



# Johor Sustainability Policy

2017 - 2021

English  
Version





# **Dasar Kelestarian Negeri Johor**

## *Johor Sustainability Policy*

### **2017-2021**

December, 2016  
Iskandar Puteri



# FOREWORD

**Menteri Besar Johor**  
*Chief Minister of Johor*



Johor have always support and practice sustainable development that is inclusive of economic growth, social welfare and environmental stewardship. A progressive Johor does not just entail physical development and rapid economic growth. Environmental sustainability must also be maintained.

Natural resources, clean air, green and peaceful environment are very important to Johor's welfare. These are natural symphony that are important and critical for us to function normally in our lives. Johor is also blessed with a diversity of flora and fauna, as well as natural habitats of global significance such as RAMSAR sites. However, it appears that today, we are too concerned with physical development and ignoring the fate of our environment. Whereas all businesses in the future are sustainability oriented. Even the 11<sup>th</sup> Malaysia Plan have made green economic growth as one of six strategic thrust to spearhead economic growth in Malaysia.

The state government of Johor, through the Economic Planning Unit have formulated the Johor Sustainability Policy 2017-2021 with inputs from various stakeholders. This Policy shall be our guide in upkeeping environmental stewardship, while ensuring rapid physical development and concrete jungle does not neglect the conservation and protection of natural resources.

It is my fervent hope that with support and cooperation from all stakeholders, this Policy will be effectively implemented to ensure that Johor's environment and natural resources are managed wisely for well-being of our present and future generations. It is time for all of us ensure rapid economic growth in Johor does not adhere to our environment. Complementary to spirit of Muafakat Johor, we are all part of sustainability and share this responsibility together - the government, private sectors, civil societies, local communities as well as international communities.

I call upon all the people of Johor to join hands in safeguarding the natural heritage of Johor. This is our shared heritage. Heritage which values are not comparable and can't be measured by any means.

A handwritten signature in black ink, appearing to read 'Mohamed Khaled Bin Nordin'. The signature is fluid and stylized, with the first name 'Mohamed' being more prominent.

**DATO' MOHAMED KHALED BIN NORDIN**  
26 March 2017

# FOREWORD

## **Pengerusi Jawatankuasa Kesihatan dan Alam Sekitar Negeri Johor**

*Johor State Chairman EXCO of Health and Environment*



In Johor, development and growth are manoeuvred by plans that focuses on economic and social aspect such as Johor Strategic Growth Plan 2010-2020 and Pelan Suara Hati Johor. Regional plans such as East Coast Economic Region, Iskandar Malaysia and Rapid Pengerang have added further stimulus to the rapid growth of Johor. However, this rapid development often perceived as contributors to environmental pollution in the state. Nonetheless behind this development, the state government is committed to ensure environmental sustainability.

As such, in order to achieve a more comprehensive development in Johor that comprises of economy, social and environment, the state government of Johor have prepared the Johor Sustainability Policy, This Policy provides an opportunity for the government to detailed out the state's intention in protecting and preserving its natural assets, controlling pollution, pursuing green technologies while ensuring economic growth and the welfare of our people are in parallel.

The Johor Sustainability Policy 2017-2021 emphasises heavily on shared responsibility and harnessing commitments from everyone in Johor. Throughout its preparation, the Policy have been formulated with constant inputs and collaboration from various stakeholders. This Policy shall be our guide for the next five years in developing sustainably. This entails how Johor shall conserve its natural heritage, cultivating green lifestyle, greening it economic sectors, improving governance and empowering the people of Johor. This Policy is also in line with the 11<sup>th</sup> Malaysia Plan that highlights greener economic growth as well as Sustainable Development Goals at international level.

It is the desire of the government to ensure that all stakeholders, work in close cooperation in implementing this Policy. The Johor Sustainability Policy also provide great potential and opportunities in Johor and correspondingly facilitate the state's sustainable development agenda as well as promoting greater benefits for all Johorians. Let us together play our part and responsibility in protecting our environment and preserving the natural heritage of Johor, for the benefits and well-being of everyone.



**YB DATUK HAJI AYUB BIN RAHMAT**  
26 March 2017



# TABLE OF CONTENTS

LIST OF ABBREVIATIONS	ii
EXECUTIVE SUMMARY	iv
<b>INTRODUCTION</b>	<b>1</b>
SUSTAINABLE JOHOR	2
NATURAL HERITAGE OF JOHOR	3
CHALLENGES BEFORE US	11
THE JOHOR SUSTAINABILITY POLICY	22
<b>POLICY FRAMEWORK</b>	<b>25</b>
OVERVIEW	26
GOAL AND POLICY STATEMENT	27
PRINCIPLES	28
STRATEGIC THRUSTS	29
MUAFAKAT JOHOR	31
<b>THRUST 1: CONSERVING NATURAL HERITAGE</b>	<b>33</b>
<b>THRUST 2: INCULCATING A RESPONSIBLE LIFESTYLE</b>	<b>43</b>
<b>THRUST 3: GREENING THE ECONOMY</b>	<b>51</b>
<b>THRUST 4: IMPROVING GOVERNANCE</b>	<b>61</b>
<b>THRUST 5: EMPOWERING THE PEOPLE</b>	<b>69</b>
<b>PRIORITY PROGRAMMES</b>	<b>73</b>
<b>IMPLEMENTATION FRAMEWORK</b>	<b>113</b>
A CALL FOR ACTION	114
ROLES AND RESPONSIBILITIES FOR IMPLEMENTATION	114
COORDINATING PLATFORMS	115
COMMUNICATING THE POLICY	116
REVIEW OF POLICY AND ACTIONS	116

# LIST OF ABBREVIATIONS

<b>AQI</b>	Air Quality Index
<b>BAKAJ</b>	Badan Kawal Selia Air Johor
<b>BATNEEC</b>	Best Available Techniques Not Entailing Excessive Costs
<b>BMP</b>	Best Management Practice
<b>BRT</b>	Bus Rapid Transit
<b>CASBEE</b>	Comprehensive Assessment System for Built Environment Efficiency
<b>CBD</b>	Convention on Biological Diversity
<b>CCA</b>	Community Conserved Areas
<b>CEPA</b>	Communications, Education and Public Awareness
<b>CFS</b>	Central Forest Spine
<b>CHM</b>	Clearing House Mechanism
<b>CITES</b>	Convention on International Trade in Endangered Species of Wild Fauna and Flora
<b>COIR</b>	Community in River
<b>CSR</b>	Corporate Social Responsibility
<b>DID</b>	Department of Irrigation
<b>DKNJ</b>	Dasar Kelestarian Negeri Johor/Johor Sustainability Policy
<b>DOE</b>	Department of Environment
<b>DOSH</b>	Department of Occupational Safety and Health
<b>EAFM</b>	Ecosystem Approach to Fisheries Management
<b>ECER</b>	East Coast Economic Region
<b>EE</b>	Energy Efficiency
<b>ESA</b>	Environmentally Sensitive Areas
<b>GDP</b>	Gross Domestic Product
<b>GHG</b>	Greenhouse Gases
<b>GIB</b>	Green Building Index
<b>HCVF</b>	High Conservation Value Forest
<b>IBA</b>	Important Bird Areas
<b>IMUO</b>	Iskandar Malaysia Urban Observatory
<b>IRBM</b>	Integrated River Basin Management
<b>IRDA</b>	Iskandar Regional Development Authority
<b>JNPC</b>	Johor National Parks Corporation
<b>JPBD</b>	Department of Town and Country Planning
<b>JSDR</b>	Johor Sustainable Development Roundtable
<b>JSGP</b>	Johor Strategic Growth Plan
<b>JTLM</b>	Department of Marine Park Malaysia
<b>JWCP</b>	Johor Wildlife Conservation Project
<b>LCS</b>	Low Carbon Society
<b>MEA</b>	Multilateral Environmental Agreements
<b>MMEA</b>	Malaysian Maritime Enforcement Agency
<b>MNS</b>	Malaysian Nature Society
<b>MPLJ</b>	Majlis Pembangunan Lestari Johor
<b>MSMA</b>	Urban Storm Water Management
<b>MTHPI</b>	Majlis Teknologi Hijau dan Perubahan Iklim
<b>NGO</b>	Non-Governmental Organization
<b>NMT</b>	Non-Motorised Transport
<b>PAJ</b>	Perbadanan Pengangkutan Awam Johor

<b>PBT</b>	Pihak Berkuasa Tempatan
<b>PERHILITAN</b>	Department of Wildlife and National Parks
<b>PESISIR</b>	Partnership for Interdisciplinary Studies of Shoreline Ecosystems
<b>POME</b>	Palm Oil Mill Effluent
<b>PRF</b>	Permanent Reserved Forest
<b>PSSA</b>	Particularly Sensitive Sea Area
<b>RA</b>	Residential Association
<b>RE</b>	Renewable Energy
<b>REDD</b>	Reducing Emission of Deforestation and Degradation
<b>RET</b>	Rare, Threatened and Endemic
<b>RIMCA</b>	Royal Iskandar Marine Conservation Area
<b>RKK</b>	Special Management Area
<b>SAJ</b>	Syarikat Air Johor
<b>SCP</b>	Sustainable Consumption and Production
<b>SDG</b>	Sustainable Development Goals
<b>SMP</b>	Solid Municipal Waste
<b>SSL</b>	Self Sufficient Level
<b>STL</b>	Southern Tiger Landscape
<b>SWCorp</b>	Perbadanan Pengurusan Sisa Pepejal dan Pembersihan Awam
<b>TOD</b>	Transit Oriented Development
<b>UNEP</b>	United Nations Environmental Programme
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>UNFCC</b>	United Nations Framework Convention on Climate Change
<b>UPEN</b>	Johor Economic Planning Unit
<b>WQI</b>	Water Quality Index







Sacred Lotus (*Nelumbo nucifera*) in Bekok, Batu Pahat

# EXECUTIVE SUMMARY



## THE CHALLENGES BEFORE US

Johor aims to become a developed state by year 2020. The state already has strong economic and social policies and programmes that address various facets of development in the state. Over the past decade, the state has implemented various programmes designed to uplift the quality of life of all people in Johor. From infrastructure to education to transportation and poverty eradication, continuous effort has been made to turn Johor into a modern state where there is economic progress and social equality. While these policies and plans provide direction towards enhancing the state's economic growth and improving the quality of life of its people, protecting the environment and natural resources is vital if this growth is to remain sustainable.

Johor is rich with natural heritage which includes some of the most unique terrestrial, marine and freshwater habitats in the country. These habitats contain a considerable number of rare, endemic or threatened species of plants and animals that are of global importance. However, the state's transition to become a developed, high-income state has exerted various pressures on Johor's biodiversity, leaving many species vulnerable with some even facing threats of extinction.

Protecting the environment is no longer a trade-off but a requisite to sustained economic growth. The challenges are many. The population of Johor has increased and will continue to. There will be increasing competition for the finite supply of resources and land. The economic growth will impose pressures on the natural environment especially when paired with high carbon economy and unsustainable consumption and production patterns. Water scarcity and increasing impact from climate change are other pressures that is threatening the state. Furthermore, there is a general lack of awareness on the importance of sustainability throughout the state as well as significant knowledge gaps.

To address these challenges and achieve the desired growth for Johor that integrates economy, social and environment attributes, it's crucial for the state to be able to plan and manage its environment and natural resources.

The **Johor Sustainability Policy 2017-2021** provides the overall direction for the state to conserve and protect its natural heritage, control pollution and embrace green technology while ensuring economic development and people's welfare are in sync towards a sustainable development.







## POLICY STATEMENT

“Johor is committed in conserving and protecting its natural assets, controlling pollution and boosting low carbon growth while ensuring economic growth and people’s wellbeing.”



## GOAL, PRINCIPLES AND STRATEGIC THRUSTS

This goal of this Policy is to conserve and protect the natural heritage, control pollution and boost low carbon growth while ensuring economic growth and the well-being of all the people in Johor. To achieve this goal, the policy is guided by four principles.

### The Four Principles:

<b>1</b> <b>Shared Responsibility</b>  The protection of the environment and the conservation of natural resources are the shared responsibility of all the people of Johor.	<b>2</b> <b>Participatory</b>  The planning, management and monitoring of sustainable development must be carried out in a participatory manner.
<b>3</b> <b>Precautionary</b>  The lack of full scientific certainty should not be used as a reason to postpone measures to minimise threats to the state's natural heritage and the environment.	<b>4</b> <b>Good Governance</b>  Good governance, including accountability and transparency, is crucial to sustainable development.

**This Policy has five thrusts encompassing conserving natural assets, inculcating a responsible lifestyle, greening the economy, improving governance and empowering the people.**



**Strategic Thrust 1** outlines the actions that the state needs to take to protect its natural heritage and conserve its resources. This includes the protection of forest, wetlands and marine habitats, enhancing protected area management, protecting rare and endangered species, combatting poaching, protecting water resources, conserving geological heritage and improving climate resilience.



**Strategic Thrust 2** outlines the actions that the state needs to take to cultivate a responsible and green lifestyle among the people. This includes the provision of efficient public transportation, investments in pedestrian and cycling infrastructure, enhancing public open spaces, improving waste management, promoting responsible consumption and encouraging community farming.



**Strategic Thrust 3** outlines the actions that the state needs to take to make the economy environment-friendly. This includes promoting a low carbon economy, promoting green buildings and green construction, cultivating sustainable consumption and production, controlling pollution from various sources, promoting green technology, improving the management practices in forestry, agriculture, fisheries and extractive industries as well as fostering responsible tourism.



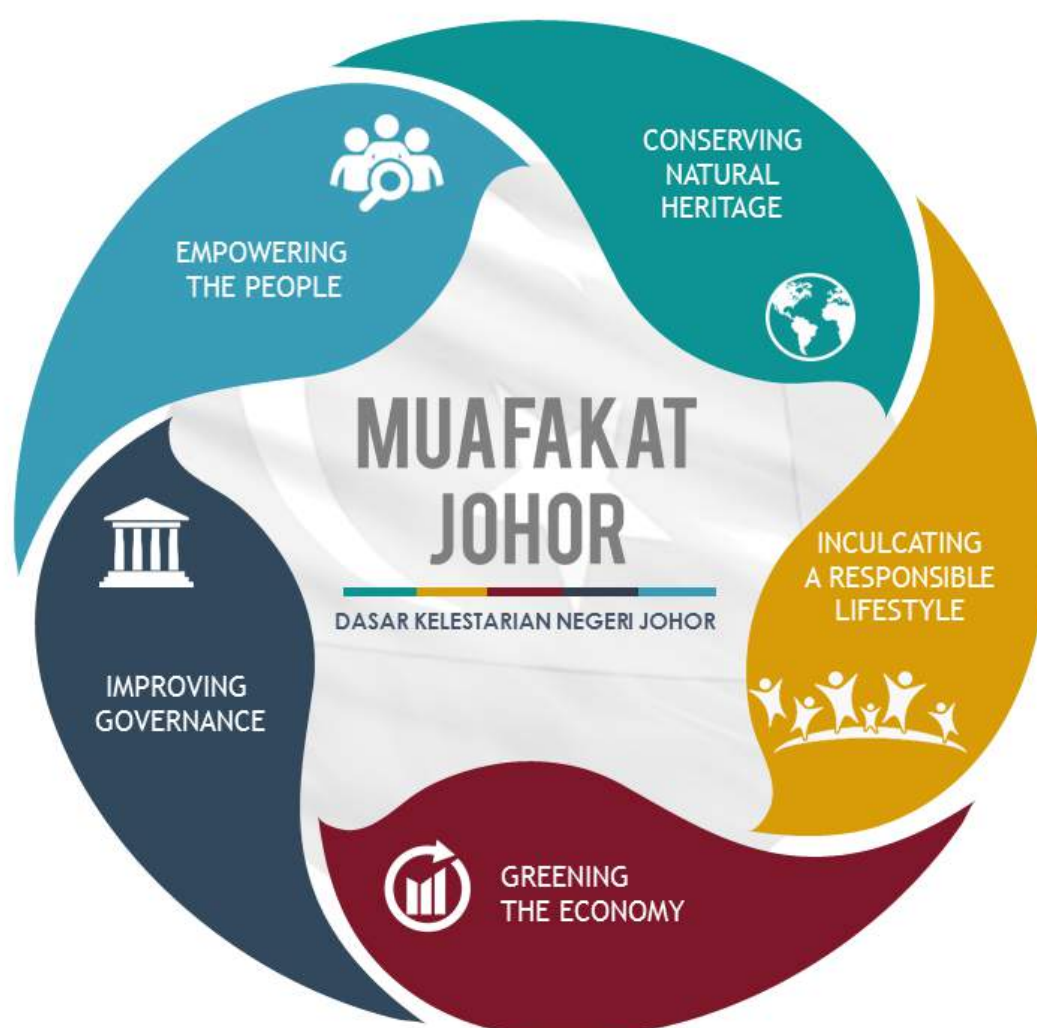
**Strategic Thrust 4** outlines the actions that the state needs to take to improve governance across the state to effectively manage natural resources. This includes the strengthening of state institutions, improving coordination and decision-making, enhancing the legislative framework and improving science-policy interface, financing and accountability.



**Strategic Thrust 5** outlines the actions that the state needs to take to empower the people of Johor to play a greater role in managing the state's natural heritage. This includes increasing education and awareness, empowering local communities, supporting the civil society, forging partnerships with the private sector and enhancing stakeholder participation in decision making.

The five strategic thrusts are founded on **Muafakat Johor** and are supported by various sub-thrusts and a multitude of actions. To provide focus for the initial years of the policy implementation, 11 priority programmes have been identified in this Policy.

### The Five Strategic Thrust of Johor Sustainability Policy





## JOHOR SUSTAINABILITY POLICY 2017 - 2021

### POLICY GOAL

Conserve and protect the natural heritage, control pollution and boost low carbon growth while ensuring economic growth and the well-being of all the people in Johor.

#### TERAS 1

Conserving  
Natural  
Heritage

10 sub-  
thrust  
76 actions

#### TERAS 2

Inculcating  
a  
Responsible  
Lifestyle

7 sub-  
thrust  
52 actions

#### TERAS 3

Greening the  
Economy

9 sub-thrust  
63 actions

#### TERAS 4

Improving  
Governance

7 sub-thrust  
25 actions

#### TERAS 5

Empowering the  
People

6 sub-thrust  
26 actions



Kota Iskandar in Iskandar Puteri





## STRATEGIC THRUSTS

### THRUST 1

#### Conserving Natural Heritage



Strengthening the management of Johor's natural resources to safeguard the ecosystems where important social, economic and cultural benefits are being derived from.

NH 1.1: Enhancing Sustainable Forest Management

NH 1.2: Conserving Unique Wetlands

NH 1.3: Enhancing Conservation of Marine Biodiversity

NH 1.4: Managing Biodiversity at Landscape Level

NH 1.5: Protecting Rare, Threatened and Endemic Species

NH 1.6: Enhancing Protected Area Management

NH 1.7: Combating Poaching and Illegal Wildlife Trade

NH 1.8: Managing and Protecting Water Resources

NH 1.9: Conserving Geological Heritage

NH 1.10: Developing Climate Resilience & Natural Disaster Preparedness

### THRUST 2

#### Inculcating a Responsible Lifestyle



Enabling communities in Johor to live healthier and greener lifestyle by reducing wastage and consumption levels.

RL 2.1: Providing Efficient, Reliable and Affordable Public Transportation

RL 2.2: Providing Cycling and Pedestrian Infrastructure

RL 2.3: Enhancing Public Green and Open Spaces

RL 2.4: Improving Municipal Waste Management

RL 2.5: Cultivating Responsible Consumption

RL 2.6: Encouraging Community Farming

RL 2.7: Maintaining Cleanliness to Protect Public Health



### THRUST 3

#### Greening the Economy



Greening Johor's economy with a long-term focus on continuously improving the environmental performance of all economic sectors including reducing resource consumption, minimising waste and pollution and reducing carbon footprint.

GE 3.1: Nurturing a Low Carbon Economy

GE 3.2: Promoting Green Townships & Buildings

GE 3.3: Promoting Sustainable Consumption and Production

GE 3.4: Preventing and Controlling Pollution

GE 3.5: Promoting Green Technology

GE 3.6: Promoting Sustainable Energy

GE 3.7: Improving Management Practices in the Forestry, Agriculture, Fisheries Sectors Effectively

GE 3.9: Adopting Responsible Mining and Quarry Practices

GE 3.9: Fostering Responsible Tourism

### THRUST 4

#### Improving Governance



Forging effective governance and strong institutions that are responsive to public needs, deliver essential services and promote inclusive growth.

IG 4.1: Strengthening Capacity of State Institutions

IG 4.3: Enhancing the State Legislative Framework

IG 4.4: Strengthening National and International Cooperation

IG 4.5: Improving Science - Policy Interface

IG 4.6: Financing for Sustainable Development

IG 4.7: Improving Accountability and Transparency

**THRUST 5****Empowering the People**

Empowering and harnessing the commitment of the people of Johor including the civil society, private sector, academia and local communities in the pursuit of sustainability.

EP 5.1: Increasing Education, Awareness and Extending Outreach

EP 5.2: Empowering Local Communities

EP 5.3: Recognising and Supporting Civil Society

EP 5.4: Forging Partnerships with Private Sector

EP 5.5: Enhancing Stakeholder Participation in Decision Making Processes

EP 5.6: Strengthening Stakeholder Networking



Pulau Sibu in Mersing  
Photo by: JTLM

**PRIORITY PROGRAMMES**

 <p><b>PP 1: WARISAN ALAM JOHOR</b></p> <p>Mapping of Johor's natural heritage to improve decision-making, administration of land and natural and raising awareness.</p>	 <p><b>PP 2: PULAI BIOSPHERE INITIATIVE</b></p> <p>Managing the entire Pulau landscape as an integrated unit the ecological linkages between the sites as well as their relation to the growing urban landscape that surrounds them.</p>
 <p><b>PP 3: ROYAL ISKANDAR MARINE CONSERVATION AREA</b></p> <p>Establishing a large marine conservation area in Mersing where resource utilization can be managed holistically to ensure the long-term health of this fragile seascape.</p>	 <p><b>PP 4: SOUTHERN TIGER LANDSCAPE</b></p> <p>Managing the Endau-Panti-Sedili landscape as an integrated ecological unit in which biodiversity can coexist with economic activities.</p>
 <p><b>PP 5: SG. JOHOR INTEGRATED RIVER BASIN MANAGEMENT</b></p> <p>Strengthen the management of the Sg Johor basin to ensure the integrity of water supply to the state.</p>	 <p><b>PP 6: SG. MUAR INTEGRATED RIVER BASIN MANAGEMENT</b></p> <p>Strengthen the management of the Sg Muar basin to minimize flooding and ensure water supply to the state.</p>
 <p><b>PP 7: PEDESTRIAN AND CYCLING INFRASTRUCTURE</b></p> <p>Promoting healthy lifestyle while reducing carbon footprint through enhancement of pedestrian and cycling infrastructure.</p>	 <p><b>PP 8: LOW CARBON BUILDING</b></p> <p>Reducing carbon footprint through green building and green infrastructure to spearhead low carbon regime.</p>
 <p><b>PP 9: DAPUR HIJAU</b></p> <p>Encouraging commercial kitchens and food premises to better manage their wastes through the implementation of the Best Management Practices.</p>	 <p><b>PP 10: PELITA</b></p> <p>Establishing cooking oil collection programme to reduce the amount of used cooking oil going into rivers and sewers.</p>
 <p><b>PP 11: COMMUNITY EMPOWERMENT PROGRAMME</b></p> <p>Enhancing participation of local communities, civil society and the private sector in natural resources management.</p>	



## IMPLEMENTATION FRAMEWORK

The Johor State government, via UPEN and the Majlis Pembangunan Lestari Johor, will play the leading role in implementing the Policy. This includes undertaking the necessary coordination among stakeholders, establishing the appropriate institutional platforms, facilitating resource mobilisation and initiating review of the Policy, as necessary. There will be many opportunities for civil society, local communities, private sector, academic institutions and general public to be active partners in the implementation of this Policy.

Given the immense task of implementing and monitoring the Policy, a substantial amount of coordination will be required to ensure optimum utilisation of resources, reduce conflicts and maximise synergies. The two coordination platforms for this Policy are:



### Majlis Pembangunan Lestari Johor

The highest decision-making body for this Policy is the rebranded Majlis Pembangunan Lestari Johor (MPLJ) which will be chaired by the Menteri Besar of Johor.



### Johor Sustainable Development Roundtable

A multi-stakeholder Johor Sustainable Development Roundtable (JSDR) shall be established which will consist of representatives from the private sector, academia, environmental-based NGOs and community-based NGOs.



## COMMUNICATING THE POLICY

Communicating the Policy to stakeholders will be a vital and continuous activity during the implementation period. UPEN shall be responsible for communications - from designing the messages, collating progress and ensuring that the message is effectively delivered and understood by the stakeholders.



## REVIEW OF POLICY AND ACTIONS

This Policy and its actions shall be reviewed after 5 years i.e. in year 2021. The review shall take into account new challenges at the national and state level, national and international commitments, state priorities and funding opportunities and constraints.









Sg. Pulai RAMSAR Site

# SECTION 1

## INTRODUCTION





## SUSTAINABLE JOHOR

Johor aims to become a developed state by year 2020. The state already has strong economic and social policies and programmes, including the Johor Strategic Growth Plan, that address various facets of development in the state. Over the past decade, the state has implemented various programmes designed to uplift the quality of life of all people in Johor. From infrastructure to education to transportation and poverty eradication, continuous effort has been made to turn Johor into a modern state where there is economic progress and social equality.

While these policies and plans provide direction towards enhancing the state's economic growth and improving the quality of life of its people, protecting the environment and natural resources is vital if this growth is to remain sustainable. As Johor develops, protecting the environment is no longer a trade-off but a requisite to sustained economic growth. The challenges are many. There will be increasing competition for the finite supply of resources and land while the economic growth will impose pressures on the natural environment. To address these challenges and achieve the desired growth for Johor, it's crucial for the state to manage its environment and natural resources judiciously.





## NATURAL HERITAGE OF JOHOR

Johor is a blessed with a diversity of flora and fauna. The state's rich natural heritage includes some of the most unique terrestrial, marine and freshwater habitats in the country, which contain a considerable number of rare, endemic or threatened species of plants and animals. Many of these are of global importance.



### Terrestrial Habitats

Johor retains a forest cover of approximately 24% while boasting a sizeable protected area network, which includes national parks, wildlife reserves and various types of forest reserves. Terrestrial protected areas now cover 12.4% of the state's landmass. Terrestrial habitats include forests on a multitude of soils and terrain, ranging from lowland dipterocarp forests to riverine mangroves, and peat and freshwater swamps.

#### Endau-Panti-Sedili Landscape



The largest remaining forested landscape in southern Peninsular Malaysia is located in eastern Johor - the Endau Panti Sedili landscape. This landscape, which stretches from the Endau- Rompin National Park through a number of forest reserves and wildlife reserves down to the Panti region in the south, consists of lowland dipterocarp forests interspersed with hill, montane and heath forests on low-lying sandstone hills as well as patches of swamp forests that occur on inundated ground along the rivers.

