Green Practices Guideline for Agriculture Sector

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GREEN PRACTICES GUIDELINE FOR AGRICULTURE SECTOR

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FOREWORD

The development of green practice guidelines is a continuation of the implementation of the MyHIJAU Program under the Ministry of Environment and Water (KASA) and the Malaysian Green Technology and Climate Change Corporation (MGTC) which is a coordinating agency and secretariat for the program. This program has been approved by the National Council for Green Technology and Climate Change (MTHPI) which was held on 23 October 2012. This is one of the Government's initiatives in the development of Green Technology in Malaysia. It is in line with the implementation of the National Green Technology Policy as well as the direction of Sustainable Consumption & Production (SCP) to encourage local manufacturers, producers and suppliers, especially to companies and Small and Medium Enterprises (SMEs). In addition, it will also focus on the Government's initiatives and direction in the development of the country's SMEs.

The development of Green Practice Guidelines is to provide guidance to the green industry in implementing green practices at the preliminary stage, during and after construction is implemented. These guidelines also have an implementation direction to ensure that these Guidelines will continue to be referred to and used by all parties, especially industry players to help achieve the government's goal of implementing green development in Malaysia. This green practice can help the industrial sector to have the potential to venture into the field of green technology, especially in the production of green products and services, as well as increase the encouragement of producers, manufacturers and suppliers to apply green technology in the premises, production process and operation. These Guidelines are more towards the requirements that need to be put into practice so that industries, companies and organizations have green practice guidelines that can be referred to as well as help companies achieve the government's goal of using green practices in line with SDG 12.6, which is to encourage the industry to use sustainable practices and integrate information sustainability into the reporting cycle.

Referring to the twelfth Malaysia plan under the eighth main focus which is to accelerate green growth, where this green practice development program is able to play a very important role in being a catalyst to ensure that these green practices are more practical and applicable to all parties in the green industry whether directly or indirectly for local companies and businesses to gain exposure to this green industry practice guide.

Therefore, increasing productivity and long-term profits through environmental, social and governance (ESG) elements should be applied in decision-making by ensuring that companies focus on reducing the negative impact on the environment. Although Malaysia only contributes 0.7 percent to greenhouse gas emissions, the Government will continue to fulfil its commitment to reduce GHG emission intensity up to 45 percent to GDP in 2030, based on emission intensity in 2005, in line with the aspiration to become a low carbon country.

It is hoped that this goal can be achieved by focusing on the industry to understand the importance of green practices in business by applying knowledge about the benefits and applications of green technology as well as the implementation strategy of the green practice monitoring mechanism in business management to obtain the recognition of the green industry.

LIST OF ABBREVIATIONS

DASN	Dasar Alam Sekitar Negara
DOE	Department of Environment
DID	Department of Irrigation and Drainage
DOA	Department of Agriculture
DOF	Department of Fisheries
DOSM	Department of Statistics, Malaysia
DVS	Department of Veterinary Services
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FAMA	Federal Agriculture Marketing Authority
FAO	Food and Agriculture Organization of the United Nations
IPM	Integrated Pest Management
ISO	International Organization for Standardization
LKIM	Fisheries Development Authority of Malaysia
GAP	Good Agricultural Practices
GHG	Green House Gas
GDP	Gross Domestic Product
GTFS	Green Technology Funding Scheme
KASA	Kementerian Alam Sekitar dan Air
LPP	Lembaga Pertubuhan Peladang
MAFI	Ministry of Agriculture and Food Industries
MARDI	Malaysian Agriculture Research and Development Institute
MGTC	Malaysia Green Technology Corporation
MPIB	Malaysian Pineapple Industry Board
MPOB	Malaysian Palm Oil Board
NAFAS	National Farmers Organization
OECD	Organization for Economic Cooperation and Development

ι.

LIST OF TERMINOLOGIES These are the terminologies used within this Guideline: Adaptation The process of change by which an organism or species becomes better suited to its environment. Agri-business Agriculture conducted on strictly commercial principles. A renewable fuel produced by the breakdown of organic matter such as food scraps Biogas and animal waste. Circular The circular economy is a systems solution framework of production and economy consumption that tackles global challenges like climate change, biodiversity loss, waste, and pollution. Commodity Commodity crops are crops grown, typically in large volume and at high intensity, specifically for the purpose of sale to the commodities market (as opposed to direct crops consumption or processing.) A gas that contributes to the greenhouse effect by absorbing infrared radiation. Greenhouse Gas Carbon dioxide and chlorofluorocarbons are examples of greenhouse gases. Green investor Refers to investing activities aligned with environmentally friendly business practices and the conservation of natural resources. Internet of The network of physical objects that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other Thing devices and systems over the internet Low carbon Low-carbon technology means the sum of equipment's, methods, knowledge and technology other modalities for low-carbon or carbon-free. Life Cycle The systematic analysis of the potential environmental impacts of products or services during their entire life span. Analysis A greenhouse gas inventory sector that covers emissions and removals of LULUCF greenhouse gases resulting from direct human-induced land use such as settlements and commercial uses, land-use change, and forestry activities. Mitigation means reducing risk of loss from the occurrence of any undesirable event Mitigation such as climate change. Natural capital The world's stocks of natural assets which include geology, soil, air, water and all living things. Palm oil mill Wastewater generated from palm oil milling activities which requires effective effluent treatment before discharge. Payback period The time value of money and is determined by counting the number of years it takes to recover the funds invested. Systemic Systemic describes what relates to or affects an entire system. For example, a systemic disease affects the entire body or organism, and systemic changes to an organization have an impact on the entire organization, including its most basic operations Sustainable growth that is repeatable, ethical and responsible to, and for, current and future

growth

communities.

INTRODUCTION

01

BACKGROUND OF THE AGRICULTURE SECTOR

The agricultural sector plays a significant role in the nation's economic growth, creating job opportunities, producing more affordable food in larger quantities and improving livelihoods.

According to data from the Department of Statistics Malaysia, the agriculture sector contributes 7.4% of Malaysia's GDP in 2020 (Dept. of Statistics Malaysia, 2021).

Total agricultural exports increased from RM115.5 billion in 2019 to RM118.6 billion in 2020





Total imports of the agriculture sector also showed an increase to RM98.0 billion in 2020 as compared to RM93.5 billion in 2019.

However, the production of major commodity crops in 2020 has decreased as compared to 2019.

The production of fresh fruit bunches (oil palm) which was the highest among agricultural commodities showed a decrease by 2,096 thousands tonnes (2.1 per cent) in 2020 when compared to 2019.

BACKGROUND OF THE AGRICULTURE SECTOR

While development brings prosperity to the people and the country, the agriculture sector continues to provide nutrients and income needed to improve the wellbeing of a nation.



BACKGROUND OF THE AGRICULTURAL SECTOR

The agricultural sector must address the interrelated challenges of avoiding pollution, improving resource efficiency, achieving major reductions in the emission of greenhouse gases (GHGs), and altering systemic challenges to mitigate negative impacts towards the environment.

This is also supported by the emerging trends among trading partners, capital markets and financial institutions, where compliance with the principles of **ESG** (environment, society, and governance) has become increasingly imposed and must be considered for long-term survival of the agricultural sector as a whole.



