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# Developing A Greener Built Environment

# CONTENTS



# INTRODUCTION

# Malaysia's Commitments

## Reduction of GHG Emissions

- Unconditionally reduce economy wide carbon intensity of 45% by 2030 compared to 2005 levels

## Halt Deforestation

- Halt deforestation by 2030
- By 2025, at least 20% of terrestrial areas and inland waters, and 10% of coastal and marine areas are conserved

## Voluntary Carbon Market

- Establish a Voluntary Carbon Market (VCM) and Domestic Emissions Trading Scheme in phases

## Global Commitments

- Loss and damage - Developing countries to seek financial assistance for loss and damage.
- The 2015 Paris agreement contained two temperature goals – to keep the rise well below $2^0$C above pre-indusrial levels. It was agreed in COP 26 to keep the increase to $1.5^0$C.
- To boost low-emissions energy generation.
- Adaptation - building flood defences, preserving wetlands, restoring mangrove swamps and regrowing forests.

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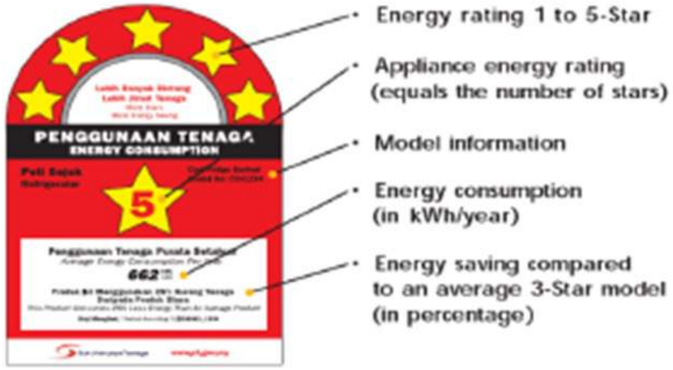
# Energy Efficiency – Low Hanging Fruit

Non energy efficient buildings are like a leaky bucket. We need to plug all the holes. 50% of final electricity consumption in Malaysia is by commercial and residential buildings.

Presents a “low hanging fruit” opportunity to optimize building operating costs and alleviate negative environmental impact.

- National Energy Efficiency Action Plan (NEEAP 2016-2025)
- Malaysian Energy Performance Standards (MEPS)
- Energy Efficiency and Conservation Act (2023)
- UBBL 38A
- Efficient Management of Electrical Energy Regulations (EMEER 2008)
- MS 1525:2019 – Energy Efficiency and use of renewable energy for non-residential projects
- MS2680:2017 - Energy Efficiency and use of renewable energy for residential projects




1. Air Conditioner
2. Refrigerator
3. Domestic Fan: MS 2574:2014
4. Lamps: MS 2598:2014
5. Television
6. Washing Machine
7. Microwave Oven
8. Electric Rice Cooker
9. Freezer

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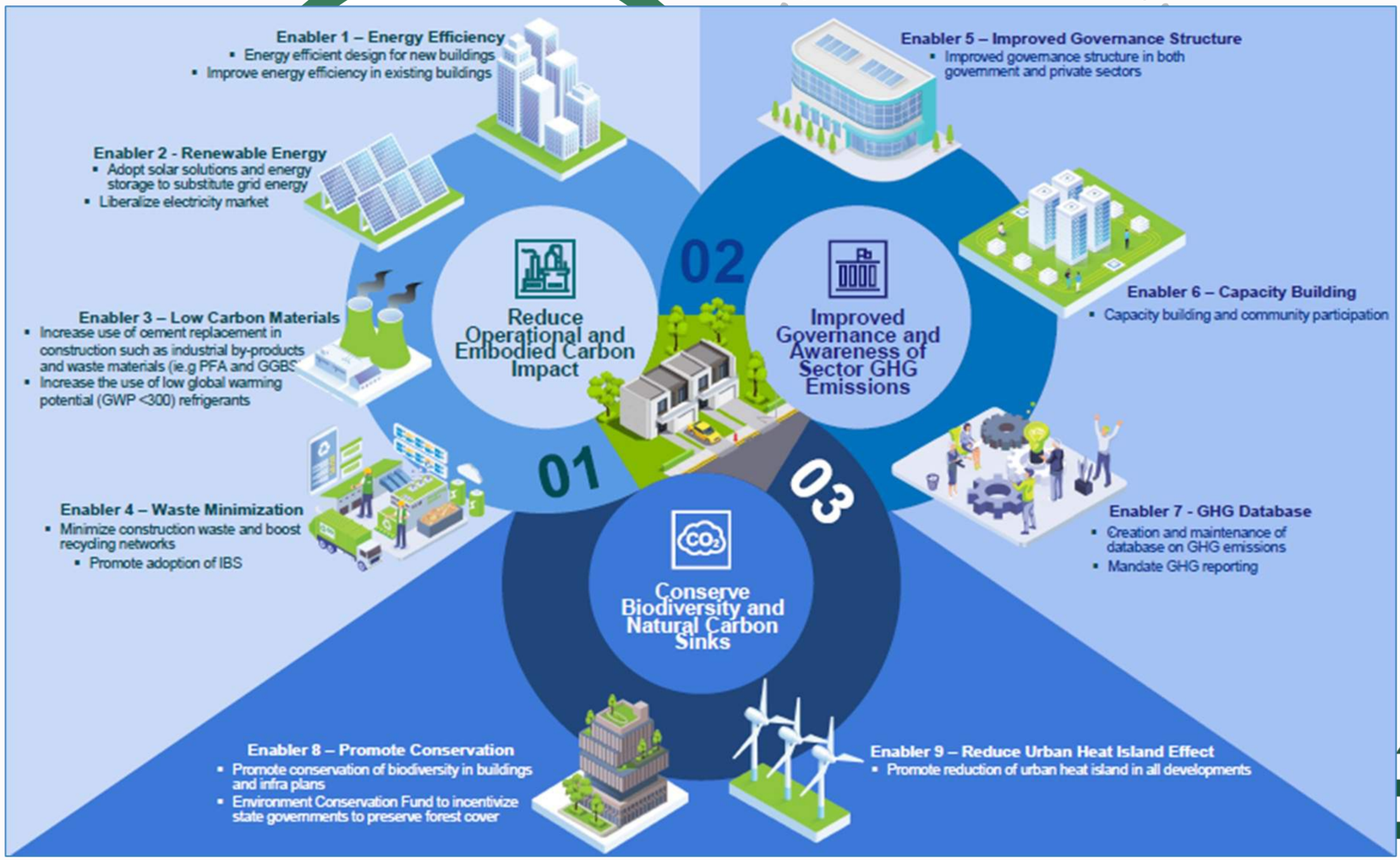
# National Low Carbon Cities Masterplan

