



MALAYSIAN GREEN TECHNOLOGY AND  
CLIMATE CHANGE CORPORATION

# CLIMATE CHANGE & MITIGATION STRATEGIES FOR ORGANISATIONS

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GHG Advisory & Consultancy Division (Climate Action Group)

11 November 2022



# Outline

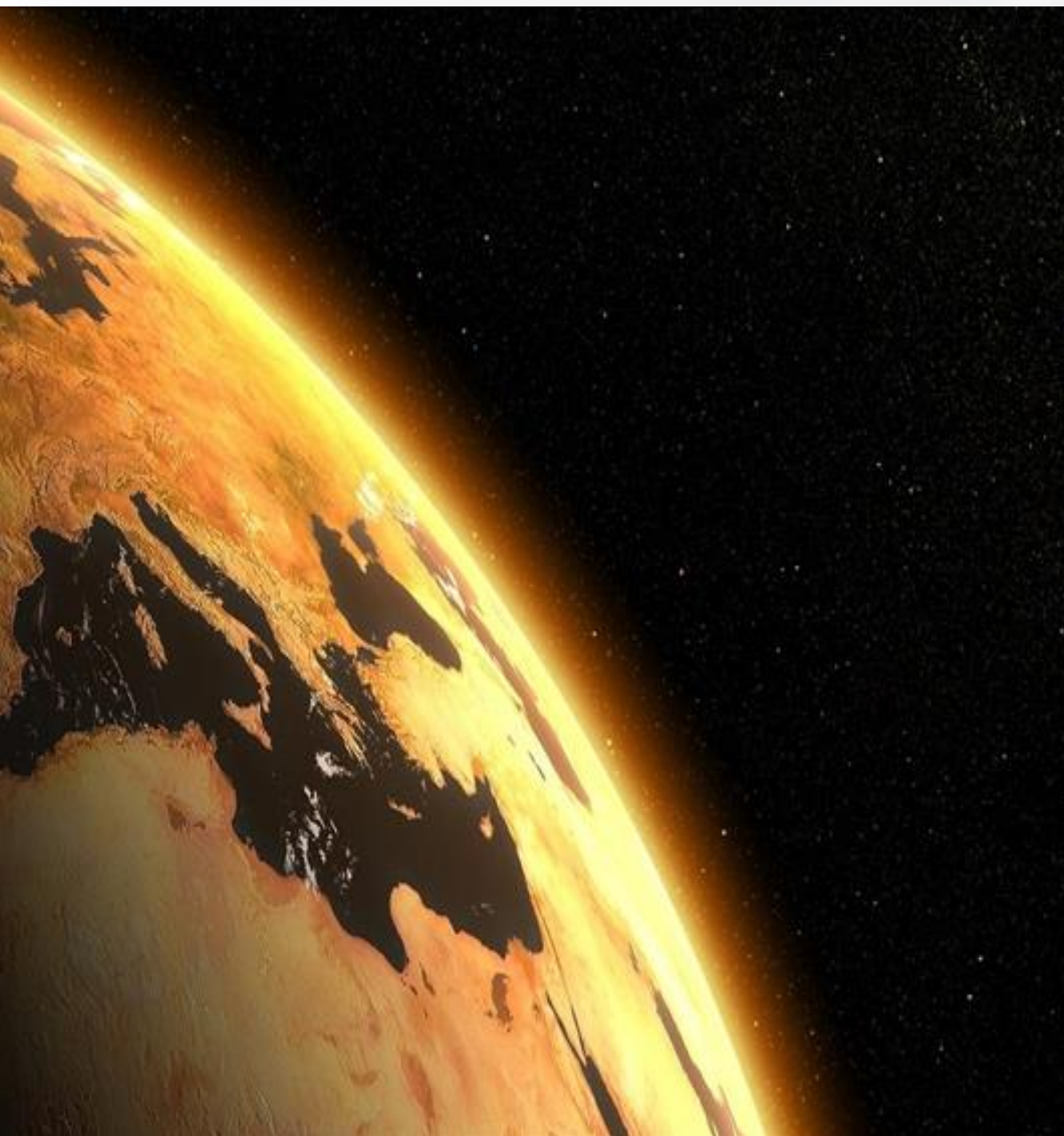
1. Introduction to climate change
2. Introduction to GHG emissions
3. GHG emissions assessment
4. GHG emissions mitigation and target

# What is climate change?



- Climate change quite simply refers to **changes** in Earth's long-term weather patterns.
- The most notable impact of climate change is **global warming** – the gradual increase in the overall temperature of the Earth's atmosphere.
- This global rise in temperature is linked to what scientists call the **greenhouse effect**.

# Greenhouse effect



It's normal for there to be some greenhouse gases in our atmosphere.

Extra greenhouse gases in our atmosphere are the main reason that Earth is getting warmer.