"ESG presents an **intriguing** opportunity to businesses and manufacturers" At the United Nations Climate Change Conference (COP26), USD100 billion annually is pledged by developed countries to support climate efforts in developing countries that meets the goals of the Paris Agreement and the UN Convention on Framework Climate Change (UNFCCC) up to 2025. This climate finance includes local, national, and transnational financing that mitigation support and adaptation actions which aligns with existing ESG frameworks that agri-businesses can adopt and practice.

Within and beyond Malaysia, significant number of investors are placing more emphasis on the implementation of ESG framework within a company. about Concerns energy efficiency, waste management, greenhouse emissions, water consumption or resources utilization are now central to global finance which are covered by the three focal factors of ESG that measures the sustainability and ethical impact of an investment.

Agricultural businesses that choose **not to address ESG** components may face **risks in their business** operations, **financing costs** and fluctuating share price performance.

To address the issues of environmental protection, climate change and sustainable development, stakeholders should consider the **adoption of green technology** in their operations and management.

BACKGROUND OF THE AGRICULTURAL SECTOR

What is Green Practices?



Green practices can be defined as the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout the lifecycle of a product development.

The implementation of Green Practices in existing operations and processes has direct and indirect benefits to the agricultural related industries and producers. Other than environmental protection, the adoption of green practices increases long-term productivity and profit. Some of the ESG elements may also be achieved through these improvements, ensuring long-term survival of the company and cementing its good reputation.



BACKGROUND OF THE AGRICULTURAL SECTOR

Why Green Practices?

> In response to the call for greater **sense of responsibility** towards the environment.

To secure **sustainable growth** in industry especially considering external environment in which an agriculture company conducts its business

Due to **technological factors** where relative advantage and performance by adopting green practices would provide a better environmental performance.

Ultimately, through the utilization of green practices:

Key economic sectors can decouple economic growth from the depletion of natural capital

Strategies to create a low-carbon and resourceefficient economy can be implemented;

Mitigate adverse impacts of traditional production processes while increasing productivity and sustaining the economy;

Enable more responsible utilization of natural resources for production of more affordable goods in larger quantities, while improving livelihoods, raising income, and creating more jobs.

SUCCESS STORY: IMPLEMENTATION OF GREEN PRACTICES IN THE INDUSTRY

There are many ways of implementing green technology within the operations, resources, or processes of an agricultural sector. The decision to go 'green' may come from the requirement to reduce carbon footprint, utilization of green resources, compliance with regulations, or contribution to society and the environment, but it is a decision that may well lead to increased revenues, global recognition, improved performance of operations and higher productivity.

FGV Holdings as a plantation based company owns **28 biogas power plants** and had developed a commercial-scale palm-based natural gas plant in Malaysia. It supports the Malaysian sustainable agenda through initiatives in green energy and resources including the establishment of waste to wealth strategy from their renewable and by-products division.



Increased revenue, energy savings and reduced carbon footprint

SUCCESS STORY: IMPLEMENTATION OF GREEN PRACTICES IN THE INDUSTRY

Federal Land Development Authority (Felda) and Concord Green Energy Sdn Bhd (CGE) biogas projects involves setting up biogas plants at 14 of Felda's palm oil mills with the early stage of the project focusing on four "green-field" palm oil mills, two located in Pahang and two in Johor.

The CGE's biogas projects generate electricity from palm oil mill effluent discharged by Felda's palm oil mills where millers have their biogas system in place, rather than just managing the waste, through the FiT incentive. Under this project, millers are able to generate income as the produce from the biogas can be converted to electricity where it will be transferred to the nearest substation from the biogas plant. This lead to increased revenues, global recognition and higher productivity for these companies.

The palm oil millers will enjoy the Feed-in-Tariff incentive application approved by SEDA with the later signing a contract with Tenaga Nasional Bhd to supply electricity.





Approach

Captured biogas from the palm oil mill effluent (POME) would be used for combustion in boiler and convert the biogas for electricity generation using the most cost effective methods. The revenue garnered from providing electricity to the grid will be a revenue shared between CGE and Felda.



Achievement

Concord FGV Keratong 2 Biogas Plant in Pahang has been recognised by the Ministry of Energy and Natural Resources Malaysia as Winner of the National Energy Awards (NEA) 2022 under the category "Renewable Energy - On Grid National Grid".

Concord Group has also won the National Energy Awards for 3 consecutive years under the same category – in 2020 for Concord FGV Lepar Hilir Biogas Plant in Pahang and in 2021 for Concord FGV Adela Biogas Plant in Johor.

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SUCCESS STORY: IMPLEMENTATION OF GREEN PRACTICES IN THE INDUSTRY

Cargill Inc. is a leading provider of products and services in the food and agricultural commodities including specialty edible oil throughout the Asia Pacific region. Specialty fats are incredibly popular due to their versatility and functionality. The decision to go 'green' has led Cargill to install dry palm fractionation capacity, enabling the production of a range of specialty fats for use in chocolates, coatings, fillings and compounds, spreads, bakery fats, and other applications.

The green practices initiatives by Cargill includes responsibly sourced palm oil supply chain making make it possible for the company to offer specialty fats made from segregated palm oil certified by the Roundtable for Sustainable Palm Oil (RSPO).

Cargill places a high priority on using palm oil that has been certified by the RSPO, which is has been a member of since 2004, in addition to following the Malaysian Sustainable Palm Oil (MSPO) certification plan with regard to palm oil sourced in country.

The green practices initiatives by Cargill includes responsibly sourced palm oil supply chain making





Core business

Provides food, agricultural, financial and industrial products all around the world.

Cargill

Helping the world thrive

Approach

Cargill is committed to producing and sourcing palm oil in an economical, environmentally sustainable and socially responsible manner while working toward a transparent, traceable and sustainable palm supply chain.

Achievement

Cargill has always focused on taking long term and sustainable approaches to tackling some of the world's most challenging issues across food system, such as low agricultural productivity, poor nutritional status, lack of access to formal markets, and limited economic opportunities.

Impact

Cargill operates 17 refineries, 12 mills and five palm plantations where their plantations work with nearly 22,000 smallholder farmers (who have plantations of 2 hectares each). More than 95% of their palm oil volume comes from third parties (about 1,700 mills). Cargill sources palm oil from more than 10 countries and delivers it to hundreds of customers worldwide

REALITY OF GREEN PRACTICES IN AGRICULTURE

Climate change has created challenges for the agricultural sector and will continue to do so by inducing increase in temperature, rainfall variation, and the frequency and intensity of extreme weather events. Other challenges may include resource problems like water scarcity, pollution and soil degradation. These challenges will negatively affect crop production.

Malaysia aspires to be a low-carbon nation by 2050 through an unconditional commitment to **reduce GHG emissions** level (against Gross Domestic Product: GDP) **of 45% by 2030** compared to 2005.

