CHAPTER 4
THRUST 1: BALANCED AND DYNAMIC GROWTH

> *"Strengthening the country's strategic position for sustainable economic development supported by an integrated transport network and emphasising smart digital infrastructure are key elements towards dynamic and balanced growth."*

Dynamic growth is a result of development planning that is adaptive and resilient to changing circumstances and times. To remain competitive, the nation's economy must be supported by flexible spatial planning strategies that are able to respond quickly to the everchanging global development trends To ensure balance, the growth must be matched with the needs and potentials of an area. Identified growth nodes need to be developed based on local economic potentials, and supported by integrated transport networks as well as the provision of adequate and comprehensive basic infrastructure in all populated areas as they serve as the backbone to local economic development.

Balanced and dynamic growth requires the strengthening of the country's strategic position at the global level, the development of sustainable and competitive economy, and the provision of integrated transport network and holistic infrastructure.

Thrust 1 Balanced and Dynamic Growth is supported by four (4) strategic directions namely:

DG 1 Strengthening Nation's Strategic Position at Global Level

The country's strategic position at the global level is important in shaping a more dynamic and balanced growth. The country's economic development should not be limited to national level but expanded to regional and global levels through strategic relationships and cooperation to ensure a sustainable and more competitive economic growth. To sustain continuous economic growth, the country's preparedness to face any threats and attacks must be strengthened. Additionally, emphasis should also be given to the strengthening of the national security planning including security control at the borders and gateways to prevent unwanted intrusions and to protect the security of the country's strategic infrastructure.

DG 2 Ensuring Sustainable and Competitive Economic Growth

Major economic activities are concentrated in key growth nodes, which are the Conurbations, the Promoted Development Zones (PDZs) and the Catalyst Centres. The functions of growth nodes need to be strengthened to drive a more competitive economic growth. The role of the Agropolitan Centres as rural growth nodes should also be enhanced in line with the local development potentials. In addition, the application and development of digital economy must be encouraged so that the country's economy will remain dynamic in the current and future economic scenarios. The development of digital economy has the potential to attract investments, empower human resource and enhance research. In line with the Industrial Revolution 4.0 (4IR), focus must also be given to the adoption of new technological innovations to increase industrial productivity. To further support the economic growth of the country, the tourism sector also needs strengthening as it has the potential to be one of the major contributors to the country's GDP.

DG 3 Providing Strategic and Integrated Transportation Network Connectivity

The transport sector plays an important role in shaping and supporting the development of a more competitive national economy. The provision of a strategic and integrated transport network will help to increase the overall level of accessibility between regions, and between urban and rural areas.

DG 4 Improvising Digital and Smart Infrastructure

The enhancement of digital infrastructure is important in realising a more competitive national development that is also in line with current development trend. The provision of a comprehensive and high-capacity digital infrastructure will bridge the country's digital divide at the global level in line with the national aspirations in the National Digital Network Plan (JENDELA). Digital infrastructure also plays significant role in supporting the implementation of the smart city agenda in each Local Authority (PBT).

The Overall View of Balanced and Dynamic Growth Thrust

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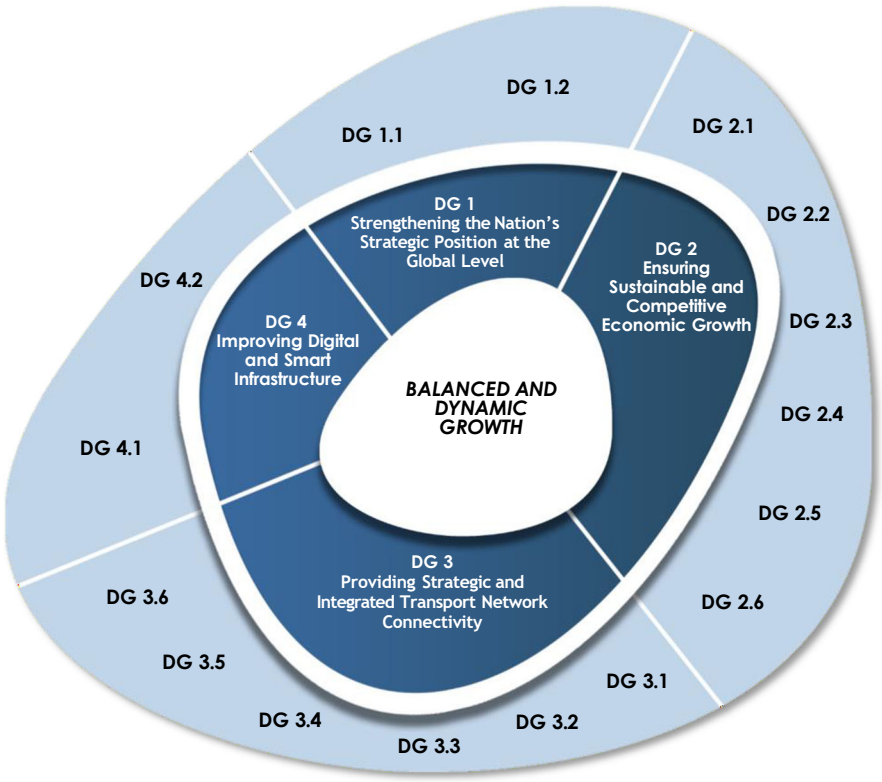
Actions



STRENGTHENING THE NATION'S STRATEGIC POSITION AT THE GLOBAL LEVEL

- **DG 1.1** Strengthen Regional Cooperation in Physical Planning and Economic Development
- **DG 1.2** Strengthen National Security Planning

ENSURING SUSTAINABLE AND COMPETITIVE ECONOMIC GROWTH

- **DG 2.1** Strengthen the Function of Growth Areas
- **DG 2.2** Intensify the Activities of Digital Economy as the Basis for Economic Growth
- **DG 2.3** Apply the Latest Industrial Technology as a Pillar of Economic Growth
- **DG 2.4** Diversify Tourism Products and Coverage as One of the Main Drivers of the National Economy
- **DG 2.5** Ensure the Provision of High-Quality Infrastructure and Tourism Support Facilities
- **DG 2.6** Leverage Rural Local Resources

PROVIDING STRATEGIC AND INTEGRATED TRANSPORT NETWORK CONNECTIVITY

- **DG 3.1** Strengthen Road Transport Network and Connectivity
- **DG 3.2** Making Rail as the Main Pillar of Transportation System
- **DG 3.3** Strengthen Public Transport Services to Achieve Modal Split Targets
- **DG 3.4** Strengthen Air Connectivity at Global, Regional and Local Levels
- **DG 3.5** Improve Water Transport Services
- **DG 3.6** Strengthen the Logistics Industry

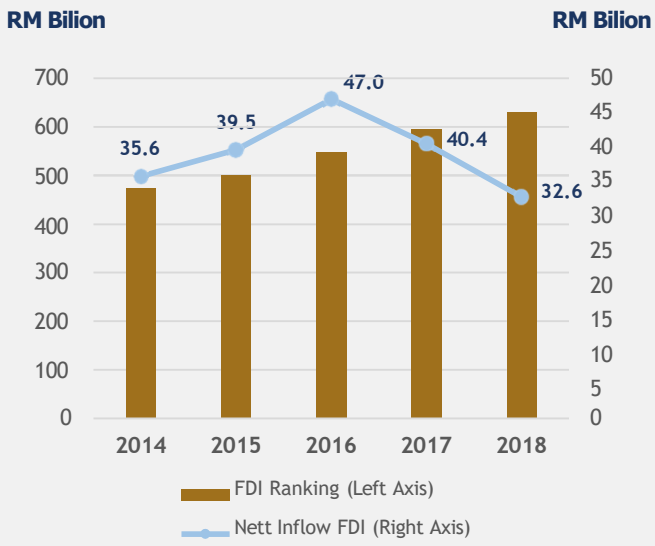
IMPROVING DIGITAL AND SMART INFRASTRUCTURE

- **DG 4.1** Ensure Development of Infrastructure Towards a Smart Nation
- **DG 4.2** Ensure Comprehensive Implementation of Smart City Agenda

DG 1
STRENGTHENING THE NATION'S STRATEGIC POSITION AT GLOBAL LEVEL

Strategic relations and cooperation at regional and international levels play an important role in strengthening the country's position globally. Malaysia continues to be attractive to global investors due to its strong economic position and political stability. Malaysia also has a strategic position in the global trade market with a focus on foreign direct investment (FDI) and good trade relations globally. Malaysia's bilateral trade cooperation with foreign countries is important in driving a more dynamic and competitive economic growth.

Foreign Direct Investment (FDI)
(2014-2018)



Source: Department of Statistics Malaysia, 2018

According to the Department of Statistics Malaysia, the country has recorded RM 32.6 billion of foreign direct investment in 2018 compared to RM 40.4 billion in 2017. Malaysia's foreign direct investment inflow have shown a downward trend since 2017 due to reduced investment in the mining and quarrying sectors. To counter this downward FDI trend, stronger cooperation and relations between Malaysia and other countries in the region are required to boost the FDI inflow into Malaysia.

The aspect of national security is also important in ensuring sustained economic growth of the country. Malaysia's strategic position in the heart of the Southeast Asian region and the world's major shipping routes, namely the Straits of Malacca and the South China Sea, must be safeguarded and protected from any threats that could endanger the country's administration and security. Border controls need to be tightened to curb the entry of illegal immigrants and the smuggling of goods. The country's readiness to face threats, including the threat of pandemics and cybercrime, must also be strengthened.

STRATEGIC DIRECTION DG 1

STRENGTHENING THE NATION'S STRATEGIC POSITION AT GLOBAL LEVEL

DG 1.1	Strengthen Regional Cooperation in Physical Planning and Economic Development
DG 1.2	Strengthen National Security Planning

STRATEGY
DG 1.1

STRENGTHEN REGIONAL COOPERATION IN PHYSICAL PLANNING AND ECONOMIC DEVELOPMENT

RELATED SDGs
SDG8 SDG12
SDG16 SDG17

Regional cooperation represent the collaborations and cooperation between neighbouring countries in the context of safeguarding common interests based on the principles of interdependence and integration that are mutually beneficial in terms of security and trade interests. Cross-border ties will enhance the opportunities for Malaysia and its regional partners to leverage on each other's strengths at both the regional and global levels.

NPP4 supports Malaysia's commitment to international cooperation and leverages on its strategic position to improve performance in the economic, social and environmental aspects. Malaysia's location in the heart of ASEAN, provides the long-term potential that can generate regional and international economic prosperity.

ACTION DG 1.1A

Strengthen Malaysia's strategic relations at the ASEAN and international levels

Strategic trade ties help drive a more competitive economic growth for the country. Among Malaysia's regional cooperation commitments (refer to **plan 4-1**) include :

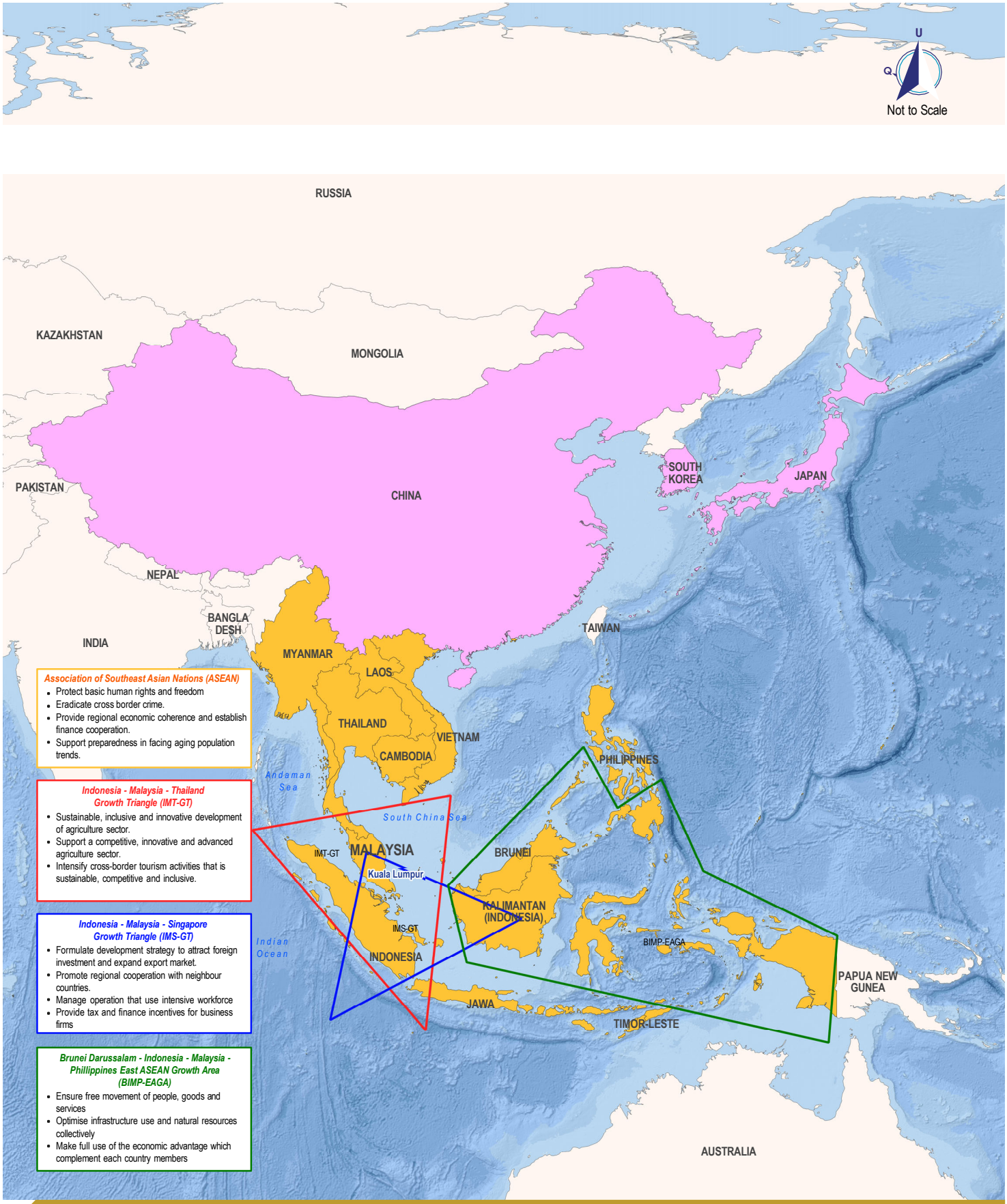
- Association of Southeast Asian Nations (ASEAN).
- ASEAN+3 (Cooperation between East Asian countries with China, South Korea and Japan).
- Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT).
- Indonesia-Malaysia-Singapore Growth Triangle (IMS-GT).
- Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA).

Malaysia must leverage on its potential and take the opportunities from the established cooperation with Asian countries in strengthening its economic growth and development.

NPP4 proposes the following measures to strengthen the country's strategic relations:

1. **Improve transport connectivity and accessibility** between the country's entry points and key growth centres including major tourist destinations and duty-free areas.
2. **Strengthen strategic infrastructure assets** (including logistics hubs, seaports and airports) to ensure that these assets remain relevant, competitive and complementing each other.
3. **Strengthen the role of the Special Economic Zone** (SEZ) through research and development (R&D) intensification as well as encouraging knowledge and technology transfer for the purpose of enhancing national economic development and intra-regional investment at the ASEAN level and within the country. In strengthening the role of SEZ, focus is to be given to the NCER, ECER, Iskandar Malaysia, the proposed Central Region Economic Corridor and Labuan IBFC.

AGENCIES INVOLVED	
Main Agencies	**Supporting Agencies**
• Ministry of Foreign Affairs • Ministry of International Trade and Industry (MITI) • Ministry of Transport (MOT) • Corridor Authorities • Labuan Cooperation	• PLANMalaysia@Negeri • Related Local Authorities



MAP 4-1: MALAYSIA COMMITMENT IN REGIONAL COOPERATION

Regional Cooperation

- Association of Southeast Asian Nations (ASEAN)
- ASEAN+3 (China, Korea Selatan dan Jepun)
- Indonesia - Malaysia - Thailand Growth Triangle (IMT-GT)
- Indonesia - Malaysia - Singapore Growth Triangle (IMS-GT)
- Brunei Darussalam - Indonesia - Malaysia - Philippines East ASEAN Growth Area (BIMP-EAGA)

Source:
- National Physical Plan 4, 2020

STRATEGY
DG 1.2

STRENGTHEN NATIONAL SECURITY PLANNING

RELATED SDGs
SDG3 SDG16 SDG17

Security planning that emphasises on the concept of total security is an important measure to identify and manage risks, and ultimately to enhance the country's readiness to face all forms of threats. National security refers to a situation where the country is free from any threats, either from within or outside, that could negatively impact the stability of the country. In the context of national security planning, NPP4 takes into account the security of borders and internal assets of the country, community security, data security and food security. This strategy details out the proposed actions in relation border security and internal assets of the country, while other aspects of national security planning are detailed out in other related strategies.

ACTION DG 1.2A

Ensure the security of the country's strategic infrastructure

The country must be able to continuously control and protect its strategic assets in order to ensure stability and to keep the administrative systems intact. Therefore, NPP4 emphasises the management and protection of strategic infrastructure assets, including resources and targets, that are important to the country. Threats to these assets can cause economic losses and weaken national defences and security. The risk level of these strategic assets must be assessed and considered in land use planning to ensure land use distribution that is appropriate and does not jeopardise their security.

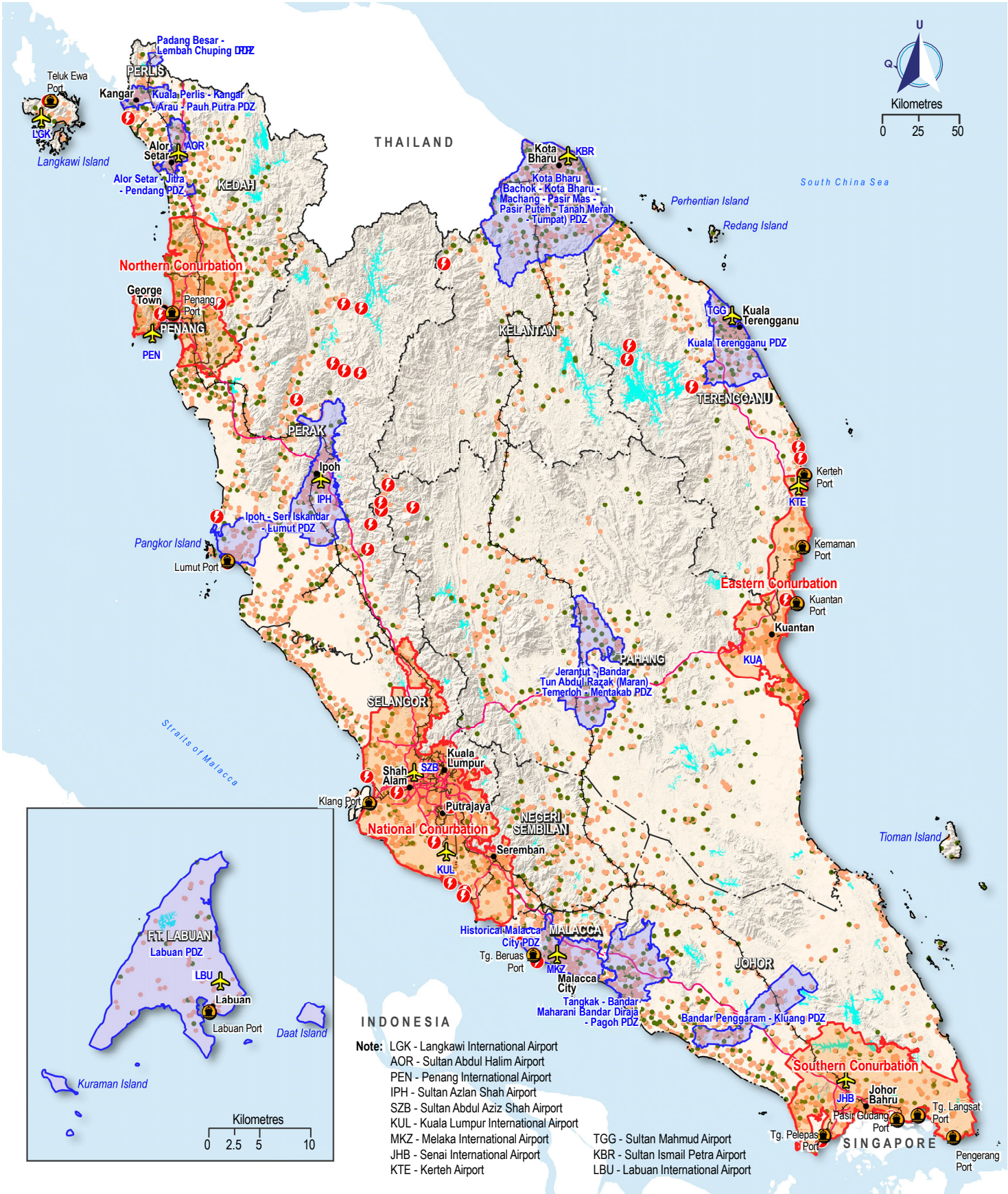
NPP4 suggests the following measures to be implemented:

1. Conduct detail inventory of the country's strategic infrastructure assets for the purpose of assessing the level of security / risk. This includes (refer to **Plan 4-2**) :
   - Air, sea and land military camp facilities.
   - Dams and power stations.
   - Assets close to national waters and borders.
   - Important state transport hubs such as airports and seaports.
   - The national administrative centre in Putrajaya.
   - Economic centres in cities and towns in the Conurbations and PDZs.
2. Gazette the country's strategic infrastructure areas as protected and key security areas.
3. Develop an action plan that addresses, controls and mitigates development planning surrounding the country's strategic infrastructure assets / key security areas.
4. Conduct specific studies and develop security planning guidelines for key security areas.

The protection of the country's strategic infrastructure assets is important in making Malaysia a resilient nation as well as to ensure the sanctity of its sovereignty and the continued well-being of its people.

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• National Security Council (NSC) • Ministry of Defence Malaysia (MINDEF) • Ministry of Home Affairs (MOHA) • PLANMalaysia	• PLANMalaysia@Negeri • Local Authority



MAP 4-2: STRATEGIC INFRASTRUCTURE LOCATION IN PENINSULAR MALAYSIA AND F.T OF LABUAN

Development Node
- Conurbation
- Promoted Development Zone

National Assets
- Airport
- Port
- Highway
- Rail Line

Infrastructure and Utilities
- Power Station
- Dam

Facilities
- Education Facilities
- Health Facilities

Others
- State Capital
- State Boundary

Source:
- I-Plan PLANMalaysia, 2018
- National Physical Plan 4, 2020

ACTION DG 1.2B

Reinforce the security of national border

Reinforcing the country's border security is important to prevent any threats of invasion, smuggling, the spread of diseases and other social ills that can endanger the safety and stability of the country. Similarly, physical planning at the national level must also emphasise security at the main border checkpoints, airports, coastal zones and isolated spots that can become illegal entry points to the country (refer to **Plan 4-3**).

To prevent cross-border crime, measures to control national borders and waters must be intensified and supported through an integrated national spatial planning. NPP4 suggests the following measures to be implemented:

1. Implement stricter and more effective monitoring at gateways and borders through the use of appropriate state-of-the-art technology. The infrastructure must be improved to support the use of technology for monitoring, and other purposes, the country's border areas.
2. Erect fences and walls at appropriate locations along the border to prevent breaches.
3. Prepare Special Area Plans (SAP) for border towns that prioritise border security in the planning of the towns.

BRIEF FACTS

489

Arrest of illegal immigrants (PATI) by the Malaysian Border Security Agency (AKSEM).

20 cases

Pirate attacks in the Straits of Malacca that threaten the safety of the shipping route

Source: Ministry of Home Affairs, 2018

The Rantau Panjang Immigration, Customs, Quarantine and Security (ICQS) Complex is one of the gateways to Malaysia from Thailand.

AGENCIES INVOLVED

Main Agencies

- National Security Council (NSC)
- Ministry of Defence Malaysia (MINDEF)
- Ministry of Home Affairs (MOHA)
- Malaysia Immigration Department
- Royal Malaysian Customs Department
- Royal Malaysian Police
- Malaysian Armed Forces

Supporting Agencies

- PLANMalaysia@Negeri
- Local Authority

Note: LGK - Langkawi International Airport
AOR - Sultan Abdul Halim Airport
PEN - Penang International Airport
IPH - Sultan Azlan Shah Airport
SZB - Sultan Abdul Aziz Shah Airport
KUL - Kuala Lumpur International Airport
MKZ - Melaka International Airport
JHB - Senai International Airport
KTE - Kerteh Airport
TGG - Sultan Mahmud Airport
KBR - Sultan Ismail Petra Airport
LBU - Labuan International Airport

MAP 4-3: NATIONAL GATEWAY BORDER IN PENINSULAR MALAYSIA AND F.T OF LABUAN

Gateway Border
- National Land Border
- National Coastal Border

Border Town
- Local
- International

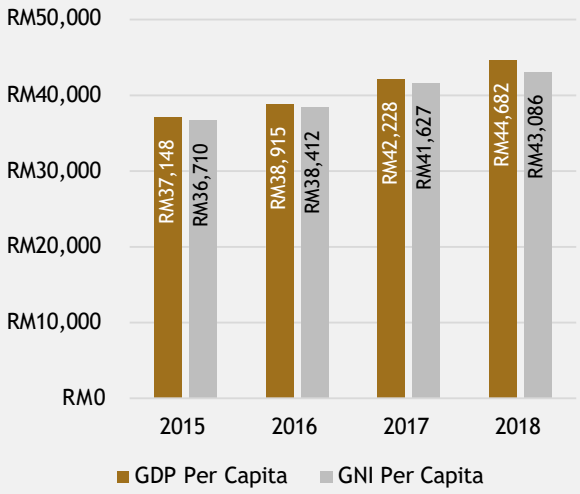
Others
- Airport
- Port
- Highway
- Rail Line
- Forest Area
- Water Body
- State Capital
- State Boundary

Source:
- Malaysian Maritime Enforcement Agency, 2018
- National Physical Plan 4, 2020

DG 2
ENSURING SUSTAINABLE AND COMPETITIVE ECONOMIC GROWTH

The current scenario of the global economy which is faced with recession, global pandemics and trade disruptions is among the challenges that Malaysia must overcome in pursuing a more competitive economic growth in the future. This can be achieved by making the Malaysian economy resilient, strong and diversified moving forward into the year 2040. The country has to be prepared for knowledge-intensive economy driven by digital technology and 4IR. The digitally driven economy requires diverse, skilled, responsive, and flexible talent that are ready to adapt and acquire knowledge to face the new technological era.

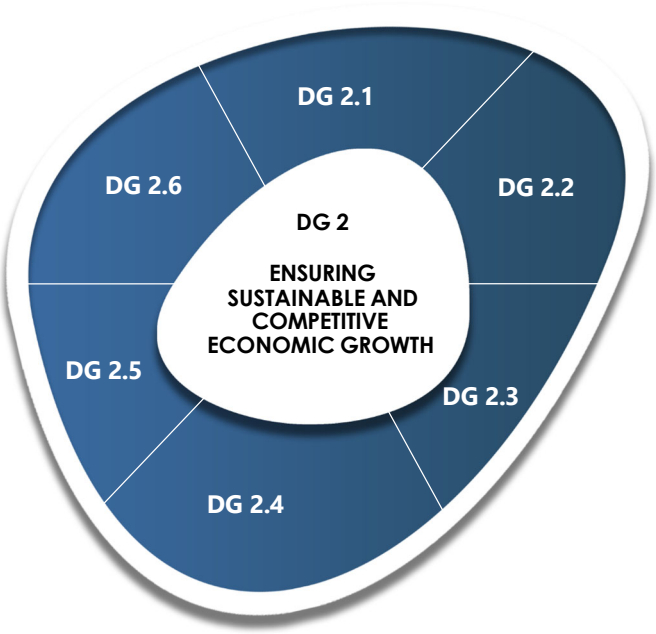
Malaysia - GDP per Capita and GNI per Capita, 2015 - 2018 (RM in current prices)



Source: Department of Statistics Malaysia, Malaysia Statistics Yearbook 2018 (December 2019); Department of Statistics Malaysia, Malaysian Economic Statistics. Time Series 2015 (December 2015)

Gross National Income (GNI) is an estimate of the total gross national income which includes income received from foreign countries. The figure above shows that GNI per capita (total gross national income shared by the entire population) for Malaysia has been steadily increasing from RM 36,710 (2015) to RM 43,086 (2018), indicative of encouraging economic growth since 2015.

This strategic direction focuses on strengthening economic development in the medium, small and rural towns to increase the country's income sources by stimulating spatial development to promote diversification of economic activities. The increased in value and productivity of rural economic activities are expected to help increase the income of the rural population and reduce the development gap between urban and rural areas. At the same time, this strategic direction also aims at enhancing the economic development in the cities through the promotion and application of technology in line with the 4IR.



STRATEGIC DIRECTION DG 2

ENSURING SUSTAINABLE AND COMPETITIVE ECONOMIC GROWTH

DG 2.1	Strengthen the Function of Growth Areas
DG 2.2	Intensify the Activities of Digital Economy as the Basis for Economic Growth
DG 2.3	Apply the Latest Industrial Technology as a Pillar of Economic Growth
DG 2.4	Diversify Tourism Products and Coverage as One of the Main Drivers of the National Economy
DG 2.5	Ensure the Provision of High-Quality Infrastructure and Tourism Support Facilities
DG 2.6	Leverage Rural Local Resources

STRATEGY
DG 2.1

STRENGTHEN THE FUNCTION OF GROWTH AREAS

RELATED SDGs
SDG8 SDG11

Growth areas are population and economic centres that contribute significantly to the development of the country's economy. To achieve a dynamic and balanced growth, opportunities for trade and investment must be created across the country and not just limited to large cities. Hence, economic growth and development must also be expanded and intensified in small and medium towns and urban areas of the country.

