat.

**Renewable fuel:** Fuel resources that is produced from renewable resources. Examples include biofuels and Hydrogen fuel. This is in contrast to non-renewable fuels such as natural gas, LPG, petroleum, coal, and other fossil fuels and nuclear energy.

**Energy consumption:** An energy usage by the organisation and all its sub-entities for its operations and activities.

**Energy savings:** An energy consumption reduction measured against a baseline year.

**Reporting period:** The time span for which the instrument assesses the organisation. Unless required otherwise time span should be one year.

## 2.2. UNIT OF MEASURE

Percentage (%) of renewable energy used with reference to the total energy used within the organisation.

Percentage (%) of renewable fuel used with reference to the total fuel used within the organisation.

## 3. METHODOLOGY

### 3.1. DATA SOURCES

**Energy consumption:** Meter energy usage readings (i.e., kWh, kJ, MMBTU), electricity bills (i.e., kWh, kJ, MMBTU), or any other documents recording the energy consumption for the organisation.

**Renewable energy consumption:** Meter renewable energy production readings (i.e., kWh, kJ), utility bills (i.e., kWh, kJ, MMBTU), or any other documents recording the renewable energy consumption for the organisation.

**Fuel consumption:** Bills of quantities for fuels (i.e., litres of fuel, kg of fuel, cu.ft of gases), or any other documents recording the fuel consumption for the organisation.

**Certificates of analysis (COA):** COA for fuels shall be referred to determine calorific values of fuels used (if applicable).

### 3.2. DATA COLLECTION METHOD

*Energy consumption:*

1. Metered energy usage reading showing a consumption of energy over a period of time. Typically, meter reading is provided with a monthly time span. The total energy consumed shall be computed by taking the total meter readings for individual months over the period of the reporting year. In the event that more than one energy source is available, the sum of the meter readings shall be considered.
2. If there are more than one type of energy being consumed, a common energy unit shall be utilised. (e.g., MWh, MJ)
3. Other documents that can be used as evidence are purchase invoices received by utility providers or suppliers for energy purchased with the assumption that the energy purchased is consumed within the reporting period.

*Renewable Energy consumption:*

1. Metered Renewable Energy showing a generation of renewable energy over a period of time. Typically, meter reading is provided with a monthly time span. The total renewable energy generated shall be computed by taking the total meter readings for individual months over the period of the reporting year. In the event that more than one energy source is available, the sum of the meter readings shall be considered.
2. If there are more than one type of renewable energy being generated, a common energy unit shall be utilised. (e.g., MWh, MJ)
3. Other documents that can be used as evidence are purchase invoices received by utility providers or suppliers for energy purchased with the assumption that the energy purchased is consumed within the reporting period.

*Fuel consumption:*

1. Bills of quantities of fuel for fuels purchased shall be used to represent consumption of fuel over a period of time. The total fuel consumed shall be computed by taking the total quantities for the period of the reporting year. In the event that more than one fuel source is consumed, the sum of the quantities of fuel consumed shall be considered.
2. Other forms of evidence acceptable include, purchase invoices, bills of lading, and other similar documents.
3. If there are more than one type of fuel being consumed, a common energy unit shall be utilised. (e.g., MWh, MJ)
4. The energy unit of fuels shall be computed by multiplying the calorific value (e.g., J/kg, kJ/l) of the fuel with the quantity (e.g., kg, l). Refer to the Appendix for the list of common calorific value that can be used as reference. In the event of fuels not listed in the Appendix, the assessor shall request from the organisation for such information accompanied by respective reference document (e.g., certificates of analysis for fuel calorific value, literature reference).
5. Other documents that can be used as evidence are purchase invoices received by utility providers or suppliers for fuel purchased with the assumption that the energy purchased is consumed within the reporting period.

*Fuel consumption coming from renewable sources:*

1. Bills of quantities of fuel for fuels coming from renewable purchased shall be used to represent consumption of renewable fuel over a period of time. The total renewable fuel consumed shall be computed by taking the total quantities for the period of the reporting year. In the event that more than one renewable fuel source is consumed, the sum of the quantities of fuel consumed shall be considered.

2. Other forms of evidence acceptable include, purchase invoices, bills of lading, and other similar documents. Documents and records of renewable fuels consumed (e.g., biomass, biogas) can also serve as evidence.
3. If there are more than one type of renewable fuel being consumed, a common energy unit shall be utilised. (e.g., MWh, MJ)
4. The energy unit of renewable fuels shall be computed by multiplying the calorific value (e.g., J/kg, kJ/l) of the fuel with the quantity (e.g., kg, l). Refer to the Appendix for the list of common calorific value that be used as reference. In the event of fuels not listed in the Appendix, the assessor shall request from the organisation for such information accompanied by respective reference document (e.g., certificates of analysis for fuel calorific value, literature reference).
5. Other documents that can be used as evidence are purchase invoices received by utility providers or suppliers for fuel purchased with the assumption that the energy purchased is consumed within the reporting period.

*Observations:* Observations are made during the site visit to understand the actual case scenario of the green initiative implementation within the boundaries of the organisation.

*Interviews:* Interviews with respondent carried out to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Questionnaires/surveys:* A set of questions designed for respondent to acquire insight of the processes/activities involved within the boundaries of the organisation.

*Documents reviews:* Documents reviewed during the site visit to support the observation.