This landscape represents the last stronghold in southern Peninsular Malaysia for charismatic megafauna such as the Malayan tiger, Asian elephant and Malayan tapir. The landscape also boasts a rich bird population and great potential in terms of the lucrative bird ecotourism industry. Two parts of the Endau-Sedili-Panti landscape are of global significance in terms of bird conservation, having been listed by BirdLife International as Important Bird Areas (IBA) in 2004. The Endau-Rompin IBA, which includes the Endau-Rompin National Park and the adjacent forest reserves in Johor and Pahang, boasts a total of 253 species of birds on record. The site is described by BirdLife International as "the most important IBA site in the southern peninsula for biome (Sundaic lowland forest)-restricted assemblages". It is estimated that 121 species of birds are dependent upon this habitat, of which six are classified as globally Threatened and 60 as Near Threatened. The Panti IBA which generally follows the boundary of the Panti Forest





Reserve is located at the headwaters of Sungai Johor, Linggiu and Ulu Sedili. Over 250 bird species have been recorded here, including several Sunda endemics and globally threatened species.

A number of amphibians are endemic to this landscape; in that they have only been found here and nowhere else in the world. Examples include the Kota-Tinggi forest gecko and Panti bent-toed gecko that have been discovered along streams in forest reserves here, as well the Gollum's toad and Endau stream toad found only in Endau-Rompin National Park.

In terms of flora, the Endau-Sedili-Panti landscape is located within the Riau Pocket, which holds a unique plant assemblage that shares similarities with the flora of western Borneo and the Riau province of Sumatra. This area also contains a number of Johor endemics found nowhere else in the world. To illustrate, Endau-Rompin National Park contains 52 species of plants that are endemic to south Peninsular Malaysia (Johor/Pahang) and 19 species that are narrowly endemic to Endau-Rompin. In terms of threatened species, 38 Critically Endangered and 16 Endangered species are known from Endau-Rompin National Park.

Beyond the Endau Rompin National Park, Johor Forestry Department has classified a number of compartments of Permanent Reserve Forests (PRF) within the Endau-Sedili-Panti landscape as High Conservation Value (HCV) forests due to the presence of endemic dipterocarp species. Compartment 14 of Gunung Arong PRF was categorized as HCV for the presence of Resak batu while Compartments 135 and 136 were categorized as HCV for the presence of Damar hitam telepok and Resak batu. It is very likely that more endemic plant species are present within the forests here.

## Gunung Ledang

---

In the west, the fabled Gunung Ledang, the highest mountain in Johor at 1,276m, is a renowned tourist destination. The lush forests of Gunung Ledang, which have been studied since the 1850s, have identified to be rich in biodiversity. The topography of the mountain provides a diversity of natural habitats rich in plant life. This includes a plethora of beautiful flowering plants such as the



*Paphiopedilum barbatum* orchid, *Rhododendron Jjasminiflorum* and *Rhododendron Mmalayanum* at the peak of the mountain. With 13 rivers originating from the mountain, Gunung Ledang also serves as an important water catchment for both Johor and Melaka. Two kilometres away from Gunung Ledang, several hills such as Bukit Tukau, Bukit Belading dan Reban Kambing are recognised as areas that are rich with endemic plant species such as *Cycas cantafonia*.



## Wildlife in Endau-Panti-Sedili landscape

The camera-trap program is a program by the Johor Department of Wildlife and National Parks (DWNP) to estimate the number of wildlife and is essential in gaining information on fauna ecology, which can then help to provide solutions to managing their habitat in the future. The photos below are captured in CFS2-PL3 that connects Panti Forest Reserve and Southern Sedili Forest Reserve.



Source: PERHILITAN Johor, 2016









## Marine Habitats

Johor is unique in being the only state in Peninsular Malaysia that has coastlines facing the Straits of Melaka and the South China Sea, as well as the narrow Johor Straits. The diverse coastal habitats along the State's lengthy coastline include sandy beaches and rocky promontories (especially along the east coast), coastal mudflats along the west coast, mangrove (both coastal and riverine) as well as seagrass meadows in the shallow waters of the Tebrau Straits (especially within the estuaries of Sungai Pulai and Sungai Johor). The mangrove and seagrass habitats provide especially crucial ecosystem services, as they directly support coastal fisheries in the State, serving as breeding grounds for juveniles of commercially valuable fishes such as Sea Bass, Mangrove Snapper and Grouper.

Beyond the mainland, numerous small islands dot the States territorial waters, in particular Pulau Pisang and Pulau Kukup off the west coast, the Pulau Lima group of islands off the southeast coast, and the Mersing archipelago off the east coast.

### Pulau Merambong

---

The most accessible of these islands is perhaps Pulau Merambong, which is situated south of Sungai Pulai close to the Singapore boundary. This tiny island is the perfect site for marine education, as it sports an incredibly rich intertidal marine diversity that includes all manner of corals, sponges, bivalves, crustaceans, sea snails, zoanthids and sea anemones, to name a few. The small landward part of the island is no less interesting, with an astounding geological formation. The island is connected to the mainland by the largest seagrass bed in the country, which is visible only at low tide.




---

Pulau Merambong with incredibly rich intertidal marine diversity that makes it a perfect site for marine education.

---



## Marine Parks

The 13 marine parks islands of the Mersing archipelago are an important tourism draw for the State, boasting coral reefs, pristine sandy beaches and unique geological formations. Well known dive sites off islands such as Pulau Aur, Pulau Dayang and Pulau Pemanggil provide scuba divers with an opportunity to view pelagic species such as whale sharks and manta rays. The Pulau Tinggi group of islands within the archipelago has the second highest coral species richness in Peninsular Malaysia (155 species), after the Pulau Tioman group. Extensive seagrass beds occur just beyond the coral reefs, in particular off Pulau Sibul and Pulau Tinggi. These marine habitats are believed to support the most significant concentration of Dugongs in Peninsular Malaysia. Endangered Green and Hawksbill Turtles also nest on the sandy beaches here.

Rarely seen migratory sea (or pelagic) birds may be seen over the waters off these islands, especially on the east and southeast coast. These include the Long-tailed Jaeger, Bulwer's Petrel, Lesser Frigatebird and the Critically Endangered Christmas Island Frigatebird.

Marine Parks in Johor		
Name of Site	Area (ha)	True area** (ha)
Pulau Rawa	5,080	19,557.4
Pulau Hujung	5,235	
Pulau Tengah	5,149	8,414
Pulau Besar	8,414	
Pulau Harimau	4,900	4,570
Pulau Gaol (Gual)	4,570	
Pulau Mensirip	4,660	9,745
Pulau Aur	9,745	
Pulau Pemanggil	8,790	8,790
Pulau Tinggi	10,180	
Pulau Sibul	4,260	22,586.8
Pulau Sibul Hujung	1,183	
Pulau Mentinggi	4,399	60,679.2
<b>Total</b>	<b>76,565</b>	

\*\*True area = minus overlaps

Source: Draft Interim PA Masterlist (2014)



Photo by: JTLM

Pulau Tinggi has about 500 inhabitants spread over three villages and is the most populated island of the Johor Marine Park.



## Rivers and Wetlands

Johor is drained by numerous rivers which flow to the west, south and east coasts from the central mountainous area. These rivers play a crucial role in the economy and the lives of the people of Johor. In addition to rivers, the state also has a variety of wetlands - ranging from peat swamps to mangroves to mudflats and freshwater swamps.

### Rivers of Johor

---

The rivers of Johor form a key component of the environment and landscape, and in many ways; are treasures of the state. There are ten main river basins in Johor, namely Sg. Kesang, Sg. Muar, Batu Pahat, Sg. Benut, Sg. Pontian, Sg. Pulai, Sg. Johor, Sg. Sedili Besar, Sg. Mersing and Sg. Endau. Besides being important water sources, the rivers contribute to lives of Johoreans culturally, socially and economically. Rivers provide important habitats and serve as feeding and breeding grounds for a wide range of riverine life. 97% of Johor raw water supply for agriculture, domestic and industrial needs are derived from surface water resources. For example, Sg. Johor accounts for nearly 60% of the state's water supply.



Steps have been taken over the years to enhance the water quality and rehabilitate Sg. Skudai in Johor Bahru, an urban river subjected to pollution and development pressure.

---





## Wetlands

---

Johor has many important wetlands ranging from mangrove to mudflats to freshwater swamps.

The unique wetlands of the **Sedili** region was studied as early as 1990s. Apart from the rare freshwater swamp forests that were found here in the past, perhaps the most outstanding aspect of the wetland flora of Sedili is the unique succession of riparian vegetation from the estuary inland along the rivers of Sg Sedili Besar and Sg Sedili Kecil. This belt begins from the mangroves in the saltwater estuary to the Nipah belt in the brackish water; to the Putat belt in the tidal freshwater region, to the Rasau belt; to the Mempisang belt, to the Pelawan banks behind the Mempisang belt and finally reaching the Saraca streams in the interior. This gradation is found nowhere else in Malaysia and is extremely rare in Southeast Asia.

The other significant inland wetlands habitat present in Johor is the peatswamp forest at the **Air Hitam Utara forest reserve**. This forest constitutes just seven percent of the original extent of peatswamp forest in the State (the rest were converted to agriculture). As a peatswamp forest, this site is important in terms of the carbon sequestered within the peat. Any clearing or burning of this carbon sink will contribute towards climate change. The site also contains some unique biodiversity, such as the Critically Endangered blackwater fish, *Betta persephone* that is endemic to this area.



An ecological study carried out by Wetlands International in 2007 found that the Sedili wetlands fulfills over 60% of the criteria for Ramsar site listing.

The southwestern coastline from **Sungai Muar down to Tanjung Piai** is listed by BirdLife International as an Important Bird Area (IBA). The extensive coastal mudflats here, particularly at Parit Jawa and Sungai Balang (and the adjacent paddy fields) are important habitats for resident and migrant shorebirds that stopover here along the East Australasia migratory route. Parit Jawa is especially well known among birdwatchers, and one of the star attractions here is the colony of Lesser Adjutant, a rare stork whose populations have been declining rapidly across its range.

## RAMSAR Sites

Three of the most unique mangrove habitats in the State, situated within the Sungai Pulai PRF, Tanjung Piai National Park and Pulau Kukup National Park are considered to be of global significance. These sites were listed under the Convention of Wetlands of International Importance (or the Ramsar Convention) in 2003.

RAMSAR Sites in Johor		
Name of Site	Area (ha)	Date of Designation
Pulau Kukup	647	31 Jan 2003
Tanjung Piai	526	31 Jan 2003
Sungai Pulai	9,126	31 Jan 2003



With its associated seagrass beds, intertidal mudflats and inland freshwater riverine forest, **Sungai Pulai** represents one of the largest and most diverse riverine mangrove ecosystems in Peninsular Malaysia. The site contains about 24 true mangrove species as well as 21 mangrove-associated species, including the endemic *Avicennia lanata*, as well as the rare *Bruguiera sexangula* and *Podocarpus polystachus*. Sungai Pulai also boasts a rich faunal diversity, with around 53 species of birds, 26 species of mammals, 12 species of reptiles, 111 species of fish as well as 39 species of benthic organisms recorded. Species of conservation value found here include birds such as the Mangrove Pitta, Mangrove Blue Flycatcher and Mangrove Whistler; as well as mammals, such as the Bearded Pig, Leopard Cat, and Smooth Otter.

**Tanjung Piai National Park**, one of the smallest protected areas in the country, is famous for being the southernmost tip of continental Asia. The site is an especially important ecotourism destination, and has consistently recorded the highest number of visitors among all of the national parks in the Johor. Tourism facilities are well developed here, and include a visitor centre, boardwalks, as well as interpretive materials and overnight facilities.

**Pulau Kukup National Park**, an uninhabited mangrove island situated about 1km off the coast of southwestern Johor, is one of the few intact sites of its kind remaining in Southeast Asia. The island supports rare and endangered species, including the Flying fox and Bearded Pig. The globally threatened Lesser Adjutant utilizes the island as a stopover and breeding ground.



## Challenges

In its pursuit of sustainable development, Johor faces many challenges. These include increasing population pressure, stress on its natural heritage, competition for land and the high carbon economy and lifestyle. These challenges are daunting and the combined effort of all the people in Johor is required to overcome them.



### Conserving State's Natural Heritage

Johor's ongoing transition towards achieving developed, high-income status has exerted numerous pressures on its natural habitats, and subsequently all of the plants and animals that depend on these habitats for survival. While much of the state's natural habitats have made way for development, many biodiverse areas and unique species still remain in pockets throughout the state. It is pertinent to note here that most of these remaining areas (green lungs, water catchments, etc.) also provide critical ecosystem services so important for all Johoreans - and further loss or degradation of these areas would certainly have detrimental impacts on their well-being.

#### Forest Loss and Habitat Fragmentation

Today, less than 24% percent of the Johor remains under natural forest cover. The ongoing conversion of natural forest to plantations represents the greatest threat to Johor's terrestrial biodiversity. While many species of plants and animals can thrive even in logged forest (provided sustainable forest management practices are applied), most cannot survive in monoculture plantations.



Fragmented habitat in Sg. Pulai Forest Reserve

Johor's terrestrial and coastal marine habitats have become increasingly fragmented and isolated over the years. Maintaining ecological connectivity in the landscape is crucial for the

long-term health of biodiversity. The safe movement of wildlife between habitat patches is important to allow for exchange of genetic material (including plant genetic material). Habitat fragmentation, on the other hand encourages in-breeding and reduces the resilience of wildlife populations and consequently the ecosystems that they form a part of.

#### Threats to Wetlands

Johor is blessed with some of the most unique wetlands in the country, including freshwater swamps, seagrass beds and riverine mangroves. Rapid development, however has resulted in the loss and degradation of many of these unique sites. While some of these sites have been afforded legal protection, there are a number of important sites that are not protected. Of equal importance, an integrated landscape approach needs to be taken to ensure the health of these sites - adjacent developments and activities must be managed to ensure that they do not negatively impact on these fragile ecosystems.

#### Maintaining Ecosystem Services

Healthy ecosystems provide numerous goods and services that are important to sustain human life. The loss, degradation or



fragmentation of these ecosystems therefore also affect the goods and services they provide. For example, conversion of catchment forests exacerbates flooding downstream and reduces quality of water resources, whereas the degradation of mangrove, seagrass or coral reef habitats is inexorably linked to a loss in fisheries production.

### **Protecting rare, threatened and endemic species**

The terrestrial, freshwater and marine habitats of Johor contain many rare or threatened plants and animals, including some endemic species that occur nowhere else on earth. As many of these species have a restricted distribution, the loss of even a single habitat or population may result in their extinction. At present, not enough is known about the distribution of these species in Johor in order to manage or conserve them effectively. On the other hand, land administrators and policy makers often do not have access to sufficient information on their locations to make informed decisions when approving land for development.

### **Human-wildlife conflicts**

The depletion of natural habitats corresponds to an increase in incidences of human-wildlife conflicts. Displaced animals such as elephants, tigers, macaques, snakes and wild pigs

invariably cause conflicts that are damaging to both human and animal alike. Many cases of wildlife conflicts are reported each year in Johor, particularly around the Endau-Sedili-Panti landscape where forest conversion and displacement of wildlife is actively ongoing. In 2015, Johor recorded 1,004 human-wildlife conflict cases, the second highest in Peninsular Malaysia.

### **Poaching and illegal wildlife trade**

Poaching/ illegal hunting continues to occur in Johor despite all of the measures that has been taken to combat wildlife crime in the State. The greatest threat is posed by organized syndicates, made up of poachers from Indochina that essentially “rob” the State of its valuable natural resources. There are also strong indications that illegal wildlife trade still occurs at significant levels in Johor, both in terms of the sale of wildlife and their derivatives as well as trans-shipment of wildlife through the legal and illegal entry points along the State’s lengthy coastline. A 2012 survey on the wild meat trade in Malaysia by TRAFFIC Southeast Asia found that Johor had the most shops selling wildlife meat in Peninsular Malaysia. A more recent survey in 2015 by TRAFFIC found that Johor had the greatest proportion of traditional Chinese medicine shops selling illegal bear bile products among all states in Malaysia.



## Water Security

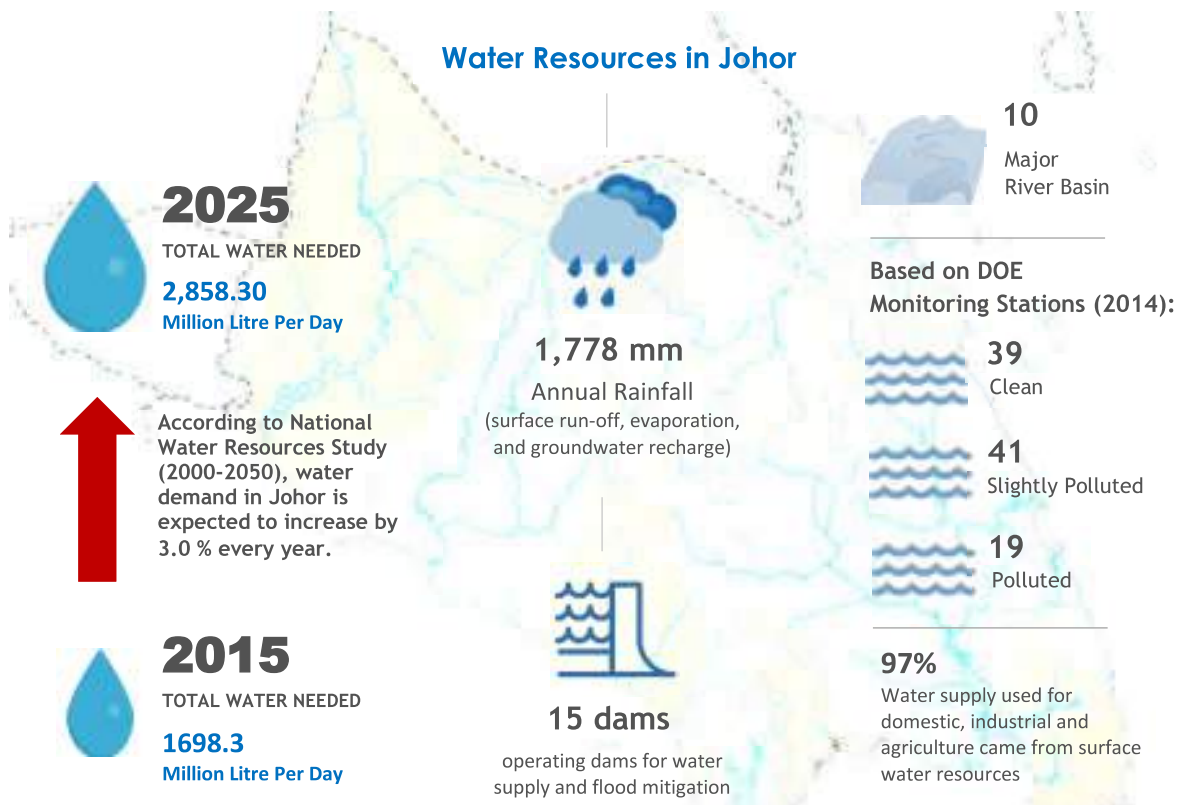
Johor has abundant water resources and receives an average annual rainfall of 1,778 mm per year (National Water Resource Study 2000-2050). However, in recent years, Johor has been experiencing water stress. Water consumption in the state is increasing substantially and coupled with drought, this has led to serious shortages at some areas.

Johor presently has 15 dams that are used for water supply and flood mitigation. In 2016, five dams which are Labong, Congok, Lebam, Linggiu and Layang Dam breached the critical water levels as a result of a prominent dry season.

Today, the state's water demand is about 1,700 million litres per day (MLD). As population is expected to increase to 4.4 million by 2020, the demand for water will also increase accordingly. In addition, a significant portion of the state's raw water is sold to Singapore. The 1962 bilateral agreement allows Singapore to draw up to 1,136 MLD from the Sg. Johor until 2060.

While, there are already a number of programmes and projects aimed to increase water production capacity and its distribution, the increasing pollution, increasing demand for water and drought will continue to threaten the security and integrity of water resources in Johor.

### The Big Gulp: Water in Johor

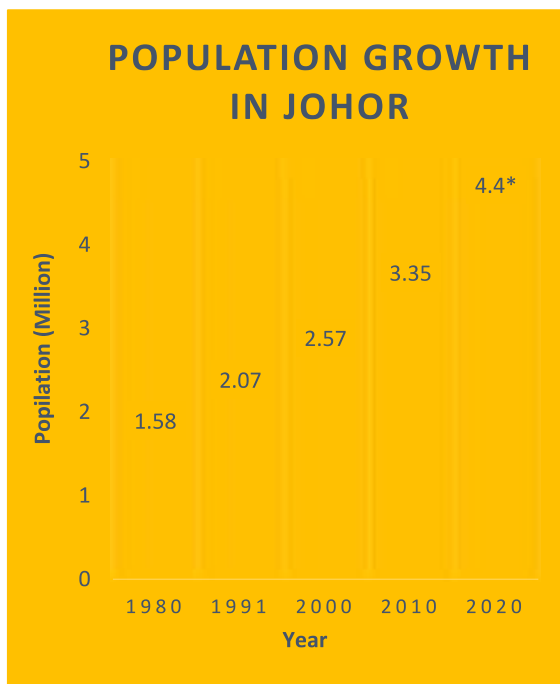


Source: BAKAJ, NWRS 2010-2050, DOE



## Population Pressure

Johor is the second most populous state in Malaysia with 3.554 million persons in 2015. The state's population is projected to reach 4.4 million by 2020 - representing an increase of almost 1 million persons compared to 2015. The additional population will need to be fed, sheltered, clothed and educated. There will be increasing demand for food, water, houses, jobs, schools, health care, energy and transportation. With increasing household incomes, the consumption patterns are also changing. Johor's consumption per capita is higher than ever. The burgeoning population will continue to exert pressure on state's land and natural resources.



Source: Department of Statistics, Malaysia.  
 \* Population projection estimated by Johor State Investment Centre (JSIC)







## High Carbon Lifestyle

Population growth, paired with unsustainable consumption and production patterns are one of the biggest challenges to achieving sustainable development. Lifestyle is related closely to economic status and household income. As quality of life improves, people's lifestyle - the manner by which they consume resources, produce waste and travel, changes. The carbon footprint often increases in tandem.



The Iskandar Malaysia have grown rapidly over the past decade and is poised to become a strong, sustainable metropolis of international standing by 2025.

### Public Transportation System

The public transportation network in Johor is still inadequate. The transportation infrastructure is lacking in many areas even in Iskandar Malaysia - making it necessary for people to rely on private vehicles and/or endure long inefficient commutes. The state has in recent years, intensified investment in public transportation. The free city bus service, Bus Muafakat Johor, is an initiative to change the public transport landscape in Iskandar Malaysia. The state has also formulated the Johor Transport Master Plan 2015-2045 to promote sustainable transportation in the state. 40 new bus routes have been introduced in cities across the state. Other efforts include the construction of 197 km electric train from Gemas to Johor Bahru. While all these initiatives have helped to alleviate the traffic condition, a lot more remains to be done.



Photo by: PAJ

Bus Muafakat Johor operating in five Local Authority areas of Iskandar Malaysia

### Pedestrian and Cycling Infrastructure

In Johor, pedestrian and cycling infrastructure is limited and available only in certain areas of the state, mostly in park areas and city centres. But even when they are present, pedestrian walkways and cycling lanes are not integrated. As a result, people are unwilling to walk and continue to rely on private motorized transport.



Pedestrian walkway and cycling lanes in Kluang as part of Kluang's vision to be a 'Healthy City'

### Open Green Spaces

As cities grow and space becomes more limited, urban parks and green spaces play an important role to cater to social and recreational needs of the people. In Johor, while there are open public spaces in various areas, there are inadequate to meet the demands of the population. The target of 10% of open space and parks set by JPBD for new development has not been fully realized. So far, only one local authority in Johor, Majlis Perbandaran Johor Bahru Tengah has met the target of 2 hectares open space per 1000 population prescribed in the National Urbanisation Policy.

### Waste Production

Johor produced about 1.08 million tonnes of municipal solid waste in 2015 which were sent to 14 landfills throughout the state. Only one of these is an operating sanitary landfill - the others being non-sanitary or open dumping grounds where the risk of soil, water and air pollution remains a concern. At present, landfills remain as the main disposal method in Johor. However, with increasing waste generation, all landfills are expected to reach their final capacities within a short time. SWCorp plans to upgrade all existing landfills to sanitary landfills to mitigate the risk of pollution. SWCorp has also proposed to open up several inert landfills to reduce illegal dumping, specifically for construction waste.



As of 1 June 2016, waste separation at source has been made mandatory in Johor under the Solid Waste and Public Cleansing Management Act 2007 (Act 672), although SWCorp (Johor) began its separation at source programme since September 2015. This scheme is expected to divert recyclable items away from landfills to reduce the overall cost for waste disposal. Based on the current waste composition of households in Johor, more than 30% of waste material could potentially be removed from the waste stream.

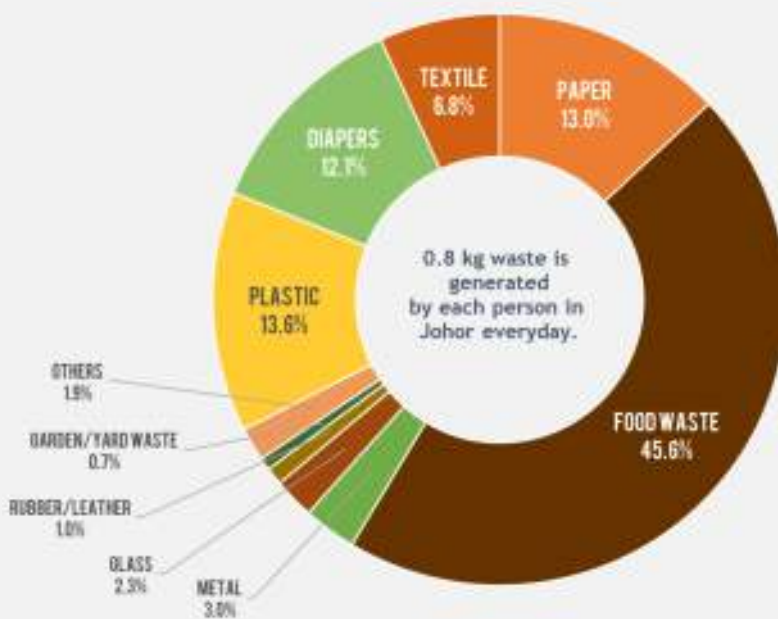
However, SWCorp has yet to receive full participation from the public and more than 44,000 warning letters were issued to homeowners for not separating their waste. Most households were unaware of the programme or were unsure how to do separation.





Seelong sanitary landfill in Kulai received about 1,138 tonne of municipal solid waste per day - the biggest landfill in Johor and the only sanitary landfill in operation.

### Johor Waste Composition



Solid Waste Composition in Johor (2015)

In 2015, each Johorean generated 0.8 kg of waste in one day on average. (SWCorp, 2016). In total, Johor produce more than 3,465 tonne per day, which is the second highest state in waste production behind Selangor. Out of the 1.08 M tonne generated in a year, approximately 700,000 tonne is being generated in Iskandar Malaysia. Nearly half of the waste generated in Johor are food waste.

Recycling rate in Johor (and Malaysia) is still low at 12.8% -- which is still far from 2020 target of 22% -- despite the numerous awareness campaigns conducted.