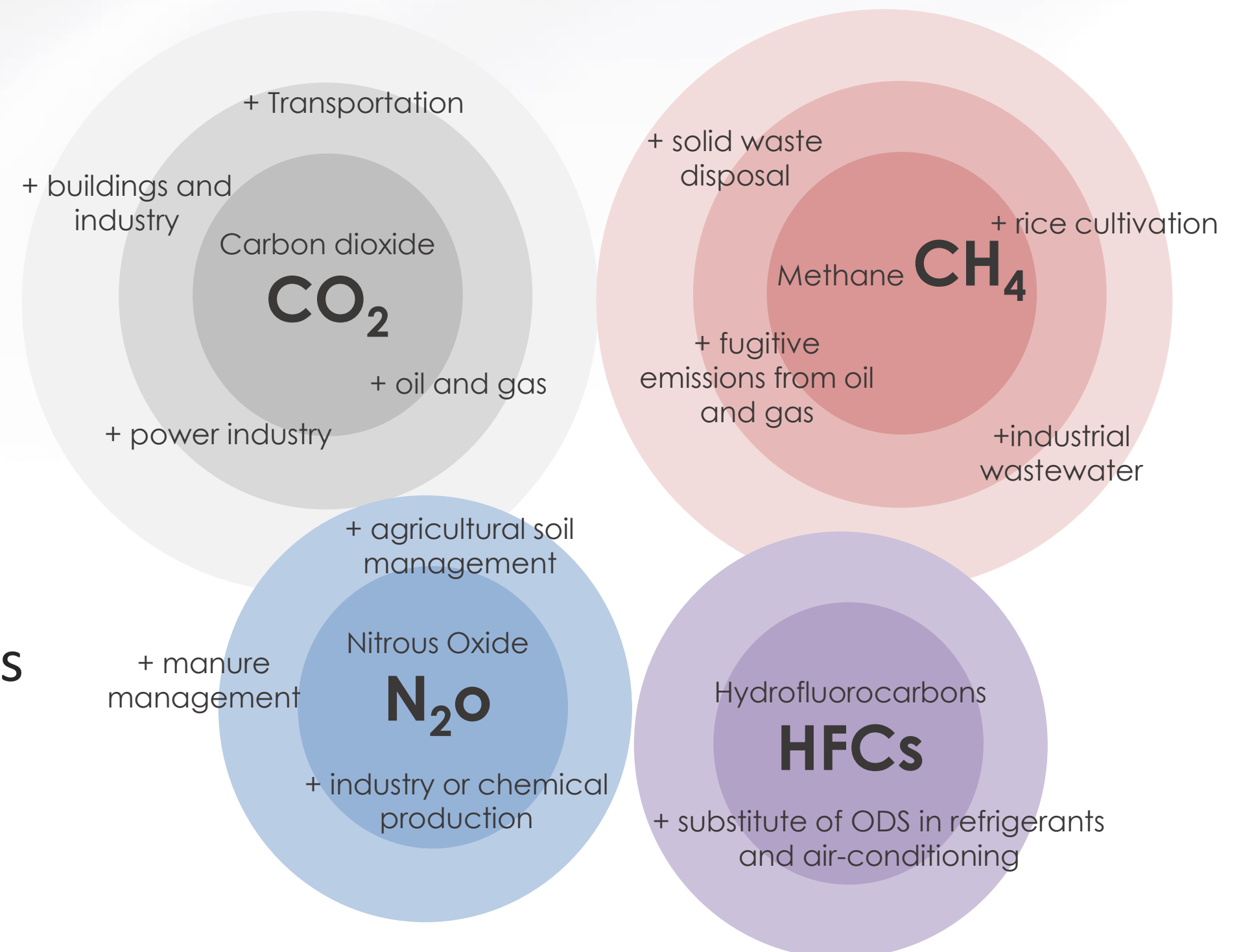
Greenhouse gases trap the Sun's heat in Earth's atmosphere.

# Greenhouse Gases

The main gases responsible for the greenhouse effect include:

- i. Carbon dioxide (CO<sub>2</sub>)
- ii. Methane (CH<sub>4</sub>)
- iii. Nitrous oxide (N<sub>2</sub>O)
- iv. Fluorinated gases (HFC, PFC, SF<sub>6</sub>)

## Type of GHG and Sources



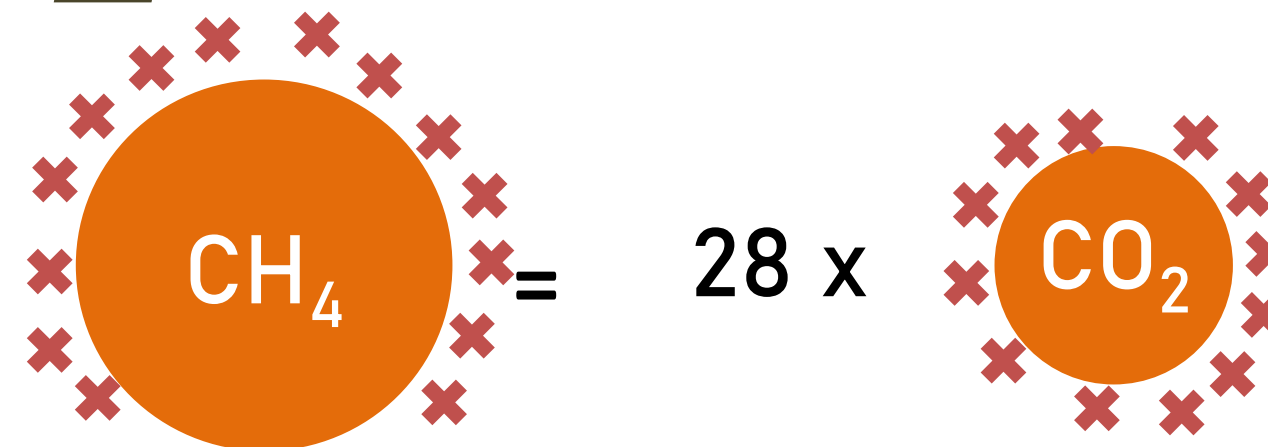
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All greenhouse gases have its GWP **Global Warming Potential**.