ACTION DG 2.1A

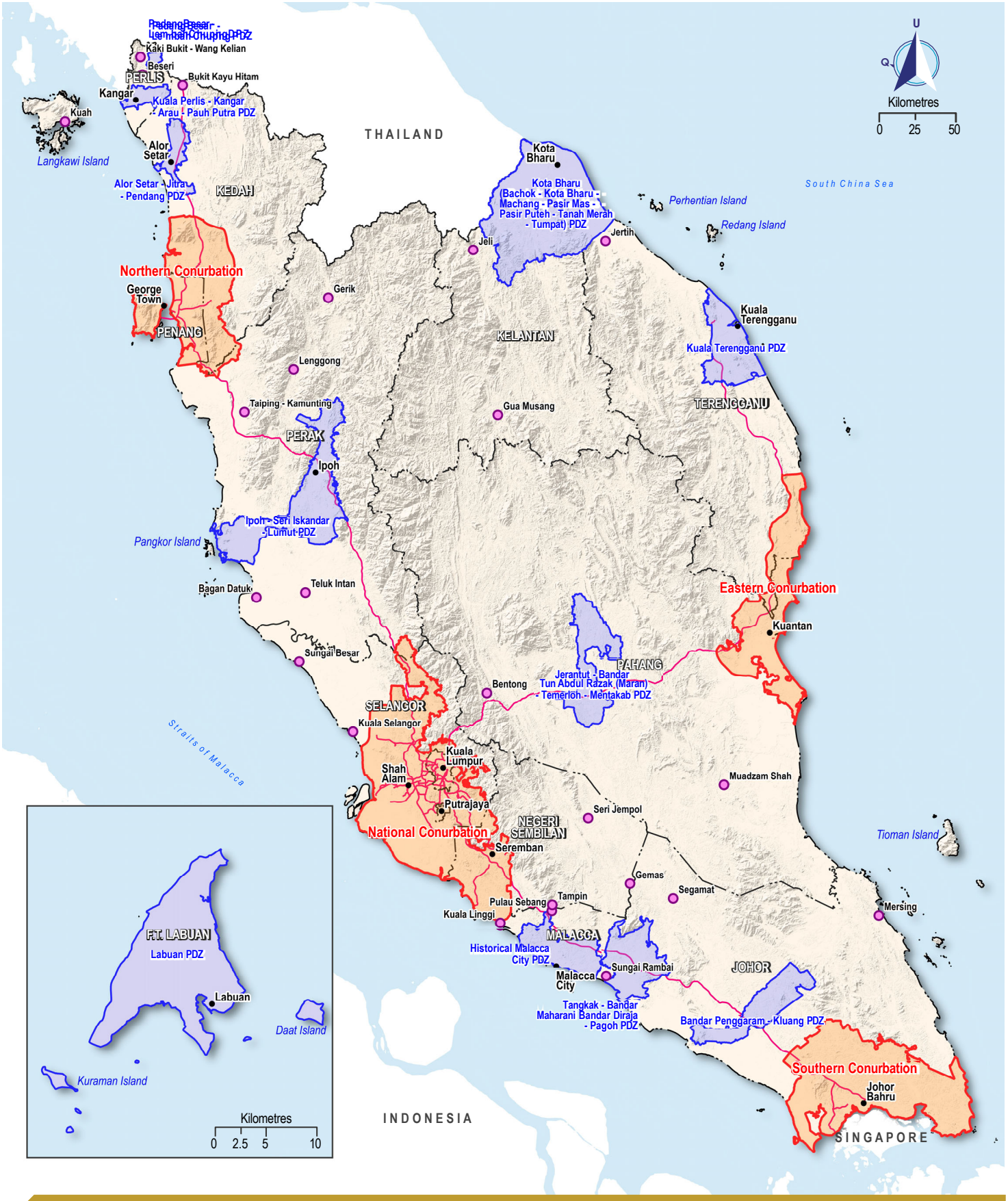
Strengthen the role of Conurbations, PDZs and Catalyst Centres

Growth areas stimulate the local and national economic growth by providing various employment and business opportunities in services, industry and other urban economic activities. NPP4 has identified three (3) types of urban growth areas to be strengthened namely Conurbations, PDZs and Catalyst Centres (refer to **Plan 4-4**). While all three generate growth, the Conurbations serve as the major engine in the economic development of the country, while the PDZs and Catalyst Centres support and complement the development in the Conurbations. Hence, the function and role of the Conurbations can be strengthened by accelerating the development in the PDZs and Catalyst Centres. Thus, by strengthening the role of Conurbations, PDZs and Catalyst Centres, NPP4 aims to create a more balanced growth between the regions in the Peninsular Malaysia and in Labuan.

Identified growth areas

4 Conurbations	11 Promoted Development Zones (PDZs)	24 Catalyst Centres
1) **National Conurbation** F.T. Kuala Lumpur, F.T. Putrajaya and parts of Selangor State (Shah Alam - Klang - Port Klang - Ampang Jaya - Petaling Jaya - Subang Jaya - Kajang - Sepang) as well as the opening of new corridors in the northern part of Bestari Jaya - Ijok - Puncak Alam - Bandar Bukit Beruntung - Serendah - Batang Kali - Kuala Kubu Bharu - Tanjung Malim, and in the southern area covering parts of Malaysia Vision Valley (MVV) (Seremban and Port Dickson Districts, Negeri Sembilan). 2) **Southern Conurbation** Johor Bahru - Senai - Skudai - Kulai - Pasir Gudang - Tanjung Pelepas - Pontian - Kota Tinggi - Desaru - Pengerang as well as the opening of new corridors up to Bandar Tenggara. 3) **Northern Conurbation** Penang, and the opening of new corridors in parts of Kedah (covering Kulim - Sungai Petani - Bandar Baharu - Yan) and North Perak (Selama). 4) **Eastern Conubation** Kuantan - Pekan - Gambang including the opening of new corridors in Terengganu (Chukai – Kerteh).	**Central Region** 1) Malacca Historical City. **Southern Region** 1) ***Tangkak - Bandar Maharani Bandar Diraja - *Pagoh.** 2) Bandar Penggaram - Kluang. **Northern Region** 1) Kuala Perlis - Kangar - ***Arau - *Pauh Putra.** 2) Padang Besar - Lembah Chuping. 3) Alor Setar - Jitra - ***Pendang.** 4) Ipoh - Seri Iskandar - Lumut. **Eastern Region** 1) Kota Bharu (Bachok - Kota Bharu - Machang - Pasir Mas - Pasir Puteh - Tanah Merah – Tumpat. 2) Kuala Terengganu. 3) ***Jerantut - *Bandar Tun Razak (Maran) - *Temerloh - *Mentakab.** **F.T. Labuan** 1) The whole of F.T. Labuan.	**Central Region** Kuala Selangor, Sungai Besar, Tampin, Gemas, Seri Jempol, Kuala Lingg, Pulau Sebang and Sungai Rambai. **Southern Region** Segamat and Mersing. **Northern Region** Beseri, Kaki Bukit - Wang Kelian, Kuah, Bukit Kayu Hitam, Taiping - Kamunting, Lenggong, Gerik, Teluk Intan, and ***Bagan Datuk.** **Eastern Region** Jeli, Gua Musang, Jertih, Bentong and Bandar Muadzam Shah.

***New Urban / Settlements identified by NPP4**



MAP 4-4: CONURBATION, PROMOTED DEVELOPMENT ZONE AND CATALYST CENTRE IN PENINSULAR MALAYSIA AND F.T OF LABUAN

Growth Area
- Conurbation
- Promoted Development Zone
- Catalyst Centre

Others
- State Capital
- Highway
- State Boundary

Source:
- National Physical Plan 4, 2020

NPP4 suggests the following measures to strengthen the role of Conurbations, PDZs and Catalyst Centres:

National Conurbation (Main Conurbation): Focus~~es~~ on strengthening and increasing the added-value of the country's economic sector

1. Diversify development and investment opportunities in the services, industry and tourism sectors to drive a more dynamic economic growth.
2. Expand public transport networks, especially high-speed rail to improve inter-regional connectivity and facilitate population mobility.
3. Prioritise development and redevelopment in brownfields and old towns, TODs, mixed development and multi-use to meet land requirement for development target and to reduce urban sprawl around the conurbation.
4. Provide smart and high-tech infrastructure facilities to promote digital-based economic activities.
5. Expand the use of information and communication technology (ICT) innovations in the management of economic activities to increase productivity.
6. Strengthen the roles and collaborations between communities, developers, and stakeholders in the planning, implementation and monitoring especially in relation to commercial activities.

Southern, Northern and Eastern Conurbations (Secondary Conurbations): Focus on strengthening and increasing the added-value of the regional economic sector

1. Diversify development and investment opportunities in the services, industry and tourism sectors to drive a more dynamic regional economic growth.
2. Expand public transport networks, especially rail services around the conurbations to facilitate population mobility.
3. Prioritise development and redevelopment in brownfields and old urban areas, TODs, mixed development and multi-use to meet land requirement for development target and to reduce urban sprawl around high-density areas.
4. Provide smart and high-tech infrastructure facilities to support the development of a digital-based economy.
5. Expand the use of ICT innovations in the management of economic activities to increase productivity.
6. Strengthen the roles and collaborations between communities, developers, and stakeholders in the planning, implementation, and monitoring agendas that focus on local economic potentials.

BRIEF FACTS

Criteria and Characteristics of Conurbation

- Agglomeration of major cities.
- Polycentric development pattern.
- **Major contributor to the national economy.**
- Population exceeds **1 million** people.
- High employment density (high number of jobs and GDP per capita).
- Land use activities **generate high economic returns.**
- Efficient and effective transit, communication and infrastructure systems.
- Located within a **radius of 90 minutes (for primary conurbation)** and **60 minutes (secondary conurbation)** travel time to employment centres.

Promoted Development Zones (PDZs): Focus on generating and accelerating growth

1. Diversify development and investment opportunities to empower economic growth and create new opportunities in the services, industry, agriculture and tourism sectors.
2. Develop strategic and comprehensive networks of public transport systems to facilitate population mobility.
3. Prioritise development and redevelopment in brownfields and old towns to meet land requirement for development target and to reduce urban sprawl.
4. Promote efficient, inclusive and environmentally sensitive land use patterns as well as economical use of land.
5. Provide appropriate connectivity and infrastructure networks to stimulate growth as well as accelerate the integration and influence of PDZs on the surrounding areas.
6. Expand the use of ICT innovations in the management of economic activities to increase productivity.
7. Strengthen the roles and collaborations between the communities, developers, and stakeholders in the planning, implementation and monitoring.

BRIEF FACTS

Criteria and Characteristics of Promoted Development Zone (PDZ)

- Settlement centres strongly related to economic, social and administrative activities.
- Polycentric development pattern.
- Population **exceeds 100,000 people.**
- **Main centre of employment.**
- Adequate and viable urban facilities.
- Distinctive function and potential in **generating the local economy.**
- Strategic transport links with other major cities.
- Located within a **radius of 40-60 minutes travel time** to employment centres.

Bandar Maharani Bandar Diraja is part of **PDZ Tangkak - Bandar Maharani Bandar Diraja - Pagoh.** Bandar Maharani is the centre for business and commercial activities.

Catalyst Centres: Focus on generating local economic growth

1. Diversify development and investment opportunities to empower economic growth and create new opportunities in the services, industry, agriculture and tourism sectors.
2. Develop strategic and comprehensive public transport networks to facilitate population mobility.
3. Prioritise development and redevelopment in brownfields and old towns to meet land requirement for development target and to reduce urban sprawl.
4. Promote efficient, inclusive and environmentally sensitive land use patterns as well as economical use of land.
5. Provide ICT facilities, connectivity networks and appropriate infrastructure to stimulate growth as well as accelerate the integration and influence of Catalyst Centres to their surrounding areas;
6. Empower the application and use of technology among the local community to increase the competitiveness of economic development.
7. Strengthen the roles and collaboration between the communities, developers, and stakeholders in the planning, implementation, and monitoring agenda.

BRIEF FACTS

Criteria and Characteristics of Catalyst Centre

- Located **outside Conurbation and PDZ.**
- Monocentric development pattern.
- Population **exceeds 10,000 people.**
- Distinctive functions and importance in the **development of the local economy.**
- Strong and useable local resources.
- Strong relationship with its area of influence.
- Include an **urban service centre.**
- Located within a **radius of 30 minutes travel time** to employment centres.

Pekan Kuah, Langkawi, Kedah is one of the Catalyst Centres identified by NPP4 where its tourism activities are the main contributor to the economic development in Langkawi.

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Housing and Local Government (KPKT) • State Authority • PLANMalaysia	• Corridor Authority • Local Authority

Bagan Datuk, Perak is a new town that has been identified as having its own potential to be upgraded as a Catalyst Centre. The main economy in Bagan Datuk includes eco-tourism, logistics and industrial activities.

ACTION DG 2.1B

Strengthen the functions of towns and cities according to settlement hierarchy

The Second National Urbanization Policy (DPN2) has identified 288 cities and towns which are classified into five (5) categories in the urban hierarchy. The general function of a city refers to its basic function which offers business, housing, education, health, transport, recreational and social facilities to the local population. The physical and economic growth of a city is generally driven by the business and trade sectors.

Urban development in Malaysia must be in line with the urban hierarchy as outlined in DPN2 (refer to **Plan 4-5**). The urban hierarchy is based on the role and function of a city or town. The hierarchy is important in determining the planning direction of a city or town and in prioritising financial allocation and urban infrastructure provision.

NPP4 has identified several cities and towns that have the potential to be upgraded in terms of their positions in the urban hierarchy (refer to **Table 4-1**). George Town and Johor Bahru-Iskandar Puteri has the potential to be upgraded into Global Cities based on the criteria outlined in DPN2. These include population size, services of international standard, cross-regional economic impacts, availability of high quality educational institutions and extensive transport connectivity.

The need to strengthen the hierarchy and functions of cities will be detailed out during the preparation of DPN3 (2025-2040) taking into account the criteria that have been set as well as the current requirements for urban planning at the federal and state levels.

BRIEF FACTS

Urban hierarchy as outlined by DPN2:

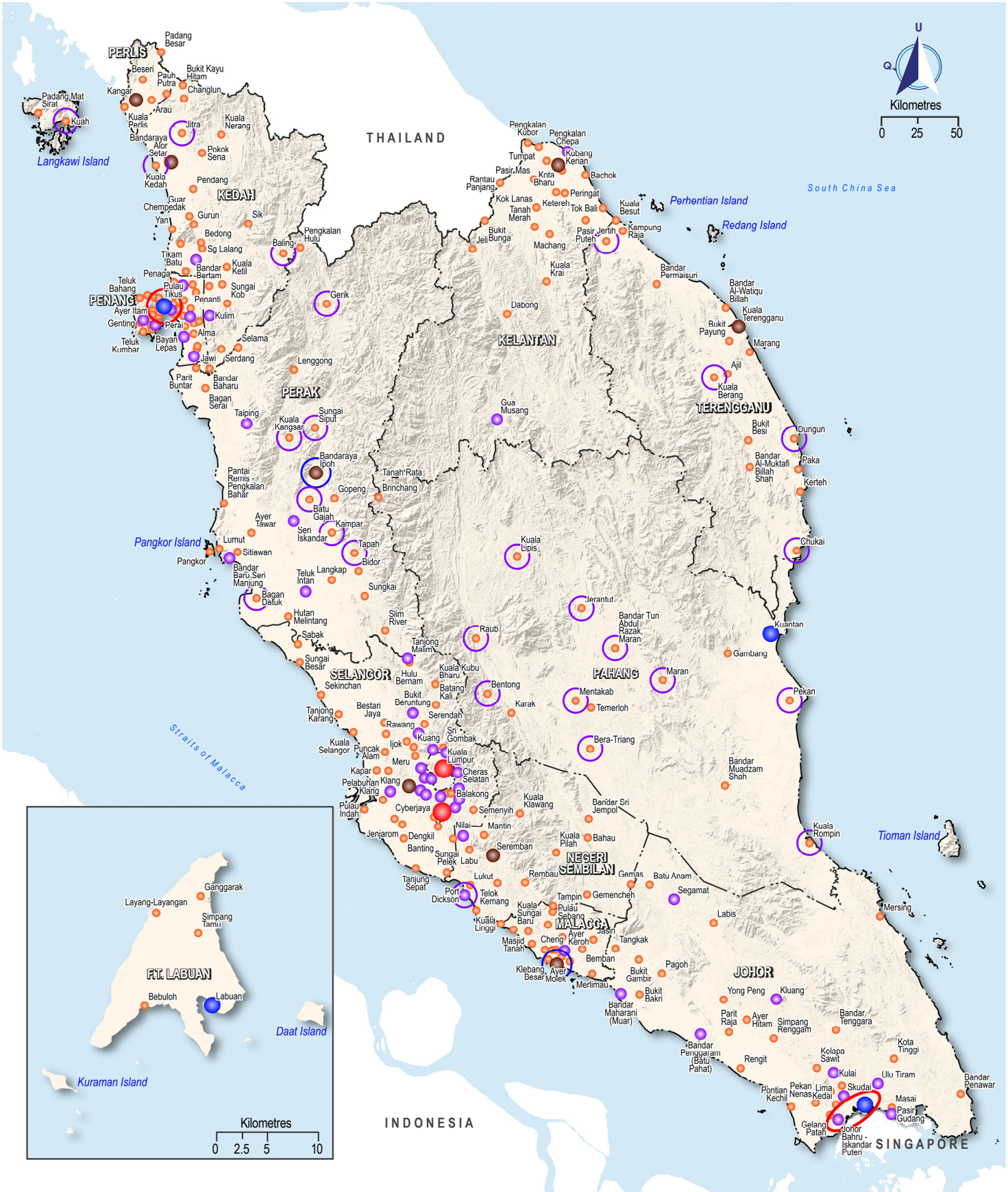
1. Global City
2. Regional City
3. State City
4. Main Town
5. Local Town

Among the measures that can be implemented to improve the function of a city or town are:

1. Plan and conserve appropriate land use activities to support ~~of~~ the roles and functions of the city.
2. Guide the development of the city based on the defined city boundaries.
3. Leverage local strengths, characters and values in urban development planning.
4. Enhance the provision of infrastructure and facilities for cities with special functions and characteristics to increase the economic potential of the local population.
5. Provide appropriate transport facilities and infrastructure according to the hierarchy and function of the city.

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• PLANMalaysia • PLANMalaysia@Negeri • Local Authority	• Ministry of Housing and Local Government (KPKT)



MAP 4-5: URBAN HIERARCHY IN PENINSULAR MALAYSIA AND F.T OF LABUAN

Urban Hierarchy

- Global City
- Regional City
- State City
- Main Town
- Local Town

- Proposed Global City
- Proposed Regional City
- Proposed Main Town

Others

- State Boundary

Source:

- National Urbanisation Policy 2
- National Physical Plan 4, 2020

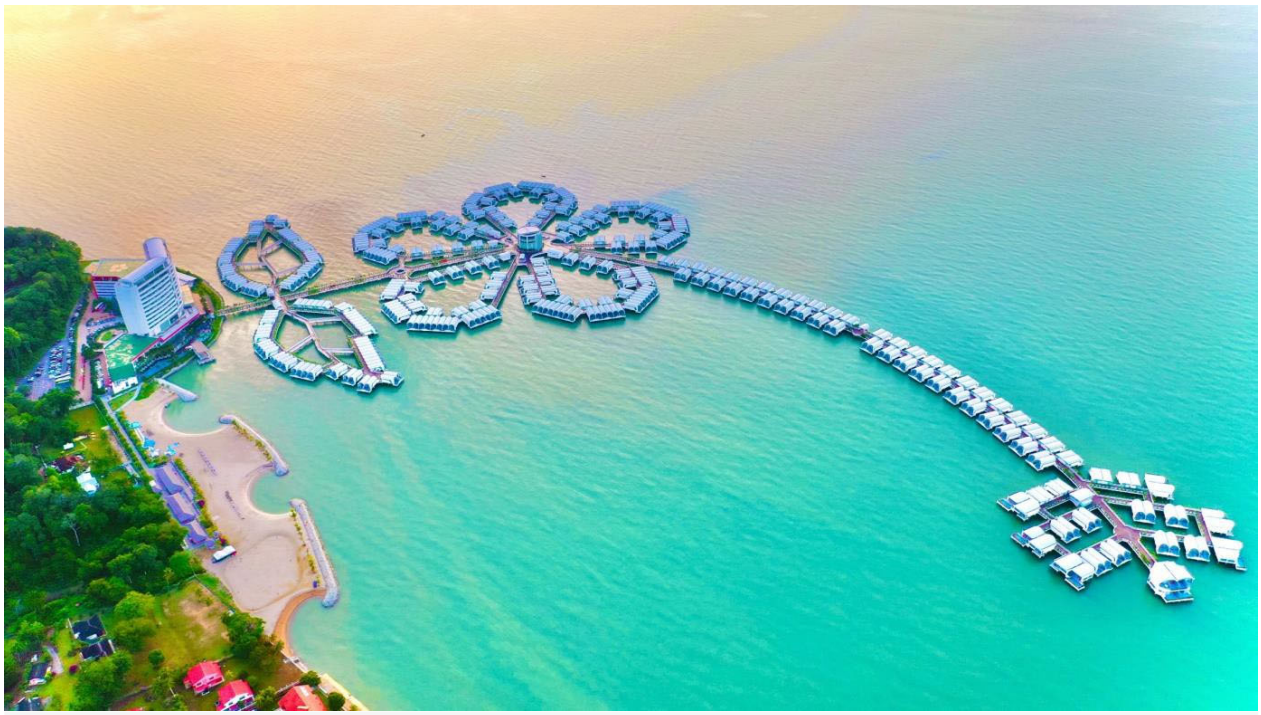
Table 4-1: Existing urban hierarchy and proposed upgrade for cities and towns

Hierarchy	List of Cities and Towns
Global Cities	• F.T. Kuala Lumpur • F.T. Putrajaya • *George Town, Penang • *Johor Bahru - Iskandar Puteri, Johor
Regional Cities / Towns	• Kuantan, Pahang • *Malacca City, Malacca • *Ipoh, Perak • Labuan Town, F.T. Labuan
State Cities / Towns	• Kangar, Perlis • Alor Setar, Kedah • Shah Alam, Selangor • Seremban, Negeri Sembilan • Kuala Terengganu, Terengganu • Kota Bharu, Kelantan
Major Towns	**Kedah** • Sungai Petani • Kulim • *Kuah • *Jitra • *Kuala Kedah • *Baling **Penang** • Kepala Batas • Butterworth • Balik Pulau • Batu Kawan - Cassia • Bayan Baru • Bukit Mertajam • Nibong Tebal **Perak** • Seri Iskandar • Seri Manjung • Taiping • Tanjung Malim • Teluk Intan • *Gerik • *Sungai Siput • *Kuala Kangsar • *Batu Gajah • *Kampar • *Tapah • *Bagan Datuk **Kelantan** • Pengkalan Chepa • Gua Musang **Terengganu** • *Jertih • *Kuala Berang • *Dungun • *Chukai **Pahang** • Temerloh • *Kuala Lipis • *Jerantut • *Raub • *Bandar Tun Abdul Razak (Maran) • *Maran • *Bentong • *Bera - Triang • *Kuala Rompin • *Pekan • *Mentakab

Continued

Hierarchy	List of Cities
Major Towns	**Selangor** • Bandar Utama • Bukit Beruntung • Cheras Selatan • Gombak • Kajang • Kelana Jaya • Klang • Subang Jaya • Petaling Jaya • Puchong • Rawang • Selayang Baru • Seri Kembangan • Sepang • Ulu Kelang **Negeri Sembilan** • Nilai • *Port Dickson **Malacca** • Ayer Keroh **Johor** • Bandar Maharani (Muar) • Bandar Penggaram (Batu Pahat) • Kluang • Kulai • Pasir Gudang • Segamat • Skudai • Ulu Tiram

*Cities and towns with upgraded hierarchy



Lexis Hibiscus Port Dickson, Negeri Sembilan is a five (5) star accommodation facility and one of the main tourist attractions in Port Dickson. The growing potential of the tourism sector is one of the factors for Port Dickson being upgraded into a main town.

ACTION DG 2.1C

Increase urban competitiveness at the global level in an integrated manner

The competitiveness of a city is measured by a its ability to attract capitals, businesses, talents and visitors. Improving the competitiveness of a city is important to ensure that it remains competitive and relevant. The global city competitiveness indices should be adopted by major cities to strengthen their level of urban competitiveness. These indices include:

- **Global Cities Index**
  - Assess the performance of cities in terms of economic and human capital growth.
- **Global Power Cities Index**
  - Assess the roles and services of cities in the global economy.
- **World Class City**
  - Ranks world's major cities.
- **Liveable Cities Index**
  - Evaluate the performance of cities in providing quality living environment.
- **Sustainable City Index**
  - Assess the performance of cities in economic development, environmental quality, community, spatial quality of the environment, social well-being, efficient infrastructure and transport, and effective governance.
- **Best Cities Index**
  - Similar to Liveable Cities Index and but considers aspects of land use.

Among the measures that can be undertaken are:

1. **Implement sustainable development strategies and actions** aimed at enhancing the level of city competitiveness for cities with City Competitiveness Master Plan (CCMP). This Master Plan study was conducted for Kuala Lumpur, Kuching, Johor Bahru, Kota Kinabalu, George Town and Kuantan.
2. **Expand the provision of CCMP study** to other major cities in Malaysia.

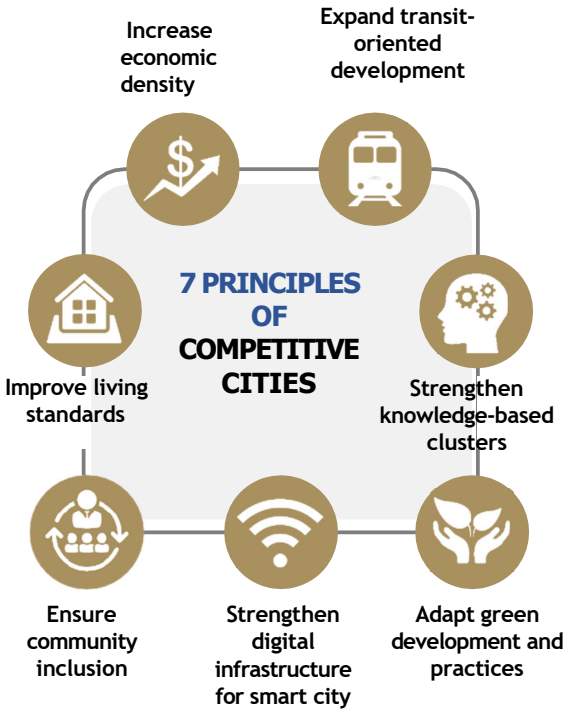


Figure 4-1: Seven (7) principles of a competitive city
Source: *Kuala Lumpur Competitive City Master Plan, 2019*

AGENCIES INVOLVED	
Main Agencies	**Supporting Agencies**
• Economic Planning Unit (EPU) • Ministry of Housing and Local Government (KPKT) • PLANMalaysia • State Authority • Local Authority	• Corridor Authority

STRATEGY
DG 2.2

INTENSIFY THE ACTIVITIES OF DIGITAL ECONOMY AS THE BASIS FOR ECONOMIC GROWTH

RELATED SDGs
SDG8 SDG9

Digital economy refers to activities and transactions driven by the public, private and entrepreneurial sectors to produce, adopt and innovate digital technology and socio-economic related services to increase total income, productivity and quality of life. The digital economy is a new wave that is capable of creating a variety of business opportunities as well as jobs, thus increasing income of the overall population, including those living in rural areas.

The digital economy has grown exponentially following the COVID-19 pandemic, which has created new digital businesses. Online services using online platforms are among the growing digital economic activities in Malaysia. The Shared Prosperity Vision (SPV) 2030 also outlines digital economy as one of the future economic growth that needs to be given attention to drive the economic development of Malaysia

Digital economy in Malaysia continues to grow in line with the rapid development of technology in the 4IR era. Focussing on the development of digital economy will not only boost the country's economic growth, but also attract investors and empower human capital as well as research and development. Some of the priorities that need to be addressed to stimulate the growth of digital economy include:

- Ensure the provision of comprehensive digital infrastructure in urban and rural areas.
- Ensure the availability of affordable high speed internet for all sections of society.
- Empower digital skills among the population to produce ~~a~~ highly skilled workforce.

The development of digital economy continues to stimulate online business or e-commerce activities in Malaysia. **Figure 4-2** shows that the contribution of the e-commerce sector to the country's GDP has increased from 2014 to 2017. Meanwhile, the National E-commerce Strategic Roadmap targets a 20% growth of the e-commerce sector by 2020, with a value of RM 170 billion. The growth of the e-commerce sector continues to be driven by the establishment of the Digital Free Trade Zone (DFTZ) which enables cross-border trade activities to be conducted more smoothly and easily.

BRIEF FACTS

MyDIGITAL is a digital transformation roadmap that enables the business sector to compete on the global stage. There are six (6) main thrusts outlined, namely:

1. Drive digital transformation in the public sector.
2. Boost economic competitiveness through digitalisation.
3. Develop digital infrastructure.
4. Build a digitally-skilled workforce.
5. Create an inclusive digital society.
6. Establish a secure and ethical digital environment.

Source: *Malaysian Digital Economy Blueprint*

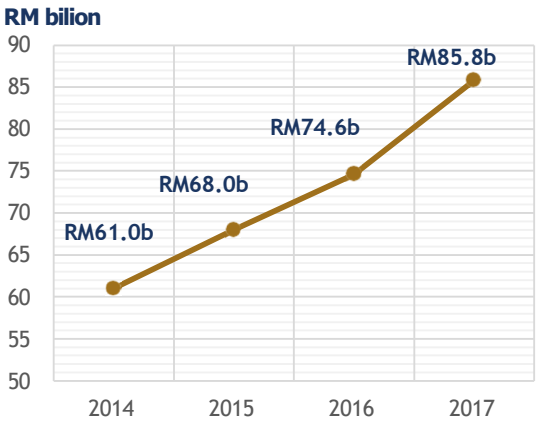


Figure 4-2: Contribution of the e-commerce sector to the country's GDP.
Source: *National eCommerce Strategic Roadmap (NESR) Progress Report 2017*

ACTION DG 2.2A

Promote e-commerce in services sector especially in retail

The concept of e-commerce allows purchase and sale transactions to be conducted online and from anywhere with access to internet services. This concept also helps in saving business costs as well as facilitating transactions between sellers and purchasers. E-commerce is now the main choice by business owners, especially in the retail sector, as it enables them to market their products widely and across borders.

The COVID-19 pandemic has brought changes to the retail sector. The imposition of movement control orders has made online transactions the primary choice by consumers to purchase goods. In this context, e-commerce plays a role in ensuring that retail businesses remain relevant in the current post-pandemic era.

The growth of e-commerce will also have an impact on spatial planning. With e-commerce, the demand for storage space is expected to be higher than the demand for retail space. To drive economic growth through the digital economy, the digitalisation of the retail sector through e-commerce activities needs to be intensified. Measures that can support the growth of e-commerce activities include:

1. Promote e-commerce and increase its use so that the country's economy can be more competitive in the global market. Special focus should be given towards promoting and encouraging wider use of e-commerce as a way of doing business.

2. Coordinate the provision of digital infrastructure in urban and rural areas in line with spatial planning at the state and local levels. The readiness of high-tech infrastructure has to be planned and enhanced to support the growth of the country's digital economy.

3. Accelerate and expand the use of digital technology in e-commerce to support innovation-led economic growth. This can be achieved by creating an ecosystem that supports innovation as well as creating research and development (R&D) opportunities.

4. Expand the development of Digital Free Trade Zones (DFTZ) to the Northern and Southern Regions of Peninsular Malaysia. The development of the DFTZ has to be integrated with major logistics hubs in the two regions.

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of International Trade and Industry (MITI) • Ministry of Communications and Multimedia • Malaysian Digital Economy Corporation (MDEC)	• State Authority • Corridor Authority • Malaysia External Trade Development Corporation (MATRADE) • SME Corporation Malaysia

ACTION DG 2.2B

Promote knowledge-based SMEs (K-SMEs) and digitalisation

The small and medium enterprise (SME) industry is one of the contributors to the country's economic growth. There are various types of small enterprises such as resource-based industries, metals, plastics, electrical and electronic components, and food processing. The SME industry is more concentrated in rural areas and involves small entrepreneurs. The analysis conducted during NPP4 preparation found that there is a large gap between SMEs and large companies, either locals or multinationals, including in terms of the level of technology use and the ability to explore new industries as well as to increase productivity.

The SMEs have the potential to grow by adopting and adapting the latest technology in their activities. The adaptation of the latest technology can assist SME entrepreneurs in expanding their markets, increasing productivity as well as making the SME industry remain relevant and more competitive in the future. Knowledge-based SMEs (K-SMEs) play an important role as catalyst for innovation among companies in Malaysia.

Among the measures that need to be implemented to encourage knowledge-based SMEs are:

1. **Foster public interest towards digital acceptance.** This can be achieved by creating joint programmes involving digital economy companies and the government, and by supporting the development of digitalisation related talent in Malaysia as well as globally. The more people accept digitalisation, the faster the digital economy can be developed in Malaysia.
2. **Intensify the development of digital and technology-based businesses.** Sufficient support should be provided through the creation of an environment that allows companies, research organisations and individuals to better engage in innovative activities. This includes the need to plan for appropriate local physical space, human resource development, investment in innovation infrastructure and fostering the exploration of new fields through incubator programmes.
3. **Ensure the readiness of infrastructure and physical space in driving the growth of the digital economy.** The planning and development of appropriate infrastructure and physical space are essential to support and help accelerate the development of digital economy, for instance, expanding the e-commerce platforms and improving access to the internet.