Voluntary Process targeted at local authorities in Malaysia with Ministry of Natural Resources, Environment and Climate Change (NRECC) as PMO

Tax Incentives offered by Malaysian Investment Development Authority of Malaysia (MIDA) for owners and operators of green buildings (federal level).

Other incentives offered by selected local authorities such as plot ratio increase, development charge rebate etc for development of green buildings.



# ESG Disclosure in Malaysia

FTSE4Good

GRESB

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

GRI STANDARDS

INTEGRATED REPORTING <IR>

BANK NEGARA MALAYSIA
CENTRAL BANK OF MALAYSIA

Climate Change and Principle-based Taxonomy

Applicable to:
1. Licensed banks
2. Licensed investment banks
3. Licensed international Islamic banks
4. Licensed Islamic banks
5. Licensed insurers
6. Licensed reinsurers
7. Licensed takaful operators
8. Licensed retakaful operators
9. Prescribed development financial institutions

Issued on: 30 April 2021

Table D: Classification of economic activities

| Classification | | Economic Activity (Transaction Level) | | Overall Business | |
|---|---|---|---|---|---|
| | | GP1 Climate Change Mitigation | GP2 Climate Change Adaptation | GP3 No Significant Harm to the Environment | GP4 Remedial Efforts to Promote Transition |
| Climate Supporting | C1 | GP1 or GP2 or both | | ✓ | |
| Transitioning | C2 | GP1 or GP2 or both | | ✘ | ✓ |
| | C3 | ✘ | | ✘ | ✓ |
| Watchlist | C4 | GP1 or GP2 or both | | ✘ | ✘ |
| | C5 | ✘ | | ✘ | ✘ |

# About Us: GreenRE (Green Real Estate)

REHDA

GreenRE

- **Fully endorsed by the Federal Government**
- **Internationally benchmarked and aligned to best practice guidelines – Joint certification with MyCrest by CIDB**
- **Projects certified by GreenRE are eligible for government tax incentives**
- **Recognized by several local authorities including Penang State, DBKL, MBPJ, MBSA and MBSJ**