Abilities different greenhouse gases to trap heat in the atmosphere



# Impacts of Climate Change?



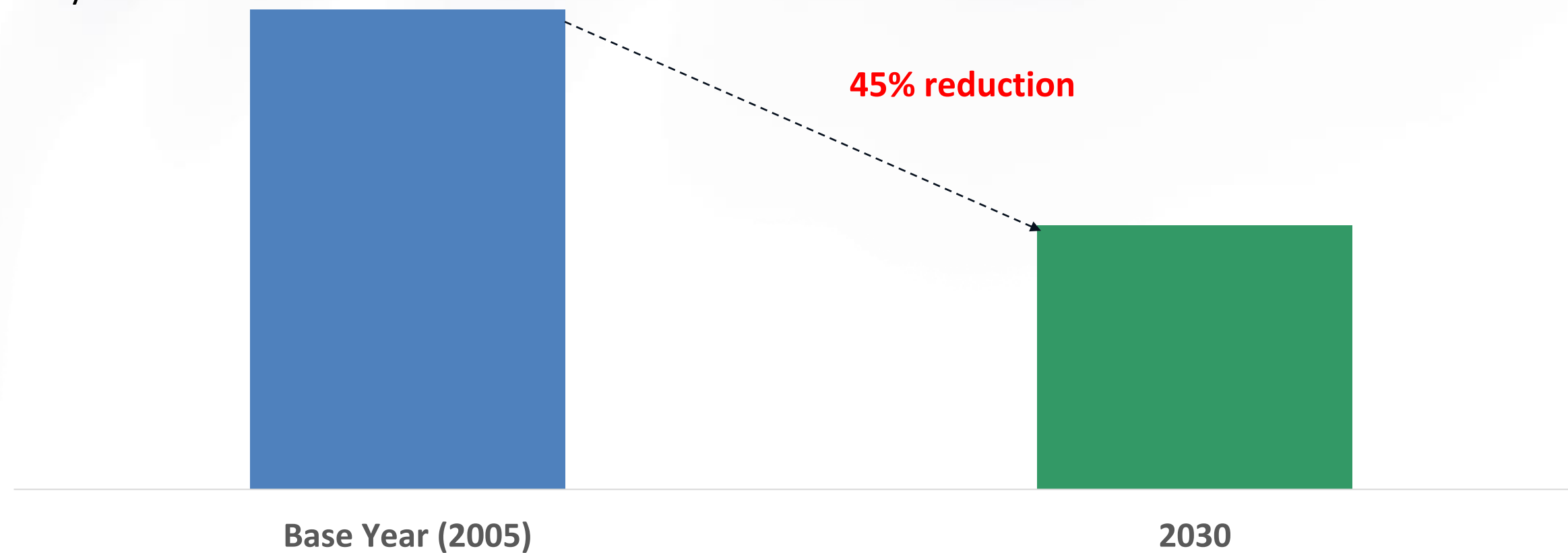
# Responses to Climate Change



# Malaysia's Nationally Determined Contribution (NDC)

“Malaysia intends to reduce its economy-wide carbon intensity (against GDP) of 45% in 2030 compared to 2005 level”

0.4285 kgCO<sub>2</sub>eq/RM  
Emissions Intensity in 2005



Source: Malaysia's Updated NDC







# Malaysia's Long-Term Target

“The ministry is developing a long-term national low carbon development strategy in line with the country's aspiration to achieve **net zero GHG reduction as early as 2050.**”

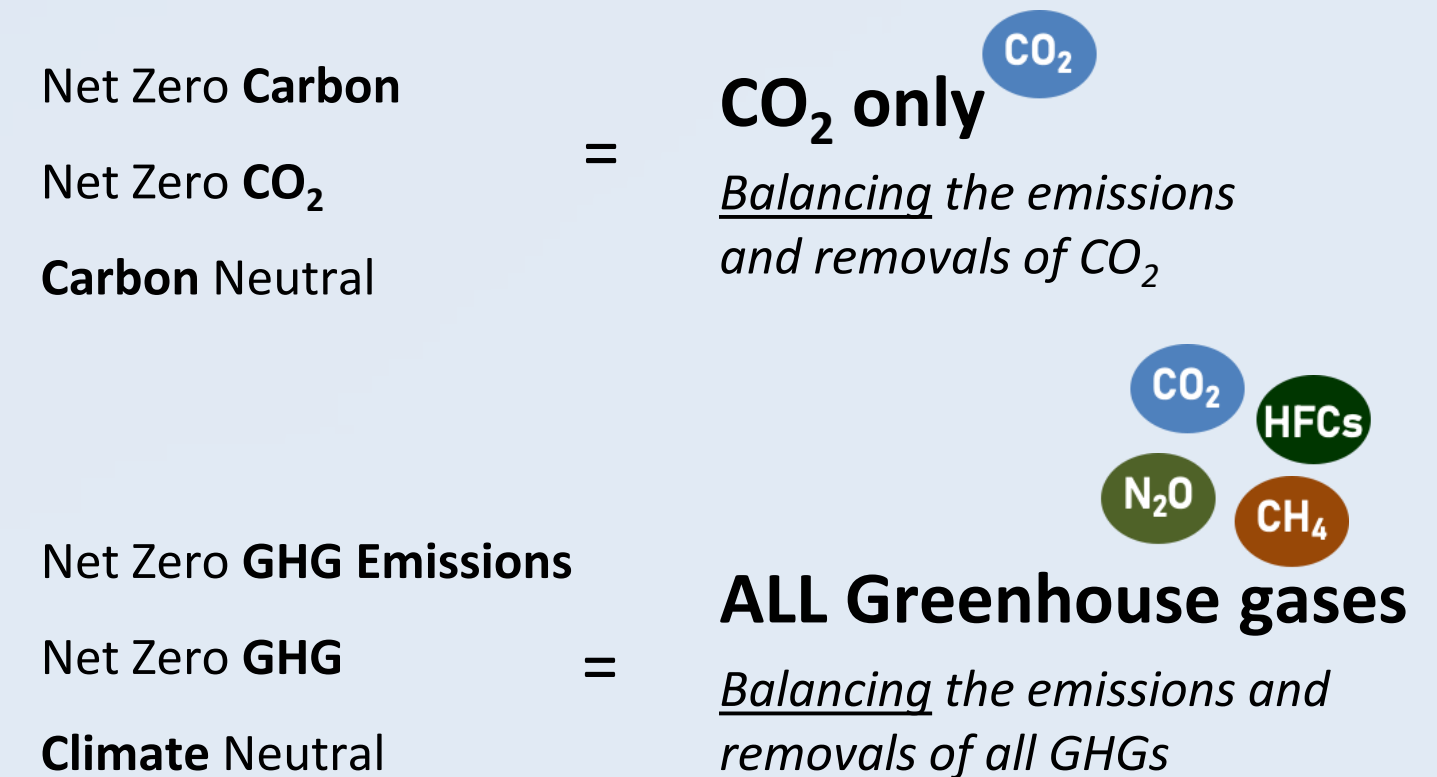
*Prime Minister Datuk Seri Ismail Sabri Yaakob*  
(Source: New-Straits-Times June 21, 2022)



# Various Terminology & Concept

 <p><b>Khazanah</b> has set a target to achieve <b>net zero emissions by 2050</b> and will be working towards <b>carbon-neutral operations</b> by 2023</p>	 <p><b>PETRONAS</b> aspires to achieve <b>net zero carbon emissions</b> by 2050</p>	 <p><b>TNB</b> aspires to achieve <b>net zero emissions</b> by 2050</p>
 <p><b>EPF</b> commits to achieving a <b>climate neutral</b> portfolio by 2050</p>	 <p><b>FGV</b> to halve its greenhouse gas emissions by 2030 and hit <b>net zero emissions</b> by no later than 2050.</p>	 <p><b>Axiata</b> is committed to achieving <b>net-zero emissions</b> no later than 2050, and to reduce <b>operational carbon emissions</b> by 45% from a 2020 baseline by 2030.</p>

## IPCC distinguishes several terms as follows:



# GHG Emissions Assessment

# MEASURE the Emissions

## PERSONAL



A **personal carbon footprint** is carbon dioxide emissions caused by each person's clothing, food, housing and traffic of daily life.

