

## Malaysia's Northern States: Improving Competitive Advantages and Industrial Growth

By *Lee Siu Ming*

### Executive Summary

This brief discusses the comparative and competitive advantages for industrial growth within the concept of 'prosper thy neighbour' for the four states in northern Malaysia—Kedah, Penang, Perak and Perlis—and offers a value proposition for shared growth. In summary, this brief proposes the following modes of action:

- States to continue tapping on growing manufacturing industries but to differentiate themselves by carving out niche activities in different segments in the industry
- States with comparative advantage in resource-based industries to exploit advantages, and to expand into higher-value activities downstream
- States to seek more opportunities for the manufacturing of agricultural resource-based outputs.
- With the available air, sea and land infrastructure, and planned future infrastructure, states should consider the opportunity to increase manufacturing output in the northern region through high-value, high-technology manufacturing activities
- States should improve productivity and competitiveness, investment in human resources, and upgrading of technological capabilities to accompany inflow of investments and increased manufacturing activities
- Amidst the US-China trade war, some of the steps in current climate for E&E which the four states are involved in, and should improve upon, are: (1) promotion of capabilities of Malaysia-based companies, in the event of trade diversion occurring; (2) encouragement of firms' involvement in capacity-building initiatives, such as Industry4WRD and Digital Transformation Acceleration Program (DTAP); and (3) facilitation of market participation in 5G value chain and autonomous vehicles
- NCIA to engage in more consultations with the four states to fill the gaps for certain projects. Formal representation of state officials in NCIA's working group should also increase effectiveness of NCIA initiatives

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## Introduction

Kedah, Penang, Perak and Perlis are the four northern states in Malaysia, with Perlis bordering the south of Thailand. As a whole, the four states contributed 15.8% to the national GDP in 2018, a marginal decrease compared to 15.9% in 2015. In 2018, Penang contributed 6.7% to the national GDP while Perak, Kedah and Perlis contributed 5.4%, 3.3% and 0.4%, respectively (see Table 1).

Much greater emphasis should be placed on the role of competitive advantage as a predictor of the economic prosperity of not only firms, but also nations (Gupta, 2015). This refers to the “creation” of some natural or policy-induced superiority which reduces costs for all home sectors. Porter (1990) exemplified the use of case-study evidence to identify the factors of competitive advantage which encourage a nation’s firms to achieve high world market shares in their industries. Gupta (2015) noted that a nation’s prosperity is not “inherited” and does not necessarily depend on factor endowment but rather, it is “created” by the nation’s firms that are successful in the world markets. This would, among others, depend on the capacity of the nation’s industry to innovate and upgrade. Success can be measured in terms of substantial and sustained exports and/or foreign investment.

In a static world, a country and its firms will enjoy competitive advantage if firms in that country specialise in the products which a country has a comparative advantage in. In contrast, in a dynamic world, firms will benefit from enhancing the comparative advantage of their nations through forces of competitive advantage driven by created factors such as cutting-edge technology and innovation.

To ascertain economic growth, it is critical that each state formulate and implement various economic growth strategies (Idris and Yussof, 2009). As Malaysia is an export-oriented open economy, states emphasize the manufacturing sector as an important contributor to the state’s economy<sup>1</sup>. This brief examines manufacturing activities and existing industries in the four states in northern Malaysia (Kedah, Penang, Perak, and Perlis), and provides a descriptive explanation of the comparative and competitive advantages of each state based on the limited data available. In Tun Dr. Mahathir Mohamad’s speech at the World Bank’s annual meeting in Hong Kong in 1997, he defined the term ‘prosper thy neighbour’ as prosperity together with one’s neighbour. A country benefits from an expanded market for goods, and wealth-creating investment opportunities, even as jobs and wealth are created for its neighbours. The statement also provides motivation for this brief in examining the ‘neighbours’ of the northern region states. In our discussion, three key issues are raised, namely: (1) Potential opportunities for synergies in the current and related industries; (2) Trade and investment in the rise of the US-China trade war; and (3) The evolving role of the Northern Corridor Implementation Authority (NCIA).