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Entrepreneur Development and Cooperatives (MEDAC) • Ministry of Communications and Multimedia • Malaysian Digital Economy Corporation (MDEC) • SME Corporation Malaysia	• State Authorities • Corridor Authorities

STRATEGY
DG 2.3

APPLY THE LATEST INDUSTRIAL TECHNOLOGY AS A PILLAR OF ECONOMIC GROWTH

RELATED SDGs
SDG8 SDG9
SDG12

The Industrial Revolution 4.0 (4IR) requires the adaptation of the latest industrial technology in driving the country's economic growth to be more competitive. The widespread use of automation and technology can increase productivity and reduce dependency on low-skilled foreign labour. Emphasis should be given to the manufacturing sector which is one of the major contributors to the country's GDP growth. Continuous initiatives are also required to ensure the availability of infrastructure and facilities that support of the use of the latest technology in economic activities

Based on the McKinsey Global Institute report (2012), the contribution of the manufacturing sector to the GDP in the middle-income countries is in the range of 20% to 35%. Referring to **Figure 4-3**, the manufacturing sector was the second largest contributor to Malaysia's GDP at 22.3% in 2019. This was an encouraging performance and in line with the findings of studies at the global level. This shows that the manufacturing sector in Malaysia is on the right track as an important contributor to the national economy.

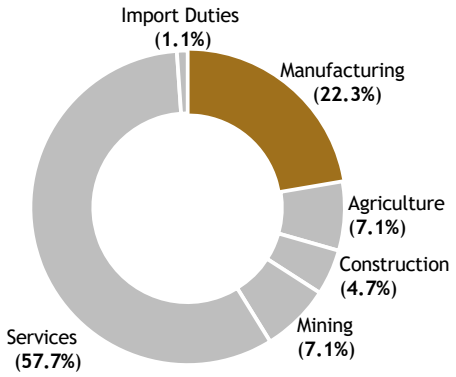


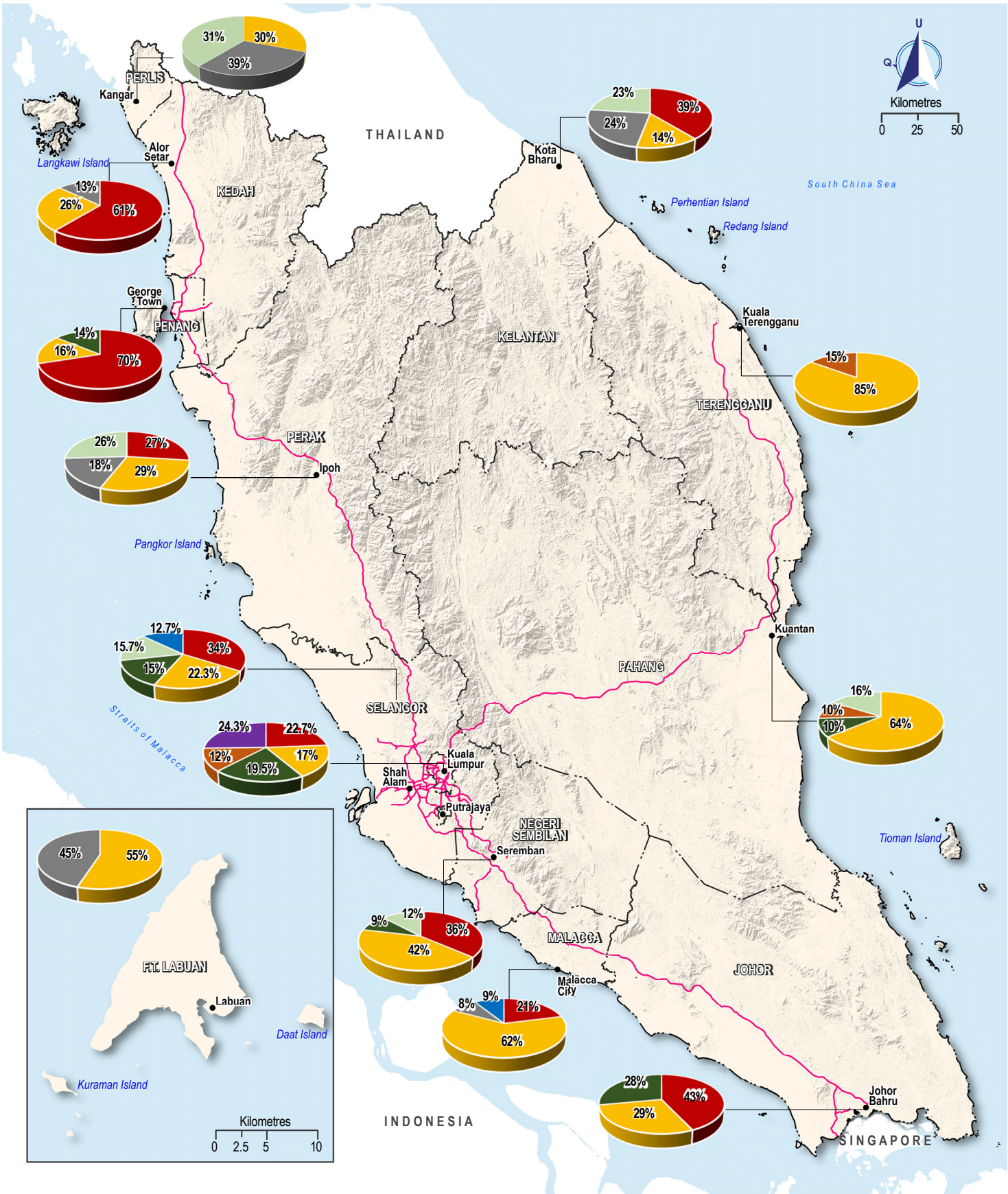
Figure 4-3: National GDP contribution by sector **Source**: Akaun Negara. Keluaran Dalam Negeri Kasar, 2015-2019 (Mei 2020), Department of Statistics Malaysia.

With the use of automation and technology, the manufacturing industry has the potential to grow larger. Under 4IR, sufficient attention has to be given to producing highly skilled workforce through industry-based training. The adaptation of 4IR and Internet of Things (IoT) applications will spawn manufacturing clusters with more innovative, high-tech and high value-added features in the future that take into account the key elements of 4IR as shown in **Figure 4-4.**

Figure 4-4: Key 4IR Elements
Source: National Industrial Policy Report 4.0, 2018, MITI

Based on **Plan 4-6**, the main manufacturing sectors in Peninsular Malaysia include:

1. Electronic, communication, optical and electrical product manufacturing (concentrated in Kedah, Penang, Kelantan, Selangor and Johor).
2. Basic chemical, plastic and synthetic rubber, pharmaceutical, medico- and botanical chemical product as well as refined petroleum (concentrated in Perak, Negeri Sembilan, Malacca, Pahang and Terengganu).



MAP 4-6: PRODUCTION CONTRIBUTION BY ACTIVITY in PENINSULAR MALAYSIA AND F.T OF LABUAN

Production Contribution By Activity

- Electronic, communication, optical and electrical products manufacturing
- Chemical, plastic & synthetic rubber, pharmaceutical, medicinal & botany and filtered petroleum manufacturing
- Iron, base steel, base metal, non -ferrous metal, metal structured products manufacturing
- Glass and non-metal production manufacturing
- Wood products, cork, wood milling & crabbing manufacturing
- Food and beverages manufacturing and processing
- Transportation and transport equipment manufacturing
- Others

Others

- State Capital
- Highway
- State Boundary

Source:
- Department of Statistics Malaysia, 2017
- National Physical Plan 4, 2020

ACTION DG 2.3A

Encourage the development of high-tech and innovative manufacturing clusters

Currently, value added manufacturing clusters are concentrated in selected areas, especially in industrial areas close to large cities, large skilled workforce, higher education centres, good infrastructure and rich in natural resource materials. **Plan 4-7** shows the economic corridors and clusters of the focus sectors by region.

Future planning of new industrial areas should be in line with the efforts to expand existing major industrial clusters to new areas with emphasis on:

a) Advanced manufacturing techniques that offer products that meet the needs of users (customised product).
b) Complex engineering systems based on robotics, advanced automation, nanotechnology, micro technology and artificial intelligence.
c) Clean technology-based manufacturing industries including the use of recycled resources, renewable energy and sustainable manufacturing.

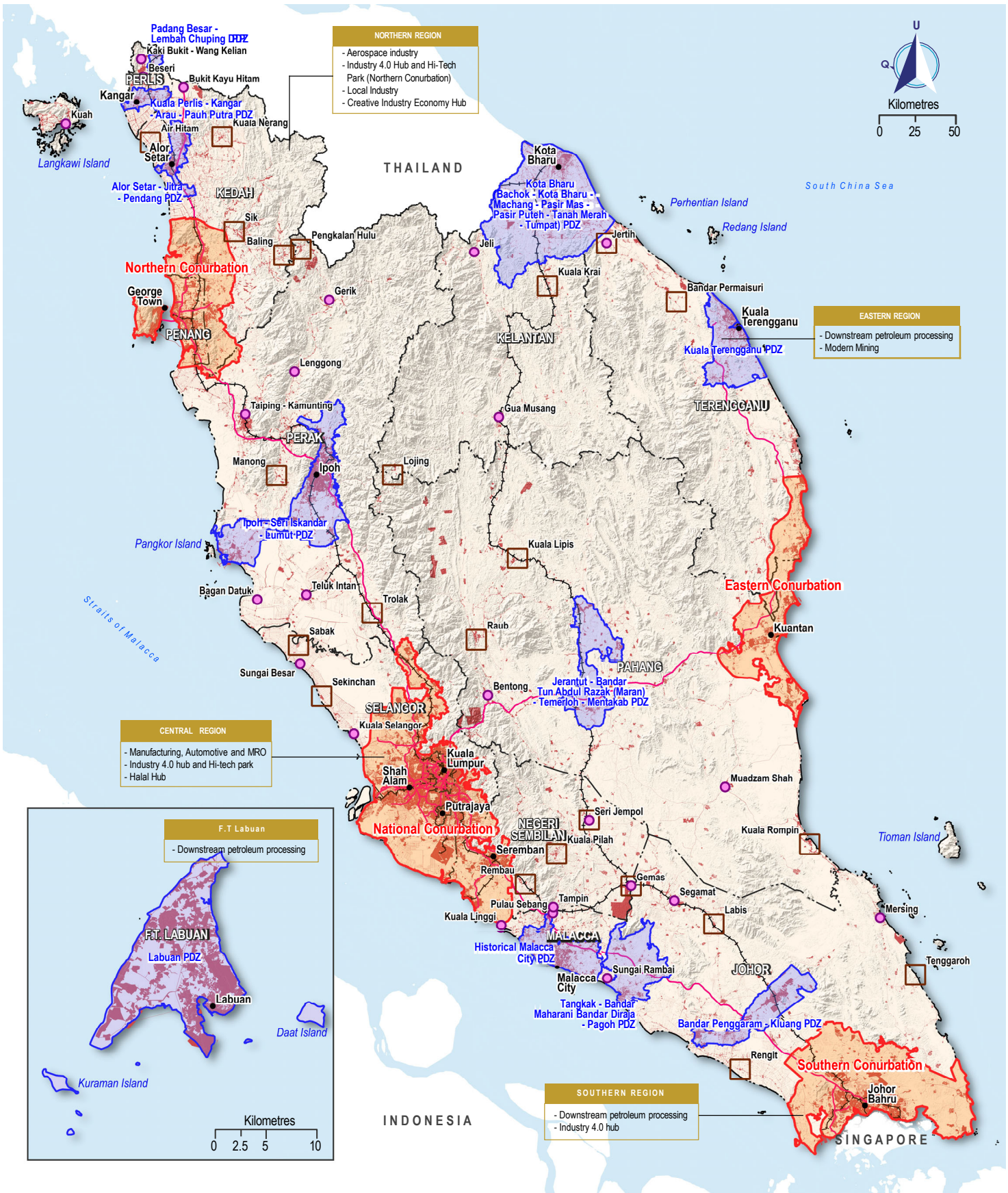
Among the measures that can be implemented are:

1. Develop innovative high-technology industries to produce high value and competitive products.
2. Collaborate between higher educational institutions and industry/stakeholders in R&D to ensure the industry remains relevant.
3. Strengthen collaboration in Research, Development and Commercialisation (R,D&C) to produce products that contribute to circular economy.
4. Improve employee skills through training (reskilling, upskilling, cross skilling) to become more proactive, innovative and competitive.

The 4IR policy will create an ecosystem involving science, technology, innovation and the economy by 2030.

Source: National Fourth Industrial Revolution (4IR) Policy Report 2020, MOSTI

AGENCIES INVOLVED	
Main Agencies	**Supporting Agencies**
• Ministry of Science, Technology and Innovation Malaysia (MOSTI) • Ministry of International Trade and Industry (MITI)	• Ministry of Human Resource • State Authority • Corridor Authority



MAP 4-7: CORIDOR AND ECONOMIC CLUSTER BY REGION IN PENINSULAR MALAYSIA AND F.T. LABUAN

Growth Area
- Conurbation
- Promoted Development Zone
- Catalyst Centre
- Agropolitan Centre

Others
- State Capital
- Built-up
- Highway
- Rail Line
- State Boundary

Source:
- Integrated Regional Framework, 2020
- National Physical Plan 4, 2020

ACTION DG 2.3B

Prioritise the planning and management of integrated industrial park

The planning of new industrial parks must emphasise on efficient space management and provision of integrated support facilities. An integrated management of an industrial park enables emission and pollution from factory activities to be controlled, thus protecting the quality of the environment in the surrounding area. Efficient management is a key factor in attracting local and international investors to conduct business in the country.

In promoting a carbon neutral country, the concept of Eco-Industrial Park (EIP) should be encouraged in the planning and development of new industrial parks. EIP is an industrial park that encourages business collaboration between industrial companies and local communities to reduce pollution and improve the efficiency of sharing of information, raw materials, water, energy, infrastructure and natural resources. The planning of EIP must prioritise environmental management, encourage the development of industries with high value chains, and emphasise the development of technology based on green and clean industry.

To ensure that the industrial sector remains competitive, emphasis should be given to R&D. R&D helps in diversifying products as well as increasing innovation and productivity of the industries.

The planning of new industrial parks should also look at the industrial chain ecosystem. This is important in driving the manufacturing industry towards being more competitive, productive, and towards achieving operational sustainability.

The measures that need to be implemented in the planning of new industrial parks are:

1. Ensure Managed Industrial Parks are located at appropriate industrial areas.
2. Provide industrial areas to support the expansion of high value manufacturing industry. This includes the provision of high value product innovation centres, incubators and R&D laboratories.
3. Provide a complete and up-to-date infrastructure.
4. Strengthen connectivity to transport nodes.
5. Strengthen cooperations between industries, governments and universities to ensure the supply of skilled and talented workforce.
6. Strengthen the management of industrial areas to maintain sustainability and safety, while at the same time, protect the environment.

AGENCIES INVOLVED	
Main Agencies	**Supporting Agencies**
• Ministry of Science, Technology and Innovation Malaysia (MOSTI) • Malaysian Digital Economy Corporation (MDEC) • State Authority	• Malaysian Investment Development Authority (MIDA) • Ministry of Entrepreneur Development and Cooperatives (MEDAC) • Ministry of Higher Education (MOHE) • Corridor Authority • Local Authority

MAP 4-8: DISTRIBUTION OF INSTITUTION AND INDUSTRIAL PARK IN PENINSULAR MALAYSIA AND F.T OF LABUAN

Land Use Distribution
- Industrial Area
- Proposed Industrial
- Higher Education Institution

Others
- State Capital
- State Boundary

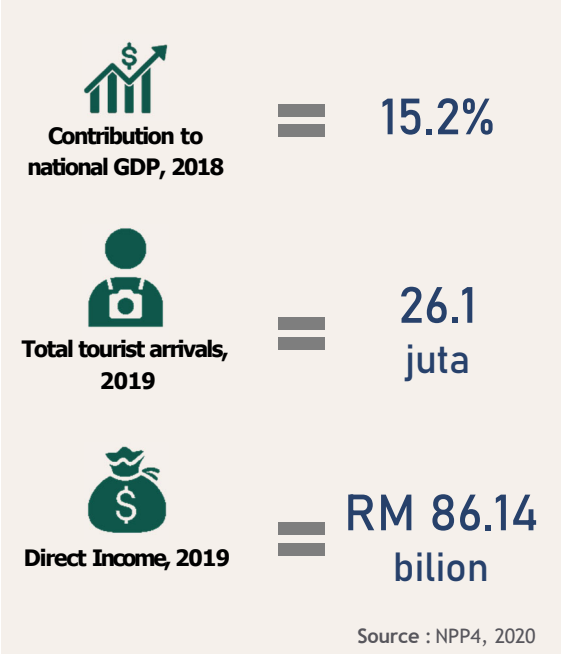
Source:
- I-Plan PLANMalaysia, 2018
- Malaysia Investment Development Authority, 2018
- National Physical Plan 4, 2020

STRATEGY
DG 2.4

DIVERSIFY TOURISM PRODUCTS AND COVERAGE AS ONE OF THE MAIN DRIVERS OF THE NATIONAL ECONOMY

RELATED SDGs
SDG8

The tourism industry is one of the main drivers of the country's economic growth with a contribution of 15.2% to Gross Domestic Product (GDP) in 2018.



The tourism sector showed a positive development with an increase in total tourist arrival of 1% at 26.1 million in 2019 compared to 25.8 million in 2018. Direct revenue from tourism activities also increased by 2.4% at RM 86.14 billion in 2019 compared to RM 84.1 billion in 2018. Based on the existing tourism products, the country's tourism industry has the potential to be further strengthened to drive a more dynamic and competitive economic growth of the nation.

The country's tourism sector has been affected by the COVID-19 pandemic. Therefore, efforts to re-strengthen the domestic tourism sector need to be implemented more effectively and innovatively. The implementation of the measures outlined by NPP4 is expected to enhance the performance of the tourism sector in the future.

The main pillar of the tourism industry is the destinations that can attract tourists. These destinations should have quality infrastructure and tourism facilities to ensure the comfort of the tourists and visitors. NPP4 has identified five (5) key elements at each tourism destination that need to be emphasised in order to improve the competitiveness and attractiveness of the destinations (refer to **Figure** 4-5).

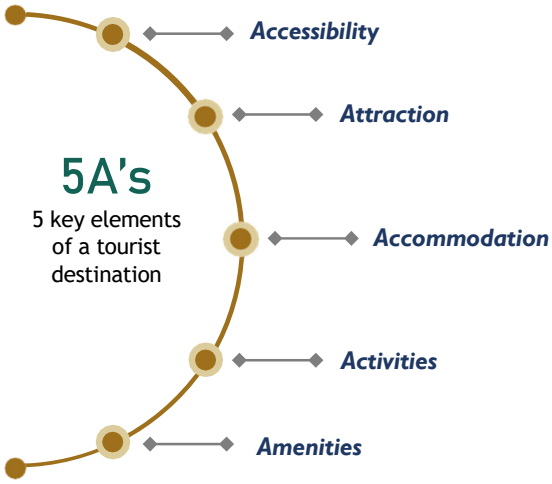
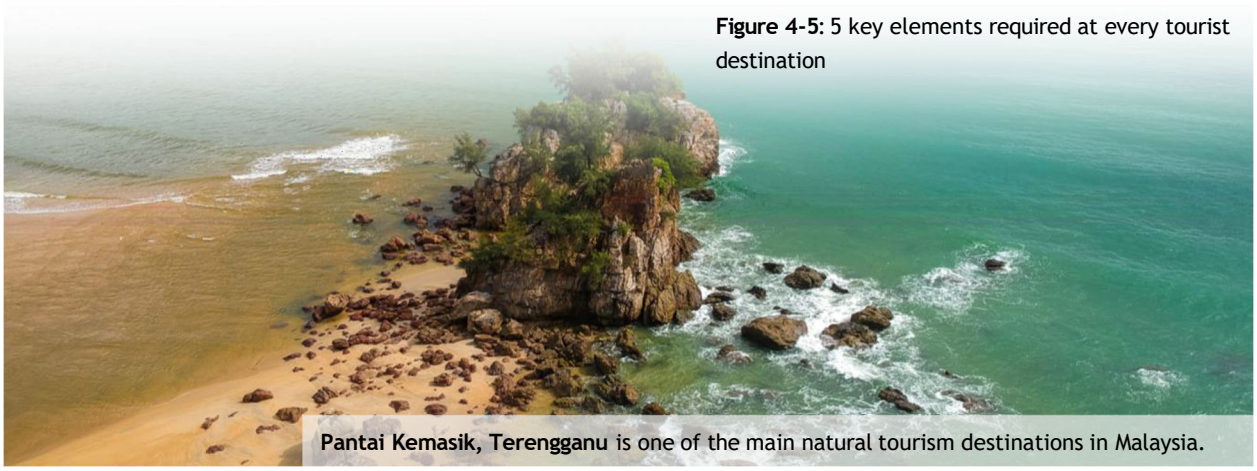


Figure 4-5: 5 key elements required at every tourist destination



Pantai Kemasik, Terengganu is one of the main natural tourism destinations in Malaysia.

ACTION DG 2.4A

Strengthen the country's major natural tourism destinations

Nature-based tourism is one of the main attractions of the tourism sector in the country. Natural tourist attractions offer products with a "nature" theme that rely on unique features to attract tourists. There are 4 main products that have high potential for natural tourism, namely:

01 ECO TOURISM

Has a wide range of products from forest trekking and exploration to wildlife observation activities.

02 HIGHLAND TOURISM

Featuring the uniqueness of cool highland climate in tropical areas and usually combined with other tourism products such as agro tourism.

03 BEACH AND ISLAND TOURISM

It is an important asset to the tourism industry based on the country's geographical features of being surrounded by the best beaches and islands in the world.

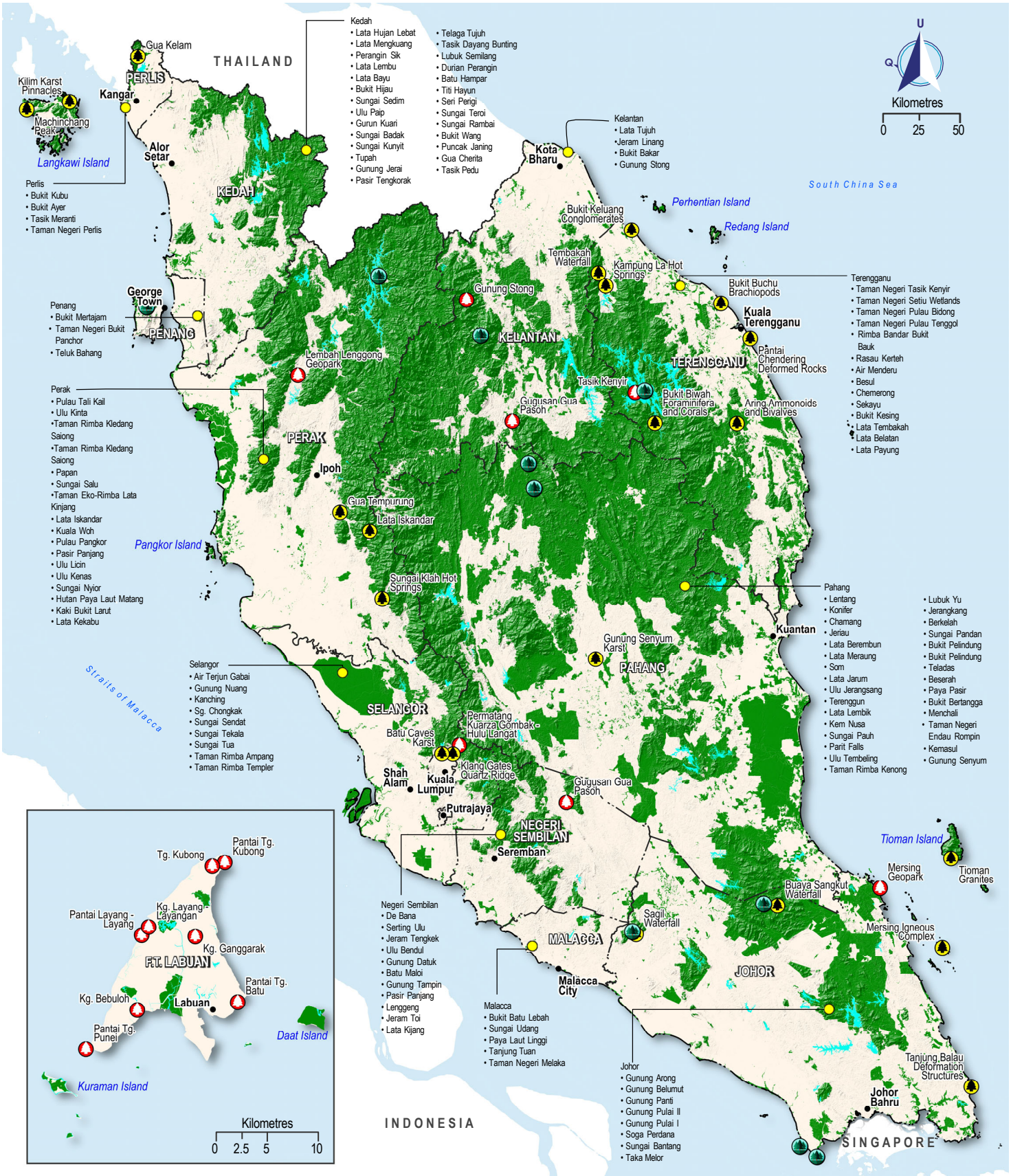
04 GEO TOURISM

Offering the uniqueness of landforms and rock formations, including biological and cultural elements, as tourism attractions such as Langkawi UNESCO Global Geopark and Kinta Valley Geopark.

The measures to be implemented include:

1. Rebrand existing nature tourism attractions based on the potential, strength and uniqueness of each destination.
2. Identify new destinations that have the potential to be featured and promoted internationally.
3. Implement measures for the conservation and maintenance of natural tourism destinations throughout the country.
4. Upgrade basic facilities and tourism infrastructure with priority given to the 60 clusters based on the National Eco-Tourism Plan (2016-2025).

AGENCIES INVOLVED	
Main Agencies	**Supporting Agencies**
• Ministry of Tourism, Arts and Culture Malaysia (MOTAC)	• State Authority • National Heritage Department (JWN) • Department of Minerals and Geosciences Malaysia (DMG)



MAP 4-9: NATURAL TOURISM DESTINATIONS (NATIONAL PARKS, STATE PARK, GEOPARK AND FOREST RESERVE) IN PENINSULAR MALAYSIA

Nature Tourism

- National/ State Parks
- Geological Heritage
- Proposed Geopark
- Reserve Forest by State
- Forest Area
- Water Body

Others

- State Capital
- State Boundary

Source:

- Mineral and Geoscience Department, 2018
- National Physical Plan 4, 2020

MAP 4-10: NATURAL TOURISM DESTINATIONS (HIGHLAND, COASTAL AND ISLAND TOURISM) IN PENINSULAR MALAYSIA

Nature Tourism
- Highland Tourism
- Beach/ Coatal
- Island Tourism

Others
- Forest Area
- Water Body
- State Capital
- State Boundary

Source:
- National Physical Plan 4, 2020

ACTION DG 2.4B

Ensure tourist arrival at major tourism destinations is based on their carrying capacity

Carrying capacity in the tourism sector is a mechanism to identify the ability of a tourist attraction, especially in rural areas, to accommodate the presence of visitors at a time. Observing the carrying capacity is important to ensure that the level of satisfaction and experience of tourists in each visit can be maintained at an optimal level. Additionally, it also protects the quality of the attraction and its surrounding environment from degradation due to excessive arrival of visitors.

The implementation of this mechanism is important to ensure socio-economic and environmental balance and sustainability. Carrying capacity studies should be given priority in the main tourism destinations, especially the nature tourism destinations.

The Carrying Capacity Study of Peninsular Malaysia Resort Islands for Pulau Besar (Malacca), Pulau Sembilan (Perak), Pulau Jerejak (Penang), Pulau Payar (Kedah), Pulau Bidong and Pulau Tenggol (Terengganu) was conducted by PLANMalaysia as a guide for sustainable development planning and tourism destination management in resort islands.

NPP4 proposes the following measures to be implemented:

1. Expand carrying capacity study to major tourist destinations.
2. Implement intelligent sharing of data on tourist arrival between stakeholders and tourism operators.
3. Provide adequate tourism support facilities in line with the designated carrying capacity.

Tasik Dayang Bunting is one of the main products of natural tourism that require carrying capacity study to ensure the balance between socio-economic and environmental sustainability.

AGENCIES INVOLVED	
Main Agencies	**Supporting Agencies**
• Ministry of Tourism, Arts and Culture Malaysia (MOTAC) • PLANMalaysia • Local Authority	• State Authority • Corridor Authority

ACTION DG 2.4C

Strengthen the identity of cities and tourist attractions through rebranding of potential tourism activities

Cities, towns and tourist attractions play a role in generating tourism income through tourists' spendings. In 2018, domestic tourists spent RM 82.7 billion, and 42% of that amount was through shopping activities. International tourists contributed RM 87.7 billion to the national economy in the same year and 33.5% of the total was also through shopping activities.

Therefore, the development of tourism products according to the potential of the location such as the provision of shopping malls in major cities, border towns and gateways as well as duty free zones are important to maximise the economic benefits from tourism activities. Important elements of a city and town such as historical features, heritage and architectural uniqueness must be maintained as attractions to tourists from within and outside of the country. Major cities and towns rebranding is also important as one of the marketing and promotion strategies of tourism products. The branding of cities and towns for tourism activities is proposed to be classified (refer to **Table 4-2** and **Plan 4-11**) as follows:

1. Royal Towns.
2. Cultural, Heritage and Historical City.
3. Highland Tourism.
4. Border and Gateway City.
5. Tourism and Leisure City.

Rebranding of major cities and towns should refer to the potentials of tourism activities which are based on current trends and the demand and supply as well.

The planning and development of cities, towns and tourist attractions must include the creation of tourism route networks between them to attract visitors to visit these cities and towns.

To ensure that urban tourism remains as one of the main attractions of the country's tourism sector, NPP4 recommends the following measures for implementation:

1. Identify potential urban identities to be featured in urban planning and tourism rebranding.
2. Restructure urban design and landscape through the preservation of existing identity, history and heritage of cities and towns.
3. Upgrade and improve the quality of key facilities and infrastructure such as public facilities, broadband network, hospitality and accommodation to ensure tourist comfort.
4. Organise cultural, heritage and historical festivals, international sports activities, and international conferences.

Kuala Kangsar, Perak is an example of Royal City tourism product.