## PRODUCT



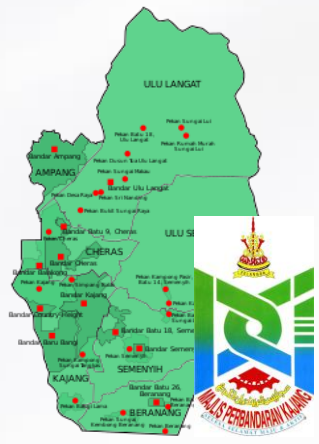
A **product carbon footprint** measures the greenhouse gas (GHG) emissions over the entire life of a product (goods or services)

## ORGANISATION



An **organizational** carbon footprint measures the GHG emissions from all the activities across the organization, including energy used in buildings, industrial processes and company vehicles.

## CITIES



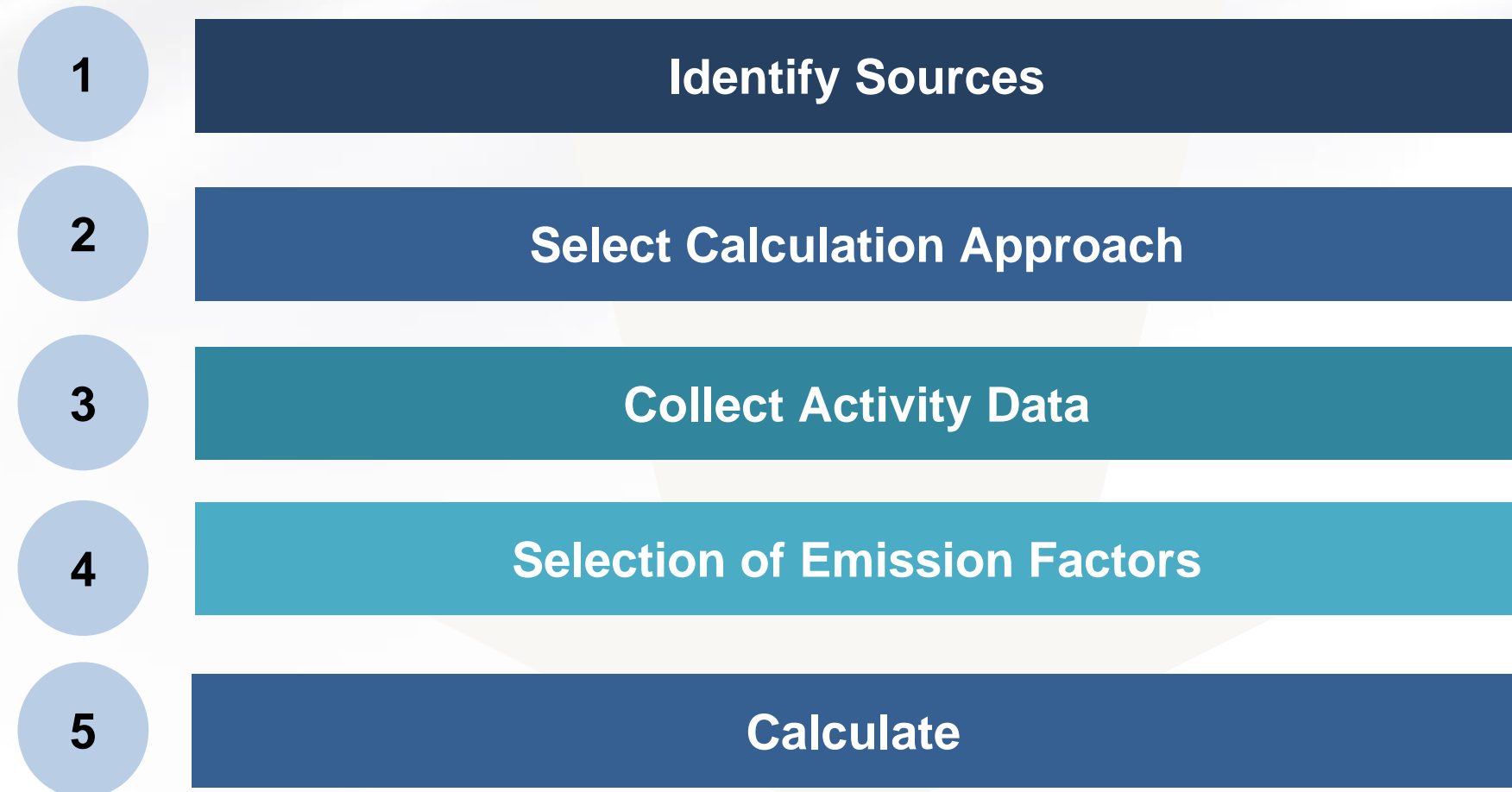
**Cities** GHG Inventory is an estimate of emissions and removals of greenhouse gases (GHG) from given sources or sinks, from a defined boundary

## COUNTRY



A **National** GHG inventory is an estimate of emissions and removals of greenhouse gases (GHG) from given sources or sinks, from a defined country in a specific period

# How to calculate GHG Emissions in 5 Steps

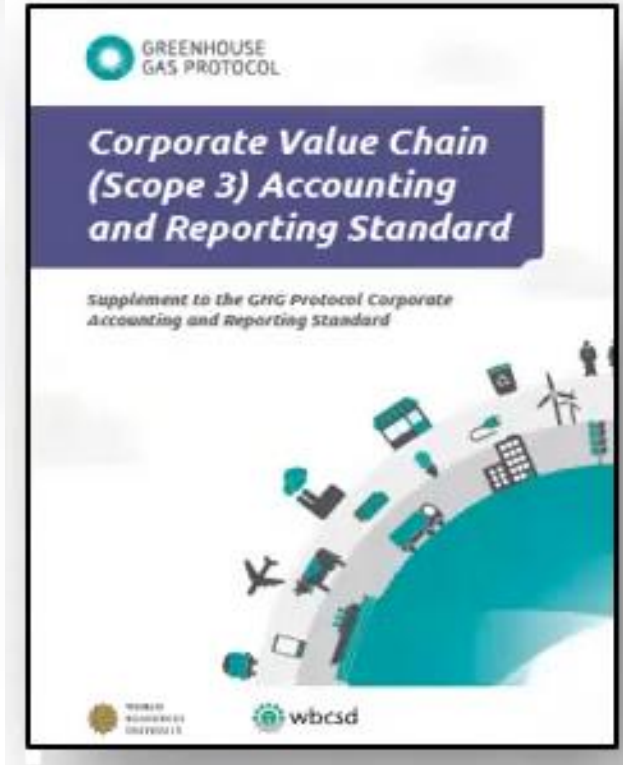


# Guidelines and Methodology (Entity Accounting)

## Guidelines



Corporate Standard (Scope 1 & 2)