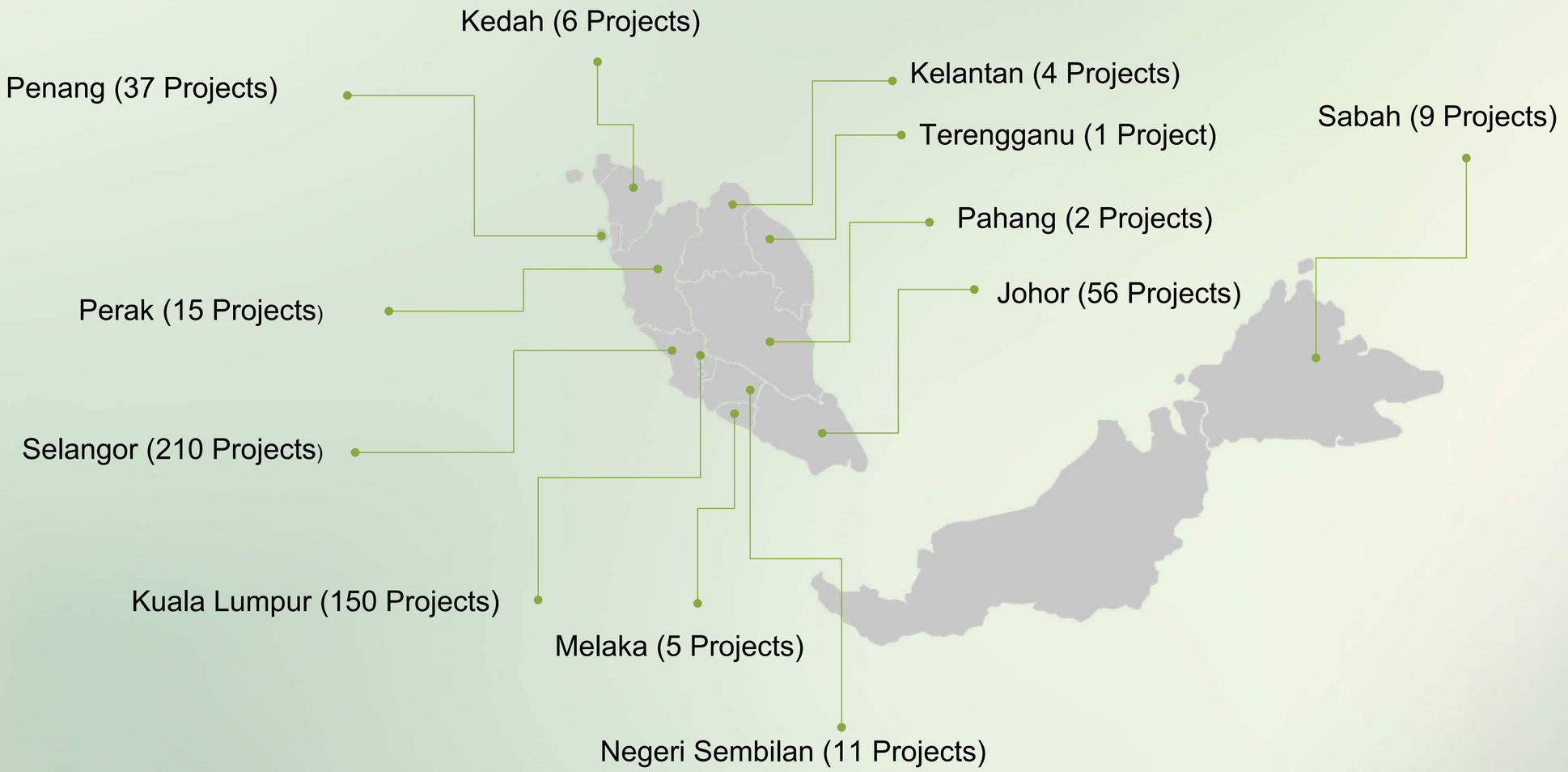
01 Green Building Certification

02 Training Programmes
- GREENREAP - GRETS
- Short Courses

03 Collaborations (R&D & Awareness Drives)

# Registered Projects

**Over 600 projects registered covering over 400 million ft²**




**Almost 80% of new projects in the country use GreenRE for green certification.**

# GREENRE RATING TOOLS

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# Standards and Certification

## What are Standards?

- A standard is a set of guidelines and criteria against which a product, system, project or service can be judged.
- Generally developed through consensus by organizations.
- ISO defines a standard as: "a document, established by consensus, approved by a recognized body that provides for common and repeated use as rules, guidelines, or characteristics for activities or their results".
- Standards are either – "Prescriptive" , "Performance-based" or "Outcome Based" applied separately or together.

## What is Certification?

- Certification is a confirmation that a product, system, project or service meets defined criteria of a standard.
- ISO defines certification as: "any activity concerned with determining directly or indirectly that relevant requirements are fulfilled".
- They can be either "Single attribute" or "Multi attribute".

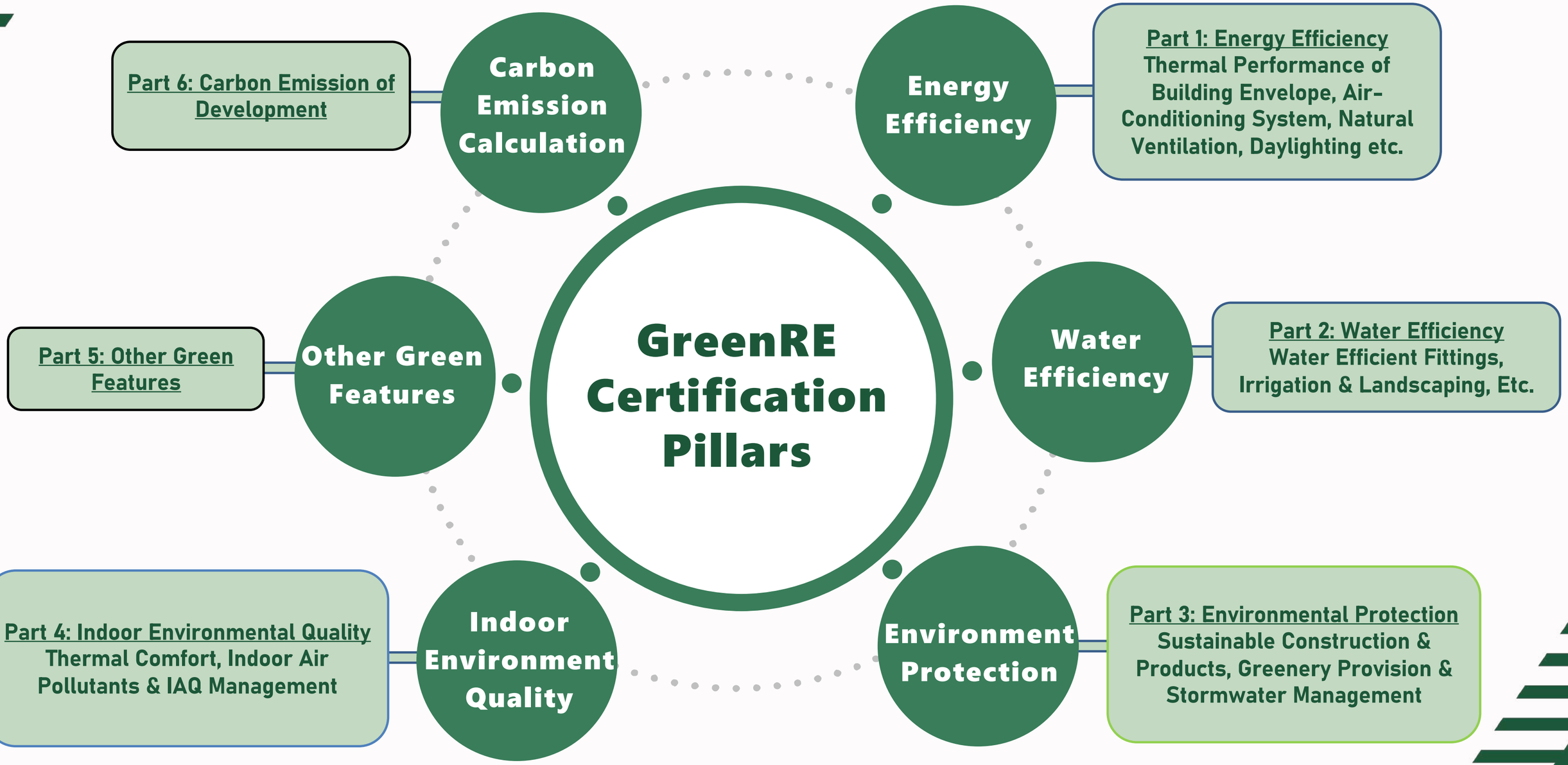
# GreenRE Rating Tools

| Score | Rating |
|---|---|
| 91 and above | Platinum |
| 86 to ≤ 90 | Gold |
| 76 to ≤ 85 | Silver |
| 50 to ≤ 75 | Bronze |