### 3.3. COMPUTATION

The renewable energy percentage and renewable fuel percentage for the reporting period can be calculated using the following equations:

Percentage (%) of renewable energy consumption =

$$\left[ \frac{\text{Energy consumption coming from RE sources (i. e. , kWh, kJ, MMBTU)}}{\text{Total energy consumption (i. e. , kWh, kJ, MMBTU)}} \right] \times 100\%$$

Percentage (%) of renewable fuel consumption =

$$\left[ \frac{\text{Fuel consumption coming from renewable sources (unit for fuel)}}{\text{Total fuel consumption (unit for fuel)}} \right] \times 100\%$$

### 3.4. ASSUMPTIONS AND UNCERTAINTIES

Wherever fuel characteristic information is used for calculations, it shall be noted that the averaging of such characteristics (i.e., calorific value) contributes to uncertainties.

Any and all averaging approach to consumption data shall be noted and wherever practicably possible the uncertainties shall be quantified.

Total energy consumed for the reporting period shall be calculated based on the actual consumption of energy for each month within the reporting period. In the event of data unavailability, average consumptions can be provided. Averaging approaches and assumptions made should be described in sufficient detail.

Total fuel consumed for the year of reporting shall be calculated based on the actual consumption of fuel for each month within the reporting period. Each type of fuel should be calculated separately.

Suggested unit for fuel as follows:

Liquid fuel (i.e., petrol, diesel, oil, etc.) - litres of fuel

Solid fuel (i.e., coal, woodchip, etc) - kg of fuel

Gaseous fuel (i.e., natural gas, LPG, etc.) – MMBTU or cu.ft. of gases

If the organisation is reporting both renewable electricity and renewable fuels, the energy units should be standardised in MWh or MJ and reported in combination.

## 4. OTHER METHODOLOGICAL CONSIDERATIONS

### 4.1. COMMENT AND LIMITATION

There are no limitations to this indicator.

### 4.2. VALIDATION

Renewable Energy Certificate (REC) issued by Tenaga Nasional Berhad (TNB) or GSPARX Sdn. Bhd. to validate total amount of renewable energy subscribed.

### 4.3. QUALITY MANAGEMENT

Not applicable.

## 5. REFERENCES

1. National Energy Efficiency Action Plan 2016 – 2025.
2. Malaysia Renewable Energy Roadmap (MyRER).
3. Dasar Tenaga Negara (DTN) 2022 – 2040.
4. The Sustainable Development Goals (SDGs).

## INDICATOR INSTRUMENT FACTSHEET

## INDICATOR: INNOVATION

## SUB-INDICATOR: KNOWLEDGE TRANSFER AND COLLABORATION

## 1. INDICATOR INFORMATION

## 1.1. GOALS AND TARGETS

Goal 1: Establishment of strategic partnership/collaboration/joint venture/knowledge transfer programme for innovation in green practices and commercialisation initiatives.

**United Nations Sustainable Development Goals**

- *SDG 8:* Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.
- *SDG 9:* Build resilient infrastructure, promote sustainable industrialisation, and foster innovation.
- *SDG 12:* Ensure sustainable consumption and production patterns.

**Green Technology Master Plan (GTMP) 2017 – 2030 Strategic Thrust**

- *ST2: Market Enablers*
  - 8.3.6 Introducing Roll-Out Plans Comprising Human Capital Development and Public - Private Collaboration to Green the Cities
  - 8.3.7 International Collaborations
- *ST3: Human Capital Development*
  - 8.4.2 Greater Collaboration with Tertiary Institutions for Upskilling of Graduates

**Dasar Sains, Teknologi, Inovasi Negara (DSTIN) 2021 – 2030**

- ST1: Advancing Scientific and Social Research Development and Commercialisation
  1. Increase Gross Expenditure on R&D (GERD) to at least 2.0% of GDP by 2020.
  2. Enhance the performance of public and private Research, Development & Commercialisation funding.

## 1.2. INDICATOR

Innovation

## 1.3. SUB-INDICATOR

Knowledge transfer and collaboration

## 1.4. LAST UPDATE

13 May 2023

## 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Agriculture & Plantation
- Aquaculture
- Construction
- Forest operation
- Livestock
- Manufacturing
- Mining
- Services

## 2. DEFINITIONS AND CONCEPTS

### 2.1. DEFINITION

*Knowledge transfer:* Method of sharing information, abilities, ideas, discoveries, and skills across different areas/community that encourages innovation and boost efficiency in the organisation system. The activity involves research, academic engagement for technology transfer or commercialisation through the relationship between collaborative partners, with outcomes of successful knowledge or technology transfer and commercialisation.

*Strategic collaboration:* Strategic actions or programs in innovation practice to achieve specific goals and objectives of mutual benefit to the parties involved, creating values for intended audience/clients/consumers/stakeholders.

### 2.2. UNIT OF MEASURE

Not applicable

## 3 DATA SOURCE AND DATA COLLECTION METHOD

### 3.1 DATA SOURCES

*Contract agreements:* Documents indicating mutual obligations between two or more parties such as Letter of Intent (LOI)/Non-Disclosure Agreement (NDA)/Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA).

*Intellectual Property (IP):* Documents related to intellectual protection such as copyrights, trademarks, trade secret, industrial design, utility innovation or patent.

*Proof of Return on Value:*

*Economic Value:* Financial accounting report indicating outlining investment, revenue and net profit based on commercialisation/marketing attribution success of innovative green products/services.

*Social Value:* Project completion report with evidence of applied/implemented/reviewed innovation practices which leads to pre-set goals that are measurable improvements on existing practices of identified community.

*Other related Value:* Project report or document information improvement on productivity/practice/system and resource and material-efficiency leading to improved air and water quality/fewer waste/more renewable energy sources and other sustainable conditions.