Table 4-2: Major cities and towns in Peninsular Malaysia according to tourism identity

CATEGORY	LOCATION
Royal Towns • A city that is designated as the official residence of a sultan or a king (except Bandar Maharani, Johor).	1. Kubang Kerian, Kelantan 2. Pekan, Pahang 3. Klang, Selangor 4. Kuala Kangsar, Perak 5. Seri Menanti, Negeri Sembilan 6. Bandar Maharani, Johor 7. Arau, Perlis 8. Anak Bukit, Kedah
Cultural, Heritage and Historical City • A city with heritage values and historical relics that are still preserved.	1. Kuala Lipis, Pahang 2. Bandar Melaka Bandaraya Bersejarah 3. George Town, Penang
Highland Tourism • Tourist hotspots located at an altitude of over 300m.	1. Genting Highlands, Pahang 2. Cameron Highlands, Pahang 3. Bukit Tinggi, Pahang 4. Bukit Bendera, Penang 5. Bukit Larut, Perak 6. Bukit Fraser, Pahang 7. Gunung Jerai, Kedah 8. Janda Baik, Pahang
Border and Gateway City • A city that is located close to the international border and is the gateway to the country by road.	1. Bukit Kayu Hitam, Kedah 2. Pengkalan Hulu, Perak 3. Padang Besar, Perlis 4. Wang Kelian, Perlis 5. Johor Bahru, Johor 6. Rantau Panjang, Kelantan 7. Bukit Bunga, Kelantan 8. Pengkalan Kubor, Kelantan
Tourism and Leisure City • A city that focuses mainly on tourism and leisure activities.	1. Port Dickson, Negeri Sembilan 2. Kuala Terengganu, Terengganu 3. Kuala Besut, Terengganu 4. Tanah Rata - Brinchang, Pahang 5. Kuala Rompin, Pahang 6. Bukit Tinggi, Pahang 7. Mersing, Johor 8. Kuah, Kedah 9. Pulau Pangkor, Perak 10. Lumut, Perak 11. Cherating, Pahang 12. Batu Ferringhi, Penang 13. Genting Highlands, Pahang

AGENCIES INVOLVED	
Main Agencies	**Supporting Agencies**
• Ministry of Tourism, Arts and Culture Malaysia (MOTAC) • State Authority • Local Authority • PLANMalaysia	• Department of National Heritage

MAP 4-11: LOCATION OF ROYAL TOWN, HERITAGE TOWN, TOURISM CITY, BORDER TOWN AND ENTERTAINMENT TOWN IN PENINSULAR MALAYSIA

City Tourism Category

- Royal Town
- Cultural, Heritage and Historical Town
- Highland Tourism
- Border Town And Gateway
- Tourism and Entertainment City

Others

- State Capital
- Forest Area
- State Boundary

Source:
- National Physical Plan 4, 2020

ACTION DG 2.4D

Integrate Tourism Routes and Trails to promote the country's major tourism products

Tourism Routes and Trails is a tourism concept that focuses on creating network of links between natural resources, culture and areas of interest within an area. An integrated route system based on tourism products is a systematic method to optimise available tourism resources more comprehensively.

To ensure that the concept of Tourism Routes and Trails creates an impact on the country's tourism industry, it must be based on the following three (3) principles:

i. Offer special and integrated route-based tourism products that is able to attract visitors.
ii. Ensure continuous protection of natural and cultural assets, while being able to promote the values of those assets to visitors.
iii. Manage, maintain and provide marketing services and provide route portfolio information for a systematic and orderly implementation.

The concept of Tourism Routes and Trails helps in:

- Diversifying tourist destinations to increase revenue from tourism products.
- Increasing tourist length of stay and spending.
- Improving the sustainability of tourism products.

The promotion of tourism products should not be limited to a single state or region, but to be promoted and marketed as a complete package at the Malaysian context. Stakeholder cooperation between states or regions needs to be strengthened in promoting the country's key tourism products.

The measures that need to be implemented include:

1. Explore the integration of existing network of Tourism Routes and Trails with new ones to expand the country's tourism market (refer to **Plan 4-12**)
2. Identify tourism products that have the potential to be integrated through Tourism Routes and Trails network. Integrate key tourism sectors (health, education and research, sports and recreation) in developing this network.
3. Upgrade existing infrastructure and facilities at each potential tourist destination.
4. Develop Tourism Routes and Trails network based on themes that can be integrated between states and key tourism sectors (eco-tourism, heritage and culture, and the Royal City).
5. Encourage cooperation and collaborations between stakeholders in the tourism industry.

AGENCIES INVOLVED	
Main Agencies	**Supporting Agencies**
• Ministry of Tourism, Arts and Culture Malaysia (MOTAC)	• State Authority • Corridor Authority • Department of National Heritage • Local Authority • PLANMalaysia

MAP 4-12: TOURISM ROUTES AND TRAIL IN PENINSULAR MALAYSIA

Tourism Routes and Trail

- Trail 1 : Diverse tourism (Combination of several tourism categories)
- Trail 2 : Natural experience

Others

- State Boundary

Source:

- National Physical Plan 4, 2020

ACTION DG 2.4E

Strengthen the development of niche tourism products throughout the country

Niche tourism refers to a specific tourism product that can be tailored to meet the needs of a particular market segment as well as placing the product as a specific tourism destination. Niche tourism, through image creation, helps tourism destinations to differentiate their products to compete competitively in a diverse tourism settings.

Niche tourism focuses on meeting the needs of a specific market based on interest in a particular product. It usually involves a combination of two different product segments such as medicine and tourism.

The main products of niche tourism that are popular and growing rapidly in Malaysia are medical tourism, educational tourism, aqua tourism, agro tourism, eco tourism and M.I.C.E. In 2018, medical tourism generated RM 1.5 billion through the arrival of 1.2 million tourists seeking treatment in Malaysia. Apart from that, the number of international students has also increased to almost 171,000 students in 2018. New convention centres have also been opened to meet the demand for M.I.C.E.

Niche tourism also provides added economic value in various fields through employment, business and investment opportunities. This indirectly increases the contribution of the tourism sector to the national economy.

The emphasis on niche tourism products should give greater focus on tourist and market segments to meet current trends in the tourism industry and the demand from tourists. For example, specialisation in each category of M.I.C.E is necessary, to identify the 'target market' with more focus and indirectly can generate more opportunities and added economic value in the country's tourism sector.

A study on the potential of the niche tourism market must be done to ensure that the existing potential can be maximised. To ensure the successful development of niche tourism products, NPP4 suggests the following measures to be implemented:

1. Strengthen niche tourism products throughout the country.
   a) The main destinations for **medical tourism products** must be determined based on current demand and the availability of key facilities and infrastructure such as international airports to receive foreign tourists. The destinations needs to be specified according to the region as follows:

      1. Northern Region: Penang .
      2. Central Region: Kuala Lumpur, Selangor and Malacca Historic City.
      3. Eastern Region: Kuantan.
      4. Southern Region: Johor Bahru.

Gleneagles Ampang, Kuala Lumpur

Pusat Konvensyen Antarabangsa Persada Johor, Johor Bahru

Pusat Konvensyen Antarabangsa Putrajaya

Source: NPP4, 2020

b) The main destinations for **educational tourism products** are public universities that have the status of research universities as set by the Ministry of Higher Education, namely:

- Universiti Malaya (UM).
- Universiti Kebangsaan Malaysia (UKM).
- Universiti Putra Malaysia (UPM).
- Universiti Sains Malaysia (USM).
- Universiti Teknologi Malaysia (UTM).

Other public and private universities in the country also have the potential and should be promoted as educational tourism destinations as well.

c) The main destinations for **M.I.C.E products** should be determined according to current demand and the provision of convention centre facilities as well as major infrastructure such as international airports to receive visitors from abroad. These destinations need to be specified according to the region as follows:

- Northern Region: Penang and Langkawi.
- Central Region: Kuala Lumpur, Putrajaya, Selangor, Port Dickson and Malacca Historic City.
- Eastern Region: Kuantan, Kota Bharu and Kuala Terengganu.
- Southern Region: Johor Bahru.

2. Intensify the promotion and marketing strategy of the country's niche tourism products more comprehensively.
3. Provide incentives such as tax exemption from the government to industry players and the private sector to further boost the growth of niche tourism.
4. Ensure that the standards and ratings of national niche tourism products are based on standards by international bodies.

The success of niche tourism products should be measured using the following indicators:

- The quality and level of each product.
- Market segment of each product.
- Product promotion and marketing strategy by considering current trends (pull and push factors).

Malaysian public universities with research university status.

AGENCIES INVOLVED

Main Agencies

- Ministry of Tourism, Arts and Culture Malaysia (MOTAC)
- Malaysian Health Tourism Council (MHTC)
- Ministry of Higher Education (MOHE)

Supporting Agencies

- State Authority
- Local Authority

STRATEGY
DG 2.5

ENSURE PROVISION OF HIGH-QUALITY INFRASTRUCTURE AND TOURISM SUPPORT FACILITIES

RELATED SDGs
SDG8

The provision of quality tourism infrastructure and facilities is important in providing the best services to tourists. High-quality and sustainable infrastructure will increase the comfort level of tourists and efficiency in services, which in turn can increase the average overnight stay of tourists from 6.5 days (2018) to a longer period. In addition, the provision of high-quality infrastructure and facilities will also enhance the competitiveness of the Malaysian tourism industry in developing tourism products and services of international standard.

The provision of key components of tourism infrastructure and facilities must consider the aspects of comfort and efficiency for tourists to attend to important matters while at tourism destinations. The main tourism infrastructure and facilities that need to be emphasised include:

- Accommodation facilities.
- Public transport network.
- Tourism information centre.
- Other support facilities.

The rating infrastructure and tourism facilities should be implemented based on the following indicators:

1. Category.
2. Size.
3. Usage capacity.

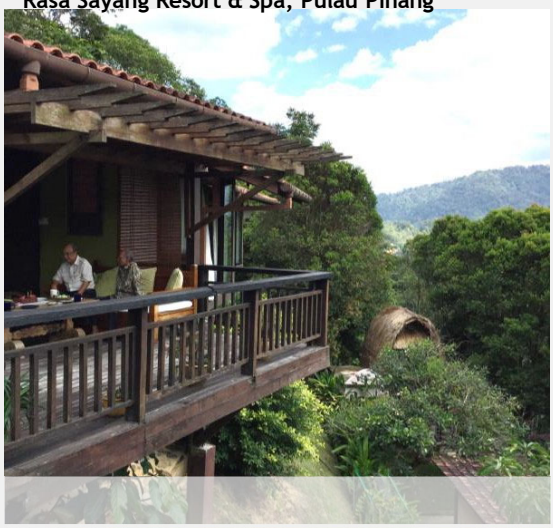
Tourism support facilities include accommodation, public transport and tourist information centre.

ACTION DG 2.5A

Ensure adequacy and variety of accommodation facilities

Avani Sepang Goldcoast Resort, Selangor

Rasa Sayang Resort & Spa, Pulau Pinang



Homestay Janda Baik, Pahang

Accommodation facilities at tourist destinations play an important role in providing places for tourists to stay and rest for the night. Good and quality accommodation facilities and hospitality help improve tourist satisfaction. To further attract tourists, accommodation facilities provided should be diverse in terms of types and offer unique experiences to tourists.

Accommodation facilities provided should be suitable to the tourist destination. Accommodation facilities of international standard (5 stars) should be concentrated around major cities in each state. The availability of major transport facilities such as airports attracts tourists, both domestic and international, to visit the cities. Nevertheless, hotels with 2 to 4 stars rating also need to be provided in the major cities to provide choices and to meet the demand from target groups.

The provision of hotels with 3 to 4 stars rating should be emphasised in local towns. However, for small towns that have the potential to be developed as tourist destinations, the provision of budget hotels with 1 to 2 stars rating is sufficient.

Other types of accommodation facilities such as resorts and homestays can be provided at suitable locations based on tourist demand. The provision of adequate accommodation facilities can contribute to increase in tourists' length of stay and spending.

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Tourism, Arts and Culture Malaysia (MOTAC) • Local Authority	• Malaysian Hotel Association

ACTION DG 2.5B

Improve accessibility to major tourist destinations

Transport network is an important tourism support facility and is one of the factors that contribute to the growth of tourism sector. It connects between tourist destinations and allows tourists to travel between one destination to another. Cost savings, convenience, travel time, and safety during travel are key factors for tourists in making travel arrangements. Therefore, a systematic and efficient transport infrastructure and network will attract tourists since they enable tourists to travel between destinations easily and in comfort.

To improve accessibility, the following measures are to be implemented:

1. Provide an integrated and efficient transport system to facilitate the movement of tourists to tourist destinations.
2. Improve the level of public transport services and connectivity to tourist destinations.
3. Apply modern technology in public transport services and integrate with tourist destinations.

Includes existing transport facilities nationwide that contributes to the development of the tourism sector

AGENCIES INVOLVED

Main Agencies

- Ministry of Tourism, Arts and Culture Malaysia (MOTAC)
- Ministry of Transport Malaysia (MOT)
- Local Authority

Supporting Agencies

- State Authority
- Corridor Authority

ACTION DG 2.5C

Develop interactive and virtually accessible tourist information centre

Tourism information centres should provide data and information specific for all tourism products in the country. These include important information about tourist destinations, public transport networks, support facilities such as accommodation and shopping facilities, and others. The use of the latest technology such as "virtual reality" should be utilised especially in the promotion and marketing of tourism products.

To enhance the promotion of tourism products in Malaysia, tourism information can be provided in an integrated manner at business premises, recreational areas, public facilities, major transit nodes and through online applications (apps). This measure can be implemented in major cities and in small towns that have the potential to become tourist destinations.

The measures that need to be implemented are:

1. Identify appropriate locations to locate more interactive and innovative information centres.
2. Use latest technology such as "virtual reality" in the promotion and marketing of tourism products.
3. Provide and update complete information on tourist products or attractions.
4. Provide dedicated funds for the development and maintenance of tourism's virtual assets.

Digital displays can be used to promote tourism products in the country.

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Tourism, Arts and Culture Malaysia (MOTAC) • Local Authority	• State Authority

STRATEGY
DG 2.6
LEVERAGE RURAL LOCAL RESOURCES

RELATED SDGs
SDG11 SDG12

Malaysia is blessed with a diverse local resources with the potential to be highlighted in rural economic development. Rural local resources are important and have significant roles to play in driving economic development in Malaysia.


Among the handicraft products produced by the local handicraft industry of the rural population

These resources can be utilised to add value to the rural economy. The diversity of economic activities in rural areas can benefit the local population through increased sources of income and employment opportunities in rural areas. This in turn can be a catalyst for a more dynamic and competitive rural economic growth, thereby reducing the development gap between urban and rural areas.

ACTION DG 2.6A
Diversify the rural economy based on local potential

The rural economy needs to be developed based on local strengths, uniqueness and potential. Rural economic activities should not focus only on a single activity but should be diversified based on local development potentials. Among the potential niche clusters of the rural economy that can be explored are:

NPP4 proposes the following measures to diversify the rural economy:

1. Enhance value chain activities for the agro-based economy.
2. Promote agglomeration of economic activities focusing on niche clusters in rural areas.
3. Formulate an integrated rural development programmed in order to attract young and skilled people to remain in rural areas.
4. Improve basic infrastructure and rural support facilities that have the potential to empower rural economic growth.
5. Provide strategic and integrated transport network connecting rural areas with the nearest major cities.

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Rural Development (KPLB) • Ministry of Agriculture and Food Industry Malaysia (MAFI) • State Authority	• Corridor Authority • Local Authority

ACTION DG 2.6B

Making Agropolitan Centres as rural growth nodes

Agropolitan Centre is an integrated approach to agro-based economic development for rural areas. The main goal of Agropolitan Centre is to drive the growth of rural economy in order to eradicate poverty by increasing the income of the rural population. This requires stimulation of physical development to become the catalyst for a more competitive rural economic growth. NPP4 has identified Agropolitan Centres based on their potentials to increase the added value of agricultural products in the area.

Among the measures that need to be implemented to make Agropolitan Centres as rural growth nodes are:

i. Develop training centres to improve the skills of the rural population.
ii. Provide research and development (R&D) centres focusing on increasing agricultural productivitiy.
iii. Connect Agropolitan Centre with Catalyst Centre and PDZ.
iv. Provide comprehensive infrastructure and utilities Agropolitan Centre.
v. Apply the use of support technology in the management of agricultural activities.

Criteria and characteristics of the Agropolitan Centre

- Towns or rural settlement centres located in agropolitan areas / districts;
- Serves as a major agricultural service centre;
- Has the potential to be an agricultural marketing and trading centre;
- Has the potential to provide local agricultural training centres and district agricultural produce processing centres;
- Able to generate local economic growth; and
- Located outside Conurbation and PDZs.

23 Agropolitan Centres in Peninsular Malaysia

Northern Region
- ***Kuala Nerang**
- Sik
- ***Baling**
- ***Air Hitam**
- ***Pengkalan Hulu**
- Manong
- Trolak

Central Region
- Sekinchan
- ***Sabak**
- ***Gemas**
- ***Seri Jempol**
- ***Rembau**
- ***Kuala Pilah**

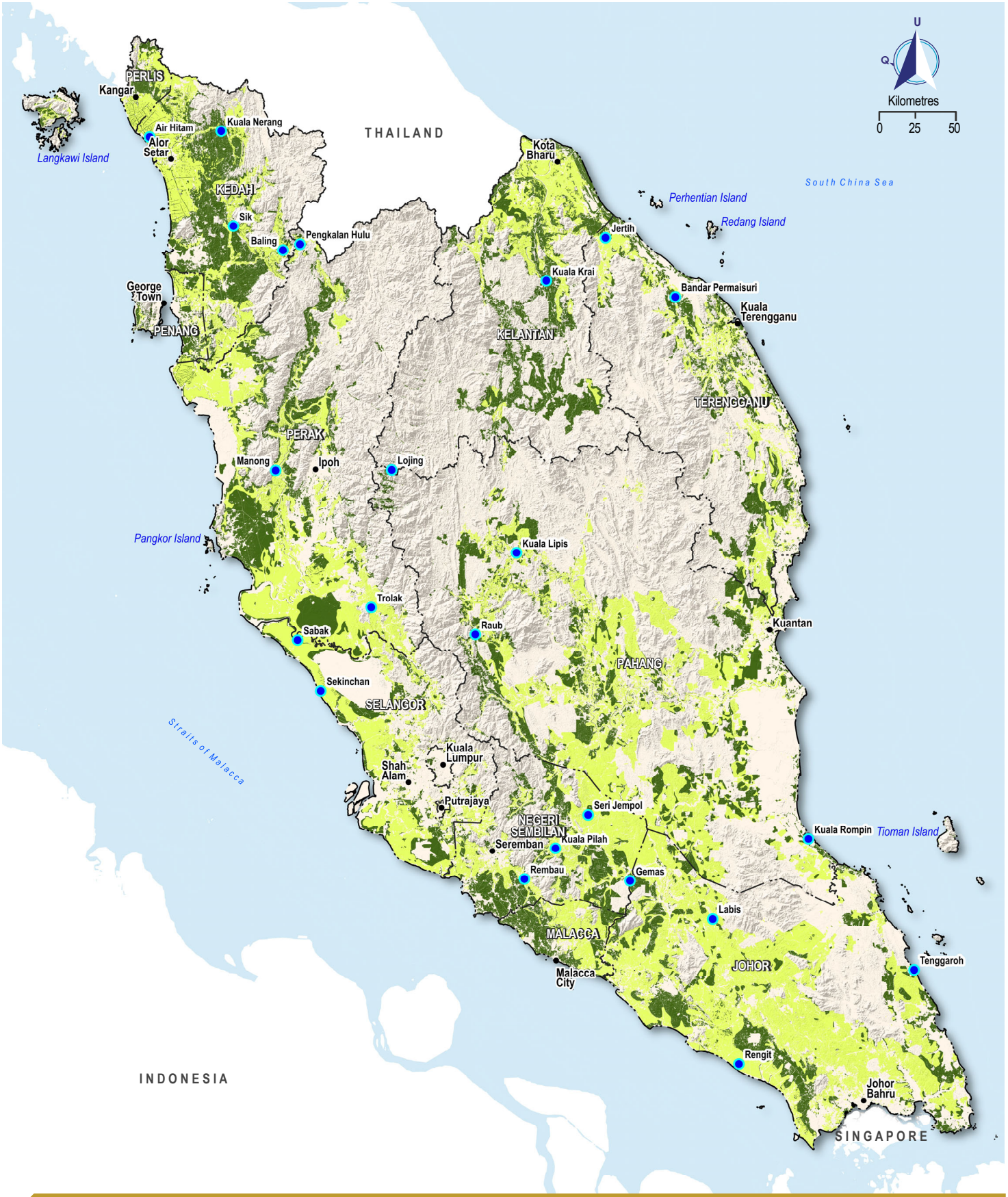
Southern Region
- ***Tenggaroh**
- ***Rengit**
- ***Labis**

Eastern Region
- Kuala Krai
- Lojing
- Bandar Permaisuri
- ***Jertih**
- Raub
- Kuala Lipis
- Kuala Rompin

***New Agropolitan Centres identified in the NPP4 study**

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Rural Development (KPLB) • Ministry of Agriculture and Food Industry Malaysia (MAFI) • State Authority	• Corridor Authority • Local Authority



MAP 4-13: AGROPOLITAN CENTRE LOCATION IN PENINSULAR MALAYSIA

Growth Area

- Agropolitan Centre

Prime Agriculture Area (PAA)

- Class 1 Agriculture (Reserved Land for Agriculture)
- Class 2 Agriculture (Agriculture Support Land)

Others

- State Capital
- State Boundary

Source:

- Agriculture Department, 2018
- National Physical Plan 4, 2020

Sekinchan Agropolitan Centre, Selangor has its own uniqueness in promoting tourism activities based on local resources such as rice cultivation.

DG 3
PROVIDING STRATEGIC AND INTEGRATED TRANSPORTATION NETWORK CONNECTIVITY

Transport network is one of the enabling factors of the country's economic development. Transport facilities are used to facilitate the movement of people from one area to another. A strategic and integrated transport network is also able to improve the function of a city and reduce the development gaps between urban and rural areas. An integrated transport network increases the accessibility of rural areas, stimulates rural economic activities and drives a more dynamic and competitive growth.

Malaysia has formulated the National Transport Policy (NTP) 2019-2030 which provides the direction in developing an efficient, integrated and sustainable transport sector to drive economic growth and support the well-being of the people in line with the status of a developed country. This policy outlines five (5) policy thrusts and 23 specific strategies in providing a smart, connected, convenient and safe transport system to meet the needs of the people. Taking into account the role of the transport sector as the backbone of the country's economic growth, the implementation of the NTP 2019-2030 will contribute to ensuring the Malaysian economy will remain business-friendly and able to be a global competitor in the transport industry.

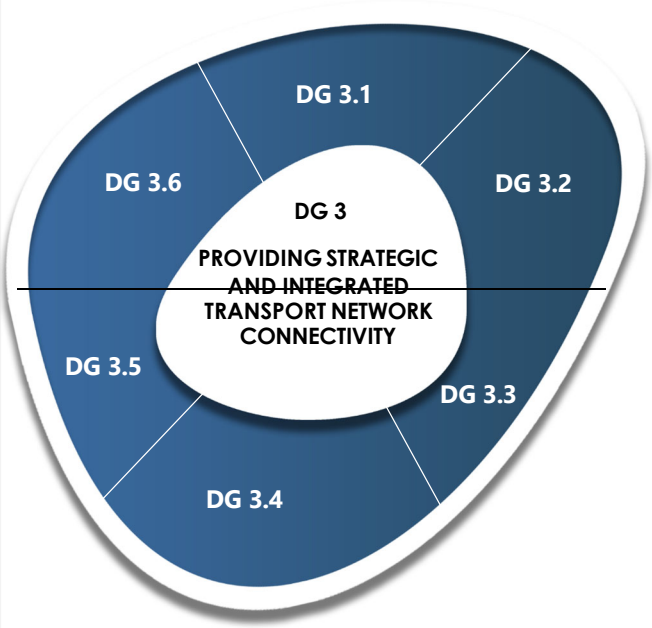
National Transport Policy (NTP) Vision 2019-2030

To develop a sustainable transport sector that accelerates economic growth and supports the well-being of the *rakyat* in line with an advanced nation status

5 National Transport Policy (NTP) Thrust 2019-2030

1. **Strengthen the governance** towards a conducive environment for the transport sector.
2. **Optimise, build and maintain** transport infrastructure, services and networks for efficiency.
3. **Enhance safety, integration, connectivity and accessibility** for seamless journey.
4. Advance towards **green transport ecosystem.**
5. **Expand global footprint** and promote internationalisation of transport services.

This strategic direction aims to strengthen the role of all types of transport, especially rail, to enhance connectivity within and between regions as well as urban and rural areas.



STRATEGIC DIRECTION DG 3

PROVIDING STRATEGIC AND INTEGRATED TRANSPORTATION NETWORK CONNECTIVITY

DG 3.1	Strengthen Road Transport Network and Connectivity
DG 3.2	Making Rail as the Main Pillar of Transportation System
DG 3.3	Strengthen Public Transport Services to Achieve Modal Split Targets
DG 3.4	Strengthen Air Connectivity at Global, Regional and Local Levels
DG 3.5	Improve Water Transport Services
DG 3.6	Strengthen the Logistics Industry

STRATEGY
DG 3.1

STRENGTHEN ROAD TRANSPORT NETWORK AND CONNECTIVITY

RELATED SDGs
SDG3 SDG8
SDG9 SDG10
SDG11

The transport network is one of the main factors that drive the physical and economic development of the country. Integrated road transport network is crucial in driving the country's economy towards a more dynamic and competitive growth. Road network also helps reduce the development gaps between urban and rural areas.

MALAYSIA HAS BUILD (UNTIL DECEMBER 2018)

245,500 KM
Federal and State Roads

1,958 KM
Highway

Source: Malaysia Road Statistics 2019 Edition

The provision of strategic and integrated transport linkages can stimulate urban and rural economic activities. NPP4 seeks to ensure provision of integrated and comprehensive road network to enhance connectivity between regions, growth areas (Conurbations, PDZs and Catalyst Centres), urban areas and rural areas to stimulate dynamic and competitive economic growth, and to improve the living standards of the people in general.

ACTION DG 3.1A

Ensure comprehensive and quality road connectivity between regions

Road connectivity plays an important role in the strategic framework of spatial development as it supports economic activities along the corridor and between key growth areas. In addition, roads also play a role in connecting key growth areas with the country's main gateways.

In formulating the proposals for new highways and roads, as well as for existing road upgrades, NPP4 has taken into account the proposals stated in the Highway Network Development Plan 2030 (HNDP 2030). Similarly, NPP proposals for bridges are in line with the proposals by the Ministry of Federal Territories (KWP).

Table 4-3: Proposed new highways

NO.	PROPOSAL	IMPLEMENTATION YEAR
01	**East Coast Highway 3 (LPT3)** • Construction of the East Coast Highway 3 (LPT3) - to connect Terengganu (Gemuroh) to Kelantan (Pengkalan Kubor) by completing the 'missing link' with the connection from the East Coast Highway 2 (LPT2). This highway will be built in 2 phases starting from Gemuroh to Tok Bali, and then to Pengkalan Kubor.	• 2021-2025: Kuala Terengganu - Tok Bali • 2026-2030 : Tok Bali - Pengkalan Kubor

Continued

NO.	PROPOSAL	IMPLEMENTATION YEAR
02	**Connection from the East Coast Highway (LPT) to connect Pahang to Johor** • Improving accessibility and economic viability along the east coast corridor (southern part) with the implementation of the proposed East Coast Highway 4 (LTP4) Kuantan - Pasir Gudang (as well as to Singapore in the future).	• After 2030
03	**Highway connecting Eastern Region - Northern Region** • Improve route FT4 - Tanah Merah, Kelantan - Kupang, Kedah and route FT185 - Kuala Terengganu - Simpang Pulai, Perak	• 2021-2025: Improve route FT4 • 2026-2030: Improve FT185
04	**Connection from Central Spine Road (CSR) at Simpang Pelangai, Pahang to Ulu Tiram, Johor via Southern Central Road (SCR)** • Encourage mobility from the East Coast to the West Coast of Peninsular Malaysia.	• 2021-2030
05	**West Coast Expressway (WCE) connection to the south (Johor) and north (Perlis) via the Northern Corridor Highway (NCH)** • Proposed connection of the existing WCE Highway (Taiping - Banting) to Padang Besar, Perlis via NCH, and to the southern part of Pontian, Johor via WCE. This route will connect all major cities on the west coast of Peninsular Malaysia and indirectly become an alternative route to the PLUS Highway (E1 & E2).	• 2021-2025: NCH • 2021 – 2030: WCE Connection
06	**Labuan - Sabah Bridge** • Improving connectivity between the Federal Territory of Labuan and Borneo/Sabah through the proposed bridge to Menumbok, Sabah as a gateway to Labuan and also as a catalyst to increase critical mass for Labuan's development. Existing ferry service connecting Labuan and mainland Sabah is unable to accommodate the increase in users, especially during festive seasons.	• 2021-2025

Source: *Highway Network Development Plan 2030 (HNDP 2030) report and bridge proposals by the Ministry of Federal Territories (KWP)*

To ensure the proposals under this action can be achieved, stakeholders need to implement the proposed projects in accordance with the targets outlined in NPP4 as follows:

Table 4-4: Proposed highways, new roads and upgrading of existing roads (cross-states)

ROADS / HIGHWAYS CROSS-STATES	
1. Taman Kuala Perlis - Bedong, Kedah Road.	11. East Klang Valley Expressway (EKVE).
2. Northern Corridor Highway (NCH).	12. Putrajaya - Bangi Expressway (PBE).
3. Kota Bharu - Penang Highway Connection.	13. KLIA - Senawang (SKLIA).
4. Jalan Baru (NCH - PB2 Section) Serdang, Kedah to the Second Bridge.	14. Putrajaya - KLIA (MEX II) .
5. West Coast Highway (WCE).	15. Setiawangsa - Pantai Expressway (SPE).
6. Hutan Melintang – Raub Highway.	16. Semenyih - Simpang Pelangai, Pahang.
7. East Coast Highway 3 (LPT3).	17. Southern Central Road (SCR).
8. Central Spine Road (CSR).	18. Pahang - Ulu Tiram, Johor through SCR.
9. Setiu to Kenyir Road.	19. Kuantan - Kemaman Highway.
10. Seremban - Pekan Highway.	20. Kg. Telaga Papan - Pantai Tok Bali Road.
	21. Lebai Leh - Permaisuri Road.
	22. Chiku - Basung Road.

The North-South Highway, which is one of the north-south main links in Peninsular Malaysia

Table 4-5: Proposed highways, new roads and upgrading of existing roads (by state)

PERLIS

1. Northen Corridor Highway (NCH) link via Padang Besar - Sintok Highway (KESBAN).

PULAU PINANG

1. Bypass from Tun Dr. Lim Chong Eu Highway to Ayer Itam (Package 2).
2. Bypass from Tun Dr. Lim Chong Eu Highway to Gurney Promenade (George Town) (Package 3).
3. Pan Island Link 1 (PIL 1) - Gurney Drive to Tun Dr. Lim Chong Eu Highway.
4. Pan Island Link 2 (PIL 2) - Relau to Island B (Penang South Reclamation - PSR).
5. Pan Island Link 2A (PIL 2A) - Tun Dr. Lim Chong Eu Highway to Island A (Penang South Reclamation - PSR).
6. Third Route (Package 4) from Gurney Drive to Bagan Ajam.
7. Jalan Baru (NCH - PB2 Section) Serdang, Kedah to the Second Bridge.
8. Elevated Penang Bypass: Sg Dua to Juru.
9. North Coastal Paired Road (NCPR) - Package 1.

PERAK

1. Kota Bharu - Penang Highway via Gerik.
2. West Coast Highway (WCE).
3. Northen Corridor Highway (NCH).
4. Hutan Melintang - Raub Highway.
5. Jalan Pantai Remis - Parit.
6. Tapah Link Highway.
7. Ipoh - Lumut Highway.
8. Batu Kurau - Changkat Jering Highway.

KEDAH

1. Northern Corridor Highway (NCH).
2. New road from East West Highway.
3. Kota Bharu - Penang Highway extension.
4. Tikam Batu - Kuala Ketil (KXP Link Road).

KELANTAN

1. Kota Bharu - Penang Highway extension.
2. East Coast Highway 3 (LPT3).
3. Central Spine Road (CSR).
4. Jalan Lebai Leh - Permaisuri.

TERENGGANU

1. East Coast Highway 3 (LPT3).
2. Jalan Lebai Leh - Permaisuri.
3. Jalan Setiu to Kenyir.
4. Jalan Kuala Berang - Kuala Terengganu.
5. Jalan Tengku Ampuan Intan Zaharah.
6. Jalan Ajil - Kg. Pulau Kerengga.
7. Jalan Kerteh - Kg. Chabang.