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<sup>1</sup> However, Kuala Lumpur has been putting focus into regional services hubs (Yusof, 2019).

**Table 1: Selected demographic and economic profiles of Kedah, Penang, Perak and Perlis, 2015-2018**

<b>States</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
<b>GDP at constant 2015 prices (RM million)</b>				
Kedah	39,550	41,156	43,059	44,806
Penang	78,146	82,493	86,738	91,175
Perak	63,176	65,958	69,291	72,942
Perlis	5,353	5,570	5,694	5,884
<b>Population (million)</b>				
Kedah	2.10	2.12	2.14	2.16
Penang	1.70	1.72	1.74	1.77
Perak	2.47	2.48	2.49	2.50
Perlis	0.25	0.25	0.25	0.25
<b>GDP per capita (RM)</b>				
Kedah	18,864	19,835	20,960	21,410
Penang	46,020	48,633	51,115	52,937
Perak	25,610	27,343	29,335	30,303
Perlis	21,540	22,588	23,611	24,442
<b>Share of Malaysia's GDP (%)</b>				
Kedah	3.4	3.3	3.3	3.3
Penang	6.6	6.7	6.7	6.7
Perak	5.4	5.4	5.3	5.4
Perlis	0.5	0.5	0.4	0.4
<b>Labour force</b>				
Kedah	905.3	910.9	932.7	936.7
Penang	848.1	845.5	841.1	849.4
Perak	1,014.3	1,023.1	1,052.4	1,069.8
Perlis	101.1	103.2	101.4	107.6
<b>Unemployment rate (%)</b>				
Kedah	2.6	2.9	2.8	2.9
Penang	1.6	2.1	2.1	2.2

Source: Department of Statistics

## **Framework in the discussion of comparative and competitive advantages**

The comparative and competitive advantages in this article are discussed based on the framework adapted from Gupta (2015). In terms of comparative advantage, Gupta (2015) lists the synthesis of factors as follows:

- i. Scale economies, supporting industries, and technology
- ii. Quantity and quality of physical and human resources
- iii. Trade enhancing national policies and international policies
- iv. Demand or market size

Meanwhile, the competitive advantages adapted from Porter (1990) and Gupta (2015) are as follows:

- i. Competencies or resources to benefit from comparative advantage and convert it to competitive advantage
- ii. Innovation strategies related to demand factors and product differentiation
- iii. Innovation strategies related to supply factors and supporting industries
- iv. Business environment, government policies, and supporting industries

Since this brief discusses the comparative and competitive advantages of the four states in relation to manufacturing activities and its existing industries in the context of some prevailing issues, the comparative and competitive advantages described here may not be all-encompassing, especially when primary and tertiary sectors of the economy are not within the scope of the discussion.

Table 2 shows the economic contribution by sectoral share of economic activity to each state's GDP. In 2015-2018, Penang has the highest sectoral composition of manufacturing activity (between 42.9%-43.3%) while Perlis has the lowest sectoral composition of manufacturing activity (between 7.9% and 8.6%). Each of the four states' services contribution to the state's GDP is the highest among the different sectors of economic activity. In terms of sectoral composition of agricultural activity to GDP, Perlis has the highest sectoral composition of agricultural activity, followed by Perak, Kedah and Penang.