### 3.2 DATA COLLECTION METHOD

*Contract agreements*

Evidence indicating a formal contract or agreement within collaborative parties:

1. Letter of Intent (LOI)/Non-Disclosure Agreement (NDA)/Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA).

*Intellectual Property (IP)*

1. Provisional IP application document; or
2. E-filing document; or
3. Published detailed of invention; or
4. IP Award certificate/letter; or
5. IP filing number.

*Organisation may present proof of Economic ROI and/or Social Value ROI*

*Proof of Return on Investment (ROI) or Return on Value (ROV):*

*Proof of Economic ROI*

1. Financial accounting report of commercialised product/service solution resulting from innovation project (e.g., commercial activities, transactions, order, invoice).

2. Proof of positive return on investment (ROI) is not necessary. However, organisation will only need to prove that commercialised product/service is going to or actively being promoted to market.

#### Proof of Social Value ROI

1. Project completion report (clearly shows measurable pre-set goals to improve existing practices related to community engagement outlining innovation product/service/process applied/implemented/system/management/productivity reviewed on identified community).
2. In the event of an ongoing project, proof of actual goals is not yet necessary. However, proof of plan or ongoing engagement with community must be present through official project documents.

#### Proof of Other ROV

1. Project completion report with evidence of improvement on productivity/practice/system and resource and material-efficiency leading to improved air and water quality/fewer waste/more renewable energy sources and other sustainable conditions.

### 3.3 COMPUTATION

Not applicable

### 3.4 ASSUMPTIONS AND UNCERTAINTIES

Not applicable

## 4 OTHER METHODOLOGICAL CONSIDERATIONS

### 4.1 COMMENT AND LIMITATION

Not applicable

### 4.2 VALIDATION

Not applicable

### 4.3 QUALITY MANAGEMENT

1. Malaysian Standards (MS) - Standards Malaysia
2. Local or International Product Certification – SIRIM
3. Good Design Mark – Malaysia Design Council
4. MyHIJAU Mark - MGTC

## 5. REFERENCES

1. Green Practice Guideline for Services Sector (Final Report Draft 2022).
2. Green Technology Master Plan Malaysia/GTMP (2017 – 2030).
3. Dasar Sains, Teknologi dan Inovasi Negara/DSTIN (2021 – 2030).
4. Dasar Keusahawanan Negara/DKN (2030).
5. Sustainable Development Goals (SDG) 2030.
6. Dasar Perubahan Iklim Negara.

## INDICATOR INSTRUMENT FACTSHEET

## INDICATOR: INNOVATION

## SUB-INDICATOR: RESEARCH AND DEVELOPMENT (R&amp;D)

## 1. INDICATOR INFORMATION

## 1.1. GOALS AND TARGETS

Goal 1: Establishment of Research & Development (R&D) process, output, and policy for organisation.

Goal 2: To increase investment or incentive received to support innovation in green practice to promote commercialisation, Intellectual Property and award/recognition within the organisation.

## United Nations Sustainable Development Goals

- *SDG 8*: Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.
- *SDG 9*: Build resilient infrastructure, promote sustainable industrialisation, and foster innovation
- *SDG 12*: Ensure sustainable consumption and production patterns

## Green Technology Master Plan (GTMP) 2017 – 2030 Strategic Thrust

- *ST4: Research & Development & Commercialisation (R&D&C)*
  - 8.5.1 A key steppingstone towards an innovative Green Technology (GT) hub
    - 8.5.1.1 R&D&C Projects
  - 8.5.2 Encouraging more localised and demand driven R&D&C
- *ST2: Market Enablers*
  - 8.3.2 Funding GT project development
  - 8.3.3 Exploring Alternative GT Financing Ecosystem
  - 8.3.4 GT Incentives

## Dasar Sains, Teknologi, Inovasi Negara (DSTIN) 2021 – 2030

- *ST1: Advancing Scientific and Social Research Development and Commercialisation*
  1. Enhance commercialisation and increase uptake of home-grown R&D innovative products through clear guidelines and standards compliance.
  2. Increase Gross Expenditure on R&D (GERD) to at least 2.0% of GDP by 2020.

## 1.2. INDICATOR

Innovation

## 1.3. SUB-INDICATOR

Research and Development (R&D)

## 1.4. LAST UPDATE

13 May 2023

## 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Agriculture & Plantation
- Aquaculture
- Construction
- Forest operation
- Livestock
- Manufacturing
- Mining
- Services

## 2. DEFINITIONS AND CONCEPTS

### 2.1 DEFINITIONS

*Research & Development (R&D):* Activities that organisation undertakes to innovate and introduce new improvised products and services.

*Commercialisation:* The process of bringing new products and services to market.

*Innovation:* Innovation refers to activity that contribute to the creation of key products, services, or processes to reduce the harm, impact, and deterioration of the environment while optimising the use of natural resources.

*Products:* Product innovation involves creating new products or improved versions of existing products that increase their uses or impact in green solution/environment. It applies the concept of green to the entire process of product innovation by increasing resource utilisation, efficiently promoting green production design, and positively promoting corporate financial performance.

*Services:* Green service innovation includes elements such as green invention, environmental service portfolio, environmental service delivery, and environmental service design. Distinct from other service innovations, green service innovation focuses on environmental, social responsibility, and customer experience.

*Intellectual Property:* Form of property that includes any tangible/intangible creations of human intellect, green practices, or green innovation initiatives. Namely patents, copyrights, industrial design, utility innovation, trademarks, and trade secrets.

*Social innovations:* New solutions (products/services/models/markets/processes) that simultaneously meet a social need and lead to new or improved capabilities and relationships and better use of assets and resources.