PAHANG

1. Central Spine Road (CSR).
2. Kuantan - Pasir Gudang Highway Extension (LPT4).
3. Hutan Melintang - Raub Highway.
4. Simpang Pelangai - Muadzam Shah Highway.
5. Seremban - Pekan Highway.

JOHOR

1. Kuala Lumpur - Johor Bahru West Coast Expressway Extension (WCE).
2. Southern Central Road (SCR) connecting Segamat - Ulu Tiram.
3. Batu Pahat Bypass.
4. Kuantan - Pasir Gudang Highway Extension (LPT4).

Continued

SELANGOR

1. East Klang Valley Expressway (EKVE).
2. Putrajaya - Bangi Expressway (PBE).
3. KLIA - Senawang (SKLIA).
4. Putrajaya - KLIA (MEX II).
5. Northport - Westport Highway.
6. Serdang - Kinrara - Putrajaya Highway (SKIP).
7. Setiawangsa - Pantai Highway (SPE).
8. Sungai Besi - Ulu Kelang Highway (SUKE).
9. Damansara - Shah Alam Highway (DASH).
10. KLIA Ring Road.
11. Pulau Indah Ring Road.
12. Kuala Lumpur - Johor Bharu West Coast Expressway Extension (WCE).

F.T. KUALA LUMPUR & F.T. PUTRAJAYA

1. Putrajaya - Bangi Expressway (PBE).
2. East Klang Valley Expressway (EKVE) .
3. Setiawangsa - Pantai Expressway (SPE).

MELAKA

1. Kuala Lumpur - Johor Bharu West Coast Expressway Extension (WCE).
2. Coastal road.
3. Jalan Kuala Linggi - Masjid Tanah (Fasa 2).
4. Jalan Kuala Sungai Baru - Jalan Londang (Malacca State Route M157).
5. Jalan Sungai Udang - Bukit Rambai.

NEGERI SEMBILAN

1. Semenyih - Simpang Pelangai, Pahang.
2. KLIA - Senawang (SKLIA).
3. Seremban - Serting Highway.
4. Kuala Lumpur - Johor Bharu West Coast Expressway Extension (WCE).
5. Southern Central Road (SCR) via Simpang Pelangai - Segamat.

F.T. LABUAN

1. Labuan - Sabah Bridge.
2. Coastal Road (Ganggarak - Tanjung Aru).

Part of the **EKVE** line under construction.

AGENCIES INVOLVED

Main Agencies

- Ministry of Works (KKR)
- Ministry of Transport Malaysia (MOT)
- Public Works Department (JKR)

Supporting Agencies

- State Authority
- Corridor Authority
- Local Authority

MAP 4-14: ROAD LINKAGES IN PENINSULAR MALAYSIA AND F.T OF LABUAN

Land Transport
- Highway
- Federal Road
- State Road
- Proposed Highway

Others
- State Capital
- State Boundary

Source:
- Ministry of Transport, 2018
- Malaysia Highway Authority, 2018
- National Physical Plan 4, 2020

ACTION DG 3.1B

Ensure appropriate road hierarchy proposals

The road hierarchy determines the role and function of a road. It also serves as a guide in road transport planning in ensuring the most appropriate type of roads to be built.

In general, the highway system should be supported by a comprehensive network of roads of lower hierarchy such as arterial roads, collector roads and local roads as shown in **Figure 4-6.** Additionally, the use of appropriate type of intersection to connect roads of different hierarchy is also very important. Highways and arterial roads should be connected by interchange to disperse traffic smoothly as shown in **Figure 4-7**. This is important for the distribution of traffic from the highways to local roads. The application of appropriate road hierarchy and type of intersection can also avoid traffic congestion especially during peak hours.

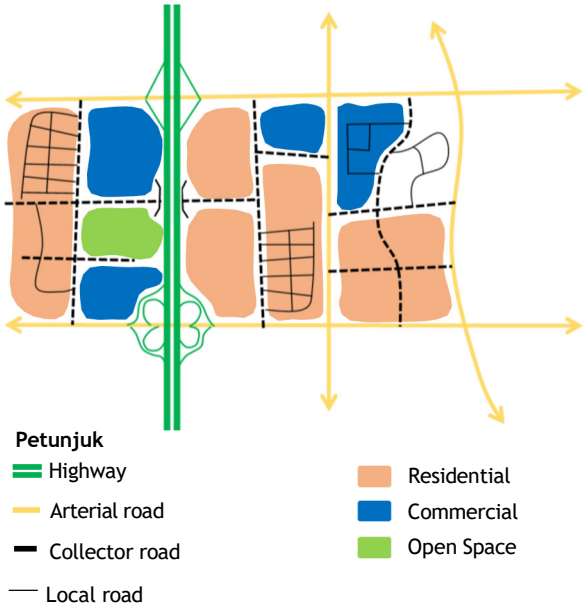


Figure 4-6: Road hierarchy concept

The measures to be implemented include :

1. Identify and upgrade existing roads with poor hierarchical setting to ensure more efficient road network.
2. Ensure the provision of new roads is in accordance with the correct road hierarchy.

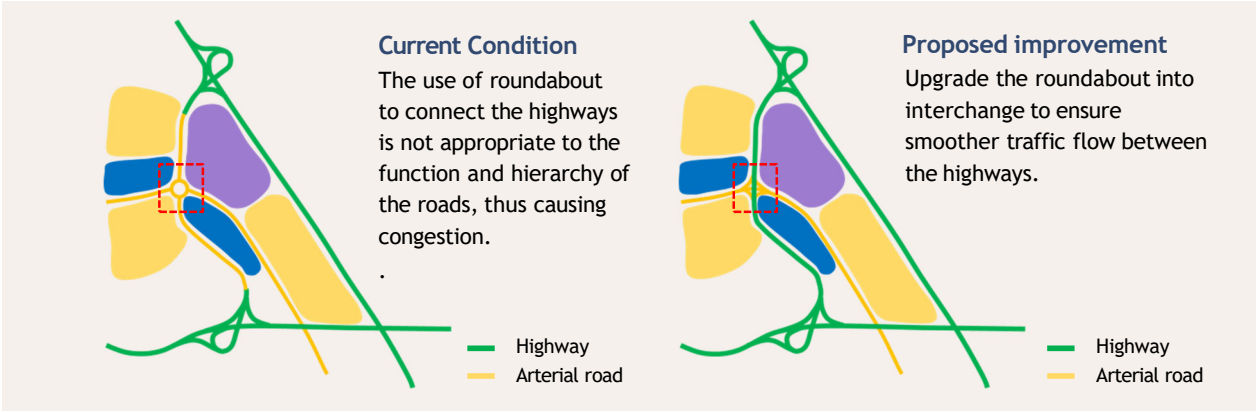


Figure 4-7: Proposed multi-storey intersection

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Works (KKR) • Ministry of Transport Malaysia (MOT) • Public Works Department (JKR) • Malaysian Highway Authority (LLM) • State Authority • Local Authority	• Corridor Authority

ACTION DG 3.1C

Improve road access in rural areas

A good road network is one of the important aspects in improving the socio-economic and well-being of the rural population. Rural roads, including access and internal circulation roads, should be paved to increase the accessibility to rural facilities and improve the well-being of the population. Among the measures to be implemented are:

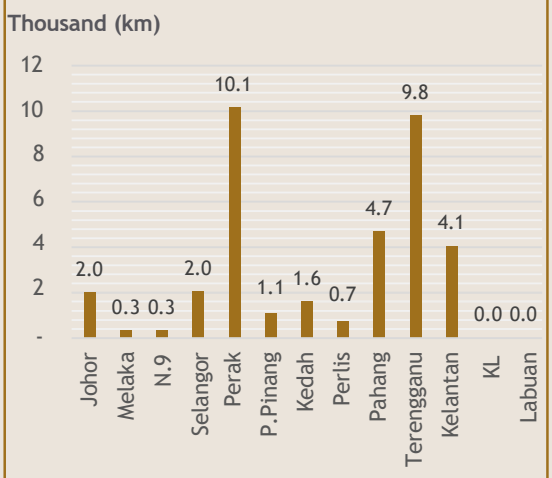
1. Increase road surfacing work to upgrade unpaved roads into paved roads. This is to ensure that the number of unpaved roads in rural areas is reduced every year, thus increasing accessibility to and within rural areas.

2. Intensify the existing rural road upgrading programme.

3. Ensure rural road upgrade and maintenance are conducted regularly especially roads that provide access to educational institutions, health, safety and other social facilities.

BRIEF FACTS

Length of unpaved road by state (kilometres).



Source: Malaysia Road Statistics 2019 Edition, JKR

Existing road programmes under the Ministry of Rural Development

RURAL ROAD PROGRAMME

- Aims to accelerate and increase road construction in rural areas.

Source: Official portal Ministry of Rural Development

RURAL ROAD CONNECTIVITY PROGRAMME

- Connecting one village with another with a main road.
- Aims to improve the living standard and well-being of villagers and increase their accessibility to public facilities.

Source: Official portal Ministry of Rural Development

AGENCIES INVOLVED

Main Agencies

- Ministry of Rural Development (KPLB)
- Ministry of Works (KKR)
- Ministry of Transport Malaysia (MOT)
- Public Works Department (JKR)

Supporting Agencies

- State Authority
- Corridor Authority
- Local Authority

ACTION DG 3.1D

Ensure road maintenance and improvement are according to schedule

Scheduled road improvement and maintenance are very important in ensuring a good level of road service and user safety. In this context, road improvement means improving roads that have exceeded the capacity of Level of Service F (LOS F) to a better level of service, at least to LOS D. Meanwhile, scheduled maintenance involves preventive maintenance that are done at regular interval before road condition deteriorate, hence endangering users. Among the measures to be implemented are:

1. Improve road Level of Service (LOS)

Roads operating at LOS F must be upgraded. If this is not possible due to space limitation, then there is a need to provide high-capacity transport (use of public transport) such as buses or rail in the area. Urban development in the area must also be controlled by reducing population density and plot ratio.

Table 4-6: Road Level of Service (LOS)

Volume-to-Capacity (V/C) ratio = <0.6 • The best level of road service (LOS). Free traffic flow and no travel delays.	**LOS A**
Volume-to-Capacity (V/C) ratio = 0.6 - 0.69 • Good level of service. • Smooth traffic with minimal delays.	**LOS B**
Volume-to-Capacity (V/C) ratio = 0.7 - 0.79 • Reasonably good level of service. • Slightly reasonable traffic flow with slightly reduced speed.	**LOS C**
Volume-to-Capacity (V/C) ratio = 0.8 - 0.89 • Acceptable level of service. • Speed decreases slightly as traffic volume increases. • Travel delays are still acceptable.	**LOS D**
Volume-to-Capacity (V/C) ratio = 0.9 - 0.99 • Approaching towards an unstable level of service. • Spacing between vehicles is quite close. • Traffic is congested.	**LOS E**
Volume-to-Capacity (V/C) ratio = >1.0 • Unacceptable level of service. • Road needs to be improved. • Traffic is very congested.	**LOS F**

***Source**: Malaysia Highway Capacity Manual (MHCM) 2011*

2. Ensure road maintenance is carried out according to schedule and requirements

Routine and periodic road maintenance must be undertaken according to schedule. Meanwhile, emergency maintenance must be carried out as quickly as possible. On time maintenance work is important to keep roads in good condition and safe for users.

Routine Maintenance Work	Periodic Maintenance Works
• R01 - Pavement maintenance • R02 - Road shoulder maintenance • R03 - Grass cutting • R04 - Street furniture maintenance • R05 - Bridge and sewer maintenance • R07- Drain cleaning • B - Routine inspection	1) Pavement periodic maintenance • Road re-surfacing. • Road surface repair. 2) Non-pavement periodic maintenance • All non-pavement repair work such as road line painting, guardrail replacement, signage, etc.

Emergency Work

Includes preparing traffic management plan, cleaning and other temporary work to rectify problems due to:

- Slopes or landslides.
- Collapsed bridge/sewer or declared unsafe by JKR.
- Damaged bridge railing and parapet that jeopardises users' safety. Broken sewer mains/damaged bridge main component and declared unsafe by JKR.
- Embankment failure or subsidence.
- Fallen tree that endangers road users.
- Obstacle on the road (such as oil/chemical spills, building materials).
- Disaster occurrence (such as natural disasters, large area fires, haze).
- Damaged guardrail (unable to perform its function; due to accident).
- Damaged traffic light.
- Damaged street light.
- Damaged footbridge.
- Damaged tunnel water pump system.

Source: Ministry of Works

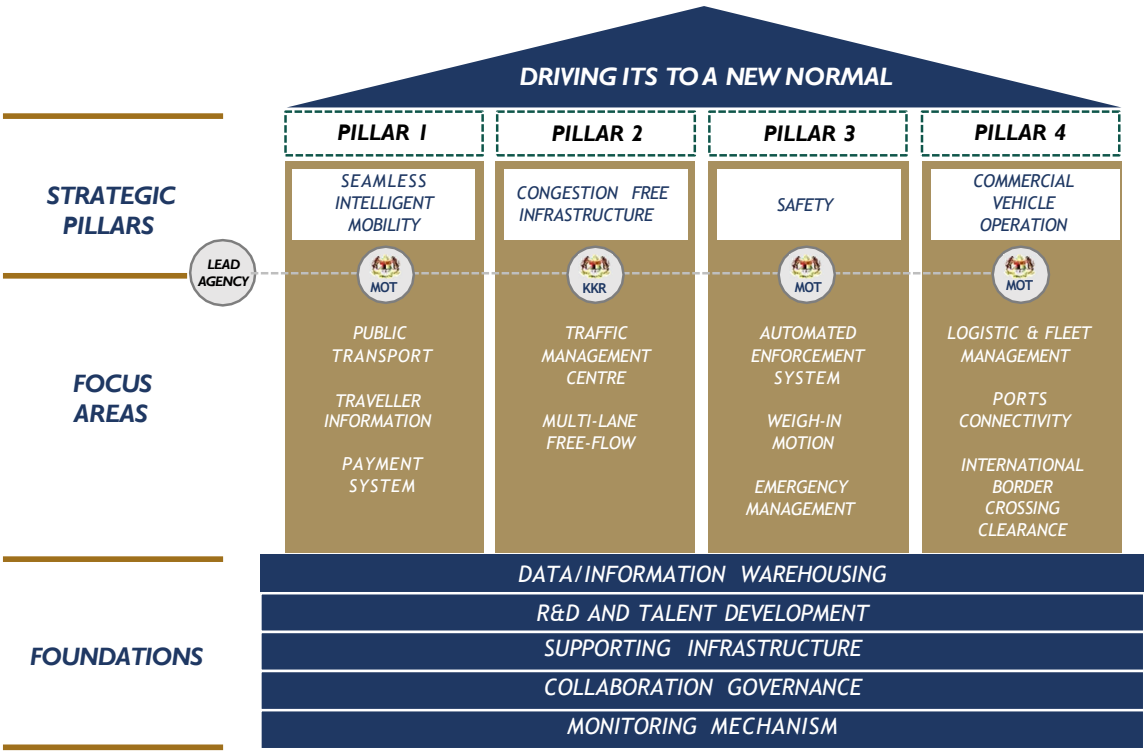
AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Works (KKR) • Public Works Department (JKR) • State Authority • Local Authority	• Corridor Authority

ACTION DG 3.1E

Increase the use of smart technology in traffic management

The application of smart technology is required in creating innovative and high-tech transport and traffic management services. The Ministry of Works has prepared the Malaysian Intelligent Transport System (ITS) Blueprint 2019-2023 (**Figure 4-8**) as a benchmark and a guide to the development of ITS in Malaysia.



Source: *Malaysian ITS Blueprint 2019-2023*

Figure 4-8: The Intelligent Transport System (ITS) framework

Among the measures that need to be implemented to increase the use of smart technology in traffic management are:

1. **Establish National Intelligent Transport Management Centre (NITMC)**
   - This traffic database centre will focus on improving traffic management and reduce traffic congestion through integrated analysis and the use of smart technology such as smart traffic light system. The Centre will be coordinated and shared with relevant agencies for the purpose of traffic and transport management, as well as to promote more integrated analysis to assist decision makers in resolving urban management issues.

Traffic management centre in Moscow, Russia

Toll gantry in Johannesburg

2. **Increase the application of barrier free toll road system**
   - This system helps to shorten travel time by reducing congestion especially at highway toll plazas. This system must be supported by the implementation of the Electronic Toll Collection such as Radio Frequency Identification (RFID) or camera/scanner system like Automatic Number Plate Recognition (ANPR).

3. **Encourage the use of smart technology at parking facility (Smart Parking)**
   - Smart Parking is a parking management concept that uses technology like sensors and cashless payment that can provide current information to users and parking operators. New development proposals are encouraged to provide an integrated smart parking system.

Smart Parking at Sunway Pyramid, Selangor

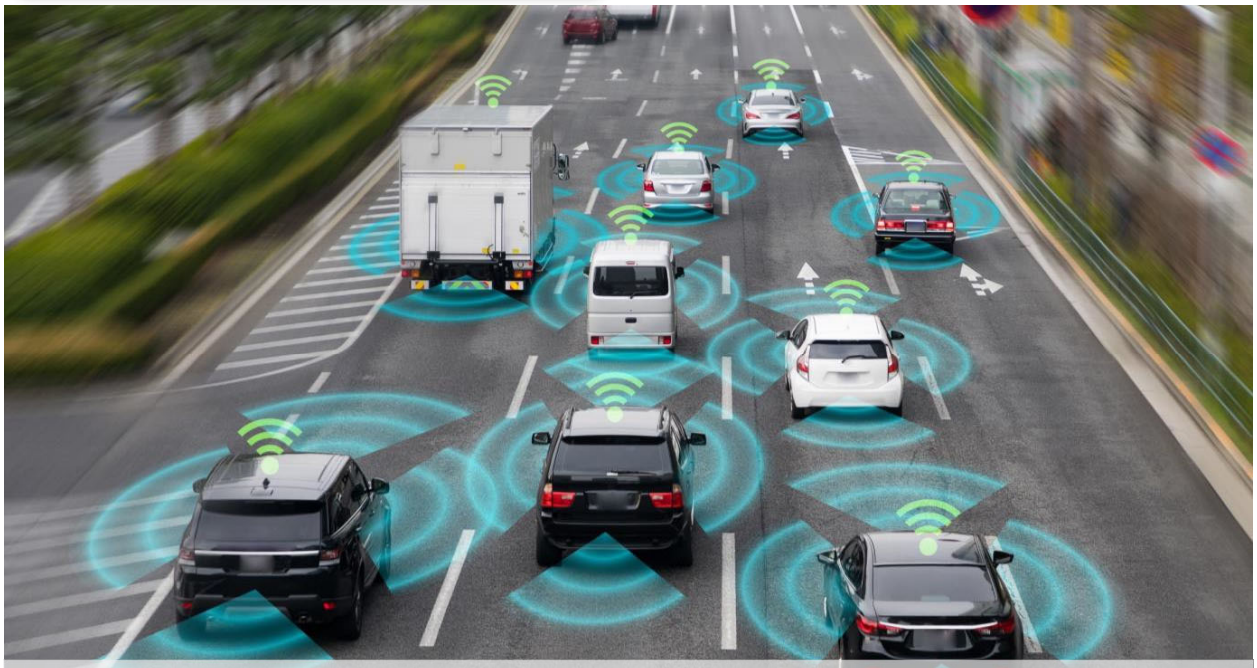
Charging station facilities for electric vehicles

4. **Encourage the use of electric vehicles**
   - Electric vehicles should be seen as the future of the country's automotive industry, which is more environmentally friendly. The following measures are required to encourage the use of electric vehicles:
     a) Provide more infrastructure that support the use of electric vehicles such as charging stations.
     b) Increase the incentives for manufacturers and users of energy efficient vehicles (EEV).

5. Encourage the use of autonomous vehicles

- In preparing the country towards autonomous vehicle technology, several aspects need to be considered such as infrastructure, legislation, security and so on. Among the measures that need to be implemented are:

  a) Develop infrastructure that can support the use of autonomous vehicles.
  b) Improve the legal provisions to support the use of autonomous vehicles (or other appropriate modes of transport) on the road.



How autonomous vehicles work on the road

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Transport Malaysia (MOT) • Ministry of Works (KKR) • Public Works Department (JKR) • Malaysia Automotive Association (MAA) • Malaysia Automotive, Robotics and IoT Institute (MARii)	• Ministry of Energy and Natural Resources (KeTSA) • Malaysian Institute of Road Safety Research (MIROS) • State Authority • Local Authority

STRATEGY
DG 3.2

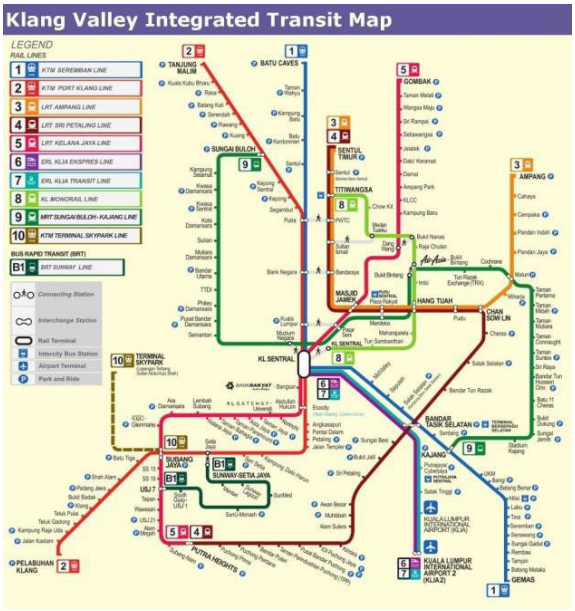
MAKING RAIL AS THE MAIN PILLAR OF TRANSPORTATION SYSTEM

RELATED SDGs

- SDG8
- SDG9
- SDG11

The rail system in Malaysia is beginning to undergo a transformation and its role has expanded from providing cargo services to also providing passenger services that connect cities and regions in Peninsular Malaysia such as the commuter services, KTM and ETS.

The focus of commuter services is to connect Kuala Lumpur with the surrounding cities with the aim of reducing road congestion. Meanwhile, the KTM and ETS services are mainly to connect the regions in Peninsular Malaysia to one another. Additionally, other rail systems are also being used in the country such as the Monorail, the LRT and the MRT. Good rail connectivity, especially in the city, can provide convenience to users and in turn can further boost the country's economic growth.



Integrated rail network in the Klang Valley.
Source: klsentral.info

However, to make rail becomes the main pillar of the transport system, the existing rail services need to be further strengthened, for instance by improving rail connectivity between cities and regions, and by using advanced and new technology especially in terms of coach capacity and train speed.

In addition, rail systems that can provide safe and faster travel, such as the High-Speed Rail (HSR) need to be deployed more throughout the country. The HSR is a key component in making the rail system the mainstay of the country's transport sector.

KLIA Express and KLIA Transit services that connect KL Sentral Integrated Terminal with KLIA / KLIA2

ACTION DG 3.2A

Improve rail connectivity between cities, regions and the country's main gateways

Rail connectivity between cities, regions and gateways must be given attention so that rail transport will be able to function as a high-speed, safe and sustainable bulk carrier.

For example, Thailand will have the new and largest rail station in ASEAN, the 'Bang Sue Grand Station'. The station will replace the 'Bangkok Railway Station' and will serve as the City of Bangkok's terminal for long distance rail services.

Bang Sue Grand Station – Bangkok, Thailand

The station will have at least 26 platforms and will provide multi-system rail connectivity services including HSR services that will link Bangkok with Padang Besar.

Therefore, the proposed rail lines such as the HSR in Malaysia need to be implemented to connect the regions and act as a part of the main gateway of the country by connecting airports and rail stations in major cities and border towns.

Table 4-7: Proposed high-speed rail lines

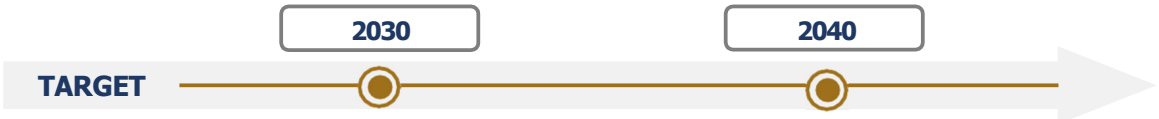
NO	PROPOSAL	LENGTH (SPEED)	PROPOSED TRAVEL TIME	PROPOSED IMPLEMENTATION YEAR
01	**Kuala Lumpur to Johor Bahru (HSR I) and to Singapore (HSR 1A)** • This line is as an alternative route in between the busiest corridors.	350km (320km/hr)	1 Hour 30 Minutes	2025 - 2030
02	**Port Klang to Kota Bharu (ECRL 1), and to Thailand through Rantau Panjang (ECRL 1A)** • This line connects the central and eastern regions and is the main rail gateway from Thailand.	640km (160km/hr)	4 Hour 20 Minutes	2025 - 2030
03	**KLIA to Malacca (ERL 2)** • Diversify transport modes between KLIA and neighboring states.	90km (250km/hr)	30 Minutes	2025 - 2030

Continued

NO	PROPOSAL	LENGTH (SPEED)	PROPOSED TRAVEL TIME	PROPOSED IMPLEMENTATION YEAR
04	**Kuala Lumpur to Kangar (HSR 2), and to Thailand (HSR 2A)** • This line connects the central region and the northern region that make up a corridor with high population number.	540km (450km/hr)	1 Hour 48 Minutes	2030 - 2040
05	**Kuantan to Johor Bahru (ECRL 2)** • This line is an alternative route to the ECRL that will stimulate the economic development of the east coast.	310km (450km/hr)	60 Minutes	2030 - 2040
06	**Penang to Kota Bharu (ECRL 3)** • This line connects the northern region and the eastern region.	350km	1 Hour 10 Minutes	2030 - 2040

Note:

1) The proposed HSR1 and ECRL1 rail lines are currently being studied.
2) Travel time is dependent on the average rail speed.



- Kuala Lumpur to Johor Bahru (HSR 1) and to Singapore (HSR 1A)
- Port Klang to Kota Bharu (ECRL 1), and then to Thailand via Rantau Panjang (ECRL 1A)
- KLIA to Malacca (ERL 2)

- Kuala Lumpur to Kangar (HSR 2) and to Thailand (HSR 2A)
- Kuantan to Johor Bahru (ECRL 2)
- Penang to Kota Bharu (ECRL 3)

MAP 4-15: EXISTING RAIL SERVICES AND PROPOSED HIGH SPEED RAIL LINE IN PENINSULAR MALAYSIA

Rail Line Routes

- Proposed High Speed Rail Station (HSR1)
- Proposed High Speed Rail Line (HSR 1)
- Proposed High Speed Rail Station (HSR2)
- Proposed High Speed Rail Line (HSR 2)
- Proposed East Coast Rail Link (ECRL 1)
- Proposed East Coast Rail Link Stations (ECRL 1)
- Proposed Kuantan-Johor Bahru Rail Line (ECRL2)
- Proposed Penang-Kota Bharu Rail Line (ECRL3)
- Proposed ERL KLIA-Malacca
- Rail Station
- Existing Rail Line

Others

- Cities in Proposed Route
- State Capital
- State Boundary

Source:
- Ministry of Transport, 2018
- MyHSR Corporation, 2018
- National Physical Plan 4, 2020

Table 4-8: Proposed intercity rail lines

NEGERI SEMBILAN
1. KLIA - Port Dickson. 2. Nilai - KLIA.

MELAKA
1. Port Dickson - Malacca City. 2. Pulau Sebang - Malacca City.

PERLIS
1. Padang Besar - Pelabuhan Darat (PIP). 2. Arau - Sanglang.

KEDAH
1. Bukit Kayu Hitam - Alor Setar. 2. Bukit Kayu Hitam - Changlun. 3. Sungai Petani - Kulim.

PULAU PINANG
1. Bayan Baru LRT line. 2. George Town - Butterworth LRT line. 3. Butterworth - Batu Kawan BRT line.

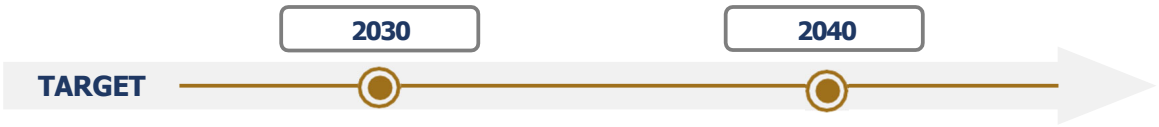
JOHOR
1. Rapid Transit System Johor Bahru - Singapore (RTS). 2. Iskandar Malaysia BRT Line (Tebrau, Skudai & Iskandar Puteri). 3. Iskandar Puteri to Singapore BRT line (Tuas MRT Station).

PERAK
1. Batu Gajah - Seri Iskandar - Lumut. 2. Tapah Road - Bagan Datuk. 3. Lumut - Bagan Datuk - KLIA.

SELANGOR
1. Bagan Datuk - Shah Alam - KLIA. 2. Klang Valley Circle Line. 3. Northern Klang Valley and Southern Klang Valley Line. 4. Klang Valley Outer Ring.

The KTM ETS service is an intercity rail service that connects major cities between KL in the National Conurbation and Penang in the Northern Conurbation.

The proposed intercity rail implementation targets are based on demand and the surrounding development.



- Padang Besar - Inland Port (PIP).
- Bukit Kayu Hitam - Alor Setar.
- Sungai Petani - Kulim.
- Bayan Baru LRT line.
- George Town - Butterworth LRT line.
- Batu Gajah - Seri Iskandar - Lumut.
- Klang Valley Circle Line.
- Northern Klang Valley and South Klang Line.
- Nilai - KLIA.
- Rapid Transit System Johor Bahru - Singapore (RTS).
- Iskandar Malaysia BRT Line (Tebrau, Skudai & Iskandar Puteri).

- Arau - Sanglang.
- Bukit Kayu Hitam - Changlun.
- Butterworth - Batu Kawan BRT line.
- Tapah Road - Bagan Datuk.
- Lumut - Bagan Datuk - KLIA.
- Bagan Datuk - Shah Alam - KLIA.
- Klang Valley Outer Ring.
- KLIA - Port Dickson.
- Port Dickson - Malacca City.
- Pulau Sebang - Malacca City.
- Iskandar Puteri to Singapore BRT line (Tuas MRT Station).

AGENCIES INVOLVED

Main Agencies

- Ministry of Transport Malaysia (MOT)
- Ministry of Works (KKR)
- Land Public Transport Agency (APAD)
- Malaysia Rail Link Sdn. Bhd. (MRL)
- MyHSR Corporation Sdn. Bhd.

Supporting Agencies

- State Authority
- Corridor Authority
- Local Authority

MAP 4-16: EXISTING RAIL SERVICES AND PROPOSED CITY RAIL LINE IN TOWNS PENINSULAR MALAYSIA

Rail Line Routes
- Rail Station
- Existing Rail Line
- Proposed Rail Line
- Proposed City Rail

Others
- State Capital
- Cities in proposed route
- State Boundary

Source:
- Penang State Structure Plan, 2030
- Kedah State Structure Plan, 2035
- Perak State Structure Plan, 2035
- National Physical Plan 4, 2020

ACTION DG 3.2B

Increase the use of modern technology in rail service systems

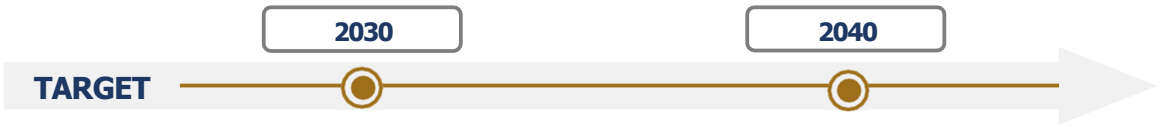
The use of advanced modern technology can make rail travel faster, smoother and more comfortable to users. In China, for instance, the use of technology to increase train speed has reduced travel time from 10 hours to only 4 hours.

In Japan, in an effort to further improve rail travel, the use of biometric system is already being tested and expected to be fully deployed at every rail station in Osaka by 2024.