Source: SW-Corp Johor





## Urban and Industrial Growth

Johor is a fast-growing state with its industrial, real-estate and agriculture development. Johor already has established industrial hubs such as Tanjung Bin, Tanjung Pelepas Port and Pasir Gudang Port. Iskandar Malaysia, Rapid Pengerang, Forest City and the High-Speed Rail from Kuala Lumpur to Singapore will further stimulate the economy and add to the growth momentum of the state. As urban and industrial areas expand, rate of carbon emission and pollution will increase over time.



Photo by: Johor Petroleum Development Corporation Bhd (JPDC)

The Tanjung Bin Petrochemical and Maritime Industrial Centre is a free industrial zone and an important industrial hub for the storage, blending and transit of petroleum products.

### Air Quality

The overall air quality in Johor, based on the DoE's Air Pollution Index, was moderate most of the time except during the annual haze episodes. Key air pollutants such as PM<sub>10</sub>, O<sub>3</sub>, NO<sub>2</sub>, SO<sub>2</sub> and CO were below the stipulated limits of the Malaysia Ambient Air Quality Standards. Johor will continue to face difficulties in identifying and quantifying air pollution sources due to the difficulties in differentiating transboundary sources from local sources. Besides that, the four-existing air quality monitoring stations in Johor cannot provide sufficient information to map air pollution in a developing urban environment.

### Water Quality

In 2014, 19 rivers in Johor were classified as polluted. Sg. Johor, the most important river for water supply, has experienced frequent shutdowns of water treatment plants which lead to water disruptions in Johor Bahru, Nusajaya and parts of Kulaijaya and Senai. The water treatment plant at Sg. Skudai has also experienced numerous shutdowns between 2012 and 2015 due to the high levels of ammonia in the river.

The state has initiated number of river rehabilitation projects. The on-going Sg. Segget rejuvenation project involves reducing pollution sources (primarily sewage),



development of a flood mitigation system, and river beautification. River rehabilitation efforts have however been difficult. For example, rehabilitation work carried out for Sg. Skudai has yet to achieve the Class II target of the

National Water Quality Standards. Although various river improvement measures have been undertaken, the pollution problem cannot be easily overcome.

### Segget River Revitalisation Initiative - Reviving a Dead River



Photo by: IRDA

Sg. Segget has been a busy waterway since the 1900s and is one of the most polluted rivers in Malaysia. The Sg Segget Rejuvenation Project comprises an integrated water treatment plant and the development of a flood mitigation and sewerage system, followed by the river beautification project. The rehabilitation work of Sungai Segget is part of the plan to transform the city centre of Johor Bahru into a vibrant place. The rejuvenation project is expected to be completed by 2017.

### Hazardous Wastes

With the growth of Johor's industrial sector, the generation of hazardous wastes has also increased. In Johor, the main types of hazardous wastes are dross/slag, clinker and ash which are generated by chemical, metal, electric and electronics industries. Although, these wastes need to be disposed of in a licensed facility, there has been a number of non-compliances and illegal dumping. Scheduled waste disposal may reach a critical

situation in Johor due to the lack of facilities to manage such waste. All scheduled wastes have to be sent to Integrated Waste Facility at Bukit Nanas, Negeri Sembilan, while the establishment of a similar facility will require significant investment. In Johor, there is also there is no mechanism of proper segregation or disposal system for electronic waste, particularly for the general public, which has led to improper e-waste management.



## Climate Change and Natural Disasters

Johor is susceptible to the impacts of climate change. Some examples include extreme variation in weather pattern, flash flood, shortage of water, coastal erosion, forest fire and heat waves.

### Flood

Johor has experienced several major floods over the past few years. In addition to extreme rainfall, the main reasons for flooding was due to rivers which are unable to accommodate increases in runoff, especially during monsoon seasons. The most notable event was the 2006-07 floods where Batu Pahat, Johor Bahru, Kluang, Kota Tinggi, Mersing, Muar, Pontian and Segamat were severely affected by two series of flash floods. Total cost of infrastructure damage was estimated to be around RM 250 million affecting 2,400 families and 12,000 residents. In 2015, six flood events occurred of which four were in Johor Bahru. The annual average flood damage for state of Johor is estimated to be more than RM 30 Million with more than 200,000 people affected.

### Coastal Erosion

The length of Johor coastline is 492 km. According to Department of Irrigation and Drainage (DID), 47% of the coastline in Johor are eroded while almost 6% are critically eroded. Numerous coastal protection works have been implemented especially along the west coast. Sea level rise coupled with shipping activities have threatened the west coastline of Johor, particularly near Tanjung Piai. The erosion rate at Tanjung Piai has been increasing at average rate of 1.5 mm annually. The coast has experienced severe erosion for several decades, in spite of the construction of various coastal defense structures.



Rock revetments along the coastline of Tanjung Piai to protect against accelerated erosion.

### Drought

Coupled with increasing water demand and river pollution, urban areas in Johor can be expected to experience disruption of water supply during extreme drought events. Lower rainfall could lead to water shortages for irrigation, domestic and industrial use and also affect river water quality. Water shortages would require more draw-down from water supply reservoirs, which in turn could deplete water reserves in reservoirs. 2016 has already seen numbers of water rationing events due to prolonged heatwave that dries up dams and rivers across Johor.

### Vector-Borne Diseases

Climate change affect human health in multiple ways. But major concern has been vector-borne diseases such as dengue that increases with humidity and heat. The number of cases and death related to dengue has been steadily increased for the past few years in Johor particularly in urban areas. They have been 24 reported cases of dengue per day, and increase of 125% number of cases from 2015 to 2016. Although the increase has also been contributed by poor sanitation and hygiene in households, public areas, and construction sites, warmer temperatures and heat waves are among the major driver for high incidence of dengue cases.





## Majlis Teknologi Hijau dan Perubahan Iklim Johor

Majlis Teknologi Hijau dan Perubahan Iklim Johor acts as a platform to plan, coordinate and monitor the implementation of activities/programs that support the development of green technologies, climate change adaptation, green communities and low carbon development in Johor. The Council is chaired by the Menteri Besar of Johor and has various sub-committees related to green industry, green development, green neighborhood and climate change.



## Awareness

The level of knowledge and awareness amongst the public is still low and the education of Johoreans on environment and sustainable living is an on-going effort. Values of biodiversity, environmental stewardship, low carbon lifestyle and responsible consumption are among the many aspects that remains foreign to most people. The importance of protecting the environment with regards to the three pillars of sustainability - including its critical roles for sustaining economic growth, in supporting human well-being and in creating resilience to climate change - remain poorly understood by the public.



## Capacity to Manage

There is generally inadequate capacity at the state agencies to plan, implement and monitor sustainable development. While the state government has made progress over the past decade by strengthening various agencies and establishing new ones, the present day challenges are complex and pose serious challenges to the state machinery. Capacities are restricted due to understaffing, and lack of requisite information, tools and technical capacity. Non-governmental organisations (NGOs) and local communities, while typically willing to participate in conservation, are often constrained by their lack of capacity in terms of funds, formal training and access to information.



## Funding

There is limited funding for environmental protection in the state. State budget allocations is relatively low as compared to the significant values that the natural resources, biodiversity and ecosystem services generate for the Johor economy and population. Most environment-related agencies face financing constraints. Federal government funds are also very limited. The private sector has in recent years become increasingly engaged in funding conservation. However, the amount of funding from these sources is irregular and insufficient compared to the total needs.



## **Absence of Strong Partnership**

The civil society movement in relation to environmental protection is not strong in Johor. The number of NGOs operating in Johor is still small and does not commensurate with the size of the state nor the level of economic development. Many of the NGOs in Johor are either very localised or focus on specific themes only and do not have the capacity to upscale the good work that they are doing. Most NGOs in the state appear to be working by themselves without little or no collaboration with state agencies. There is also no formal mechanism and support scheme to encourage or help these NGOs and local communities to expand what they are doing.



## **THE JOHOR SUSTAINABILITY POLICY**

In the pursuit of sustainable development, having a comprehensive over-arching policy on sustainability, environmental protection and wise use of natural resources that takes into the aspirations of the people of Johor, as well as the multitude challenges that the state faces are crucial.

The Johor Sustainability Policy 2017-2021 provides the direction for the state to conserve and protect its natural heritage, control pollution and embrace green technology while ensuring economic development and improving the quality of life of all people in Johor.







Sg. Mersing in Mersing town

## SECTION 2

# IMPLEMENTATION FRAMEWORK



## OVERVIEW

The Johor Sustainability Policy seeks to ensure the environment and natural resources are protected and utilised in sustainable manner while Johor drives its economic growth. The Policy aims to compliment Johor's economic and social policies. This relates to how Johor will conserve its rich biological diversity, cultivate a responsible lifestyle amongst its people, adapt to climate change and green its economy.

In the Eleventh Malaysia Plan, Malaysia has set a target to become an advanced economy by 2020. This is proposed to be achieved in a resilient, low-carbon, resource-efficient, and socially-inclusive manner - which is also the manner which Johor wants to grow. Socio-economic development is vital in raising the quality of lives of the people in Johor, but if limited natural resources are not used efficiently, it will result in irreversible damage and put the state's development at risk.

This policy is also in parallel with Malaysia's aspiration to set forth green growth for sustainability and resilience as highlighted in Eleventh Malaysia Plan. In line with Malaysia's international commitments, the Policy also embodies the spirit of the Sustainable Development Goals set by the United Nations for Agenda 2030.



The three pillars of Sustainable Development -  
Safeguarding the environment while creating shared  
prosperity and advancing economic  
competitiveness.



## GOAL AND POLICY STATEMENT

This goal of this policy is to conserve and protect the natural heritage, control pollution and boost low carbon growth while ensuring economic growth and the well-being of all the people in Johor.

### POLICY STATEMENT

"Johor is committed to conserving and protecting its natural heritage, controlling pollution and boosting low carbon growth while ensuring economic growth and people's wellbeing."





## PRINCIPLES

The Johor Sustainability Policy is guided by four key principles to ensure that the state's vision for sustainable development is achieved.

### Shared Responsibility

1

**The protection of the environment and the conservation of natural resources is the shared responsibility of all the people of Johor.**

Sustainable development requires collective effort for the goals to be fully achieved. Everyone in Johor - from government agencies, civil society, private sectors, academia and local communities - plays a vital role. Environmental protection and stewardship cannot rest on government alone but requires the collective action from everyone. Everybody needs to be empowered to be agents of positive transformation.

### Participatory

2

**The planning, management and monitoring of sustainable development must be carried out in a participatory manner.**

Overcoming challenges towards sustainability demands new approaches to decision-making processes. This requires consultation and inclusivity. Adequate platforms must be provided to ensure effective participation of stakeholders. The people in Johor shall be engaged in shaping the future of the state. These inclusive partnerships built upon principles and values and a shared vision that place people and planet at the centre.

### Precautionary

3

**The lack of full scientific certainty should not be used as a reason to postpone measures to minimise threats to the state's natural heritage and the environment.**

If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason to favour economic activity and development. Decision making process in the state shall be guided by careful evaluation to avoid serious or irreversible damage to the environment and Johor's natural heritage through assessment of the risks and consequences.

### Good Governance

4

**Good governance, including accountability and transparency, is crucial to sustainable development.**

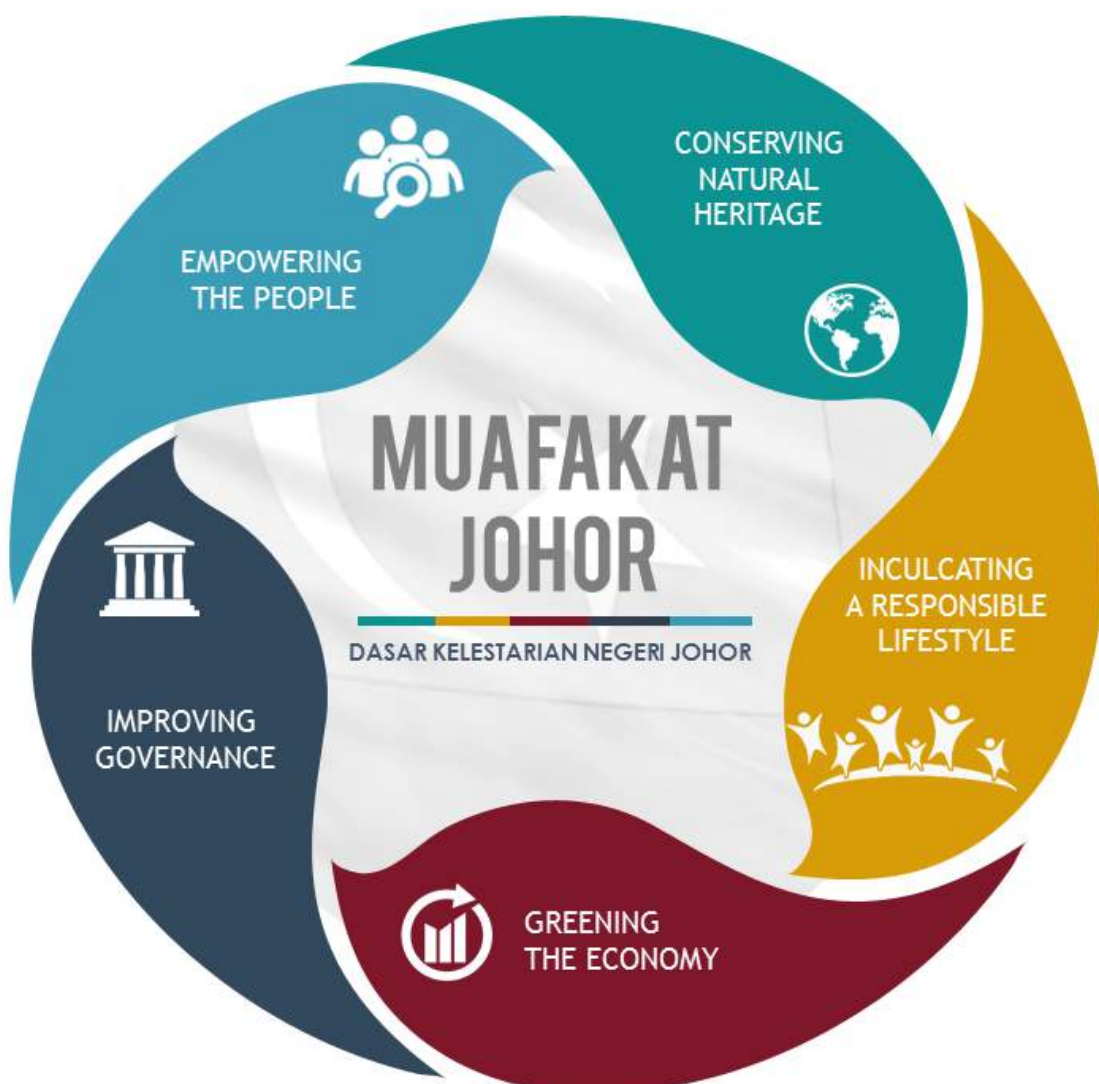
Good governance is the cornerstone of sustainable development. It is essential to have an effective, honest, responsive and fair governance at all levels - from state government all the way to local authorities. Sustainable development - and successful implementation of this policy - relies on good governance and strong institutions.



## STRATEGIC THRUSTS

This policy has five strategic thrusts that pave way for realising the goal of the policy. The strategic thrusts encompass conserving natural assets, inculcating a responsible lifestyle, greening the economy, improving governance and empowering the people. The five thrusts are founded on Muafakat Johor.

### The 5 Strategic Thrusts of the Johor Sustainability Policy





**Strategic Thrust 1** outlines the actions that the state needs to take to protect its natural heritage and conserve its resources. This includes the protection of forest, wetlands and marine habitats, enhancing protected area management, protecting rare and endangered species, combatting poaching, protecting water resources, conserving geological heritage and improving climate resilience.

---



**Strategic Thrust 2** outlines the actions that the state needs to take to cultivate a responsible and green lifestyle among the people. This includes the provision of efficient public transportation, investments in pedestrian and cycling infrastructure, enhancing public open spaces, improving waste management, promoting responsible consumption and encouraging community farming.

---



**Strategic Thrust 3** outlines the actions that the state needs to take to make the economy environment-friendly. This includes promoting a low carbon economy, promoting green buildings and green construction, cultivating sustainable consumption and production, controlling pollution from various sources, promoting green technology, improving the management practices in forestry, agriculture, fisheries and extractive industries as well as fostering responsible tourism.

---



**Strategic Thrust 4** outlines the actions that the state needs to take to improve governance across the state to effectively manage natural resources. This includes the strengthening of state institutions, improving coordination and decision-making, enhancing the legislative framework and improving science-policy interface, financing and accountability.

---



**Strategic Thrust 5** outlines the actions that the state needs to take to empower the people of Johor to play a greater role in managing the state's natural heritage. This includes increasing education and awareness, empowering local communities, supporting the civil society, forging partnerships with the private sector and enhancing stakeholder participation in decision making.

---

The five strategic thrusts are founded on **Muafakat Johor** and are supported by various sub-thrusts and a multitude of actions.





## MUFAKAT JOHOR

Muafakat Johor refers to a consensus or agreement among the people of Johor - i.e. decisions, plans, programmes and policies are made or developed with consensus among all stakeholders. The concept of muafakat as being vital to the well-being and growth of the state of Johor. Muafakat Johor recognises the diversity of cultures, customs and aspirations of the people in Johor and calls for tolerance, compromise and moderate approach. There is no peace without compromise. No prosperity without tolerance. No national unity without moderation. Inclusivity is absolutely vital.



A vibrant, inclusive and resilient economy and society requires partnerships and collaboration among all stakeholders - government, civil society, private sector, local communities, etc. Everyone must be involved and benefit. Consultation is key. It calls for the state and society to mutually strengthen each other.

### Muafakat Johor




“We are very fortunate to have the development of the country founded in the spirit of consensus. In fact, we obtained independence in 1957 as a result of consensus among our leaders then. Thus, this collaborative attitude should be re-affirmed in the heart of all Malaysians. However, this spirit cannot be achieved through force and law enforcement. This is because loyalty to the homeland is born of trust and confidence in the country and its future.

Sowing the seeds of consensus among the people is not an easy task but it is absolutely crucial for the purpose of sustainable development. Participatory planning and participatory decision-making is a fundamental pillar of sustainable development.”

- YAB Dato' Mohamed Khalid Nordin, Menteri Besar Johor







Panti Forest Reserve Kota Tinggi

SECTION 3

---

**THRUST 1:  
CONSERVING NATURAL HERITAGE**





## THRUST 1

### Conserving Natural Heritage

Johor's forests, rivers, wetlands, coastal belts and islands are biologically rich and support a unique array of plants and animals. In addition, they also provide a range of ecosystem services that are crucial for the well-being of the people.

Wild places such as waterfalls, beaches and forests provide an avenue for recreation and ecotourism; trees produce oxygen and absorb carbon dioxide to ensure fresh air; forested catchments protect freshwater supply and reduce flooding downstream; while mangroves, coral reefs and seagrass beds help maintain fish stock while serving as globally important carbon sinks.

It is therefore vital that a fine balance is struck in the management and utilisation of Johor's natural assets to ensure that they continue to support economic growth and provides all of



the goods and services important for the future of all Johoreans, while at the same time, is still serve as a viable habitat for all of the unique plants and animals that make up Johor's irreplaceable natural heritage.

**Strategic Thrust 1 has 10 sub-thrusts and 76 actions.**

#### THRUST 1

##### Conserving Natural Heritage



Strengthening the management of Johor's natural resources to safeguard the ecosystems where important social, economic and cultural benefits are being derived from.

NH 1.1: Enhancing Sustainable Forest Management

NH 1.2: Conserving Unique Wetlands

NH 1.3: Enhancing Conservation of Marine Biodiversity

NH 1.4: Managing Biodiversity at Landscape Level

NH 1.5: Protecting Rare, Threatened and Endemic Species

NH 1.6: Enhancing Protected Area Management

NH 1.7: Combating Poaching and Illegal Wildlife Trade

NH 1.8: Protecting and Managing Water Resources

NH 1.9: Conserving Geological Heritage

NH 1.10: Developing Climate Resilience & Natural Disaster Preparedness



## NH 1.1

### Enhancing Sustainable Forest Management

In the on-going drive towards development, a large portion of the original forest cover of Johor has been replaced by other forms of land uses. At present, less than 24% of the State's land area remains under forest cover. It is fortunate that these remaining forests still hold a great wealth of biodiversity, and continue to provide an array of goods and services that underpin the well-being of Johoreans. However, the increasing scarcity of natural forest in the State, along with the added pressures exerted on it by an expanding population, makes its conservation and sustainable management more critical now than at any time in its history. Sustainable forest management alludes to the environmentally appropriate, socially beneficial, and economically viable management of forests for present and future generations. In other words, it means using forests in such a way, and at a rate that maintains their biodiversity, productivity, regeneration capacity, vitality, as well as their potential to continue providing ecosystem services in the future. Johor needs to:

- (a) Set a target of 25% forest cover in the state and formulate a plan to achieve the target.
- (b) Implement a 10-year moratorium on conversion of natural forests, including degraded forests within Permanent Reserved Forests to plantations and other land uses.
- (c) Revise the State Forestry Enactment to include provisions for public consultation for any proposed degazettement of Permanent Forest Reserves as well as provisions for a "State Park" category under Section 10 of the Enactment.
- (d) Conduct surveys to identify, map and designate High Conservation Value Forest (HCVF), and develop and implement a plan to manage and monitor such areas.
- (e) Work towards re-obtaining sustainable forest management certification.
- (f) Implement a pilot REDD+ (Reducing Emissions from Deforestation and Forest Degradation) project.
- (g) Gazette the Pantii State Park under Section 10 of the revised Johor Forestry Enactment.

#### High Conservation Value Forest

The idea of High Conservation Value Forests (HCVFs) was developed by the Forest Stewardship Council and first published in 1999. This concept moves the forestry debate away from definitions of particular forest types (e.g. primary, old growth) or methods of timber harvesting (e.g. industrial logging) to focus on the values that make a forest important. These encompass environmental and social values such as rare species, wildlife habitats, watershed protection, resources harvested by local communities and cultural significance. Areas with forest where these values have outstanding significance and critical importance can be defined as HCVF areas based on an agreed set of criteria. By identifying these key values and ensuring that they are maintained or enhanced, it is possible to make rational management decisions that are consistent with the maintenance of important environmental and social values.



Source: WWF-Malaysia



## NH 1.2

### Conserving Unique Wetlands

---

There are a number of unique wetlands in Johor that provide important ecosystem services (especially for the local communities) as well as hold good potential as ecotourism sites. However, many of these wetland sites are degraded. Efforts should be taken to secure some of the most important remaining wetlands, and to enhance their management so that they are able to continue providing ecosystem services. Johor needs to:

- (a) Gazette the Sedili Kecil and Sedili Besar riparian zones and freshwater swamp forests as protected areas using appropriate legislation.
- (b) Rehabilitate and sustainably manage the riparian zones along the Sedili Kecil and Sedili Besar rivers, with focus on community based management and ecotourism.
- (c) Rehabilitate and gazette Air Hitam Forest Reserve as a State Park under Section 10 of the revised Johor Forestry Enactment.
- (d) Gazette the remaining mangrove forests around Sungai Santi as a protected area using appropriate legislation.
- (e) Gazette the South-west Johor coastline as a Bird Sanctuary using appropriate legislation.
- (f) Halt all future conversion of mangroves for aquaculture projects.
- (g) Rehabilitate degraded mangroves areas, particularly sites of abandoned aquaculture farms.



## NH 1.3

### Enhancing Conservation of Marine Biodiversity

---

A holistic approach shall be taken towards the conservation and sustainable use of Johor's rich marine ecosystems as well as the species that inhabit them. This shall include the creation of a new marine protected area, working towards achieving sustainable fisheries (see Thrust 3), addressing land based sources of marine pollution and providing avenues for local community and private sector participation in marine conservation. Johor needs to:

- (a) Establish the Royal Iskandar Marine Conservation Area (RIMCA) [see Priority Programme 3].
- (b) Establish Malaysia's first dugong sanctuary within RIMCA [see Priority Programme 3].
- (c) Implement a pilot Ecosystem Approach to Fisheries Management project within RIMCA.
- (d) Ban fishing of sharks and rays in Johor's waters.
- (e) Map all key marine habitats including seagrass beds, coral reefs, and mangroves, and monitor these habitats to detect changes due to environmental or anthropogenic pressures.
- (f) Conduct comprehensive monitoring of seagrass beds in the Tebrau Straits, and rehabilitate where possible.
- (g) Conduct research on key marine species including marine mammals, turtles, fishes and invertebrates.
- (h) Strengthen and support the operations of the two existing turtle hatcheries in the State, and formulate regulations to protect all turtle nesting sites.
- (i) Ban the collection and sale of turtle eggs in Johor and make it mandatory for all trawlers operating in Johor waters to install Turtle Excluder Devices.
- (j) Utilise biotechnology to enhance the ongoing seahorse and giant clam breeding programmes.
- (k) Promote Pulau Merambong as a marine education site, in partnership with the local community.
- (l) Develop strict regulations and enforcement to ensure that island and marine tourism operators conform to global best practices in responsible tourism.





## NH 1.4

### Managing Biodiversity at Landscape Level

It is now widely acknowledged that biodiversity needs to be planned and managed at the greater landscape, other than at species or habitat level. Landscapes must be managed as integrated ecological unit in which biodiversity can coexist with economic activities, taking into consideration the environmental and biological processes that occur across the landscape. Mainstreaming of biodiversity conservation is key in such initiatives, as it would require the commitment and cooperation of all stakeholders. Johor needs to:

- (a) Formulate landscape management plans for the Pulau and Southern Tiger Landscapes [see Priority Programme 2 & 4].
- (b) Seek UNESCO Man & Biosphere status for the Pulau Biosphere.
- (c) Establish wildlife corridors in areas where forest fragmentation is most severe. Focus shall be on the two Primary Linkages (PL) and two Secondary Linkages (SL) identified in the Central Forest Spine (CFS) Masterplan :
  - PL1 (Labis Timur PRF - Lenggong PRF)
  - PL3 (Panti PRF - Ulu Sedili Selatan PRF)
  - SL4 (Mersing PRF - Jemaluang PRF)
  - SL5 (Panti PRF - Kuala Sedili PRF)
- (d) Establish a programme to comprehensively address human-wildlife conflicts, in particular for elephants and macaques.
- (e) Monitor and eradicate invasive alien species.
- (f) Establish suitable platforms for stakeholders in each landscape to exchange ideas and work towards common goals.

#### Central Forest Spine



The Central Forest Spine (CFS) initiative aims to improve ecological connectivity across four main forest complexes in Peninsular Malaysia. Since its inception in 2010, the CFS Master Plan has become the platform for landscape connectivity between all major protected areas in Peninsular Malaysia. A total of 17 primary linkages and 20 secondary linkages have been identified under the master plan. Various programmes have been implemented to establish ecological corridors through the gazettement new protected areas or the expansion of existing ones. However, development activities such as agricultural expansion have significantly reduced the extent of primary forest within the landscape and is putting ecosystem services at risk. Pressure for land resources has resulted in many identified corridors in danger of becoming fragmented, which will eventually affect the overall viability of the protected area system in Peninsular Malaysia.