**Table 2: Economic contribution by sectoral share of economic activity to respective state's GDP (%), 2015-2018**

	2015	2016	2017	2018
<b>Kedah</b>				
Agriculture	13.7	12.6	12.7	12.2
Mining and quarrying	0.2	0.2	0.3	0.3
Manufacturing	28.9	29.0	28.9	28.6
Construction	2.2	2.4	2.2	2.3
Services	54.3	54.9	55.3	56.0
<b>Penang</b>				
Agriculture	2.7	2.4	2.3	2.2
Mining and quarrying	0.2	0.2	0.2	0.2
Manufacturing	43.0	42.9	43.1	43.3
Construction	3.5	3.6	3.1	2.8
Services	49.8	49.9	50.1	50.6
<b>Perak</b>				
Agriculture	16.4	15.4	15.8	15.1
Mining and quarrying	0.6	0.6	0.6	0.6
Manufacturing	17.7	17.8	18.3	18.1
Construction	4.1	4.2	3.1	3.2
Services	61.1	61.8	62.0	62.8
<b>Perlis</b>				
Agriculture	21.7	21.5	21.9	21.5
Mining and quarrying	0.6	0.5	0.5	0.6
Manufacturing	8.6	8.1	8.1	7.9
Construction	1.7	1.6	1.6	1.6
Services	63.8	64.3	65.4	65.9

*Note: Total may not equal 100 as data on import duties are not included  
Source: Department of Statistics*

The summary of MIDA-approved manufacturing investment, industrial land area and major industries are presented in Table 3. MIDA's approved manufacturing investment data shows consistent inflow of manufacturing investments into the four states in the period of 2014-2018, except for Perlis which did not have inflow of investment in 2016.

**Table 3: Approved manufacturing investments, industrial land use and summary of major industries in Kedah, Penang, Perak and Perlis**

State	MIDA Approved Manufacturing Investments (RM million)					Industrial land (hectares)	Summary of major industries
	2014	2015	2016	2017	2018		
Kedah	5,285	1,357	2,183	2,535	2,386	N/A	E&E, rubber -based products, plastic, textile, automotive component, food packaging, plastic injection and moulding, timber, pharmaceuticals, health products, concrete products, steel fabrication, logistics and storage
Penang	8,162	6,724	4,294	10,812	5,781	Industrial land use: 3,303.8318 (2017)	Semiconductor, E&E, medical devices, avionics, renewable energy, halal and food industry
Perak	1,708	3,887	3,946	2,007	1,887	Industrial land use: 118,374.451* (2016)	E&E, halal products, agro -based products, non -metallic-based products, foundry and engineering, rubber-based products,
Perlis	213	3	0	525	8	State-developed industrial parks: 160.45 (2016)	Marine engineering, cement, warehousing, PVC, construction materials, food, fishing capital equipment, rubber products, electronics

*\*Includes land use for building*

*Source: Malaysian Investment Development Authority (MIDA), JPPD, InvestKedah, InvestPenang, InvestPerak, Perlis Economic Planning Division*

## **A Note on Competitive Advantages and Industrial Growth**

### **1. Tap into and create synergies between current and their related industries**

Based on MIDA approved manufacturing investment data (2014-2018), the largest cumulative investment by sectors in the four states are (1) Electronics & Electrical Products, (2) Scientific &

Measuring Equipment, (3) Transport Equipment, (4) Plastic Products, and (5) Machinery & Equipment. The states recorded almost similar rates of diversification in terms of approved manufacturing projects by industry, except for Perlis. The major investments (more than 10% of total investments) in the states for the period of 2014-2018 are as follows:

- i. Kedah: Electronics & Electrical Products, Non-Metallic Mineral Products, Transport Equipment
- ii. Penang: Electronics & Electrical Products, Scientific & Measuring Equipment, Machinery & Equipment
- iii. Perak: Rubber Products, Basic Metal Products, Electronics & Electrical Products
- iv. Perlis: Rubber Products, Fabricated Metal Products

The forward-looking indicator of January-June 2019 approved manufacturing investment also showed an encouraging sign, with Penang (RM9.2 billion) and Kedah (RM7.7 billion) as the top two states with the highest approved manufacturing investment, while Perak (RM1.7 billion) and Perlis (RM53.3 million) also recorded encouraging inflows.