In line with the strategy to ensure rail becomes the main pillar of our country's transport system, modern technology should be used to save travel time and provide a smoother and safer journey to rail users.

The measures that can be implemented are as follows:

1. Encourage the use of online application that provides real time and up-to-date information to users to make travel plans and decisions.
2. Implement cashless travel ticket payment system.
3. Use biometric systems such as face recognition to facilitate boarding and departure in order to save time especially when involving large number of passengers.
4. Consider the potential of using the latest technology and methods from the feasibility study to implementation of the proposed High-Speed Rail.
5. Consider the use of a 'Gauge Change Train' that can operate on both the 'standard gauge' and 'meter gauge' track to optimise the use of rail carriage set.
6. Introduce the use of Personal Rapid Transit in areas with moderate population density and for short distances.



- Autonomous vehicle-based rail service.
- Fast departure process by using biometric systems to facilitate travel.
- Personal Rapid Transit for appropriate area.
- 'Smart Sensors' to identify rail track damage.

- The latest technology such as 'Hyperloop' and 'Magnetic Levitation' as HSR modes.
- 'Moving platforms' concept between inter-urban and intra-urban rail services to save conversion time.

AGENCIES INVOLVED

Main Agencies

- Ministry of Transport Malaysia (MOT)
- Ministry of Works (KKR)
- Land Public Transport Agency (APAD)
- Prasarana Malaysia Berhad
- Ministry of Science, Technology and Innovation (MOSTI)

Supporting Agencies

- PLANMalaysia
- State Authority
- Corridor Authority
- Local Authority

STRATEGY
DG 3.3

STRENGTHEN PUBLIC TRANSPORT SERVICES TO ACHIEVE MODAL SPLIT TARGETS

RELATED SDGs
SDG3 SDG8
SDG10 SDG11

Public transport is an important basic mode of transport. Maximising the use of public transport will reduce traffic congestion especially in urban areas, which in turn will positively affect national productivity.

The provision of various modes of transport through an integrated transport system is also one of the indicators of the progress of a country. Therefore, setting a modal split target that encourages the use of public transport will benefit the people as well as increase the country's productivity. Currently, the existing modal split in urban areas in Malaysia that already have rail and bus services and infrastructure has shown a positive achievement. With the right approach, this achievement can be extended to the surrounding areas so that the desired modal split targets can be pursued.

Based on **Table 4-9**, the current modal splits (2020) for major cities of Kuala Lumpur, Johor Bahru and George Town show that usage of private transport is still higher than public transport.

Table 4-10 shows the proposed modal split targets for the medium-term (2030) and long-term (2040) for large cities in Malaysia. Therefore, the actions outlined in this chapter are aimed at increasing the use of public transport especially by improving rail and bus services.

Table 4-9: Current modal split in major cities in Malaysia

NO.	MAIN CITIES	2020 *Public transport: private transport ratio
01	Kuala Lumpur	20:80
02	Johor Bahru	15:85
03	George Town	11:89

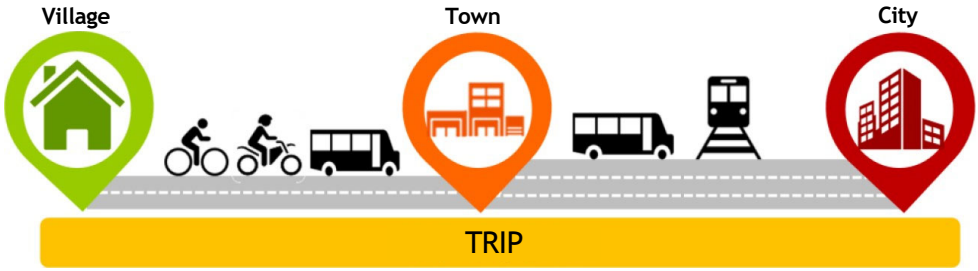
Table 4-10: Proposed modal split target for cities in Malaysia

NO.	URBAN HIERARCHY	2030 * Public transport: private transport ratio	2040 * Public transport: private transport ratio
01	National Capital (Kuala Lumpur)	50:50	70:30
02	State Capital (Example: Johor Bahru, George Town, Kuantan)	30:70	50:50
03	Main Towns (Example: Kulim, Klang, Butterworth)	20:80	30:70

ACTION DG 3.3A

Improve the integration and expansion of rail network in the city

To make public transport becomes the main choice of travel among the population, it has to be comprehensive in terms of network and connectivity. In urban areas, the rail and bus services must be supported by efficient 'First Mile and Last Mile' connections. In rural areas, where buses are mainly the public transport services available, emphasis must be on complimenting the bus services with comprehensive cycling and pedestrian facilities.



The following are the proposed rail lines to increase the integration and expansion of public transport network in major cities.

Table 4-11: Proposed rail alignment in cities

CONURBATION	PROPOSAL	LENGTH	PROPOSED IMPLEMENTATION YEAR
National Conurbation	**Klang Valley Circle Line** The proposed line will integrate all existing rail lines in the Klang Valley and form a complete 40km urban transit network.	40km	2030
	North Klang Valley and South Klang Valley Line A 28km line to Rawang will be connected to existing rail services such as Kelana Jaya LRT, Ampang LRT and KTM Komuter to the North Corridor. The 38km South Corridor from Kajang (MRT1) to Putra Heights (LRT1) via Putrajaya Sentral (ERL & MRT2).	66km	2030
	Outer Klang Valley Line The proposed line will bypass the city centre and connect to Serendah and KLIA via Port Klang. This line is estimated to be 100km long which will serve Serendah, Puncak Alam, Kapar, Port Klang, Banting and KLIA.	100km	2040

Continued

CONURBATION	PROPOSAL	LENGTH	PROPOSED IMPLEMENTATION YEAR
Northern Conurbation	**Bayan Lepas LRT Line (First Phase)** This line will connect KOMTAR, George Town to Penang International Airport and will end at Island A (Penang South Reclamation - PSR).	23.5 km	2030
	Bayan Lepas LRT Line (Second Phase) This line will connect the First Phase with Island B and Island C (Penang South Reclamation - PSR).	6.4 km	2040
	George Town - Butterworth Rail Line This line will be integrated with the Bayan Lepas LRT line which will connect the island and the mainland (Seberang Perai)	18 km	2040
	Air Itam Rail Line This proposed line will begin from KOMTAR integrated station, George Town and will end at Paya Terubong.	13 km	2045
	Tanjung Tokong Rail Line This line is proposed to begin from KOMTAR integrated station, George Town and end at Tanjung Tokong.	7 km	2060
	Raja Uda - Bukit Mertajam BRT Line This proposed line will form a network between the northwestern part and the southeastern part (Bukit Mertajam) of Seberang Perai before ending at Permatang Tinggi, with a potential connection to Kepala Batas.	28 km	2060
	Permatang Tinggi - Batu Kawan BRT Line This line will connect Batu Kawan to Permatang Tinggi integrated station with an extension to Seberang Jaya and Nibong Tebal.	14 km	2060

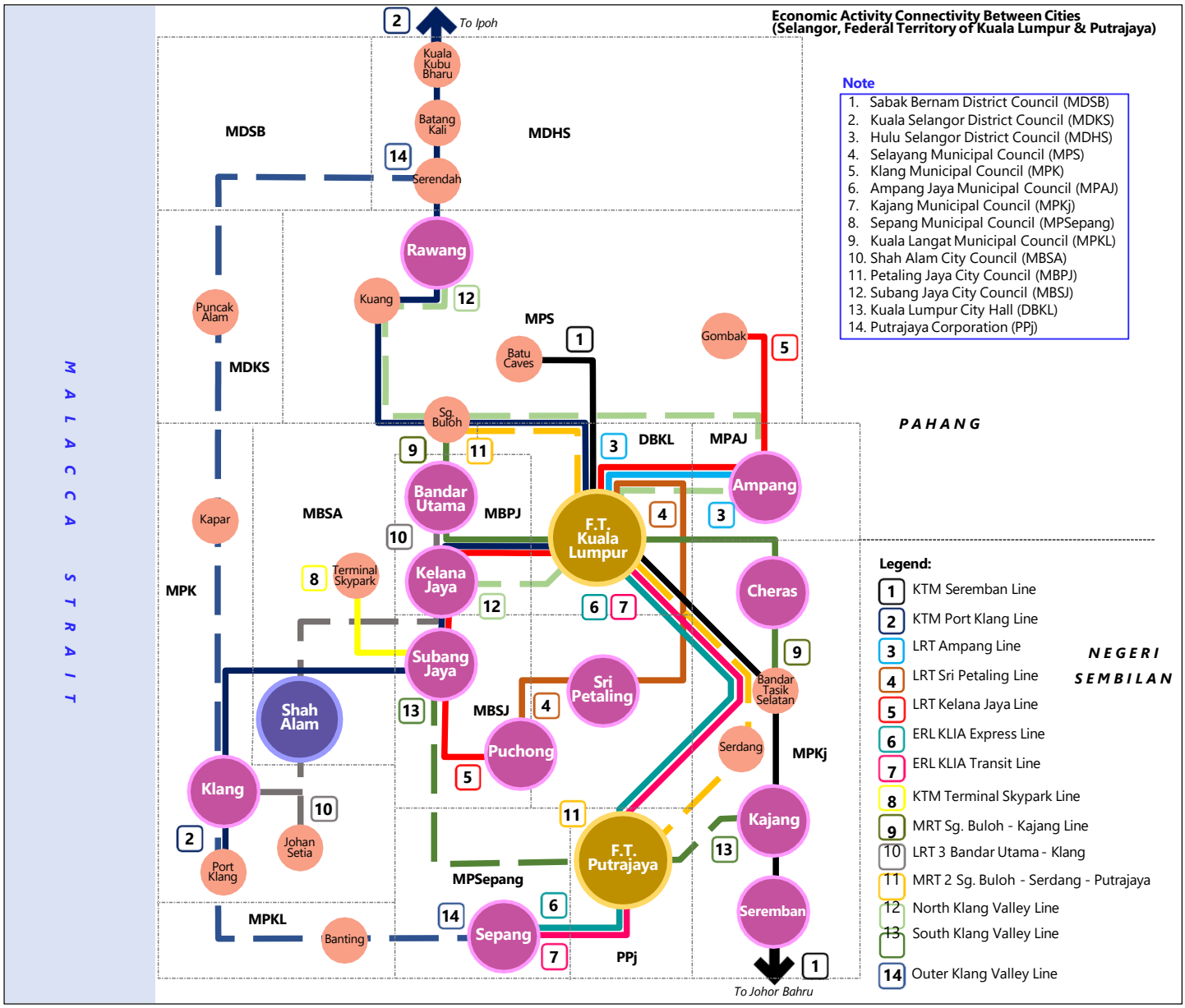
Continued

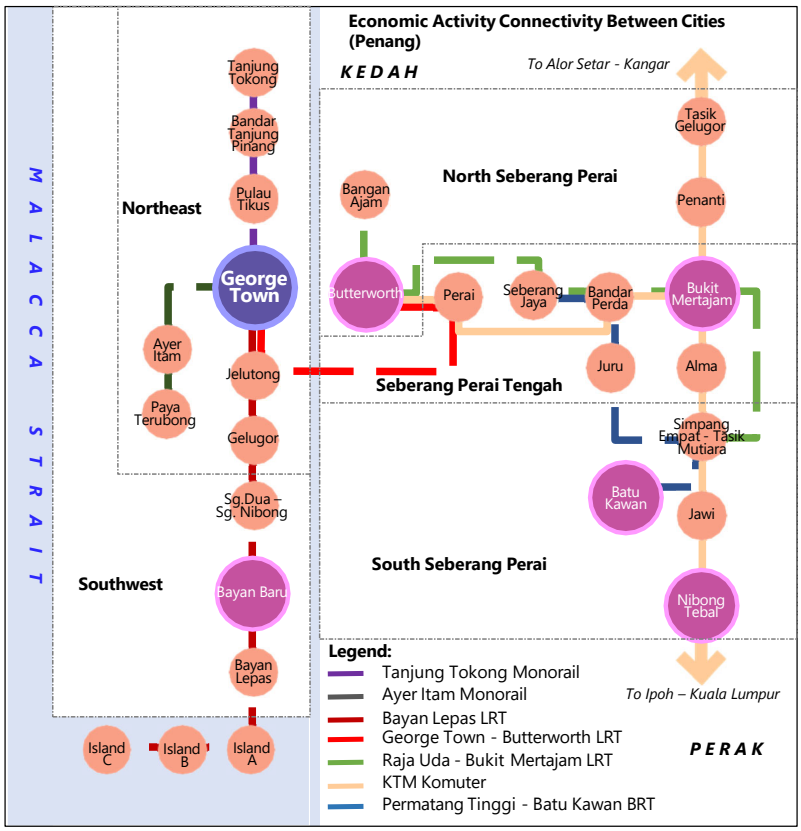
CONURBATION	PROPOSAL	LENGTH	PROPOSED IMPLEMENTATION YEAR
SOUTHERN CONURBATION	**Rapid Transit System Johor Bahru - Singapore (RTS)** The construction of this RTS will provide rail service that connects Malaysia to Singapore and as an alternative route for the Johor Causeway.	24km	2030
	Iskandar Malaysia BRT Line (Tebrau, Skudai & Iskandar Puteri) The proposed line is 51km long and will connect Iskandar Puteri, Skudai, Tebrau to Senai Airport.	51km	2030
	Iskandar Puteri - Singapore BRT Extension (Tuas MRT Station) This BRT line will connect Nusajaya in Malaysia with Tuas on the East-West MRT line in Singapore as an alternative link between the two countries.	23km	2040

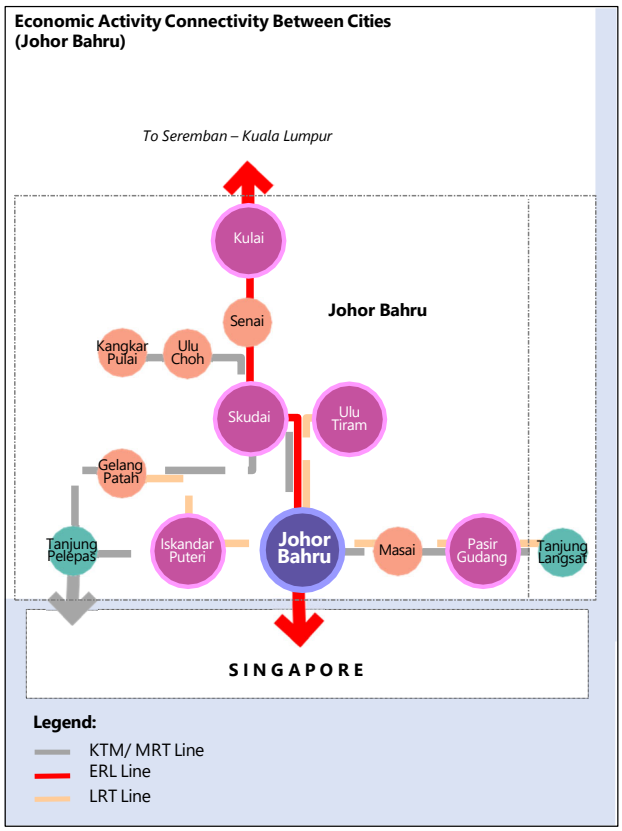
Note: *The proposed 'Circle Line' is an existing proposal while the proposed rail lines in the Northern Conurbation were extracted from the Penang State Transport Master Plan (PIP)*

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Transport Malaysia (MOT) • Ministry of Works (KKR) • Land Public Transport Agency (APAD) • Prasarana Malaysia Berhad	• State Authority • PLANMalaysia • Corridor Authority • Local Authority


Economic Activity Connectivity Between Cities
(Selangor, Federal Territory of Kuala Lumpur & Putrajaya)
Note
1. Sabak Bernam District Council (MDSB)
2. Kuala Selangor District Council (MDKS)
3. Hulu Selangor District Council (MDHS)
4. Selayang Municipal Council (MPS)
5. Klang Municipal Council (MPK)
6. Ampang Jaya Municipal Council (MPAJ)
7. Kajang Municipal Council (MPKj)
8. Sepang Municipal Council (MPSepang)
9. Kuala Langat Municipal Council (MPKL)
10. Shah Alam City Council (MBSA)
11. Petaling Jaya City Council (MBPJ)
12. Subang Jaya City Council (MBSJ)
13. Kuala Lumpur City Hall (DBKL)
14. Putrajaya Corporation (PPj)
To Ipoh
Kuala Kubu Bharu
Batang Kali
Serendah
MDSB
MDHS
Rawang
Kuang
Puncak Alam
MDKS
MPS
Batu Caves
Gombak
Sg. Buloh
DBKL
MPAJ
Ampang
Bandar Utama
MBPJ
MBSA
F.T. Kuala Lumpur
Kapar
MPK
Terminal Skypark
Kelana Jaya
Cheras
Subang Jaya
Sri Petaling
Bandar Tasik Selatan
Shah Alam
MBSJ
Puchong
Serdang
MPKj
Klang
Johan Setia
Port Klang
Kajang
F.T. Putrajaya
MPSepang
Seremban
MPKL
Banting
Sepang
PPj
To Johor Bahru
MALACCA STRAIT
PAHANG
NEGERI SEMBILAN
Legend:
1 KTM Seremban Line
2 KTM Port Klang Line
3 LRT Ampang Line
4 LRT Sri Petaling Line
5 LRT Kelana Jaya Line
6 ERL KLIA Express Line
7 ERL KLIA Transit Line
8 KTM Terminal Skypark Line
9 MRT Sg. Buloh - Kajang Line
10 LRT 3 Bandar Utama - Klang
11 MRT 2 Sg. Buloh - Serdang - Putrajaya
12 North Klang Valley Line
13 South Klang Valley Line
14 Outer Klang Valley Line


Economic Activity Connectivity Between Cities
(Penang)
KEDAH
To Alor Setar - Kangar
Tanjung Tokong
Bandar Tanjung Pinang
Pulau Tikus
Northeast
George Town
Ayer Itam
Jelutong
Paya Terubong
Gelugor
Sg.Dua – Sg. Nibong
Southwest
Bayan Baru
Bayan Lepas
Island C
Island B
Island A
Tasik Gelugor
North Seberang Perai
Bangan Ajam
Penanti
Butterworth
Perai
Seberang Jaya
Bandar Perda
Bukit Mertajam
Juru
Alma
Seberang Perai Tengah
Simpang Empat - Tasik Mutiara
Batu Kawan
Jawi
South Seberang Perai
Nibong Tebal
To Ipoh – Kuala Lumpur
PERAK
MALACCA STRAIT
Legend:
Tanjung Tokong Monorail
Ayer Itam Monorail
Bayan Lepas LRT
George Town - Butterworth LRT
Raja Uda - Bukit Mertajam LRT
KTM Komuter
Permatang Tinggi - Batu Kawan BRT


Economic Activity Connectivity Between Cities
(Johor Bahru)
To Seremban – Kuala Lumpur
Kulai
Senai
Johor Bahru
Kangkar Pulai
Ulu Choh
Skudai
Ulu Tiram
Gelang Patah
Tanjung Pelepas
Iskandar Puteri
Johor Bahru
Masai
Pasir Gudang
Tanjung Langsat
SINGAPORE
Legend:
KTM/ MRT Line
ERL Line
LRT Line

ACTION DG 3.3B

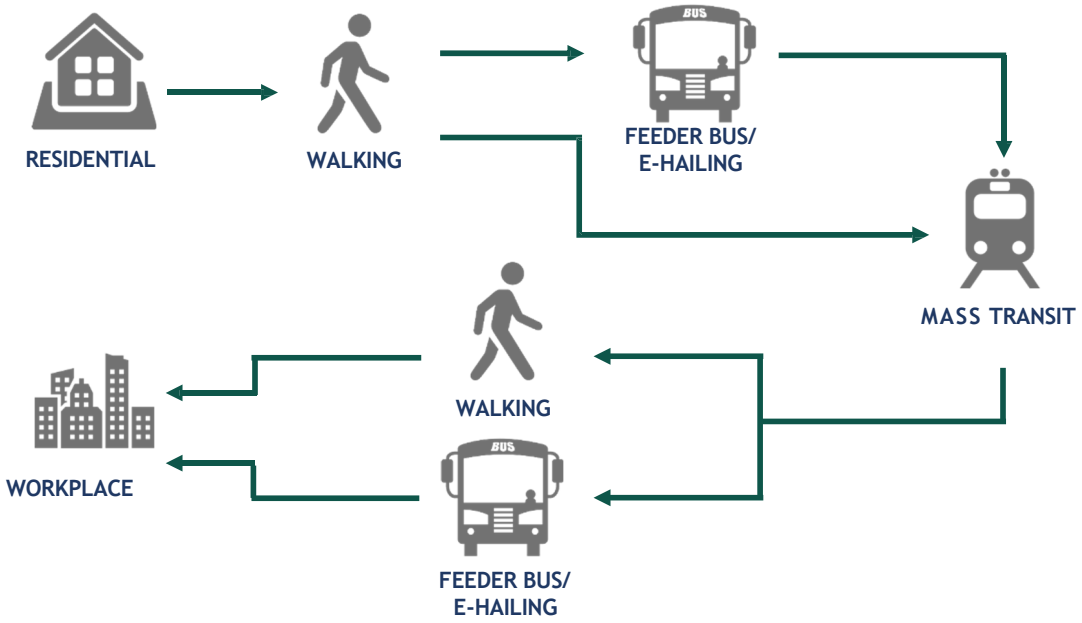
Ensure First Mile and Last Mile is supported in public transport integration

The 'First Mile and Last Mile' is the segment traveled from home or workplace to the nearest public transport facility. This segment involves modes of transport such as walking, cycling, shuttle buses and taxis. The city's rail and bus systems should have efficient 'First Mile and Last Mile' support to ensure the effectiveness of public transport services. The lack of 'First Mile and Last Mile' integration into the transport services reduces the efficiency of the existing rail and bus systems and may reduce their attractiveness to the population.

Measures to strengthen 'First Mile and Last Mile' integration involve:

1. Ensure the provision of comfortable, safe and connected covered walkways and bicycle paths within transit development zones (400m and 800m from transit stations) is given priority at the development planning stage in line with the requirements in the planning guidelines for pedestrian.
2. Provide dedicated routes for Personal Mobility Devices (PMDs), for example e-scooter and bicycle.
3. Provide intermediary bus services with a frequency of every 10 minutes for areas within 5km radius from each rail station.
4. Provide waiting and drop-off facilities for e-hailing services.
5. Provide Park 'n Ride facilities at rail stations and main bus terminals in suburban and rural areas.

Integration of 'First Mile and Last Mile' in public transport system



AGENCIES INVOVLED	
Main Agencies	**Supporting Agencies**
• Ministry of Transport Malaysia (MOT) • Ministry of Works (KKR) • Land Public Transport Agency (APAD) • Prasarana Malaysia Berhad • Local Authority	• PLANMalaysia • State Authority

ACTION DG 3.3C

Improve bus services in major cities

In cities without rail services, buses are the main public transport mode that serve the transport needs of the city dwellers. For these cities, NPP4 proposes that the Local Authorities conduct a land public transport study to identify the number of bus services, estimated future passenger growth and bus routes that need to be provided. Currently, 5 states have conducted their Land Public Transport Studies, namely Kuala Lumpur, Putrajaya, Selangor, Negeri Sembilan and Johor.

Measures to improve bus services for major cities are:

1. Prepare land public transport study in the early stage of development planning, and implement and monitor the recommendations from the study to achieve the modal split targets as recommended in **Table 4-12** and **Table 4-13**. Among the aspects that need to be studied are:

   i. Suitability of various modes of transport services.
   ii. Coverage area of bus, taxi, and rail services if any.
   iii. Frequency of bus, taxi, and rail services if any.
   iv. Number of buses and taxis.
   v. Provision of public transport terminals and traffic management in the area.
   vi. Pedestrian facilities to and from public transport routes/stations.

Table 4-12: The number of buses needed to achieve the 2030 modal split targets

CITY	POPULATION	MODAL SPLIT (%)	TOTAL PUBLIC TRANSPORT TRIPS IN AN HOUR (NO.)	ESTIMATED NUMBER OF BUSES (TOTAL)
State Cities	550,000 - 1,500,000	30	33,000 - 99,000	600 - 2,000
Main Towns	100,000 - 500,000	20	4,000 - 18,000	60 - 300
Local Towns	10,000 - 100,000	15	300 - 3,000	8 - 80

Table 4-13: The number of buses needed to achieve the 2040 modal split targets

CITY	POPULATION	MODAL SPLIT (%)	TOTAL PUBLIC TRANSPORT TRIPS IN AN HOUR (NO.)	ESTIMATED NUMBER OF BUSES (TOTAL)
State Cities	550,000 - 1,500,000	50	55,000 - 165,000	1,000 - 3,000
Main Towns	100,000 - 500,000	30	6,000 - 27,000	100 - 500
Local Towns	10,000 - 100,000	20	400 - 4,000	10 - 100

AGENCIES INVOLVED

Main Agencies

- Prasarana Malaysia Berhad
- Land Public Transport Agency (APAD)
- Local Authority

Supporting Agencies

- PLANMalaysia
- State Authority
- Corridor Authorities

ACTION DG 3.3D

Increase the use of modern technology to facilitate smoother public transport operation

The use of modern technology in the public transport system can reduce travel time and improve safety. Thus, the use of modern technology is important to be integrated into the current and future public transport systems for the benefit of the users. Modern technology is increasingly being implemented in the public transport system in the Klang Valley such as 'Real Time Bus Location' and 'Cashless Transaction' for ticket purchase with credit, debit, or prepaid cards.

Measures to increase the use of technology in public transport system are as follows:

1. Develop an integrated public transport database.
2. Implement Internet of Things (IoT) to enable inter-networking to be implemented between devices and buildings, machines and vehicles.
3. Use online travel application to provide real-time information to facilitate users to plan their travels.
4. Expand the use of digital ticketing system for each mode of public transport.
5. Use biometric systems to save travel time and to increase security.

ICPS application in the form of Touch 'n Go that is being used for payment of public transport fares in Malaysia.

The use of Real Time Information Service that shows ETS arrival time helps passengers to plan their travels.

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Transport Malaysia (MOT) • Ministry of Works (KKR) • Land Public Transport Agency (APAD) • Prasarana Malaysia Berhad	• State Authority • Local Authority

STRATEGY
DG 3.4

STRENGTHEN AIR CONNECTIVITY AT GLOBAL, REGIONAL AND LOCAL LEVELS

RELATED SDGs
SDG8 SDG9

The air transport industry in Malaysia has strong potentials to be developed at national, ASEAN and global levels to meet the growing demand especially from economic activities.

The rapid development of the Kuala Lumpur International Airport (KLIA and klia2) has opened more trade and tourism opportunities, thus playing a key role in Malaysia's economic development.

In addition, the International Air Transport Association (IATA) also projects an increase in the number of air passengers from 3.8 billion passengers in 2016 to 7.2 billion passengers in 2035. This opportunity should be leveraged as a basis in further developing the country's air transport industry.

KLIA is a major air transport hub in Malaysia. Its strategic location among ASEAN countries gives KLIA an advantage in leveraging the Open Skies Policy agreement. KLIA's function as a major hub is also supported by other international airports located in the Northern Region, Southern Region and in Sabah and Sarawak.

As a major air hub, the number and destination of flights from KLIA need to be increased to be in line with its status and capacity. Currently, the numbers are much lower than Hong Kong and Changi Airports (Singapore) (**Figure 4-9**). Additionally, the provision of infrastructure can also be improved so that the country's air transport industry will continue to thrive.

BRIEF FACTS

KLIA Key Facts

Total Number of Passengers
59.89 million

International Passengers
43.51 million

Domestic Passengers
16.38 million

Number of Airlines
69

malaysia airlines
Firefly
AirAsia
Malindo air

**Has offices at KLIA and klia2*

Total Cargo Handled
714,669
metric tonne

Number of Travel Destinations
136

***Source**: Malaysian Transport Statistics, 2018.*

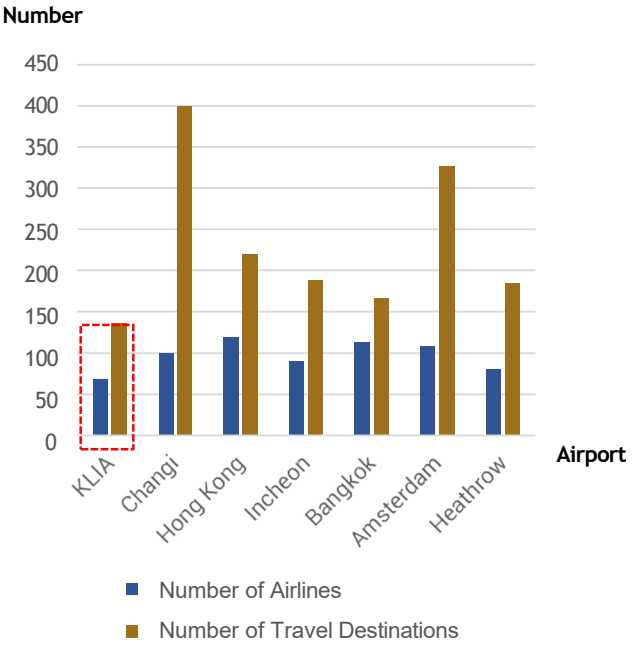


Figure 4-9: Number of Airlines and Number of Travel Destinations by Airports, 2018

Source: *International Air Transport Association* (IATA)

ACTION DG 3.4A

Establish the role of each airport based on the socio-economic significance of the area

Its strategic position with the highest number of local and international passengers compared to other airports in Malaysia gives KLIA the potential to be enhanced in terms of functions and provision of facilities and infrastructure. This is in line with the aim of making KLIA as one of the 'Regional Hubs' in the region, as proposed by the National Transport Policy 2019-2030.

The role of an airport should be determined based on its improved function, frequency of flights and the number of destinations. The upgrading of an airport's function should be based on the four (4) categories identified by NPP4 that take into account the number of total population and the local economy of the area. The categories are as follows:

CATEGORY 1 :

Primary International Gateway

- The country's main international airport as the main gateway of the country, and as global and regional hub.
- Airport capacity of more than 25 million passengers per annum (mppa).
- Global and regional cargo hub.
- Majority of services are direct scheduled flights.
- Can accommodate wide-body and narrow-body aircrafts.
- Has two runways that support flight capacity*.
    1. Kuala Lumpur International Airport (KLIA and klia2).

*Depending on the runway design, aircraft type, aircraft movement and total number of passengers.