### 2.2 UNIT OF MEASURE

Not applicable

## 3. DATA SOURCE AND DATA COLLECTION METHOD

### 3.1 DATA SOURCES

*Innovation Management Procedure:* Sets of policies, processes and procedures used by organisations to ensure fulfilment of tasks required to achieve operational objective for innovation (including financial success, safe operation, product quality, client relationships, legislative and regulatory conformance, and worker management).

*Organisational Structure:* Refers to systems which outlines how innovation activities are formalised through functions within an R&D unit and within the boundaries of the organisations under evaluation.

*Product/Design/System/Solution Blueprint:* Refers to related standard documents/record/proof of concept and pertaining innovation outcome.

*Project Charter:* A document that describes an innovation project in its entirety that includes an overview, an outline of scope, an approximate schedule, a budget estimate, anticipated risks, and key stakeholders.

*Grant Proposal:* A document proposing a research project requesting for sponsorship of that research.

*Grant Award Document:* A written agreement between the organisation and a grantee as the official notification of grant approval with evidence for contractual grant reporting.

*Investment Records:* Financial documents/records used as evidence for internal and external investment of technology or system which enables innovation process/research/practice/development in the organisation.

*Intellectual Property (IP):* Provisional IP application document/e-filing document/published detailed of invention on intellectual protection within copyright, trademark, patents, geographical indications, plant varieties, industrial designs and semiconductor integrated circuit layout designs.

*Recognition/Award/Certification:* Refers to the state or quality innovation product/process/service that are recognised or acknowledged by certified bodies.

*Proof of Return on Value:*

*Economic Value:* Financial accounting report indicating outlining investment, revenue and net profit based on commercialisation/marketing attribution success of innovative green products/services.

*Social Value:* Project completion report with evidence of applied/implemented/reviewed innovation practices which leads to pre-set goals that are measurable improvements on existing practices of identified community.

*Other related Value:* Improvement on productivity/practice/System and resource and material-efficiency leading to improved air and water quality/fewer waste/more renewable energy sources and other sustainable conditions.

### 3.2 DATA COLLECTION METHOD

The data to be collected should prove the existence of a Research and Development (R&D) unit/dept/personnel with proof of project document and R&D result that includes any one of the suggested types of evidence.

*Proof of in-House R&D Process (any of the following):*

*Existence of R&D unit/dept/personnel/appointment*

1. A unit or section or department that has a role on promoting innovation (e.g: R&D department, testing department, incubation unit); or
2. Appointment letter or minute meeting indicating specific Person in Charge for a R&D project related to green practices.
3. Position or job title in charge in R&D, testing or innovation (e.g: Project manager, Research Supervisor); or

4. A project or an activity promoting innovation in management procedure within the reporting period. (e.g: new product development, Innovation Competition, Design improvement, product or service refinement); or
5. In the event of unit or section specifically promoting innovation is not present, a specific team that work on innovation project can be considered as evidence of innovation management system in place.

*Product/Design/System/Solution Blueprint*

1. Evidence illustrates the outcome from R&D, Commercialisation, or Innovation (eg: Technical Drawing, System Drawing or chart, Layout, Product Blueprint, Prototype, Model Making, Mock-ups, Proof of Concept Development).
2. A proof of service system (e.g.: System Flowchart, Apps, Software Development).

*Project Charter:* Project Plan and Proposal or Project Roadmap outlining the overview of project, scope, schedule, estimated budget.

*Proof of Research & Development Investment (any of the following):*

*Grant Proposal:*

1. Proof of submitted grant proposal outlining context, objectives, and methods leading to research and development project for innovation activities/product/services/processes; or
2. Grant proposal draft that will be submitted within the year of reporting period. (With proof of call for submission poster/email/letter).

*Grant Award Document:*

1. Grant agreement for research and development project – active grant. (eg: Grant letter, Contract agreement, grant certificate, Proof of grant/financial) or;
2. Grant payment (e.g., Proof of grant/financial record or transaction) or;
3. Grant Monitoring records (e.g., Project progress report, financial statements).

*Investment Records:*

1. Financial documents/records used as evidence for internal and external investment of technology or system which enables innovation process/research/practice/development in the organisation.
2. A written agreement between the organisations as the official notification of grant/fund/sum value invested with evidence for contractual investment reporting.

*Internal/external investment of innovation-enabling technology or system:*

1. Agreement, subscription, assignment, or other document evidencing in physical form an investment appointing the organisation as custodian.
2. Purchase or installation record of system or technology.

*Proof of Research & Development Outcome/Project Report (any of the following):**Proof of Return on Investment (ROI) or Return on Value (ROV):**Proof of Economic ROI*

1. Financial accounting report of commercialised product/service solution as a result of innovation project. (e.g commercial activities, transactions, order, invoice)

2. Proof of positive return on investment (ROI) is not necessary, organisation will only need to proof that commercialised product/service is going to or actively being promoted to market.

*Proof of Social Value ROI*

1. Project completion report (clearly shows measurable pre-set goals to improve existing practices related to community engagement outlining innovation product/service/process applied/implemented/system/management/productivity reviewed on identified community).
2. In the event of an ongoing project, proof of actual goals is not yet necessary. However, proof of plan or ongoing engagement with community must be present through official project documents.

*Proof of Other ROV:* Project completion report with evidence of improvement on productivity/practice/system and resource and material-efficiency leading to improved air and water quality/fewer waste/more renewable energy sources and other sustainable conditions.

*Intellectual Property (IP):*

1. Provisional IP application document/e-filing document/published detailed of invention on intellectual protection within copyright, trademark, patents, geographical indications, plant varieties, industrial designs and semiconductor integrated circuit layout designs.
2. E-filing document; or
3. Published detailed of invention; or
4. IP Award certificate/letter; or
5. IP filing number.