This aspiration is in line with Initiatives such as the Green Technology Master Plan, Green Technology Financing Scheme, Low Carbon Cities the Malaysian government's Framework and Government Green Procurement commitment towards climate action and green technology: New economic instruments such as carbon pricing and carbon tax will be introduced and imposed as part of strategies to achieve low-carbon development Agriculture contributes а share significant the of National Energy Policy to be launched with Acts related (GHG) greenhouse gas to energy efficiency and conservation to supervise emissions, where 17% of it is energy consumption by high-intensity users in the directly through agricultural industrial and commercial sectors activities and an additional 7-14% through changes in land Circular economic model will be implemented under the use (OECD/IFPRI, 2014). 12th Malaysia Plan to reduce pollution, waste generation and dependence on natural resources LULUCF_ agriculture For Malaysia, 1% contributes around five Waste percent share of the sectoral Agriculture sources of greenhouse gas 12% 5% (GHG) emissions. The GHG describes inventory the Industrial national emissions and sink in Processes terms of million tonnes carbon 6% dioxide equivalent (Mt CO₂eq) Energy The LULUCF (Land Use, Land 76% Use Change and Forestry) sector is used to report the CO_2 flows between different terrestrial reservoirs (biomass, soils, etc.) and the atmosphere that take place on the Malaysia's GHG Emissions by Sector in 2011 (from Malaysia managed surfaces of a Biennial Update Report (BUR) submitted to the United Nations Framework Convention on Climate Change in December 2015) territory.

REALITY OF GREEN PRACTICES IN AGRICULTURE

Hence, the agriculture sector is uniquely positioned to improve livelihoods and at the same time contribute towards the **global sustainability agenda**. After all, the environmental aspects and impacts of produce coupled with economic related activities and services have always been the driving factors of the advances in the agriculture sector.

New paradigms of green practices such as **circular economy**, **lean** and **cleaner production** can be found within the precepts of the agricultural sector. Hence, embedding **green practices whether direct or indirectly** in the agriculture sector is a strategic move towards maintaining the economic and environmental viability of the industry.





The issues of climate change and the environment are vital to the survival of our nation. The Ministry of Environment and Water, has taken various measures and initiatives to address these issues, efforts of which can be categorized into three major themes; **energy**, **waste** and **forestry**.



MEASURES AND INITIATIVES BY THE MINISTRY OF ENVIRONMENT AND WATER (KASA)



WASTE PAPER RECYCLING

Target of 40% waste redirection from waste disposal sites: • 22% through recycling • 18% through waste treatment

Impact: Increase of recycling rate materials from

erials from 15 to 21% in 017. •

 National Solid Waste Management Policy 2006
 Eleventh Malaysia Plan

Related Policy:

Emission avoidance:

3937.76 Gg CO₂ eq

BIOGAS RECOVERY FROM PALM OIL MILL EFFLUENT (POME)

- Biogas plays a crucial role in driving Malaysia that is moving towards adopting renewable energy and environmental sustainability.
- Target include 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.

Entry Point Project -Developing Biogas Facilities at Palm Oil Mills Related Program:

Related Project:

Economic Transformation Programme 2010

Emission avoidance:

2377.84 Gg CO₂ eq



FORESTRY

AGRICULTURE

Malaysian Organic Scheme (SOM) or Malaysia Organic (MyOrganic) is a certification that recognizes 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 ha as for now

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.

SUSTAINABLE MANAGEMENT OF FOREST

Forest certification scheme that allow the annual allowable cut in the Permanent Reserved Forest (PRF) is capped at 85 m3/ha for the period of tenth & eleventh Malaysia Plan.

Related Certification:

Malaysian Criteria and Indicators for Forest Management Certification 2001

Emission avoidance:

 $20,307.50\,{\rm Gg}\,{\rm CO}_2\,{\rm eq}$

FOREST ENRICHMENT PROGRAMMES

Aims:

 Improve degraded forests 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

The carbon emission is one of the central elements that link these efforts, and as agricultural stakeholders are increasingly expose to the carbon-conscious market, implementing green practices in their processes and operations are the next logical step in ensuring their survival and performance.

EXISTING NATIONAL POLICIES AND GUIDELINES

Malaysia Good Agriculture Practices (MyGAP)

A certification scheme that recognizes farms that follow best practices in agriculture (crop, fisheries, and veterinary) to not only produce good quality products, but also protect their workers' welfare and the environment.

Certification scheme for agricultural, aquaculture, & livestock sector	Implemented based on Malaysian Standard (MS)	MS 1785:2005 Crop- Commodities Good Agricultural Practice			
	Features				
MS 1998:2007 Good Aquaculture Practice (GAqP)	MS 2467:2012 – Code of Practice for Seaweed Cultivation	MS 2027: 2006 Good Animal Husbandry Practice for livestock			
Malaysia O	rganic Certification Scheme	(myOrganic)			
A certification scheme that was developed by the Department of Agriculture to a recognition to farms that practice organic farming based on Malaysian Standard MS 1					

A certification scheme that was developed by the Department of Agriculture to give recognition to farms that practice organic farming based on Malaysian Standard MS 1529 20001 The Production, Processing, Labelling and Marketing of Plant Based Organically Produced Food.

Farming methods do not pollute land and waterways and ensuring that the environment is preserved. Soil and produce analysis to ensure no presence of pesticides residues, heavy metals and microbial.

Criteria

Agriculture produce are of assured quality and able to compete in domestic and international markets. Farm audit that meets a set of regulations including the safety and welfare of

workers and employers.

3

MyHIJAU Mark

Malaysia's official Green Recognition Scheme endorsed by the Ministry of Energy, Green Technology and Water that brings together certified green products and services that meet local and international environmental standards under one single mark.

To encourage wide and continued use of green products and services by providing incentives and support to develop and promote green products and services further into the market. An online platform (<u>www.myhijau.my</u> or MyHijau App) was established for procurers, government ministries, and the general public to find information about all green products and services that have been recognised under the MyHIJAU Mark.

EXISTING NATIONAL POLICIES AND GUIDELINES





PURPOSE FOR THE GREEN PRACTICES GUIDELINE FOR THE AGRICULTURE SECTOR

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This guideline was prepared to propel the nation's agricultural ecosystems toward greener growth. This was done by reviewing the roles and scenarios of nation's agricultural sector and utilizing other relevant sources of knowledge.

The guide details items that can be applied by industrial policymakers and players. Some of the changes required for the transition to a green economy may imply significant restructuring or disruption of technological paths. However, this guide also aims to ease this transition by providing guidance by highlighting a number of cases that had already been implemented successfully international.

Objectives of the green practices guideline is as follows:-

To provide guidance in implementing green practices in the agricultural sector.

To offer directions on green practices implementation pertinent to green agriculture industry.

The development of The Green Practices Guideline was approved by the Ministry of Environment and Water in 2021 through the Twelfth Malaysia Plan (RMKe-12).

This government initiative supports the country's development of green technology policies towards the direction of sustainable development for agricultural industries and organizations in Malaysia.

PURPOSE:

To help stakeholders make better decisions towards more sustainable agriculture goals.

MANDATE

Ministry of Environment and Water approval through the 12th Malaysia Plan in 2021

PURPOSE

Provide guide and recommendation for the agriculture sector in implementing green practices

POLICY

Support green technology policies owards sustainable development of agricultural sector in Malaysia

APPROACH

Optimise consumption of resources, energy and water while reducing waste and emission





SCOPE AND APPLICATION







DEFINITION OF GREEN AGRICULTURE

The application of sustainable development principles to agriculture: ensuring the sustainable production of food, feed, wood and fibres while respecting the associated ecological, economic and social limits.