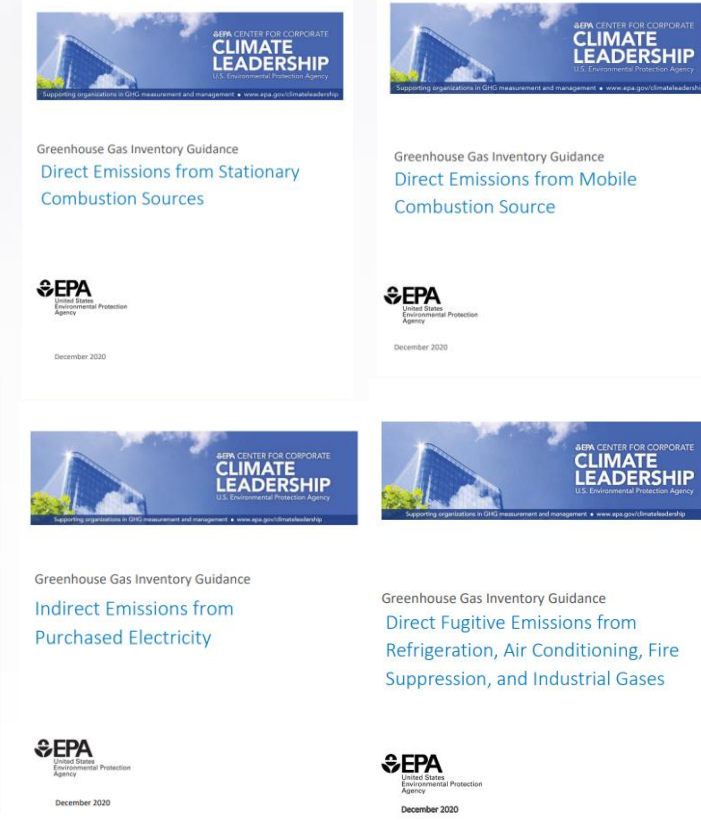


Value Chain (Scope 3)

## Methodology



2006 IPCC Guidelines



US EPA GHG Inventory Guidance



GCCA Guidelines

Two **basic types of data** are necessary to calculate the **emissions**:

$$\text{GHG Emissions} = \text{Activity Data} \times \text{Emissions Factor} \times \text{GWP}$$

# GHG Emissions Assessment

GHG emissions assessment involves:



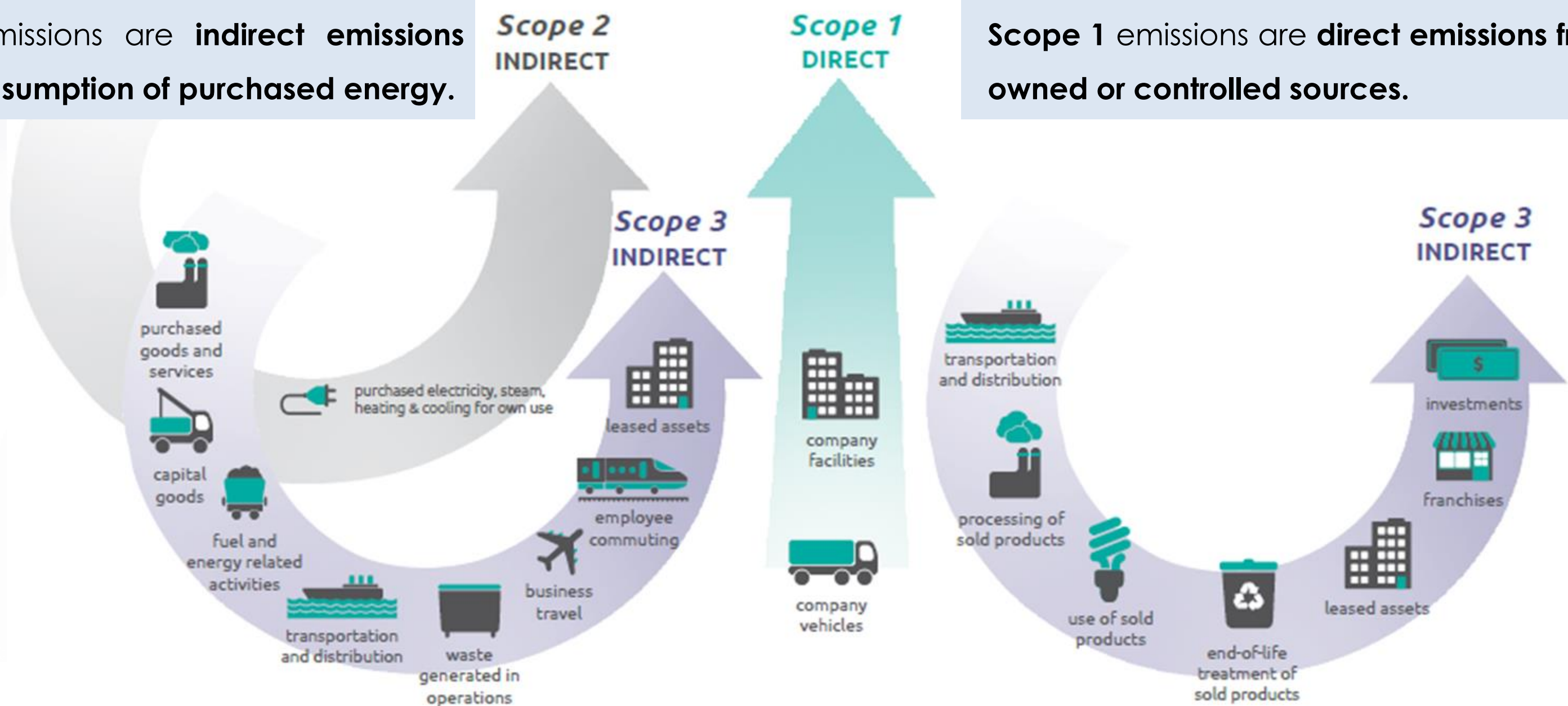


# Types of Emissions Scope



**Scope 2** emissions are **indirect emissions** from the consumption of purchased energy.

**Scope 1** emissions are **direct emissions** from owned or controlled sources.



**Upstream activities**

**Scope 3** emissions are all **indirect emissions** that occur in the value chain of the reporting company.

**Downstream activities**

# GHG Emissions Mitigation and Target

# What is GHG Management?

GHG management is about taking steps to **measure and manage greenhouse gas (GHG)** emissions within your organisation and extend the reduction of emissions across your supply chain (FDF, 2008, p.8).



# 6 THINGS TO CONSIDER: Development of GHG Mitigation Action Plans For Company



To **prioritise the emission hotspots** for reduction effort.



To plan for a series of **carbon reduction programmes**.



To **set a carbon reduction target** to demonstrate its commitment. The carbon reduction target can be absolute or intensity target.



To establish **enabling strategies** for GHG Reductions. (e.g. incentives, procurement practices, awareness, capacity building)



To **decide the boundary of the target**. As a minimum, the target should be set for Scope 1 and Scope 2 emissions, but also exploring to include Scope 3 emissions.



To **integrate climate change adaptation strategies** in designing mitigation strategies.