*Recognition/Award/Certification:*

1. Recognition of achievement, label, standards or special acknowledgment on Innovative solution, product or services. (e.g., MyHIJAU mark, Eco-label mark, MS mark, or significant recognition promoting innovation).
2. Certificate for Research & Development outcome from local or international agencies, association, government bodies and authorities (e.g., Product Certification from SIRIM, Standards Malaysia, MGTC, MRM or MyIPO).
3. Proof of award received from R&D&C&I initiative, projects, programmes, or venture (e.g., Local or Internationally recognised award/organiser/provider).

**3.3 COMPUTATION**

Not applicable

**3.4 ASSUMPTIONS AND UNCERTAINTIES**

Not applicable

**4. OTHER METHODOLOGICAL CONSIDERATIONS**

Not applicable

**4.1 COMMENT AND LIMITATION**

Not applicable

**4.2 VALIDATION**

Not applicable

**4.3 QUALITY MANAGEMENT**

- Malaysian Standards (MS) – Standards Malaysia
- Local or International Product Certification – SIRIM
- Good Design Mark – Malaysia Design Council
- MyHIJAU Mark – MGTC

**5. REFERENCES**

1. Green Practices Guideline for Services Sector (Final Report Draft 2022).
2. Green Technology Master Plan Malaysia/GTMP (2017 – 2030).
3. Dasar Sains, Teknologi dan Inovasi Negara/DSTIN (2021 – 2030).
4. Sustainable Development Goals (SDG) 2030.
5. Dasar Keusahawanan Negara/DKN (2030).

## INDICATOR INSTRUMENT FACTSHEET

## INDICATOR: MANAGEMENT

## SUB-INDICATOR: GREEN PROCUREMENT

## 1. INDICATOR INFORMATION

## 1.1. GOALS AND TARGETS

*Goal 1:* Encourage companies to adopt sustainable practices and integrate sustainability information into their reporting cycle.

The goal of this instrument is mapped to the following global goals and National targets:

**United Nations Sustainable Development Goals**

- *SDG 12:* Ensure sustainable consumption and production patterns.
- *SDG Target 12.6:* Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

## 1.2. INDICATOR

Management

## 1.3. SUB-INDICATOR

Green Procurement

## 1.4. LAST UPDATE

13 May 2023

## 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Agriculture & Plantation
- Aquaculture
- Construction
- Forest operation

- Livestock
- Manufacturing
- Mining
- Services

## 2. DEFINITIONS AND CONCEPTS

## 2.1. DEFINITIONS

*Boundary:* A defined border that accounts for and limits the key business activities and processes which form the basis of the study or analysis.

*Baseline year:* A reference point in time against which a measure of consumption and/or production in the present and/or future are measured.

*Reporting period:* The period for which the instrument assesses the organisation. Unless required, otherwise period should be one year.

*Management:* Management from an organisational perspective refers to planning, organising, and administering its resources and activities effectively to achieve specific objectives efficiently.

*Green Procurement:* The acquisition of environmentally friendly products and services, including setting environmental requirements in selecting suppliers, contractors, and contract agreements.

## 2.2. CONCEPTS

Not applicable.

## 2.3. UNIT OF MEASURE

Not applicable.

### 3. METHODOLOGY

#### 3.1. DATA SOURCES

*Policy or standards:* Refers to a written policy and/or international/national standards used/implemented within the organisation's boundaries.

*Monitoring records:* Refers to documents/records used as evidence and primary data to achieve the intended goals.

*Contract agreements:* Documents are evidence for indicating mutual obligations between the parties.

*Purchasing records and documents:* Documents indicate the organisation acquiring services or/and products/systems.

#### 3.2. DATA COLLECTION METHOD

*Policy or standards:*

1. A written document that states the procurement of green services or/and products/systems.
2. A description of company guidelines related to services or/and products/systems.
3. Strategic action plan document of a company on green procurement commitments.
4. Green procurement policy document related to the organisation's services or/and products/systems.

*Monitoring Records:*

1. A statement of green practices activities related to green procurement that are shared in minutes of meetings, mission & vision, website, social media, and others.
2. Recognition of certificate and award on green procurement activities in national and international organisations.

*Contract agreements:* A documented agreement on green procurement related to services or/and products/systems (LoI/MoU/MoA).

#### 3.3. ASSUMPTION AND UNCERTAINTIES

Not applicable.

### 4. OTHER METHODOLOGICAL CONSIDERATIONS

#### 4.1. COMMENT AND LIMITATION

Not applicable.

#### 4.2. VALIDATION

Any nationally and internationally recognised eco-label certification.

#### 4.3. QUALITY MANAGEMENT

ISO 20400:2017 (Green Procurement)

### 5. REFERENCES AND DOCUMENTATION

1. Sustainable Development Goals (SDG) 2030.
2. ISO 20400:2017 Guideline.

## INDICATOR INSTRUMENT FACTSHEET

## INDICATOR: MANAGEMENT

## SUB-INDICATOR: POLICY AND PROGRAMME

## 1. INDICATOR INFORMATION

## 1.1. GOALS AND TARGETS

*Goal 1:* Encourage small, medium, and large companies to adopt sustainable practices and reporting.

The goal of this instrument is mapped to the following global goals and National targets:

## United Nations Sustainable Development Goals

- *SDG 12:* Ensure sustainable consumption and production patterns.
- *SDG Target 12.6:* Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

## 1.2. INDICATOR

Management

## 1.3. SUB-INDICATOR

Policy and Programme

## 1.4. LAST UPDATE

13 May 2023

## 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Agriculture & Plantation

- Aquaculture
- Construction
- Forest operation
- Livestock
- Manufacturing
- Mining
- Services

## 2. DEFINITIONS AND CONCEPTS

## 2.1. DEFINITIONS

*Boundary:* A defined border that accounts for and limits the key business activities and processes which form the basis of the study or analysis.

