



PPHJ 2030

POLISI PEMBANGUNAN HIJAU JOHOR

Johor Green Transportation Policy 2030

Policy

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Johor Green Transportation 2030



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Preface

Johor Green Transportation Policy 2030



Assalamualaikum warahmatullahi wabarakatuh and Greetings,

With deep gratitude, I would like to express my appreciation to all parties who have contributed to the formulation of the **Johor Green Transportation Policy 2030**. This document is a symbol of the Johor state government's determination to lead the transformation of the state's transportation system towards a more environmentally friendly and sustainable future. As one of the key sectors contributing to carbon emissions, green transportation is a priority in our efforts to address climate change challenges and enhance the quality of life for the people of Johor.

As an international gateway, Johor has great potential to introduce an efficient and modern green transportation system. This policy is designed to drive the development of eco-friendly transportation infrastructure, such as electric buses, an efficient public transit network, and dedicated lanes for zero-emission vehicles. With a clear action plan, the Johor state government aims to reduce dependence on private vehicles and expand access to affordable and environmentally friendly public transportation.

Additionally, this policy also focuses on promoting the use of electric vehicles (EVs) in both the private and public sectors. This includes providing incentives for EV owners and expanding the EV charging infrastructure across the state. By encouraging the adoption of green technology in logistics and freight transportation, Johor can drive progressive and competitive green economic growth.

This policy also highlights the importance of strategic collaboration with the private sector and the community to ensure the success of this transformation. By involving all stakeholders, Johor can develop an integrated green transportation ecosystem, reduce carbon emissions, and create a more comfortable and sustainable urban environment for all. I am confident that the implementation of this policy will not only position Johor as a model for green transportation in Malaysia but also create a lasting positive impact on the people and the environment.

Together, we can realize Johor's vision as a progressive and sustainable green state. May this effort bring lasting benefits to all of us and future generations.

Thank you.

Yang Amat Berhormat Dato' Onn Hafiz bin Ghazi
Chief Minister of Johor

List of Abbreviations

AC	Alternative Current
AI	Artificial Intelligence
BEV	Battery Electric Vehicle
BPEN	Johor Economic Planning Division
BSI	Sultan Iskandar Building
CCC	Certificate of Completion and Compliance
CCTV	Closed-Circuit Television
CO ₂	Carbon Dioxide
COP21	21 st Conference of the Parties
DC	Direct Current
DNKJ	Johor Sustainability Policy 2017-2021
EFB	Empty Fruit Bunch
EV	Electric Vehicle
EVCB	Electric Vehicle Charging Bay
EVCS	Electric Vehicle Charging System
FCEV	Hydrogen Fuel Cell
FCV	Fuel Cell Vehicle
FIT	Feed-in Tariff
GHG	Greenhouse Gas
GLC	Government-Linked Company
HEV	Hybrid Electric Vehicle
HVO	Hydrotreated Vegetable Oil
ICT	Information and Communication Technology
IP	Implementation Initiative
IPT	Institution of Higher Education
ITA	Investment Tax Allowance
JBPM	Fire and Rescue Department of Malaysia
JPJ	Road Transportation Department Malaysia
JSC	Johor Sustainability Centre
GDP	Gross Domestic Product
KPK	Ministry of Plantation and Commodities
LCMB 2021-2030	Low Carbon Mobility Blueprint 2021-2030
LCS	Low Carbon Society
LPJ	Johor Port Authority
MAHB	Malaysia Airports Holdings Berhad

MGTC	Malaysian Green Technology and Climate Change Corporation
MIDA	Malaysian Investment Development Authority
MOF	Ministry of Finance Malaysia
MPOB	Malaysian Palm Oil Board
MVA	Megavolt-Amperes
NETR	National Energy Transition Roadmap
OEM	Original Equipment Manufacturer
OPF	Oil Palm Frond
OPT	Oil Palm Trunk
PAJ	Johor Public Transportation Corporation
PBT	Local Authority
PE	Electricity Substation
PHEV	Plug-in Hybrid Electric Vehicle
PKS	Palm Kernel Shell
PKPJ	Johor Housing Development Corporation
PLUS	North-South Expressway Project Berhad
PMJ	PLANMalaysia Johor
POME	Palm Oil Mill Effluent
PPMJ 2030	Johor Sustainable Development Plan 2030
PS	Pioneer Status
PSP	Principal Submitting Person
PTD	Administrative and Diplomatic Officer
PTP	Port of Tanjung Pelepas
QC	Quay Crane
R&R	Rest and Service Area
RTS	Rapid Transit System
RTG	Rubber Tyred Gantry Crane
SAF	Sustainable Aviation Fuel
SDG	Sustainable Development Goals
SEB	Sarawak Energy Bhd
SEDA	Sustainable Energy Development Authority
SEZ	Special Economic Zone
ST	Energy Commission
RE	Renewable Energy
TLK	Parking Space
TNB	Tenaga Nasional Berhad

Executive Summary

Johor Green Deal's target for electric vehicle (EV) adoption serves as a key strategy to reduce carbon emissions and support sustainable development. Therefore, this policy is designed with the vision of positioning Johor as a leader in EV transportation, contributing to net-zero aspirations and sustainability by 2030.

The main objectives of this policy are to strengthen EV adoption in Johor, enhance biofuel production for the green transportation sector, and assess the feasibility of hydrogen fuel cell usage as a support for green transportation.

The policy's strategies include increasing the number of electric vehicle charging bays (EVCB), developing EV charging hubs, expanding EV ownership registration, integrating EVs into smart home energy management, utilizing biofuels as an alternative for green transportation, and exploring hydrogen as a future fuel source for green mobility.

Through the implementation of this policy, Johor is expected to become a leader in green transportation technology in Malaysia by 2030. This policy also has the potential to attract investments in the green sector, raise public awareness of sustainable lifestyles, and drive job creation in green technology. These efforts will support the state government's ambition to position Johor as a high-performing state and achieve the vision of the Johor Sustainable Development Plan 2030.

1.0

Introduction

Johor is among Malaysia's primary economic contributors as of 2023. The state's economic performance showed a 4.1% increase from 2022 to 2023, based on Gross Domestic Product (GDP) values. Two sectors demonstrated substantial growth:

services sector

RM79.9
billion

&

manufacturing sector

RM44.2
billion

The strategic location of Johor has a significant direct impact on cross-border vehicle movement, serving as a primary trade route and logistical network. Johor is home to an international airport in Senai, offering a full range of domestic, international, and cargo flight services. In terms of maritime transportation, Johor features two seaports of international standing: Johor Port in Pasir Gudang and the Port of Tanjung Pelepas (PTP) in Gelang Patah.

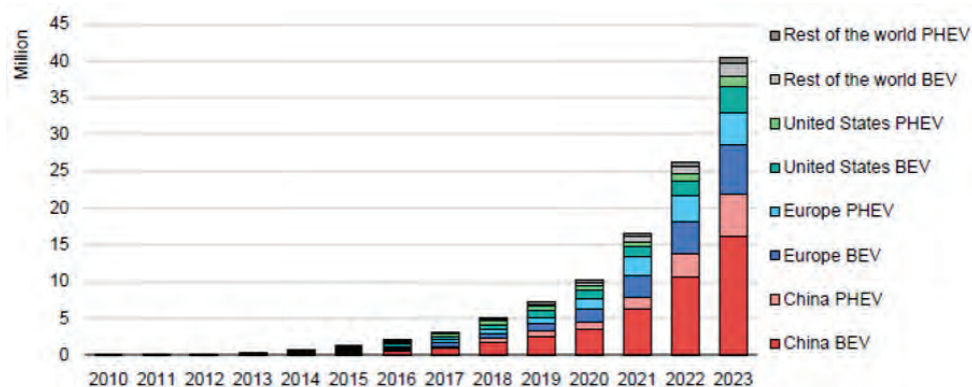
Based on the Johor Green Deal framework, the promotion of green transportation is a key agenda that must be expanded to support the state government's aspirations to make Johor a sustainable state by empowering green initiatives by 2030.

This policy plays a central role in reshaping Johor's Transportation landscape, supporting green development, and advancing the vision outlined in the Johor Sustainable Development Plan 2030, positioning Johor as a high-performance state.

2.0 Global Trends in Green Transportation

One of the major environmental challenges today is carbon emissions from the transportation sector. The land transportation sector is a significant contributor to carbon emissions, impacting the environment. A range of efforts and incentives are needed to reduce reliance on fossil fuels and to promote green transportation. These include encouraging the use of Electric Vehicles (EVs), biofuels, and hydrogen fuel.

Moreover, advancements in battery technology can also help reduce dependence on fossil fuels. This technology holds substantial potential and has the capability to improve EV performance over time. With these advancements, EVs are expected to play a vital role in the global automotive landscape, helping to lower fossil fuel dependence and supporting environmental sustainability goals (Figure 1).



battery electric vehicle; PHEV = plug-in hybrid electric vehicle. Only includes passenger cars.

Source: Analisis IEA berdasarkan penyerahan negara dan data daripada ACEA, EAFO, EV Volumes dan Marklines (IEA, 2024)

Figure 1: Global Electric Vehicle Trends, 2010-2023

As for global biofuel demand trends, the transportation sector has shown consistent growth, as depicted in Figure 2. The majority of new biofuel demand comes from rapidly developing countries such as Brazil, Indonesia, and India. These three countries have clear biofuel policies and abundant raw material potential.

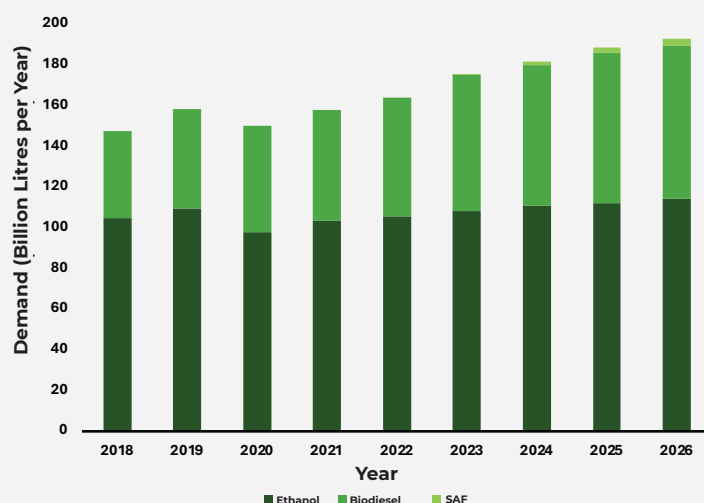


Figure 2: Global Biofuel Demand

Among the biofuels that have seen the most significant growth globally are bioethanol and biodiesel. Their usage varies by mode of transportation; for example biodiesel and bioethanol

are used for land transportation, biomethanol for maritime transportation, and sustainable aviation fuel (SAF) for air transportation.



Hydrogen fuel cells are also an alternative to help the transportation sector reduce fossil fuel usage by using green hydrogen (hydrogen produced from renewable energy (RE) sources) as fuel. According to the agreement reached by 195 countries at the 21st Conference of the Parties (COP21) held in Paris in 2015, the use of hydrogen fuel cells could be a key factor in reducing carbon dioxide (CO₂) emissions by 60% by 2050. To support the development of hydrogen technology, countries such as Japan, Australia, Germany, South Korea, China, and Malaysia have released national strategic roadmaps for the broader adoption of hydrogen. Several stimulus packages have also been announced, including incentives and financing, feasibility studies, and pilot projects to enhance the competitiveness of the hydrogen industry. However, considering that global hydrogen fuel cell usage is still in the early stages of research and the technology is not yet fully developed, this alternative is not currently deemed suitable as a primary fuel source for green transportation by 2030.

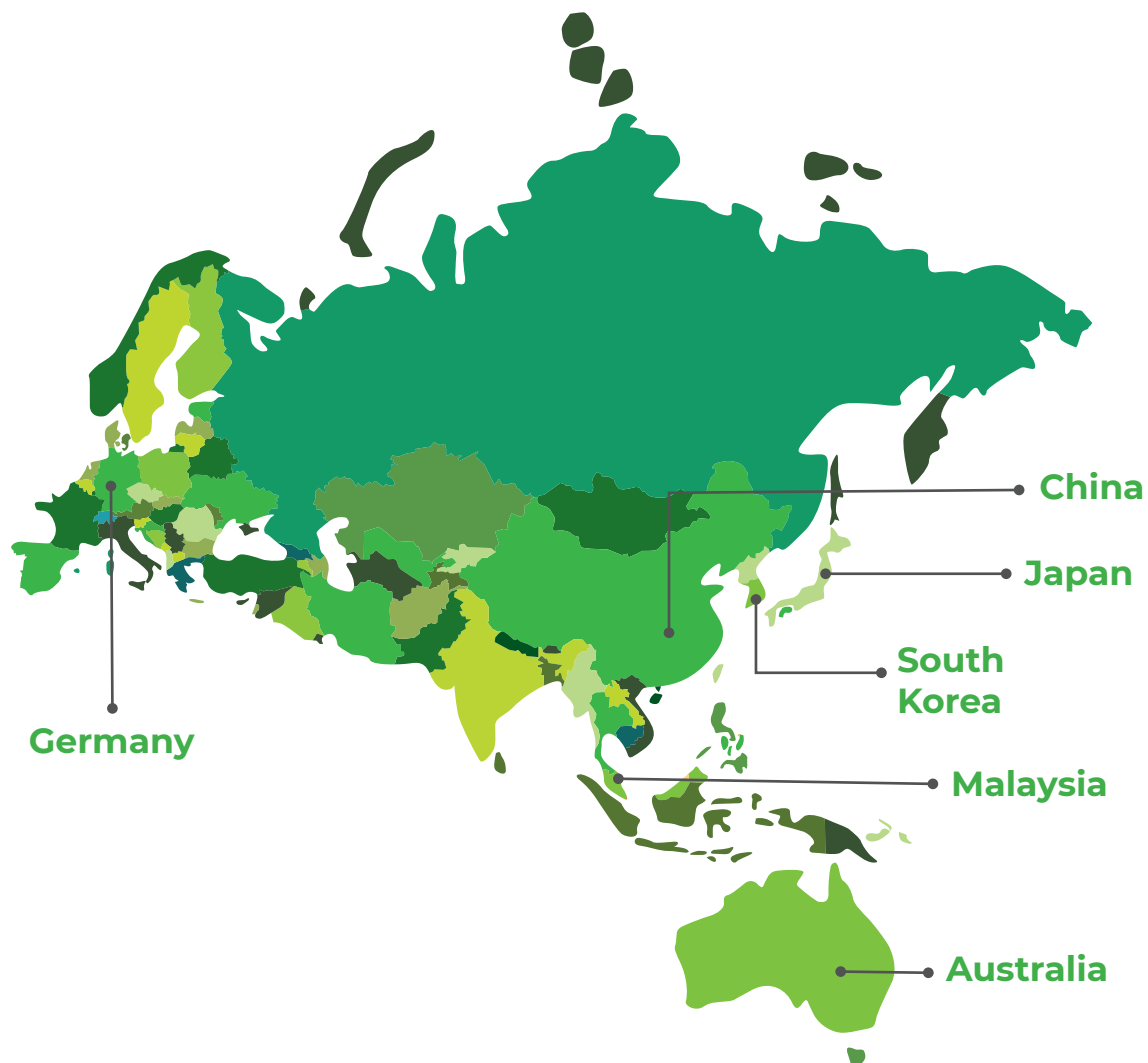


Figure 3: Countries that Support the Development of Hydrogen Technology

2.1 ASEAN

The green transportation trend is rapidly growing and gaining acceptance within the automotive industry. ASEAN countries are also taking significant steps toward achieving their green transportation targets. Table 1 shows the targets set by several ASEAN countries in achieving green transportation.