*** max 100 points**


| | |
|---|---|
| **Building Tools** | ▪ Residential Building & Landed Home<br>▪ Non-Residential Building<br>▪ Healthcare<br>▪ Industrial Facilities<br>▪ Office Interior<br>▪ Retail<br>▪ Data Centres |
| **Township Tools** | ▪ Township (TS 1.0) |
| **Infrastructure Tools** | ▪ Infrastructure (v1.0) |

# GreenRE Rating Pillars- Building



# GreenRE Criteria(Non-Residential Building

| | CATEGORY | POINTS |
|---|---|---|
| Part 1 | Energy Efficiency | 114 |
| Part 2 | Water Efficiency | 15 |
| Part 3 | Environmental Protection | 45 |
| Part 4 | Indoor Environmental Quality | 9 |
| Part 5 | Other Green Features | 7 |
| Part 6 | Carbon Emission of Development | 3 |
| | **Total** | **193** |

**Minimum 30 points from Part 1 (capped at 50 points)**
**Minimum 20 points from Part 2-6 (capped at 50 points)**
**Maximum Score = 100 points**

**Elective Requirement for Energy Improvement**
**(Combination of the following items to meet 30 credits)**

Part 1 – Energy Efficiency
NRB 1-1 Thermal Performance of Building Envelope -OTTV
NRB 1-2 Air-Conditioning System
NRB 1-3 Building Envelope – Design/ Thermal Parameters
NRB 1-4 Natural Ventilation (exclude carparks)
NRB 1-5 Daylighting
NRB 1-6 Artificial Lighting
NRB 1-7 Ventilation in Carparks
NRB 1-8 Ventilation in Common Areas
NRB 1-9 Lift and Escalators
NRB 1-10 Energy Efficient Practices & Features
NRB 1-11 Renewable Energy

**Elective Requirement for Other Areas**
**(Combination of the following items to meet 20 credits)**

Part 2 - Water Efficiency
NRB 2-1 Water Efficient Fittings
NRB 2-2 Water Usage and Leak Detection
NRB 2-3 Irrigation System and Landscaping
NRB 2-4 Water Consumption of Cooling Tower

Part 3 – Environmental Protection
NRB 3-1 Sustainable Construction
NRB 3-2 Sustainable Products
NRB 3-3 Greenery Provision
NRB 3-4 Environmental Management Practice
NRB 3-5 Green Transport
NRB 3-6 Stormwater Management
NRB 3-7 Refrigerants

Part 4 - Indoor Environmental Quality
NRB 4-1 Thermal Comfort
NRB 4-2 Noise Level
NRB 4-3 Indoor Air Pollutants
NRB 4-4 Indoor Air Quality (IAQ) Management
NRB 4-5 High Frequency Ballasts

Part 5 – Other Green Features
NRB 5-1 Green Features & Innovations

Part 6 – Carbon Emission of Development
NRB 6-1 Carbon Emission of Development

# GreenRE's Key Areas of Focus – Pre-requisites

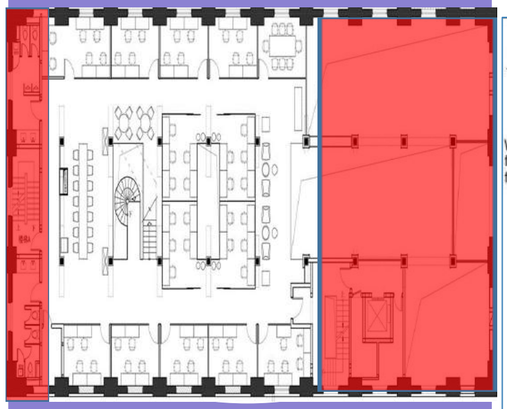
**Baseline = MS-1525 for non-residential and MS-2680 for residential buildings**

| Parameter | Requirements |
|---|---|
| OTTV | Max 50 $W/m^2$ |
| RTTV | Max 25 $W/m^2$ |
| Roof U-Value | Light : Max 0.4 $W/m^2K$ |
| | Heavy : Max 0.6 $W/m^2K$ |

**Aligned to UBBL-38A**

| Parameters | Requirements | |
|---|---|---|
| | Gold | Platinum |
| OTTV | Max 42 $W/m^2$ | Max 40 $W/m^2$ |
| Saving using Energy Modelling | Min 45% | Min 50% |
| Sustainable Construction | Min 3 credits | Min 5 credits |
| Sustainable Products | Min 3 credits | Min 4 credits |