*Baseline year:* A reference point in time against which a measure of consumption and/or production in the present and/or future are measured.

*Reporting period:* The period for which the instrument assesses the organisation. Unless required, otherwise time span should be one year.

*Management:* Management from an organisational perspective refers to planning, organising, and administering resources and activities effectively to achieve specific objectives efficiently.

*Policy:* Documented statement to achieve specific goals by the organisations.

*Programme:* An activity that supports the achievement of the stated goal. The results of the project activities must have a direct, real, and measurable impact on achieving the intended purpose.

**2.2. CONCEPTS**

Not applicable.

**2.3. UNIT OF MEASURE**

Not applicable.

**3. METHODOLOGY****3.1. DATA SOURCES**

*Policy or standards:* Refers to a written policy and/or international/national standards used/implemented within the organisation's boundaries.

*Monitoring records:* Refers to documents/records used as evidence and primary data to achieve the intended goals.

*Contract agreements:* Documents are evidence for indicating mutual obligations between the parties.

**3.2. DATA COLLECTION METHOD**

*Policy or standards:*

1. Policy or standards comply with local, national, and international legislation and regulations (e.g., Environmental Quality Act 1974).
2. Policy or standards of green practice by the organisation (e.g., ISO standards).
3. Developed guidelines or standard operating procedures of any green practice by the organisation (e.g., MyHIJAU Guidelines).
4. A planned roadmap and implemented strategy of new green practices (e.g., National Green Growth Roadmap).

*Monitoring Records:*

1. Reports of participation in any sustainability programmes on the website, social media, posters, and minutes of meetings.

2. Recognition of certificate and award received on sustainability programmes at national and international levels.

*Contract agreements:*

1. A written agreement of green practices commitment among employees and top management (e.g., Vision and missions of organisation).
2. A written agreement of green practices commitment with industries (e.g., MoU/MoA/LOI/LOA/NDA).
3. A written agreement of green practices commitment for corporate social responsibility (CSR) (e.g., Community, NGOs).

**3.3. ASSUMPTION AND UNCERTAINTIES**

Not applicable.

**4. OTHER METHODOLOGICAL CONSIDERATIONS****4.1. COMMENT AND LIMITATION**

Not applicable.

**4.2. VALIDATION**

Not applicable.

**4.3. QUALITY MANAGEMENT**

- ISO 9001:2015 (Quality Management Systems).
- ISO 14001:2015 (Environmental Management System).
- ISO 45001:2018 (OSHA).

**5. REFERENCES**

1. Sustainable Development Goals (SDG) 2030.
2. ISO 9001:2015 Guideline.
3. ISO 14001:2015 Guideline.
4. ISO 45001:2018 Guideline.

## INDICATOR INSTRUMENT FACTSHEET

## INDICATOR: MANAGEMENT

## SUB-INDICATOR: HUMAN CAPITAL

## 1. INDICATOR INFORMATION

## 1.1. GOALS AND TARGETS

*Goal 1:* Encourage companies to adopt sustainable practices and integrate sustainability information into their reporting cycle.

The goal of this instrument is mapped to the following global goals and National targets:

**United Nations Sustainable Development Goals**

- *SDG 12:* Ensure sustainable consumption and production patterns.
- *SDG Target 12.6:* Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

## 1.2. INDICATOR

Management

## 1.3. SUB-INDICATOR

Human Capital

## 1.4. LAST UPDATE

3 May 2023

## 1.5. RELATED SECTORS

This indicator instrument applies to the following sectors:

- Agriculture & Plantation
- Aquaculture
- Construction
- Forest operation
- Livestock
- Manufacturing
- Mining
- Services

## 2. DEFINITIONS AND CONCEPTS

## 2.1. DEFINITIONS

*Boundary:* A defined border that accounts for and limits the key business activities and processes which form the basis of the study or analysis.

*Baseline year:* A reference point in time against which a measure of consumption and/or production in the present and/or future are measured.

*Reporting period:* The period for which the instrument assesses the organisation. Unless required, otherwise period should be one year.

*Human Capital:* A productive wealth embodied in labour, skills, and knowledge that can be developed, recruited, trained, and managed to achieve organisational goals.

## 2.2. UNIT OF MEASURE

Not applicable.

## 3. METHODOLOGY

### 3.1. DATA SOURCES

*Policy or standards:* Refers to a written policy and/or international/national standards used/implemented within the boundaries/organisations.

*Monitoring records:* Refers to documents/records used as evidence and primary data to achieve the intended goals.

*Contract agreements:* Documents are evidence for indicating mutual obligations between the parties.

### 3.2. DATA COLLECTION METHOD

*Policy or standard:*

1. A human capital development document that states the key performance indicators related to green practices.
2. A strategic action plan on human capital development that outlines the organisation's plan to adopt green practices.
3. A policy on human capital development that promotes lifelong learning culture on green practices.

*Monitoring Records:*

1. Minutes of meetings on human capital development related to green practices aimed at building a green culture and lifestyle.
2. A statement of documented human capital development activities in relations to green practices that the organisation shares on its website, social media, and other media of communications.
3. Recognition of organisational human capital development activities in relations to green practices (e.g., certificates, awards obtained at national and international levels).

*Contract agreements:* A documented agreement indicating mutual obligations between the parties that is related to human capital development.

### 3.3. ASSUMPTIONS AND UNCERTAINTIES

Not applicable.