Source: JPBD



## NH 1.5

### Protecting Rare, Threatened and Endemic Species

---

Action shall be taken to ensure the long-term health and viability of populations of the rare, threatened and endemic (RET) species of plants and animals. A State plant conservation strategy shall also be developed, with particular focus on rare, threatened and endemic (RET) species present within the various habitat types in the State. The plant conservation strategy shall provide detailed recommendations for the in-situ and ex-situ conservation of these RET species. Johor needs to:

- (a) Carry out a state-wide survey to estimate populations of selected RET species and map RET hotspots. For terrestrial and marine animals, this should include tigers, elephants, leopards, tapirs, bearded pigs, black water fishes, dugongs, turtles and seahorses.
- (b) Develop and implement species conservation action plans for selected key species. These plans should include components on surveys, research (including population genetics), monitoring and conservation actions, which may include captive breeding and translocation.
- (c) Develop a plant conservation strategy for Johor and carry out a state-wide survey to inventorise and map distribution of plant species in Johor.
- (d) Establish arboretum(s) as required for ex-situ conservation of plant genetic resources.
- (e) Carry out scientific research to understanding of the ecology of each vegetation type in relation to climate change and isolation.
- (f) Gazette Bukit Tunku, Bukit Belading and Reban Kambing as National Parks.



## NH 1.6

### Enhancing Protected Area Management

---

Protected Areas, particularly the four National Parks gazetted under the National Parks (Johor) Corporation Enactment, form the core of the State's conservation landscape. Terrestrial Protected Area coverage in Johor (minus overlaps) currently stands at 234,489.8 ha (12.4% of the State's land area) while marine Protected Area coverage currently totals 61,869.8 ha. These figures are expected to increase in the coming future, when new areas come into being. Johor needs to:

- (a) Expand terrestrial area coverage to encompass 15% of the State's land area by 2020.
- (b) Strengthen protected area management, centred on the formulation and implementation of management plans, business plans and annual work plans for all protected areas.
- (c) Strengthen patrolling and enforcement within protected areas through joint-agency patrolling, development of rapid response protocols (to respond effectively to tip-offs) and the appointment of Honorary Wildlife Rangers.
- (d) Develop human resource capacity in Protected Area management, particularly in terms of developing critical skills sets, enhancing professionalism and staff motivation as well as incorporating use of the latest technology.
- (e) Review the governance structure of Protected Area agencies to ensure that key committees are operational and contain adequate stakeholder representation including from the scientific community, civil society and local communities.
- (f) Work towards co-management of Protected Areas to ensure that local indigenous communities (especially those whose traditional territories overlap with Protected Areas) are committed to its conservation while are able to derive fair and equitable benefits from sustainable and controlled use of the sites.
- (g) Obtain ASEAN Heritage Park status for Endau-Rompin National Park.



## NH 1.7

### Combating Poaching and Illegal Wildlife Trade

Poaching or the illegal hunting of wildlife still occurs in Johor's forests, as in other parts of the country. Poaching continues despite the fact that Johor has taken strong measures to combat wildlife crimes, including a blanket ban on all commercial hunting in 2013 and the implementation of the Johor Wildlife Conservation Project, an innovative multi-agency effort that has been going on for almost a decade. Apart from poaching, illegal wildlife trade still occurs at significant levels in Johor, including the sale of protected wildlife and their derivatives (especially in eateries and Traditional Chinese Medicine shops) as well as trans-shipment of wildlife to neighbouring countries through ports and illegal entry points along the State's lengthy coastline. Johor needs to:

- (a) Develop the capacity of relevant law enforcement officers to combat poaching and illegal wildlife trade.
- (b) Local councils to incorporate strong measures to prevent illegal wildlife trade in commercial premises.
- (c) Work with relevant authorities to enhance monitoring of wildlife smuggling at official and unofficial entry points to the State.
- (d) Expand the Johor Wildlife Conservation Project.
- (e) Raise awareness among local communities and key government agencies on poaching and the illegal wildlife trade [see Priority Programme 1].

#### Johor Wildlife Conservation Project: Combating Poaching Together



The Johor Wildlife Conservation Project (JWCP) is an initiative by the State Government to protect and conserve wildlife and forests in the Endau-Rompin Landscape. The JWCP receives the patronage of DYMM Sultan Ibrahim Ismail Ibni Almarhum Sultan Iskandar. The major partners of JWCP are the Johor National Parks Corporation, Johor State Forestry Department, Department of Wildlife and National Parks, Royal Malaysia Police, Kulim (Malaysia) Berhad and Wildlife Conservation Society. Since 2007, partners of JWCP have jointly carried out multi-agency enforcement activities, biological monitoring surveys and human-wildlife conflict monitoring and mitigation projects. Main programmes under the

JWCP include the 'Tiger and Prey Program' and 'Elephant Program' that is symbiotic and support each other towards the conservation of wildlife in Johor.



Source: JNPC, WCS





## NH 1.8

### Protecting and Managing Water Resources

Sound management is important to ensure the sustainability of water resources in the state. The protection of water catchments and integrated management of river basins is a critical requisite to secure water supply as many water catchments in Johor are already developed. Land use planning must be improved, and water catchment areas can no longer be compromised by development pressure. Besides securing water supply, it is also crucial to manage water demand in Johor. In Johor, water resources management cuts across various legislations, institutions, and policies, and involves several state agencies (e.g. BAKAJ, SAJ, DID, etc.). Water resources management must therefore take an integrated approach through the rationalising of the roles and responsibilities of various agencies in Johor, and the active participation of all stakeholders.

- (a) Gazette and protect critical water catchments and river riparian reserves and establish buffer zones around water catchment areas.
- (b) Declare Sg. Johor Basin as a strategic asset for Johor and raise effluent discharge standard in the entire catchment [see Priority Programme 5].
- (c) Undertake integrated river basin management planning for Sg. Muar, Batu Pahat, Pulai, Skudai, Tebrau, Endau, Johor and Mersing.
- (d) Intensify education and awareness raising on water-saving tips, water reduction measures and installation of water-saving devices.
- (e) Introduce revised tariffs to reduce water usage among consumers.
- (f) Continuously upgrade existing small and ineffective sewage treatment plants.
- (g) Conduct groundwater mapping to study the extent of groundwater (including deep groundwater) potential in Johor.
- (h) Conduct research on desalination of seawater.
- (i) Conduct aerial mapping in water catchment area to identify river pollution sources.
- (j) Organise the Johor Water Forum annually.
- (k) Establish a Community in River (COIR) program that focus on Sg. Skudai to cultivate sense of shared responsibility in river conservation.

#### Johor Water Forum



The one day forum in 2015, was organized by state government of Johor which aims to shape the direction of water industry in Johor towards more sustainable way in line with rapid development in the state. The forum brought in policy makers, professionals, and academics together with multi-faceted group of international delegations to discuss and reach consensus in facing future water challenges in Johor. The forum also provided exposure regarding various opportunities in Johor water industry and act as a platform in strengthening the coordination between government agencies and private sectors. In 2016, Johor Water Forum was appointed to act as an

advisor to the Johor State Water Resources Council, whose membership will composed of experts from Universiti Teknologi Malaysia (UTM), Regulatory Air Johor (Bakaj), SAJ Holdings Sdn Bhd (SAJ) and water technology practitioners in the industry, as well as honorary members from Singapore International water Week (IWW) and Japan Water Forum. Johor Water Forum will also play a role in carrying out a detailed study on the development of groundwater technology as an alternative sources and water catchment in the state.

Source: Jauhar, Berita Harian



## NH 1.9

### Conserving Geological Heritage

There are several sites in Johor that have high geological value especially the islands off Mersing. Geological conservation and geotourism offer potential for ecotourism. Establishing Geoparks is a practical way to protect and conserve these geological heritage and to educate the public.

- (a) Obtain UNESCO Geopark status for the geologically unique areas around Mersing and the offshore islands [see Priority Programme 3].
- (b) Develop Mersing Geopark Management Plan that fits into RIMCA Management Plan to ensure balance between conservation of heritage resources, development of tourism infrastructure and enhancement of local socio-economic activities [see Priority Programme 3].
- (c) Set up Geopark museums and information centre.
- (d) Collaborate with universities for research and schools for awareness/training programme.
- (e) Create geotourism products for general public, environmentalists, and geoscientists.
- (f) Set up a monitoring system, particularly on conservation, environmental degradation, carrying capacity, and other environmental issues.



## NH 1.10

### Developing Climate Resilience and Natural Disaster Preparedness

Johor is located in a geologically stable area that is not prone to large scale natural disasters. Nevertheless Johor is still vulnerable to impacts of climate change and has experienced severe floods in past decade. Besides floods, Johor has also experienced heat waves, coastal erosion, droughts and forest fires.

- (a) Develop the state's resilience framework that takes into account risk assessment and adaptation planning for natural disasters and long term climate change impact.
- (b) Develop state disaster risk maps to improve land use planning by identifying hotspots for floods, landslide, and forest fires.
- (c) Ensure developers to fully implement Urban Storm Water Management guidelines.
- (d) Improve flood mitigation in rural areas by providing flood retention ponds and enhancing drainage infrastructure.
- (e) Conduct state-wide awareness and education programme to prepare communities for natural disaster especially in flood-prone areas.
- (f) Develop an integrated shoreline management plan for the whole of Johor.
- (g) Strengthen effectiveness of monitoring and enforcement at high risk areas such as peatlands (e.g. Jemaluang, Gunung Arong and Tenggaroh) to prevent forest fires.
- (h) Continuously monitor and regulate water table levels at peatland areas in the high risk and fire prone areas.
- (i) Encourage local communities to be 'eyes and ears' for government agencies in monitoring open burning activities through communication and smartphone application.







Universiti Teknologi Malaysia, Skudai

## SECTION 4

# THRUST 2: INCULCATING A RESPONSIBLE LIFESTYLE



## THRUST 2

### Inculcating a Responsible Lifestyle

Sustainability starts at home - sustainable communities are derived from the everyday actions of the many individuals that make up the community. This relates closely to lifestyle choices - how people choose to move from one place to another, consumption patterns and how they interact with their natural surroundings. The concept of sustainable living is not new to Johor - many government agencies and other organisations have already adopted the concept of green neighbourhoods in their local plans and development strategies.

A green community actively seeks to minimise its environmental and carbon footprint, by reducing wastage and consumption levels. Every community in Johor can be encouraged and empowered to live healthier and greener lifestyles. While this can be achieved through the provision of green urban design,



infrastructure and services, it is crucial to raise environmental awareness among individuals and communities, and subsequently turn this sense of awareness into tangible and meaningful actions at the household level.

**Strategic Thrust 2 has 7 sub-thrusts and 52 actions.**

#### THRUST 2

##### Inculcating a Responsible Lifestyle



Enabling communities in Johor to live healthier and greener lifestyle by reducing wastage and consumption levels.

RL 2.1: Providing Efficient, Reliable and Affordable Public Transportation

RL 2.2: Improving Cycling and Pedestrian Infrastructure

RL 2.3: Enhancing Public Green and Open Spaces

RL 2.4: Improving Municipal Waste Management

RL 2.5: Cultivating Responsible Consumption

RL 2.6: Encouraging Community Farming

RL 2.7: Maintaining Cleanliness to Protect Public Health



## RL 2.1

### Providing Efficient, Reliable and Affordable Public Transportation

The state has long recognised the importance of efficient transportation towards enhancing competitiveness and economic growth. This includes improving the efficiency and quality of public transportation services, as well as mitigating the negative environmental and health impacts of transportation. In this, it is crucial that commuters are provided sufficient options and incentives to shift from private vehicles to public transportation. Public transportation shall be an important component of urban planning in the state. Johor needs to:

- (a) Promote public transport as an environmentally-friendly means of travel and commute as opposed to private vehicle usage.
- (b) Improve the quality of park and ride facilities at the urban fringes that are convenient, safe, and secure, and within walkable distance to public transportation centres.
- (c) Provide sufficient facilities for the disabled at transport nodes
- (d) Locate public transport stations within the walkable distance to minimise journey lengths for employment, shopping, leisure, education and other activities.
- (e) Establish a seamless public transportation connection between Pasir Gudang, Johor Bahru-Singapore, Skudai, Kulai and Nusajaya.
- (f) Promote the development and integration of Bus Rapid Transit systems, particularly in Johor Bahru.
- (g) Expand the 'Car Free Day' program to all major towns in the state.
- (h) Conduct a feasibility study for road pricing in Johor Bahru.



## RL 2.2

### Improving Cycling and Pedestrian Infrastructure

Cycling and walking are healthy modes of transport that have minimal carbon emission and greatly reduce vehicular traffic. However, towns and cities must be designed in such a way to encourage walking and cycling. Creating a pedestrian and cycling environment entails establishing connectivity, quality of the routes and adopting safe city elements. Although this can be a challenge and require paradigm shift in town planning, many local plans and regional plan such as CDPII for Iskandar Malaysia in the state have incorporated walkable, safe and liveable city design. Designing walkable cities is an integral component of a green community that lives responsibly. Johor needs to:

- (a) Priorities the implementation of cycle lanes and pedestrian pathways [see Priority Programme 7].
- (b) Create bicycle lanes and the pedestrian paths that link between activity centres such as schools, public parks and facilities, commercial areas, major employment centres and housing.
- (c) Ensure that all new and existing bicycle lanes and pedestrian paths are furnished with adequate lighting, landscaping, bike racks, railings and other relevant infrastructures.
- (d) Ensure all bicycle lanes and pedestrian paths are separated from motorways and are well connected.
- (e) Adopt a safe city concept to ensure the routes are through active areas and 'eyes on the street' to increase the feeling of security.





- (f) Promote universal design for the physically challenged and disabled citizens with various degrees of mobility in planning, designing, implementing and maintaining transportation improvements especially for non-motorised transportation.
- (g) Provide shades by planting trees with large canopy along bicycle lanes and pedestrian paths; or shaded infrastructure where planting of trees is not possible.



## RL 2.3

### Enhancing Public Green and Open Spaces

Green open spaces are a critical component of the urban fabric that enhance their liveability as well as the physical and mental well-being of the people. Open spaces represent important recreational areas and public spaces that enable social interaction and lead to healthier, friendlier communities. As such, parks and open spaces shall be planned and developed in an integrated manner to “green” the urban environment in Johor. Sufficient recreation facilities shall also be provided, consistent with the needs of urban residents. Different categories of open spaces should be developed to cater the needs of various segments of the community. Collaboration between the State government, local authorities, local communities and the private sector is vital in ensuring the provision of open spaces that add value to, and enhance the liveability of towns and cities in Johor. Johor needs to:

- (a) Provide a variety of open spaces equipped with facilities for recreation, sports and family activities and ensure they are adequate for the community needs.
- (b) Allocate at least 10 % open space in all new development plans.
- (c) Enhance an integrated park system through connections of greenways, park connectors and public access areas.
- (d) Public green spaces shall be gazetted to prevent any misuse, rezoning or land acquisition in the future.
- (e) Encourage adoption of parks by private sectors/NGO and promote the ‘Rakan Taman’ concept.
- (f) Utilise flood retention ponds as part of open spaces and recreational areas.
- (g) Create linear recreational areas and parks along river reserves.
- (h) Ensure the materials design for the open space are environmentally friendly and safe to use
- (i) Conserve and restore urban green lungs to enhance the ecosystem services that they provide to urban communities, such as being areas for recreation.
- (j) Plant appropriate trees species in open spaces for provision of shade, to enhance urban biodiversity and carbon sequestration.

#### Sireh Park@Iskandar Puteri

As an ongoing effort by the state government and UEM Sunrise, a regional open space in Iskandar Puteri is currently being developed into world-class sustainable natural Heritage Park called SIREH Park @Iskandar Puteri, which will be opened to public in early 2018. It will be largest public park in Johor with approximately 343 acres. SIREHPark@Iskandar Puteri is aimed to encourage aesthetic appreciation of the planted areas and also outdoor activities. The park will encompass three major focus areas namely Recreational, Educational Learning Experience Outside Classroom (“LEOC”), and Science and Conservation).



Source: UEM Group



## RL 2.4

### Improving Municipal Waste Management

Disposal at landfills remains the main approach for waste disposal in Johor even though a number of landfills in the state are reaching maximum capacity. A more integrated and holistic approach that cuts across all sectors is required in order to achieve a sustainable waste management system. An integrated waste management system is capable of achieving numerous targets, including reduced waste generation, lower greenhouse gases emissions as well as less pollution. The state has initiated household waste separation to reduce the dependency on landfills. However, getting the public to separate their wastes as proven to be difficult, and the recycling rate in Johor remains low. Johor needs to:

- (a) Expand the separation at source scheme to the entire municipal waste stream, including commercial and institutional premises.
- (b) Develop and implement a food waste minimization program with pilot projects for households, wet markets, restaurants, schools and universities.
- (c) Develop and implement an office waste minimization program and initiate pilot projects at commercial and institutional premises.
- (d) Develop the 'waste-to-wealth' concept for residential, commercial, industrial and institutional premises by placing monetary values on various types of waste.
- (e) Ban the use of polystyrene containers in Johor by 2017.
- (f) Pursue alternative options for waste treatment other than sanitary landfills.
- (g) Support and strengthen environmental education in curriculum and co-curricular school activities, including modules on cleanliness,
- (h) Encourage research on waste characteristics, methods of minimization and handling technologies.



## RL 2.5

### Cultivating Responsible Consumption

As Johor propels towards becoming a high-income state, the increase in household income coupled with population growth, will lead to greater consumption of resources such as energy, water, food and land. The generation of household and industrial waste will also increase, putting added pressure onto the environment. Therefore, it is crucial that sustainable lifestyles are inculcated in tandem with increasing economic prosperity. This calls for commitment from Johoreans of all levels: communities, private sectors, and government to consume resources responsibly, with minimum impact to the environment. Johor needs to:

- (a) Adopt a State-wide Water Conservation Awareness Programme to promote water conservation, with emphasis on changing the mindset of youth and children.
- (b) Impose requirements for rainwater harvesting systems for new developments.
- (c) Introduce revised tariffs and 'smart' meters to reduce electricity consumption.
- (d) Launch the "Cool Biz" campaign that includes reducing the use of air-conditioning, and wearing casual attire to work.
- (e) Encourage adoption of 'work from home' and flexi working hours in suitable sectors to reduce travel demand and fuel consumption.
- (f) Make free green lifestyle education booklets available at all shopping centres to enhance public awareness.



- (g) Making schools the educational hubs for low carbon lifestyle and sustainable consumption through curricular activities, competitions, collaboration with stakeholders, and reusable/recyclable waste collection from households.
- (h) Encourage community and individual composting by using robust and cost efficient technologies.
- (i) Develop a state-wide Blueprint and Action Plan for Biodegradable and Biocomposting to reduce industries, wholesalers, distributors and consumers dependency on plastic and polystyrene.



## RL 2.6

### Encouraging Community Farming

---

Community farming is an agricultural activity conducted voluntarily by local communities. The farms can act as community gardens or green spaces for the local community to socialise as well as educational spots for nature appreciation. The practice of urban agriculture has gained popularity in Johor due to initiatives by Rural Transformation Centre and Johor Agricultural Department. IRDA has also established the Urban Farming Development Centre to provide support and encouragement to urban farmers. Besides reducing the cost of living and contributing to food security, such activities also go a long way to promote fellowship among residents. Johor needs to:

- (a) Identify unused or under-utilised land such as utility land reserves, abandoned lands and undeveloped lands for be cultivated as community farms.
- (b) Ensure community farms are be managed by a legitimate entity such as residential associations or Rukun Tetangga.
- (c) Encourage composting of food wastes and planting mediums and upcycling of items such as wood pallets, bottles, and drums as planter boxes.
- (d) Encourage developers to set aside land for community farms, which can be considered as value added to the layout plan and as part of neighbourhood green areas.
- (e) Encourage vertical farming and rooftop farms to reduce requirement of farmlands.
- (f) Promote modern agriculture technology like mini fertigation, aeroponics and hydroponics for urban farming.
- (g) Introduce community garden program at housing schemes, places of worship and schools.





### Iskandar Malaysia Urban Farming Development Centre

The UFDC is an initiative by IRDA to promote urban farming, strengthening traditional economic activity through innovative technology, while easing the people's burden in coping with the rising cost of living. The project also receives support from the state government, Johor Agriculture Department, RTC Johor and KOPUTRA.

The first project under UFDC was launched by MB Johor in April 2016. It is located on a 0.6 hectare plot of land in the compound of the Jasa Apartments, Taman Mutiara Rini. The pioneer project will involve two categories: 'Farm to Eat' and 'Farm to Sell'.

Four other areas have been proposed under this programme in Pasir Gudang, Johor Bahru, Kulau and Tebrau. The farming activities are conducted using social enterprise method, where the product from UFC are marketed exclusively through Iskandar Malaysia Cooperative Bhd (imCoop) and KOPUTRA.



Source: Berita Jauhar



### RL 2.7

#### Maintaining Cleanliness to Protect Public Health

Health is the pulse of a community well-being. Unsanitary environment can contribute to resurgence of vector-borne diseases such as dengue which has been a health and environmental issue in Johor over the past few years. The state has conducted various public awareness campaigns to educate the people in Johor in keeping the environment clean to prevent dengue transmission as well as undertaking vector control such as 'Ultra Low Volume (ULV)' fogging. As urban areas in Johor continue to develop, it is very important that environmental management is also being strengthened to meet this challenge. Johor needs to:

- (a) Strengthen continuous surveillance and cleaning at drains and empty lands where water retention is common.
- (b) Ensure effective and timely waste collection by local authorities to reduce potential mosquito breeding grounds.
- (c) Increase enforcement activities in construction sites with cooperation of all agencies such as local authorities, CIDB and DOSH.
- (d) Start a 'Dengue Awareness Programme' state-wide to enhance the empowerment of local communities in eliminating dengue breeding grounds in their home and neighbourhood.





Molek Pine 4, winner of the  
GAIA 2016 award in Johor Bahru

## SECTION 5

### THRUST 3: GREENING THE ECONOMY





## THRUST 3

### Greening the Economy

A green economy promotes growth and development that takes into account the wise utilisation of resources, while ensuring that negative environment impacts are minimised - a cornerstone of sustainable development. A green economy should result in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.

Johor already has a strong economic agenda - as spelt out in the recent Johor Strategic Growth Plan as well as in several other strategic plans. While the economic agenda will strengthen the economic prosperity of the people of Johor, it is equally important to ensure that this growth is achieved in a manner in which land and natural resources are utilised efficiently.

This relates to minimising waste and pollution, reducing carbon footprint as well as embracing

sustainable consumption and production practices. In other words, Johor's economy must be "greened" with a long-term focus on continuously improving the environmental performance of all economic sectors.



**Strategic Thrust 3 has 9 sub-thrusts and 63 actions.**

#### THRUST 3

##### Greening the Economy



Greening Johor's economy with a long-term focus on continuously improving the environmental performance of all economic sectors including reducing resource consumption, minimising waste and pollution and reducing carbon footprint.

GE 3.1: Nurturing a Low Carbon Economy

GE 3.2: Promoting Green Townships & Buildings

GE 3.3: Promoting Sustainable Consumption and Production

GE 3.4: Preventing and Controlling Pollution

GE 3.5: Promoting Green Technology

GE 3.6: Promoting Sustainable Energy

GE 3.7: Improving Management Practices in the Forestry, Agriculture, Fisheries Sectors

GE 3.9: Adopting Responsible Mining and Quarry Practices

GE 3.9: Fostering Responsible Tourism





### GE 3.1

## Nurturing a Low Carbon Economy

Achieving a low-carbon economy is critical for a sustainable future. A low carbon economy has a number of key elements, including green technology, renewable energy, carbon market and natural resource management, and cuts across multiple sectors such as transportation, construction, commerce and industry. Johor has already embarked on a journey towards realising a low carbon economy by implementing the Low Carbon Society Blueprint for Iskandar Malaysia and establishing the Majlis Teknologi Hijau dan Perubahan Iklim.

While many elements of the low carbon economy are covered in this and other strategic thrusts, what is further required from Johor is taking a holistic and integrated planning that covers necessary sectors to develop a low carbon economy. This includes harnessing commitment from every economic sector in Johor - industry, transport, SMEs, developers etc. and as well as every stakeholder - including private sectors, communities, academics, and government agencies. Johor needs to:

- (a) Develop a state plan for low-carbon growth.
- (b) Ensure that the Low Carbon Society blueprint is implemented at the five local authorities within Iskandar Malaysia.
- (c) Strengthen private sector (oil and gas, agriculture, etc.) commitment towards local carbon growth.
- (d) Integrate low carbon objectives and targets into industry business plans and strategies.
- (e) Develop a carbon monitoring and auditing framework for Johor.
- (f) Establish the Iskandar Malaysia Urban Observatory (IMUO) to develop a model for urban management while monitoring the development, traffic conditions, air quality and water quality.

### Low Carbon Society Blueprint for Iskandar Malaysia 2025



The Low Carbon Society Blueprint for Iskandar Malaysia was developed in 2013. The blueprint seeks to minimise carbon emission in all economic sectors and aims to reduce greenhouse gas emission within Iskandar Malaysia by up to 50% by year 2025.

The blueprint contains 12 Actions with 281 programmes. Besides the main blueprint, LCS action plans were also developed for five local authorities in Iskandar region - Johor Baru City Council, Johor Baru Tengah Municipal Council, Kulai Municipal Council, Pasir Gudang Municipal Council and Pontian District Council. The local authorities have begun to incorporate the programmes under the LCS into their strategic plan and local plans.



Source: IRDA



## GE 3.2

### Promoting Green Townships and Buildings

Cities and towns accounts for more than 70% of carbon emission in Johor. Green buildings and green townships are one of the most effective way to reduce carbon footprint while providing multiple environmental and social benefits. Green construction shall therefore be emphasised for all new development, while existing buildings shall be retrofitted to improve the efficiency of energy and water use. Close collaboration between architects, planners, engineers, researchers and developers will be required to create the enabling environment needed to achieve this. Johor needs to [see Program Keutamaan 8]:

- (a) Adopt new green criteria “Johor Green Building Standards” for all new developments and used within development planning and approval process.
- (b) Promote the use of green building and township standards and certification (e.g. Johor Green Building Standards, Green Building Index, CASBEE, GAIA) for all new development.
- (c) Retrofit existing public buildings and infrastructure to enhance energy, water and waste efficiency.
- (d) Impose building rating systems statewide.
- (e) Allow multiple certification system for green buildings and introduce award system.
- (f) Design residential buildings that take advantage of tropical climate through maximizing natural ventilation and lighting.
- (g) Develop a model low carbon town to showcase and promote sustainable living.
- (h) Ensure new mixed development are provided with comprehensive pedestrian and cycling networks, energy-efficient buildings and eco-friendly features.
- (i) Ensure continuous improvement on green buildings practices.
- (j) Promote and conserve vernacular structures and rural green buildings.

#### Establishment of CASBEE Iskandar Centre



The Comprehensive Assessment System for Built Environment Efficiency (CASBEE) is a built environment efficiency assessment framework that was designed based on the concept of environmental efficiency or eco-efficiency. CASBEE was chosen as the standard assessment tool to be used in Iskandar Malaysia. IRDA has commenced a pilot project in close collaboration with Institute for Building Environment and Energy Conservation, the creators of CASBEE; Keio University; Hosei University and Universiti Teknologi Malaysia. Upon completion of the CASBEE Pilot Project in May 2016, a set of assessment manuals were produced to guide local authorities, developers and business enterprises in Iskandar

Malaysia to encourage the development of green cities, neighbourhoods and buildings. Several buildings, urban developments and local authorities in Iskandar Malaysia were selected to test out the newly adapted CASBEE Iskandar Manual.