Table 1: Green Transportation Initiative Targets for ASEAN Countries

COUNTRY	TARGET
Singapore	• Aiming for full EV adoption by 2040 • Targeting a 1% SAF blend by 2026, with an increase to 3-5% SAF blend by 2030
Thailand	• Targeting 725,000 EVs by 2030 • Increasing the percentage of RE in transportation fuel use to 25% by 2036
Indonesia	• Aiming to transition from the use of petrol and diesel to EVs, biofuels, and hydrogen • Targeting 2 million EVs by 2030
Laos	• Targeting 30% EV usage in the national vehicle mix by 2030 • Targeting 10% biofuel usage as transportation fuel
Philippines	• Establishing the Philippines' EV industry as a producer and exporter of EVs by 2040 • Aiming for the addition of 311,700 EVs between 2023 and 2028
Malaysia	• Aiming for 1.5 million EVs by 2040 (with 16,763 EVs registered as of July 2024) • Targeting the use of B30 biodiesel for heavy vehicles by 2030 • Aiming for 40% green fuel use in maritime transportation by 2050 • Targeting a 1% SAF blend in aviation fuel by 2030 • Aiming for 5% hydrogen use in heavy transportation by 2050

3.0

Transportation Trends in Johor

The transportation sector in Johor is undergoing changes in line with the state's economic growth and population increase. Land transportation continues to be the cornerstone of the sector, with rising private vehicle usage and the expansion of road and highway networks. However, traffic congestion in major urban areas such as Johor Bahru continues to be a challenge, prompting efforts to improve the public transportation system. Public services such as buses and trains, including the Rapid Transit System (RTS) project connecting Johor Bahru to Singapore, are expected to alleviate congestion and facilitate the movement of residents and tourists.

Additionally, Johor is beginning to show potential in the transition to green transportation. Initiatives such as the introduction of EVs and the gradual development of EV charging infrastructure have been introduced. However, EV adoption remains at an early stage, with a need to raise public awareness and expand EV charging facilities. The development of ports such as the PTP and Port of Pasir Gudang also plays a crucial role in driving the maritime transportation sector, supporting the state's economic growth. Overall, Johor shows a growing trend towards modern and sustainable transportation, aligned with efforts to improve the quality of life and support sustainable development.

3.1 Potential of EVs in Johor to Support Green Transportation

The Malaysian government has demonstrated a strong commitment to advancing the EV sector, including in the State of Johor. Several key incentives have been announced to stimulate the growth of the EV industry and reduce ownership and maintenance costs. Among these, the government offers incentives for the local assembly of electric motorcycles and has introduced EV tax incentives aimed at helping local companies produce electric vehicles at more competitive prices, thereby encouraging the purchase of EVs in Malaysia.

The rapidly expanding EV charging infrastructure, particularly in Johor Bahru and Iskandar Puteri, provides strong support for the growth of EV usage. Additionally, government incentives, green development plans, and potential investments in EV charging manufacturing and assembly sectors position Johor as a leading hub for the EV industry in Malaysia.

The urban population growth and the increasing demand for eco-friendly vehicles make EVs a cost-effective and efficient solution for reducing carbon emissions. Public awareness campaigns and education programmes related to EV technology are also essential to ensure widespread acceptance among the public. Johor has the potential to become a leader in the EV industry through economic support and foreign investments, which will simultaneously generate job opportunities and contribute to local economic development.

3.2 Potential of Biofuels in Johor to Support Green Transportation

Given that Johor is rich in natural resources and agricultural waste such as palm oil, the use of bioenergy as an alternative energy source needs to be explored more extensively. Palm oil waste, which includes Oil Palm Fronds (OPF), Oil Palm Trunks (OPT), Empty Fruit Bunches (EFB), Mesocarp Fibre, Palm Kernel Shells (PKS), and Palm Oil Mill Effluent (POME), has diverse potential applications, including biofuel production.

According to statistics released by the Malaysian Palm Oil Board (MPOB), Johor is the second-largest state in Peninsular Malaysia in terms of palm oil plantation area, covering 676,583 hectares (ha). Johor also has the second-highest number of palm oil mills in Peninsular Malaysia, with 63 mills. This data clearly indicates that Johor is rich in biomass resources and has the potential to become one of the leading biofuel producers in Malaysia. As of the third quarter of 2024, there are approximately 10 biodiesel production industries in Johor. In addition, there is the development of a SAF facility in Pasir Gudang, Johor, with a capacity of 350,000 tons per year, expected to be completed by the end of 2024. According to the National Energy Transition Roadmap (NETR), a biofuel hub will be developed in Pengerang, Johor, for the production of biofuels such as SAF and hydrotreated vegetable oil (HVO).

Palm oil plantation area ▼

676,583
ha

Johor (second highest) ▼

63
mills



**Abundant Hydroelectric
Energy Resources:**

Sarawak
3.5 GW total hydroelectric
power generation
capacity

3.3 Potential of Hydrogen as a Future Fuel Source for Green Transportation

Johor still lacks the necessary elements for viable hydrogen production and the implementation of hydrogen as a fuel for vehicles. This stands in contrast to Sarawak, which possesses abundant hydroelectric energy resources, with a total hydroelectric power generation capacity of approximately 3.5 gigawatts (GW).

This allows the Sarawak government, through Sarawak Energy Bhd (SEB), to utilize hydro energy to electrolyze water and produce approximately 90,000 tons of green hydrogen annually, including 2,000 tons for local use. As a result, Sarawak has achieved a significant milestone by launching Southeast Asia's first integrated hydrogen production plant and hydrogen refuelling station in Kuching in 2019. The Sarawak government has also introduced a pilot project involving the importation of more hydrogen fuel cell buses for its free hydrogen bus service initiative.

3.4 Land Transportation

The EV-based land transportation system in Johor is undergoing rapid transformation, aligning with global efforts to reduce environmental impact and promote sustainability. Johor has taken various proactive measures to integrate green technology into its transportation system.

Numerous initiatives have been undertaken to support EV adoption, including the installation of EV Charging Bays (EVCB) at strategic locations such as shopping malls, residential areas, and public spaces. These measures aim to facilitate EV usage and encourage more residents to transition to environmentally friendly vehicles. The policy also outlines several initiatives related to the use of biofuels and hydrogen for land transportation to support the state government's direction in strengthening green transportation.

3.4.1 Electric Vehicle (EV)

Johor faces an unbalanced transportation modal split of approximately 89:11, where private vehicle use (cars and motorcycles) is significantly higher than public transportation (buses). The increasing number of fossil-fuel-powered vehicles directly contributes to higher carbon emissions into the atmosphere, leading to global temperature rise and numerous adverse effects on human health and the environment.



However, Johor is among the leading states in EV adoption in Malaysia, covering electric motorcycles, cars, vans, buses, and lorries. The annual rise in EV usage reflects growing public awareness of the importance of green transportation in preserving the environment.

Additionally, the state government has implemented various initiatives to improve public transportation. Johor Public Transportation Corporation (PAJ) aims to reduce private vehicle use by increasing public transportation usage by 40%, focusing on service promotion, accessibility, and integration. Projects such as the RTS aim to ease congestion at the Johor Causeway. This rail transportation project connects Malaysia and Singapore, reducing congestion and supporting the Johor-Singapore Special Economic Zone (JS-SEZ). Statistics for daily cross-border transportation users in 2023 are shown in Table 2.

Table 2: Average Daily Cross-Border Transportation Users in 2023

TYPE OF VEHICLES	EXITING MALAYSIA	ENTERING MALAYSIA
Motocycles	54,373	47,901
Cars	52,366	48,450
Buses	80,854	85,427
Lorries	3,162	3,144
Total	190,755	184,922

Source: Kementerian Dalam Negeri, 2023

The modal split for logistic vehicle use is 70:30 between vans or light lorries and heavy goods vehicles (HGV). Vans or light lorries usage are notably higher in Pontian (81.78%), Muar (76.53%), Kota Tinggi (74.46%), Johor Bahru (72.55%), and Batu Pahat (70.88%). Conversely, heavy lorries usage peaks in Kulai (40.71%) and Kluang (40.32%). The reliance on petrol for these vehicles significantly contributes to carbon emissions, necessitating a shift toward EV for logistics.

3.4.2 EV Usage in Johor

EV adoption in Johor is expanding in line with global initiatives to reduce carbon emissions and enhance environmental sustainability. Statistics show a fivefold increase in EV purchases in Johor from 2021 to 2022, as detailed in Table 3.

Table 3: Registered EVs in Johor

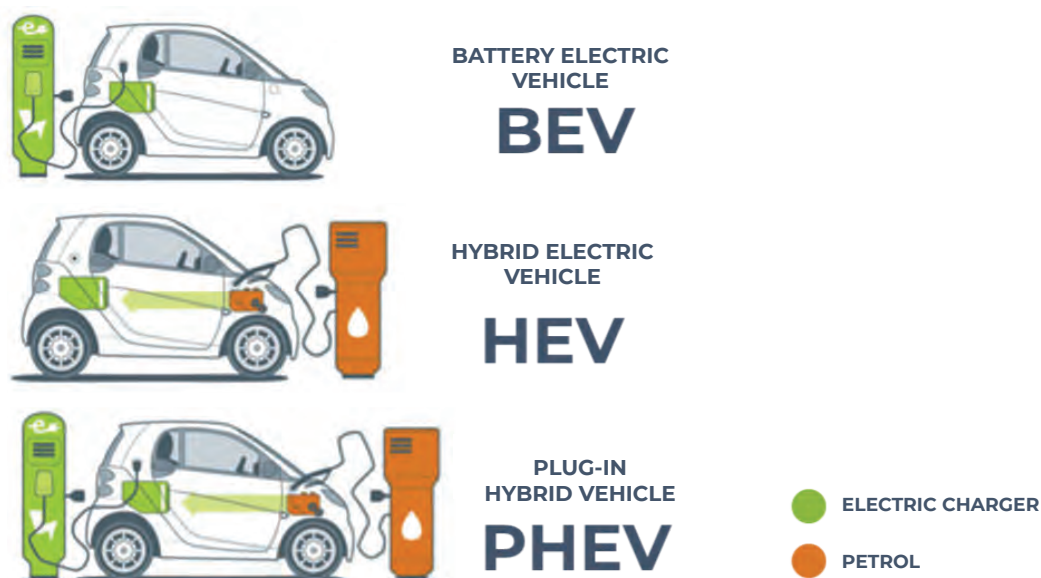
YEAR	NUMBER OF EVs
2019	26
2020	41
2021	23
2022	117
2023	406
2024 (July)	364

Source: Jabatan Pengangkutan Jalan, Malaysia.

The following is the information on EVs in Johor State covering cars, motorcycles, buses, and lorries:

a) **Electric Cars**

Local vehicle manufacturers in Malaysia have taken proactive steps in introducing several hybrids and EV models into the market such as BHEV, HEV and PHEV..



These models are equipped with advanced hybrid technology, offering a more environmentally friendly alternative compared to conventional fossil-fuel vehicles. This initiative not only reflects technological advancements in the local automotive industry but also supports global efforts to reduce carbon emissions.

Additionally, since early 2024, local authority (PBT) in Malaysia has started using EVs as their official vehicles. This initiative demonstrates the government's commitment to green technology and serves as an example for other sectors to follow suit. The use of EVs by PBT not only helps reduce carbon emissions but also raises public awareness about the benefits of EVs. This step also drives the development of supporting infrastructure, such as EV Charging Bay (EVCB), which are crucial for the growth of EV usage in the country.





b) Electric Motorcycles

Electric motorcycles in Johor significantly reduce carbon emissions as they do not produce exhaust gases like conventional motorcycles. This contributes to mitigating climate change. Johor can further reduce its carbon footprint as more users switch to electric motorcycles. Moreover, electric motorcycles have lower operating costs since the cost of electricity for charging batteries is less than fossil fuel, and they require minimal maintenance.

The growing environmental awareness has also encouraged more individuals and organizations in Johor to opt for electric motorcycles as a greener alternative. Initiatives such as Pos Malaysia's use of electric motorcycles showcase a commitment to sustainability and can serve as an example for other companies. Government support through incentives and the development of charging infrastructure has further accelerated the adoption of electric motorcycles. Furthermore, the use of electric motorcycles reduces noise pollution in urban areas, enhancing residents' quality of life.

c) Electric Buses

Johor has introduced electric buses in public transportation to reduce carbon emissions. Several electric buses are operational in the Iskandar Malaysia area to promote environmentally friendly public transportation. Additionally, the first cross-border electric bus between Malaysia and Singapore has been introduced via the Johor Causeway in Iskandar Puteri, managed by a local company with its own charging infrastructure.





d) Electric Lorries

Several logistics and delivery companies have demonstrated their commitment to environmental sustainability and fuel cost savings by using hybrid and electric lorries. Aligned with this initiative, the development of EVCBs for heavy lorries is actively progressing to ensure sufficient infrastructure support for the transition to cleaner and greener technology.

The Johor State Government has also implemented a cross-border public transportation system. The development of the RTS Link is a shuttle train network approximately 4 kilometres in length, connecting two stations, Bukit Chagar in Johor Bahru and Woodlands in Singapore. This project aims to alleviate traffic congestion and provide transportation options for users at the Sultan Iskandar Building (BSI). The network will have a capacity of 10,000 passengers per hour in each direction, with an estimated daily ridership of 40,000 passengers. This development also directly impacts the growth of the JS-SEZ in strengthening Johor's investment agenda.

3.4.3 EVCB in Johor

The development of EVCBs is essential to support the increasing number of EVs on the roads. With growing awareness of environmental sustainability and government incentives, more Johor residents are transitioning to EVs. However, ensuring a sufficient number of EVCBs is crucial to enable EV users to charge their vehicles easily and efficiently. Currently, Johor is working to increase the number of EVCBs to meet rising demand.

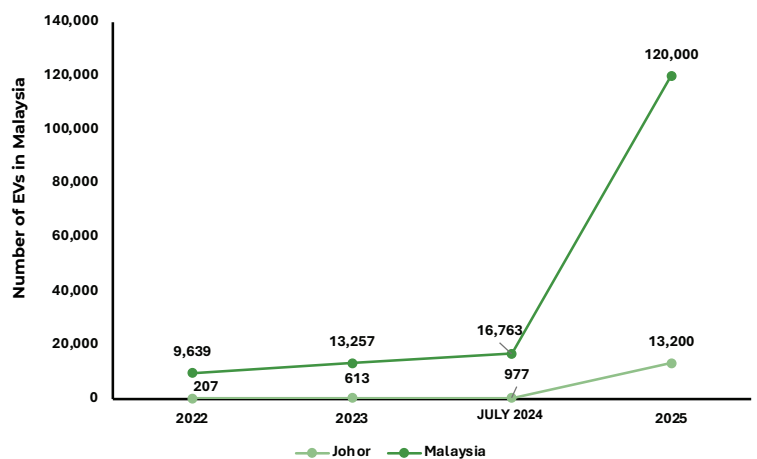
A limited number of EVCBs could negatively impact the adoption of EVs in Johor. A shortage of EVCBs might discourage potential users from switching to EVs due to concerns about charging difficulties. This could hinder EV market growth and affect the government's efforts to reduce carbon emissions. Therefore, it is vital to ensure that charging infrastructure develops in tandem with the increasing number of EVs in the state.