One interesting segment to note is electronics, which has become a significant product in manufacturing in these four states as well (Athukorala and Narayanan, 2017), but this brief notes that different states are engaged in fairly different product segments and different parts of the value chain. The states are and should continue to carve a niche in different electronics product segment and value chain to ensure that all states are able to benefit from the growth of the electronics manufacturing sector. For example, while Penang has had industrial experience in the E&E sector for more than 45 years<sup>2</sup>, the presence of foundries is particularly small. This gap, however, is observed to be filled in Kulim Hi-Tech Park. Meanwhile, Perlis is attracting investment in the solar energy (PV) sector. InvestPerak (undated) described the state's proximity to electronics manufacturing hubs like Klang Valley and Penang as a proposition to investors, with MNCs and home-grown companies such as Unisem and Carssem having operated in Perak for decades.

Malaysia has been a global leader in the resource-based industries (such as in the manufacturing of rubber products, especially rubber medical devices<sup>3</sup>, and palm oil products). There is continued space for growth and opportunities for higher value activities. The high sector multiplier of 2.6 times (calculation by MAVCOM, 2017) for rubber products manufacturing also clearly shows Malaysia's comparative advantage in this sector. One way to escape the dependency on commodity is to address the downstream constraints of these value-added resource products, which are mainly exported (Farfan, 2005). Ali and Ahmad (2009) advocated that the expansion of economic sectors such as the manufacturing sector is a way forward to increase income. This includes policies that encourage high-tech agriculture-based industries and that are targeted at new industries or business.

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<sup>2</sup> This includes semiconductor, light emitting diodes (LED) and electronic manufacturing services (EMS) firms.

<sup>3</sup> Rubber medical devices refer to medical examination and surgical gloves, condoms, catheters, dentals dams, medical rubber sheets, medical tubes and other related products.

In the latest announcement of Kedah Rubber City, the project will focus on innovative, high value and specialised latex and rubber products, precision-engineered rubber products and 'green' rubber products. All this will also contribute to the demand to use Penang Port for external trade. Its first phase consists of 500 acres, jointly developed by the Northern Corridor Implementation Authority, Kedah's state government and the Malaysian Rubber Board. Athurokala and Narayanan (2017) reported that the full scale of the project will cover 1,500 acres of land area. With the government's support and its strategic location near the upstream raw rubber (local and imported from Thailand), downstream manufacturing companies may consider investing or expanding in Kedah Rubber City, and benefit from its proximity to Penang Port. In Perak, Kossan Rubber Industries Bhd, the world's third largest producer of rubber gloves, has announced the construction of an integrated plant in Bidor, Perak with an investment of RM1.5 billion. There are also additional plans to subdivide the land for their suppliers and build an industry-relevant ecosystem in the same project.

While Perlis contributes the lowest share to the national GDP among the four states, Andriess and van Westen (2009) noted that the state has a rather diversified economy with services as its main sector along with some manufacturing, including those by foreign investors, as compared to Satun, its neighbour at the Thai border, which is limited to a small services sector and some processing of primary products, notably a large tuna canning plant. Nevertheless, there are initiatives being undertaken to enhance the economic activities in Perlis (as described in this section and the following sub-sections).

Furthermore, Athukorala and Narayanan (2017) highlighted that one major limitation from NCIA initiatives so far concerns the rural-urban divide – especially targeting the improvement of people living in the agriculture hinterland in the states of Kedah, Perlis and Perak. Given that the agricultural sector contributions to GDP of Kedah, Perak, and Perlis is more than 10% each, the manufacturing of agricultural resource-based outputs can be expanded to take advantage of this.

Athukorala and Narayanan (2017) advocated for trade in high-value foods, for example, processed form of fruits and vegetables, poultry, fish, and dairy products. In 2017, the Ministry of Agriculture and Agro-based Industries approved RM1 million to the Perlis state government for the management of harumanis farming. An additional allocation for research purposes to enhance the quality of mangoes may be considered. More initiatives can be undertaken to move into the value-added manufacturing of agricultural and processed food where demand for these products is less cyclical. The advantage of being in the Indonesia-Malaysia-Thailand Golden Triangle (IMT-GT) has constantly been raised but there can be more benefits to be tapped in the halal and food industry by the four states, and a natural extension to the current economic activities here will be the processing of agricultural outputs.