## 4. OTHER METHODOLOGICAL CONSIDERATIONS

### 4.1. COMMENT AND LIMITATION.

Not applicable.

### 4.2. VALIDATION

Not applicable.

### 4.3. QUALITY MANAGEMENT

ISO 30414:2018 (Human Resource Management)

## 5. REFERENCES AND DOCUMENTATION

1. Sustainable Development Goals (SDG) 2030.
2. ISO 30414:2018 Guide.

# QUESTIONNAIRE

1. Cost-benefit analysis: This involves comparing the costs of implementing the evaluation method with the potential benefits that it is expected to produce.
  - (a) On a scale of 1-5, how expensive is it to implement this evaluation method?  
(1 = very inexpensive, 5 = very expensive)
  - (b) On a scale of 1-5, how much of a benefit is this evaluation method expected to produce?  
(1 = no benefit, 5 = significant benefit)
  - (c) On a scale of 1-5, how likely is it that the benefits of this evaluation method will outweigh the costs?  
(1 = not likely at all, 5 = extremely likely)
  - (d) On a scale of 1-5, how confident are you that the costs of this evaluation method can be financed?  
(1 = not confident at all, 5 = extremely confident)
  - (e) On a scale of 1-5, how well does this evaluation method compare to other evaluation methods in terms of cost-benefit ratio?  
(1 = much worse, 5 = much better)
  - (f) On a scale of 1-5, how much of an impact does this evaluation method have in terms of unintended consequences?  
(1 = no impact, 5 = significant impact)
  - (g) On a scale of 1-5, how much of an impact does this evaluation method have in terms of long-term costs or benefits?  
(1 = no impact, 5 = significant impact)
  - (h) On a scale of 1-5, how much of an impact does this evaluation method have in terms of regulatory or legal considerations?  
(1 = no impact, 5 = significant impact)
2. Feasibility study: This is a comprehensive analysis of the potential risks, challenges and opportunities of the evaluation method, including the resources required and the potential impact on the stakeholders.
  - (a) On a scale of 1-5, how easy is it to implement this evaluation method?  
(1 = very difficult, 5 = very easy)
  - (b) On a scale of 1-5, how well does this evaluation method fit within the available resources and constraints?  
(1 = not well at all, 5 = extremely well)
  - (c) On a scale of 1-5, how likely is it that this evaluation method will be successful given the available resources and constraints?  
(1 = not likely at all, 5 = extremely likely)
  - (d) On a scale of 1-5, how much time is required to implement this evaluation method?  
(1 = very little time, 5 = a significant amount of time)
  - (e) On a scale of 1-5, how well does this evaluation method perform during the pilot testing?  
(1 = not well at all, 5 = extremely well)
  - (f) On a scale of 1-5, how well does this evaluation method perform in terms of logistics?  
(1 = not well at all, 5 = extremely well)
  - (g) On a scale of 1-5, how well does this evaluation method perform in terms of data accessibility?  
(1 = not well at all, 5 = extremely well)
  - (h) On a scale of 1-5, how well does this evaluation method perform in terms of expert review?  
(1 = not well at all, 5 = extremely well)

3. Time analysis: This involves analysing the amount of time required to implement the evaluation method, including the time required for data collection, analysis, and reporting.
- (a) On a scale of 1-5, how much time is required to set up this evaluation method?  
(1 = very little time, 5 = a significant amount of time)
  - (b) On a scale of 1-5, how much time is required for data collection with this evaluation method?  
(1 = very little time, 5 = a significant amount of time)
  - (c) On a scale of 1-5, how much time is required for data analysis with this evaluation method?  
(1 = very little time, 5 = a significant amount of time)
  - (d) On a scale of 1-5, how much time is required for reporting with this evaluation method?  
(1 = very little time, 5 = a significant amount of time)
  - (e) On a scale of 1-5, how often does the data need to be updated with this evaluation method?  
(1 = rarely, 5 = frequently)
  - (f) On a scale of 1-5, how much of an impact does this evaluation method have on staff time?  
(1 = no impact, 5 = significant impact)
  - (g) On a scale of 1-5, how much of an impact does this evaluation method have on the project timeline?  
(1 = no impact, 5 = significant impact)
  - (h) On a scale of 1-5, how well does this evaluation method fit within the overall project schedule?  
(1 = not well at all, 5 = extremely well)
  - (i) On a scale of 1-5, how much flexibility is there to adjust the timing of data collection and analysis with this evaluation method?  
(1 = very little flexibility, 5 = a lot of flexibility)
  - (j) On a scale of 1-5, how much time is required for training personnel to use this evaluation method?  
(1 = very little time, 5 = a significant amount of time)
4. Pilot testing: This involves testing a small-scale version of the evaluation method to identify any potential issues or challenges that need to be addressed before full implementation.
- (a) On a scale of 1-5, how well did this evaluation method perform during the pilot test?  
(1 = not well at all, 5 = extremely well)
  - (b) On a scale of 1-5, how well did the evaluation method meet the needs of the test participants?  
(1 = not well at all, 5 = extremely well)
  - (c) On a scale of 1-5, how well did the evaluation method achieve the desired outcomes?  
(1 = not well at all, 5 = extremely well)
  - (d) On a scale of 1-5, how much feedback did test participants provide about the evaluation method?  
(1 = very little feedback, 5 = a lot of feedback)
  - (e) On a scale of 1-5, how well did the evaluation method perform compared to other similar methods tested?  
(1 = not well at all, 5 = extremely well)
  - (f) On a scale of 1-5, how feasible is it to implement this evaluation method on a larger scale?  
(1 = not feasible at all, 5 = extremely feasible)
  - (g) On a scale of 1-5, how much of an impact did the evaluation method have on the pilot test participants?  
(1 = no impact, 5 = significant impact)
  - (h) On a scale of 1-5, how well did the evaluation method perform in terms of data accuracy?  
(1 = not well at all, 5 = extremely well)
  - (i) On a scale of 1-5, how well did the evaluation method perform in terms of data reliability?  
(1 = not well at all, 5 = extremely well)
  - (j) On a scale of 1-5, how well did the evaluation method perform in terms of data validity?  
(1 = not well at all, 5 = extremely well)