# 3 Main Sources to Reduce GHG Emissions at Organisational Level

1



**Stationary Combustion**

2



**Mobile Combustion**

3



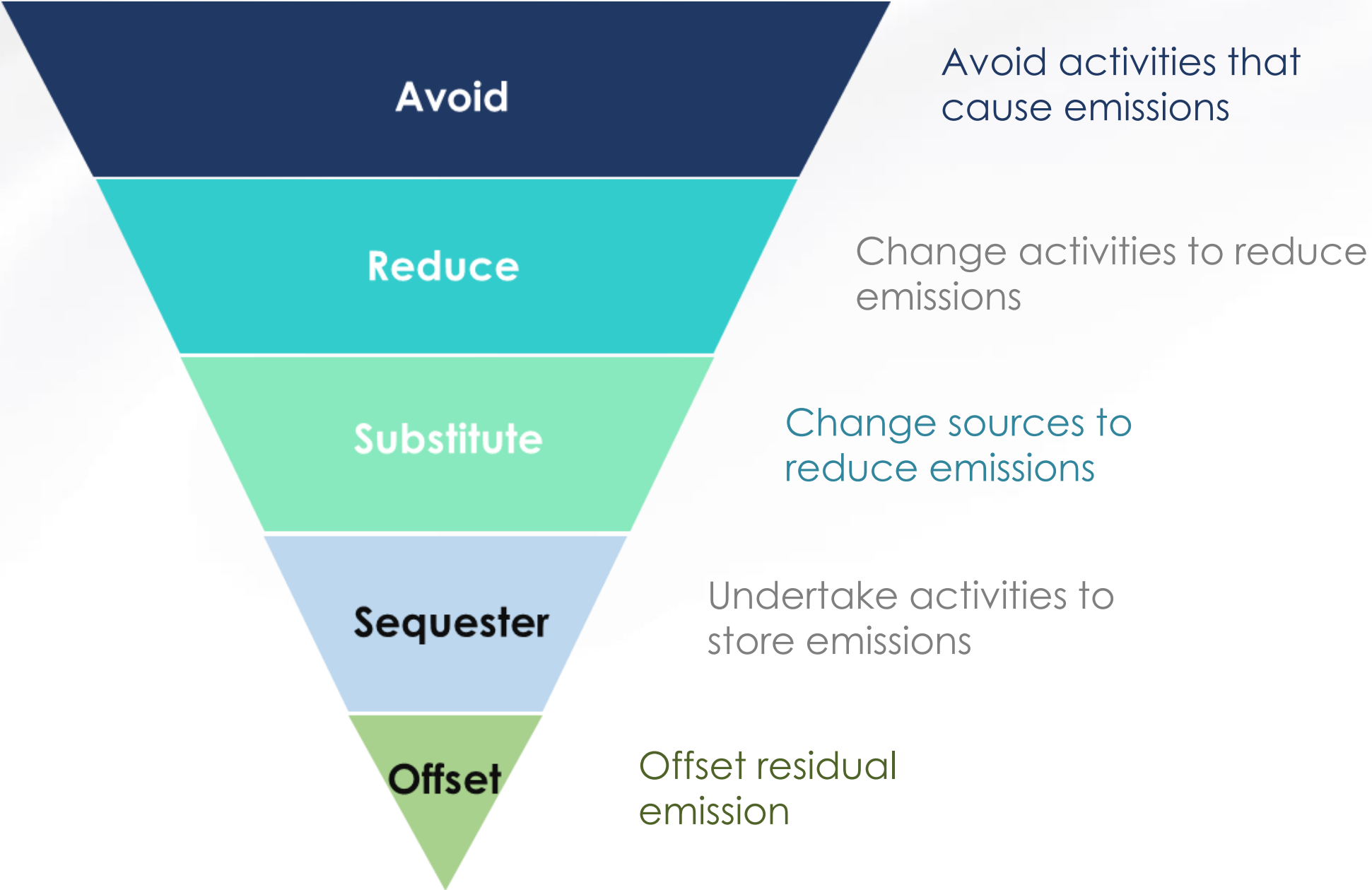
**Waste**

# GHG Management Hierarchy

Most favoured option



Least favoured option



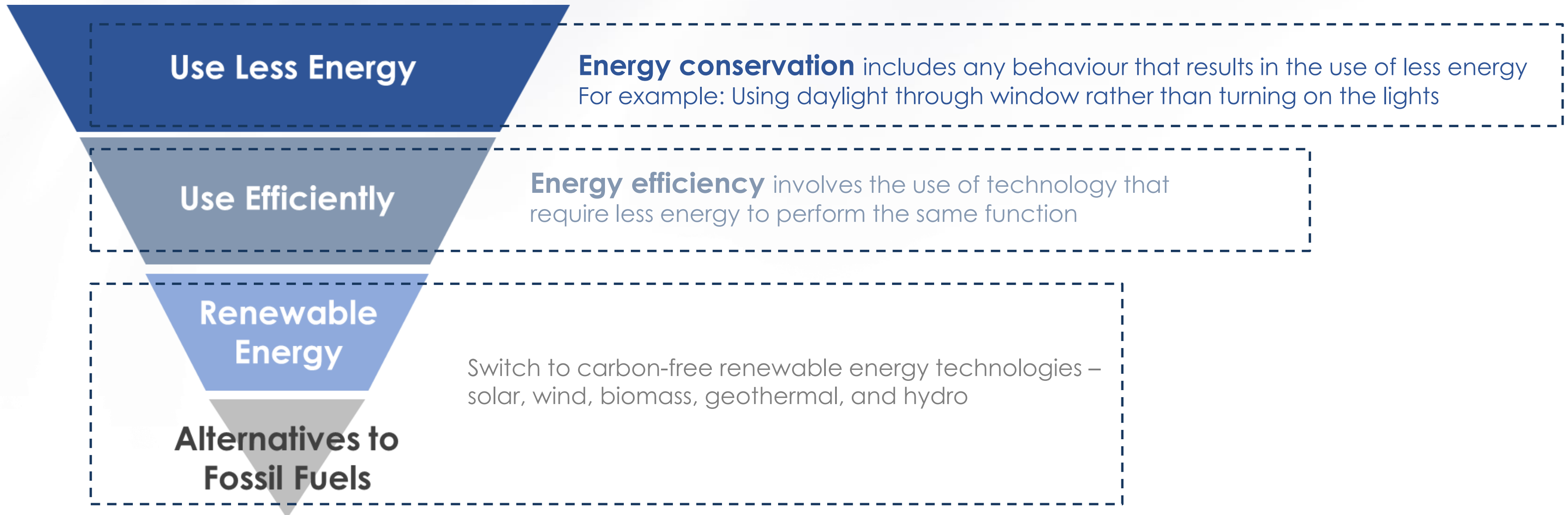
Adopted from : IEMA GHG Management Hierarchy & RMIT University Carbon Management Plan



# 1. Stationary Combustion

**ENERGY MANAGEMENT** is key in reducing GHG emissions from stationary combustion

## ENERGY MANAGEMENT HIERARCHY





## 2. Mobile Combustion

### Avoid, Shift, Improve (ASI) Approach to Support Sustainable Low Carbon Transport



#### **AVOID** Motorised trips

- Motor and fuel taxes
- **Non trip incentive**
- Road user fees/tolls
- Cordon/ congestion pricing
- **Car sharing programs**
- Transit Oriented Development
- Car free zones
- **Commuter trip reduction policies**
- **Avoid freight empty loads**
- **Better freight logistics**



#### **SHIFT** To more efficient modes of transportation

- Public transport improvements
- Parking Management
- Transit Oriented Development
- Improvement in NMT (non-motorised transport)
- Freight Rail



#### **IMPROVE** Efficiency of remaining travel activity

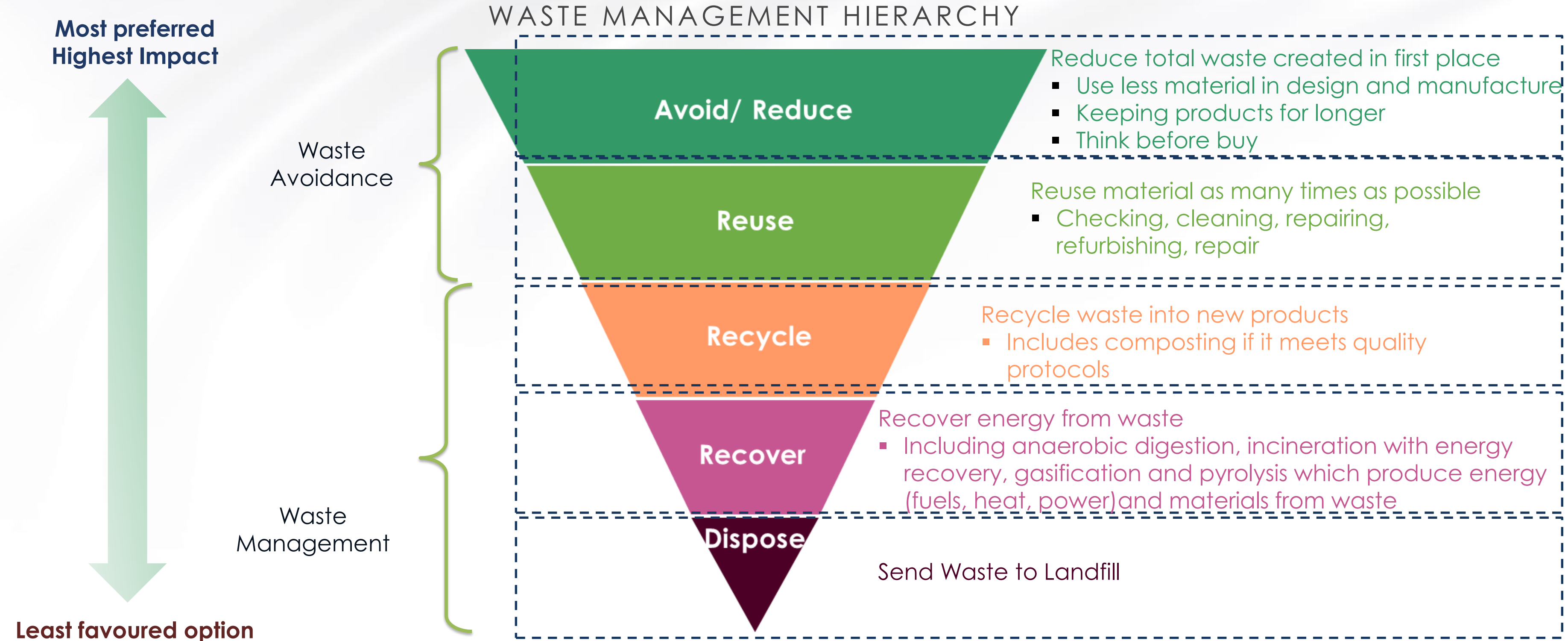
- Active traffic management
- **Eco-driving behaviour**
- **Fleet maintenance schemes**
- Intelligent transportation systems
- Traffic signal synchronisation
- **Energy efficient vehicles/trucks/ships**
- **Lower carbon fuels (Biofuels)**
- Aerodynamic vehicle design

