



NOFOR GREENFIELD

Policy framework for Green Growth in Johor

Green Growth Vision

Low-carbon, sustainable and livable environment for all

3 Objectives

Environment - To conserve and preserve Johor's natural capital and biodiversity

Social - To ensure sustainable communities, maximising the benefits derived from equitable growth

Economy - To create inclusive economic growth through sustainable, efficient use of resources

5 Pillars

Energy

Driving energy efficiency across sectors and accelerating the renewable energy transition



Transport and Mobility

Improving public infrastructure, greening the maritime transport sector and scaling up electrification of vehicles



Land use, Nature & Water

Conserving biodiversity, preserving water sources and reducing flash floods, as well as proper waste and water management



Low Carbon Cities

Managing carbon emissions in the urban environment and raising community awareness



Industry

Encouraging better environmental performance of and decarbonising Johor's industries



4 Enablers



Green financing



Human capital



Technology and Innovation



Policy and regulations

Enablers

26 recommended initiatives for the State



Energy

E1: Implement a percentage RE rule for all new commercial and residential buildings in Johor

E2: Integrate solar energy into state government buildings, to strengthen the governments position as a leader in the widespread adoption of RE

E3: Build an enabling environment in economic zones and hub located in Johor to create a green innovation centre for the State

E4: Attract investments in solar PV technology to grow Large-Scale Solar ("LSS") energy projects in Johor

E5: Drive energy efficiency efforts across the commercial and industrial sectors through data analytics and implementation of energy saving measures



Transport and Mobility

T1: Intergrate active mobility designs in existing infrastructure to increase accessibility to alternative modes of transportation

T2: Implement Johor's public bus and ridership real-time monitoring system to improve resource efficiency and ridership levels

T3: Promote shared mobility among Johoreans to improve flexibility of commuters

T4: Establish an EV charging infrastructure network across Johor

T5: Implement emission control policies to reduce air pollution within port areas

T6: Transitioning diesel-powered port equipment to electric equipment to reduce emissions



Land use, Nature & Water

L1: Develop a facilitation programme to support agricultural establishments in obtaining the "MYGAP" certification

L2: Establish a peer-to-peer resource sharing platform for agricultural stakeholders to increase use of resources and modernise the farming sector

L3: Intensify zero-waste efforts in households and by industries to ensure proper disposal and eliminate illegal dumping

L4: Deploy an integrated urban water management ("IUWM") system to protect Johor's water resources

L5: Cultivate sustainable tourism practices in the tourism sector to empower local players and elevate standards of tourism activities in Johor

L6: Strengthen existing tree planting programs to accelerate forest and biodiversity conservation through partnership with the private sector and NGOs



Low Carbon Cities

LCC1: Intergrate urban nature-based solutions ("NbS") into Johor's current disaster risk reduction and climate change adaptation strategy to address flash flooding

LCC2: Mandate green building certification for all new building and township projects to encourage sustainable design and construction practices

LCC3: Infrastructure maintenance of old commercial buildings to preserve existing built environment and ensure continued use

LCC4: Strengthen community-driven green capability awareness programs to build a Low Carbon Society



Industry

I1: Accelerate the integration of the circular economy, with a focus on reducing the production and management of waste

I2: Provide incentives for companies to integrate solar thermal energy in their production processes to increase the share of RE

I3: Pilot a project to introduce the sourcing of construction material from green/sustainable materials for new industrial and infrastructure developments in Johor

I4: Establish federal-state government collaborations to intergrate palm oil mill effluent ("POME")-derived biogas into the national grid

I5: Establish statewide GHG emissions reporting, aligned with Malaysia's Nationally Determined Contributions

Pillar 1: Energy



Goal

Accelerating the renewable energy transition and driving energy efficiency across sectors

Focus areas



Energy Transition



Energy Efficiency

Desired outcomes

An increase in renewable energy sources

A reduction in GHG emissions intensity

Innovation and technological advancements through R&D centres

Job creation and business opportunities in the renewable energy sector, including reskilling opportunities to roles in the green energy sector

Where are we today?



Natural gas and crude oil are the main sources of fuel commonly used; **natural gas comprises the largest share of 42.0%**¹



The largest power plants in Johor are coal-fired, with a **combined capacity of 3,244 MW**²



In the Iskandar region, the **highest contributor to GHG emissions was the "Stationary Energy" sector**, forming 53.9% of total GHG emissions in 2018, increase to 54.5% in 2019³



Opportunities for Johor to complement Singapore through importing renewable energy exist as **electricity imports may eventually form a key part of Singapore's energy mix.**⁴

Recommendations

E1: Implement a percentage RE rule for all new commercial and residential buildings in Johor

E2: Integrate solar energy into public facilities and state government buildings to strengthen the government's position as a leader in the widespread adoption of RE

E3: Build an enabling environment in economic zones and hubs located in Johor to create a green innovation centre for the State

E4: Attract investments in solar PV technology to grow Large-Scale Solar ("LSS") energy projects in Johor

E5: Drive energy efficiency across the commercial and industrial sectors through data analytics and implementations of energy saving measures

Pillar 2: Transport and Mobility



Goal

Improving public transport infrastructure, scaling up electrification of vehicles, and greening the maritime transport sector

Focus areas



Land Transport



Maritime Transport

Desired outcomes

An increase in the reliability and efficiency of public transportation systems, and improving mobility in communities

EV charging facilities and infrastructure at all commercial centres, government buildings and gas stations

Shifting investment away from carbon-intensive road transport and toward sustainable transport modes

Phasing out of diesel-powered port equipment to reduce emissions in port areas

Where are we today?