Johor has introduced several key policies related to green development and transportation to support EV adoption. These policies aim to ensure that charging infrastructure expands alongside the growing number of EVs on the roads and that charging costs remain affordable. With these policies, the state government hopes to meet EV users' needs and support the transition to greener and more sustainable transportation.

As of the third quarter of 2024, Malaysia recorded 16,763 registered EVs (Figure 4). The number of EVs in Johor as of July 2024 stands at 977 vehicles, with a projection of 13,200 vehicles by 2025, representing only 2% of the proposed target for 2025. These statistics indicate that public acceptance of EVs remains low.

JULY 2024 ›
977
vehicles

PROJECTION 2025 ›
13,200
vehicles

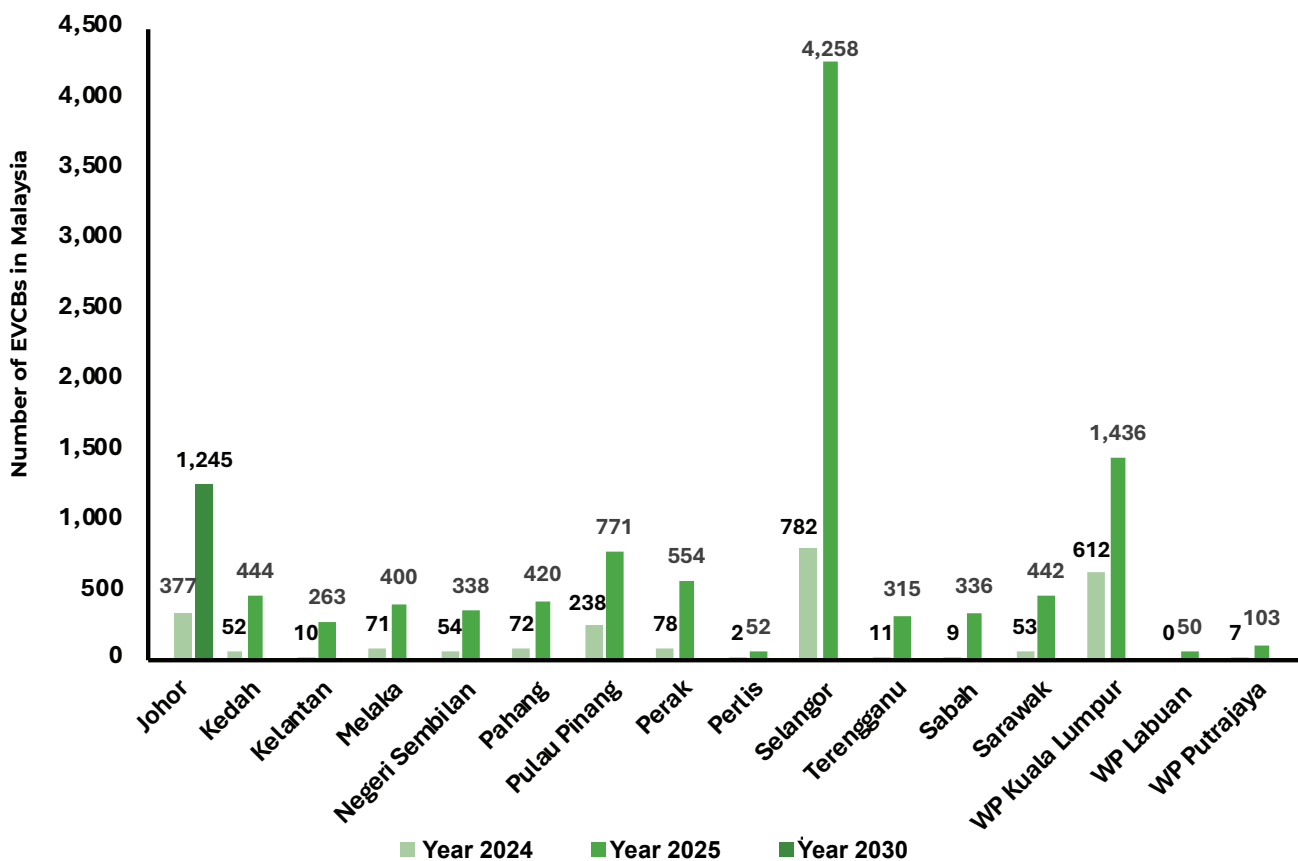


Source: MGTC, 2024; JPJ, 2024

Figure 4: Targeted Number of Evs in Malaysia by 2025

As for EVCBs, as of the third quarter of 2024, 2,288 EV charging units were fully operational across Malaysia, with 377 EV charging units in Johor. The target for Johor through the Low Carbon Mobility Development Plan (LCMB) 2021-2030 is to have 1,100 EVCBs by 2025. This initiative is implemented through public-private partnerships, a collaboration between the State Government and strategic partners.

Figure 5 illustrates the current number and target of EVCBs in Johor and other states in Malaysia. Johor is the third-highest state in achieving the EVCB implementation targeted by the Malaysian Green Technology and Climate Change Corporation (MGTC). An additional 868 EVCBs are required in Johor to reach the 1,245-target by 2030.



Source: PLANMalaysia, 2024; MGTC, 2024; PBT Negeri Johor, September 2024

Figure 5: Number of EVCBs in Malaysia

Table 4 shows the current number of EVCBs for each PBT. The current locations of EVCBs are concentrated in Johor Bahru due to high demand, including tourists from Singapore.

Table 4: Number of EVCBs by PBT

NO.	LOCAL AUTHORITIES (PBT)	CURRENT EVCB COUNT
1.	Majlis Bandaraya Johor Bahru	149
2.	Majlis Bandaraya Iskandar Puteri	142
3.	Majlis Bandaraya Pasir Gudang	1
4.	Majlis Perbandaran Batu Pahat	9
5.	Majlis Perbandaran Kluang	17
6.	Majlis Perbandaran Kulai	26
7.	Majlis Perbandaran Muar	13
8.	Majlis Perbandaran Pontian	0
9.	Majlis Perbandaran Segamat	1
10.	Majlis Perbandaran Pengerang	15
11.	Majlis Daerah Kota Tinggi	0
12.	Majlis Daerah Labis	0
13.	Majlis Daerah Mersing	0
14.	Majlis Daerah Simpang Renggam	0
15.	Majlis Daerah Tangkak	2
16.	Majlis Daerah Yong Peng	2
Total		377

Source: Pihak Berkuasa tempatan, September 2024.

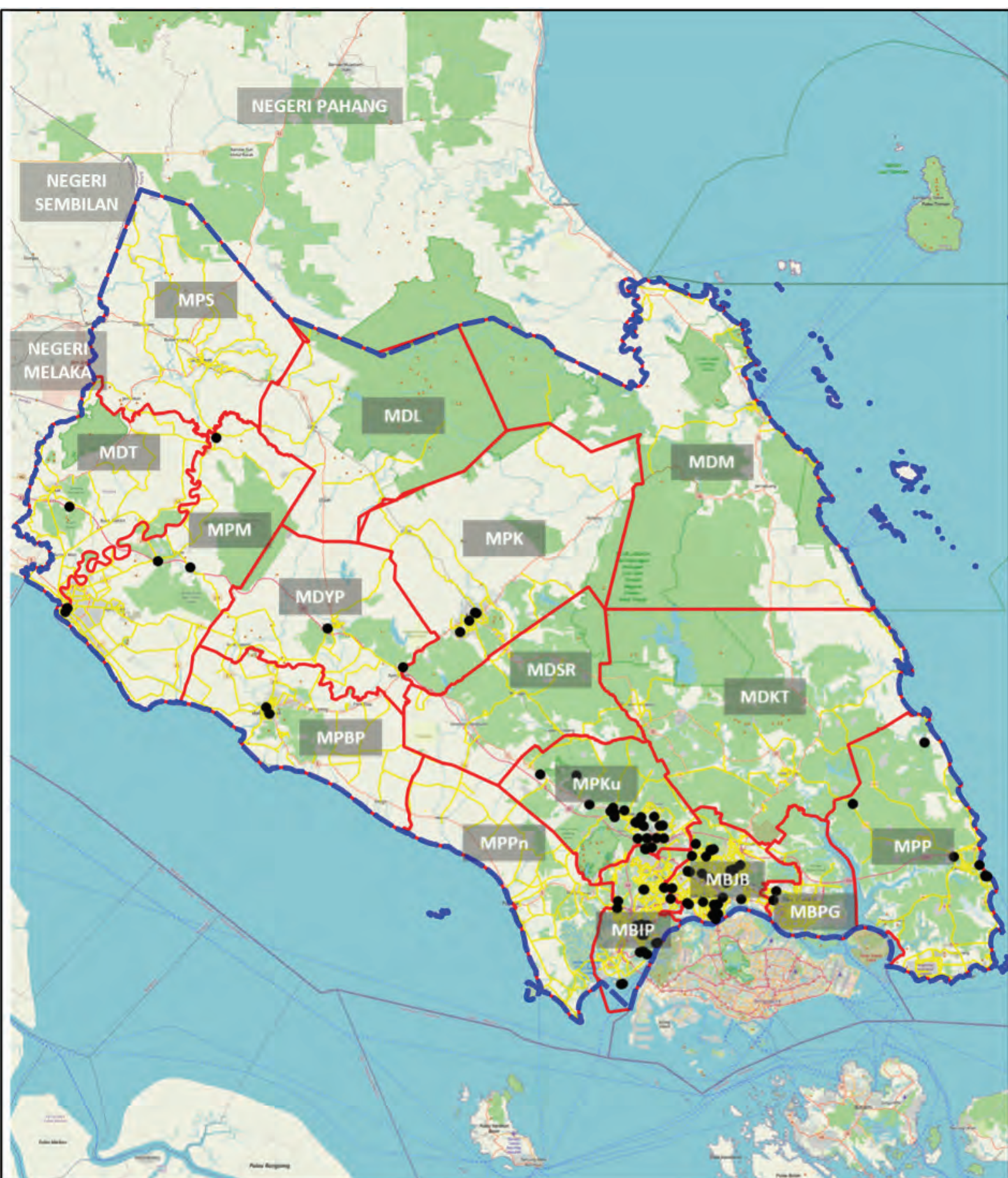


FIGURE 6
STUDY LOCATION MAP

**DISTRIBUTION OF EV CHARGING LOCATIONS AS
OF JULY 2024**

LEGEND

-  Johor Border
-  Local Authority Boundary
-  EV Charging Location



SCALE 1 : 1,000,000

COORDINATE SYSTEM
GDM2000 (EPSG3377)
JOHOR GRID



3.4.4 Issues and Challenges of EV in Johor to Support Green Transportation

The rapid economic growth and increase in population drive the necessity to transition to a more environmentally friendly transportation system. Although there are efforts to reduce carbon emissions through green initiatives such as EVs, the state continues to face various obstacles, including high infrastructure costs, low public awareness, and technical and logistical constraints. Thus, understanding the issues and challenges faced by the state of Johor in supporting green transportation is a critical step towards achieving environmental sustainability and improving the quality of life for its citizens. There are issues and challenges faced by Charging Point Operators (CPOs) and PBT.

i. Perspective of CPO

- **Tariff Setting**

The determination of charging tariffs does not always align with government subsidies or RE incentives, particularly for industry players. Charging tariffs may be higher than domestic electricity costs because EVCB installations are located in commercial areas, where site rental and electricity costs, as well as charger costs, vary based on specifications.

- **EVCB Approval Process**

The lack of uniform policies and regulations across different areas can delay the approval and installation process of EVCBs, posing a challenge in Johor. To ensure success, collaboration among local authorities, the government, private companies, and the community is crucial to establish a streamlined procedure that facilitates industry players in driving the adoption of electric vehicles in Johor.

ii. Perspective PBT

- **Engagement with CPO**

The absence of a dedicated platform for CPOs to interact with PBT regarding EVCB installations is a critical issue. CPOs often lack a clear view of opportunities or sufficient incentives to invest in areas under the jurisdiction of local authorities. Thus, proactive interaction between PBT and CPOs is essential to enhance mutual understanding of the needs of both parties.

- **Availability of Locations**

Identifying suitable locations for EVCB installation in Johor faces several major issues, particularly space constraints in densely populated urban areas. Existing parking spaces are often fully occupied, making it challenging to allocate additional space for EVCBs. Furthermore, the high costs of developing and maintaining EVCBs require financial allocations and investments from PBT and industry players.

Installing EVCBs in rural areas faces various challenges, primarily due to a lack of supporting infrastructure such as stable electricity supply. Without consistent electricity, operating EVCBs becomes difficult and inefficient, undermining consumer confidence in EVs. Moreover, strategic location determination for EVCBs requires detailed data analysis. Locations that appear geographically suitable may not necessarily align with EV users' preferences, who prioritize convenience and accessibility.

- **Clear Guidelines**

In line with the state government's goal to achieve carbon neutrality by 2030, a comprehensive guideline must be developed at the state level for the installation of EVCB. The preparation of these guidelines is crucial for PBT to facilitate the process and monitoring, attract investments, and increase the number of EVCBs in Johor. These guidelines will also serve as a reference for industry players and stakeholders in advancing the green transportation agenda in Johor.

- **EV Registration Records**

The preparation of EV registration records is essential for obtaining data on vehicle ownership to plan the development of EVCBs. Currently, EV data is very limited and difficult to obtain. This complicates the planning and development of EVCBs to meet the needs of various vehicle types.

- **Target for EVCB Installation in Each PBT**

MGTC and PLANMalaysia have set targets for EVCB installations in Johor based on PBT areas. However, each PBT also has its own specific target for EVCB installations. The installation targets set by MGTC, PLANMalaysia, and PBT need to be aligned in order to achieve the national target that has been communicated to the public.

3.4.5

Utilization of Biofuels for Land Transportation

Currently, biofuel production in Malaysia for land transportation is focused on biodiesel. The biodiesel programme was introduced in phases, starting in June 2011 with the B5 biodiesel programme (5% palm biodiesel blended with 95% petroleum diesel). This was later upgraded to B7 in December 2014, followed by the B10 biodiesel programme in 2019. The B20 biodiesel programme began in 2020 and is being implemented in phases, depending on infrastructure availability. In 2023, the federal government mandated under NETR the implementation of the B30 biodiesel programme by 2030.

Thailand has produced bioalcohol (such as bioethanol) for blending with petrol usage in light vehicles. Given that petrol-powered vehicles are the most widely used in Johor, using a 10% biofuel blend like bioethanol with petrol could help reduce carbon emissions from petrol vehicles and decrease reliance on fossil fuels. This initiative could also serve as a transitional phase before the widespread adoption of EVs in Johor.

There are **two (2) main challenges** in implementing biofuels for the land transportation sector in Johor, namely:

i. Centralized Biomass Resource Collection

The collection of raw materials from existing biomass resources is decentralized and in small quantities, posing a significant supply chain challenge for commercial biofuel production.

Establishing a Biomass Hub in Johor should be targeted to centralize and systematize the collection, processing, and distribution of biomass raw materials. An efficient and systematic Biomass Hub would ensure the biomass supply chain and facilitate large-scale biofuel production in Johor.

ii. Policies and Incentives to Support Bioethanol-Petrol Blends for Land Transportation (Light Vehicles)

Due to government subsidies on petrol for vehicles, bioethanol production and usage for petrol vehicles are not cost-effective.