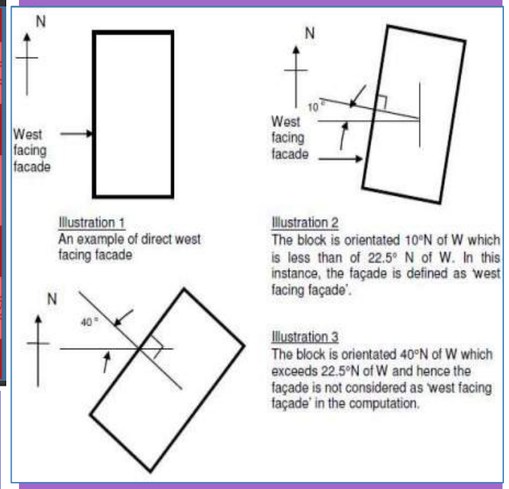
**Focus on the "Must Have high impact items" vs "Nice to Have low impact items"**



**1. Shift core / common areas to east and west side of building.**

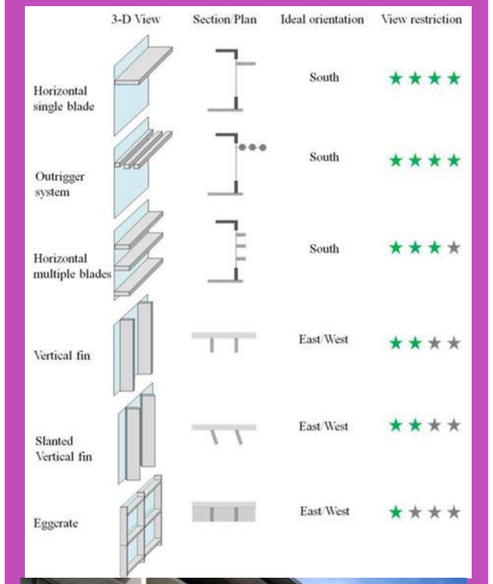
*Figure shows all the building common areas located at west and east facing parameters. Retain same NLA*

*All the habitable spaces are located at the north and south building parameter.*

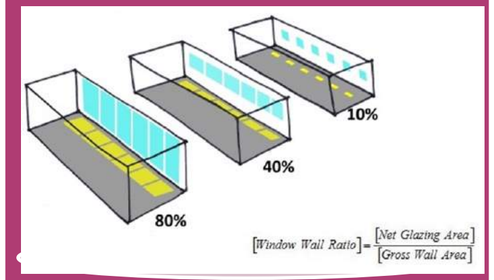



**2. Reduce east & west orientation**

*Tilt building 22.5 degrees away from east or west orientation.*




**3. Apply external shading**

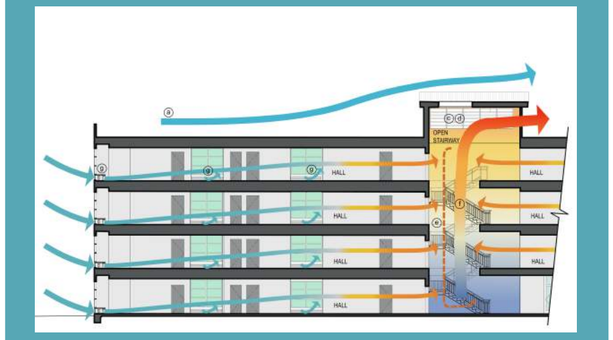


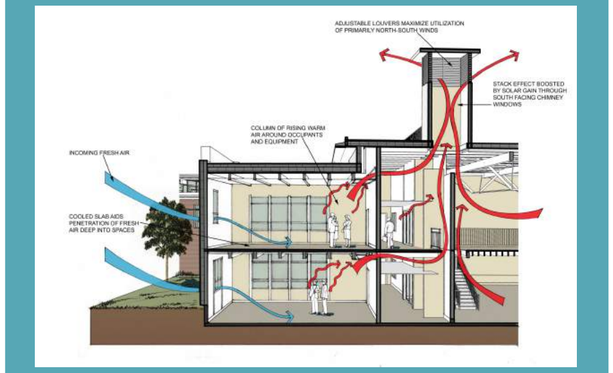

**4. Reduce WWR (window to wall ratio) and / or use low-e glass**



**5. Use roof insulation**

# Strategies to Lower Thermal Transfer into Building (Reduced OTTV)




**6. Optimize natural ventilation capture – openings to face N-S direction**

**7. Harness Daylighting**



**8. Energy efficient air-conditioning**



**9. Energy efficient lighting**

## Strategies to Improve Energy Efficiency

# Green Township


**A Green Township is designed to reduce impact to the environment and is resilient to emerging threats associated with climate change.**

**Part 1 – Energy Efficiency**
- TS 1-1 Energy Efficiency for Infrastructure and Public Amenities
- TS 1-2 On-site Energy Generation
- TS 1-3 Site Planning and Building Orientation
- TS 1-4 Energy Management System
- TS 1-5 Minimise Energy Consumption during Off-Peak Hours

**Part 2 - Water Management**
- TS 2-1 Water Efficient Fittings for Infrastructure and Public Amenities
- TS 2-2 Stormwater Management
- TS 2-3 Alternative Water Sources
- TS 2-4 Water Efficient Landscaping
- TS 2-5 Water Efficiency Management

**Part 3 – Material & Waste Management**
- TS 3-1 Minimise Cut and Fill in Earthworks
- TS 3-2 Sustainable Construction for Infrastructure and Public Amenities
- TS 3-3 Sustainable Products for Infrastructure and Public Amenities
- TS 3-4 Waste Reduction
- TS 3-5 Waste Management and Segregation
- TS 3-6 Waste Conveyance
- TS 3-7 Waste Reuse and Processing

**Part 4 - Environmental Planning**
- TS 4-1 Self Sufficiency and Accessibility within Township
- TS 4-2 Green and Blue Spaces for the Public
- TS 4-3 Microclimate Optimisation
- TS 4-4 Outdoor Thermal Environment
- TS 4-5 Site Selection
- TS 4-6 Conservation and Integration of Existing Structures and Assets
- TS 4-7 Habitat Conservation and Restoration
- TS 4-8 Minimise Site Disturbance
- TS 4-9 Environmental Management System
- TS 4-10 Future Provision and Connections