The volume of trade (both import and export) shows an increase (in value terms) in the past five years for the North Butterworth Container Terminal (NBCT). In the past five years, exports from NBCT increased from RM38 billion in 2014 to RM51 billion in 2018, an increase (2014-2018) of 7.6% (Compound Annual Growth Rate, CAGR), while imports also recorded a CAGR of 8.4%, reaching



RM40 billion in 2018. It is worth noting that about 15-20% of the volume comes from Thailand, and a large volume of goods is from the northern states in Malaysia other than Penang.

In terms of air freight, the value of the air freight trade at Bayan Lepas International Airport is the highest in Malaysia (exceeding the airfreight trade value of KLIA) reflective of export volume from the E&E sector in Penang and the northern states. In the past five years, exports from Bayan Lepas International Airport increased from RM118 billion in 2014 to RM233 billion in 2018, an increase of 15.5% (CAGR), while imports also recorded a CAGR of 6.0%, reaching RM135 billion in 2018.

At the Malaysia-Thailand border, Bukit Kayu Hitam shows continued trade growth. Exports grew by 10.3% (CAGR) between 2014 and 2018, and stood at RM20 billion in 2018. Imports showed an increase of 9.4% (CAGR) in the same period, and stood at RM17 billion in 2018. It is also encouraging to note that Malaysia and Thailand will pursue a single-window system to facilitate the clearance of goods at the border (Malay Mail, 2019). With the available air, sea and land infrastructure, and the planned future infrastructure<sup>4</sup>, there is capacity to handle increased manufacturing output in the northern region. This can be done through an increase in high-value, technology-intensive manufacturing activities, also for the purpose of capturing long-term economies of scale.

In discussing current and related industries to capitalize and tap on, future industrial growth actions planned to be undertaken in the four states, and the infrastructure channels for trade in this sub-section, it is imperative to note that the independent variables of foreign direct investment (FDI), and FDI growth do not result in significant GDP growth by themselves. They have to be accompanied by improvement in productivity and competitiveness, investment in human resources, and upgrading of technological capabilities (Hooi, 2008). Labour productivity in the four states showed an increasing trend in 2015 as compared to 2010, but only Penang's labour productivity exceeded the national labour productivity<sup>5</sup>.

## **2. Trade and investment in the rise of US-China trade war**

In view of the escalating United States-China trade war, This sub-section discusses the United States-China trade war's potential threats and opportunities for the four states. The trade war is a key concern for many economies around the world. Malaysia will not be spared totally from a possible full-scale global trade war (if it happens) given the country's dependency on external trade (Affin Hwang Investment Bank, 2018). The northern states of Malaysia may face challenges in some of the key industries that are most exposed to external trade, and have previously delivered growth.

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<sup>4</sup> For example, announcement of Kulim International Airport project and Bukit Kayu Hitam round clock cargo movement (Ng, 2019).

<sup>5</sup> The author notes that talent upgrading is an important part of enhancing the competitiveness of the four states, but policy recommendation for this is not included in the scope of this study.

Trade data showed some weakness especially in the months of November 2018 and February 2019. Weak results of local E&E companies are indicative of a potential decline in the global supply chain. Resource-based industries are less affected directly by the trade war due to their exclusion from the list of goods impacted by tariffs. This has allowed for the growth of these industries. While the medium to long-term outlook for the E&E industry remains favourable, some of the steps in the current climate for E&E which the four states are involved in are: (1) promotion of capabilities of Malaysia-based companies, in the event of trade diversion occurring; (2) encouragement of firms' involvement in capacity-building initiatives, such as Industry4WRD and Digital Transformation Acceleration Program (DTAP); and (3) facilitation of market participation in 5G value chain and in autonomous vehicles.