To encourage more companies to participate in biomass processing for biofuel production, the federal government, through the Malaysian Investment Development Authority (MIDA), has introduced several tax incentives, including:

- **Pioneer Status (PS)** with income tax exemption of **70%-100%** of statutory income for 5-10 years;

or

- **Investment Tax Allowance (ITA)** with **60%-100%** of qualifying capital expenditure incurred over 5-10 years. This allowance can be offset against 70% of statutory income in the assessment year.

Companies in this industry are also eligible for the following reinvestment incentives:

- **Pioneer Status (PS)** with income tax exemption of **70%** of statutory income for 5 years;

or

- **Investment Tax Allowance (ITA)** with **60%** of qualifying capital expenditure incurred over 5 years, deductible from 70% of statutory income in the assessment year.

Such incentives can assist manufacturing companies in producing biofuel products at more competitive prices. Although the government has provided several tax incentives, their implementation has yet to take place due to the absence of a policy related to the blending of bioethanol with petrol.



3.4.6 Implementation of Hydrogen Fuel Cells for Land Transportation

The early implementation of hydrogen fuel cells for vehicles in Johor faces several challenges:

- High initial investment and expensive hydrogen production costs
- Immature hydrogen technology
- Most hydrogen vehicle developments are at the pilot project and demonstration-of-concept stages
- Lack of safety and technical standards for hydrogen vehicle use
- Slow market demand due to the dominance of petrol- and electricity-powered vehicles
- Need for new infrastructure development for hydrogen refuelling stations



These challenges can be addressed through comprehensive research on the infrastructure and feasibility of hydrogen vehicles in Johor. This could indirectly reduce the cost of implementing hydrogen fuel cells and promote RE sources for land transportation in Johor.

3.5 Maritime Transportation

Maritime transportation in Johor plays a vital role in both the state and national economies, particularly through major ports such as Tanjung Pelepas Port (PTP) and Pasir Gudang Port. In pursuing sustainable development, the concept of green seaports has been introduced to minimize environmental impacts. The Green Port Policy launched by the Johor Port Authority (LPJ) aims to ensure more environmentally friendly port operations by reducing carbon emissions, better managing solid and liquid waste, and protecting marine habitats.



However, several issues need to be addressed to achieve this goal. One of the main challenges is the lack of uniformity in policies and regulations across regions, which can delay the implementation of green initiatives. Additionally, the lack of supporting infrastructure, such as a stable electricity supply, adds to the challenges of integrating green technology at ports. Collaboration among PBT, government bodies, private companies, and the community is essential to overcome these challenges.

With a holistic and comprehensive approach, it is hoped that more ports in Johor can transition to environmentally friendly operations, thereby contributing to sustainable development and reducing negative environmental impacts. Green ports are not only crucial for environmental sustainability but also for enhancing the competitiveness of Johor's ports on an international level.

Green ports can attract more sustainability-focused companies by reducing carbon emissions and managing waste more effectively, thereby boosting trade activities and the state's economy. Therefore, continuous efforts and collaboration among all stakeholders are key to achieving this goal and ensuring that maritime transportation in the state of Johor continues to grow sustainably and environmentally friendly.



3.5.1 Electric Vehicle (EV)

LPJ is introducing various new technologies and services to improve operations, including maintenance and repair services for ships and greener port infrastructure in Johor. Among the initiatives undertaken by LPJ is the transition of diesel-powered equipment or vehicles at ports to electric ones to reduce greenhouse gas emissions. As of now, one (1) electric prime mover unit is available at the container terminal, alongside six (6) electric motorcycles and one (1) electric car.

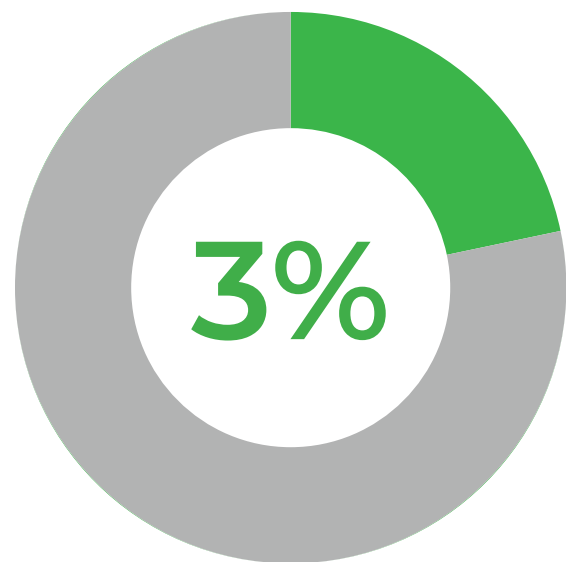
Pasir Gudang Port is using two (2) unit of electric scooters for patrolling and enforcement within the port area and plans to add six (6) more units by August 2024. There are also nine (9) units of electrification of Quay Cranes (QC) for more efficient use. At PTP, 252 units of Electrification Rubber Tyred Gantry Cranes (RTGs) are in operation. PTP has also leased five (5) Electrification prime movers from the Original Equipment Manufacturer (OEM). PTP is in the process of converting conventional yards into fully electric blocks to enhance electric-based services.

3.5.2

Use of Biomethanol for Maritime Transportation

line with the International Maritime Organization's goal to halve annual carbon emissions by 2050 and establish green shipping corridors, Johor has the potential to develop into a regional hub for the production and storage of biomethanol. Johor is home to two (2) strategically located ports, Pasir Gudang Port and the PTP. These ports have the potential to play a significant role regionally and globally in supporting carbon reduction efforts in the maritime transportation sector. However, the use of biomethanol derived from biomass sources for the maritime transportation sector in Johor is still at the early research stage and has not yet reached commercialization. Several challenges exist regarding the production and use of biomethanol, such as the lack of a guaranteed supply of biomass due to the absence of biomass collection centres and safety concerns related to the highly flammable nature of biomethanol.

Global Carbon Emissions



Given that alternative fuels from biomass and biomethanol are flammable, feasibility studies must be conducted to ensure their safe usage. Collaboration with shipping and logistics companies needs to be strengthened to promote green port hubs equipped with bunker refuelling facilities for shipping companies. For large-scale biomethanol production, the involvement and cooperation of all parties are necessary to develop the technologies associated with biomethanol production.

3.6

Air Transportation

The air transportation sector in Johor plays an important role in supporting the state and national economy, particularly through Senai International Airport. Johor's strategic location near Singapore makes it a crucial hub for passenger and cargo movement. The direction of this sector is to increase capacity and operational efficiency while minimizing environmental impacts. Green initiatives such as the use of alternative fuels, energy efficiency improvements, and carbon emission reductions are among the measures taken to achieve these goals. Additionally, the development of green infrastructure, such as environmentally friendly terminal buildings and the use of smart technologies to reduce energy consumption, is also being actively pursued. Collaboration between PBT, the government, and airlines is crucial to ensure the success of these initiatives.

3.6.1 EV Operations

Senai International Airport serves as a gateway for domestic, international, and cargo flights. The National Transportation Policy 2019-2030, introduced by the Ministry of Transportation Malaysia, focuses on green transportation for the air transportation system. Among the initiatives outlined are institutionalizing green airports, green transportation terminals, and green logistics. This is because Malaysia has set a higher goal of reducing greenhouse gas emissions intensity by 45% by 2030.



In institutionalizing green airports, Senai International Airport can highlight the potential for EV use in its operations. This means that the internal operations of the airport should transition from conventional vehicles to EVs, such as boarding stair, fire engines, and luggage lorry.

3.6.2

Sustainable Aviation Fuel (SAF) for Air Transportation to **reduce greenhouse gas emissions** in the air transportation sector by up to **75%**. However, SAF usage is still new and limited, but the Malaysian government has proposed using a **1%** SAF blend in aviation fuel by 2030. The main challenges hindering SAF commercialization in Johor include high production costs and the absence of enforcement requiring SAF usage at present.

Preliminary studies to develop technology and infrastructure for SAF production in the air transportation sector must be conducted in collaboration with local research institutions. Developing technology and infrastructure in Johor is crucial to ensuring SAF production at more competitive prices. Efforts could begin with pilot projects in collaboration with local airlines or industry players to produce SAF on a larger scale.



4.0

Existing Policies Related to Green Transportation

Existing policies related to green transportation in Malaysia play an important role in efforts to achieve sustainable development and reduce negative environmental impacts. One of the key policies is the National Green Technology Policy, which encompasses economic, environmental, and social elements. This policy aims to align the growth of the green technology industry with increasing its contribution to the national economy, ensuring sustainable development, and conserving the environment for future generations.

In the transportation sector, this policy emphasizes more efficient energy use and carbon emission reductions through alternative fuels such as biofuels and renewable energy. Additionally, the National Transportation Policy plays an important role in enforcing compliance with environmental acts and regulations while making public transportation networks the backbone of sustainable urban growth and transportation planning, as shown in Figure 7.

In line with Malaysia's efforts to reduce greenhouse gas emissions, the Iskandar Malaysia Low Carbon Society Blueprint 2030 - Climate Action Plan (CAP) was developed at the state level in Johor in 2022. This Policy highlights green mobility initiatives, including EVs, Biofuels and hydrogen. Furthermore, several policies related to green transportation include:

1

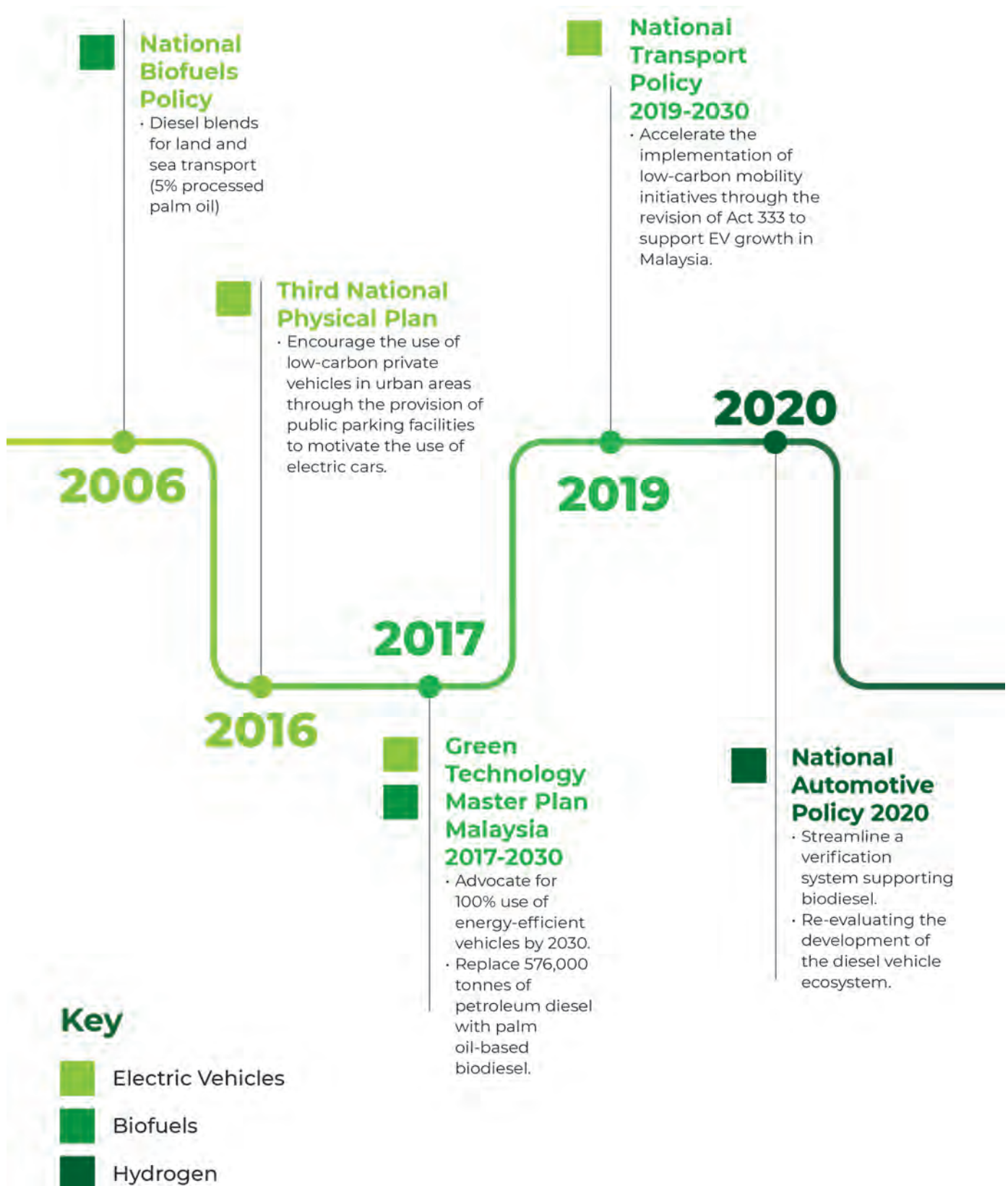
Johor Sustainable Development Plan 2030
PPMJ 2030

2

Johor State Sustainability Policy (DKNJ)
2017-2021

3

Johor State Structure Plan
2030



(cont.)



Figure 7: Policies Introduced in Malaysia Related to the Transportation Sector

5.0 Vision and Objectives of the Johor Green Transportation Policy

The vision and objectives of the Johor Green Transportation Policy 2030 are formulated based on data collected to enhance the use of EV and biofuels while ensuring environmental sustainability in Johor. This policy is also guided by the current EVCB within Johor, PLANMalaysia guidelines, present and future challenges, the latest policy proposals to strengthen EV usage, and the incentives that the state government may provide in the future (Figure 8).