GREEN TECHNOLOGY

Definition by MGTC : The development and application of **products, equipment and systems** used to conserve the natural environment and resources, which minimizes and reduces the negative impacts of human activities.

SUSTAINABLE AGRICULTURE

Can be defined in many ways, but ultimately it seeks to sustain farmers, resources, and communities by promoting farming practices and methods that are profitable, environmentally sound, and good for communities. Due to these objectives, sustainable agriculture complements modern agriculture.

United States Food, Agriculture, Conservation and Trade Acts defined it as an integrated system of plant and animal production practices, having a site-specific application that will, over the long term, result in the followings:-

Satisfy human food and fiber needs

Enhance environmental quality and natural resources based upon which agriculture economy depends Sustain the economic viability of farm operations

Make the most efficient use of nonrenewable and onfarm resources, integrating (where appropriate) natural biological cycles and controls Finhance the quality of life for farmers and society as a whole

American Society of Agronomy defined it as "one that, over the long term, enhances the environmental quality and the resource base on which agriculture depends; provides for basic human food and fibre needs; is economically viable; and enhances the quality of life for farmers and society as a whole" (Francis & Youngberg, 1990).



OR

INTRODUCTION

The greening of agricultural industries has become a core determinant of economic competitiveness and sustainable growth, especially in developed nations. Since resource inputs represent an important production cost for agricultural industries, improving production and operational efficiency gives them a competitive advantage by means of increased productivity.

Agricultural operations in Malaysia vary tremendously in terms of their size, organizational structures, and business operations, which pose a challenge in ensuring that green practices are consistently included in the activities of these operations, regardless whether it is private or governmentally owned. Thus, the greening of agricultural industries requires a holistic approach to ensure continuous support and smooth implementation of green industry policies and initiatives.



This guideline highlights the gap in knowledge on recent advancements in green and sustainable agriculture in Malaysia which include: (1) specific topics such as technical approaches that have been applied in green agricultural operations; (2) application of relevant and latest technologies in agriculture such as mechanization and IOT as well as management measures with consideration on the potential environmental impact.



INTRODUCTION

The five steps below are recommended for stakeholders intending to implement green practices into their existing agriculture operations and processes:

DEVELOP ACTION PLANS & IMPLEMENTATION STRATEGY

Based on findings, specific action plans & implementation strategies will be developed including approach, responsibilities & timeline.

05

MEASURE INPUTS, OPERATIONS & PRODUCTS

Based on selected indicators, manufacturers can measure the specific elements according to identified methodology.

03

SET OBJECTIVES Green objectives chosen

based on ambitions and expectations of the company and consumers.

01

02

ASSESS PERFORMANCE

04

The measured elements will be assessed, taking note of specific areas for improvement.

DETERMINE INDICATORS

Six indicators with 18-sub indicators are outlined which can be used by agriculture establishments to determine the relevant options.

Further details can be found in the Implementation and Action Plan section, starting from pages 41.

GREEN INDICATORS

Indicators are a mean of tracking progress against policy targets and to assess the effectiveness of implementation programmes. The operational measures had been organized into **six indicators** which are resources, waste, water, energy, innovation and agriculture management.



RESOURCES

Natural resources such as soil, water, sun, biodiversity and renewable energy sources, climate and ecosystem services are fundamental for the structure and function of agricultural systems.

Agriculture contributes to high usage of resources (air, water, and land), which has more negative impacts on the planet than any other human activity, as deliberated in SDG12 below.

Land use and agriculture uses about 40% of our global land area, covers 70% of our global water withdrawals, and emits 30% of our greenhouse gases.

Worldwide, agriculture accounts for 70% of human freshwater consumption.

Green practices in sustainable agriculture aims to produce outputs and at the same time conserve biodiversity of organisms in the area by providing healthy and natural environments for them to live in.



SCOPE

The scope for materials and resources (MC) includes five (5) sub-indicators: Material Usage and Selection Strategies (MC1), Sustainable Resources Strategies (MC2), Resource Conservation Strategies (MC3), Final Resource Strategies (MC4), and Awareness Strategies (MC5).

Sub- indicator	Key Issues	Goals	Recommendations	Key players
	Unsustainable usage of natural	 Increase the sustainability of resources; Acceleration in productivity growth Minimise the environmental impact of resources consumption 	There shall be a consideration on high yield, reusability and sustainability during the selection and usage of materials.	Industry
Material Usage and	resources. Competition for natural		The application of 6R shall be incorporated into the operations of establishments.	Industry
Selection Strategies (MC1)	 Food losses and waste claim a significant proportion of agricultural output 		The authority shall advocate on including the environmental externalities in costs and prices of agricultural produce to send the right message to producers and consumers.	Policy makers
			The authority shall advocate on resources efficiency.	Policy makers
Sustainable	 High footprint of input materials The natural resources (MC2) Migh footprint of input materials The natural resources must be sourced locally 	 Reduce the carbon footprint of natural resources. Minimise the environmental impacts of logistics and transportation 	The usage of resources and materials that are certified and available within the region must be prioritized.	Industry
Sustainable Resources Strategies (MC2)			The use of local resources while reducing the environmental impacts from transportation for example, shall be encouraged.	Industry

The efforts towards increasing circularity in resources strategies are aligned with the GTMP targets highlighted here

(Formulation of a comprehensive Demand Side Management Master Plan		Alignme	ent with G	reen Techı Targets	nology Masterplan
	20% Government procurement to be green	SECTORS / AREAS		YEAR		
	22% Resycling Rate of household waste	SECTORS / AREAS	2020	2025	2030	
	2,080MW Installed capacity of	Renewable Energy (RE)	RE mix (installed capacity)	RE mix (installed capacity)	30% RE mix (installed capacity)	
×		Energy Efficiency		 10% Reduction in electricity consumption 	 15% Reduction in electricity consumption 	



Sub-indicator	Key Issues	Goals	Recommendations	Key players
			Implement soil conservation practices and treatment to mitigate erosion and degradation to promote healthy crops.	Industry
	Conservation		Maintain soil function for better soil structure, improved water penetration, less runoff, better drainage and increased stability.	Industry
Resource Conservation Strategies (MC3)	and Maintenance of Key Resources • Conservation of Soil Quality	Reduce the soil erosion and loss of nutrition	Increase the usage of more organic matter as a source and sink for soil nutrients, as a substrate for microbial activity, and as a buffer against fluctuations in acidity, water content, contaminants, etc.	Industry
			Transform processes towards 'holistic' approaches, such as; agroecology and climate-smart agriculture, which also build upon indigenous and traditional knowledge.	Industry /Policy makers
Final Resource Strategies (MC4)	Lack of funding support for green practices in agriculture	Secure more funding for green practices in agriculture	Initiate actions to secure more fund for supporting green practices, research and development and application of green technologies.	Industry /Policy makers
			Adoption of environmental financing as an instrument for promoting resource efficiency measures through financial institutions or independent funds shall be encouraged.	Industry /Policy makers
			Financial improvements, along with drastic cuts in economy- wide and agricultural fossil fuel use.	Industry /Policy makers
Awareness Strategies (MC5)	Lack of green public procurement and green products usage in agriculture businesses	To encourage green procurement and usage of green products in agriculture transactions	Usage of green public procurement for the agriculture sector to pursue social and environmental goals and as a means of creating demand for green products and services shall be encouraged	Industry /Policy makers

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WASTE

Agriculture-based industries produce large amounts of agriculture by-products, food loss, and waste along the supply chain every year, which are disposed of either by burning, dumping, or unplanned landfilling.