Source: Mitigation Strategies and Accounting Methods For Greenhouse Gas Emissions From Transportation, Inter-American Development Bank (IDB)





# 3. Waste



Source: Northeast Recycling Council, Jenni Downes, University of Technology in Sydney, Australia

# KEY GOVERNMENTAL POLICIES AND PROGRAMMES

## In relation to GHG Mitigation for Company's Reference



Sector	Ministries / Agencies	Latest / Active Development
<b>Energy</b>	<ul style="list-style-type: none"> <li>Economic Planning Unit (EPU)</li> <li>Ministry of Energy and Natural Resources (KeTSA)</li> <li>Energy Commission (ST)</li> <li>Sustainable Energy Development Authority (SEDA)</li> </ul>	<ul style="list-style-type: none"> <li>National Energy Policy (2021-2040) and Action Plan – to be launched</li> <li>New RE target: 31% RE capacity by 2025; 40% RE Capacity Mix by 2035</li> <li>Energy Efficiency Conservation Act (EECA) bill – finalisation</li> </ul>
<b>Green Building and Infrastructure / Construction</b>	<ul style="list-style-type: none"> <li>Ministry of Works</li> <li>CIDB</li> <li>Jabatan Kerja Raya (JKR)</li> </ul>	<ul style="list-style-type: none"> <li>National Construction Policy 2030</li> <li>Green Building Rating tools:                             <ul style="list-style-type: none"> <li>Green Building Index (GBI)</li> <li>GreenRE</li> <li>MyCREST - carbon rating tool used by the CIDB</li> <li>Penarafan Hijau (PH) – Sustainable development rating used by JKR</li> <li>Sustainable InfraSTAR - sustainable infrastructure design and measurement tool by CIDB</li> </ul> </li> <li>Zero Energy Building (ZEB) assessment tool – SEDA</li> <li>BEI Labelling for 300 government buildings</li> <li>CIDB - Inventory of embodied carbon on construction materials</li> </ul>
<b>Waste Management</b>	<ul style="list-style-type: none"> <li>Ministry of Housing and Local Government (KPKT)</li> <li>Jabatan Pengurusan Sisa Pepejal Negara (JPSPN)</li> <li>DOE, KASA</li> </ul>	<ul style="list-style-type: none"> <li>KPKT is targeting 6 waste-to-energy (WTE) plants towards 2025</li> <li>Increased recycling rate target in the seven states under SWCorp supervision to 40% by 2025.</li> <li>Malaysia Towards Zero Single Use Plastic 2018-2030</li> <li>Circular Economy Roadmap for Plastic</li> </ul>
<b>Transportation</b>	<ul style="list-style-type: none"> <li>Ministry of Transport</li> <li>KASA &amp; MGTC</li> <li>Malaysia Automotive Robotics and IoT Institute (MaRii)</li> </ul>	<ul style="list-style-type: none"> <li>National Transport Policy 2019-2030</li> <li>Low Carbon Mobility Blueprint (LCMB)</li> </ul>

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Sector	Ministries / Agencies	Latest / Active Development
<b>Climate Change and GHG / Carbon Emissions</b>	<ul style="list-style-type: none"> <li>Ministry of Environment and Water</li> <li>Malaysian Green Technology and Climate Change Corporation (MGTC)</li> </ul>	<ul style="list-style-type: none"> <li>NDC Update (submitted to UNFCCC July 2021)</li> <li>National Guidance Voluntary Carbon on Market Mechanisms</li> <li>Review of National Climate Change Policy</li> <li>NDC Roadmap</li> <li>Review of Green Technology Master Plan (GTMP)</li> <li>Malaysia's Long Term Low Emissions Development (LT-LEDS) Strategy</li> </ul>
<b>Green Assets, Products and Services</b>		<ul style="list-style-type: none"> <li>MyHIJAU Mark and Directory</li> <li>Government Green Procurement (GGP)</li> </ul>
<b>Green Incentives</b>		<ul style="list-style-type: none"> <li>Green Technology Financing Scheme 3.0 (Green bonds and Sukuk) – Dana Jamin</li> <li>Green Investment Tax Allowance (GITA) / Green Income Tax Exemption (GITE)</li> </ul>

# PROGRAMMES OFFERED BY MGTC

## In relation to GHG Mitigation for Company's Reference



**GITA  
GITE**



### GREEN INCENTIVES & CERTIFICATION

Green policies, green financing for GT projects, tax allowance, green labelling & certification



FACILITATE GREEN INDUSTRY GROWTH



LOW CARBON CITY TRANSFORMATION

### LOW CARBON CITIES

Low Carbon Cities Framework, tools & blueprint development, LCC solutions



### GREEN ADVISORY & CAPACITY BUILDING

Policy, roadmap development, carbon management, green skills & competency development



INDUSTRY ADVISORY & CAPACITY BUILDING



ENERGY MANAGEMENT

### SUSTAINABLE ENERGY

Energy Management certification (EMGS), Energy Management training, sustainable energy (EE & RE) solutions



### GREEN PROMOTION & INVESTMENT

Green Exhibition, Business Matching & Green Business promotion platforms



PROMOTE GREEN BUSINESS & INVESTMENT



LOW CARBON MOBILITY TECHNOLOGIES ADOPTION

### LOW CARBON MOBILITY

Electric Vehicle (EV) adoption, EV Infrastructure, Low Carbon Mobility Blueprint



# GHG Target

Common drivers for setting a GHG target include:

- Minimizing and managing GHG risks
- Achieving cost savings and stimulating innovation
- Preparing for future regulations
- Demonstrating leadership and corporate responsibility
- Participating in voluntary programs

# Steps in Setting a Target

Common drivers for setting a GHG target include:

- Minimizing and managing GHG risks
- Achieving cost savings and stimulating innovation
- Preparing for future regulations
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## Setting GHG Target in 10 Steps



# Thank You

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