The percentage of carbon emissions in Johor stems from **cars and motorcycles** (47% and 43% respectively). Buses, taxis and hired vehicles produce negligible emissions¹



If left unchecked, growth in the transportation sector is expected to add **carbon emissions by 8,584 kilo tonne** ("kt") CO₂ by 2025 in the Iskandar region alone²



Carbon emissions from maritime ports come from sources such as shipping vessels, cargo handling equipment and port infrastructure³



Considering Singapore's target of reducing peak land transport emissions by 80% by mid-century⁴, Johor should encourage the greater usage of electric/energy efficient vehicles

Recommendations

- T1: Integrate active mobility designs in existing infrastructure to increase accessibility to alternative modes of transportation
- T2: Implement Johor's public bus and ridership real-time monitoring system to improve resource efficiency and ridership levels
- T3: Promote shared mobility among Johoreans to improve flexibility of commuters
- T4: Establish an EV charging infrastructure network across Johor
- T5: Enforce emission control policies to reduce air pollution within port areas
- T6: Transitioning diesel-powered port equipment to electric equipment to reduce emissions

Pillar 3: Land use, Nature and Water



Goal

Conserving biodiversity, preserving water sources and reducing flash floods, as well as proper waste and water management

Focus areas



Agriculture



Forest & Biodiversity Conservation



Water Management



Waste Management

Desired outcomes

Minimised food security risk through the production of quality agricultural products

Reduction in pollution from illegal dumping of waste
Improvements in potable water supply quality, increasing access and availability of clean water for the local community

Protection of natural endowments and conservation of biodiversity

A modernised farming sector that leverages on technology and data, and attracting young talent into the industry

Where are we today?



Agriculture remains a major part of **Johor's physical and economic landscape**, accounting for 13.2% of the State's economic structure¹



Number of **illegal dumpsites** has been **growing** on an upwards trend, from 103 sites in 2017 to 159 sites in 2021²



According to Johor's Environment Statistics 2022, 17 **rivers** fall under the **"polluted"** category and 39 rivers are categorised as **"slightly polluted"**³



Johor boasts a total of 6 national parks, including **three RAMSAR sites** which are home to 960 species of flora and 600 species of fauna⁴

Recommendations

L1: Develop a facilitation programme to support agricultural establishments in obtaining the Malaysian Good Agricultural Practice ("MYGAP") certification

L2: Establish a peer-to-peer resource sharing platform for agricultural stakeholders to increase efficient use of resources and modernise the farming sector

L3: Intensify zero-waste efforts in households and by industries to ensure proper disposal and eliminate illegal dumping

L4: Deploy an integrated urban water management ("IUWM") system to protect Johor's water resources

L5: Cultivate sustainable tourism practices in the tourism sector to empower local players and elevate standards of tourism activities in Johor

L6: Strengthen existing tree planting programs to accelerate forest and biodiversity conservation through partnerships with the private sector and NGOs

Pillar 4: Low Carbon Cities



Goal

Managing carbon emissions in the urban environment through green township and green building certification mandate, as well as raising community awareness

Focus areas



Urban Environment



Buildings

Desired outcomes

Increased utilisation of NbS to mitigate climate risks

Creation of “built to last” buildings and townships by utilising green construction materials

Retrofit current land space and buildings to be more sustainable, simultaneously reducing the need of new building constructions

Creation of additional jobs such as green building consultants and specialised builders

Where are we today?



Johor Bahru was ranked the second hottest city, registering a **6.70°C** change in temperature within 13 years between May 2005 and May 2018¹



Johor had **one of the highest population compositions** across all states in Malaysia (11.6%)², posing a serious threat to sustainable growth



In Malaysia, the green building initiative is guided by the GBI. PPMJ 2030 has noted that the current **usage of green building rating systems is low**³



Some examples of **initiatives at the community level** such as “Kempen Johor Bersih”, “JB Wake Up! Car Free Day” and “Iskandar Puteri Low-Carbon grant” were carried out to strengthen community awareness^{4 5}

Recommendations

LCC1: Integrate urban nature-based solutions (“NbS”) into Johor’s current disaster risk reduction and climate change adaptation strategy to address flash flooding

LCC2: Mandate green building certification for all new building and township projects to encourage sustainable design and construction practices

LCC3: Infrastructure maintenance of old commercial buildings to preserve existing built environment and ensure continued use

LCC4: Strengthen community-driven green capability awareness programs to build a Low Carbon Society



Focus areas



Sustainable Practices



Decarbonisation of Johor's Industries

Desired outcomes

Reducing the amount of energy and materials used in the production process across industries in Johor

Greater consideration of the environmental impact throughout production life cycles across Johor's industries

Transitioning from a linear economic model to a circular economy model

New jobs created such as professional recyclers and refurbishers, solar thermal engineers, and specialised consultants

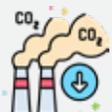
Where are we today?