**Part 5 – Green Buildings and Green Transport**
- TS 5-1 Green Building within Township
- TS 5-2 Green Urban Design Guidelines
- TS 5-3 Green Transportation

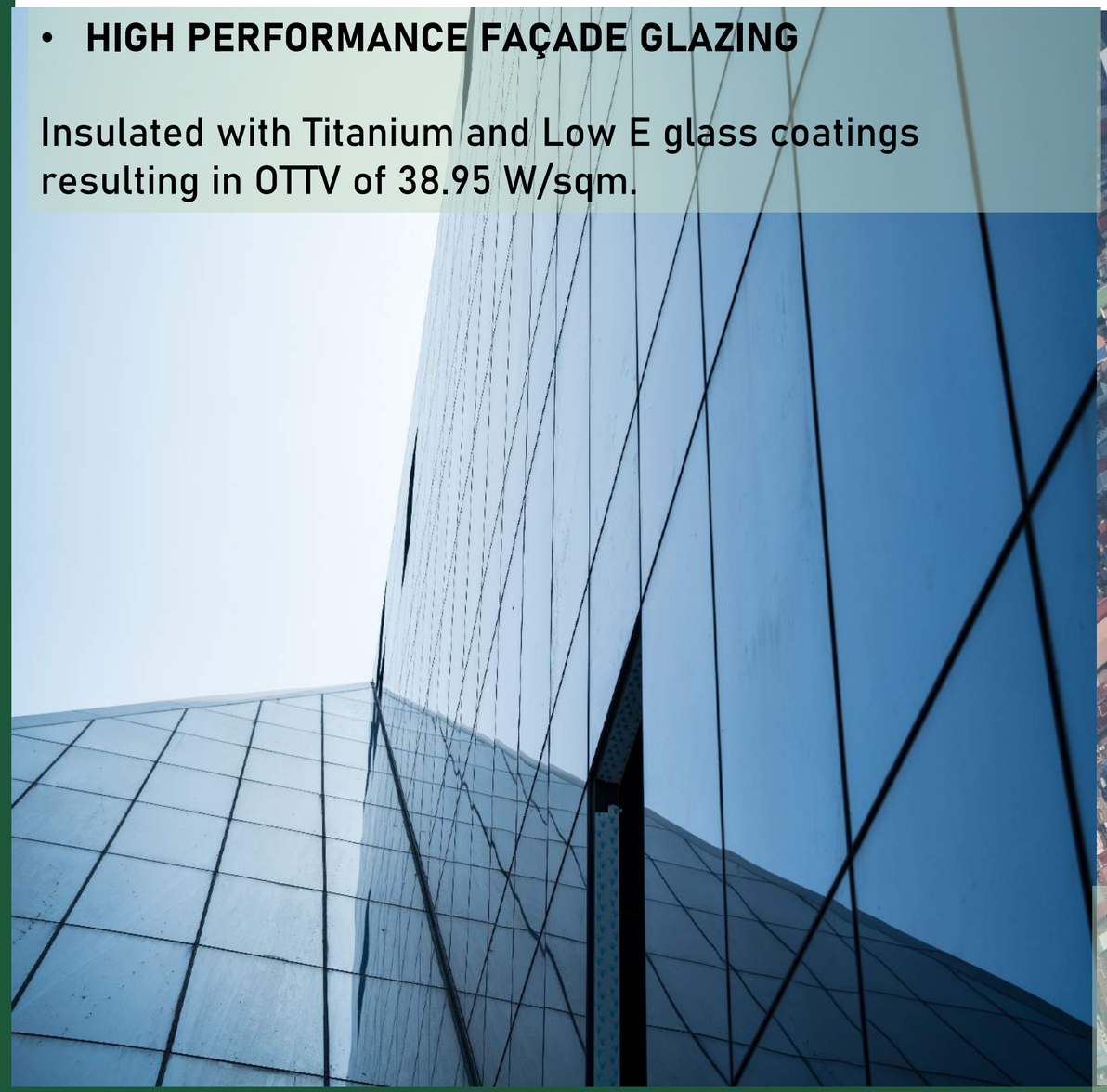
**Part 6 – Community and Innovation**
- TS 6-1 Stakeholder Engagement, Feedback and Evaluation
- TS 6-2 Public Awareness, Education and Community Involvement
- TS 6-3 Green Lease
- TS 6-4 Intelligent Infrastructure
- TS 6-5 Safe Environment
- TS 6-6 Light Pollution Reduction
- TS 6-7 Other Green Features and Innovation

# MERDEKA 118|PLATINUM

# GREEN FEATURES

- **HIGH PERFORMANCE FAÇADE GLAZING**

Insulated with Titanium and Low E glass coatings resulting in OTTV of 38.95 W/sqm.