Success for competitive advantage can be viewed in terms substantial and sustained exports and/or foreign investment (Gupta, 2015). States in Malaysia are more focused on investment promotion compared to trade promotion as there are more direct benefits for states in terms of job creation, realised investment in targeted economic areas, and positive economic spillovers to other industries. Although it is still a key objective of states, trade promotion is less focused upon. This is partly because there are state investment promotion agencies in each state, while functions of trade promotion are usually incorporated under an existing agency rather than a specialised body. Nevertheless, closer sharing of intelligence with Malaysia External Trade Corporation (MATRADE) ensures synergy of investment.

### **3. The evolving role of the Northern Corridor Implementation Authority (NCIA)**

NCIA was established under the Northern Corridor Implementation Authority Act 2008, and is responsible for providing direction and devising policies and strategies in relation to socioeconomic development in the Northern Corridor Economic Region (NCER). Similar to Athukorala and Narayanan (2018), this study finds that currently available data are inadequate to assess the growth and outcomes of NCIA projects. There is also overlapping of fields covered in available data, which makes it difficult to assess the impact of those projects<sup>6</sup>.

Some of the key projects under phase 2 of the NCIA programme include Kedah Rubber City, Kedah Science and Technology Park, Chuping Valley Development Area, and Perlis Inland Port. How some of these projects developed have been described earlier.

Firstly, the development of key industrial parks in these states, among them Kedah Science and Technology Park, Kedah; Batu Kawan Industrial Park, Penang; Perak Hi-Tech Industrial Park (PHTIP), Perak; Chuping Valley Industrial Area, Perlis need to be benchmarked against the best industrial parks in the Southeast Asian region to ensure that the northern region and Malaysia as a whole continues to attract foreign and domestic investments.

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<sup>6</sup> The author notes that talent upgrading is an important part of enhancing the competitiveness of the four states, but policy recommendation for this is not included in the scope of this study.

Athukorala and Narayanan (2018) highlighted that NCIA’s structure complicates the participation of all states. The NCIA council involves only the states’ Chief Ministers, but lacks formal representation of state officials in project planning and implementation. However, Athukorala and Narayanan (2018) observed noticeable differences after the General Election in 2018. There have been more consultations with the four states, and more trust and responses from individual states to NCIA’s willingness to fill the gaps for certain projects<sup>7</sup>. Taking into consideration the surrounding changes, complementary projects by NCIA should support the common growth of the region as a whole. Formal representation of state officials in NCIA’s working group should also increase effectiveness of its initiatives.

Key points on the competitive advantages/competencies to convert comparative advantages to competitive advantages for industrial growth are summarized in Table 4, based on the framework adapted from Porter (1990) and Gupta (2015).

**Table 4: Summary of competitive advantages/competencies to convert comparative advantages to competitive advantages for industrial growth**

	<b>Kedah</b>	<b>Penang</b>	<b>Perak</b>	<b>Perlis</b>
i. Competencies /resources to benefit from comparative advantage and convert that into competitive advantage	Major manufacturing investments: Electronics & Electrical Products, Non-Metallic Mineral Products, Transport Equipment	Major manufacturing investments: Electronics & Electrical Products, Scientific & Measuring Equipment, Machinery & Equipment	Major manufacturing investments: Rubber Products, Basic Metal Products, Electronics & Electrical Products	Major manufacturing investments: Rubber Products, Fabricated Metal Products
ii. Innovation strategies related to demand factors and product differentiation	Kulim Hi Tech Park as catalyst for E&E investments, including fabrication.  Kedah Rubber City to strengthen resource-based industries manufacturing.  Food industries to benefit from IMT-GT.	Penang has had industrial experience in the E&E sector for more than 45 years; includes semiconductor, light emitting diodes (LED) and electronic manufacturing services (EMS) firms.  Diversification in other related sectors: medical devices, machinery and equipment, avionics.  Food industries to benefit from IMT-GT.	State’s proximity to electronics manufacturing hubs like Klang Valley and Penang as a proposition to investors, with MNCs and home-grown companies such as Unisem and Carssem, have been operating in Perak for decades.  Destination for many resource-based manufacturing firms.  Food industries to benefit from IMT-GT.	Noticeable investment is the solar energy (PV) sector.  Value-add in terms of agro-based industries.  Food industries to benefit from IMT-GT.