CATRGORY 2 :

Primary Regional Airport

- Region's international airport and focus on Asian and domestic destinations.
- Airport capacity of up to 25 mppa.
- Regional cargo hub.
- Majority of services are direct scheduled flights and chartered flights to and from local and Asian destinations.
- Can accommodate wide-body and narrow-body type aircrafts.
    1. Sultan Abdul Aziz Shah Airport, Subang
    2. Penang International Airport
    3. Langkawi International Airport
    4. Sultan Ismail Petra Airport, Kota Bharu
    5. Senai International Airport
    6. Proposed Chendor Airport in Pahang
    7. Proposed Kulim International Airport (KXP) in Kedah

CATEGORY 3 :

Domestic Airport

- Serves flights to and from ASEAN and domestic destinations.
- Airport capacity of up to 5 mppa.
- Majority of services are domestic and ASEAN scheduled flights as well as chartered flights to and from Asian destinations.
- Operates narrow-body and turboprop aircrafts.
    1. Sultan Abdul Halim Airport, Alor Setar
    2. Sultan Mahmud Airport, Kuala Terengganu
    3. Labuan Airport
    4. Malacca Airport
    5. Kertih Airport
    6. Sultan Azlan Shah Airport, Ipoh
    7. Proposed Mersing Airport

CATEGORY 4 :

STOLport (Short Take-off and Landing)

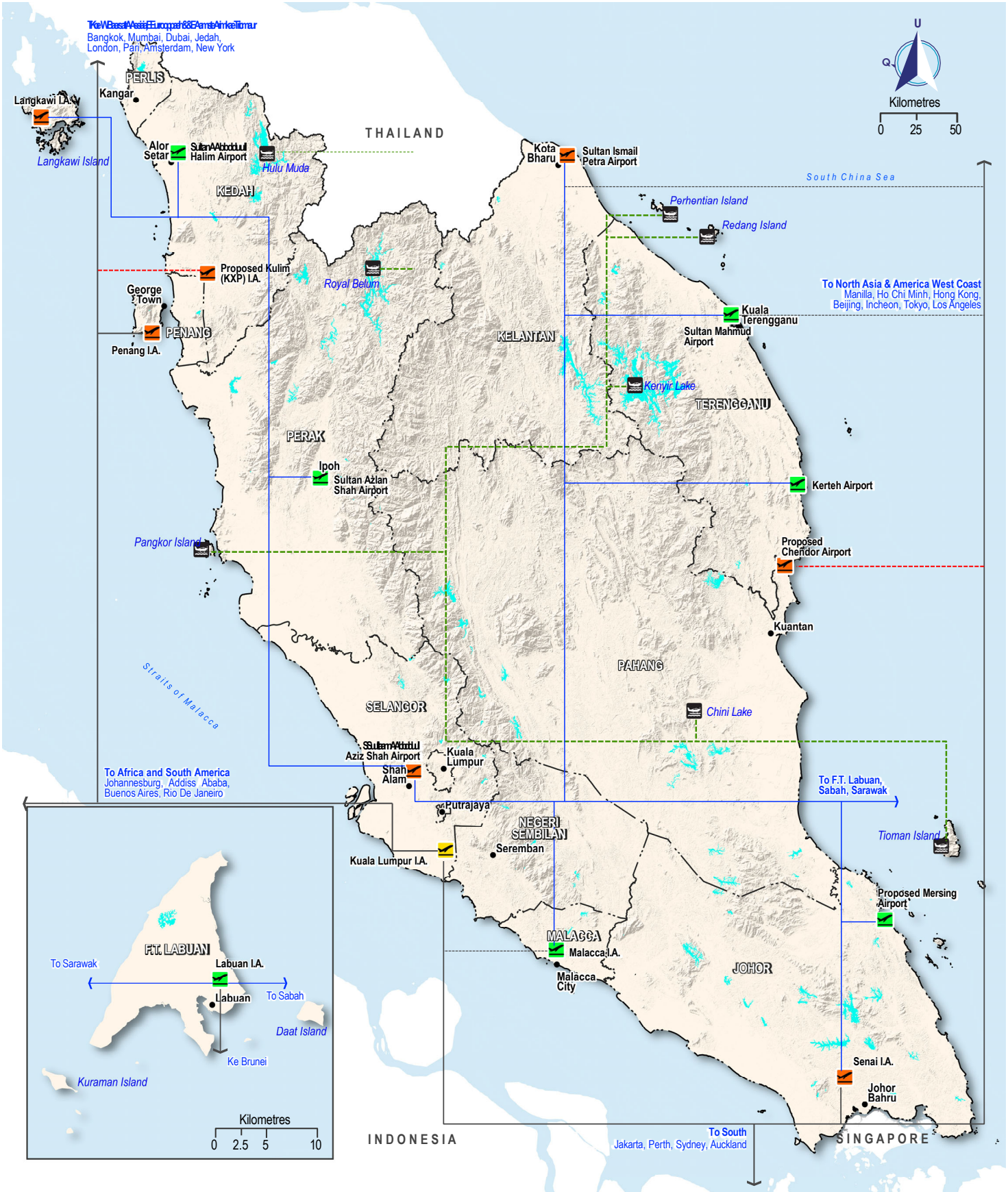
- Operate turboprop and amphibious aircrafts.
    1. Pulau Tioman Airport
    2. Pulau Redang Airport
    3. Pulau Pangkor Airport
    4. Taiping Airport
    5. Proposed amphibious airports (refer **Actions DG3.4C**).

(Note: The determination of airport category is subject to the National Airports Strategic Plan (NASP)

Sultan Ismail Petra Airport, Kota Bharu is identified as a Primary Regional Airport (Category 2) based on its total number of passengers exceeds 1.5 mppa.

AGENCIES INVOVLED

Main Agencies	Supporting Agencies
• Ministry of Transport Malaysia (MOT) • Malaysia Airport Holdings Berhad (MAHB)	• Ministry of Tourism, Arts and Culture (MOTAC) • State Authority



MAP 4-17: AIRPORT HIERARCHY IN PENINSULAR MALAYSIA AND F.T OF LABUAN

Airport Hierarchy
- Category 1
- Category 2
- Category 3
- Category 4

- International Route
- Regional Route
- Domestic Route
- Proposed International Route
- Proposed Amphibious Route

Others
- State Capital
- Water Body
- State Boundary

Note:
I.A. – International Airport

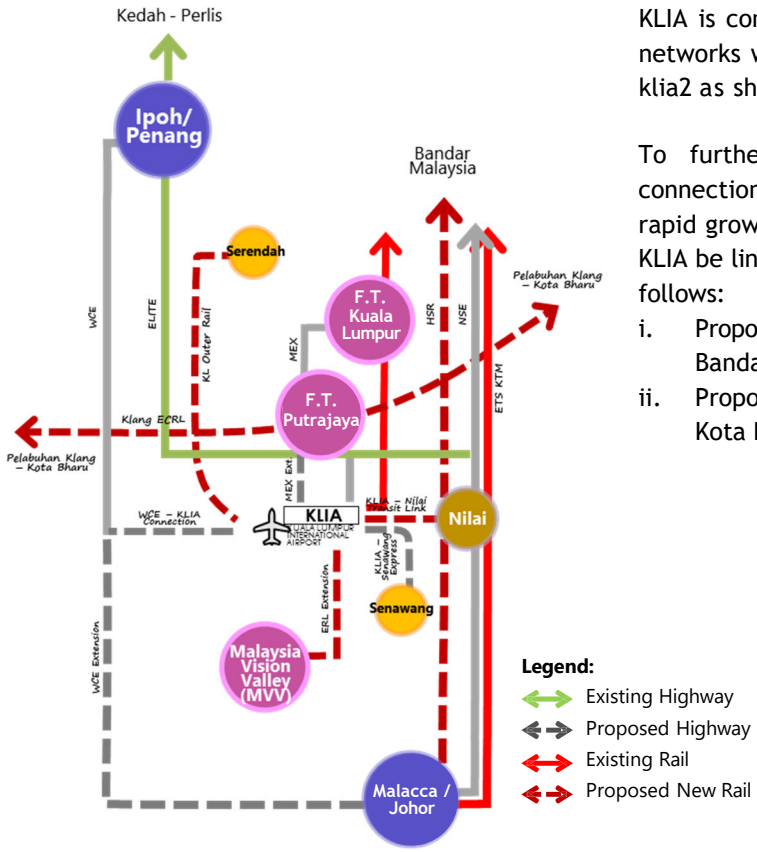
Source:
- Ministry of Transport, 2018
- Malaysia Airport Holding Berhad (MAHB),2018
- National Physical Plan 4, 2020

ACTION DG 3.4B

Diversify integrated land transport modes to airports

The success of an airport's operation depends on its location and connectivity to other transport facilities such as rail and road. These will increase the airport's accessibility and shorten travel time to the airport.

Major airports in developed countries are often connected to a good network of highways and to public transport systems such as rail and bus. KLIA has a rail transport network that is directly connected to the airport. In addition, there are also short-haul and long-haul rail services available to meet the needs of users from major cities such as Kuala Lumpur and Putrajaya. For other airports in the country, their needs for integrated transport connectivity must also be planned to improve accessibility to users.



KLIA is connected to highway and public transport networks which are directly connected to KLIA and klia2 as shown in **Figure 4-10**.

To further improve integrated land transport connection to KLIA in order to accommodate the rapid growth around the airport, it is proposed that KLIA be linked with 2 new proposed rail networks as follows:

i. Proposed High-Speed Rail (HSR) linking Bandar Malaysia and Johor Bahru.
ii. Proposed East Coast Rail Link (ECRL) linking Kota Bharu and Port Klang.

Figure 4-10: Road and rail networks connection to KLIA and klia2.

AGENCIES INVOLVED	
Main Agencies	**Supporting Agencies**
• Ministry of Transport Malaysia (MOT) • Ministry of Works (KKR) • Land Public Transport Agency (APAD) • Malaysian Highway Authority (LLM) • Malaysia Airport Holdings Berhad (MAHB) • Senai Airport Terminal Services Sdn. Bhd.	• State Authority

ACTION DG 3.4C

Strengthen air transport services to environmentally sensitive tourist areas and areas that are difficult to access for emergency purposes

Current air transport services in Malaysia are more focused on providing long distance transport services. However, short-haul air transport services including for emergency and tourism purposes should also be given attention.

Short-haul air transport services can be expanded with the use of amphibious aircrafts and helicopters. Amphibious aircrafts can take off and land on the surface of water body and do not require long and expensive runways. They can use existing jetties as departure points, thus reducing further the cost of providing the services. In addition, the aircrafts can also use the existing STOLports whose landing spaces comply with the standard operating procedures set by CAAM.

Suitable tourist areas for amphibious aircraft and helicopter services are as follows (refer **Plan 4-18**):

i. Hulu Muda, Kedah.
ii. Royal Belum, Perak.
iii. Tasik Chini, Pahang.
iv. Tasik Kenyir, Terengganu.
v. Pangkor Island, Perak.
vi. Perhentian Island, Terengganu.
vii. Tioman Island, Pahang.
viii. Redang Island, Terengganu.

Measures to strengthen air services to environmentally sensitive tourist areas and for emergency purposes by enhancing the use of helicopters and amphibious aircrafts as alternative transport are as follows:

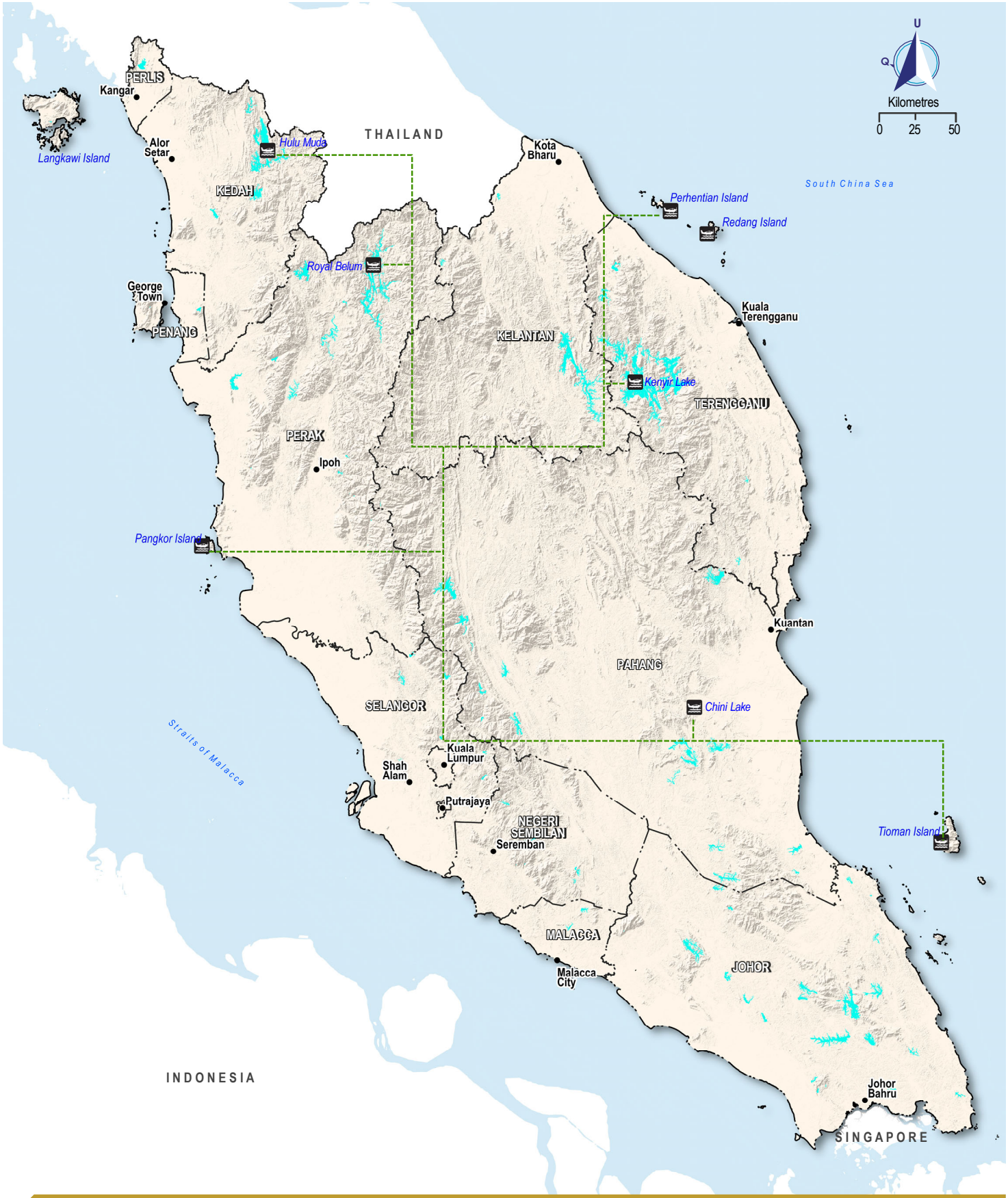
i. For tourism purposes such as in Pangkor Island, helicopter and amphibious aircraft services can be provided for tourism activities.
ii. The use of helicopters and amphibious aircrafts can also increase the level of accessibility to remote areas in the interior, which is useful in the case of emergency and in enhancing security by patrolling the country's territorial waters.

BRIEF FACTS

Amphibious aircraft is an aircraft that can operate on the surface of water and land. The aircraft is equipped with a slim buoy mounted under the fuselage to allow it to land on the surface of water. The Viking Air DHC-6-400 Twin Otter is the popular type of amphibious aircraft today that can accommodate up to 19 passengers.

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Transport Malaysia (MOT) • National Security Council (NSC) • Civil Aviation Authority of Malaysia (CAAM)	• State Authority • Ministry of Tourism, Arts and Culture Malaysia (MOTAC) • Malaysian Aviation Commission (MAVCOM) • Airline companies



MAP 4-18: SUITABLE TOURISM AREAS FOR AMPHIBIOUS AIRPLANE AND HELICOPTER SERVICES IN PENINSULAR MALAYSIA

Growth Area
- Proposed Water Airport (Amphibious)
- Proposed Amphibious Route

Others
- State Capital
- Water Body
- State Boundary

Source:
- National Physical Plan 4, 2020

ACTION DG 3.4D

Upgrade existing airport facilities and infrastructure

The Open Skies Policy is an agreement that allows airlines of ASEAN countries to provide unrestricted flight services, including service frequency, flight capacity, aircraft type, route and number of airlines allowed.

With this policy, the number of flights into the country will increase. To support this increase, airports in Malaysia must be improved in terms of facilities and infrastructure to ensure operational efficiency. Facilities and infrastructure that need to be improved are as in **Table 4-14**:

Table 4-14: Added value that can be integrated in existing airport facilities and infrastructure

	BASIC	ADDED VALUE
Airside	• Aircraft apron. • Passengers.	• Private jet. • Cargo plane.
	• Cargo Storage.	• Fridge facility. • Animal hotel.
Landside	• Airline and related aviation industry office space.	• Office space integrated with business space. • Companies that require / heavy users of air transport.
	• Commercial space for passengers. • Hotel.	• Commercial space for local communities, residents and workers.
Transport Connectivity	• Roads to major cities. • Rail services.	• Roads to other nearby cities and towns. • High speed rail services.

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Transport Malaysia (MOT) • Malaysia Airport Holdings Berhad (MAHB)	• State Authority • Ministry of Works (KKR) • Local Authority • Public Works Department (JKR)

STRATEGY
DG 3.5

IMPROVE WATER TRANSPORT SERVICES

RELATED SDGs
SDG8 SDG9

Water transport plays an important role as the main public transport for residents along rivers, large lakes and coastal islands by providing direct transit for residents and goods at a lower cost. It also helps to increase the accessibility of island residents to the mainland and thus strengthen their social ties. Water transport is also able to attract more tourists to coastal islands and thus helps to improve the socio-economic of the residents.

ACTION DG 3.5A

Strengthen ferry services

To improve the efficiency and quality of ferry services, infrastructure and facilities related to ferry services need to be strengthened, especially the physical facilities. Ferry services play an important role in providing public transport to the residents of coastal islands at a lower cost as well as contributing to the tourism sector.

Kuala Perlis Passenger Ferry Terminal

Among the measures that need to be taken to strengthen ferry service and its infrastructure are:

1. Improve accessibility to terminals/jetties with good road networks and rail services.
2. Improve infrastructure and facilities to promote the 'First Mile and Last Mile' by providing covered pedestrian facilities from ferry terminals to public transport facilities such as bus/rail/taxi/e-hailing terminals.
3. Provide basic facilities at terminals/jetties such as complexes or areas equipped with various facilities, for example restaurants, handicraft and seafood stalls, duty free shops, integrated ticket counters, broadband internet access, public toilets and operation offices.
4. Provide integrated customs clearance, immigration and quarantine (CIQ) facilities for terminals that cater international passengers.

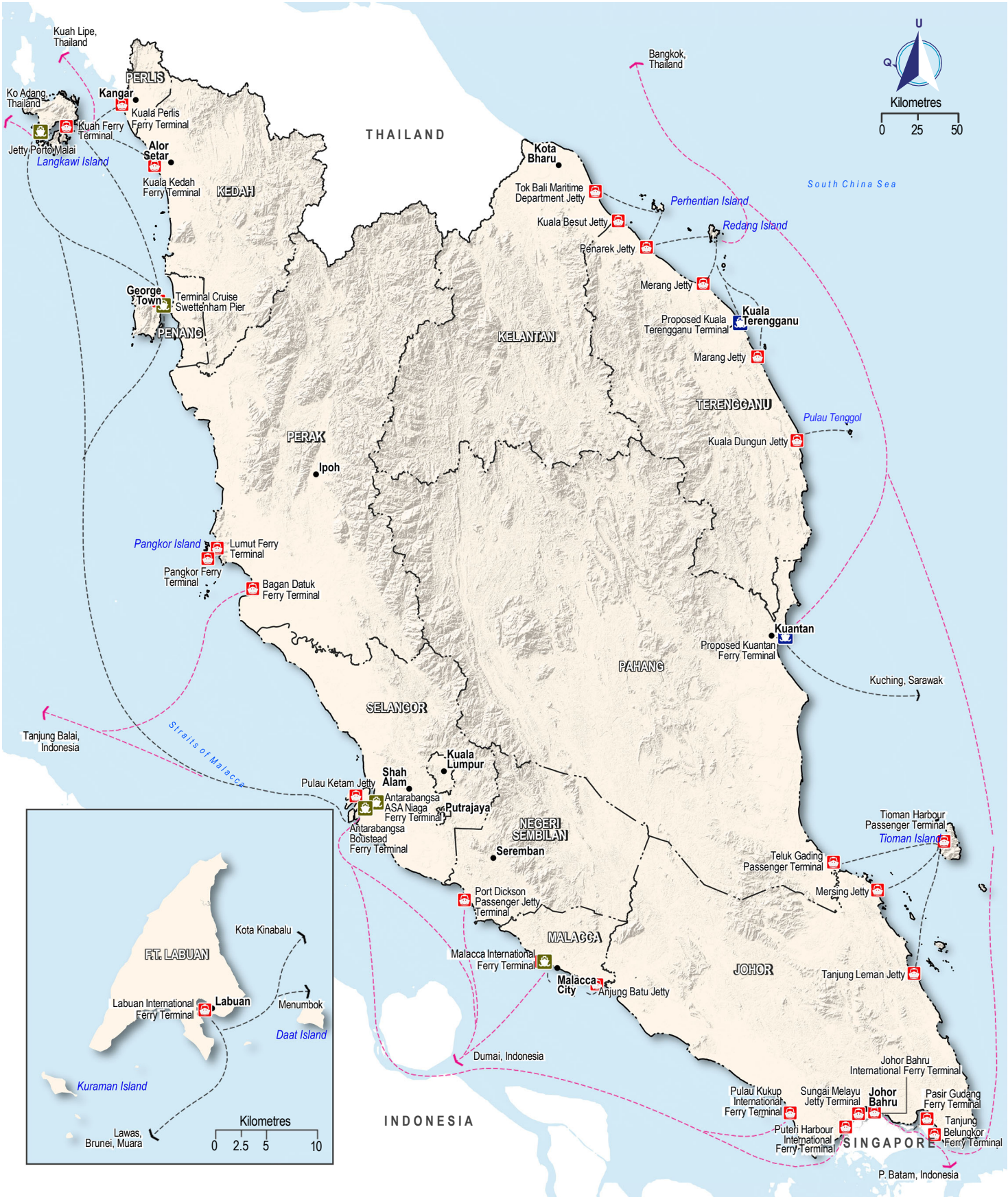
AGENCIES INVOLVED

Main Agencies

- Ministry of Transport Malaysia (MOT)
- Malaysia Marine Department
- Port Agency
- Malaysian Customs Department
- Local Authority

Supporting Agencies

- State Authority
- Corridor Authority



MAP 4-19: WATER TRANSPORT TERMINAL IN PENINSULAR MALAYSIA AND F.T OF LABUAN

Passenger Terminal Location

- Passenger Terminal (Cruise)
- Proposed Terminal (Cruise)
- Passenger Terminal

Ship Route

- Domestic Route
- International Route

Others

- State Capital
- State Boundary

Source:

- Ministry of Transport, 2018
- Malaysia Maritime Department, 2018
- National Physical Plan 4, 2020

ACTION DG 3.5B

Strengthen water taxi services

Water taxi services can be an alternative public transport for travel between cities (urban enclaves) to meet the travel needs of locals as well as for tourism. NPP4 proposes that the existing waterways are used as water taxi routes, especially for short distance travel using small boats/water taxis.

Among the measures to be implemented are:

1. Plan a network of water taxi routes using existing waterways.
2. Increase the number and location of water taxi hubs/transits to encourage their use and to promote tourism.
3. Improve infrastructure and facilities by upgrading jetties into multi-mode hubs/ transit stops such as in location near rail facilities with easy access to bus, taxi and e-hailing services.
4. Improve jetty infrastructure including the provision of a dedicated terminal building with restaurants and other facilities such as integrated ticketing counters and convenience stores.
5. Ensure high level of safety in accordance with the standards set by the Malaysian government for water taxi services and passenger jetties.

Table 4-15: Areas with existing water taxi service and proposed new jetties

STATE	AREA
Terengganu	• Seberang Takir - Kuala Terengganu.
Pahang	• Kuala Tahan - Bandar Jerantut. • Hulu Tembeling - small villages such as Kg. Tekah, Kg. Padang.
Kelantan	• Kuala Krai - Dabong. • Jeti Kuala Betis - Kg. Setar. • Orang Asli settlements such as Pos Brooke, Pos Mering, Kuala Jenera. • Rural areas such as Kg. Sungai Rimau, Kg. Pasir Tinggi Kelewak, Kg. Kuala Gris.
Perak	• Sayong - Kuala Kangsar.
F.T. Labuan	• Connecting areas such as Kg. Batu Menikar, Kg. Lubok Temiang, Kg. Tanjung Kubong.
F.T. Putrajaya	• Tourism products at Putrajaya lake.
Malacca	• Tourism products to Pulau Besar, Pulau Upeh, Pulau Hanyut, Pulau Nangka and Pulau Undan.
Penang	• Gurney Wharf - Butterworth.
Johor	• Kota Iskandar - Stulang, Stulang-Pengerang, Kukup - Pulau Karimon (revival of old route).

Proposed new jetty

AGENCIES INVOLVED

Main Agencies

- Malaysia Marine Department
- Local Authority

Supporting Agencies

- Ministry of Transport Malaysia (MOT)
- State Authority
- Corridor Authority
- Port Agency

ACTION DG 3.5C

Strengthen cruise ship services

The port of call is one of the main entrances for tourists to access tourist attractions. Cruise ship services help boost the tourism industry and the economy, especially in the districts and states with port of call. Cruise ship services and ports of call in each state are as shown in **Table 4-16.**

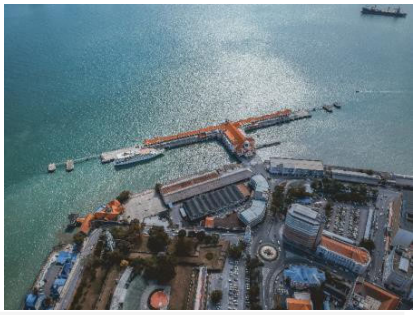
To improve cruise ship services, the measures that need to be implemented are as follows:

1. Improve and expand the terminals to accommodate larger capacity cruise ships and to attract more cruise ships to call and berth.
2. Improve facilities at the terminals for the convenience of passengers and terminal users including air-conditioned buildings, link bridges, automatic teller machines, foreign currency exchange counters, restaurants, souvenir shops and duty-free shops.
3. Provide 'First Mile and Last Mile' facilities to improve terminal accessibility such as covered walkways, ample parking space, as well as taxi and e-hailing service counters.
4. Develop new ports of call at suitable and strategic location in states that attract tourists.

Table 4-16: Cruise ship port of call

STATE	TERMINAL
Kedah	• Porto Malai Ferry Teminal, Langkawi.
Penang	• Swettenham Pier Cruise Terminal, George Town.
Selangor	• Boustead International Ferry Terminal, Port Klang. • ASA Niaga International Ferry Terminal, Port Klang.
Malacca	• Malacca International Ferry Terminal.
Negeri Sembilan	• Port Dickson Passenger Jetty Terminal.
Pahang	• Kuantan Port.
Terengganu	• Pulau Warisan, Kuala Terengganu.
Johor	• Pulau Setindan, Mersing.

New Proposal



Swettenham Pier Cruise Terminal , George Town

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Transport Malaysia (MOT) • Malaysia Marine Department • Port Agency • Local Authority	• State Authority • Corridor Authority • Royal Malaysian Customs Department • Immigration Department of Malaysia

STRATEGY
DG 3.6

STRENGTHEN THE LOGISTICS INDUSTRY

RELATED SDGs
SDG8 SDG9

The logistics industry is the backbone of the supply chain as well as the catalyst that stimulates trade and business to drive the country's economic growth. A logistics industry hub is an exchange centre that connects shipping services with other modes of transport as well as provides network for trade supply and distribution under the concept of multi modal integrated transport services.

ACTION DG 3.6A

Establish the hierarchy and role of seaports as the country's maritime gateways

Ports in Peninsular Malaysia and F.T. Labuan can be divided into three categories, namely:

CATEGORY 1 :

National and regional hub, and can handle all types of cargo.

1. Port Klang, Selangor (includes Northport, Westport, Southport).
2. Tanjung Pelepas Port, Johor.
3. Penang Port, Penang.

CATEGORY 2 :

Ports that support Category 1 hub

1. Kuantan Port, Pahang.
2. Pasir Gudang Port, Johor.
3. Labuan Port, F.T. Labuan.
4. Kerteh Port, Terengganu.
5. Proposed Tok Bali Port, Kelantan.

CATEGORY 3 :

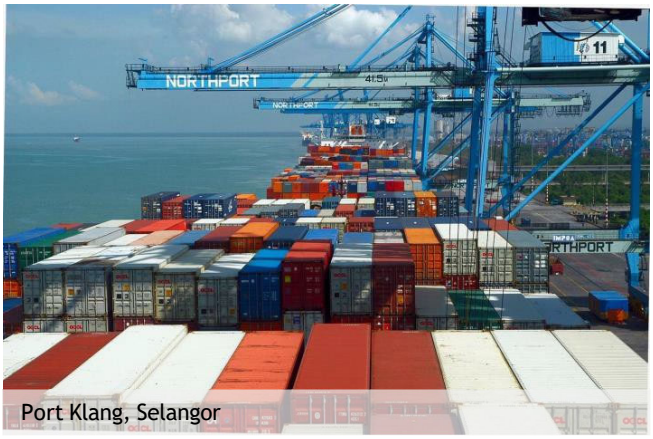
Ports that support goods production of the surrounding areas

1. Port of Tanjung Beruas, Malacca.
2. Teluk Ewa Port, Langkawi.
3. Kemaman Port, Terengganu.
4. Pengerang Port, Johor.
5. Tanjung Langsat Port, Johor.
6. Lumut Port, Perak.
7. Proposed Yan Port, Kedah.
8. Proposed Bagan Datuk Port, Perak.
9. Proposed Kuala Linggi Port, Malacca.
10. Proposed new port on Pulau Carey, Selangor.
11. Proposed Tanjung Agas Port, Pahang.

These ports have different roles and functions, and thus should be planned in an integrated manner in line with the National Transport Policy 2019-2030 in order to enhance the country's competitiveness.

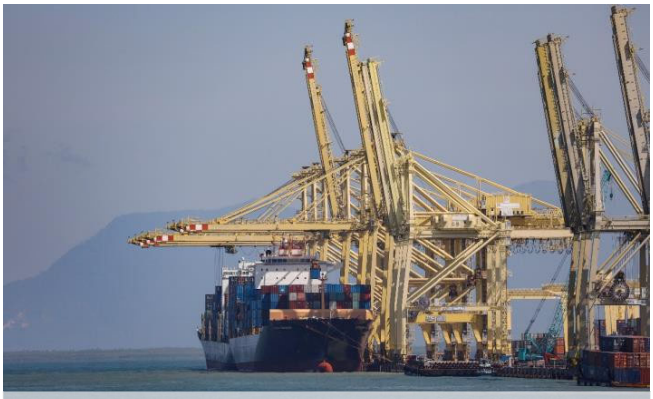
Measures to enhance the ports as the country's maritime gateways include:

1. Improve port cargo handling system to facilitate and expedite the handling of goods in line with the latest operation standards for goods handling.
2. Adopt online documentation process to expedite the loading and unloading of goods for import and export.
3. Ensure integration between ports and industrial areas to facilitate logistics.
4. Ensure good connection between ports and other modes of transport such as rail and road.



Port Klang, Selangor


Tanjung Pelepas Port, Johor


Penang Port, Penang

Port Klang, Tanjung Pelepas Port and Penang Port are among the main ports in Peninsular Malaysia.

AGENCIES INVOLVED

Main Agencies

- Ministry of Transport Malaysia (MOT)
- Malaysia Marine Department
- Port Authority

Supporting Agencies

- State Authority

MAP 4-20: PORTS IN PENINSULAR MALAYSIA AND F.T OF LABUAN

Port Hierarchy

- Level 1 Port
- Level 2 Port
- Level 3 Port

Others

- East Coast Rail Link (ECRL)
- Industrial Cluster
- Land Port
- State Capital
- Highway
- Rail line
- State Boundary

Source:

- Ministry of Transport, 2018
- Malaysia Investment Development Authority, 2018
- National Physical Plan 4, 2020T

ACTION DG 3.6B

Enhance the role of airports as logistics hubs

The role of airports as logistics hubs needs to be enhanced to facilitate the timely delivery of goods to around the world.

KLIA's strategic position and the provision of world-class facilities and infrastructure make KLIA as one of the important 'Regional Hubs' in the region. Apart from being a passenger hub, KLIA also acts as the country's main logistics hub.

KLIA's role as a logistics hub needs to be enhanced to accommodate the growth of economic activities, especially e-commerce, which is expected to expand every year. The proposed development of KLIA Aeropolis will also further increase the demand for KLIA as a logistics hub.