JOHOR GREEN TRANSPORTATION POLICY 2030

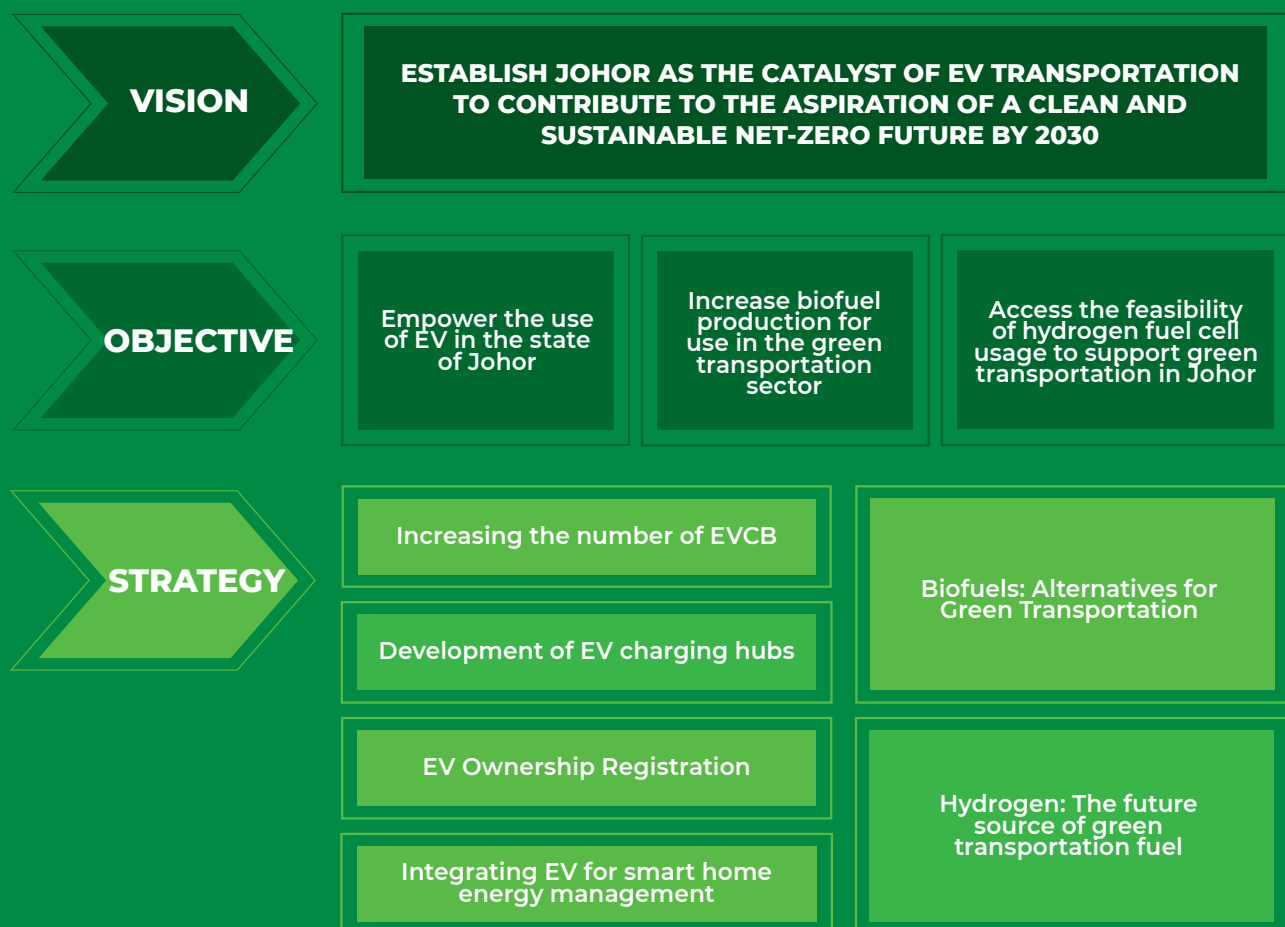


Figure 8: Framework of the Johor Green Transportation Policy 2030

Several key targets and actions to be achieved by 2030 are as follows:

1- *Use of EV*

- ✓ Encourage the use of EVs, starting with adoption by state government and expanding to the community. The target is to have 2,000 registered EVs in Johor by 2030.
- ✓ Improve EVCB infrastructure, considering installation costs, maintenance, and safety.
- ✓ Develop nine (9) charging hubs powered by solar energy as the electricity source.
- ✓ Promote the use of EVs for operations and logistics in the aviation and maritime sectors.

2- *Production and Use of Biofuels*

- ✓ Support the federal government's mandate to implement the B30 biodiesel programme by 2030, aiming to increase biodiesel production in Johor by 125 million litres annually.
- ✓ Execute pilot projects for the production and use of alternative biofuels (e.g., bioethanol blended with petrol for land transportation, biomethanol for maritime transportation, and SAF for air transportation) in Johor by 2030.
- ✓ Target annual production of 1.6 million litres of biomethanol and 2.2 million litres of SAF.
- ✓ Estimated potential investment for biofuels: RM600 million.
- ✓ Create 1,100 job opportunities.
- ✓ Reduce carbon emissions by 8.25% by 2030.

6.0 Implementation Timeline

The implementation period for the Johor Green Transportation Policy 2030 action plan is divided into three (3) phases, as shown in Table 5: short-term (Quick Win), medium-term, and long-term. The detailed timeline with the corresponding implementation years is as follows:

Table 5: Implementation Timeline for Johor Green Transportation Action Plan 2030

	TIME FRAME	YEAR OF IMPLEMENTATION
Short-Term (Quick Win)	1 - 2 Years	2025 - 2026
Medium-Term	3 - 4 Years	2025 - 2028
Long-Term	5 - 6 Years	2025 - 2030

7.0 Quick Win Implementation Initiatives

There are six (6) Quick Win implementation initiatives to be executed within one (1) to two (2) years, as detailed in Table 6.

Table 6: List of Quick Win Implementation Initiatives

STRATEGY	QUICK WIN IMPLEMENTATION INITIATIVES
S1: Increasing the Number of EV Charging Bays (EVCB)	IP 1: Establish EVCBs in PBT administrative area to achieve the target of 1,245 units by 2030.
	IP 2: Promote the installation of EVCBs to private companies.
	IP 4: Develop a user-friendly, accessible integrated application to ensure a smooth and satisfactory user experience.
S2: Development of EV Charging Hubs	IP 1: Provide EV charging hubs in nine (9) locations by 2030.
S3: EV Ownership Registration	IP 1: Encouraging the use of EVs at the state government level as official departmental and within the community to achieve the target of 15,840 EV registrations in Johor.
S5: Biofuels: Alternatives for Green Transportation	IP 1: Create a biomass ecosystem in Johor to enhance the economic viability of biomass for production biomass fuel for green transportation.

Strategies and Action Plan

Johor Green Transportation Policy 2030

8.0 Strategies and Action Plan Green Transportation

The Johor Green Transportation Policy 2030 comprises **six (6) strategies** with **15 implementation initiatives**. These initiatives are supported by **62 programmes** to achieve the policy's vision, as shown in Figure 9

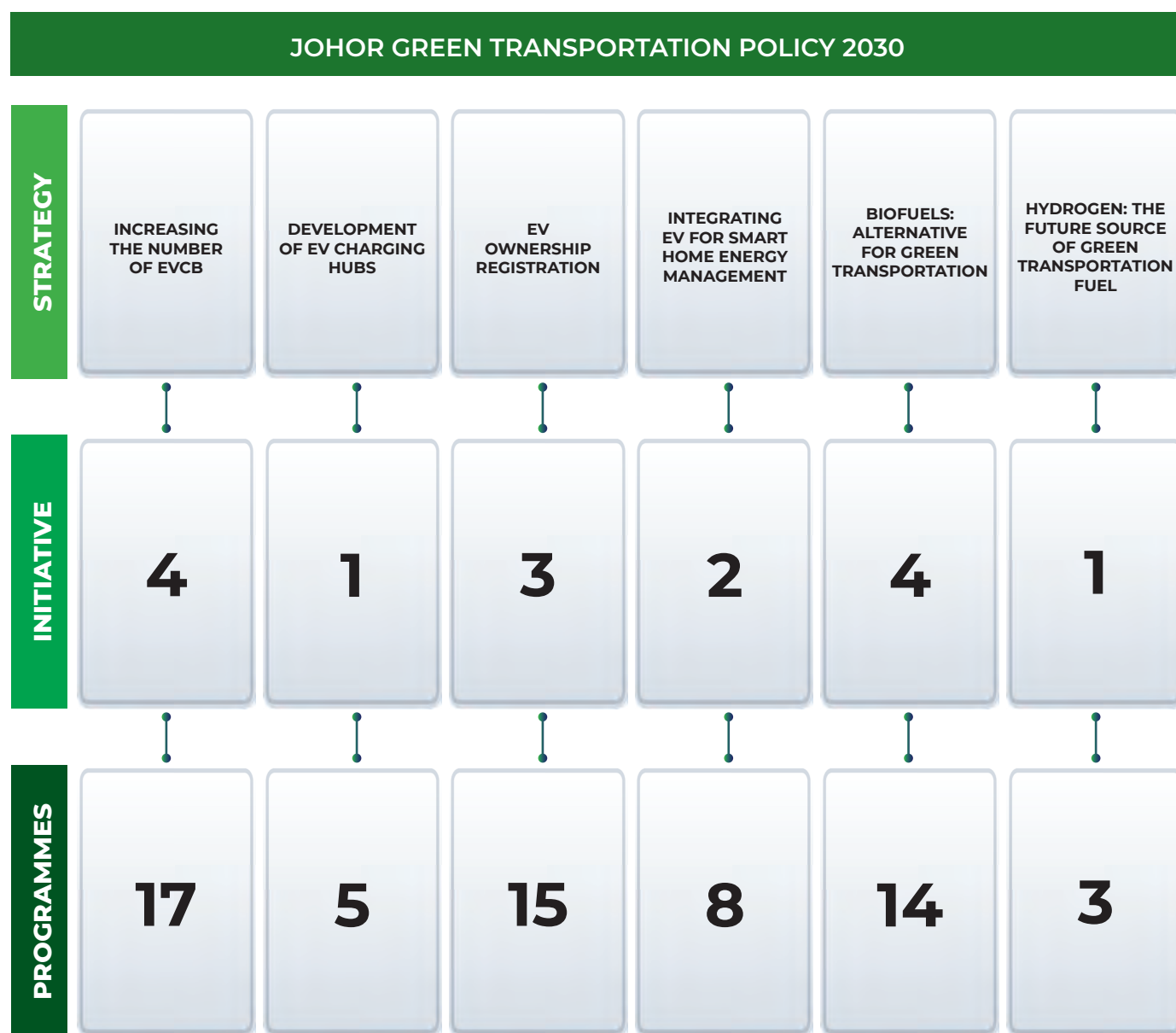


Figure 9: Summary of the Johor Green Transportation Policy 2030

STRATEGY 1

Increasing The Number Of Electric Vehicle Charging Bays (EVCB)

OBJECTIVE

One of the main objectives of this policy is to increase the number of EVCBs in Johor to meet the needs of future EV users. The development of EVCB infrastructure must be planned and built to cater to demand and facilitate both domestic and international EV users in Johor. As of September 2024, 377 EVCBs have been installed for commercial and public use. This strategy aims to provide 1,245 EVCBs across Johor by 2030, representing a 73% Increase.

SEPTEMBER 2024

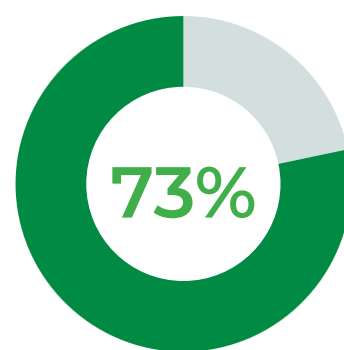
377
EVCB unit



YEAR 2030

1,245
EVCB unit

Increasing



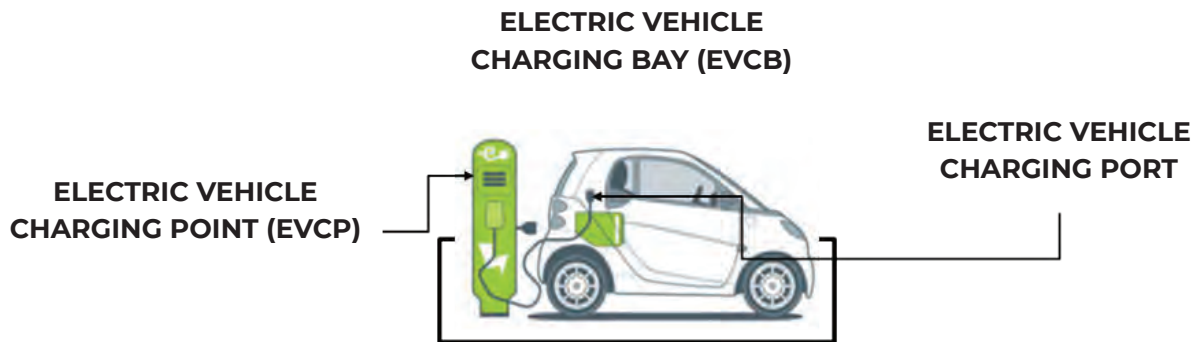
IMPLEMENTATION INITIATIVE

1. Establish EVCBs in PBT administrative areas to achieve the target of 1,245 units by 2030.
2. Promote the installation of EVCBs to private companies.
3. Enhance Development Plans for EVCB development.
4. Develop a user-friendly, accessible integrated application to ensure a smooth and satisfactory user experience.

IP 1:

ESTABLISHING EVCBS IN PBT ADMINISTRATIVE AREAS TO ACHIEVE THE TARGET OF 1,245 UNITS BY 2030

Johor is expected to experience high demand for EVCBs due to Singapore's approach, which sets a target for the use of EVs starting in 2030, gradually increasing until it is fully enforced by 2040. As a result of this approach, Johor has the potential to become a charging location for EVCBs for vehicles crossing the border for daily activities or leisure in the state. The installation of EVCB involves two (2) key criteria that must be considered: the charging device and the number of charging points and ports.



The installation of EVCBs aims to facilitate the use of EVs and encourage more residents to switch to environmentally friendly vehicles. The selection of EVCB locations is the result of an analysis that considers the accessibility of existing EVCB coverage areas. Based on benchmarking studies, the criteria for selecting locations for EVCBs are based on two (2) factors as follows:

- i. Land Use Patterns:
 - a. Residential areas;
 - b. Commercial zones;
 - c. Office buildings;
 - d. Institutions;
 - e. Educational facilities;
 - f. Religious institutions; and
 - g. Open spaces.
- ii. Traffic Infrastructure:
 - a. Main roads; and
 - a. Secondary roads.

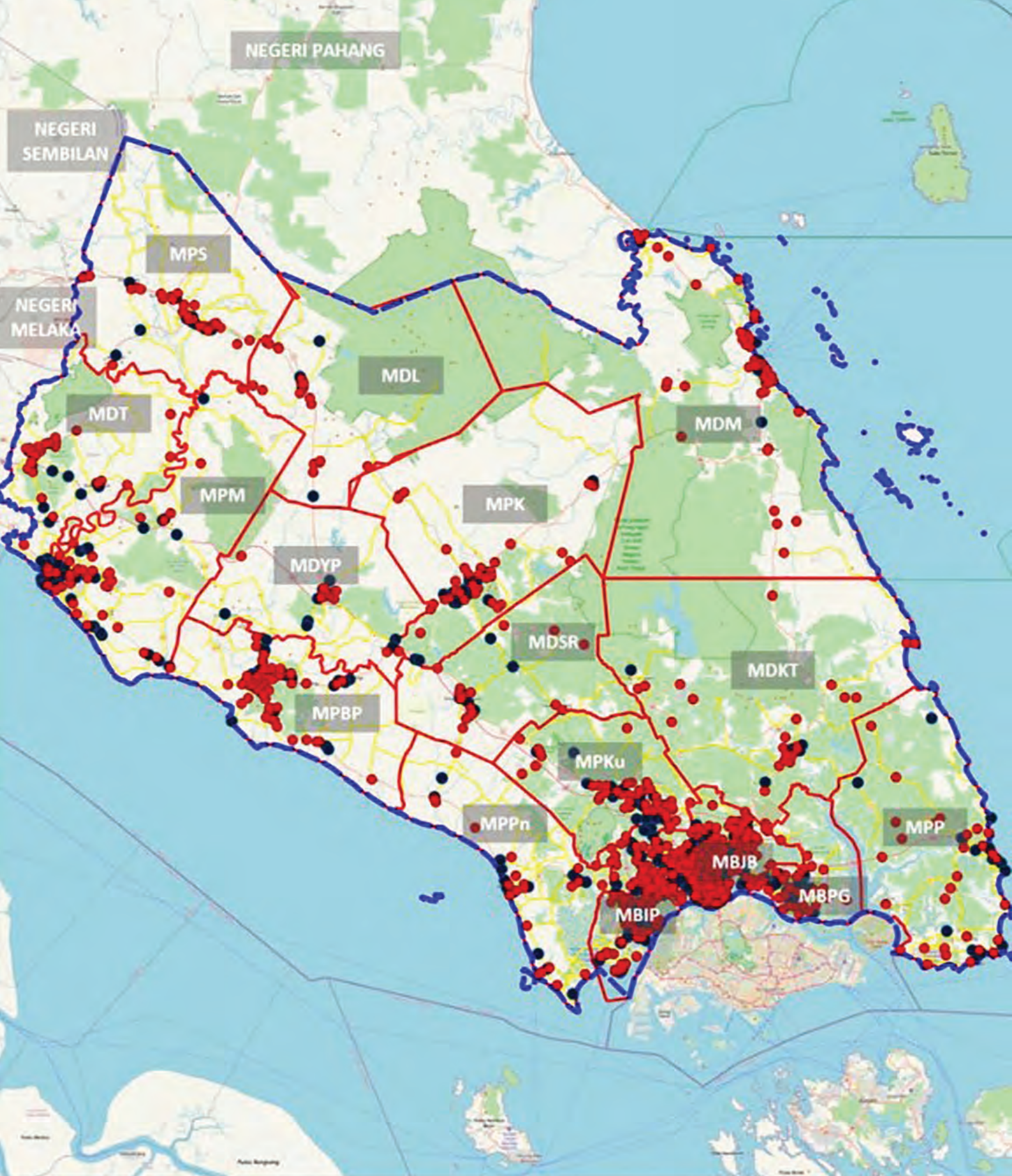
The installation of EVCBs involves both alternating current (AC) and direct current (DC) power supplies. AC installations incur lower infrastructure costs compared to DC, making them more suitable for daily use by EV users. Furthermore, this type of charger can expand access for EV users, in line with the need for sustainable transportation.