A CASBEE Iskandar Centre shall be established in Iskandar Malaysia to promote, implement and manage the CASBEE Iskandar assessment system. This centre would also play a role in consolidating efforts by various stakeholders in Iskandar Malaysia that contribute toward greening of the built environment. This centre is proposed to be a platform for built environment experts in Iskandar Malaysia (architects, planners, engineers, and environment & energy-related experts) to share best practices and experience, as well as share technical resources and expertise. This centre would be able to consolidate other related green building initiatives currently being undertaken by IRDA such as the development of the framework for Building Energy Monitoring and Reporting System and Green Accord Initiative Award.

Source: IRDA



### GE 3.3

## Promoting Sustainable Consumption and Production

Sustainable consumption and production (SCP) relates to the optimal utilisation of natural resources and products in a manner that minimises environmental and social impacts over the entire life cycle of the product. SCP takes a holistic cradle-to-grave approach that assigns responsibility to all stakeholders across the production and consumption process - from producers and consumers to the regulatory bodies and businesses. This approach represents a major paradigm shift for businesses that now need to meet the 'triple bottom line' of social, environmental and financial sustainability. At the same time, consumers must be sufficiently responsible and educated to demand for products that meet the criteria for sustainability as well as take a proactive approach in reducing excessive consumption. Johor needs to:

- (a) Develop and implement a public sector green procurement plan for low carbon products and services.
- (b) Establish a directory on green and low carbon supply chains, markets and technologies that support long-term growth with resilience.
- (c) Raise consumer awareness on green and low carbon products and services
- (d) Leverage on digital technologies to improve efficiency of business, particularly for small and traditional businesses.
- (e) Encourage and support the aquaculture, agriculture and forestry sectors to achieve sustainability certification and accreditation.
- (f) Discourage "goodie-bags" and "door gifts" at all State functions.
- (g) Develop SCP capacity building programmes for government, commercial and industrial sectors.



### GE 3.4

## Preventing and Controlling Pollution

Johor is strengthening its industrial base through several large projects such as the Pengerang Integrated Petroleum Complex while existing industrial estates such as Pasir Gudang continues to grow. Industrial development produces a number of undesirable impacts, particularly pollution emissions, especially when the number and intensity of industries continue to increase. Although many industries in Johor have adopted clean technology as well as improved pollution control methods, much more can be done.

Monitoring and enforcement will need to be enhanced to create a level playing field among all industries. The burden of the regulation of pollution control should not only fall upon the government, as such industries must also be proactive in improving their environmental performance, through voluntary and self-regulatory measures. Johor needs to:

- (a) Develop pollution prevention strategies for all categories of pollution sources - including large, small and medium factories, urban and commercial development, residential areas, agriculture and extractive industries.
- (b) Phase out polluting industries through improvement in industrial processes and stricter regulations.



- (c) Implement a permit system for all effluent discharges into the river system based on the polluter-pays-principle [see Priority Programme 5].
- (d) Develop incentives to attract low carbon industries.
- (e) Support programmes for recycling industrial waste material across all sectors.
- (f) Upgrade and enhance the local recycling industry.
- (g) Systematically upgrade and maintain sewage treatment facilities in rural areas or outside the serviced areas by replacing pour flush systems with septic tanks or by connecting to sewage treatment plants.
- (h) Strengthen enforcement and monitoring at restaurants and wet markets to ensure that sullage is discharged into the sewers and grease traps maintained by the owners of the premises.
- (i) Improve the used cooking oil collection programme throughout the state.
- (j) Develop a state-wide e-waste collection programme.



### GE 3.5

#### Promoting Green Technology

---

Green technology encompasses a variety of products, equipment and systems that help to minimise negative impacts on the environment. The incorporation of green technology, a key strategy for green growth has already been adopted to a certain extent in Johor, with the development of the Low Carbon Society Blueprint 2025 for Iskandar Malaysia and the action plans for five local authorities. In the construction sector, many developers have begun integrating green technology, for example the development of green buildings and green townships.

However, the incorporation of green technology needs to be further expanded to all sectors, in particular, the traditional industries that still utilise outdated technology. This would require streamlining of the regulatory framework, and the participation of industry players in setting targets as well as to develop appropriate incentives for green technology integration. Consumers must be educated to recognise and appreciate green technology products. Johor needs to:

- (a) Support the introduction of industry standards for green technology i.e. Life Cycle Assessment and Green Business Models.
- (b) Strengthen R&D on green technologies in partnership with local universities and other technology providers
- (c) Establish an innovation fund for green technology development.
- (d) Establish an Advice Service to support the promotion and implementation of green technology initiatives for all sectors and levels.
- (e) Promote state wide practice of Green Procurement
- (f) Reward green practitioners that take lead of community projects as well as industry that incorporate green technologies.
- (g) Establish accreditation system for green technology products, equipment and systems.





## GE 3.6

### Promoting Sustainable Energy

Energy is a crucial element for economic growth. In the pursuit of green growth, it is important for Johor to move away from its dependence on fossil fuels towards alternative sources of green or renewable energy. This shift will also create opportunities for growth and development, including business and job opportunities in the renewable energy sector. Besides advocating for renewable energy, adopting energy efficiency practices is also equally important. Many existing buildings and equipment are still relying on old technology that consumes large amount of electricity.

Johor has significant production of biomass such as agricultural waste due to extensive palm oil plantations, and this potential source of energy has not been fully utilised. There is ample scope for growth in the biogas and biomass energy sector. In addition, the increasing affordability of solar energy makes it an attractive option to be explored especially in new developments and urban areas. Finally, methane produced from municipal landfills also provides an attractive alternative source of energy for Johor.

- (a) Develop a State plan for long-term energy growth and management.
- (b) Accelerate investments into renewable energy and 'carbon-capture strategies'.
- (c) Accelerate investment into energy efficiency.
- (d) Establish and connect biomass energy plants to the national grid.
- (e) Apply the principle of 'waste to wealth' for palm oil waste to produce material for the activation of carbon sequestration.
- (f) Develop a system to capture methane gas from palm oil mill effluent (POME) to be re-used as fuel material.
- (g) Upgrade all landfills to sanitary landfills to enable captured methane to be converted for energy supply.
- (h) Expedite safe closure of landfills meeting life span, conduct site remediation and explore methane gas extraction.
- (i) Provide more incentives for developers and Johoreans to include solar photovoltaic systems.

#### Cypark Rimba Terjun Renewable Energy Park

The Rimba Terjun Renewable Energy Park is a 2MV Solar Photovoltaic Farm. Located in Rimba Terjun, Pontian, this park is an integrated renewable energy park that was restored from a 14-acre non-sanitary landfill site. It is a good example of environmental and economic transformation where a dump site was restored to a site with economic value. The park produces energy via Solar PV Farm and methane from the buried wastes. The power generated is sold to Tenaga Nasional Berhad.



Source: Cypark Resources Bhd



### GE 3.7

## Improving Management Practices in the Forestry, Agriculture and Fisheries Sectors

The primary sectors, in particular forestry, agriculture and fisheries, represent an important component of Johor's economy. However, these sectors typically exert the greatest impacts on the environment and biodiversity. These industries often occupy large areas of land (oil palm plantations alone account for 61% of Johor's land area), and often emit waste streams that have detrimental impacts on the receiving ecosystems. Johor needs to:

- (a) Encourage and support the palm oil sector to pursue certification under the Malaysian Sustainable Palm Oil (MSPO) and/or Roundtable on Sustainable Palm Oil (RSPO) schemes.
- (b) Ensure that agriculture does not encroach into ESAs such as riparian zones, steep slopes, protected areas and forest reserves.
- (c) Encourage and support the fisheries and aquaculture sectors to work towards the Malaysian Good Agricultural Certificate (MyGAP) and Fish Quality Certificate (FQC), a national program under the Department of Fisheries. Upon complying, the sector can move towards the international schemes such as the Marine Stewardship Council certification and Aquaculture Stewardship Council certification.
- (d) Implement the aquaculture best management practice that follows the 'Aquaculture Practice Code' from the Department of Fisheries.
- (e) Initiate a pilot project for Ecosystem Approach to Fisheries Management [see Priority Programme 3].
- (f) Regain certification for the Johor Forest Management Unit under the Malaysian Timber Certification Scheme (MTCS).



### GE 3.8

## Adopting Responsible Mining and Quarry Practices

Johor is rich in minerals such as bauxite, gold and tin ore as well as non-metal deposits such as silica and granite. While development of the mineral sector can spur economic growth, responsible extraction practices of these non-renewable resources are needed to reduce the negative impacts to surrounding environment and local communities. Johor needs to:

- (a) Conduct a detailed State-wide mapping of mineral reserves to identify mineral hotspots.
- (b) Enhance monitoring and enforcement to ensure that mining operations comply with the approved Mining Operational Scheme.
- (c) Ensure that mining companies operating in and adjacent to Environmentally Sensitive Areas adopt the Best Available Techniques Not Entailing Excessive Costs (BATNEEC).
- (d) Adopt the "Kaedah-Kaedah Kuari" under Section 14 of the National Land Code 1965 to ensure that quarry operations are carried out in safe manner.
- (e) Identify ex-mining sites that are suitable to undergo rehabilitation and to be reused for retention ponds and recreational parks.



### GE 3.9

## Fostering Responsible Tourism

Johor boasts a number of premier tourism destinations, ranging from theme parks such as Legoland to nature-based sites such as the Mersing Islands and Endau-Rompin National Park. Tourism is growing in Johor and is a key sector of the economy. Natural environments are valuable resources for tourism but if not managed properly, their value will diminish over time. As such, tourism must be managed sustainably to minimise impacts on the surrounding environment.

- Undertake a carrying capacity assessment of all the key ecotourism sites especially the Ramsar sites, Endau Rompin National Park and Mersing islands.
- Build capacity amongst tourism site managers and operators to adopt best management practices in responsible tourism.
- Establish and enforce responsible tourism regulations and guidelines for visitors and tour operators.
- Engage and empower local communities living in and around nature tourism sites as active participants in ecotourism planning and implementation.

### Kampung Sungai Melayu: Eco Tourism Village

20 km from bustling city of Johor Bahru, a true hidden gem can be found in Gelang Patah, Kampung Sungai Melayu, a 150-year-old small village built around a mangrove swamp and river which houses a diverse ecosystem of flora and fauna.

This area is a haven for birdwatchers, sporting 447 local bird species and 186 migratory bird species, such as hornbills, eagles and storks as the village lies along the seasonal flight path. Visitors can enjoy boat rides along the river not only for birdwatching but to try their hand at crab catching and fishing, having their catch cooked up and served to them for their next meal. There are fisheries and farms which are run by the local community that can be visited as well. The tourists can also enjoy fishing, making “belacan” and “asam pedas”, playing traditional games, participating in fishing demonstration and making handicraft from various items in their surroundings while appreciating being close to nature and basking in the rustic and authentic Malay kampung experience.

The village was the first project under Kawan Iskandar Malaysia, a community empowerment program by IRDA to assist the targeted group to move up the economic value chain through social enterprise due to rapid development of Iskandar Malaysia. Today, Kg. Sungai Melayu is a premier destination of ecotourism in the state. Since being declared as an eco-tourism village in 2014, the village has received over 12,000 visitors including tourists from Singapore, Australia, London, Japan, China and Russia. Eco tourism has brought valuable employment to the village and greatly improved business at the local seafood restaurant, driven by the local community using Social Enterprise Business Model through cooperative cooperation.



Source: Kampung Sungai Melayu, Tourism Johor, The Iskandarian, IRDA







Kota Iskandar, Iskandar Puteri

## SECTION 6

### THRUST 4: IMPROVING GOVERNANCE



## THRUST 4

### Improving Governance

Improved governance across many dimensions is fundamental to sustainable development in Johor. The Millennium Declaration, adopted by the world's leaders in 2000, recognized the vital link between good governance and development. Johor needs effective governance and strong institutions that are responsive to public needs, deliver essential services and promote inclusive growth. Good governance promotes peaceful and stable societies that ensure development can be sustained.

Given that natural resources come under the jurisdiction of the state government, it is important that effective state institutions, legislation and systems are in place to manage them. State agencies need to be continuously strengthened, inter-agency coordination enhanced and legislations streamlined.

Decision-making processes need to be transparent, robust and involve all stakeholders.



*“Democracy, good governance and the rule of law at the national and international levels, as well as an enabling environment, are essential for sustainable development including sustained and inclusive economic growth, social development, environmental protection and the eradication of poverty and hunger.”*

(UN General Assembly Resolution 66/288, July 2012).

**Strategic Thrust 4 has 6 sub-thrusts and 25 actions.**

#### THRUST 4

##### Improving Governance



Forging effective governance and strong institutions that are responsive to public needs, deliver essential services and promote inclusive growth.

IG 4.1: Strengthening Capacity of State Institutions

IG 4.2: Enhancing the State Legislative Framework

IG 4.3: Strengthening National and International Cooperation

IG 4.4: Improving Science – Policy Interface

IG 4.5: Financing for Sustainable Development

IG 4.6: Improving Accountability and Transparency



## IG 4.1

### Strengthening Capacity of State Institutions

There are many state agencies involved in ensuring sustainable development and their capacities in terms of personnel, expertise and tools must be strengthened. In particular, the capacities of agencies responsible for the planning and management of environment, forests, water, biodiversity and urban services need to be substantially increased. In addition to these, agencies related to infrastructure development, land use planning and tourism among others, also influence the state's environment and natural heritage and their capacities needs to be enhanced as well. Given that the land, forest, water and other natural resources are under the jurisdiction of the state government, it is important that the state proactively manages these resources. The state needs qualified and well-equipped personnel working on various sustainable development-related issues.

Coordination and decision-making at the state level also need to be improved to ensure that this Policy and other environment/sustainable development related matters can be implemented effectively. In addition to this, improved coordination and collaboration amongst government agencies in all aspects of planning, development, management and monitoring, as well as the adjudication of offences is crucial. Johor needs to:

- (a) Strengthen the capacity of Johor Economic Planning Unit to plan and manage sustainable development by establishing the Environment and Natural Resources Section.
- (b) Establish Environmental Units in all Local Authorities or expand the scope of existing divisions to address local environmental issues.
- (c) Strengthen JNPC's marine parks division and establish a base on the Mersing islands.
- (d) Build skills in the areas of communications, stakeholder engagement and public outreach in all key agencies.
- (e) Expand the scope of and rebrand the 'Majlis Teknologi Hijau dan Perubahan Iklim Johor' to 'Majlis Pembangunan Lestari Johor'.



## IG 4.2

### Enhancing the State Legislative Framework

Johor has a range of legislations to safeguard its natural heritage and promote sustainable development. However as new threats emerge and priorities change, these legislations need to be streamlined and strengthened. The state will need to identify and eliminate gaps in the state legislations pertaining to natural resources and environment. The state also needs to identify and promulgate new legislations to help protect and manage natural heritage effectively. These include aspects related to biodiversity protection, pollution control and building and town planning requirements. Johor needs to:

- (a) Undertake a feasibility study to examine the viability of the Enakmen Alam Sekitar Negeri Johor.
- (b) Undertake a comprehensive review of all state legislation related to fisheries, marine parks and marine biodiversity including examination of the gaps and overlaps pertaining to jurisdiction over marine biodiversity.
- (c) Strengthen the Enakmen Taman Negara Johor with respect to the management of marine parks.
- (d) Strengthen the Forestry Enactment to allow for public feedback for the gazetting or degazetting of forest reserves.
- (e) Enact bylaws for local authorities to enforce environmental pollution control.



### IG 4.3

## Strengthening National and International Cooperation

---

National and international cooperation is necessary for Johor to exchange knowledge and learn good management practices. The state needs to continue its cooperation with international and regional organisations and our neighbouring countries and support Malaysia's international obligations to MEA including the CBD, Ramsar Convention, CITES and the World Heritage Convention and ASEAN initiatives on environment and biodiversity conservation. The state needs to actively engage with local and international institutions and research programmes and support knowledge exchanges on sustainable development. It also must continue pursuing recognition of the global importance of its heritage areas by international bodies, programmes and treaties such as the ASEAN Heritage Park, Ramsar Convention on Wetlands, UNESCO World Heritage Convention and the UNESCO Man and the Biosphere Programme. Johor needs to:

- (a) Gain international recognition for natural heritage sites within the state
- (b) Obtain UNESCO Geopark status for the geologically unique areas around Mersing and the offshore islands [see Priority Programme 3].
- (c) Obtain UNESCO Man & Biosphere Reserve for the Pulai landscape [see Priority Programme 2].
- (d) Obtain ASEAN Heritage Park status for Taman Negara Endau Rompin.
- (e) Develop twinning programme for selected Parks in the state.
- (f) Establish the Johor - Pahang coordination committee for Endau Rompin National Park.



### IG 4.4

## Improving Science - Policy Interface

---

Johor's policies and regulations can be improved with timely and robust scientific evidence base. A coherent science-policy interface shall be established to guide decision-making. Establish effective channels of communication between the scientific community and policy-makers, all levels of government administration and the general public are needed. Johor needs to:

- (a) Develop monitoring programme and databases to enable the state to access critical management information in a timely manner.
- (b) Provide incentives to encourage research and development in the state.



### IG 4.5

## Financing for Sustainable Development

---

Adequate financing is crucial to promote sustainable development. Public budget allocation, which currently is the main source of funding, needs to be optimised to reflect the significant value that the natural ecosystem generates for the state's economy and people's wellbeing. The use of innovative and sustainable financing mechanisms beyond government sources must be fully explored and developed. The revenue bases of the state governments need to be improved and diversified to reduce their reliance/dependency on the exploitation of natural resources. Johor needs to:

- (a) Identify opportunities for the state government to diversify its revenue stream away from the exploitation of natural resources and land.





- (b) Assess the feasibility of adopting payment for ecosystem services (PES) schemes in water, forestry and other relevant sectors.
- (c) Develop and enforce the polluter pays system whereby a fee is imposed on all pollution discharges to rivers in the state.
- (d) Establish the Johor State Conservation Trust Fund to serve as a platform to mobilise financial resources from various partners including the government, private sector and international organisations for sustainability initiatives which are not funded through existing government sources.
- (e) Develop co-management partnerships with civil society and the private sector to manage the state's protected areas and parks.

### Payment for Ecosystem Service

Economic valuations provide information needed for instruments that promote more efficient use of resources via the “user pays” or “polluter pays” principle, such as Payment for Ecosystem Services (PES), conservation tax and user fees. PES is an innovative and relatively young market-based instrument for ecosystem protection, based on the principle that those who provide ecosystem services should be compensated for doing so and those who receive the benefits should pay for their provision.

A good example is in the provision of freshwater. The costs of conserving water catchments (e.g. loss of revenue from timber production) may be offset by contributions from downstream users such as households, industry, and agriculture, which depend on a continuous supply of this resource.

PES approaches have been most thoroughly developed in Latin America, but there is increasing interest throughout the world. In Costa Rica, for example, the government has developed a nationwide PES scheme in which users such as hydropower companies can pay land users to maintain forest cover in watersheds. In Quito, Ecuador, water companies are helping to pay for the management of Protected Areas that are the source for much of the capital's drinking water.



## IG 4.6

### Improving Accountability and Transparency

The state shall increase its openness and transparency as these are essential to achieve sustainable development. This include improving the dissemination of information, stakeholder access to relevant information and the clarity of the decision-making processes. In the context of implementing this policy, the state needs a clear and transparent mechanism for monitoring progress and keeping stakeholders in the loop. Johor needs to:

- (a) Ensure the policy and the monitoring/audit of policy implementation are available to the public.
- (b) Increase public participation and stakeholder engagement in all policy, programme and project formulation.



Hari Alam Sekitar Johor 2016,  
Dataran Bandaraya Johor Bahru



## SECTION 7

### THRUST 5: EMPOWERING THE PEOPLE





## THRUST 5

### Empowering the People

Sustainable development can only be achieved when all stakeholders are on board with a common vision. The state needs to empower and harness the commitment of the people of Johor in the pursuit of sustainable development. This includes the civil society, private sector, academia and local communities.

It is very important to empower non-government entities because the state government alone can never ensure that all the goals of sustainable development can be achieved. Civil society, which has traditionally played an active role in promoting sustainable development, must be empowered to play an even greater role in the future. Local communities, who have long been local custodians of the natural resources that sustain them, need to be empowered so that they can increase their contribution. The private sector need to be actively roped in to promote sustainable development as it makes many relevant development and investment decisions that influence sustainability.



To empower the people of Johor, it is important to give them a greater understanding of the benefits of the sustainable development path and awareness of what they can all do to be part of it. There has to be a greater sense of ownership across government and society. Empowering every segment of the Johor society and harnessing their commitment is fundamental to achieving Johor's sustainable development goals.

#### Strategic Thrust 5 has 6 sub-thrusts and 26 actions.

##### THRUST 5

##### Empowering the People



Empowering and harnessing the commitment of the people of Johor including the civil society, private sector, academia and local communities in the pursuit of sustainability.

EP 5.1: Increasing Education, Awareness and Extending Outreach

EP 5.2: Empowering Local Communities

EP 5.3: Recognising and Supporting Civil Society

EP 5.4: Forging Partnerships with Private Sector

EP 5.5: Enhancing Stakeholder Participation in Decision Making Processes

EP 5.6: Strengthening Stakeholder Networking





## EP 5.1

### Increasing Education, Awareness and Extending Outreach

It is crucial to create awareness and educate people about sustainable development across all segments of the society. All stakeholders need to have awareness and knowledge about sustainable development so that they can better understand the threats, better plan and design their interventions. If the majority feel strongly that their natural heritage should be conserved, it would naturally follow that greater emphasis and resources will be given towards its conservation. In order to address this gap, an exciting CEPA (Communications, Education and Public Awareness) programme shall be initiated to raise the awareness of Johoreans on their unique natural heritage. This shall be through establishment on smart partnerships, to leverage on the expertise and experience on various local NGOs and private sector. New generations of Johoreans who are aware and act as champions for sustainable development are needed. Johor needs to:

- (a) Develop and implement a state-wide communications, education and public awareness (CEPA) action plan.
- (b) Support events that celebrate environment and sustainability such as the International Day for Biodiversity, World Environment Day, Hari Alam Sekitar Negara, World Tiger Day, World Ocean Day, World Planting Day, International Day of Forests, World Water Day, Earth Hour, World Habitat Day etc.
- (c) Support and strengthen co-curricular school activities, including nature clubs and green camps with a focus on outdoor learning in nature.
- (d) Expand the Rakan Alam Sekitar programme to enable youth groups to carry out environmental conservation projects and internships with suitable organisations.
- (e) Develop voluntourism opportunities for Johoreans to visit and volunteer in biodiversity rich areas.
- (f) Support and enhance ongoing CEPA initiatives by organisations such as Kulim Wildlife Defenders, Kelab Alami Tanjung Kupang and Malaysian Nature Society.
- (g) Develop a Marine Education Centre at Mersing town.
- (h) Promote and enhance Endau-Rompin National Park as a Centre of Excellence in nature education.



## EP 5.2

### Empowering Local Communities

Involvement of local communities is necessary to achieve sustainable development. Local communities often live closest to nature and as a result have developed deep knowledge of, and intricate relationships with the and natural resources and environments around them. They play an important role as the custodians of the land which have to recognised and supported. Johor has few existing local communities actively operating in environmental care and nature conservation. The state shall strengthen their capacities, raise the level of awareness and improve access to information so that they can carry their good work more effectively. However, as the scale of economic development in Johor increases, local community movement in sustainability needs to correspond in tandem. The state shall provide more opportunities and empower local communities to collectively improve Johor's environment. Johor needs to:

- (a) Develop the Johor Community Conservation Area programme that nurtures local communities to be involved in nature conservation [see Priority Programme 11].



- (b) Identify and nurture local champions as catalysts for conservation action.
- (c) Build capacity, provide incentives, enable access to information and create awareness among local communities to carry out environmental conservation.
- (d) Establish Johor state awards that recognise local communities who have made important contributions to environmental conservation.
- (e) Establish a subcommittee on community empowerment within MPLJ to encourage, facilitate and plan conservation efforts by local communities.
- (f) Establish a state-wide Community in River (COIR) programme to cultivate shared responsibility for river care.

### Kelab Alami Tanjung Kupang - A Story of Youth Empowerment

Tanjung Kupang is a fishing village near the Pelabuhan Tanjung Pelepas and Gelang Patah in the south-western tip of Johor. Kelab Alami Mukim Tg Kupang is a local initiative that enables the local community to participate in the development around them. Kelab Alami focuses on educating the youth so they can and will teach and positively influence others in the community.

The club was founded by Shalan Jum'at (a Mukim Tg Kupang local) and Serina Rahman in 2009 and initially focused on environmental education for the youth. When it first started, about 40 youngsters, aged between five and 18 spent their time after school and on weekends in the mangrove forests, seagrass meadows or the club organic farm to learn about the habitats in their backyard. With the knowledge that they gained, these youth became local habitat experts and guides as well as community educators and researchers.

These Kelab Alami Youth Rangers are frequently consulted by developers, local agencies and others on their habitat knowledge. Kelab Alami Tanjung Kupang now works to enable the wider community to get jobs or alternative incomes in the development around them, either through direct employment or services associated with guided walks, marine and mangrove research or in future, in relation to a Nature and Heritage Centre that they are in the process of setting up. Kelab Alami graduates now work full-time to organise classes, support entrepreneurial efforts and other programmes for the community so that they will be able to benefit from the changes in their area.



Source: Kelab Alami Tg. Kupang



### EP 5.3

## Recognising and Supporting Civil Society

---

Civil society organisations are important partners in conservation. Johor has an emerging civil society working on various sustainable development initiatives. Most of them, however, have limited resources. It is therefore important to support civil society to enable people of Johor from all walks of life to work together. The state will support civil society organisations in their efforts to promote environmental conservation and sustainable resource use by building capacity, platforms and access to information. The state will also empower civil society organisations by including them in the decision-making processes and promoting participatory planning. Johor needs to:

- (a) Support civil society organisations in their efforts to promote sustainable development and environmental protection by building capacity, platforms and access to information.
- (b) Facilitate networking and collaboration amongst civil society organisations.
- (c) Maintain a register of civil society organisations at the state level.
- (d) Empower civil society organisations by including them in the decision-making processes and promoting participatory planning.



### EP 5.4

## Forging Partnerships with Private Sector

---

In recent years, Johor's thriving private sector has emerged as a committed partner in safeguarding the welfare of our society and the environment. The state needs to enable greater investments and sustained involvement of our corporate partners so that they can deliver stronger and lasting returns to sustainable development. The state needs to strengthen corporate social responsibility, investment and accountability initiatives by focusing efforts on priority areas in nature conservation and resource use. Johor needs to:

- (a) Encourage partnerships between private sector and local communities.
- (b) Identify and provide incentives to the private sector to conserve and sustainably use of natural resources. This includes promoting and rewarding alliances between private sector, civil society and local communities.
- (c) Strengthen sustainability programme for state-linked companies as well as other programmes that promote sustainability in the private sector.
- (d) Develop a Corporate Social Responsibility (CSR) programme to encourage private companies to adopt certain sites or trails. "Adoption" may entail the company providing funds for a certain timeframe, as well as volunteer placement for its staff to carry out any suitable or meaningful activities to support management and upkeep of the given area.