<sup>7</sup> For example, the Chief Minister of Penang’s statement that NCIA is willing to do a study on a new airport in Penang (but requires a budget from the ministry) (Ong, 2019). Other projects that are observed to complement the development aspirations of each state via NCIA are GBS@lpoh investments driven by NCIA (Perak State Secretary Office, 2019) and digital library set up at Alor Setar following the successful model of Penang Digital Library.

iii. Innovation strategies related to supply factors and supporting industries	<p>Infrastructure of Penang Port, Penang International Airport, Bukit Kayu Hitam to support the trade activities of the four states.</p> <p>There is a need to increase the manufacturing output in the northern region through an increase in high-value, high-technology manufacturing activities to ensure sustained volume for these infrastructures and to provide long-term economies of scale.</p>
iv. Business environment, government policies and supporting industries	<p>Ongoing US-China trade war: Weak results of local E&amp;E companies are indicative of a potential decline in the global supply chain. Resource-based industries are less affected directly by the trade war due to their exclusion from the list of goods impacted by tariffs. This has allowed for the growth of these industries.</p> <p>National industrial upgrading initiatives such as Industry4WRD and Digital Transformation Acceleration Program (DTAP).</p>

## Concluding Remarks

This brief discusses the comparative and competitive advantages for industrial growth within the concept of ‘prosper thy neighbour’ for the four states in northern Malaysia–Kedah, Penang, Perak and Perlis–and offers a value proposition for shared growth. The discussion highlights the importance of different industries to each state, and the need to capitalize upon existing comparative advantages while working on competitive advantages at the same time.

When the four states are viewed as a whole, more synergistic initiatives and policies can be undertaken for the northern region. In summary, this brief proposes the following modes of action:

- i. States to continue tapping on growing manufacturing industries but to differentiate themselves by carving out niche activities in different segments in the industry.
- ii. States with comparative advantage in resource-based industries to exploit advantages, and to expand into higher-value activities downstream.
- iii. States to seek more opportunities for the manufacturing of agricultural resource-based outputs given that the agricultural sector contribution to GDP of Kedah, Perak, and Perlis is more than 10% each.
- iv. With the available air, sea and land infrastructure, and planned future infrastructure, states should consider the opportunity to increase the manufacturing output in the northern region through high-value, high-technology manufacturing activities. This will sustain the volume supporting this infrastructure and provide long-term economies of scale.
- v. States should improve productivity and competitiveness, investment in human resources, and upgrading of technological capabilities to accompany inflow of investments and increased manufacturing activities.
- vi. Amidst the US-China trade war, some of the steps in current climate for E&E which the four states are involved in, and should improve upon, are: (1) promotion of capabilities of Malaysia-based companies, in the event of trade diversion occurring; (2) encouragement of firms’ involvement in capacity-building initiatives, such as Industry4WRD and Digital Transformation Acceleration Program (DTAP); and (3) facilitation of market participation in 5G value chain and autonomous vehicles.

- vii. NCIA to engage in more consultations with the four states to fill the gaps for certain projects. Formal representation of state officials in NCIA's working group should also increase effectiveness of NCIA initiatives.