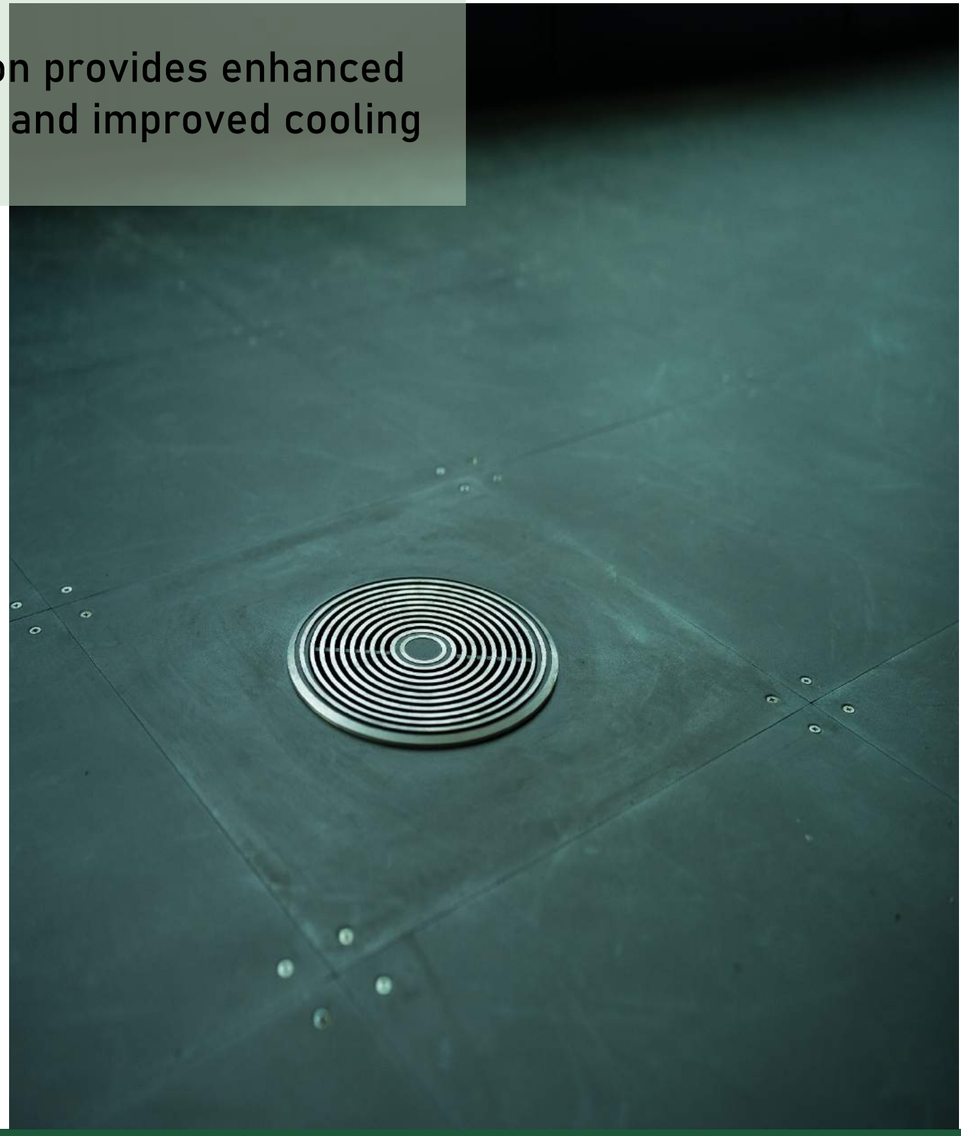
- **BUILDING INTERGRATED PHOTOVOLTAIC AND SOLAR THERMAL**

Provision of renewable energy which can replace 4.5% of total energy consumption

# GREEN FEATURES

- **UNDERFLOOR AIR DISTRIBUTION**

Underfloor air distribution provides enhanced air change effectiveness and improved cooling efficiency.



- **ENERGY EFFICIENT LIGHTING**

# GREEN FEATURES

- **CENTRALIZED PNEUMATIC WASTE MANAGEMENT SYSTEM**

Efficient vacuum based pneumatic waste management system serving entire building.

- **DISTRICT COOLING PLANT WITH THERMAL STORAGE**

Provides off-peak central chilled water production and distribution.

- **SITE WIDE MATERIAL RECYCLING**

Construction waste management programs diverting a minimum 75% of construction waste from local landfills to recycling facilities.

- **GREY WATER STORAGE AND REUSE**

For toilet flushing and cooling, the water is partially supplied by grey water filtration and rain water harvesting.