Table 7 and Figure 10 outline the current number of EVCBs by PBT, along with the targets for expansion from 2025 to 2030.

Table 7: Proposed Number of EVCBs by PBT

NO	LOCAL AUTHORITY (PBT)	CURRENT EVCB (SEPTEMBER 2024)	TARGET EXPANSION EVCB	TOTAL EVCB BY 2030
1.	Majlis Bandaraya Johor Bahru	149	200	349
2.	Majlis Bandaraya Iskandar Puteri	142	73	215
3.	Majlis Bandaraya Pasir Gudang	1	45	46
4.	Majlis Perbandaran Batu Pahat	9	89	98
5.	Majlis Perbandaran Kluang	17	52	69
6.	Majlis Perbandaran Kulai	26	63	89
7.	Majlis Perbandaran Muar	13	64	77
8.	Majlis Perbandaran Pontian	0	47	47
9.	Majlis Perbandaran Segamat	1	42	43
10.	Majlis Perbandaran Pengerang	15	29	44
11.	Majlis Daerah Kota Tinggi	0	20	20
12.	Majlis Daerah Labis	0	16	16
13.	Majlis Daerah Mersing	0	22	22
14.	Majlis Daerah Simpang Renggam	0	22	22
15.	Majlis Daerah Tangkak	2	50	52
16.	Majlis Daerah Yong Peng	2	34	36
TOTAL		377	868	1,245



SCALE 1 : 1,000,000

COORDINATE SYSTEM
GDM2000 (EPSG3377)
JOHOR GRID

FIGURE 10
STUDY LOCATION MAP

PROPOSED DISTRIBUTION OF EV CHARGING STATIONS

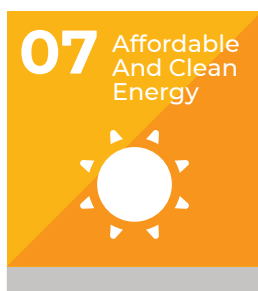
LEGEND

-  Johor Border
-  Local Authority Boundary
-  EV Charging Location 2025-2027
-  EV Charging Location 2028-2030

PROGRAMMES

- ☐ Promote the development of EVCB spaces/lot in PBT administrative areas.
- ☐ Provide both AC and DC chargers at a 5:1 ratio (AC:DC) to cater to diverse needs.
- ☐ Integrate EVCBs into existing developments.
- ☐ Expand EVCB installations in tourist hotspot areas.
- ☐ Establish strategic partnerships with private companies or industry players for EVCB development.
- ☐ Conduct detailed studies involving related departments, agencies, and private parties to identify suitable EVCB locations.

SDG



IP 2:

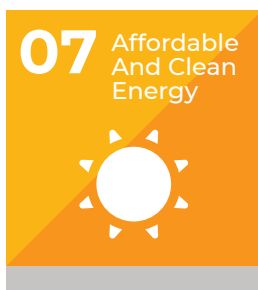
PROMOTE THE INSTALLATION OF EVCBs TO PRIVATE COMPANIES

Considering that the establishment of charging stations may incur high costs and difficulties in obtaining funding, collaboration with private companies through Public-Private Partnerships is a viable option in line with the state government's ambition to develop green technology towards the "Maju Johor 2030" mission. The involvement of the state government in promoting collaborative programmes with private companies will also provide benefits to both parties, particularly in terms of cost and the procedures involved in applying for the installation of charging points. Collaboration between the state government and private companies can enhance competitiveness in attracting investments to develop EVCBs.

PROGRAMME

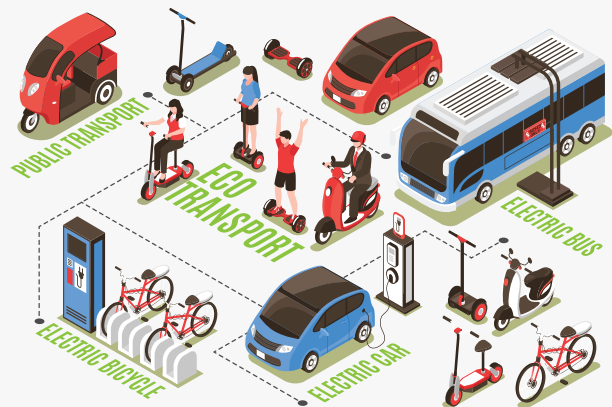
- ▢ Collaboration programme with local and foreign car manufacturers to expand the provision of EVCBs.
- ▢ Introducing special incentives under the jurisdiction of the State Government for EVCB investors.

SDG



IP 3: ENHANCE DEVELOPMENT PLANS FOR EVCB DEVELOPMENT

PBT have different views on the appropriate methods for processing EV installation applications and subsequently monitoring EV installation sites due to differences in procedures across each PBT. PBT need to review current procedures and methods for submitting Certificates of Completion and Compliance (CCC) during the process of granting development approvals for EVCBs. A clear framework should be coordinated and standardised for use by each PBT in the state of Johor. This way, potential providers of EVCBs can use the same method, even in different locations.



Each PBT has different methods and procedures for processing EVCB development approval applications, particularly concerning the submission of CCC. A framework needs to be coordinated and applied by each PBT in Johor so that the potential development of EVCBs can be implemented more efficiently.

PROGRAMME

- Develop planning and development guidelines for EVCBs in Johor.
- Provide a special lane for EVCB planning and development applications at each PBT.
- Develop a special permit application system for EVCB planning and development at each PBT.
- Reduction of development charges by up to 50% for EVCB construction in each PBT area until 2030.
- Improve the process for submitting CCC or Principal Submitting Person (PSP) in every planning and development application for EVCBs.
- Conduct a detailed study on the setting of EV charging tariffs.

SDG



IP 4:

DEVELOPE A USER-FRIENDLY, ACCESSIBLE INTEGRATED APPLICATION TO ENSURE A SMOOTH AND SATISFACTORY USER EXPERIENCE

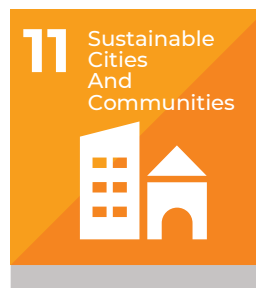
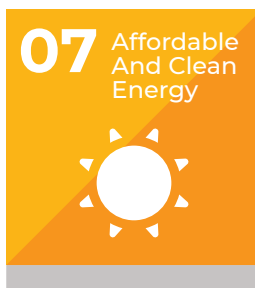


An integrated application needs to be developed to facilitate user access to EVCB location information, manage online payments on a dedicated platform seamlessly, and provide incentives or rebates for EVCB usage.

PROGRAMME

- Establish collaboration with industry operators or players to develop EV-related applications.
- Promote the application to users by providing incentives or rebates for registration on the application.
- Provide an integrated, comprehensive, and inclusive EVCB application system to improve the availability of EV charging facilities in the state of Johor.

SDG



STRATEGY 2

Developing EV Charging Hubs

OBJECTIVE

This policy aims to develop EV charging hubs to facilitate EV users' journeys. These charging hubs are designed to provide maintenance and charging services for all vehicle types (motorcycles, cars, buses, and lorries). Designated spaces for EV motorcycles that use battery swap systems will be separated from EVCBs to facilitate battery exchange. This strategy also includes planning for several strategic locations as charging hubs.

The criteria for EV charging hubs generally encompass several important aspects to ensure efficiency, accessibility, and sustainability. The following are the criteria to be considered:

i. Strategic Location:

- a. Located in high-traffic areas such as city centres, shopping malls, highways, petrol stations, or public transportation hubs.
- b. Close to residential and workplace areas for easy access by users.

ii. Charging Capacity:

- a. Provide various types of charging, such as fast charging (DC fast charging) and regular charging (AC charging) for different types of EV.
- b. Ability to support vehicles of various sizes such as cars, motorcycles, buses, and electric lorries.
- c. Optimal Electricity Substation (PE) size between 1-25 Megavolt-amperes (MVA).

iii. High-tech Infrastructure:

- a. Utilise the latest technology such as smart charging, which can be connected to mobile applications for remote monitoring.
- b. Equipped with electronic payment systems and integration with energy management systems to control energy usage efficiently.

iv. Clean Energy Sources:

- a. Promote sustainability by using RE such as solar or wind to power the EVCB.
- b. Include battery storage systems to store excess energy from renewable sources.

v. User Facilities:

- a. Easily accessible for wheelchair users or people with disabilities.
- b. Provide additional facilities such as seating, Wi-Fi, restrooms, and cafes to ensure comfort during charging.

vi. Safety and Maintenance:

- a. Equipped with safety features such as CCTV, 24/7 surveillance, and adequate lighting.
- b. Regular maintenance to ensure chargers are always functioning well and safely.

vii. Compliance with Standards and Regulations:

- a. Adhere to international and local standards for EV charging, as stipulated in the Guide on Electric Vehicle Charging System (EVCS) issued by the Energy Commission
- b. Comply with local safety guidelines and regulations regarding the installation and operation of charging hubs, as outlined in the EVCB Charging Space Guidelines.

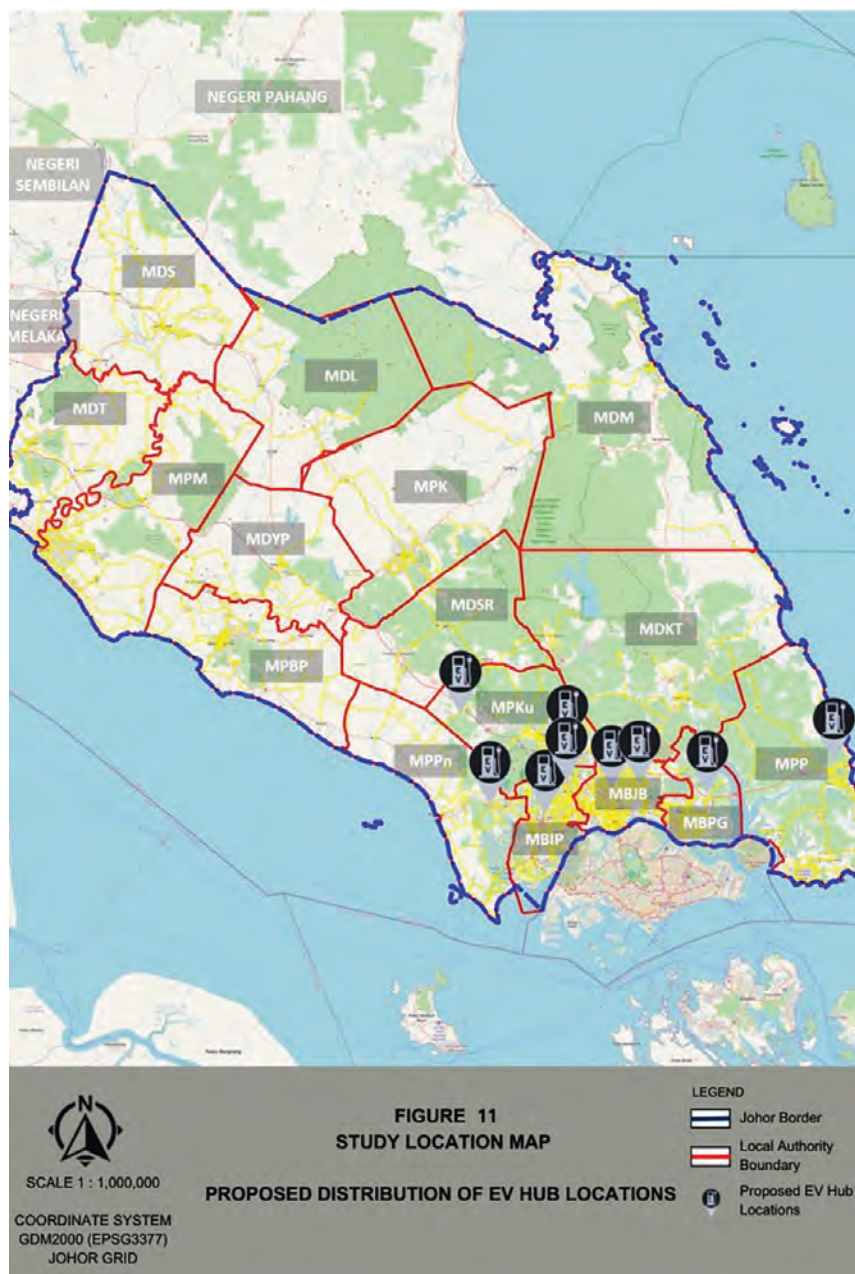
EV charging hubs that meet these criteria will support widespread EV usage, promote environmental sustainability, and facilitate the transition to green mobility.

IMPLEMENTATION INITIATIVES

- 📄 Provide EV charging hubs in nine (9) locations by 2030.
-

IP 1: PROVIDE EV CHARGING HUBS IN NINE (9) LOCATIONS BY 2030

The establishment of EV charging hubs is an essential development plan to ensure that user demand is met and maintenance services can be centrally managed for all types of EV modes. These EV charging hubs represent a new initiative in Malaysia, with Johor set to be the first to develop such hubs. Therefore, the state government can collaborate with relevant industry players to create a sustainable EV charging hub that will serve as a benchmark for other states. The maintenance facilities provided will be integrated with EVCB for all types of vehicles. Among the proposed strategic locations for the hub placement are as shown in Figure 11.



The service hub capacity depends on the extent of its development, while the capacity is also influenced by the availability and capability of the supplied electrical energy sources. The area details are shown in Table 8. This area takes into account potential locations for EV charging hubs.

Table 8: Proposed EV Charging Hub Locations

LOCATION	DETAILED LOCATION
Skudai	Universiti Teknologi Malaysia, Skudai facing Skudai Highway
Tampoi	Warehouse@Kilang Bateri Jalan Tampoi, Kawasan Perindustrian Tampoi, Johor Bahru
Larkin	Larkin Sentral
Senai	Senai Airport City
Gelang Patah	Near Terminal Bas Gelang Patah
Pengerang	Universiti Teknologi Malaysia near Bandar Penawar
Sedenak	Ibrahim Technopolis Mukim Batu, Kulai
Pasir Gudang	Near Lebuhraya Pasir Gudang, near to Lotus, Bandar Seri Alam
Pontian	Pekan Nanas –Skudai Pontian Highway

PROGRAMME

- Initiating collaboration between relevant agencies (ST, PLANMalaysia, PBT and TNB) for the installation of charging hubs.
- Determining the availability of electrical power capacity that can accommodate EV charging hubs.
- Utilizing RE sources such as solar energy at the EV charging hubs.
- Conducting a detailed study to determine the suitability of locations for EV charging hubs.
- Conducting research to identify EV types and travel patterns across the Malaysia-Singapore border using AI technology.