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## Appendix

**Table 5: Selected manufacturing industry output indicators, 2015**

State	Value of gross output (RM'000)	Value of intermediate (RM'000)	Value added (RM'000)	Total number of persons engaged	Labour productivity	Salaries & wages paid (RM'000)	Value of fixed assets (RM'000)
National Total	1,141,962,723	884,844,630	257,118,094	2,119,158	121,330	65,495,282	296,800,506
Kedah	56,884,799	45,213,258	11,671,540	97,463	119,754	2,780,965	13,710,862
Penang	155,667,905	121,374,219	34,293,686	272,241	125,968	10,431,125	33,011,204
Perak	45,709,437	35,589,322	10,120,115	138,726	72,950	3,479,498	14,792,242
Perlis	2,503,812	1,810,721	693,091	5,704	121,510	126,571	661,248

*Note: Data for 2010 is published in Athukorala and Narayanan (2018).*

*Source: Annual Economics Statistics – Manufacturing 2015, Department of Statistics Malaysia*

**Table 6: MIDA-approved manufacturing investment for Kedah, Penang, Perak and Perlis, 2014-2018**

Industry	Cumulative approved manufacturing investment, 2014-2018 (RM million)
Food Manufacturing	1,382
Beverages & Tobacco	92
Textiles & Textile Products	438
Leather & Leather Products	55
Wood & Wood Products	692
Furniture & Fixtures	274
Paper, Printing & Publishing	578
Chemical & Chemical Products	2,199
Petroleum Products (Inc. Petrochemicals)	1,649
Rubber Products	3,727
Plastic Products	1,714
Non-Metallic Mineral Products	4,074
Basic Metal Products	3,424
Fabricated Metal Products	1,996
Machinery & Equipment	3,840
Electronics & Electrical Products	28,257
Transport Equipment	4,442
Scientific & Measuring Equipment	4,670
Miscellaneous	206

Source: Author's computation based on data from MIDA

**Table 7: Exports (RM million) by selected sea and air channel in Malaysia, 2013-2018**

Exports (RM million)		2014	2015	2016	2017	2018
Sea	Port Klang	128,663	139,982	148,722	171,188	176,795
	Bintulu	84,987	64,586	52,738	68,471	67,520
	Pasir Gudang, Johor	40,817	48,132	46,483	57,615	69,526
	North Butterworth Cargo Terminal	38,000	43,219	45,008	50,724	50,736
	Tanjung Pelepas Port	27,693	33,739	34,274	38,903	39,273
	Tanjung Gelang/Kuantan Port	17,055	17,309	11,973	9,842	8,458
	Others	132,363	113,749	112,453	134,038	134,377
Air	Bayan Lepas	130,488	140,684	142,827	176,805	232,568
	KLIA, Sepang	60,990	61,183	64,848	82,699	76,495
	Others	5,568	5,310	5,472	7,449	7,136
Land	Tanjung Kupang, Johor	59,606	70,757	79,308	92,445	90,002
	Johor Bahru (Tambak/Causeway)	19,005	20,395	20,260	20,764	17,651
	Bukit Kayu Hitam	13,513	15,155	15,586	16,945	19,997
	Others	6,670	5,791	5,960	7,540	7,528

Source: Department of Statistics

**Table 8: Imports (RM million) by selected sea and air channel in Malaysia, 2013-2018**

Imports (RM million)		2014	2015	2016	2017	2018
Sea	Port Klang	170,262	194,619	201,284	220,924	233,499
	Bintulu	8,104	5,559	9,627	8,587	10,180
	Pasir Gudang, Johor	52,143	58,463	55,058	66,611	74,696
	North Butterworth Cargo Terminal	29,272	30,942	32,635	39,572	40,245
	Tanjung Pelepas Port	12,925	14,359	16,188	16,417	17,088
	Tanjung Gelang/Kuantan Port	10,688	6,548	6,255	11,500	12,558
	Others	123,807	91,848	81,144	116,248	120,408
Air	Bayan Lepas	106,717	109,448	118,666	139,639	134,707
	KLIA, Sepang	76,494	72,028	73,875	96,025	110,729
	Others	9,433	10,124	10,861	10,080	9,008
Land	Tanjung Kupang, Johor	47,837	56,370	57,158	74,119	76,783
	Johor Bahru (Tambak/Causeway)	19,070	18,266	18,119	17,368	15,765
	Bukit Kayu Hitam	12,034	13,429	13,787	16,116	17,261
	Others	4,150	3,609	4,007	5,009	5,053

Source: Department of Statistics

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