Around 1.2 million tonnes of agricultural waste are disposed into landfills annually.

If these residues are released directly to the environment without proper management, it may cause environmental pollution and eventually, harmful effects on human health.

Malaysia produces at least 168 million tonnes of biomass, including timber and oil palm waste, rice husks, coconut trunk fibres, municipal waste, and sugarcane waste annually.

These biomass can also be turned into other high value products such as animal feed, fertilizers, mulches, compost and green products such as green packaging and green building materials.

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SCOPE

Identify ways to reduce waste and to turn waste into valuable products.

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To manage waste generation efficiently with the aim to advocate circular economy approach in agriculture waste management.

AIM

12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

12.6: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature



13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

13.2: Integrate climate change measures into national policies, strategies and planning

13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning



SCOPE

The scope for Waste Management (WMA) includes four (2) sub-indicators: Waste Management Strategies in Agricultural Sector (WMA1) and Strategies for Circular Economy in Handling Agriculture Waste (WMA2).

Sub-indicator	Key Issues	Goals	Recommendations	Key players
	Large amount		All waste products including chemicals based shall be identified and managed according the relevant Act such as Environmental Quality Act 1974 and Poison Act 1952.	Industry
	of waste generated in agricultural practices during	Strengthen infrastructure	Site- specific agricultural Waste Management Plan need to be established	Industry
Waste Management Strategies in	 both pre- and post-harvest. Waste contributed from packaging of materials Lack of awareness on proper waste management at agriculture site Hazardous waste needs to also be properly disposed 	for green practices in agriculture waste management • Improve efficiency in managing agriculture waste • Comprehensive plan for waste minimisation	All waste product shall be reuse, repurposed and after extensive deliberation, disposed appropriately at suitable facilities.	Industry /Policy makers
Agricultural Sector (WMA1)			Utilize quality products and planting materials and adopt good agricultural practices in harvesting and postharvest handling to reduce food loss.	Industry /Policy makers
			Training sessions on waste management systems must be made compulsory.	Industry /Policy makers
			Integrated waste management and wastewater treatment facilities as a priority for agriculture operations.	Industry /Policy makers



Sub-indicator	Key Issues	Goals	Recommendations	Key players
			Adopt zero waste approach by reducing, reusing and repurposing waste into animal feed, compost or other value- added products.	Industry /Policy makers
	 Huge potential for reuse and/or repurpose of waste from agricultural site. Improper management of agricultural waste contributed to green house gases emissions Lack of willingness to adapt proper management at agriculture site 	 Strengthen infrastructure for green practices in agriculture waste management Improve efficiency in managing agriculture waste Comprehensive plan for waste minimisation 	Establish a comprehensive and inclusive plan to attain circularity of economy in managing agriculture waste.	Industry /Policy makers
Strategies for Circular Economy in Handling			Leverage financing from public-private sector partnerships, Foreign Direct Investment (FDI) and regional cooperation such as ASEAN network.	Policy makers
Agriculture Waste (WMA2)			Promote utilization of Life Cycle Analysis (LCA) as part of the Extended Producer Responsibility along the supply chain networks.	Policy makers
			Specific waste from produce that are of decent quality shall be considered to be channelled to different informed markets or made into animal feed.	Industry
			Utilize composting to recycle nutrients into the soil shall be implemented.	Industry



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The scope for water efficiency (WEA) includes two (2) sub-indicators: Water Harvesting Strategies (WEA1) and Water Reuse and Recycling Strategies (WEA2).

Sub- indicator	Key Issues	Goals	Recommendati	ions	Key players	
	 Lack of treated water facilities at 		Adopt technologies harvest rainwater.	to	Industry	
	 agriculture sites Inefficient water usage for irrigation and other purposes 	 Establish common water efficiency goals Monitor the water footprint 	Create a model for rainwater harvesting infrastructure.	5	Industry	
Water Harvesting Strategies (WEA1)	 Agriculture wastewater is a source of pollutants into waterways Lack of skill and knowledge on water and wastewater management 		Incentives for farmers to adopt rainwater harvesting should be introduced.		Policy makers	
Sub- indicator	Recommendations			Кеу	olayers	
	There shall be a mandatory practice to utilise methods and technologies to reuse and recycle water.			Industry		
	Establish initiatives to improve the capability and capacity of farm managers and operators to measure water footprint for better water management.			Ind. /Policy makers		
Water Reuse and Recycling	Capacity building through training and demonstration programmes for farmers to create the skills required to implement water- efficiency initiatives.				Policy makers	
Strategies (WEA2)	Increase adoption of water-efficient practices specific for agriculture sector to industry partners or associations.				Policy makers	
	Adopt efficient water usage techniques and utilize water efficient techniques and technologies such as automated micro irrigation and tube well.			Industry		
	Utilize organic, bio-based pesticides or Integrated Pest Management system to reduce dependency on toxic pesticides and weedicide.			Industry		
	Alignment with	n Green Technology N	Aasterplan Targets		····)	
towns will Rainwater System in J	60% 60% The efforts towards increasing circularity in water strategies are aligned with the GTMP targets highlighted here Swttem in 2020				ts EPLS) 2019	



The scope for Energy Efficiency (EEA) includes four (4) sub-indicators: Energy Data Strategies (EEA1), Energy Saving Strategies (EEA2), Renewable Energy Strategies (EEA3), and Eco-Labelling Strategies (EEA4).

SCOPE

Sub-indicator	Key Issues	Goals	Recommendations	Key players
	 Lack of data on direct and indirect energy usage. High dependence on conventional source, fossil fuels. Unreliable 	 Provide access to green 	Obtain data on direct and indirect energy usage for measuring energy efficiency in agricultural production systems.	Industry
Energy Data Strategies (EEA1)		 energy. Reduce reliance on fossil fuels and carbon intensity. 	Avoid sub-optimization and incorrect recommendations on technology use in operations through data generated.	Industry
	 energy supply and rising energy price. Lack of eco- labelling initiatives in the agriculture sector. 	 Greater exposure for eco-labelling in agriculture sector 	Use dedicated approaches and methodologies, such as life-cycle assessment (LCA) to assess potential environmental impacts across different product chain and across crop rotations.	Industry
	 Lack of eco- labelling initiatives in the agriculture sector. Heavy reliance on conventional source, fossil fuels. Perception on the capital for converting to green energy. 	 Provide access to green energy. Reduce reliance on fossil fuels and carbon intensity. Greater exposure for eco-labelling in agriculture sector 	Adopt energy-saving measures and prioritise supply from energy- producing facilities that use renewable sources such as wind, solar, biomass, and others to reduce energy costs.	Industry
Energy Saving Strategies (EEA2)			Encourage the use of renewable energy to reduce farm costs.	Industry
			Utilize renewable energy for reducing farm costs. such as solar and biomass energy to reduce dependence on fossil fuel energy.	Industry
			Develop a management plan to improve energy mix to include renewable energy sources.	Industry