SDG



STRATEGY 3

EV Ownership Registration

OBJECTIVE

Increasing EV usage through vehicle purchase among the public, targeting 15,840 EV registrations in Johor by 2030.

IMPLEMENTATION INITIATIVES

- Encouraging the use of EVs at the state government level as official departmental vehicles and within the community to achieve the target of 15,840 EV registrations in Johor.
- Mandating the use of EVs for public transportation (buses and taxis) by City Councils and Municipal Councils, while promoting their use in District Councils by 2030.
- Expanding EV usage to include commercial vehicle services and p-hailing services.

IP 1:

ENCOURAGING THE USE OF EVS AT THE STATE GOVERNMENT LEVEL AS OFFICIAL DEPARTMENTAL VEHICLES AND WITHIN THE COMMUNITY TO ACHIEVE THE TARGET OF 15,840 EV REGISTRATIONS IN JOHOR.

The planning of EV ownership should align with community acceptance and affordability to ensure EVCB can meet future user demand. Therefore, increasing EV usage is crucial, whether using Hybrid Electric Vehicle (HEV), Plug-in Hybrid Electric Vehicle (PHEV), Battery Electric Vehicle (BEV), and Fuel Cell Vehicle (FCV).

This implementation initiative targets 15,840 EV registrations by 2030, based on the projected increase in EV registrations from 2022 to 2024. This initiative also aligns with Johor's goal of becoming a sustainable state by 2030. Additionally, the state of Johor considers competition with Singapore, which has set a target to fully adopt EVs by 2040, as a strategic move to accelerate the transition to green transportation.

PROGRAMME

- Expanding each department within the Johor State Government to use EVs for at least 50% by 2030.
- Providing corporate rental EV services to Johor State Government departments.
- Ensuring adequate infrastructure for EVCB and battery swap services.
- Providing free parking for EV users for six (6) months to one year.

☞ Providing EV parking spot at least 2% (>50 TLK) or 1 spot (<50 TLK).

☞ Implementing awareness programmes at driving schools to promote the importance of EVs by incorporating EV modules into the curriculum.

SDG



IP 2:

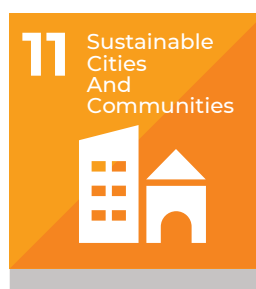
MANDATING THE USE OF EVS FOR PUBLIC TRANSPORTATION (BUSES AND TAXIS) BY CITY COUNCILS AND MUNICIPAL COUNCILS, WHILE PROMOTING THEIR USE IN DISTRICT COUNCILS BY 2030.

Public transportation systems need to transition to newer, cleaner technologies. The Johor State Government, through PAJ, can collaborate with public transportation operators to replace all conventional diesel buses with electric buses. To achieve this goal, it is important to present a clear framework setting out the appropriate time frame. This will ensure that there are no more conventional diesel buses in Johor by 2030. This step will not only reduce pollution but also improve the quality of life for Johor residents by providing more environmentally friendly public transportation.

PROGRAMME

- Expanding EV use in public services (buses and taxis) fully or in phases.
- Providing a 10% to 20% reduction in EVCB rental charges to public service providers.
- Introducing paid advertising programmes for taxis or e-hailing drivers to promote EV use in Johor.
- Offering financing options for the acquisition of electric buses and taxis at an interest rate of 2% or any more competitive and relevant interest rate through banking institutions.

SDG



IP 3:

EXPANDING EV USAGE TO INCLUDE COMMERCIAL VEHICLE SERVICES AND P-HAILING SERVICES.

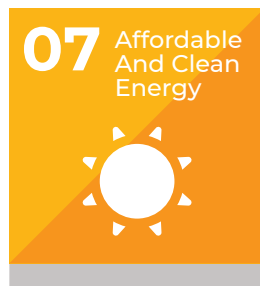
Domestic economic growth through JS-SEZ results in an increase in commercial vehicles, especially those crossing the Malaysia-Singapore border. Therefore, the government needs to encourage commercial vehicle operators to switch to EVs. The Johor State Government should also consider controlling and limiting the movement of non-electric commercial vehicles entering Singapore in the future.



PROGRAMME

- ▢ Providing EVCB for commercial vehicles at strategic locations.
- ▢ Mandating the use of EVs for logistics transportation at airports and ports.
- ▢ Mandating 50% EV use in motorcycle p-hailing services within Johor by 2030.
- ▢ Providing guidelines for EVCB installation at airports and ports.
- ▢ Identifying potential areas as Transfer Stations for converting conventional commercial vehicles to EVs for entry into Singapore.

SDG



STRATEGY 4

Integrating EV for Smart Home Energy Management

IMPLEMENTATION INITIATIVES

1. Develop the concept of Smart Homes in the planning of new residential areas.
2. Provide guidelines for installation and standards that align with electricity usage in each residential area.

OBJECTIVE

The development of smart home housing should incorporate EV charging points as an essential element generated by RE sources (solar). Providing EV charging points in every residence supports increased EV usage. The installation of EV charging points provides convenience to vehicle owners by allowing them to charge their vehicles easily, thus saving time. This charging infrastructure also supports the transition from fuel-based vehicles to EVs.



IP 1:

DEVELOP THE CONCEPT OF SMART HOMES IN THE PLANNING OF NEW RESIDENTIAL AREAS

Real estate developers should be encouraged to provide several units of homes with EV charging points using AC type, as charging can be done over a long duration, between 4 to 6 hours. This installation can facilitate the travel of EV owners by saving time and costs for charging at public EVCB. Therefore, the Johor State Government should encourage every developer to develop Smart Home in new housing developments by 2030. As a pioneer, this Smart Home concept can be applied in the development of housing for M40 groups and above.

PROGRAMME

- Encouraging real estate developers to provide EV charging points in new housing developments like M40-level housing and above.
- Providing a 10% to 15% exemption on property tax for Smart Home owners with EV charging points for the first five (5) years, depending on the terms set by every PBT.
- Offering development fee reductions of 10% to developers for applying the Smart Home concept.

- Conducting awareness programmes for the public and developers to increase knowledge about the importance and benefits of installing EV points at homes.
- Implementing pilot projects in several housing areas to demonstrate the effectiveness and benefits of EV point installation.

SDG



IP 2:

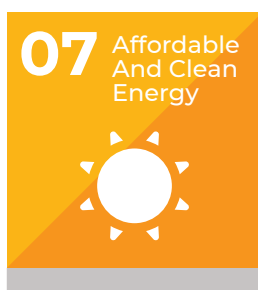
PROVIDING GUIDELINES FOR INSTALLATION AND STANDARDS THAT ALIGN WITH ELECTRICITY USAGE IN EACH RESIDENTIAL AREA

Providing guidelines for the installation of EV charging points in every residence is crucial to ensure the installation process is carried out correctly and efficiently. These guidelines aim to ensure that the installation of EV charging points meets safety, efficiency and quality installation standards. Clear and comprehensive guidelines will serve as important references for all parties involved in the installation and maintenance of EV charging points.

PROGRAMME

- ▢ Collaborating with ST agency, PLANMalaysia, PBT, and TNB for setting charging standards at home.
- ▢ Offering EV charging point installation packages as part of new home sales.
- ▢ Conducting studies to determine charging capacity in each home and safety of EV charging point installations.

SDG



STRATEGY 5

Biomass Fuel: Alternative for Green Transportation

OBJECTIVE

Utilizing biomass resources in Johor to enhance the production of biomass fuel as an alternative for green transportation (including land, maritime, and air transportation sectors).

IMPLEMENTATION INITIATIVES

1. Creating a biomass ecosystem in Johor to enhance the economic viability of biomass for producing biomass fuel for green transportation.
2. Increasing the production of B30 biodiesel and blending bioethanol with petrol for the land transportation sector.
3. Increasing the production and use of biomethanol for the maritime transportation sector.
4. Increasing the production and use of SAF for the air transportation sector.

IP 1:

CREATING A BIOMASS ECOSYSTEM IN JOHOR TO ENHANCE THE ECONOMIC VIABILITY OF BIOMASS FOR PRODUCING BIOMASS FUEL FOR GREEN TRANSPORTATION

There are various types of biofuels such as biodiesel, bioethanol, biomethanol, and SAF, each requiring different sources of biomass and conversion technologies. Among the sources of biomass that can be utilised for the production of biofuels are palm oil residues, which include OPF, OPT, EFB, Mesocarp Fibres, PKS, and POME. Additionally, used cooking oil can also be collected and repurposed into biofuels for use in the transportation sector. Without a platform to monitor biomass sources and biofuel demand, it becomes challenging to sustain biofuel business operations in Johor. A biomass ecosystem must be established in Johor to enhance the economic viability of biomass and identify the types and potential of biomass for biofuel production in the state.



PROGRAMME

- 📄 Conducting a comprehensive study that includes:
 - i. Identifying the potential and economic impact of biomass generation and demand in Johor for biofuel production.
 - ii. Identifying several strategic locations within Johor for the development of biomass collection centres.

- 📄 Establishing a regulatory body to develop and manage the biomass and biogas economy for plantations under the jurisdiction of the Johor State Government.

- 📄 Regulating the price of biomass for plantations under the supervision of the Johor State Government.

- 📄 Developing more attractive incentives (such as FIT for biofuels) to be offered to biomass producers from plantations under the jurisdiction of the Johor State Government, in line with rising capital and operational costs.

SDG



IP 2:

INCREASING THE PRODUCTION OF B30 BIODIESEL AND BLENDING BIOETHANOL WITH PETROL FOR THE LAND TRANSPORTATION SECTOR

Malaysia has implemented the use of biodiesel in the land transportation sector as a measure to reduce dependency on fossil fuels. In 2023, the federal government, through NETR Roadmap, outlined an initiative to implement the B30 Biodiesel Programme by 2030.

However, the initiative to blend bioethanol with petrol has not yet been developed in Malaysia. As this is a novel initiative, a study on the potential production and utilisation of bioethanol blends should be conducted beforehand. In theory, bioethanol can be derived from lignocellulosic biomass, including oil palm fronds, oil palm trunks, empty fruit bunches, rice straw, wood chips, sugarcane bagasse, banana leaves, and food waste.

PROGRAMME

- 📄 Conduct a study to identify the potential of blending 10% bioethanol with petrol and its feasibility for use in land transportation (light vehicles) in Johor.

- 📄 Implement a Public-Private Partnership model for the development of technologies related to bioethanol production for use in the land transportation sector.

- 📄 Implementing a pilot project in collaboration with local higher education institutions and industry players to analyze the effectiveness of bioethanol blend usage in petrol vehicles and its environmental impact.

- ☞ Increase the production of B30 biodiesel in the State of Johor by 125 million litres annually by 2030 to support the federal government's initiative to implement the B30 Biodiesel Programme.
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SDG



IP 3:

INCREASING THE PRODUCTION AND USE OF BIOMETHANOL FOR THE MARITIME TRANSPORTATION SECTOR

The State of Johor has the potential to evolve into a regional hub for the production and storage of green biofuels, with support from the federal government and local industries. This is attributed to Johor's wealth of biomass resources, making it one of the richest states in Malaysia in this regard. Additionally, Johor's strategically located ports hold significant potential to play an essential role at both regional and global levels in supporting carbon reduction efforts for the maritime sector. An initiative to boost the production and utilisation of alternative fuels, specifically biomethanol, for the maritime transportation sector should be implemented in Johor. This initiative can serve as a catalyst for transforming the regional maritime industry and position Johor as a leader in achieving zero-carbon emissions in the maritime domain. Since alternative fuels derived from biomass, such as biomethanol, are flammable, a feasibility study is essential to ensure the safety of their usage.

PROGRAMME

- 📄 Conduct a gap analysis to identify existing biomass resources in Johor for biomethanol production.

- 📄 Foster collaboration between the state government, universities, and private companies for the development of technologies and research on producing biomethanol from biomass resources.

- 📄 Implement a pilot project at the PTP to evaluate the feasibility and safety of biomethanol usage and its environmental impact.

SDG



IP 4:

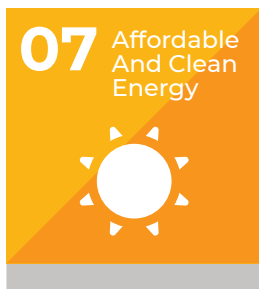
INCREASING THE PRODUCTION AND USE OF SAF FOR THE AIR TRANSPORTATION SECTOR

The use of SAF in the aviation sector is still in its early stages, with several challenges to address, such as the high production cost of SAF. As of the third quarter of 2024, there has been no enforcement mandating the use of SAF. Currently, SAF initiatives are limited to promotional purposes. Before SAF can be fully commercialised, a comprehensive study must be conducted to establish the necessary infrastructure and enforcement mechanisms in a systematic manner.

PROGRAMME

- Conduct a gap analysis to identify the availability of raw materials for SAF production and assess SAF demand levels.
- Undertake research to optimise SAF production processes to reduce overall costs.
- Implement a pilot project at Senai International Airport to evaluate the feasibility and safety of SAF usage and its environmental impact.

SDG



STRATEGY 6

Hydrogen: The Future Source of Green Transportation Fuel

OBJECTIVE

To assess the feasibility of utilising hydrogen fuel cells as an alternative energy source and the required hydrogen distribution infrastructure for land transportation to support carbon emission reductions in the transportation sector in Johor.

IMPLEMENTATION INITIATIVES

1. Conduct an initial study on the potential use of hydrogen fuel cells for land transportation.



IP 1:

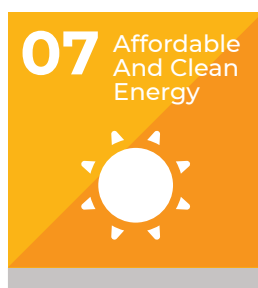
CONDUCTING AN INITIAL STUDY ON THE POTENTIAL USE OF HYDROGEN FUEL CELLS FOR LAND TRANSPORTATION

In preparation for the adoption of hydrogen as a fuel for land transportation, an initial study is needed to evaluate the feasibility of implementing hydrogen fuel cells in the land transportation sector. This study is crucial to ensure that the planning and development of hydrogen infrastructure to support green transportation in Johor can be executed more systematically in the future.

PROGRAMME

- Identify the demand for hydrogen-powered vehicles, such as hydrogen fuel cell electric vehicles (FCEVs) and hydrogen buses, in Johor over the next 10 years.
- Assess the potential of using hydrogen buses for the public transportation sector in Johor.
- Conduct a study to establish safety and technical standards for the use of hydrogen-powered vehicles in Johor.

SDG



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Conclusion

Johor Green Transportation Policy 2030

9.0 Conclusion

The Johor Green Transportation Policy 2030 is a significant strategic initiative in Johor's efforts toward sustainable and low-carbon development. This policy focuses on three key components: enhancing the adoption of increasing the production and use of biofuels, and assessing the potential of hydrogen as a future fuel source. These efforts not only help reduce carbon emissions but also raise public awareness about the importance of green technology in transportation. However, several challenges must be addressed, such as the high cost of infrastructure development, the lack of EVCBs in rural areas, and the need for more attractive incentives and policies to encourage investment. Through the implementation of a well-structured action plan, collaboration between the state government, local authorities, the private sector, and the community is crucial to ensuring the success of this policy. If effectively executed, Johor has the potential to become a leader in green transportation in Malaysia, contributing to the country's net-zero and sustainable development aspirations by 2030.