5. Expert review: This involves consulting with experts in the field to gain their perspective on the feasibility of the evaluation method, including any potential challenges and opportunities.
  - (a) On a scale of 1-5, how well does this evaluation method align with current industry standards and best practices?  
(1 = not well at all, 5 = extremely well)
  - (b) On a scale of 1-5, how well does this evaluation method address the research question or problem it is intended to solve?  
(1 = not well at all, 5 = extremely well)
  - (c) On a scale of 1-5, how well does this evaluation method utilise appropriate methods and techniques?  
(1 = not well at all, 5 = extremely well)
  - (d) On a scale of 1-5, how well does this evaluation method account for potential sources of bias?  
(1 = not well at all, 5 = extremely well)
  - (e) On a scale of 1-5, how well does this evaluation method account for potential confounding variables?  
(1 = not well at all, 5 = extremely well)
  - (f) On a scale of 1-5, how well does this evaluation method account for potential ethical concerns?  
(1 = not well at all, 5 = extremely well)
  - (g) On a scale of 1-5, how well does this evaluation method account for potential limitations?  
(1 = not well at all, 5 = extremely well)
  - (h) On a scale of 1-5, how well does this evaluation method account for potential uncertainties?  
(1 = not well at all, 5 = extremely well)
  - (i) On a scale of 1-5, how well does this evaluation method account for potential generalisability?  
(1 , not well at all, 5 = extremely well)
  - (j) On a scale of 1-5, how well does this evaluation method perform in terms of data quality?  
(1 = not well at all, 5 = extremely well)
6. Stakeholder analysis: This involves identifying and assessing the perspectives and needs of the stakeholders affected by the evaluation method, to understand the feasibility of the method in relation to their needs and concerns.
  - (a) On a scale of 1-5, how important are the stakeholders in the success of this evaluation method?  
(1 = not important at all, 5 = extremely important)
  - (b) On a scale of 1-5, how satisfied are stakeholders with this evaluation method?  
(1 = not satisfied at all, 5 = extremely satisfied)
  - (c) On a scale of 1-5, how well does this evaluation method meet the needs of the stakeholders?  
(1 = not well at all, 5 = extremely well)
  - (d) On a scale of 1-5, how much input did stakeholders have in the development of this evaluation method?  
(1 = no input, 5 = significant input)
  - (e) On a scale of 1-5, how well does this evaluation method align with the goals and objectives of the stakeholders?  
(1 = not well at all, 5 = extremely well)
  - (f) On a scale of 1-5, how well does this evaluation method account for potential stakeholder conflicts?  
(1 = not well at all, 5 = extremely well)
  - (g) On a scale of 1-5, how well does this evaluation method account for potential stakeholder resistance?  
(1 = not well at all, 5 = extremely well)
  - (h) On a scale of 1-5, how well does this evaluation method account for potential stakeholder power imbalances?  
(1 = not well at all, 5 = extremely well)
  - (i) On a scale of 1-5, how well does this evaluation method consider the perspectives of diverse stakeholders?  
(1 = not well at all, 5 = extremely well)
  - (j) On a scale of 1-5, how well does this evaluation method involve stakeholders in the implementation and monitoring process?  
(1 = not well at all, 5 = extremely well)

7. Logistics: This involves assessing the logistical aspects of the evaluation method, including the availability of necessary equipment, personnel, and facilities required to implement the evaluation method.
- (a) On a scale of 1-5, how well does this evaluation method fit within the existing infrastructure and resources?  
(1 = not well at all, 5 = extremely well)
  - (b) On a scale of 1-5, how much additional infrastructure and resources are required for this evaluation method?  
(1 = no additional resources, 5 = significant additional resources)
  - (c) On a scale of 1-5, how well does this evaluation method account for potential logistical challenges?  
(1 = not well at all, 5 = extremely well)
  - (d) On a scale of 1-5, how well does this evaluation method account for potential geographical challenges?  
(1 = not well at all, 5 = extremely well)
  - (e) On a scale of 1-5, how well does this evaluation method account for potential seasonal challenges?  
(1 = not well at all, 5 = extremely well)
  - (f) On a scale of 1-5, how well does this evaluation method account for potential security challenges?  
(1 = not well at all, 5 = extremely well)
  - (g) On a scale of 1-5, how well does this evaluation method account for potential scalability?  
(1 = not well at all, 5 = extremely well)
  - (h) On a scale of 1-5, how well does this evaluation method account for potential sustainability?  
(1 = not well at all, 5 = extremely well)
  - (i) On a scale of 1-5, how well does this evaluation method account for potential adaptability?  
(1 = not well at all, 5 = extremely well)
  - (j) On a scale of 1-5, how well does this evaluation method account for potential data privacy?  
(1 = not well at all, 5 = extremely well)

This questionnaire can be accessed and completed in the link below:

[https://docs.google.com/forms/d/e/1FAIpQLSenOOok7nloLCSrkRLYF5CW0yX3\\_u5k\\_Jup7UM-1Vec9w5Zrw/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSenOOok7nloLCSrkRLYF5CW0yX3_u5k_Jup7UM-1Vec9w5Zrw/viewform?usp=sf_link)



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