Sub-indicator	Key Issues	Goals	Recommendations	Key players
	Lack of	Greater exposure for green energy in	Adopt whenever possible to use renewable energy such as solar and biomass energy.	Industry
Renewable Energy Strategies	exposure on the current advances and initiatives for green and	agriculture sector. Increase the buy in for renewable energy mix in	Increase the usage of renewable energy so that there is a reduction of dependency on fossil fuel energy sources.	Industry
(EEA3)	energy in the agriculture sector.	energy portfolio of agriculture sector.	Have a management plan to improve their energy mix that includes renewable energy sources.	Industry
Eco-Labelling Strategies (EEA4)	 Lack of acceptance on eco-labelling initiatives among the agriculture sector stakeholders'. 	 Greater exposure for green energy in agriculture sector Increase the adoption of green energy utilisation in agriculture sector. 	Establish agriculture specific eco-labelling initiative through internal incentives and funding support for farmers.	Policy makers

The efforts towards increasing circularity in energy strategies are aligned with the GTMP targets highlighted here



INNOVATION

The capacity of the agricultural system to provide adequate supplies for food, feed and non-food uses in an environmentally sound manner depends largely on technology and innovation. This is where low productivity especially for smallholder agriculture operations is further challenged.

Technological innovations in engineering, information technology and biotechnology can improve the environmental performance of agriculture systems while exposure to international agricultural markets will better facilitate the sharing of technologies and innovations that support green agriculture.



SCOPE

The scope for innovation cross-compliance (IA) includes three (3) sub-indicators: Innovation on cross-compliance mechanisms strategies (IA1), Support for Innovation Strategies (IA2), and Extensions of Innovation Strategies (IA3).

Sub-indicator	Key Issues	Goals	Recommendations	Key players
			Establish a cross-compliance mechanism where farmers and financial provider could be matched for better funding opportunities.	Industry /Policy makers
	 Lack of capital/ investment (for marketing, 	 Increase utilization of technologies in farm or 	Develop a plan to implement environmental cross-compliance mechanisms for farmers.	Policy makers
Innovation on cross- compliance mechanisms strategies (IA1)	 expansion etc.) Lack of planning for application of innovation Lack of innovation in agricultural activities 	 plantation activities. Establish, measure and plan strategies for application of innovation in agriculture activities. 	Develop assessment criteria for farmers receiving government supports to adopt green practices or/and resource management programs.	Industry /Policy makers
			Measure the level of innovation along product value chain.	Industry
			Measure to assess any reductions achieved in greenhouse gas emissions from agriculture.	Policy makers
The efforts towards increasing circularity in innovation strategies are aligned with the GTMP targets highlighted here.				
2013	20	20 2015	2020 2025	
Emission Reduc 719.7 ktCO ₂ e	Petroleum diesel displaced by palm- oil based biodiesels tion rg Targe Reduc 1,802.4	76,000 (Klang onnes PURO RON9 t Emission nation tion (2020) > B7 Bio	5 Diesel > EURO 5 Diesel ((nationwide) > EUR 4M > EURO 4M RON 7 RON95 & 89 wide RON97 diesel > B15 Biodiesel	0 5

GREEN PRACTICES GUIDELINE AGRICULTURE SECTOR

Sub- indicator	Key Issues	Goals	Recommendations	Key players
			Support or incentives for farmers and agri-businesses to increase the efficiency of their supply commodities.	Policy makers
			Implement innovations to reduce the operating cost.	Industry/Policy makers
	 Low capital/ investment for innovation Inadequate alapsing 	 Increase resources for innovation More platform for 	Assessment for farmers receiving government supports to adopt good environmental practices or resource management programs.	Industry
Support for Innovation Strategies	for application of	innovation activities. • Establish	Measure the level of innovation along the product value chain.	Industry/Policy makers
(IA2)	innovation Lack of innovation in agricultural	plan and strategies for innovation in agriculture	Adopt Good Agricultural Practices (GAP) and to include cost-effective and optimised water, nutrient, pest, and disease management.	Industry/Policy makers
	activities	activities.	A model nursery or pilot site for organic and healthy seedlings shall be established for each field or site.	Industry
			Develop innovation plans to improve storage and optimised post-harvest handling.	Industry
			Establish farmers innovation chapter in existing set up.	Policy makers
	Extension of of innovation Strategies (IA3)Limited extension of Low adoptionIncrease extension for innovation Strategies of innovation	Adopt, adapt and optimise new technologies for crop management and care, harvesting and post-harvest handling.	Industry	
Extension of Innovation Strategies (IA3)		innovation • Encourage adoption of innovation bost	Adopt Good Agricultural Practices (GAP) and to include cost-effective and optimised water, nutrient, pest & disease management.	Industry
	best practices	practices	Apply smart farming approaches and technology where possible throughout the operations.	Industry
			Establish model nurseries or pilot site for organic and healthy seedlings	Industry

AGRICULTURE MANAGEMENT

The management of green agriculture that produce environment-friendly economic growth requires a comprehensive strategy which is flexible enough to be tailored into different sub-sectors and various stages of development.

Environmental conditions and farming systems vary within and across countries and consequently, best farm management practices vary from one location to another.

Farm or agricultural site management decisions are influenced by environmental regulations, agricultural support measures, investments in research, education and extension services, and site-specific environmental conditions.

In agriculture, the management policy for green agriculture consists primarily of a mix of policy, regulations, financial support, and research and development (R&D) directed to enhance environment-friendly agriculture.

SCOPE

To ensure that the entire agriculture process runs smoothly to increase efficiency of production in a cost-effective manner

AIM

To encourage adoption of green agricultural practices, practice sustainable and responsible consumption, strengthen the economy instruments as well as promote adoption of research and development.

8.3: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

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8.6: By 2020, substantially reduce the proportion of youth not in employment, education or training

8.8: Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment SDG 8: DECENT WORK AND ECONOMIC GROWTH **SDG 12: RESPONSIBLE CONSUMPTION**

AND PRODUCTION

12.7: Promote public procurement practices that are sustainable, in accordance with national policies and priorities

12.2: Sustainable management and use of natural resources

SCOPE

The scope for Policy, Regulations and Standards (MA) includes four (4) sub-indicators: Strategies on Rules and Standards (MA1), Compliance to Environmental Regulation Strategies (MA2), Economic Instruments and Trade Measures Strategies (MA3), and Research and Development Strategies (MA4).