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Action Plan

Johor Green Transportation Policy 2030

10.0 Action Plan Johor Green Transportation 2030

Strategy	Implementation Initiatives	Programmes	Lead Agency	Supporting Agency	Year of Implementation		
					Short-Term (1-2 years)	Medium-Term (3-4 years)	Long-Term (5-6 years)
					2025-2026	2025-2028	2025-2030
S1 Increasing the Number of Electric Vehicle Charging Bays (EVCB)	IP1 Establish EVCBs in PBT administrative areas to achieve the target of 1,245 units by 2030.	P1 Promote the development of EVCB spaces/lot in PBT administrative areas.	PBT	PMJ, IRDA, EV Service Provider Company, PLUS	/		
		P2 Provide both AC and DC chargers at a 5:1 ratio (AC:DC) to cater to diverse needs.	PBT	PMJ, IRDA, EV Service Provider Company			/
		P3 Integrate EVCBs into existing developments.	PBT	IRDA	/		
		P4 Expand EVCB installations in tourist hotspot areas.	PBT	IRDA, EV Service Provider Company, Tourism Johor	/	/	
		P5 Establish strategic partnerships with private companies or industry players for EVCB development.	PBT	IRDA, EV Service Provider Company		/	
		P6 Conduct detailed studies involving related departments, agencies, and private parties to identify suitable EVCB locations.	BPEN	PTD, PBT, IRDA, ST, JBPM, PMJ, IPT		/	

Strategy	Implementation Initiatives	Programmes	Lead Agency	Supporting Agency	Year of Implementation		
					Short-Term (1-2 years)	Medium-Term (3-4 years)	Long-Term (5-6 years)
					2025-2026	2025-2028	2025-2030
	IP2 Promote the installation of EVCBs to private companies.	P1 Collaboration programme with local and foreign car manufacturers to expand the provision of EVCBs.	GLC/ PDT	Private Company	/		
		P2 Introducing special incentives under the jurisdiction of the State Government for EVCB investors.	SUK BKT, BPEN	PBT, MGTC, MOF, TNB, EV Service Provider Company			/
	IP3 Enhance Development Plans for EVCB development.	P1 Develop planning and development guidelines for EVCBs in Johor.	PMJ	PBT, IRDA	/		
		P2 Provide a special lane for EVCB planning and development applications at each PBT.	SUK BKT	PBT, ST, JBPM, PMJ, TNB		/	
		P3 Develop a special permit application system for EVCB planning and development at each PBT.	SUK BKT	PBT, ST, JBPM, PMJ, TNB			/
		P4 Reduction of development charges by up to 50% for EVCB construction in each PBT area until 2030.	SUK BKT	PBT, PMJ, BPEN	/		
		P5 Improve the process for submitting CCC or Principal Submitting Person (PSP) in every planning and development application for EVCBs.	PBT	PMJ, SUK BKT		/	

Strategy	Implementation Initiatives	Programmes	Lead Agency	Supporting Agency	Year of Implementation		
					Short-Term (1-2 years)	Medium-Term (3-4 years)	Long-Term (5-6 years)
					2025-2026	2025-2028	2025-2030
S2 Developing EV Charging Hubs	IP4. Develop a user-friendly, accessible integrated application to ensure a smooth and satisfactory user experience	P6 Conduct a detailed study on the setting of EV charging tariffs.	BPEN	ST, TNB, CPO	/		
		P1 Establish collaboration with industry operators or players to develop EV-related applications.	PDT	ICTJohor, TNB, IRDA, Private Company	/		
		P2 Promote the application to users by providing incentives or rebates for registration on the application.	PDT	ICTJohor, Private Company	/		
		P3 Provide an integrated, comprehensive, and inclusive EVCB application system to improve the availability of EV charging facilities in the state of Johor.	PDT	ICTJohor, Private Company	/		
		P1 Initiating collaboration between relevant agencies (ST, PLANMalaysia, PBT and TNB) for the installation of charging hubs.	PBT	ST, IRDA, JBPM, PMJ, TNB	/		
		P2 Determining the availability of electrical power capacity that can accommodate EV charging hubs.	TNB	PMJ, PBT	/		
		P3 Utilizing RE sources such as solar energy at the EV charging hubs.	PMJ	TNB	/		
		P4 Conducting a detailed study to determine the suitability of locations for EV charging hubs.	BPEN	PMJ, PBT, IRDA, IPT	/		

Strategy	Implementation Initiatives	Programmes	Lead Agency	Supporting Agency	Year of Implementation		
					Short-Term (1-2 years)	Medium-Term (3-4 years)	Long-Term (5-6 years)
					2025-2026	2025-2028	2025-2030
S3 EV Ownership Registration	IP1. Encouraging the use of EVs at the state government level as official departmental vehicles and within the community to achieve the target of 15,840 EV registrations in Johor.	P5 Conducting research to identify EV types and travel patterns across the Malaysia-Singapore border using AI technology.	BPEN	PMJ, UA	/		
		P1 Expanding each department within the Johor State Government to use EVs for at least 50% by 2030.	SUK Pengurusan	All Departments under the State Government, IRDA		/	
		P2 Providing corporate rental EV services to Johor State Government departments.	SUK Pengurusan	BPEN, IRDA	/		
		P3 Ensuring adequate infrastructure for EVCB and battery swap services.	PBT	PMJ, Private Company		/	
		P4 Providing free parking for EV users for six (6) months to one year.	PBT	Private Company			/
		P5 Providing EV parking spot at least 2% (>50 TLK) or 1 spot (<50 TLK).	PBT	PMJ, Private Company, SUK BKT	/		
		P6 Implementing awareness programmes at driving schools to promote the importance of EVs by incorporating EV modules into the curriculum.	JSC/ PDT	JPJ, Private Company			/

Strategy	Implementation Initiatives	Programmes	Lead Agency	Supporting Agency	Year of Implementation		
					Short-Term (1-2 years)	Medium-Term (3-4 years)	Long-Term (5-6 years)
					2025-2026	2025-2028	2025-2030
	IP2. Mandating the use of EVs for public transportation (buses and taxis) by City Councils and Municipal Councils, while promoting their use in District Councils by 2030.	P1 Expanding EV use in public services (buses and taxis) fully or in phases.	BPEN	PAJ, Public Transportation Company		/	
		P2 Providing a 10% to 20% reduction in EVCB rental charges to public service providers.	BPEN	PBT, PAJ		/	
		P3 Introducing paid advertising programmes for taxis or e-hailing drivers to promote EV use in Johor.	BPEN	PAJ		/	
		P4 Offering financing options for the acquisition of electric buses and taxis at an interest rate of 2% or any more competitive and relevant interest rate through banking institutions.	BPEN	Banking Agencies		/	
	IP3. Expanding EV usage to include commercial vehicle services and p-hailing services.	P1 Providing EVCB for commercial vehicles at strategic locations.	PBT	Private Company		/	
		P2 Mandating the use of EVs for logistics transportation at airports and ports.	MOT	Johor Port, PTP			/
		P3 Mandating 50% EV use in motorcycles p-hailing services within Johor by 2030.	MOT	Private Company		/	
		P4 Providing guidelines for EVCB installation at airports and ports.	PMJ	BPEN, Johor Port, PTP, MAHIB	/		

Strategy	Implementation Initiatives	Programmes	Lead Agency	Supporting Agency	Year of Implementation		
					Short-Term (1-2 years)	Medium-Term (3-4 years)	Long-Term (5-6 years)
					2025-2026	2025-2028	2025-2030
S4 Integrating EV for Smart Home Energy Management	IP1. Develop the concept of Smart Homes in the planning of new residential areas..	P5 Identifying potential areas as Transfer Stations for converting conventional commercial vehicles to EVs for entry into Singapore.	BPEN	PMJ, PBT	/		
		P1 Encouraging real estate developers to provide EV charging points in new housing developments like M40-level housing and above.	PMJ	PBT, ST, JBPM, TNB, PKPJ			/
		P2 Providing a 10% to 15% exemption on property tax for Smart Home owners with EV charging points for the first five (5) years, depending on the terms set by every PBT.	SUK BKT	PBT			/
		P3 Offering development fee reductions of 10% to developers for applying the Smart Home concept.	SUK BKT	PBT	/		
		P4 Conducting awareness programmes for the public and developers to increase knowledge about the importance and benefits of installing EV points at homes.	JSC	PMJ, Private Company	/		
		P5 Implementing pilot projects in several housing areas to demonstrate the effectiveness and benefits of EV point installation.	PKPJ	PBT, PMJ, Private Company	/		

Strategy	Implementation Initiatives	Programmes	Lead Agency	Supporting Agency	Year of Implementation		
					Short-Term (1-2 years)	Medium-Term (3-4 years)	Long-Term (5-6 years)
					2025-2026	2025-2028	2025-2030
	IP2. Provide guidelines for installation and standards that align with electricity usage in each residential area.	P1 Collaborating with ST agency, PLANMalaysia, PBT, and TNB for setting charging standards at home.	BPEN	PBT, ST, JBPM, PMJ, TNB, PKPJ			/
		P2 Offering EV charging point installation packages as part of new home sales.	BPEN	PBT, PMJ, PKPJ	/		
		P3 Conducting studies to determine charging capacity in each home and safety of EV charging point installations.	BPEN	PBT, PMJ, IPT	/		
S5 Biomass Fuel: Alternative for Green Transportation	IP1. Creating a biomass ecosystem in Johor to enhance the economic viability of biomass for producing biomass fuel for green transportation	P1 Conducting a comprehensive study that includes: i. Identifying the potential and economic impact of biomass generation and demand in Johor for biofuel production. ii. Identifying several strategic locations within Johor for the development of biomass collection centres.	BPEN	JSC, GLC, UA, KPK, MPOB	/		
		P2 Establishing a regulatory body to develop and manage the biomass and biogas economy for plantations under the jurisdiction of the Johor State Government.	BPEN	JSC, GLC, Johor Corporation (JCorp)	/		
		P3 Regulating the price of biomass for plantations under the supervision of the Johor State Government.	BPEN	JSC, GLC, JCorp		/	

Strategy	Implementation Initiatives	Programmes	Lead Agency	Supporting Agency	Year of Implementation		
					Short-Term (1-2 years)	Medium-Term (3-4 years)	Long-Term (5-6 years)
					2025-2026	2025-2028	2025-2030
IP2. Increasing the production of B30 biodiesel and blending bioethanol with petrol for the land transportation sector.		P4 Developing more attractive incentives (such as FIT for biofuels) to be offered to biomass producers from plantations under the jurisdiction of the Johor State Government, in line with rising capital and operational costs.	BPEN	JSC, GLC, SEDA		/	
		P1 Conduct a study to identify the potential of blending 10% bioethanol with petrol and its feasibility for use in land transportation (light vehicles) in Johor.	BPEN	JSC, GLC, IPT	/		
		P2 Implement a Public-Private Partnership model for the development of technologies related to bioethanol production for use in the land transportation sector.	GLC	BPEN, IPT	/		
		P3 Implementing a pilot project in collaboration with local higher education institutions and industry players to analyze the effectiveness of bioethanol blend usage in petrol vehicles and its environmental impact.	BPEN	JSC, GLC, IPT		/	
		P4 Increase the production of B30 biodiesel in the State of Johor by 125 million litres annually by 2030 to support the federal government's initiative to implement the B30 Biodiesel Programme.	BPEN	JSC, GLC			/

Strategy	Implementation Initiatives	Programmes	Lead Agency	Supporting Agency	Year of Implementation		
					Short-Term (1-2 years)	Medium-Term (3-4 years)	Long-Term (5-6 years)
					2025-2026	2025-2028	2025-2030
	IP3. Increasing the production and use of biomethanol for the maritime transportation sector.	P1 Conduct a gap analysis to identify existing biomass resources in Johor for biomethanol production.	BPEN	JSC, GLC, JCorp, IPT	/		
		P2 Foster collaboration between the state government, universities, and private companies for the development of technologies and research on producing biomethanol from biomass resources.	JSC	BPEN, IPT	/		
		P3 Implement a pilot project at the PTP to evaluate the feasibility and safety of biomethanol usage and its environmental impact.	BPEN	GLC, Lembaga Pelabuhan Johor PTP, IPT			/
	IP4. Increasing the production and use of SAF for the air transportation sector.	P1 Conduct a gap analysis to identify the availability of raw materials for SAF production and assess SAF demand levels.	BPEN	JSC, GLC, JCorp, IPT	/		
		P2 Undertake research to optimise SAF production processes to reduce overall costs.	BPEN	JSC, IPT, PETRONAS		/	
		P3 Implement a pilot project at Senai International Airport to evaluate the feasibility and safety of SAF usage and its environmental impact.	BPEN	JSC, IPT, MAHB			/

Strategy	Implementation Initiatives	Programmes	Lead Agency	Supporting Agency	Year of Implementation		
					Short-Term (1-2 years)	Medium-Term (3-4 years)	Long-Term (5-6 years)
					2025-2026	2025-2028	2025-2030
S6 Hydrogen: The future Source of Green Transportation Fuel	IP1. Conduct an initial study on the potential use of hydrogen fuel cells for land transportation	P1 Identify the demand for hydrogen-powered vehicles, such as hydrogen fuel cell electric vehicles (FCEVs) and hydrogen buses, in Johor over the next 10 years.	BPEN	JSC, IPT			/
		P2 Assess the potential of using hydrogen buses for the public transportation sector in Johor.	BPEN	JSC, PAJ, IPT			/
		P3 Conduct a study to establish safety and technical standards for the use of hydrogen-powered vehicles in Johor.	BPEN	JSC, IPT			/

With Appreciation

Heartfelt appreciation and gratitude to the Johor State Government and the Board of Directors of Permodalan Darul Ta'zim (PDT) for the trust given to PDT to assist the state government in completing and producing the Johor Green Transportation Policy 2030.

Sincere appreciation to the staff of the Johor State Economic Planning Division (BPEN), the Johor Land and Mines Office (PTG), PLANMalaysia Johor, as well as researchers, experts, industry players, and agencies from both the state and federal governments who have contributed input and technical support in the preparation of this policy.

Last but not least, a heartfelt thank you to all PDT and Universiti Teknologi Malaysia (UTM) staff for their hard work and collaboration in developing the Johor Green Transportation Policy 2030.



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State Secretary of Johor
- **Yang Berhormat Tuan Ling Tian Soon,**
Chairman of the Johor State Committee on Health and Environment
- **Yang Berhormat Datuk Seri Utama Ir Hasni Bin Mohammad,**
Chairman of the Johor Sustainability Centre (JSC)
- **Yang Berhormat Dato' Ramlee bin A Rahman,**
President & Chief Executive Officer of Permodalan Darul Ta'zim (PDT)
- **Yang Berhormat Dato' Asman Shah bin Abd Rahman,**
Deputy State Secretary of Johor (Development), Office of the Johor State Secretary
- **Tuan Haji Mohammed Shakib bin Haji Ali,**
Director of the Johor Land and Mines Office
- **TPr. Saidin bin Lateh,**
Director of PLANMalaysia Johor
- **Encik Dzulkifly bin Hassan,**
Chief Financial Officer, PDT
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