## EP 5.5

### Enhancing Stakeholder Participation in Decision Making Processes

---

All stakeholders need to have the opportunity to participate and contribute to the decision-making process so that development plans, actions and outcomes are made taking into account the interest of all concerned stakeholders. The state will ensure that stakeholder consultation is central in the formulation of legislation, policies, programmes and projects. Openness are essential to achieve sustainable development. Informed citizens and the private sector are better able to engage in developing policy; they are better collaborators and partners with government on service delivery. Participation is a means to more sustainable development. When communities are actively engaged in their own development processes, project outcomes will be better targeted to local needs and results will be more sustainable. Johor needs to:

- (a) Establish the Johor Sustainable Development Roundtable (JSDR) - a multi-stakeholder roundtable consisting of members from the government, civil society, academia and the private sector to promote this Policy and serve as a partner to the state.
- (b) Develop and implement procedures and mechanisms for inclusive and timely stakeholder engagement for all policies and programmes.



## EP 5.6

### Strengthening Stakeholder Networking

---

Networking and collaboration amongst stakeholders is crucial to enable all parties to coordinate their efforts, exchange knowledge and learn from one another's experience. In this context, the state will establish the Johor Sustainable Development Roundtable (see also EP 5.5) as a mechanism to promote stakeholder networking. In addition to the JSDR, the state will also need to regularly facilitate meetings, workshops and visits that will bring stakeholders together and improve rapport amongst all parties. This is pave way for better and sustained partnerships.

- (a) Organise the Johor's Annual Sustainable Development Conference to share experience and disseminate information.
- (b) Create opportunities and platforms to enable various stakeholders to interact and collaborate.





## Kota Damansara Community Forest Reserve

### - A Model for Community-Based Conservation of Green Spaces

The Kota Damansara Community Forest Reserve (KDCF), a remnant mixed lowland dipterocarp forest of 321.75 ha in Petaling Jaya, Selangor was once part of the extensive and biodiversity-rich Sungai Buloh Forest Reserve (6,590 ha; gazetted in 1898). Over the last 30 years, boundary adjustments and excisions for housing and infrastructure development diminished its extent, and by 2003, mounting concern about forest loss spurred a movement to safeguard the remaining forest as a green enclave and wildlife refuge. The sustained campaign driven by local residents, nature enthusiasts and other community groups eventually led to it being regazetted as a Permanent Forest Reserve in 2010.

Today, the KDCF is classified as a forest for amenity, education and research under the authority of the Selangor State Forestry Department. Persatuan Rimba Komuniti Kota Damansara or KDCF Society was registered in 2011 to form a representative and well-governed community organisation to partner with the Selangor State Forestry Department in managing the forest reserve. As co-managers, the Society works closely with the Department to implement the jointly developed Forest Management Plan. KDCF sees its role as complementing the Department by connecting people with the forest through nature appreciation and recreational activities while ensuring that its core values are preserved. To this end, a network of 11 km of forest trails have been built by community volunteers over 8 years. Active environmental education and volunteer programme has been implemented, and Temuan Orang Asli from adjacent areas have taken up an important role in forest trail management. Although the Society has been successful in obtaining grants and corporate sponsorship, its main core of support continues to be the community's own contributions in the form of volunteerism, fees and donations.

As a model of public participation in the management of green spaces, KDCF offers a glimpse of the kind of synergy that can be realised through effective collaboration between government agencies and community groups, one that has the potential to be replicated with positive impact in many more locations.



Source: Justin Vaz, KDCF







Kampung Sungai Boh, Pontian

## SECTION 8

# PRIORITY PROGRAMMES


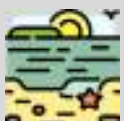






## PRIORITY PROGRAMMES

The Policy has eleven priority programmes. These are programmes that address critical environmental and natural resource management issues in Johor. Although efforts should be made to realise the actions of all the five strategic thrusts, priority should be given to these 11 programmes in the implementation of the Policy.

### The 11 Priority Programmes of Johor Sustainability Policy

	<b>PP 1:</b> <b>WARISAN ALAM JOHOR</b>		<b>PP 2:</b> <b>PULAI BIOSPHERE INITIATIVE</b>
	<b>PP 3:</b> <b>ROYAL ISKANDAR MARINE CONSERVATION AREA</b>		<b>PP 4:</b> <b>SOUTHERN TIGER LANDSCAPE</b>
	<b>PP 5:</b> <b>SG. JOHOR INTEGRATED RIVER BASIN MANAGEMENT</b>		<b>PP 6:</b> <b>SG. MUAR INTEGRATED RIVER BASIN MANAGEMENT</b>
	<b>PP 7:</b> <b>PEDESTRIAN &amp; CYCLING INFRASTRUCTURE</b>		<b>PP 8:</b> <b>LOW CARBON BUILDINGS</b>
	<b>PP 9:</b> <b>DAPUR HIJAU</b>		<b>PP 10:</b> <b>PELITA</b>
	<b>PP 11:</b> <b>COMMUNITY EMPOWERMENT PROGRAMME</b>		



# 11 PRIORITY PROGRAMMES

## PP6: SUNGAI MUAR INTEGRATED RIVER BASIN MANAGEMENT

Strengthen the management of the Sg Muar basin to minimize flooding and ensure water supply to the state.



## PP3: ROYAL ISKANDAR MARINE CONSERVATION AREA

Establishing a large marine conservation area in Mersing where resource utilization can be managed holistically to ensure the long-term health of this fragile seascape.



## PP4: SOUTHERN TIGER LANDSCAPE

Managing the Endau-Panti-Sedili landscape as an integrated ecological unit in which biodiversity can coexist with economic activities.



## PP2: PULAI BIOSPHERE INITIATIVE

Managing the entire Pulai landscape as an integrated unit the ecological linkages between the sites as well as their relation to the growing urban landscape that surrounds them.

## PP5: SUNGAI JOHOR INTEGRATED RIVER BASIN MANAGEMENT

Strengthen the management of the Sg Johor basin to ensure the integrity of water supply to the state.



# STATE-WIDE PROGRAMMES



## PP1: WARISAN ALAM JOHOR

Mapping of Johor's natural heritage to improve decision-making, administration of land and natural and raising awareness.



## PP7: PEDESTRIAN AND CYCLING INFRASTRUCTURE

Promoting healthy lifestyle while reducing carbon footprint through enhancement of pedestrian and cycling infrastructure.



## PP8: LOW CARBON BUILDINGS

Reducing carbon footprint through green building and green infrastructure to spearhead low carbon regime.



## PP9: DAPUR HIJAU

Encouraging commercial kitchens and food premises to better manage their wastes through the implementation of the Best Management Practices.



## PP10: PELITA

Establishing cooking oil collection programme to reduce the amount of used cooking oil going into rivers and sewers.



## PP11: COMMUNITY EMPOWERMENT PROGRAMME

Enhancing participation of local communities, civil society and the private sector in natural resources management.



# 1

## PRIORITY PROGRAMME

# WARISAN ALAM JOHOR



**Johor** is blessed with an astounding wealth of biological diversity within its terrestrial, freshwater and marine realms. This rich biodiversity includes unique habitats and landscapes as well as a myriad of endemic plants and animals that cannot be found anywhere else in the country, or even the world.

Unfortunately, much of this unique heritage has not been mapped or well-documented. This is a problem because land administrators and policy makers do not have the accurate information to base their decision on. This often leads to important environmental sites being alienated for other forms of

development, rendering the state's natural heritage being damaged or compromised.

Besides documenting the state's heritage, action must also be taken to ensure that the people of Johor are familiar with, and are proud of, their natural heritage, and subsequently what needs to be done to protect it. Concerted effort must therefore be taken to educate and raise the awareness. In tandem, a better understanding of this natural heritage, and appropriate legislation will be needed for the State and its people to exert greater control over this natural heritage - including its wise use, management, conservation.





## PP1: WARISAN ALAM JOHOR

### OBJECTIVES

- To map and document the natural heritage of Johor
- To enable land and natural resource administrators to make informed decisions.
- To raise awareness among the people of Johor about the uniqueness and importance of their natural heritage.

### RELATED POLICY THRUSTS

1, 4, and 5

### 4 KEY COMPONENTS

- Mapping of Johor's Natural Heritage
- Warisan Alam Johor Clearing House Mechanism
- Warisan Alam Johor CEPA programme
- Johor Sustainability Training Series

### LEAD AGENCY

JNPC

### PARTNERS

IRDA, Johor State Forestry Department, PERHILITAN, UTM, UTHM, Yayasan Warisan Johor

## KEY COMPONENTS

### 1 Mapping of Johor's Natural Heritage

The first step towards protecting Johor's natural heritage is to document and map the various natural ecosystems in the State. This shall include a description of its uniqueness, key species present in each habitat as well as land status. Results of past research, various surveys already ongoing and information available at various government agencies and research institutions shall be used to populate this map.

### 2 Warisan Alam Johor Clearing House Mechanism

A basic requirement in protecting Johor's natural heritage is to ensure that useful and reliable information on natural heritage is accessible in a form useful to policy makers and land administrators. This includes information on whether a particular area contains important biodiversity or ecosystem services. As such, a Warisan Alam Johor Heritage Clearing House Mechanism (CHM) shall be developed, loosely based on the National CHM ([www.mybis.gov.my](http://www.mybis.gov.my)). The CHM should include, in text as well as spatial format (GIS maps produced in Component 1), findings from all relevant surveys conducted in the State, and data from government agencies and research institutions.





### **3 Warisan Alam Johor CEPA Programme**

An exciting and innovative CEPA (Communications, Education and Public Awareness) programme shall be initiated to raise the awareness of the people of Johor on their unique natural heritage. This programme shall include modules tailored for specific target groups including government agencies, the private sector, urban and rural communities, as well as youth and school children. Activities shall include talks and exhibitions at public areas, experiential learning programmes, seminar and workshops, promotional videos, brochures and posters as well as regular media blitz.

### **4 Johor Sustainability Training Series**

A training course series on sustainable development in Johor shall be conducted annually. These courses shall be made mandatory for officers from relevant government agencies whose scope of work is related to, or has bearing on natural resources conservation in Johor. The courses will combine lecture sessions, group work, discussions and site visits to bring about effective learning. Relevant experts shall, especially those with experience in Johor shall be called upon to contribute lectures or activities on specific topics.





## 2

## PRIORITY PROGRAMME

## PULAI BIOSPHERE INITIATIVE



**The** Pulai landscape, which consists of the Pulai river basin from Gunung Pulai down to the Tebrau Straits, boasts several important ecological sites such as the Sg. Pulai Ramsar Site, Tg. Piai Ramsar Site, Pulau Kukup Ramsar site, Gunung Pulai Forest Reserve and Pulau Merambong. Coastal marine habitats here include the mangroves, mudflats and seagrass beds. The mudflats along the west coast form part of Johor's Southwest Coast Important Bird Area. The seas in the south will soon be declared as a Particularly Sensitive Sea Area by International Maritime Organisation.

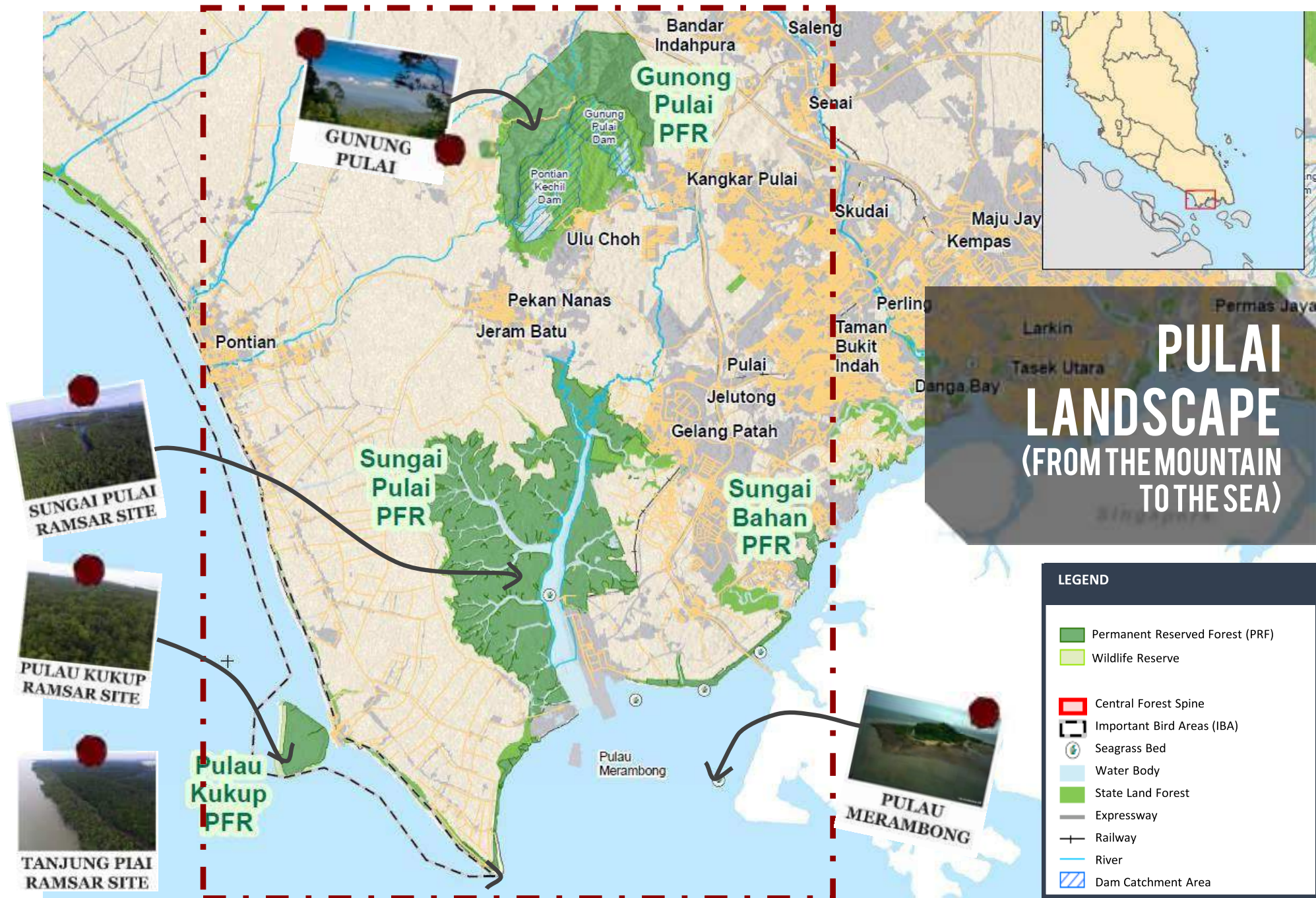
These ecological sites, which are linked by the Sg. Pulai and coastline, are surrounded by a matrix of human settlements and industrial zones - including the town of Pekan Nanas as

well as new centres of development in this part of Iskandar Malaysia. While many of the ecologically important sites here have been protected, it is important that the entire landscape is managed as an integrated unit, taking into consideration the ecological linkages between the sites as well as their relation to the growing urban landscape that surrounds them.

This programme will require a multi stakeholder partnership involving several government agencies, private entities, as well as local communities in the area. The programme could be integrated with IRDA's proposed PESISIR programme. There is potential for seeking UNESCO Man and Biosphere Reserve status for this area.









## PP2: PULAI BIOSPHERE INITIATIVE

### OBJECTIVES

- To conserve the mangrove, forests and coastal ecosystems in southwest Johor.
- To become a centre of excellence for Mangrove and Coastal Ecosystem research & conservation.
- To become a model site for multi-stakeholder partnership for sustainable development.
- To enhance local community involvement in nature conservation.
- To promote and increase nature tourism.

### RELATED POLICY THRUSTS

1, 4, and 5

### 6 KEY COMPONENTS

- Management Plan For the Pulau Biosphere
- Field Station and Visitor Centre at Sungai Pulau Ramsar Site
- Gunung Pulau - Sungai Pulau Riverine Linkage
- Mangrove and Coastal Ecosystem Research Programme
- Private Sector and Local Communities Stewardship
- Nature Education and Tourism Programme

### LEAD AGENCY

Johor Forestry State Department

### PARTNERS

JNPC, IISJ-UTM, JPBD Johor, IRDA, J-Biotech, Johor Department of Fisheries, Majlis Daerah Pontian, Johor Port Authority, private sectors, local communities and NGOs.

### KEY COMPONENTS

#### 1 Management Plan for the Pulau Biosphere

Management plans shall be formulated for the Pulau Biosphere as a whole as well as for specific sites (i.e. Gunung Pulau, Pulau Merambong, Tg Piai and Pulau Kukup). The management plans shall address the land use zoning, management regime, roles and responsibilities and financing requirements. Advocacy and outreach work for the Pekan Nenas and surrounding communities should also be included in the management plans.

#### 2 Field Station and Visitor Centre at Sg. Pulau Ramsar Site

A field station cum visitor centre shall be established at the Sungai Pulau Ramsar Site to facilitate research and to encourage nature tourism. The functions of the field centre could include (a) staging point for field research; (b) interim sample storage; (c) rest area for researchers; (d) nature interpretation centre; and (e) tourist management office.



### **3 Gunung Pulai - Sungai Pulai riverine linkage**

The ecological connectivity between Gunung Pulai and Sungai Pulai Ramsar Site shall be improved via enhancement of the riparian corridor. The riparian corridor is presently the only viable ecological link connecting Gunung Pulai to the Sungai Pulai wetlands. The enhancement of the riparian reserve will entail, among other things, enrichment planting and provision of wildlife passages.

### **4 Mangrove and Coastal Ecosystem Research Programme**

The Pulai biosphere shall serve as an open laboratory and enable multidisciplinary research on mangrove and marine biodiversity, hydrology and environmental health and the linkages with development and quality of life. Local universities shall be encouraged to conduct multi-disciplinary research here.

### **5 Private Sector and Local Communities Stewardship**

The private sector and local communities within and adjacent to the Pulai Biosphere shall be encouraged to adopt and conserve various important areas within the biosphere. Partnerships between local communities, private sector, civil society and government agencies shall be established.

### **6 Nature Education and Tourism Programme**

Nature tourism and education programmes shall be developed to attract visitors to the Sungai Pulai Ramsar site as well as to the rest of the Pulai Biosphere. The programme shall focus on the coastal and mangrove ecosystem and shall include a focus on local community participation.





# 3

## PRIORITY PROGRAMME

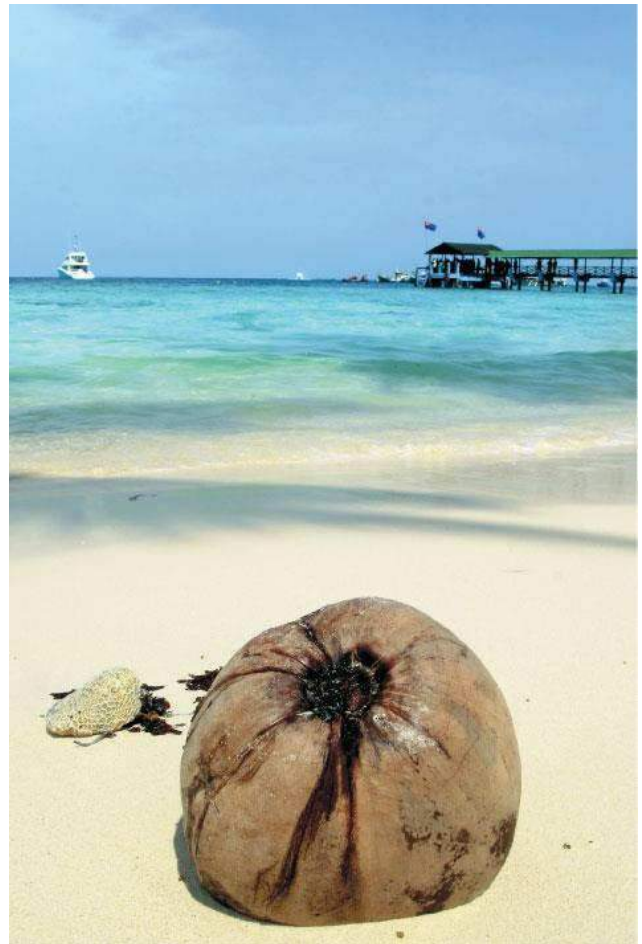
### ROYAL ISKANDAR MARINE CONSERVATION AREA



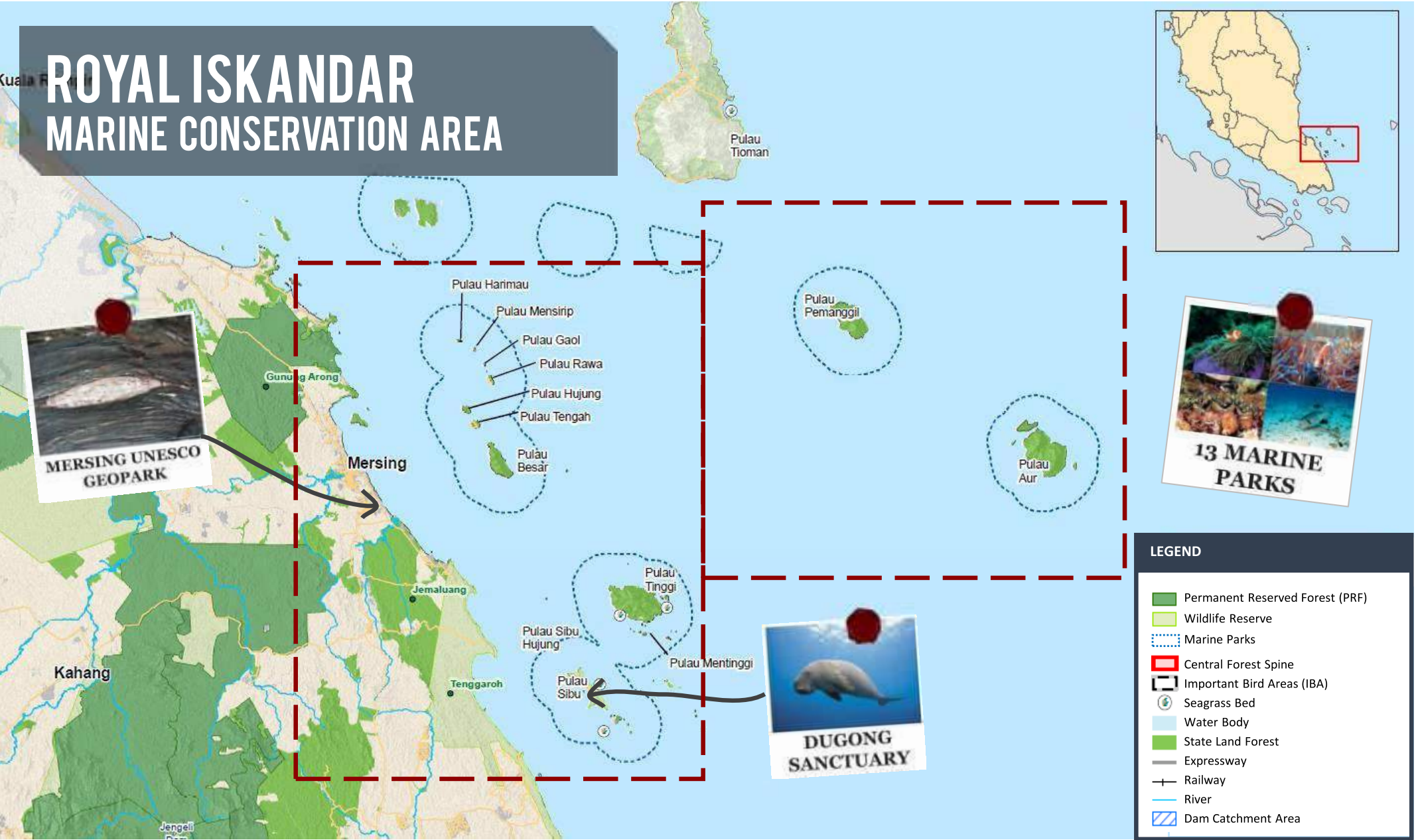
The pristine waters off the east coast of Johor are rich in biodiversity. Many of the small but beautiful islands here possess a combination of coral reefs, white sandy beaches and unique geological formations, making them important tourism destinations. The islands further offshore in particular, such as Pulau Aur, Pulau Dayang and Pulau Pemanggil possess beautiful dive sites that offer divers a chance to view pelagic species such as whale sharks and manta rays.

The Pulau Tinggi group of islands has the second highest coral species richness in Peninsular Malaysia (155 species), after the Pulau Tioman group. Extensive seagrass beds occur just beyond the coral reefs, in particular off Pulau Sibul and Pulau Tinggi. These marine habitats are believed to support the most significant concentration of dugongs in Peninsular Malaysia. Endangered green and hawksbill turtles also nest on the sandy beaches here.

Significant steps have been undertaken to conserve this rich marine biodiversity. Waters around 13 islands were gazetted as Marine Parks in 1994, under the Fisheries Act 1985. Turtle hatcheries set up on Pulau Tinggi and Pulau Tengah contribute towards turtle conservation as well as public participation and awareness. A number of initiatives have been carried out over the years to breed endangered giant clams in these pristine waters. More recently, the Johor State government has committed to the establishment of a dugong sanctuary encompassing some parts of the Mersing Archipelago and adjacent waters.



To further strengthen the conservation and management of this area, it is proposed that the Royal Iskandar Marine Conservation Area (RIMCA) be established. This large conservation area covering both the waters between the existing Marine Parks and the islands themselves, would allow for greater control over development and management on the islands, as well as enable implementation of a holistic approach to sustaining marine biodiversity and ensure sustainable fisheries within the surrounding marine waters.





### PP3: ROYAL ISKANDAR MARINE CONSERVATION AREA

#### OBJECTIVES

- To establish a large marine conservation area where resource utilization (particularly fisheries and tourism) can be managed holistically to ensure the long term health of this fragile seascape.
- To harness the strengths of all relevant stakeholders towards the conservation and protection the area's rich marine biodiversity.

#### RELATED POLICY THRUSTS

1, 3, 4, and 5

#### 8 KEY COMPONENTS

- Rimca Management Plan
- Establish Legal Protection for Rimca
- Ecosystem Approach to Fisheries Management Pilot Project
- Johor Dugong Sanctuary
- Fishermen - Tourism Reorientation Programme
- Responsible Tourism Programme
- Mersing Unesco Geopark
- Smart Partnerships for Co-Management

#### LEAD AGENCY

Johor National Parks Corporation

#### PARTNERS

Department of Marine Parks Peninsular Malaysia, Department of Fisheries Johor, JPBD Johor, J-Biotech Majlis Daerah Mersing, ECERDC, Tourism Johor, NGOs and local communities.

### KEY COMPONENTS

#### 1 RIMCA Management Plan

A management plan shall be formulated for RIMCA, together with a business/sustainable financing plan that sets out the mechanisms required to implement the management plan. The management plan shall be developed through a comprehensive stakeholder engagement process. The plan shall also include the strategies and action plans of the Rancangan Kawasan Khas for the islands. Key components to be covered in the management plan include (but are not limited to):

- **Governance** - Roles and responsibilities, committees and working groups, etc.
- **Protection** - Patrolling, enforcement, zoning, boundary demarcation, etc.
- **Ecosystem management** - Habitat monitoring, rehabilitation projects, etc.
- **Stakeholder engagement** - Local community engagement framework, grievance mechanisms, public awareness, etc.
- **Capacity building** - Human resource development, equipment and software, etc.