Sub- indicator	Key Issues	Goals	Recommendations	Key players
Strategies on Rules and Standards (MA1) .	 Lack of policy and regulations in managing green agriculture. Inadequate support for sustainability in agriculture Limited incentives for green agriculture practices Insufficient application of R&D in green practices Limited public- private participation in extension initiatives 		Implement this guideline as a policy by the organization to demonstrate its commitment.	Industry /Policy makers
			Introduce economic instruments such as fee or penalties as regulations to control excessive use of agrochemicals	Policy makers
		 Policy and regulation to implement green agriculture Framework 	Perform periodical review of standards for respective farming systems according to the nature of the local environment because a one- size-fits-all requirement may be neither environmentally effective nor economically efficient.	Industry
		 agricultural practices. Policy on incentives for green agriculture & P&D 	Develop action plan for continual collaboration for green technology transfer and best practices between the stakeholders and agricultural group.	Industry /Policy makers
		ΝάD.	Preserve high biodiversity value areas for maintaining ecosystem services.	Industry /Policy makers
			Implement policy instruments on the social wellbeing of workers that is needed to be achieved based on Act 446 The Workers' Minimum Standards of Housing and Amenities Act 2019.	Policy makers

GREEN PRACTICES GUIDELINE AGRICULTURE SECTOR

Sub- indicator	Key Issues	Goals	Recommendations	Key players	
	Lack of compliance t-	Increase compliance	Increase support for environmentally friendly practices by the authority.	Policy makers	
Compliance	regulations Inadequate green law	to to green regulations policy and Inadequate regulation green law • Strengthen	Improve enforcement of environmental regulations in agriculture sector by the authority.	Policy makers	
Environment Regulation Strategies (MA2)	to enforce green nvironment related to regulations Regulation agriculture. • Increase Strategies • Inadequate support to (MA2) current for implement	Display a support for green practices incentives namely; market and non- market, regulatory measures and cross- compliance measures.	Industry		
	green agriculture	green agriculture	Develop a system for disseminating incentives given to farms that adhere to basic environmental standards or good agriculture land maintenance.	Policy makers	
	Lack of economic incentives	Increase economic incentives	Provide economic incentives, such as import duty reduction, for mechanisation and green agricultural products.	Policy makers	
	for for mechanisati mechanisati on and on and green green arriculture agriculture	Develop a mechanism to increase spending on green initiatives in sector specific agriculture for both industry and policy makers.	Industry/Policy makers		
Economic	 Mechanism to increase green spending 	echanism • Strengthen increase the een mechanism	Impose charges on excessive use of environmentally-damaging agricultural inputs such as pesticides.	Policy makers	
Instruments and Trade Measures Strategies (MA3)	Instruments and Trade Measures Strategies (MA3) Strategies (MA3) Strategies (MA3) Strategies (MA3) Strategies (MA3) Strategies profile Strategies profile Strategies profile Strategies profile Strategies profile Strategies profile Strategies Strategi	Establish water management plan to maintain the quality and availability of water resources due to depleting water reserves coupled with competing water demand.	Policy makers		
		Establish a documented business or management plan to demonstrate attention to economic and trade viability such as the tariff and non-tariff barriers related to green agricultural practices.	Policy makers		
			Establish a plan for raising profile of green agriculture practices in national poverty reduction initiatives.	Policy makers	
	 Lack of R&D innovation initiatives 	Increase research and	Establish a plan to increase research and innovation initiatives on green agricultural management and technology.	Policy makers	
R & D	on green agriculture technology • Inadequate	innovation initiatives on green agriculture	Cross fertilization partnership between public and private on recent advances in agricultural related green technology.	Policy makers	
(MA4)	agricultural R&D	technology Strengthen agricultural R&D 	Increase in agricultural R&D through grants offering resources (laboratories, human resource, etc.) collaboration.	Industry /Policy makers	
			The farmers shall be able to respond to public/private partnerships on green agricultural research.	Industry/Policy makers	
Prenction and avareness A lorge d communications B lorge d comm					
t	Resear Comme • R&D& • Public	ch, Development and ercialisation (R&D&C) C funding -private partnership	ning ourianing in Viate sector oration with reducation titions		





INDICATORS ALIGNMENT WITH EXISTING POLICIES, BENEFITS AND RECOGNITION

This framework summarises the policies and benefits for green agriculture and has been aligned between indicators-initiatives. Stakeholders may refer to initiatives relevant to their subsector.

Existing Initiatives	Agency/ Institutions	Description	Criteria for assessment	Green Practices Indicator	Benefits	Reference
Malaysia Good Agricultural Practices (myGAP)	Department of Agriculture	Emphasises on environment, economy and social aspects to ensure the produce is safe and of good quality.	 Site inspection Residue analysis on pesticide, heavy metal and microbial Farm audit 	RESOURCES INNOVATION MANAGEMENT WASTE	Increase the potential for local and international market access and opportunities Economic gain and financial risk reduction Image and branding potential	http://www.do a.gov.my/index .php/pages/vie w/373
Malaysia Organic Certification Scheme (myOrganic)	Department of Agriculture	Recognition to farms that practice organic farming based on Malaysian Standard MS 1529: 2001 The Production, Processing, Labelling & Marketing of Plant Based Organically Produced Food.	 The usage of agrochemicals Quality and safety produce Environmentally friendly practises Integrated water management and Zero waste approach 	RESOURCES INNOVATION MANAGEMENT WASTE	Better and heathier produce Improved international market access Premium market opportunities Economic risk reduction Image and branding potential	http://www.do a.gov.my/index .php/pages/vie w/377
Malaysia Sustainable Palm Oil (MSPO)	Malaysia Palm Oil Board	The national scheme in Malaysia for oil palm plantations, independent and organised smallholdings, and palm oil processing facilities to be certified against the requirements of the MSPO Standards.	 Management commitment & responsibility Social responsibility, health safety & employment conditions Transparency Compliance to legal requirements Best practices Development of new plantings Environment, natural resources, biodiversity, ecosystem services. 	MANAGEMENT INNOVATION RESOURCES WATER ENERGY WASTE	Access to premium market Opportunities for global recognition Economic gain from compliance	https://www.m pocc.org.my/ab out-mspo
Green Investment Tax Allowance (GITA)	MIDA	Incentive for companies that undertake Green Technology projects involving capital investments.	 Renewable Energy (RE) Energy Efficiency (EE) Green Building Green Data Centre Integrated Waste Management 	WASTE ENERGY	Tax allowance Long term economic gain from adoption	https://www.m ida.gov.my/wp- content/upload s/2020/12/Gre en-technology- High-Res_ Final.pdf
Green Income Tax Exemptions (GITE)	MIDA	Incentive for companies that carry out services which 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 	ENERGY	Tax exemptions Long term economic gain	https://www.m ida.gov.my/wp- content/upload s/2020/12/Gre en-technology- High-Res- Final.pdf

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INDICATORS ALIGNMENT WITH EXISTING POLICIES, BENEFITS AND RECOGNITION

MyHIJAU Mark	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 recognized by MGTC 	RESOURCES WASTE ENERGY	Eligibility for Government Green Procurement (GGP), Green Private Purchasing (GPP), and may be eligible for GITA or GITE	https://www.m yhijau.my/abou t/
Eco-Labelling Scheme	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	RESOURCES WASTE ENERGY	Boost acceptance of products in international "green markets" that favour green products with a price premium Image and consumer preference	https://www.si rim- qas.com.my/ou r- services/produ ct- certification/ec o-labelling- scheme/
Anugerah Industri Hijau	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 lost, raw materials lost and wastewater production	RESOURCES WASTE WATER ENERGY MANAGEMENT	Improved reputation and branding	http://www.do e.gov.my/porta lv1/wp- content/upload s/2014/07/Syar at-penyertaan- dan-borang- penyertaan- AIH.pdf
National Energy Awards	SEDA	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) 	ENERGY	International recognition and eligible to represent Malaysia at the annual ASEAN Energy Awards, Southeast Asia's highest energy awards	https://www.n ationalenergya wards.com.my/ about-us/
Prime Minister's Hibiscus Awards	ENSEARCH, FMM & MICCI with recognition from KASA	Provide an opportunity for public recognition of businesses and industry's environmental commitment, management, and performance.	 Leadership Priority and commitment Env. issue Training and communication Legal compliance Environmental emergencies Employee participation Supply chain Env. programme Env. accounting Eco-design Carbon footprint 	WASTE INNOVATION MANAGEMENT	National recognition with a Plague and Certificate of Participation, and eligibility to include award's logo for promotional activities	https://www.hi biscusaward.co m/Index.aspx