Scheduled waste produced in Johor has **increased** from 421,847 metric tons in 2018 to 917,343 metric tons in 2019¹



The **industry sector** in Iskandar Malaysia region was noted as the **2nd largest consumer of energy in Johor**, using 1,548 ktoe or 32% of TFEC²



A **reduction of ~75% in GHG emissions** could be achieved for every tonne of crude palm oil produced if all palm oil mills in Malaysia captured their biogas¹



Johor's **GHG reporting** is still voluntary in nature, and the lack of data creates a challenge when developing GHG inventory

Recommendations

- 1: Accelerate the integration of the circular economy, with a focus on reducing the production and management of waste
- 2: Provide incentives for companies to integrate solar thermal energy in their production processes to increase the share of RE
- 3: Pilot a project to introduce the sourcing of construction material from green/sustainable materials for new industrial and infrastructure developments in Johor
- 4: Establish federal-state government collaborations to integrate palm oil mill effluent ("POME")-derived biogas into the national grid
- 5: Establish statewide GHG emissions reporting, aligned with Malaysia's Nationally Determined Contributions

The green growth roadmap will be implemented over three phases up to 2030

	PHASE	INITIATIVE																		
Phase 0: 13 November 2023	<p>The launching of Johor Green Deal</p> <ul style="list-style-type: none"> On 13th November 2023, DYMM Permaisuri Johor launched the Johor Green Deal, which led to the establishment of the Johor Green Growth Council and Johor Sustainability Centre. These entities were created to oversee coordination, initiate change management efforts, and support the execution of various initiatives involving sustainability in Johor. 	<p>Johor Green Deal</p>																		
Phase 1: 2024 - 2025	<p>Catalyse green growth through the implementation of high impact initiatives</p> <ul style="list-style-type: none"> Focus on driving the adoption of green and sustainable practice in government and industries Ensure fundamental enablers for all recommended initiatives are initiated Initiatives in this phase is important in supporting the realisation of 12th Malaysia Plan 	<table border="1"> <tr> <td>E1</td> <td>E2</td> <td>E4</td> </tr> <tr> <td>TM1</td> <td>TM2</td> <td>LCC2</td> </tr> <tr> <td>LCC4</td> <td>I1</td> <td>I3</td> </tr> <tr> <td>I4</td> <td>I5</td> <td>LUNW1</td> </tr> <tr> <td>LUNW2</td> <td>LUNW4</td> <td>LUNW5</td> </tr> <tr> <td>LUNW6</td> <td></td> <td></td> </tr> </table>	E1	E2	E4	TM1	TM2	LCC2	LCC4	I1	I3	I4	I5	LUNW1	LUNW2	LUNW4	LUNW5	LUNW6		
E1	E2	E4																		
TM1	TM2	LCC2																		
LCC4	I1	I3																		
I4	I5	LUNW1																		
LUNW2	LUNW4	LUNW5																		
LUNW6																				
Phase 2: 2026 - 2028	<p>Implementation of initiatives that will drive greater participation in green growth to generate higher impact</p> <ul style="list-style-type: none"> Utilise nature based solutions in addressing challenges in Johor whilst creating new economic values Initiatives in this phase play a key role in transitioning Johor towards a low carbon society, improving the livelihoods of the rakyat 	<table border="1"> <tr> <td>E3</td> <td>E5</td> <td>LCC1</td> </tr> <tr> <td>LCC3</td> <td>TM3</td> <td>TM4</td> </tr> <tr> <td>TM5</td> <td>TM6</td> <td>I2</td> </tr> <tr> <td>LUNW3</td> <td></td> <td></td> </tr> </table>	E3	E5	LCC1	LCC3	TM3	TM4	TM5	TM6	I2	LUNW3								
E3	E5	LCC1																		
LCC3	TM3	TM4																		
TM5	TM6	I2																		
LUNW3																				
Phase 3: 2029 - 2030	<p>Review implemented initiatives to identify gaps and potential improvement opportunities</p> <ul style="list-style-type: none"> All existing and outstanding initiatives should be executed Review and identify gaps for potential improvement opportunities among initiatives and new technologies 	<p>Roadmap implementation review</p>																		

JOHOR GREEN GROWTH COUNCIL

SEKRETARIAT

BAHAGIAN PERANCANG
EKONOMI NEGERI JOHOR

PERMODALAN DARUL
TA'ZIM SDN BHD

ENERGY
WORKING GROUP

TRANSPORT & MOBILITY
WORKING GROUP

LOW CARBON
CITY WORKING GROUP

LAND USE, NATURE AND
WATER WORKING GROUP

INDUSTRY
WORKING GROUP

CARBON MARKET
WORKING GROUP