In parallel, a study shall be undertaken to design the conservation area, particularly to delineate the boundaries and management prescriptions (see Component 2). This multi-





disciplinary study should be undertaken with appropriate scientific inputs, and through a comprehensive consultation process with the local community.

## 2 Establish Legal Protection for RIMCA

Appropriate State legislation should be used to gazette this conservation area. A suitable candidate is the National Parks (Johor) Corporation Enactment 1989, in which case the Johor National Parks Corporation will serve as the management authority. The Enactment, which was designed mainly for terrestrial parks, will need to be revised to include rules necessary for the management of a marine conservation area. For example, additional clauses will be required to enable the implementation of management zones as well as to provide mechanisms for co-management and co-enforcement, taking into consideration other relevant legislation such as the Fisheries Act 1985. Membership of the Corporation and its Technical Advisory Committee will also need to be expanded to add relevant marine stakeholders. The review should also include a comprehensive assessment of the jurisdictional issues involved, and identify the best options to resolve these issues. Because of the over-lapping jurisdictions with the Federal government, a co-management option needs to be explored.

## 3 Ecosystem Approach to Fisheries Management Pilot Project

The creation of a large conservation area provides an excellent opportunity for implementation of an Ecosystem Approach to Fisheries Management (EAFM) pilot project. EAFM is a holistic approach to fisheries that Malaysia has committed to, aimed at sustaining the long term health of marine ecosystems and fish stock. The main actions to be taken in this pilot project include (but not limited to):

- **Habitat survey and mapping** - To survey and map all habitats that serve as nurseries for fish stock, including seagrass beds, coral reefs and mangroves.
- **Fisheries survey** - To investigate the current fishing effort, locations (where the fish are caught) and patterns, as well as the socio-economic status of the local fishing community.
- **Zoning** - Revise current fishing zones based on the findings of the above survey and negotiations with the fishing community. If possible, trawlers and purse seines should be excluded from RIMCA altogether, while priority be given to local, small scale fishermen.
- **Regulate fisheries** - E.g. regulate the maximum catch per unit, maximum sustainable yield and minimum catch size (for top commercial species), net mesh size to reduce amount of trash fish captured, inclusion of turtle exclusion devices, regulation of artisanal fisheries to use only tended nets, etc.
- **Monitor, evaluate and adapt** - Sufficient mechanisms should be provided for adaptive management, i.e. to review and adapt the programme periodically based on new information (e.g. actions to be taken during periods of coral bleaching)

## 4 Johor Dugong Sanctuary

The area around Pulau Sibul and Pulau Tinggi is important for the dugongs. In recent years between 30-50 dugong spotted have been spotted here. A dugong sanctuary shall be established in this area where seagrass is still in abundant. The sanctuary shall include a watch area and marine passage area to prevent vessels from passing through the area where dugong usually roam.



## 5 Fishermen - Tourism Reorientation Programme

The added regulations and limitations on fisheries in RIMCA will likely impact on the local fishing industry. On the other hand, new jobs and opportunities will be created in the service sector with the expected growth of tourism industry. As such, a programme shall be developed to help reorientate fishermen (particularly those in the trawling industry) into the tourism sector (e.g. as boatmen or in sports fishing). The programme may include retraining, job placements, and seed grants for small businesses. Robust community consultation will be required to design this programme.

## 6 Responsible Tourism Programme

While island tourism is dependent on healthy ecosystems and pristine environments, uncontrolled tourism development and irresponsible tourism operators can often lead to the deterioration of these key ingredients. In this, the tourism industry here (resorts, dive operators, etc.) should be geared towards responsible tourism, through a mix of appropriate regulations, training and incentives (such as awards and eco-certification). The industry shall also be encouraged to take the extra step to initiate conservation projects. A good example already exists here - since 2014, a private resort has been successfully operating a turtle hatchery on Pulau Tengah ([www.turtlewatchcamp.org](http://www.turtlewatchcamp.org)) among other things.

## 7 Mersing UNESCO Geopark

Apart from having a rich marine biodiversity, the region has unique geological features of international significance. As such, ongoing efforts to list the Mersing islands as a UNESCO Geopark shall be continued. The UNESCO listing will provide an added impetus for ecotourism as well as conservation.

## 8 Smart Partnerships for Co-Management

Substantial funds, resources and expertise are required to manage large marine conservation areas. No single agency would be able to do this alone. Smart partnerships should therefore be developed to leverage on the strengths of key stakeholders. This includes (but not limited to):

- **Government agencies** - the Department of Fisheries, Department of Marine Parks Malaysia and Malaysian Maritime Enforcement Agency (MMEA) will need to play important roles in monitoring and enforcement.
- **NGOs and private sector** - there is merit of delegating management of the area (or parts of the area) to private entities or NGOs that have the expertise and funds needed to do the job. Such a public-private partnership model has been done in Sabah, where management of a marine conservation area has been leased to a private company since 2013, with good results ([www.reefguardian.com.my](http://www.reefguardian.com.my)).



# 4

## PRIORITY PROGRAMME

# SOUTHERN TIGER LANDSCAPE



**The** Southern Tiger Landscape (STL) i.e. the forests of eastern Johor stretching from Endau-Rompin National Park down to the Panty Bird Sanctuary, is the largest remaining forested landscape in southern Peninsular Malaysia. The STL is one of the country's last strongholds for the critically endangered Malayan tiger as well as other large mammals such as the Asian elephant, Malayan tapir and Bearded pig.

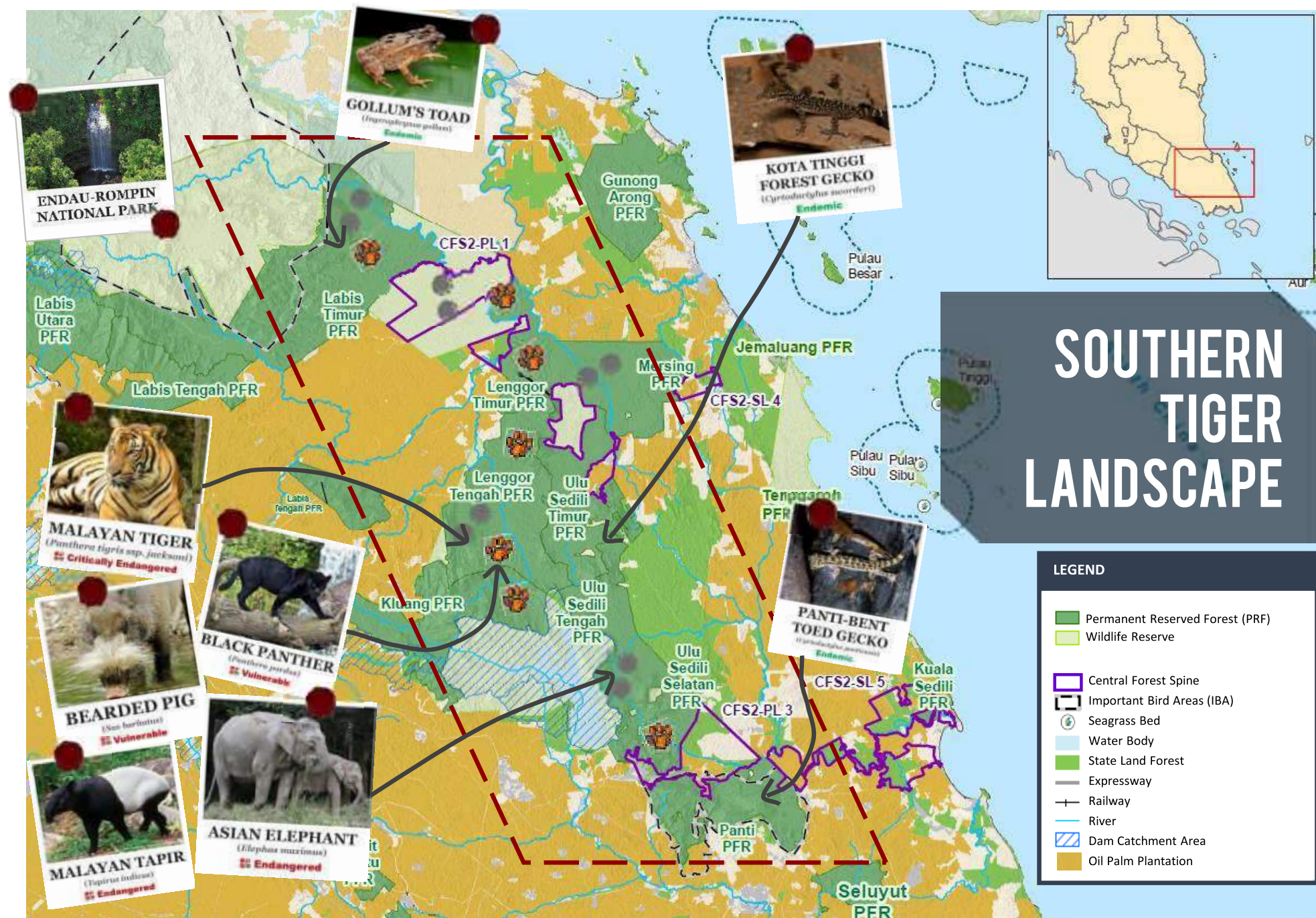
This landscape supports a bird life of global significance, with two sites (Endau-Rompin and Panty) listed as Important Bird Areas by BirdLife International. Endemic reptiles and amphibians have also been discovered here, including the Kota-Tinggi forest gecko, Panty bent-toed gecko and Gollum's toad. In terms of plant life, the flora of eastern Johor is distinct from the rest of Peninsular Malaysia and has a number of plants that are Johor endemics found nowhere else in the world.

Being the largest "green lung" in the State, the STL provides ecosystem services that are crucial to the well-being of Johoreans. To name a few, its catchment forests ensure a continued supply of freshwater; its forests and wetlands limit flooding intensity in downstream settlements; its natural attractions provide opportunities for tourism and recreation, and consequently business and employment for local communities.

Large portions of this landscape have been converted to plantations over previous decades, especially along the edges and in areas where forests were degraded from past logging activities. As a result, the landscape is now essentially a matrix of forest and plantations, interspersed with a few other types of land uses. Further conversion will split the remaining forests into smaller fragments.









There is real danger that the entire complex will be separated from the rest of the forests of Peninsular Malaysia with grave consequences on the landscape's ability to continue to support a rich biodiversity and provide invaluable ecosystem services.

Given that the STL is a very important area for Johor, it has to be managed with extra care, to ensure that this landscape matrix continues to support economic growth, while at the same time is able to still able to sustain a rich biodiversity and provide ecosystem services.

#### PP4: SOUTHERN TIGER LANDSCAPE

<p><b>OBJECTIVE</b></p> <p>To manage the landscape as an integrated ecological unit in which biodiversity can coexist with economic activities.</p>	<p><b>RELATED POLICY THRUSTS</b></p> <p>1, 4, and 5</p>	<p><b>5 KEY COMPONENTS</b></p> <ul style="list-style-type: none"> <li>▪ Rancangan Kawasan Khas for the STL</li> <li>▪ Re-establishment of Wildlife Corridors</li> <li>▪ Enhance the Johor Wildlife Conservation Project</li> <li>▪ Johor Elephant Sanctuary</li> <li>▪ STL Working Committee</li> </ul>
<p><b>LEAD AGENCY</b></p> <p>Jabatan Perhutanan Negeri Johor</p>	<p><b>PARTNERS</b></p> <p>JNPC, PERHILITAN Johor, JPBD Johor, Majlis Daerah Kota Tinggi, Majlis Daerah Mersing, Wildlife Conservation Society, local communities and plantation companies.</p>	

#### KEY COMPONENTS

1	<p><b>Rancangan Kawasan Khas for the STL</b></p> <p>A Special Area Plan (Rancangan Kawasan Khas) shall be formulated and gazetted under the Town and Country Planning Act to plan and control land use activities in the STL. This plan is to be developed through a comprehensive stakeholder engagement process, with sufficient scientific inputs. In this, a High Conservation Value (HCV) Assessment should be carried out to identify the core areas (forest reserves and other areas important for plant and wildlife conservation as well as provision of ecosystem services) where greater legal protection is required, future development should be avoided, and reforestation is to be carried out.</p>
2	<p><b>Re-Establishment of Wildlife Corridors</b></p> <p>Wildlife corridors shall be established in areas where forest fragmentation is most severe. Focus shall be on the two Primary Linkages (PL) and two Secondary Linkages (SL) identified in the Central Forest Spine Masterplan, namely:</p> <ul style="list-style-type: none"> <li>• PL1 (Labis Timur PRF - Lenggong PRF)</li> <li>• PL3 (Panti PRF - Ulu Sedili Selatan PRF)</li> <li>• SL4 (Mersing PRF - Jemaluang PRF)</li> <li>• SL5 (Panti PRF - Kuala Sedili PRF)</li> </ul>





### 3 Enhance the Johor Wildlife Conservation Project

The Johor Wildlife Conservation Project has been ongoing in the STL for almost a decade. Commendable effort has been taken by the State government and its partners to protect the tigers and other species here against poaching, particularly since 2009. There is still scope to enhance the project in various ways. For instance, securing long-term funding will enable JWCP member agencies to continue mobilising resources for joint patrols (e.g. to pay for staff allowance and other operational costs) as well as increase patrolling frequency and coverage (e.g. expand patrolling to include the Endau-Rompin National Park). Capacity building and greater recognition (e.g. national and international awards for the programme) are other areas that need to be looked into.

There is a good chance that this landscape management initiative, which will be the first of its kind in Peninsular Malaysia, will be able to attract conservation funds from international donors and private sector. This is provided that it is marketed well and there is a strong commitment to see through its implementation (this has worked in Sabah where significant funds have been secured for landscape conservation initiatives such as the Heart of Borneo and Malua Ulu Segama).

### 4 Johor Elephant Sanctuary

Establishment of an elephant sanctuary (JES) is currently underway in Pantii PRF. JES will assist in elephant conservation, ecotourism and for reducing human-elephant conflicts. The JES site is an opportunity for habitat enrichment and rehabilitation in accordance with CFS Master Plan and National Elephant Conservation Action Plan. JES shall also serve as a platform for local community participation to enhance the effectiveness of the conservation programme. The sanctuary shall be equipped with basic facilities such as (but not limited to) education centre, restaurants, viewing deck, feeding deck, and boardwalk. JES shall be managed as an integral part of the STL. The HSK Mersing, HSK Ulu Sedili, HSK Jemaluang, HSK Kluang dan HSK Pantii within the landscape will function as elephant roaming areas.

### 5 STL Working Committee

The STL Working Committee shall be established. An integrated approach to landscape management can only work with the support and cooperation of the many stakeholders who have an interest in the landscape. It would therefore be advantageous bring all of these stakeholders in the STL - from government agencies to plantation companies to NGOs and local communities - together under a common platform. This should lead to more structured participation (e.g. in the form of a landscape committee or working group), resulting in the development of voluntary initiatives to be carried out in this spirit of partnership.





# 5

## PRIORITY PROGRAMME

### SUNGAI JOHOR INTEGRATED RIVER BASIN MANAGEMENT



**Sungai** Johor is one of the most important rivers in the state. The river and its tributaries are important sources of water supply, for the state as well as Singapore. More than 50% of the state's water supply comes from this river. Syarikat Air Johor and the Public Utilities Board of Singapore (PUB) each extract approximately 250,000 cubic metres of water per day from the Sg. Johor. There are two dams in the basin, namely Linggiu dam and Lebam dam. The former supplements the water supply to both Johor and Singapore. Sg. Johor is therefore a very important asset for the state.



Despite being an important asset to the state, Sg. Johor is affected by many problems, particularly pollution. Sg. Johor has been experiencing significant water pollution which has led the frequent shutting down of water treatment plants. These disruptions affect several hundred thousand people in southern Johor. Development in upper catchment including numerous industries and conversion of land into urban uses affect the hydrology of the river and its water yield. The occasional droughts have also severely disrupted water supply. To ensure the integrity of the river and Johor's water supply, a holistic approach is needed manage the Sg. Johor basin.

#### PP5: SG. JOHOR INTEGRATED RIVER BASIN MANAGEMENT

<p><b>OBJECTIVE</b></p> <p>Strengthen the management of the Sg Johor basin to ensure the integrity of water supply to the state.</p>	<p><b>RELATED POLICY THRUSTS</b></p> <p>1, 3, 4, and 5</p>	<p><b>7 KEY COMPONENTS</b></p> <ul style="list-style-type: none"> <li>▪ Pollution Source Inventory and Mapping</li> <li>▪ Water Quality Simulation Model</li> <li>▪ Polluter Pay System for Effluent Discharge</li> <li>▪ Gazettement As Strategic Asset</li> <li>▪ River Water Quality Improvement Programme</li> <li>▪ IRBM Strategies and Action Plan</li> <li>▪ Public Outreach Programme</li> </ul>
<p><b>LEAD AGENCY</b></p> <p>DID Johor</p>	<p><b>PARTNERS</b></p> <p>BAKAJ, SAJ, DOE, IRDA and Local Authorities</p>	



## KEY COMPONENTS

<b>1</b>	<b>Pollution Source Inventory and Mapping</b>
	There are hundreds of pollution sources in the Sg. Johor basin and these have to be identified and mapped. Every single pollution source has to be documented and its loading determined. The pollution source inventory shall be developed on a GIS-based platform and made accessible to relevant stakeholders.
<b>2</b>	<b>Water Quality Simulation Model</b>
	A water quality model of the river basin shall be developed to assist in the prediction of water quality and effectiveness of pollution reduction measures. Besides that, it will also allow the model to predict the pollutant loading carrying capacity of the river in order to sustain or improve the water quality of the existing rivers.
<b>3</b>	<b>Polluter Pay System for Effluent Discharge</b>
	At present, most industries and other establishments that discharge effluents into the river do not have to pay a fee to the state regardless of the quantity of discharge. The situation, coupled with low penalties, does not provide any incentive for industries to minimise their discharges. A system of permits and fees based on the type and quantity of discharge shall be established to manage the effluent discharges. Any form of discharge into the river shall be chargeable. The legal framework for this system has to be developed. This will also provide a source of revenue to the state government.
<b>4</b>	<b>Gazettement of the River Basin</b>
	Protecting the upper reaches of Sg. Johor catchment, which is the source of water, is crucial. In this regard, the upper catchment of Sg. Johor basin shall be gazetted. This is to minimise incompatible land uses while providing better supervision and enforcement and facilitate the implementation of polluter pays principle and higher effluent standards.
<b>5</b>	<b>River Water Quality Improvement Programme</b>
	<p>A plan of action, founded strongly on the polluter pays principle, shall be formulated to address river water quality improvement and pollution prevention. Some of the key actions that needs to be examined include (but not limited to):</p> <ul style="list-style-type: none"> <li>• Improvements in the agriculture management practices</li> <li>• Better management practices and enforcement at industries and commercial premises</li> <li>• Riparian zone management</li> <li>• Solid waste management</li> <li>• Expanding the monitoring programme</li> <li>• Education and awareness</li> </ul>



## 6 Formulate Integrated River Basin Management Strategies and Action Plans

Short, medium and long-term action plans shall be formulated based on the critical issues that need to be addressed. Emphasis needs to be placed on securing the water supply, minimizing flooding and maintaining water quality. The action plans for the implementation of IRBM will be formulated according to sub-catchments and shall be specific, objective and time-based. Implementation schedules for each action plan shall be drawn up. Implementing agencies and organisations shall be identified and assigned according the respective jurisdictions.

As part of the overall strategy, important conservation areas in the catchment shall be identified and proposed for conservation. The mechanism for conservation shall also be detailed, e.g. gazetting as forest reserve, changing the classification of the existing forest reserves, land use restrictions and zoning, etc. The mechanisms for conservation shall also be identified.

## 7 Public Outreach Programme

A Public Outreach Programme shall be developed to create partnerships with stakeholders within the river basin to reduce pollution. The target groups should at least (but not limited to) include the local communities, schools, restaurants, developers and industries. The outreach programme shall address pollution by:

- Promoting a sense of ownership towards the river
- Educating the public on common do's and don'ts and other skills to reduce pollution.
- Initiating long term and sustainable change in behaviour towards protecting the river.





# 6

## PRIORITY PROGRAMME

# SUNGAI MUAR INTEGRATED RIVER BASIN MANAGEMENT



**Sungai** Muar river basin has a catchment area of 6,560 km<sup>2</sup> within Pahang, Melaka, Negeri Sembilan and Johor. More than half of catchment area is in Johor and the river fulfill 14% of the state water needs.

Sg. Muar is one of the large and important rivers in Malaysia, with significant influence over the socio-economic status of the surrounding communities. the Muar River has very much to offer to its communities, especially in terms of agriculture, aquaculture, and recreational activities (leisure fishing, boating, etc.), and it is still the sole source of drinking water for the entire Muar District, a large section of the Ledang District and a reserved water reservoir for the Melaka state.

The large catchment of Sg. Muar encompasses developed areas with high water demand across four states. Besides increasing water extraction and drought, Sg. Muar also suffers from saltwater intrusion. This phenomenon has led to disruption in water supply and decline in fish stock that affects not just Johoreans, but also neighboring states. In future, the risk of further saltwater intrusion is high due to rising sea level compounded by lower surface runoff.

Sg. Muar also faces other issues such as flooding, land acidity near water intake points, increasing demand for water and construction of river by-pass that could increase the rate of saltwater intrusion in dry season. Historically, Muar River Basin has experienced frequent flooding over the years, there had been series of heavy rainfall events that had resulted in flooding within the catchment. Many surrounding areas of Muar such as Pagoh, Lenga, Kundang Ulu, Bukit Gambir and Sawah Ring are prone to flood. From 1980 to 2010, a total of 29 flood events have been recorded.

To enhance this, a holistic approach in managing the river basin is necessary to ensure the integrity Sg. Muar and adequate water supply.



**PP6: SG. MUAR INTEGRATED RIVER BASIN MANAGEMENT**

<b>OBJECTIVE</b>  Strengthen the management of the Sg Muar basin to ensure the integrity of water supply and reduce floods.	<b>RELATED POLICY THRUSTS</b>  1, 3, 4, and 5	<b>4 KEY COMPONENTS</b> <ul style="list-style-type: none"> <li>• Flood Mitigation Programme</li> <li>• Saline Intrusion Prevention</li> <li>• Gunung Ledang - Sg. Muar Ecological Linkage</li> <li>• IRBM Action Plan</li> </ul>
<b>LEAD AGENCY</b>  DID Johor	<b>PARTNERS</b>  SAJ, BAKAJ, DOE Johor, Local Authorities	

**KEY COMPONENTS****1 Flood Mitigation Programme**

The state has prepared the Sg. Muar Flood Mitigation Plan that aims to reduce 43% of flood affected area in Muar and Ledang. Besides structural approaches and enhancement in infrastructure, other non-structural aspects such as below shall be considered to enhance the effectiveness in avoiding and minimising floods (but not limited to):

**Flood Risk Mapping**

A detailed flood risk map shall be developed to improve planning. The map shall take into account the social-economy and land use. The map shall be made available to the public as information and guide.

**Implementing MSMA**

MSMA practices that was introduced to compliment non-structural measures with structural measures shall be used thoroughly for all future developments.

**Increasing Community Awareness**

Campaign and awareness programme at community level shall be enhanced to increase public readiness in facing flood. These entails knowledge on flood, procedures during flood evacuation and how their lifestyle can influence flood risk.

**2 Prevention of Saline Intrusion**

The intrusion of saltwater happens when a river does not have enough compensation flow mainly due to excessive raw water extraction and enlarged river sections. As a result, sea water infiltrate the river and flows inward, mixing with local freshwater supply. The Muar Flood Mitigation Works have proposed building of Tidal Barrage and Lower Muar Bypasses to reduce the risk of saline intrusion, however soft-approach such as below planning measures shall be undertaken (but not limited to) as well to improve the effectiveness:



### **Water Demand Management**

An improved collaboration is needed between Local Authorities and state governments of Malacca, Johor and Negeri Sembilan to develop a framework to manage water demand and to maintain compensation flow in Panchor intake.

### **Conservation of Peatlands**

Among the ecosystem services provided by peatlands include preventing saline water intrusion and maintaining minimum flows in rivers. Therefore, remaining peatlands in Muar catchment shall be kept intact and not converted to agricultural use, while degraded peatlands should be rehabilitated.

### **Hydrological and Climate Modelling System**

Climate modelling shall be developed to anticipate future changes which takes into account the aspects that increase the severity of saltwater intrusion i.e. increasing temperatures, changes to precipitation patterns, rising sea level, and coastal erosion. This shall also include long-term monitoring of the saltwater-freshwater interface, particularly at sites identified as potentially sensitive to intrusion in Muar basin.

## **3 Gunung Ledang - Sg. Muar Ecological Linkage**

A viable ecological connectivity between Gunung Ledang and Sungai Muar shall be established via enhancement of the riparian corridor. The enhancement of the riparian reserve will entail, among other things, enrichment planting and provision of wildlife passages. The riparian corridor will also enhance Gunung Ledang National Park as tourist attraction.

## **4 IRBM Strategies & Action Plan**

An IRBM plan has been developed for Sg. Muar, but to ensure successful implementation of the plan, below measures shall be implemented:

### **Action Plans**

Short, medium and long-term action plans shall be formulated based on the critical issues that need to be addressed. The action plans for the implementation of IRBM will be delineated according to sub-catchments and shall be objective and time-based. Implementation schedules for each action plan shall be drawn up. Implementing agencies shall be identified and assigned according the respective jurisdictions.

### **Land Conservation**

As part of the overall strategy, important conservation areas in the catchment shall be identified for protection. The mechanism for conservation shall also be detailed, e.g. gazetting as forest reserve, changing the classification of the existing forest reserves, land use restrictions and zoning, etc. The mechanisms for conservation shall also be identified.

### **Sg. Muar Coordination Committee**

Sg. Muar catchment encompass number of states, therefore the issues related are often transboundary in nature. An IRBM coordination committee between Johor, Melaka, Negeri Sembilan and Pahang shall be established. The committee shall be used as a common platform for all stakeholders to address challenges and come up with solutions together, particularly to prevent over extraction during dry season.





# 7

## PRIORITY PROGRAMME

### PEDESTRIAN & CYCLING INFRASTRUCTURE



**Efficient** and environment-friendly mobility is key to achieving low-carbon growth. The state has made substantial progress by formulating its public transportation masterplan as well as many other initiatives including the free Bus Muafakat Johor. In addition, a masterplan for pedestrian facilities and cycling infrastructure within Iskandar Malaysia has also been developed. The implementation of the green mobility programmes is important to ensure that Johor can enjoy a sustainable mobility that is efficient. It will also help the nation achieve its carbon reduction targets i.e. a voluntary reduction of up to 40% in terms of emissions intensity by the year 2020 compared to 2005 levels.

In this regard, provision of pedestrian and cycling infrastructure is very important - both to reduce congestion and carbon emission as well as to promote a healthier lifestyle. However, in Johor as a whole, pedestrian and cycling infrastructure is limited and available in only certain areas of the state, mostly in park areas and city centres. Even when they are present, pedestrian walkways and cycling lanes are not integrated. As a result, people are unwilling to walk and continue to rely on private motorised transport. These infrastructures need to be substantially enhanced.