INDICATORS ALIGNMENT WITH EXISTING POLICIES, BENEFITS AND RECOGNITION

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National Green Technology Policy (NGTP)	KASA *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	RESOURCES WASTE WATER ENERGY MANAGEMENT INNOVATION	Reduction in the rate of GHG emission	https://policy.a siapacificenerg y.org/sites/def ault/files/Natio nal%20Green% 20Technology% 20Policy%2020 09.pdf
Low Carbon Cities Framework (LCCF)	KASA	Framework for sustainable development and reducing emissions by measuring the impact of development decisions in terms of carbon emissions and abatement.	•	Urban Environment Urban Transport Urban Infrastructure Building	ENERGY RESOURCES WATER INNOVATION	Reduction performance will be awarded an environmental performance rating	http://lccftrack .greentownship .my/files/LCCF- Book.pdf
Feed-in Tariff (FiT)	SEDA	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	MANAGEMENT	Reduce CO ₂ emissions and secure domestic energy supply, and guarantee investment security for renewable energy investors	http://www.se da.gov.my/rep ortal/fit/
Green Electricity Tariff (GET)	KeTSA	Encourage the use and purchase on green electricity from large scale solar and hydroelectric plants along with supporting the nation aspiration in reducing the net- zero GHG emission by 2050.	•	Residential customer (100kWh per block) Non-residential customer (1000kWh per block)	ENERGY	Subscribers able to receive Malaysia Renewable Energy Certificate (mREC) based on international REC standards and exempted from ICPT charge	https://www.m gats.com.my/gr een-electricity- tariff
Malaysia Electricity Supply Industry Trust Account (MESITA)	KeTSA	Funding for programs or projects that support the development of national power industry including renewable energy R&D, human resource and energy efficiency.	•	Electricity supply	ENERGY INNOVATION MANAGEMENT	Funding for programs and projects	https://www.k etsa.gov.my/m <u>S-</u> my/MengenaiK etsa/Maklumat Bahagian/Page s/UnitAkaunA manahIndustri BekalanElektrik .aspx
Energy Management Gold Standard (EMGS)	MGTC	Certification system delivered under the ASEAN Energy Management Scheme (AEMAS) based on excellence in energy management.	•	Energy management	ENERGY	Recognized as a leader in energy management	https://www.m gtc.gov.my/our : services/energy -management- gold-standard- emgs/

GUIDELINE IMPLEMENTATION

The figure below was adopted from construction sector guidelines and illustrates five main steps in the process to implement **green agriculture practices**. "Preparation and target setting", as well as "Monitoring and Evaluation", are the two key stages of these five activities. An Action plan and Implementation Strategy will precede for the final stages.



STAGE 1: PREPARATION AND TARGET SETTING

In initiating the green practices in any agriculture process, the most crucial step is to determine the main target or objectives for the project, as this will have an impact on the indicators involved, such as capital and human resources.

Target-setting is a strategic process to establish performance goals for indicators namely resources, waste, water, energy, innovation and agriculture management. Each indicator uses a different tool that starts with establishing a baseline: how much energy, water, or waste is currently being used or generated. These would then help identify and set short- and long-term goals.



Setting target goals and action plans is a process. It takes efforts of teams to understand the baseline and the vision to determine the most effective set of performance improvement measures for achieving the target goals.

It is an iterative process and requires measurement and validation and frequent reassessment of goals.

After selecting project's targets, objectives and goals, the indicators involved will be identified, along with the appropriate action plan, based on the project's situation.

STAGE 2: ACTION PLAN & IMPLEMENTATION STRATEGY

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Most of the recommendations during the Focus Group Discussion focused on improving farm productivity and profitability in perpetuity without ecological or human harm.

	Indicator	Action Plan	Target Setting	
	RESOURCES	Priority for resources materials that are certified and available within the local area.	Reduce waste and costing costs	
	WASTE	Implementation of integrated waste management - segregation and separation according to hazardous, domestic and green waste.	Waste minimization	
MPLE	WATER	Rainwater reuse for non-potable water supply.	Optimisation of water resources.	
EXA	ENERGY	Initiation of the net energy metering approach for a balance energy consumption-production.	Optimisation of energy consumption	
	INNOVATION	Measure to increase farm product dependability and durability.	Enhance innovation in the processes and resource materials in agriculture	
	MANAGEMENT	Enhancing green practices and climate literacy across agriculture workforce.	Implement green practices throughout the whole phase of agriculture activities	

STAGE 3: MONITORING & EVALUATION

Monitoring and reporting systems should be established to identify areas for improvement and to assess whether guidelines have been well received and effective over the long-term.





In the long term, it is envisioned that the agriculture establishments who have implemented green and best practices may apply for the Green Certificate, and being eligible for, as of now, proposed financing benefits and support. In the short term, stakeholders may refer to the table in pages 3-20 to 3-22 for potential benefits and recognitions that they are eligible for based on their current performance.

CHALLENGES IN IMPLEMENTATION OF GREEN PRACTICES GUIDELINE

Given the central position of 'sustainability' in current/future agricultural research and practice, most of the good establishments focus on maintaining the functionality of ecosystems services.

For example, sustainable land management is targeted towards boosting or stabilising agricultural productivity, improving people's livelihoods and maintaining ecosystems (Schwilch *et al.*, 2012).

Moreover, successful implementation of guidelines requires a system of monitoring. To be effective, guidelines should be flexible and well-designed so not to stifle technological innovations among agricultural industries.

Despite having support in terms of government policies and technical assistance, farmers rarely adopt green practices.

Farmers often struggle to obtain accurate information about the benefits of green practices. Government support programs need to encourage adoption despite the lack of funding, inappropriate design, and ineffective targeting of incentives.





To ensure an enabling environment, three stages are identified, namely Development, Facilitation, and Implementation. Therefore, the development of this guideline falls under the first stage of Development and within the element: governance, and policy planning.

Development Stage

Sets the stage for any approaches that allows various entities to diagnose the current situation and plan a strategic framework. It is aimed at low-hanging fruits; such as education and capacity building at a systemic level and require long term commitment before the impacts can be seen. Farms and agriculture industries can start by analysing their current performance and creating their own green strategies while relevant authorities assess local efficiencies and develop interventions based on capacity and available resources.

Facilitation Stage

Involves an assessment of actions taken during the initial stages and performance of all strategic partners. This provides a foundation in developing financial mechanisms to increase buy-ins from the agriculture industry, as well as communication strategies to facilitate adherence to new green regulatory framework. A clear cost-benefit analysis, both monetary and non-monetary, must be in place.

Implementation Stage

Describes the requirement for a clear advisory support system with full capacity to fund and implement the program. Another key item is the scoring mechanism for the Green Certificate which the agriculture industry must adhere to before they can be awarded. Only once all these capacities are in place, can the Green Certificate Scheme be implemented successfully.

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