Senai Airport, Sultan Ismail Petra Airport and the proposed Kulim International Airport (KXP) also have the potential to become important logistics hubs. Management efficiency, and movement of goods and services are among the critical factors that need to be taken into account in making the airports as logistics hubs. Therefore, among the activities/ services that can be provided are as follows:

i. Goods processing centre.
ii. Goods sorting centre.
iii. Goods repackaging centre.

BRIEF FACTS

> ***Total Cargo by Airport***
- **KLIA** : 714,669 metric tonnes.
- **Penang Airport** : 130,127 metric tonnes.
- **Sultan Abdul Aziz Shah Airport, Subang**: 32,284 metric tonnes.

➢ ***'Gateway 'to the World's Largest Economies***
- **China:** world's largest market with 6% annual GDP growth.
- **India:** world's third largest market with 7.3% annual GDP growth.
- **Indonesia:** world's fifth largest market with 5.5% annual GDP growth.

➢ ***Asia's Largest Airport Operators Group***
- **Malaysia Airport Group** operates **120 Airlines, 133 million passengers a year** and manages the delivery of **1 million metric tonnes of cargo a year.**

Source:
1. Ministry of Transport Malaysia, 2018
2. *KLIA Aeropolis : Air Cargo and Logistics by MAHB*

Measures to enhance airports as logistics hub include:

1. Improve airport cargo handling system to facilitate and expedite the handling of goods in line with the latest operation standards for goods handling.
2. Adopt online documentation process to expedite the loading and unloading of goods for import and export.
3. Provide good infrastructure support facilities.
4. Ensure good connection between airports and with other modes of transport .

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Transport Malaysia (MOT) • Malaysia Airport Holdings Berhad (MAHB) • Airline Companies	• State Authority

ACTION DG 3.6C

Enhance the integration of various modes of transport between industrial areas and logistics centres (sea and land ports)

A good multi modal and integrated transport connectivity between industrial areas and logistics hubs will facilitate and expedite the movement of goods and cargo from the former to the latter for distribution purposes and vice versa.

Measures to enhance multi modal transport integration between logistics hubs and industrial areas include improving road and rail networks as follows:

i. ECRL - connecting Pasir Puteh ECRL Cargo station to Tok Bali Port Area through the proposed spur line Teluk Kalong Industrial Area, Kemaman, Gebeng Industrial Area, Kuantan and Port Klang Free Zone (PKFZ).
ii. KTM - connecting Prai Industrial Area, Penang, Port Klang Free Trade Zone (PKFZ), Tanjung Pelepas Industrial Park and Pasir Gudang Industrial Area, Johor.
iii. Major highways - industrial areas along the North - South Expressway (PLUS), Shah Alam Expressway (KESAS), South Klang Valley Expressway (SKVE), East Coast Expressway (LPT), West Coast Expressway (WCE), Senai - Desaru Expressway (SDE) and Butterworth Outer Ring Road.

The Penang Port is connected to a network of roads via the North - South Highway. There is also a 2.5 kilometer rail line connecting North Butterworth Container Base with Butterworth Train Station.

AGENCIES INVOLVED	
Main Agencies	**Supporting Agencies**
• Ministry of Transport Malaysia (MOT) • Port Authority • Malaysian Highway Authority (LLM) • Malaysia Airport Holdings Berhad (MAHB)	• Ministry of Works (KKR) • PLANMalaysia • State Authority

ACTION DG 3.6D

Implement the concept of Intercept, Consolidate, Transfer (ICT) in strengthening the logistics industry

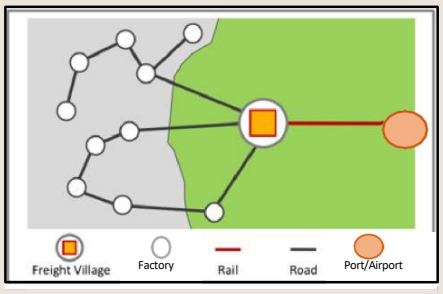
Action plan to overcome the limitations of the logistics industry and to stimulate local economic development must be prepared and implemented to strengthen Malaysia's position as a logistics hub in the Asian region.

Among the measures that need to be implemented are:

1. Enhance the implementation of ICT concept such as through the establishment of cargo villages (refer to **Plan 4-21**).
2. Establish rail as the main mode of transport and supported by other modes of transport in implementing the ICT concept.
3. Strengthen rail and road connections to airports, seaports and cargo villages as well as to industrial areas.
4. Encourage the development of urban logistics.
5. Increase the integration with global supply chain.
6. Encourage R&D for supply chain innovation.

BRIEF FACTS

ICT Concept - Logistics hubs, where cargo from different modes of transport can be unloaded, sorted and prepared for delivery. A place that connects and integrates various modes of transport (road, rail).



Schematic of ICT concept

Port Klang Free Zone (PKFZ)

Dubai Cargo Village

AGENCIES INVOLVED

Main Agencies

- State Authority
- Local Authority
- PLANMalaysia@Negeri

Supporting Agencies

- Ministry of Transport Malaysia (MOT)
- Port Agencies
- Ministry of Works (KKR)

MAP 4-21: PROPOSED LOCATION OF CARGO VILLAGE IN PENINSULAR MALAYSIA

Location of Cargo Village
- Cargo Village

Others
- Industrial Park
- State Capital
- Airport
- Port
- Highway
- Rail Line
- State Boundary

Note:
I.A. – International Airport

Source:
- Malaysia Investment Development Authority, 2018
- National Physical Plan 4, 2020

DG 4
IMPROVISING DIGITAL AND SMART INFRASTRUCTURE

Digital infrastructure includes the physical infrastructure required to enable data, computerised devices, methods, systems and processes to be utilised digitally. Digital infrastructure plays an important role in ensuring the continued development of the digital economy as well as improving the quality of life of the society in the modern era. Smart infrastructure, on the other hand, includes the integration of smart elements such as sensors and auto control to the infrastructure. Smart infrastructure enables the implementation, management and monitoring of development using digital technology thus increasing the level of efficiency in development management.

The application of digital and smart infrastructure is a national priority to support the 4IR agenda which requires the development of high-tech and smart infrastructure to support economic activities, especially industries, businesses and online services.

The Government has introduced the National Digital Network Plan (JENDELA) to improve the level of connectivity and quality of communication services throughout the country. JENDELA will expand the coverage and improve the quality of broadband services through the initiatives that have been identified as well as will prepare the country towards 5G technology.

National Aspirations in the National Digital Network Plan (JENDELA)

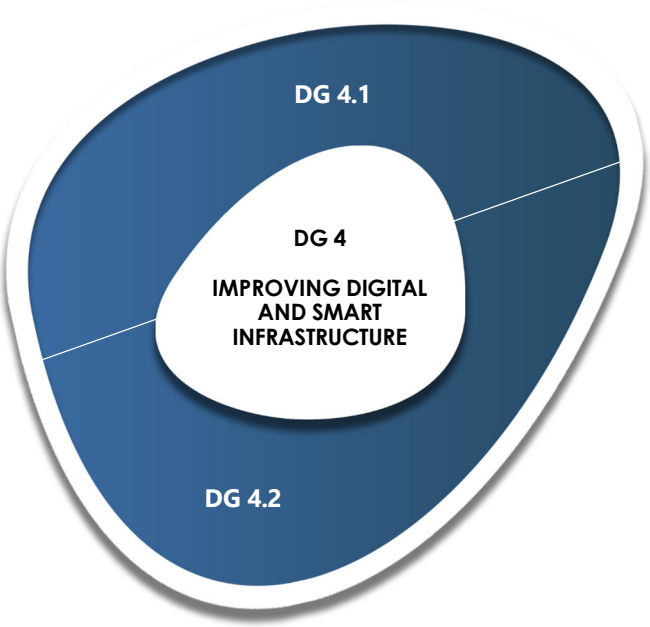
Wireless Broadband	• 100% 4G coverage in populated areas. • 100Mbps speed via 5G adaptation.
Fixed Broadband	• Gigabit speed access to 9 million premises in the country.
Delivery Ecosystem	• Preparation of digital infrastructure plan.

This strategic direction formulates spatial development strategies and actions that can increase the efficiency level of digital infrastructure. This is consistent with the changing trend of development that focuses on the use of technology in daily activities.

In line with the Malaysian Smart City Framework, digital infrastructure readiness is emphasised through the inclusion of the 'Smart Digital Infrastructure' as one of the 7 components of a Smart City.

'Smart Digital Infrastructure' component emphasizes on 3 strategies, namely:

i. **Strategy 1**: Increase internet conectivity and speed.
ii. **Strategy 2**: Increase internal and external network coverage.
iii. **Strategy 3**: Strengthen policies related to cyber security and personal data.



STRATEGIC DIRECTION DG 4

IMPROVISING DIGITAL AND SMART INFRASTRUCTURE

DG 4.1	Ensure Development of Infrastructure Towards a Smart Nation
DG 4.2	Ensure Comprehensive Implementation of Smart City Agenda

STRATEGY
DG 4.1

ENSURE DEVELOPMENT OF INFRASTRUCTURE TOWARDS A SMART NATION

RELATED SDGs

- SDG1
- SDG3
- SDG4
- SDG9
- SDG10
- SDG11

The development of digital and smart infrastructure is a key element in driving the country towards becoming a smart nation. In line with the advancement in the technological world in adapting 4IR, the need to invest in the provision of digital infrastructure is a priority that has to be addressed in the planning of future development.

This strategy outlines spatial development actions that can increase the level of efficiency of digital infrastructure in line with the changing trend of development that focus on the use of technology in daily activities. Digital infrastructure coverage needs to be expanded in populated areas and priority should be given to economic focus areas such as the Conurbations, PDZs and Catalyst Centres.

To reduce the digital divide between the urban and rural population, broadband services should be provided comprehensively so that they can be enjoyed by the society. In addition, the infrastructure must support the latest technology, namely 5G for Malaysia to remain globally competitive. The introduction of the National Digital Network Plan (JENDELA) is expected to prepare the country for adaption of 5G technology. The development of digital infrastructure also plays an important role in driving the growth of the digital economy and supporting the digital-based socio-economic activities.

ACTION DG 4.1A

Accelerate the provision of comprehensive and high-capacity digital infrastructure

In realising the digital economy agenda, Malaysia must ensure digital infrastructure efficiency to support the country's economic progress in line with the development of the global digital economy.

The rapid expansion of information technology plays a key role in ensuring communication and connectivity as well as the continued growth of the country's economic activities.

With the rapid development of technology over the past few decades, the country's digital competitiveness needs to be enhanced. Malaysia was ranked 26th in the World Digital Competitiveness Ranking 2020 (Refer to **Table 4-17**). At the global level, countries need to have the capacity to adapt and explore digital technology to transform government administration, industry, business and the general public. Investment in scientific and high-tech infrastructure is needed to enable the digital economy to contribute to the well-being of the people and the country in the globalisation and 4IR era.

Table 4-17: Malaysia's digital competitiveness compared to selected ASEAN countries

	RANKING			
	OVERALL	**KNOWLEDGE** Knowledge required for the discovery, understanding and development of new technology	**TECHNOLOGY** The overall context that enables the expansion of digital technology	**FUTURE READINESS** The level of country readiness to exploit digital transformation
Singapore	2	2	1	12
Malaysia	**26**	**19**	**20**	**32**
Thailand	39	43	22	45
Indonesia	56	63	54	48
Phillipnes	57	62	53	54

Source: *Institute for Management Development (IMD) through World Digital Competitiveness Ranking 2020*

Extensive digital coverage will open the door to investment especially in high-tech industries such as the automotive and electronics industries. Such industries are highly dependent on the use of digital technology that requires the internet to optimise supply chain processes.

The society is now also dependent on digital connections (banking, e-commerce etc.). Therefore, limited digital infrastructure coverage especially in rural areas will create a development gap between areas with coverage and those without coverage. Extensive coverage will not only drive a more dynamic economic growth, but also empower communities, especially those living in rural areas, to be more proficient in the use of technology.

Among the measures that need to be implemented are:

1. Detail out digital infrastructure planning at the SP and LP levels to determine the areas and locations for communication and digital infrastructure to ensure comprehensive coverage in populated areas in line with JENDELA (Refer to **Figure 4-11**). This measure can be implemented in phases with the earlier phases prioritise on the key growth areas namely the Conurbations, PDZs and Catalyst Centres, before addressing other areas in subsequent phases. Digital infrastructure planning needs to ensure the use of, at the minimum, 4G technology for mobile broadband and fibre optics for fixed broadband.
2. Provide comprehensive digital infrastructure to expand digital coverage and increase connectivity in line with JENDELA.
3. Provide digital infrastructure mapping system towards a comprehensively coordinated telecommunications infrastructure planning.

4. Streamline governance and legal processes and procedures for digital infrastructure development.
5. Expand 4G mobile broadband coverage from 91.8% to 100% in populated areas.
6. Increase mobile broadband speed from 25Mbps to 100Mbps.
7. Ensure the 9 million premises have access to fixed line broadband with gigabit speed.
8. Expand the concept of smart pole where it can be used not only for the installation of transmitters, but also can support other functions such as surveillance, environmental sensing, digital information broadcasting, and emergency services.

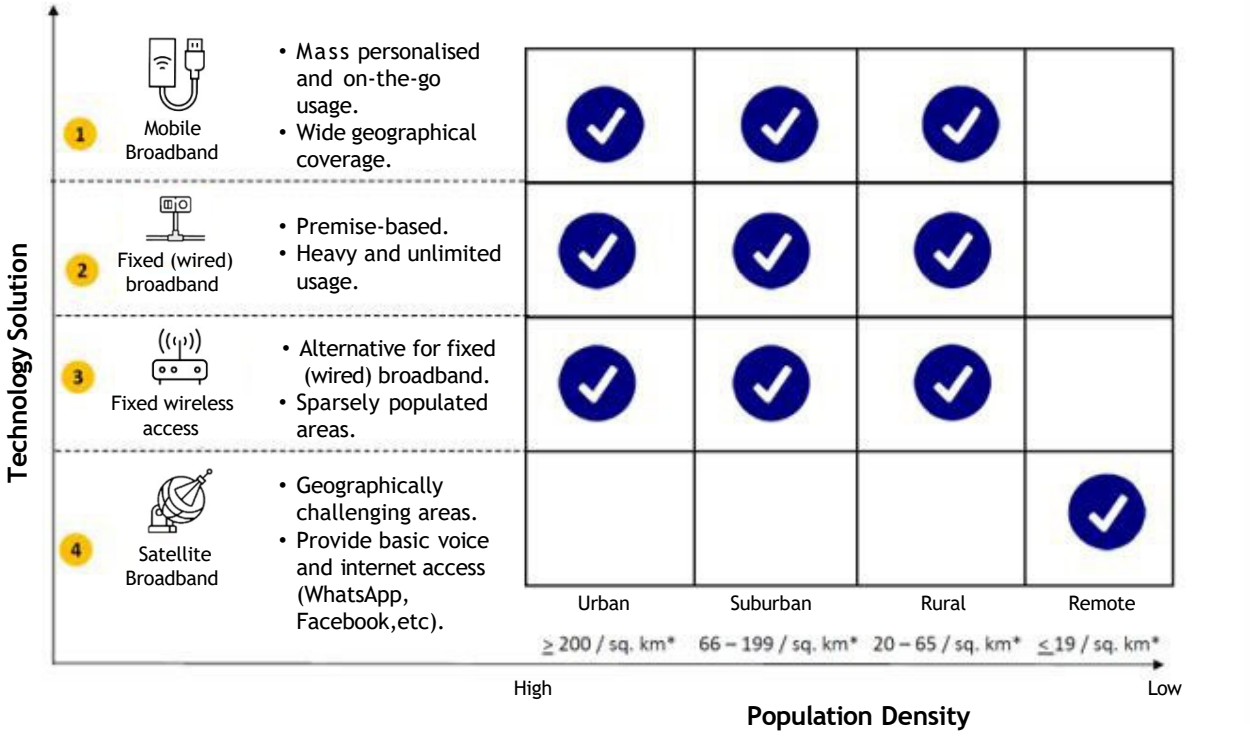


Figure 4-11: The identified technology for the expansion of broadband coverage according to population density
Source: National Digital Network Plan (JENDELA)

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Communications and Multimedia • Malaysian Communications and Multimedia Commission (MCMC) • Ministry of Rural Development (KPLB) • State Authority	• PLANMalaysia • Local Authority • Malaysia Digital Economy Corporation (MDEC)

STRATEGY
DG 4.2

ENSURE COMPREHENSIVE IMPLEMENTATION OF SMART CITY AGENDA

RELATED SDGs
SDG3 SDG9

Existing cities are also being impacted as a result of the increase in world population. Therefore, smart urban management is necessary in terms of planning, supervision and operation to facilitate and manage daily and economic activities of the population, especially in cities that are now becoming denser due to population growth.

A smart city is highly dependent on IoT which requires high speed and quality Internet network connection. Thus, for a smart city to function efficiently and comprehensively, priority must be given to infrastructure development and provision, especially communication infrastructure. With the advent of new technology such as 5G network, smart cities will become more efficient.

BRIEF FACTS

The Selangor Smart Application is one of the initiatives of the Selangor State Government to empower residents, businesses and the public sector in the use of digital technology and to support the smart city agenda in Selangor.

Development planning for smart cities must consider the needs for digital infrastructure provision. Based on the Malaysian Smart City Framework by the Ministry of Housing and Local Government (KPKT), which was launched on 23rd September 2019, seven (7) components of smart cities are identified as follows:

i. Smart Economy.
ii. Smart Living.
iii. Smart Environment.
iv. Smart People.
v. Smart Goverment.
vi. Smart Mobility.
vii. Smart Digital Infrastructure.

Source: Malaysian Smart City Framework by the Ministry of Housing and Local Government, 2019

ACTION DG 4.2A

Strengthen comprehensive smart city planning at the federal, state, and local levels based on the Malaysia Smart City Framework

In addressing the current and future urban issues, the Smart City approach should be a strategic priority to national development. The main goal of a smart city is to achieve high cost-efficiency and better social benefits to help accelerate the manifestation of the country towards achieving the status of a smart nation. The implementation of a good smart city begins with good planning.

At the federal level, smart city planning aspiration must be manisfested through policy statements in key national documents such as the 12th Malaysia Plan (12MP) and the National Development Plan (NDP) which consists of the National Physical Plan, National Urbanisation Policy and National Rural Physical Planning Policy.

At the state level, urban planning needs to adopt smart city approach as a method in developing key development areas. While at the local level, the potential of the smart city approach needs to be taken advantage of in local planning to address local issues and challenges.

Among the implementation measures towards smart city are:

1. Ensure that the smart city approach is implemented in development planning.
2. Prepare Smart City Action Plan for implementation at state level.
3. Emphasise people-centric engagement in smart city development.
4. Encourage cities to implement smart city initiatives in phases/stages.

SMART CITY

AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Housing and Local Government (KPKT) • Ministry of Communications and Multimedia • Malaysian Communications and Multimedia Commission (MCMC) • State Authority • PLANMalaysia • Local Authority	• Malaysia Digital Economy Corporation (MDEC) • Malaysian Industry-Government Group for High Technology (MIGHT)

Putrajaya is one the cities that have implemented the elements of smart city in its planning system and have Smart City Blueprint for reference.

ACTION DG 4.2B

Provide smart city-related standards to drive the development of integrated and world-class smart cities

Making Malaysia a smart nation is one of the priorities in the 12th Malaysia Plan (12MP). In the national context, there are siloed and stand-alone implementation of smart city initiatives by some industry players and stakeholders which have negatively affected the national efforts and coordination to develop integrated smart cities. Siloed implementation of smart city will result in the cities competing, rather than complimenting each other towards an integrated and world-class smart city development of the country. To mitigate this problem, smart city planning and development standards must be prepared to guide industry players and stakeholders in developing smart cities in Malaysia.

Smart city planning and development standards should include the following:

i. Smart city indicators

- The smart city standards should identify indicators to be used as the basis in measurement to drive and evaluate cities in terms of their efficiency and the quality of life. At the international level, the ISO 37122 Sustainable Cities and Communities - Indicator for Smart Cities consists of evaluation of 19 sectors through 80 indicators

ii. Smart city planning standards

- The provision of smart city planning standards in Malaysia will ensure that smart city planning will follow a predetermined process such as formulating and developing long-term smart city planning through the identification of issues/problems/challenges, analysis, stakeholder involvement, proposed initiatives and project feasibility, implementation in Development Plans and between stakeholders and industry players.

iii. Standards for smart city digital infrastructure

Songdo, South Korea
Songdo City Centre is one of the smart cities that have been developed since 2001. The buildings and roads in the City Centre are equipped with sensors to monitor energy consumption, including traffic flow, towards achieving total sustainability.

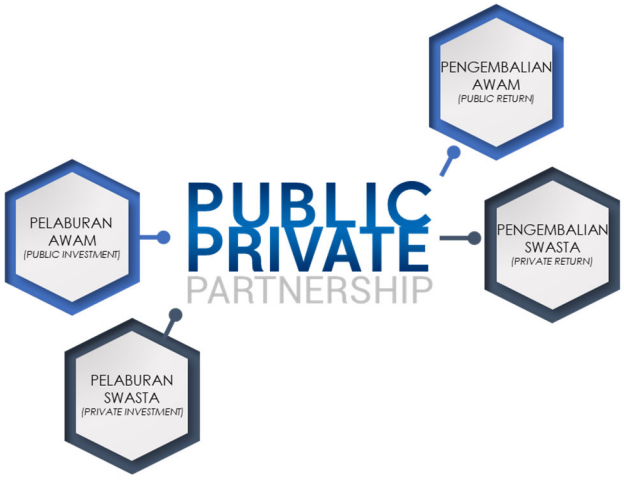
AGENCIES INVOLVED

Main Agencies	Supporting Agencies
• Ministry of Housing and Local Government (KPKT) • PLANMalaysia	• State Authority • Local Authority

ACTION DG 4.2C

Prioritise public-private partnership in the development of smart cities

Public-private cooperation is one of the aspects that need to be considered in smart city governance. Community involvement in smart city planning is important to ensure that decisions made are inclusive. The community are the end-users who will be directly impacted by all the planning decisions made at the state and local levels.



The community can provide views and suggestions to help government agencies in the formulation of policies and plans at the state and local levels. Community involvement also enriches the decision-making process with different perspectives. Smart city planning will not succeed if the local community does not benefit from the facilities provided.

Collaboration with the private sector is also important in the planning of a smart city. The private sector consisting of developers and landowners should have the same aspiration as the Local Authority in developing a smart city.

Among the implementation measures necessary to encourage public-private collaboration in smart city planning and development include:

1. Implement projects using the 6P method Planning (*Perancangan*), Implementation (*Pelaksanaan*), Monitoring (*Pemantauan*), Reporting (*Pelaporan*), Verification (*Pengesahan*) and Evaluation (*Penilaian*) to increase the effectiveness of smart city project implementation.
2. Organise corporate social responsibility (CSR) programmes, information sharing and cooperation to increase the knowledge and capabilities of the public regarding smart city.
3. Encourage the involvement of all sections of society in smart city planning and development.
4. Conduct surveys on the perception of liveability and quality of life of the population at the local level on a regular basis.

AGENCIES INVOLVED	
Main Agencies	**Supporting Agencies**
• Local Authority • State Authority	• PLANMalaysia@Negeri

THRUST 1 RELATIONS WITH SDGs

RELATED SDGs	THRUST 1 STRATEGIES DAN ACTIONS	INDICATORS
DG 1: Strengthening Nation's Strategic Position at Global Level		
SDG8 SDG12 SDG16 SDG17	**DG 1.1** Strengthen Regional Cooperation in Physical Planning and Economic Development	1. Malaysia total trade (imports and exports) with ASEAN countries. 2. Number of visitors to Malaysia from ASEAN countries. 3. Number of visitors from Malaysia to ASEAN countries.
	ACTION DG 1.1A Strengthen Malaysia's strategic relations at the ASEAN and international levels	
SDG3 SDG16 SDG17	**DG 1.2** Strengthen National Security Planning	1. Malaysia ranking in: i. Global Peace Index. ii. Global Health Security Index.
	ACTION DG 1.2A Ensure the security of the country's strategic infrastructure	
	ACTION DG 1.2B Reinforce the security of the national border	
DG 2 : Ensuring Sustainable and Competitive Economic Growth		
SDG8 SDG11	**DG 2.1** Strengthen the Function of Growth Areas	1. Urbanisation rate (by country, region and state). 2. Ranking of major cities in the global index: i. The Global Competitiveness Index. ii. Hot Spot 2025 Future Competitive of Cities. iii. Global Power City Index. iv. Global Cities Index.
	ACTION DG 2.1A Strengthen the role of Conurbations, PDZs and Catalyst Centres	
	ACTION DG 2.1B Strengthen the functions of towns and cities according to settlement hierarchy	
	ACTION DG 2.1C Increase urban competitiveness at the global level in an integrated manner	
SDG8 SDG9	**DG 2.2** Intensify the Activities of Digital Economy as the Basis for Economic Growth	1. Total and percentage of services sector GDP contribution. 2. Total and percentage of services sector employment.
	ACTION DG 2.2A Promote e-commerce in the services sector especially in retail	
	ACTION DG 2.2B Promote knowledge-based SMEs (K-SMEs) and digitalisation	

RELATED SDGs	THRUST 1 STRATEGIES DAN ACTIONS	INDICATORS
DG 2 : Ensuring Sustainable And Competitive Economic Growth		
SDG8 SDG9 SDG12	**DG 2.3** Apply the Latest Industrial Technology as a Pillar of Economic Growth	1. Total and percentage of manufacturing sector GDP contribution. 2. Total and percentage of manufacturing sector employment.
	ACTION DG 2.3A Encourage the development of high-tech and innovative manufacturing clusters	
	ACTION DG 2.3B Prioritise the planning and management of integrated industrial park	
SDG8	**DG 2.4** Diversify Tourism Products and Coverage as One of the Main Drivers of the National Economy	1. The contribution of the tourism sector to the country's GDP. 2. Number of tourist arrival to Malaysia. 3. Number of domestic visitors.
	ACTION DG 2.4A Strengthen the country's major natural tourism destinations	
	ACTION DG 2.4B Ensure tourist arrival at major tourist destinations is based on carrying capacity	
	ACTION DG 2.4C Strengthen the identity of cities, towns and tourist attractions through the rebranding of potential tourism activities	
	ACTION DG 2.4D Integrate Tourism Routes and Trails to promote the country's major tourism products	
	ACTION DG 2.4E Strengthen the development of niche tourism products throughout the country	
SDG8 SDG9	**DG 2.5** Ensure Provision of High-Quality Infrastructure and Tourism Support Facilities	1. The contribution of the tourism sector to the country's GDP. 2. Number of tourist arrival to Malaysia. 3. Number of domestic visitors.
	ACTION DG 2.5A Ensure adequacy and variety of accommodation facilities	
	ACTION DG 2.5B Improve accessibility to major tourist destinations	
	ACTION DG 2.5C Develop interactive and virtually accessible tourist information centre	
SDG11 SDG12	**DG 2.6** Leverage Rural Local Resources	1. Total and percentage of agricultural sector GDP contribution. 2. Percentage contribution of the rural economy.
	ACTION DG 2.6A Diversify the rural economy based on local potential	
	ACTION DG 2.6B Making Agropolitan Centers as rural growth nodes	

RELATED SDGs	THRUST 1 STRATEGIES DAN ACTIONS	INDICATORS
DG 3 : Providing Strategic and Integrated Transportation Network Connectivity		
SDG3 SDG8 SDG9 SDG10 SDG11	**DG 3.1** Strengthen Road Transport Network and Connectivity	1. Road development index (for country, region and state).
	ACTION DG 3.1A Ensure comprehensive and quality road connectivity between regions	
	ACTION DG 3.1B Ensure appropriate road hierarchy proposals	
	ACTION DG 3.1C Improve road access in rural areas	
	ACTION DG 3.1D Ensure road maintenance and improvement are according to schedule	
	ACTION DG 3.1E Increase the use of smart technology in traffic management	
SDG8 SDG9 SDG11	**DG 3.2** Making Rail as the Main Pillar of Transportation System	1. Number of ETS and KTM Intercity passengers.
	ACTION DG 3.2A Improve rail connectivity between cities, regions and the country's main gateways	
	ACTION DG 3.2B Increase the use of modern technology in rail service systems	
SDG3 SDG8 SDG10 SDG11	**DG 3.3** Strengthen Public Transport Services To Achieve Modal Split Targets	1. Number of urban public transport users by transport type (city rail, city bus, etc.). 2. Public transport usage rates/ modal splits in major cities (KL, Putrajaya, Johor Bahru, George Town, Kuantan).
	ACTION DG 3.3A Improve the integration and expansion of rail network in the city	
	ACTION DG 3.3B Ensure First Mile and Last Mile is supported in public transport integration	
	ACTION DG 3.3C Improve bus services in major cities	
	ACTION DG 3.3D Increase the use of modern technology to facilitate smoother public transport operation	
SDG8 SDG9	**DG 3.4** Strengthen Air Connectivity at Global, Regional and Local Levels	1. Number of travel destinations from major airports. 2. Total air passengers (domestic, regional & international). 3. Total cargo handled at airports.
	ACTION DG 3.4A Establish the role of each airport based on the socio-economic significance of the area	
	ACTION DG 3.4B Diversify integrated land transport modes to airports	
	ACTION DG 3.4C Strengthen air transport services to environmentally sensitive tourist areas and areas that are difficult to access for emergency purposes	

RELATED SDGs	THRUST 1 STRATEGIES DAN ACTIONS	INDICATORS
DG 3 : Providing Strategic and Integrated Transportation Network Connectivity		
SDG8 SDG9	**ACTION DG 3.4D** Upgrade existing airport facilities and infrastructure	4. World airport rankings.
SDG8 SDG9	**DG 3.5** Improve Water Transport Services	1. Total number of water taxi, ferry and cruise ship services. 2. Total number of water taxi, ferry and cruise ship passengers.
	ACTION DG 3.5A Strengthen ferry services	
	ACTION DG 3.5B Strengthen water taxi services	
	ACTION DG 3.5C Strengthen cruise ship services	
SDG8 SDG9	**DG 3.6** Strengthen the Logistics Industry	1. Number of cargo handled at ports. 2. World port rankings. 3. Malaysia position in the Logistics Performance Index (LPI).
	ACTION DG 3.6A Establish the hierarchy and role of seaports as the country's maritime gateways	
	ACTION DG 3.6B Enhance the role of airports as logistics hubs	
	ACTION DG 3.6C Enhance the integration of various modes of transport between industrial areas and logistics centres (sea and land ports)	
	ACTION DG 3.6D Implement the concept of Intercept, Consolidate, Transfer (ICT) in strengthening the logistics industry	
DG 4 : Improvising Digital And Smart Infrastructure		
SDG1 SDG3 SDG4 SDG9 SDG10 SDG11	**DG 4.1** Ensure Development of Infrastructure Towards a Smart Nation	1. Percentage of broadband service coverage area. 2. Average speed of broadband service. 3. The speed of broadband services in the capital/urban area. 4. Speed of broadband services in suburban/ rural area.
	ACTION DG 4.1A Accelerate the provision of comprehensive and high-capacity digital infrastructure	
SDG3 SDG9 SDG11	**DG 4.2** Ensure Comprehensive Implementation of Smart City Agenda	1. Number of local authorities that prepare smart city plans. 2. Ranking of major cities in the global Smart City Index.
	ACTION DG 4.2A Strengthen comprehensive smart city planning at the federal, state, and local levels based on the Malaysia Smart City Framework	
	ACTION DG 4.2B Provide smart city-related standards to drive the development of integrated and world-class smart cities	
	ACTION DG 4.2C Prioritise public-private partnership in the development of smart cities	

> “It is Allah who sends the winds, and they stir the clouds and spread them in the sky however He wills, and He makes them fragments so you see the rain emerge from within them. And when He causes it to fall upon whom He wills of His servants, immediately they rejoice.”
>
> 30:48 - Ar-Rum