#### PP7: PEDESTRIAN AND CYCLING INFRASTRUCTURE

<b>OBJECTIVES</b> <ul style="list-style-type: none"> <li>• Reduce traffic congestion, carbon emission and carbon footprints</li> <li>• Promote healthy lifestyle</li> </ul>	<b>RELATED POLICY THRUSTS</b> <p>2, 3 and 5</p>	<b>3 KEY COMPONENTS</b> <ul style="list-style-type: none"> <li>• Implementation of IM Pedestrian and Cycling Masterplan</li> <li>• Enhancement of Pedestrian and Cycling Infrastructure in other towns</li> <li>• Car-Free Day Programme</li> </ul>
<b>LEAD AGENCY</b> <p>Local Authorities</p>	<b>PARTNERS</b> <p>UPEN, JPBD Johor, IRDA, SPAN, PAJ, JKR, UTM, UTHM</p>	



## KEY COMPONENTS

### 1 Implementation of Master Plan and Guideline on Connected Pedestrian Walk and Cycle Lane for Iskandar Malaysia

The already existing 'Master Plan and Guideline on Connected Pedestrian Walk and Cycle Lane for Iskandar Malaysia' was developed by IRDA under its low carbon society blueprint. The guideline aims towards promoting healthy lifestyle besides reducing carbon emission and to support the effort for controlling the carbon footprint campaign. The master plan shall be used a primary document to improve pedestrian and cycling infrastructure in towns of Iskandar Malaysia.

In the plan, five non-motorized transport (NMT) pilot route have been recommended which include JB CBD Pilot NMT route, Nusajaya Pilot NMT route, Pasir Gudang Pilot Route, Kulai Pilot NMT route and Pontian Pilot NMT route. The pilot projects shall be prioritised and be implemented by PBT in collaboration with private agencies. IRDA shall facilitate these pilot projects.

### 2 Enhancement of Pedestrian and Cycling Infrastructure in other towns

Many PBTs in Johor have already embarked on pedestrianisation of its towns as outlined in their local plans. The newly completed Johor Transportation Master Plan have also prioritises green mobility and non-motoried transport to spearhead Johor as a low carbon state by 2045. To realise this vision, below actions shall be considered in town planning (but not limited to):

- I. Establishing bicycle pathway network within 2 km from the main terminal, 1 km from small terminal and 500 m from local station.
- II. Establishing pedestrian lane network within 400 m of integrated terminal and the main terminal, 200 m from small terminal and 100 m from local station.
- III. Preparation of layout plan shall consider non-motorised transport lane as below.



- IV. Preparation of Master Plan for Non-Motorised Transport in every city centres and terminal areas.



Existing roads shall be retrofitted to improve its conditions with the additions of NMT elements. In providing NMT routes, common principles shall be used which includes ensuring a safety environment for the lanes, accessible to all users, connectivity to various destinations, attractive and comfortable lanes.

### 3 Car-Free Day Programme

A car free day encourages motorists to give up their cars for a day, and either walk, cycle or use public transport to move from one place to another. It promotes a greener means of travelling and brings awareness to the benefits of travel options such as walking, cycling, transit, public transport. Besides elevating traffic congestion, it also helps Johor to reduce greenhouse gas emissions.

The car-free day programme shall be implemented by all Local Authorities. The first phase of the programme shall begin in Batu Pahat, Muar and Kluang and all the local authorities within Iskandar Malaysia.

Key developments of the programs:

- Identify the date, duration and location of the program
- Establish the rules and guides for the program
- Encourage the community to participate
- Introduce a festival or community based activities





## 8

## PRIORITY PROGRAMME

## LOW CARBON BUILDINGS



**Johor** has been enjoying rapid economic growth especially in Iskandar Malaysia. This growth has instigated rapid urbanization and it is anticipated that nearly 80% of Johor's population will live in urban areas by 2025. As the state continues to grow, it is expected that more buildings and infrastructure will be built to support the population and the economy. While these are important to nurture competitive economy, Johor aspiration of moving to low carbon regime requires reduction in carbon emission intensity without compromising economic growth. Iskandar Malaysia has already formulated its Low Carbon Society (LCS) Blueprint including specific plans of action for five Local Authorities. Many programmes and activities have been identified in the LCS Blueprint and implementation has begun in some areas.



Greening the buildings by adopting energy and water efficiency practice, waste reduction and use of sustainable materials is a practical way for a city to reduce its overall carbon footprint.

PP8: LOW CARBON BUILDINGS		
<b>OBJECTIVE</b>  Reduce carbon footprint and greenhouse gases emission through green building and green infrastructure.	<b>RELATED POLICY THRUSTS</b>  2, 3 and 5	<b>5 KEY COMPONENTS</b> <ul style="list-style-type: none"> <li>• Green Building and Design in New Development</li> <li>• Energy Audit and Monitoring</li> <li>• Retrofitting Existing Buildings for Energy Efficiency</li> <li>• Green Building Showcase</li> <li>• Green Infrastructure Partnership</li> </ul>
<b>LEAD AGENCY</b>  Local Authorities	<b>PARTNERS</b>  IRDA, JKR, JPBD Johor, Malaysia Institute of Planners Johor, Malaysian Institute of Architects Johor (PAM), REDHA, CIDB, UTM Asia Low Carbon Research Centre	





## KEY COMPONENTS

### 1 Green Buildings and Designs in New Development

Currently, green buildings standards are not mandatory in Johor and plan application process is not tied to any green criteria. To realise the aspirations of the state government, all local authorities in Johor shall adapt a new green criterion i.e. “Johor Green Building Standards” for all new developments. This standard shall be used within the development planning and approval process. Compliance to green standards shall be part of the application submission. This includes (but not limited to):

- Establish the ‘Johor Green Building Standards’ with comprehensive point system, rating and awards.
- Expedite the approval process for buildings that pursue green standards.
- Buildings in high growth areas are required to be developed under the condition of high score ratings.

There are several green building assessment and rating tools and certifications established by various parties. Notable examples are LEED, Green Building Index (GBI), GAIA by IRDA, MyCrest by CIDB as well as CASBEE, the assessment tool used by Iskandar Malaysia. While Johor Green Building Standards shall be the general standards for Johor, it is also necessary to allow for multiple rating and certification system across all sectors for building owners.

### 2 Energy Audit and Monitoring

There is no monitoring and audit being done regularly to assess building performance and energy efficiency as of now. A state-wide program for each buildings owners to undergo energy assessments and monitoring from time to time is required to identify and quantify areas of energy wastages and also determine cost-effective saving measures. The Building Energy Monitoring and Reporting System (BEMRS) currently being developed for use in Iskandar Malaysia can be used as a template for the rest of Johor.

### 3 Retrofitting Existing Buildings for Energy Efficiency

Nearly all existing buildings in Johor are not designed according to any green standards. Most of these buildings are still utilising old technology and are far from being energy efficient. Retrofitting old buildings can be challenging depending on degree of retrofitting - e.g. from just shifting to LED light bulbs to complete overhaul in infrastructure. Pilot project and providing incentives can be a good start. This includes (but not limited to):

- Retrofit government buildings such as Wisma Persekutuan or Sultan Iskandar Building as pilot demonstration project.
- Provide incentives to buildings owners to make energy efficiency improvements in their buildings.



#### **4 Showcase of Green Building Prototype**

To promote green building infrastructure, the government shall take the lead. All new government buildings shall be constructed with green office design and practice using green tool providers such as GBI or CASBEE. Some 'high profile' areas such as Kota Iskandar in Iskandar Puteri serve as an ideal location. Setting up a prototype with government buildings as a showcase of the green building potentials to private sectors and the public can go a long way.

#### **5 Green Infrastructure Partnership**

At present, there is no platform for all stakeholders to connect and discuss ideas related to green infrastructure in Johor. The Green Infrastructure Partnership (GIP) shall serve as a multi-stakeholder roundtable consisting of various stakeholders in the building and construction industry. These include planners, architects, engineers, contractors, developers, manufacturers, researchers, civil societies and local authorities to support the creation, enhancement and promotion of green infrastructure. Stakeholders such as Pertubuhan Arkitek Malaysia, Real estate and Housing Developers Association and Construction Industry Development Board shall play a key role in facilitating green infrastructure growth among all parties. The MPLJ can play the coordinating role.



# 9

## PRIORITY PROGRAMME

# DAPUR HIJAU



**Food** wastes amount to 45% of the 1 million tonnes of waste that is generated in Johor every day. The available landfills in Johor are slowly reaching their respective capacities. While the state is actively looking for alternative ways to dispose waste, managing waste production at source is equally important - especially food wastes. Many restaurants and hawkers centres that operate in Johor are not equipped with adequate waste disposal systems. As a result, food wastes, including oil and grease, flow into the drains and contribute to river pollution.



DAPUR HIJAU is a voluntary program that aims to encourage commercial kitchens and food premises to better manage their wastes through the implementation of the DAPUR HIJAU Best Management Practices. The DAPUR HIJAU program entails the provision of technical assistance and branding and marketing activities to encourage commercial kitchens and food premises to better manage their wastes and reduce pollution to rivers.

### PP9: DAPUR HIJAU

<b>OBJECTIVE</b>  (a) Reduce pollution from commercial kitchens. (b) Reduce the amount of food wastes generated in Johor.	<b>RELATED POLICY THRUSTS</b>  2, 3 and 5	<b>5 KEY COMPONENTS</b> <ul style="list-style-type: none"> <li>• Identification of pilot batch of restaurants</li> <li>• Dapur Hijau Best Management Practices</li> <li>• Kitchen Audit and Training</li> <li>• Certification and Award System</li> <li>• Incentives and Promotion</li> </ul>
<b>LEAD AGENCY</b>  Local Authorities	<b>PARTNERS</b>  KPKT, KPDNKK, JKT, IRDA, SWCorp, DID, DOE	



## KEY COMPONENTS

### 1 Identification of Pilot Batch of Restaurants

The programme shall be initiated by identifying a pioneer batch of 20 - 30 restaurants to participate in the Dapur Hijau programme. It is preferable that the pioneering batch are long-established restaurants and are within the area of a single Local Authority. The pilot restaurants can be engaged during routine health inspection by the local authorities.

### 2 DAPUR HIJAU Best Management Practices

The Dapur Hijau A Best Management Practice document, which is a basic requirement in this programme, shall be developed, covering (but not limited to):

- **Operation** - sufficient facilities for food preparation and cleaning, functioning and connected oil & grease traps etc.
- **Disposal** - cleanliness of food preparation area, clean and covered bins, waste separation at sources, proper disposal of oil and grease, recycling cooking oil etc.
- **Housekeeping** - clean storm drain, no cleaning on pavements, regular cleaning, oil & grease trap maintenance etc.
- **Management and Continuous Improvement** - cleaning and maintenance log on display, educate kitchen staffs on BMP, signage posted, provide educational commentary to customers etc.

The BMP shall be developed together with the assistance of all stakeholders - Local authorities, SUKKT, KPKT, IRDA and KPDNKK and restaurant operators. BMP posters in multiple languages shall also be developed and distributed to all restaurants.

### 3 Kitchen Audit and Training

A kitchen audit and training programme is necessary to facilitate the implementation of the DAPUR HIJAU programme.

- In-situ training and baseline audit shall be conducted for participating restaurants.
- Training workshops shall be carried out involving both participating restaurants as well as non-participating restaurants. The workshop should cover importance of environmental care and the impact of non-compliance on the environment. Trainers should also provide suggestions to improve the constraints and issues faced by restaurant operators.
- After certain period of time, conduct a follow up audit to examine any improvements and compared the results from baseline audit.





## 4 Certification and Award System

The restaurants that fulfil the requirements of the Dapur Hijau and are audited can be certified. Monitoring and audit shall be done periodically to ensure the DAPUR HIJAU programme is sustainable and not a one-off. Participating restaurants and stalls must demonstrate commitment to:

- Train all staff to ensure that they fully understand and are able to carry out the practices in DAPUR HIJAU BMP.
- Invest in and properly maintain pollution prevention devices and equipment.
- Improve kitchen layout and infrastructure, where necessary, to reduce pollution to drains and rivers.
- Create awareness amongst other restaurants and patrons for reducing kitchen waste to drains and rivers.

Participants will be encouraged serve as champions or role models to influence other establishments and communities in their area. The restaurants could also collaborate with NGOs and residential association in organising these activities.

## 5 Incentives and Promotion

As the Dapur Hijau programme is voluntary, incentives shall be provided to encourage participation. The incentives could include (but not limited to):

- **Marketing & Publicity:** Participating restaurants shall be featured on the Jauhar website, public events and in the media (newspapers, television and blogs). They shall also be given promotional material to display in their premises.
- **Technical assistance:** Participating restaurants and stalls shall be given technical assistance and advice on Best Management Practices.
- **Waivers:** Participating restaurants and stalls may be given certain waiver on permits and fees.
- **Prestige:** Participating restaurants shall be invited to attend an award ceremony at the end of the programme to recognise their achievements.



# 10

## PRIORITY PROGRAMME

# PELITA



**Used** cooking oil is a major problem in terms of pollution of the rivers as well as clogging of sewers and drainage pipes. It is estimated that over 75,000,000 kg of cooking (vegetable) oil is used in Johor and much of this ends up in the drains, rivers and sewers. Pouring used cooking oil into sinks and drains will cause environmental pollution and increase the cost of sewerage system maintenance.



There is no organised programme to collect used cooking oil in the state. The quantity of used oil generated at each household is too small to make it viable for used oil collectors to go from house to house to collect them. While there is demand for used cooking oil as biodiesel, the infrastructure for collection is simply not adequate in Johor.



The PELITA programme aims to overcome the collection problem by establishing used oil collection points at neighbourhood centres such as mosques, temples and resident associations. Used cooking oil collection via these centres is practical as it provides an option for people to properly dispose of their used cooking oil. This programme can also provide incomes for the mosques, churches, temples and resident associations.

### PP10: PELITA

OBJECTIVE	RELATED POLICY THRUSTS	4 KEY COMPONENTS
Reduce the amount of used cooking oil going into rivers and sewers in Johor.	2, 4 and 5	<ul style="list-style-type: none"> <li>• Identification of Pilot Projects</li> <li>• Education and Awareness</li> <li>• PELITA Guideline</li> <li>• Forging of Smart Partnership</li> </ul>
LEAD AGENCY	PARTNERS	
Local Authorities	Residents Associations, Mosques, Churches, Temples, Used Oil Collectors, Community Centers	



## KEY COMPONENTS

### 1 Identification of Pilot Projects

The programme shall be initiated by identifying 10 - 15 organisations to participate in the Pelita programme. Coordination and logistic is crucial for the programme to be successful. Main activities shall be priorities first as per below (but not limited to):

- Engage communities or organisations that have already started similar programmes to find out lessons learnt.
- Engage mosque, temples, churches and RAs that are willing to participate.
- Engage used oil collectors and potential participating neighborhood centres to work out logistics.
- Official planning meeting with all partners to confirm programme.
- Logistics will include:
  - Supply of collection bins and outdoor tents (if necessary)
  - Marketing and communications
  - Collection location and schedule
  - Rates (profit-sharing between collectors and sellers)

### 2 PELITA Education and Awareness

Used cooking oil is consider a grey area for many because it is not clearly stipulated in any laws or guidelines so far. The problem can arise when the used cooking oil are collected indiscriminately from food stalls and kitchens and processed for use in the manufacturing of products such as soap, perfume, candles and animal feed.

The public and business operators shall be educated about where their used cooking oil may end up, and teach them to partake in the PELITA programme and to sell it to responsible reproprocessors.

### 3 PELITA Guideline

A guideline, procedure or manual on the programme shall be formulated that includes identifying community and neighbor centre, logistics, methodology, monitoring and award system. The guideline is important to ensure the programme consistency across all districts, PBTs, and institutions.

### 4 Forging of Smart Partnerships

While this programme should be initiated by the local authorities at first, in long term other stakeholders such as the mosque committee, residents associations, NGOs should take ownership of PELITA and make it their own. Local authorities should actively seek partnership and collaboration with other stakeholders to leverage on their strengths. There are PBTs in Johor such as MP Kluang that has established its own cooking oil collection programme. PELITA can be used as an opportunity to repackage and enhance the existing programmes.



## 11

## PRIORITY PROGRAMME

COMMUNITY EMPOWERMENT  
PROGRAMME

**Empowering** the people of Johor is fundamental to achieving sustainable development. The state government alone can never ensure that the goals of sustainable development can be achieved. Local communities, who have long been local custodians of the natural resources that sustain them, need to be empowered so that they can increase their contribution. Non-governmental organisations, which have traditionally played an active role in promoting sustainable development, must be empowered to play an even greater role in the future.

To empower the people of Johor, it is important to give them a greater understanding of the benefits of the sustainable development path and awareness of what they can all do to be part of it. There has to be a greater sense of ownership across government and society. Empowering every segment of the Johor society and harnessing their commitment is fundamental to achieving Johor's sustainable development goals.





**PP12: COMMUNITY EMPOWERMENT PROGRAMME**

<p><b>OBJECTIVE</b></p> <p>Enhance the participation of local communities, civil society and the private sector in natural resources management.</p>	<p><b>RELATED POLICY THRUSTS</b></p> <p>1, 4, and 5</p>	<p><b>5 KEY COMPONENTS</b></p> <ul style="list-style-type: none"> <li>• Johor CCA Network</li> <li>• Johor Sustainable Development Roundtable</li> <li>• Policy and Procedures for Public Participation</li> <li>• Skills Training Building for Government Officers</li> <li>• Anugerah Lestari Negeri Johor</li> </ul>
<p><b>LEAD AGENCY</b></p> <p>UPEN Johor</p>	<p><b>PARTNERS</b></p> <p>Local Authorities, NGOs, Residential Associations</p>	

**KEY COMPONENTS**

1	<p><b>Johor CCA Network</b></p> <p>This calls for the establishment of a community conserved area (CCA) network in Johor and for the state to encourage, incentivise, train and support local communities to manage natural areas in the state. The concept of CCAs is well-established in Sabah and various communities are working in partnerships with the state government to conserve forests and rivers. The Tagal system in Sabah is very successful and well-known. Urban communities in Selangor have also been successful in managing forests and green spaces. The Kota Damansara community forest is a good example that can be emulated. In Johor, the community at Tg Kupang (Kelab Alami) is very active managing marine ecosystems while there is another local community active at Gunung Lambak in Kluang. These could be pioneer groups that could be supported by the state while identifying and nurturing others communities.</p>
2	<p><b>Johor Sustainable Development Roundtable</b></p> <p>In line with the spirit of the Policy that calls for partnerships between all stakeholders, a multi-stakeholder Johor Sustainable Development Roundtable (JSDR) shall be established. The role of the JSDR will include:</p> <ul style="list-style-type: none"> <li>▪ Providing technical advice and support to the state on environmental and natural resources management as well as the implementation and monitoring of the Policy.</li> <li>▪ Assisting the state in bringing in potential partners to implement the Policy.</li> <li>▪ Acting as the interface between the government and other stakeholders to solicit feedback and disseminate information pertaining to the implementation of the Policy.</li> <li>▪ Promoting the principles and goals of the Policy to all stakeholders.</li> </ul>



The membership of the JSDR will consist of representatives from the private sector, academia, environmental-based NGOs and community-based NGOs including those representing indigenous peoples and local communities. The JSDR may also co-opt other persons as deemed appropriate. The Chairmanship of the JSDR shall be rotated among the various stakeholder groups. The JSDR, may from time to time, as deemed necessary, establish working groups or subcommittees to address various issues.

### **3 Policy and Procedures for Public Participation**

Adequate and timely public participation in the formulation of state policies, programmes and projects is very important. It enables the people of Johor to be well informed of impending policies, programmes and projects, and provide their feedback on matters that may affect their lives and livelihoods.

To ensure that this public engagement is done consistently across all agencies and sectors, the state shall develop procedures (or manual) for inclusive and timely stakeholder engagement for all policies and programmes. The procedures (or manual) shall guide agencies on how to identify stakeholders, how to do the engagement, the methods that could be used, etc.

### **4 Skills Training for Government Officers**

Empowering and engaging with local communities, civil society and the private sector will require government officers to acquire new sets of skills. These include skills and knowledge on communications, public relations, participatory planning and community-based conservation. A training programme shall be developed - combining lecture sessions, group work, discussions and site visits to bring about effective learning.

### **5 Anugerah Lestari Johor**

The state shall establish the Anugerah Lestari Negeri Johor that recognise stakeholders who have made important contributions to environmental conservation. This annual awards shall have various categories including government agencies, NGOs, local communities, academia and private sector.





Bangunan Dato' Mohamad Ibrahim Munsyi, Kota Iskandar

## SECTION 9

# IMPLEMENTATION FRAMEWORK





## A CALL FOR ACTION

The **Johor Sustainability Policy 2017 - 2021** is a call to action for all the people in Johor to work together. All segments of society must participate in the implementation and monitoring of the Policy. The state government will play the leading role in delivering the Policy supported by a wider partnership amongst civil society, private sector, indigenous people and local communities, academia as well as the society at large.



## ROLES AND RESPONSIBILITIES FOR IMPLEMENTATION

**The Policy provides an enabling framework for action by stakeholders at all levels. It is intended to guide, inform, empower and support action for sustainability.**



### State Government

The Johor State government, via UPEN, will play the leading role in implementing the Policy. This includes undertaking the necessary coordination among stakeholders, establishing the appropriate institutional platforms, facilitating resource mobilisation and initiating review of the Policy, as necessary. UPEN will be responsible for coordination among the various state agencies that are crucial for the implementation of the Policy.



The Majlis Alam Sekitar, Teknologi Hijau dan Perubahan Iklim (MPLJ) will be the main coordinating platform to ensure that the Policy is implemented effectively. MPLJ will be responsible for advising state government agencies. The various state government agencies will play important roles in delivering the actions under this Policy.



### Civil Society

The Policy provides many opportunities for civil society to participate, either on its own or in collaboration with other stakeholders. The proposed Johor Sustainable Development Roundtable will be a platform for civil society to provide input and monitor the implementation of the Policy.

Given their vast knowledge and their aptitude to work with local communities as well as with national and international networks, civil society will play a very important role in translating the Policy into action.





## Local Communities

The Policy places emphasis on empowering and supporting local communities to undertake sustainable development initiatives. They are envisaged to be active partners in managing the state's natural resources. The proposed Johor Sustainable Development Roundtable will strategise and coordinate local communities' contribution to the Policy.



Photo by: KPGHHJ



## Private Sector

The formation of enduring partnerships with the private sector will be crucial for the Policy's success. Many of the actions identified in the Policy can be undertaken by the private sector, either on its own or in collaboration with other stakeholder groups. The proposed Johor Sustainable Development Roundtable will be a platform for the private sector to provide feedback, support and monitor the implementation of the Policy.



Photo by: J-Corp



## Research and Education Communities

Implementing the Policy will require the best available scientific expertise and knowledge. Johor has a large research community at universities and research institutions and this community has an important role to play. Educators and communicators also make valuable contributions by increasing the community's awareness of Johor's natural heritage through establishing experiential learning.



Photo by: UTM



## General Public

For the Policy to be effective, all the people of Johor need to contribute to sustainable development. This could involve learning more about how to live sustainably, reducing their ecological footprint, supporting or joining groups concerned with issues such as conserving particular species or sites, or volunteering for various conservation initiatives.



Photo by: Jauhar



## COORDINATING PLATFORM

**Given the immense task of implementing and monitoring the Policy, a substantial amount of coordination will be required to ensure optimum utilisation of resources, reduce conflicts and maximise synergies.**



### Majlis Pembangunan Lestari Johor

The highest decision-making body for this Policy is the Majlis Pembangunan Lestari Johor (MPLJ) - which previously was the Majlis Teknologi Hijau dan Perubahan Iklim (MPLJ) - and will be chaired by the Menteri Besar. The MPLJ whose membership includes State Exco members and senior government officials is a platform to resolve matters pertaining to sustainability and to provide policy interventions. The MPLJ, may from time to time, as deemed necessary, establish working groups or subcommittees to address various issues. In the context of this Policy, the MPLJ shall have the following roles:

- Facilitate the implementation of initiatives under the DKNJ at the state and local government levels.
- Provide an avenue for inter-agency planning among related state agencies on sustainability and the environment.





## Johor Sustainable Development Roundtable

In line with the spirit of the Policy that calls for partnerships between all stakeholders, a multi-stakeholder Johor Sustainable Development Roundtable (JSDR) shall be established. The role of the JSDR will include:

- Providing technical advice and support to the MPLJ on the implementation and monitoring of the Policy.
- Assisting the MPLJ in bringing in potential partners to implement the Policy.
- Acting as the interface between the government and other stakeholders to solicit feedback and disseminate information pertaining to the implementation of the Policy.
- Promoting the principles and goals of the Policy to all stakeholders.

The membership of the JSDR will consist of representatives from the private sector, academia, environmental-based NGOs and community-based NGOs including those representing indigenous peoples and local communities. The JSDR may also co-opt other persons as deemed appropriate. The Chairmanship of the JSDR shall be rotated among the various stakeholder groups. The JSDR, may from time to time, as deemed necessary, establish working groups or subcommittees to address various issues. The Chairman of the JSDR shall be members of the MPLJ.



## COMMUNICATING THE POLICY

Communicating the Policy to all stakeholders will be a vital and continuous activity during the implementation period. This will entail four key tasks:

- Communicating and reinforcing the goals of the Policy and its contribution to the well-being of the people of Johor.
- Communicating the progress in implementing the Policy including the achievement of its targets.
- Communicating about the opportunities for, and collaboration and participation in on-going and upcoming programmes and projects.
- Communicating success stories as regard to the Policy implementation.

The UPEN shall be responsible for communications - from designing the messages, collating progress and ensuring that the message is effectively delivered and understood by the stakeholders.



## REVIEW OF POLICY AND ACTIONS

This Policy and its actions shall be reviewed after 5 years i.e. in year 2021. The review shall take into account new challenges at the national and state level, national and international commitments, state priorities and funding opportunities and constraints.





# Thank you

to all the stakeholders who have contributed their feedback and support throughout the process of formulating this Policy. The Johor Sustainability Policy 2017-2021 would have not been possible without you.



In 2016, **more than 200 stakeholders**, including organisations and individuals from government agencies, private sectors, academics, NGOs, and residential associations, have partake in drafting this Policy through interviews, phone calls, focus group discussions, and workshops.

# Acknowledgement

Thank you to the following organisations and individuals for the photos in this Policy:

Berita Jauhar  
Cypark Resourced Bhd  
Department of Marine Parks Peninsular Malaysia  
Forest Research Institute Malaysia  
Iskandar Regional Development Authority  
Johor National Parks Cooperation  
Johor Petroleum Development Corporation Bhd  
Justin Vaz, KDCF  
Kelab Alami Tanjung Kupang  
Kelab Pencinta Gunung dan Bumi Hijau Johor  
Malaysian Nature Society  
Perbadanan Pengangkutan Awam Johor  
PERHILITAN Johor  
SAJ Holdings Sdn Bhd  
Tanjung Bintang Sdn Bhd  
UEM Group  
University Teknologi Malaya  
Wildlife Conservation Society  
WWF-Malaysia

---

Special thanks to **Flaticon** for the icons and graphics in this Policy.



Special thanks to **Kjpargeter** from **Freepik.com** for the background graphic in the front cover and back cover of this Policy.









## **JOHOR ECONOMIC PLANNING UNIT**

Aras 3, Bangunan Dato' Jaafar Muhammad,  
Kota Iskandar, 79503 Iskandar Puteri,  
Johor Darul Ta'zim