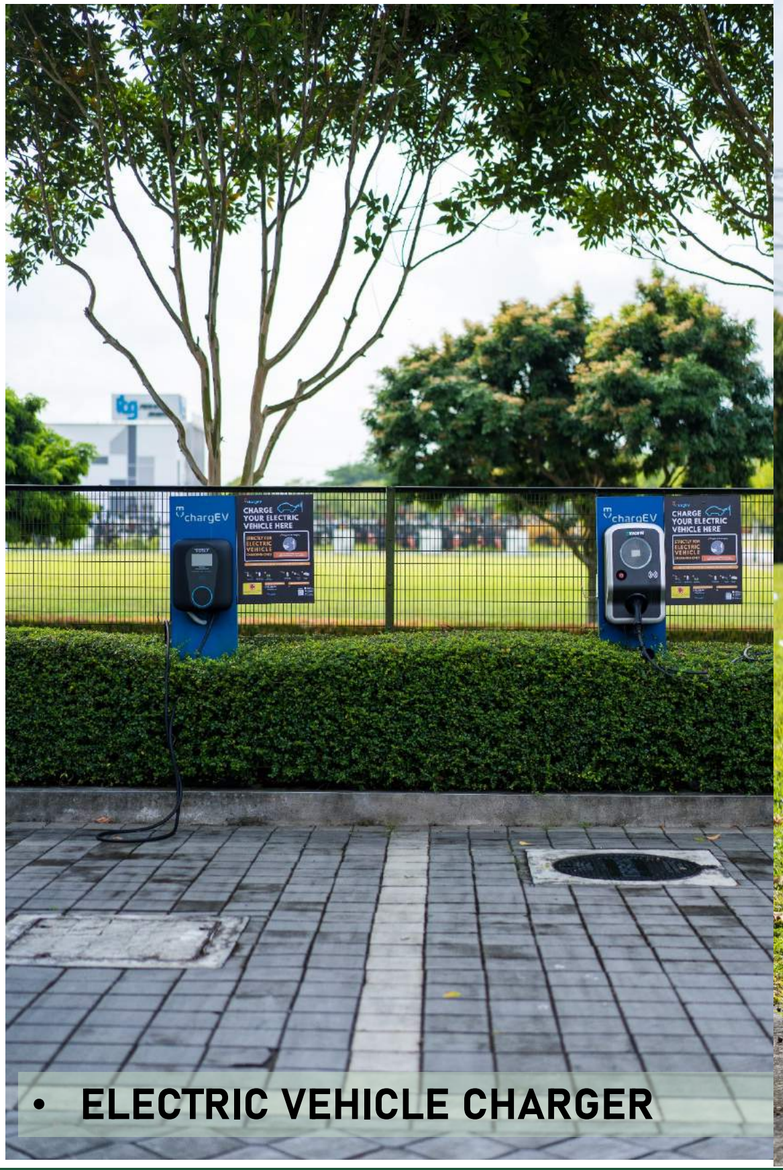
# ECO BUSINESS PARK 1|BRONZE

# GREEN FEATURES


- **WALKABLE TOWNSHIP**

Dedicated jogging, pedestrians and bicycle laned in the township

# GREEN FEATURES

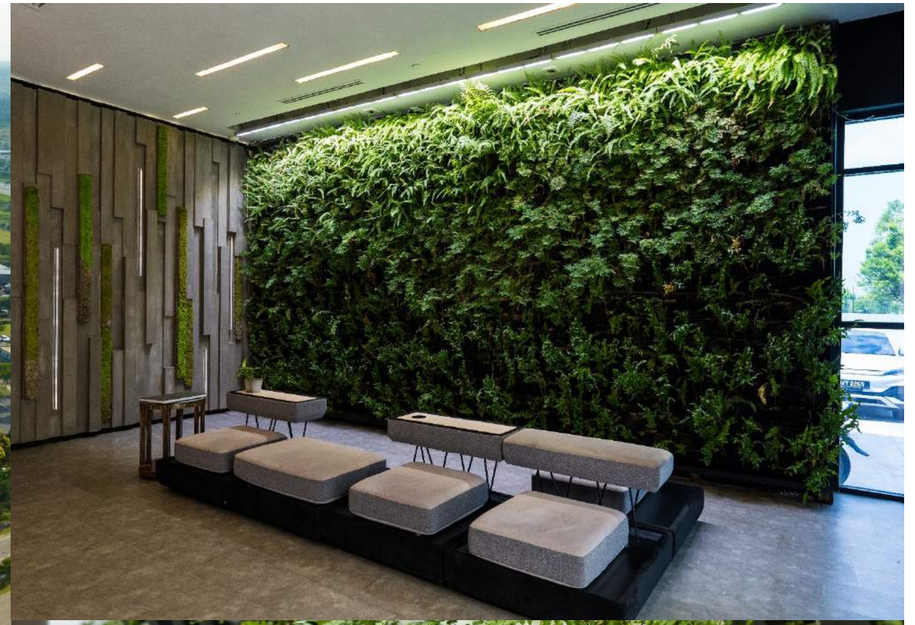



- **ELECTRIC VEHICLE CHARGER**


- **RECYCLE BINS**

Provision of recycle bin to encourage recycling activities within the township

# GREEN FEATURES



- **INDUSTRIAL PARK WITH GREENERY**

Extensive of greenery provided includes the vertical greenery and herb gardens

# GREEN FEATURES

- BUILDING ORIENTATION TO REDUCE THERMAL HEAT GAIN

# GREEN FEATURES

- **ENERGY EFFICIENT PUBLIC BUILDINGS**

Equipped with LED lighting and energy efficient air conditionings

# GREENRE ASSESSMENT PROCESS

# GREENRE ASSESSMENT PROCESS

INTERNAL REVIEW

Registration

Pre-Assessment (PA)

Actual Assessment (AA)

Provisional Certificate

Site Verification (SVA)

Final Certification

EXTERNAL REVIEW

# BENEFITS OF GREEN BUILDINGS

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# Benefits of Green Buildings

## CORE PRINCIPLES

- Conserve natural resources – energy and water (operational carbon).
- Reduce environmental impact – materials and site selection (embodied carbon).
- Improve social wellbeing – healthier working and living environment.

## ECONOMIC ADVANTAGES

- Cost Savings in the Long Term.
- Enhanced quality of building and productivity of occupants.
- Tax Incentives by MIDA.
- Alignment to sustainable reporting requirements. Greater appeal to selective investors.

## RISK MANAGEMENT

- Future-proofing buildings for impending green building and energy efficiency regulations.
- Improved climate resilience.

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# Green Buildings: Impact to Wider Economy

## Why Green the Property & Construction Sector?

- To improve quality of life and social wellbeing of society.
- To reduce overall green house gas (GHG) emissions.
- To create economies of scale for high technology products.
- To encourage higher value services and create more job openings.
- To improve the nations competitiveness. Reduced energy, water and waste per capita.
- To alleviate the threats of climate changes. Improved resilience of infrastructure.
- Encourage sustainable business decision making. Consider overall life cycle and adopt the circular economy.

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CLIMATE
SUMMIT
WHAT IF IT'S A BIG HOAX AND WE CREATE A BETTER WORLD FOR NOTHING?
• ENERGY INDEPENDENCE
• PRESERVE RAINFORESTS
• SUSTAINABILITY
• GREEN JOBS
• LIVABLE CITIES
• RENEWABLES
• CLEAN WATER, AIR
• HEALTHY CHILDREN
• ETC. ETC.
JOEL PETT
12/7/19 USATODAY

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# THANK YOU