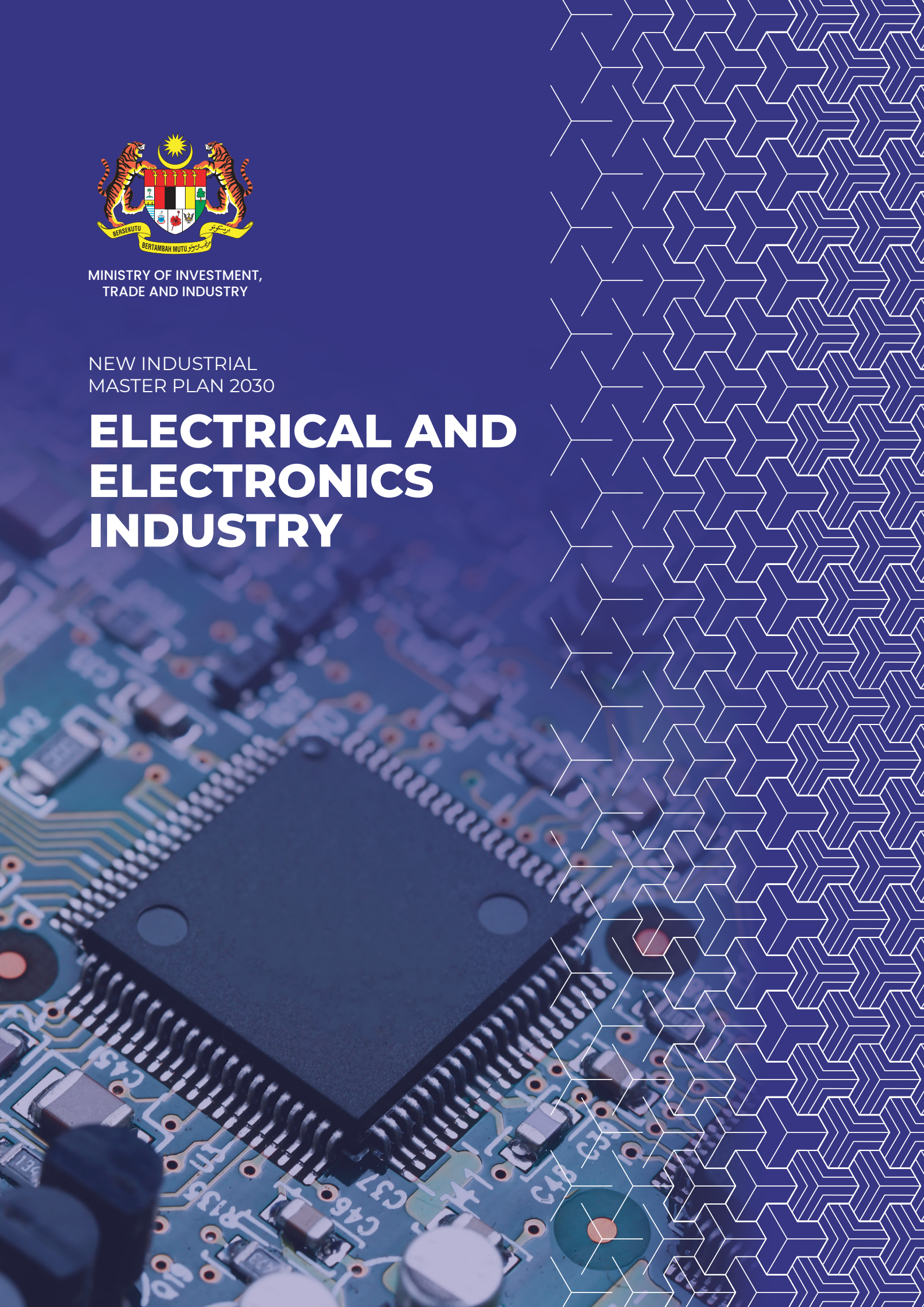


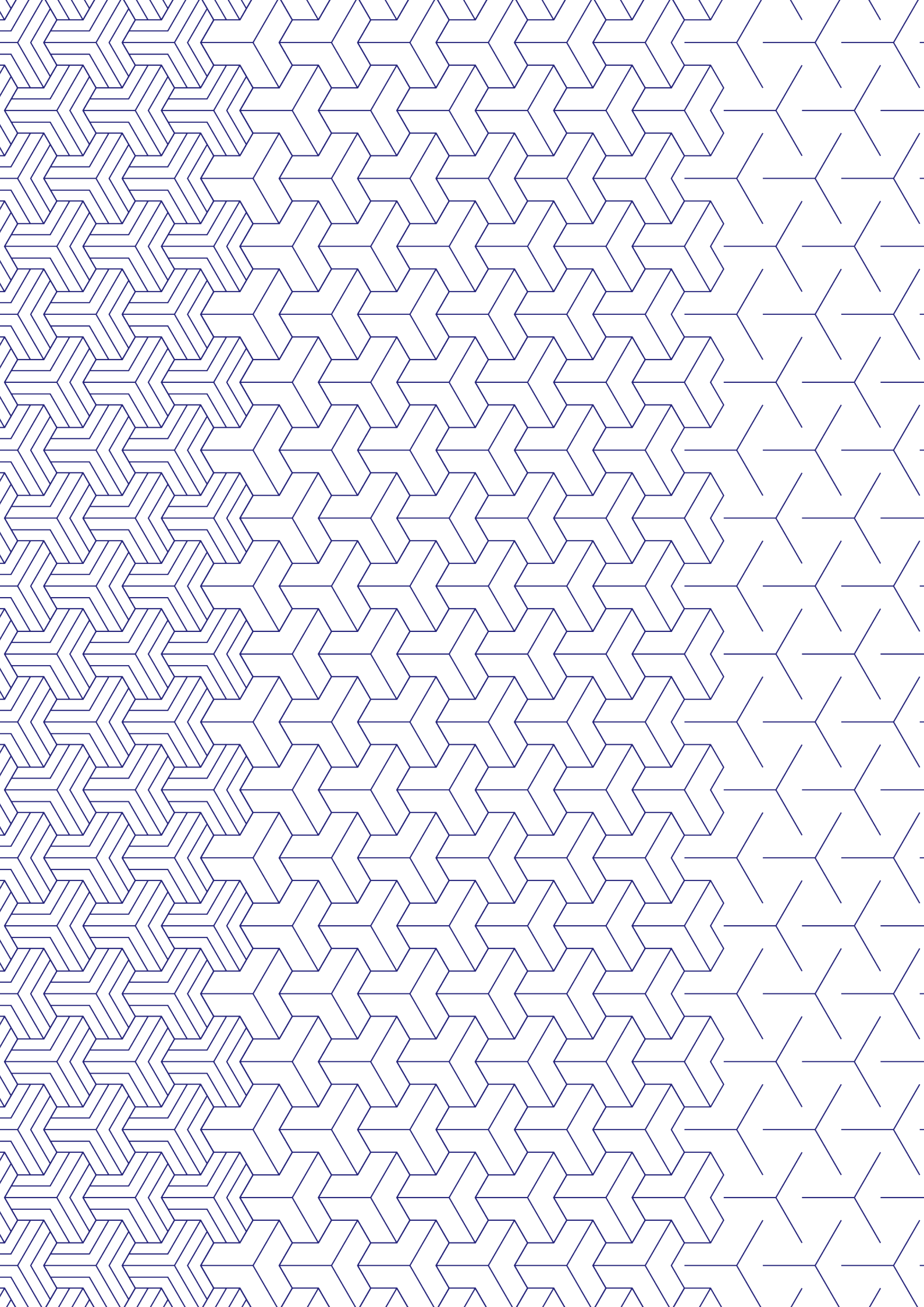


MINISTRY OF INVESTMENT,
TRADE AND INDUSTRY

NEW INDUSTRIAL
MASTER PLAN 2030

ELECTRICAL AND ELECTRONICS INDUSTRY





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PREFACE

Malaysia's strength in the manufacturing sector has been significantly driven by the implementation of robust and forward-thinking Industrial Master Plans, first launched in 1986.

The success of the IMP3 (2006-2020) was anchored on innovation, research and development (R&D) and human capital development to drive high value-added industries to transform Malaysia into a knowledge-based economy.

The journey towards formulating the NIMP 2030 is underscored by the need to build a robust industrial sector as an important prerequisite to achieve socioeconomic prosperity. Three previous iterations of the Industrial Master Plans have driven industrial development in Malaysia, with the Government adopting industrial development strategies relevant to the period to transform the economy. Malaysia flourished from a low-productivity agrarian-based economy and is heading towards achieving developed nation status, underpinned by robust manufacturing and services sectors. The strategy has successfully raised the living standards of the Rakyat and propelled remarkable growth in Gross National Income (GNI) per capita, increasing 34 times between 1967 to 2019, making Malaysia one of the fastest growing economies in modern history.

Industrial policies have since become more diverse and complex, incorporating new imperatives including the integration into the global value chain (GVC), development of indigenous capabilities in a knowledge economy, evolution of environmental, social and governance (ESG) criteria and disruptions from the new industrial revolution. The question is not about the necessity of such policies, but rather what new policies are required and how to proceed.

Given the current challenging environment, benchmarking and learning from other country's experiences are no longer sufficient. Malaysia needs to embark on its own path into uncharted territory, to steer the nation into the challenging future. The combined impact of the new imperatives and the recent pandemic has compelled the Government to rethink Malaysia's industrial strategy.

With the NIMP 2030, Malaysia intends to transform the industry into greater heights, capitalising on emerging global trends, supply chain disruptions, current geopolitical landscape, digitalisation and ESG considerations. These trends are moving at an unprecedented pace and Malaysia has to act fast.

Therefore, the NIMP 2030 is designed to achieve the aspirations in a span of seven years and takes on a Mission-based approach for industrial development. This approach unites Malaysia by encouraging collaboration between the Government and the private sector to rally the industries.

Purpose of the NIMP 2030

The NIMP 2030 sets forth Malaysia's future direction in industrial transformation. It provides a national integrated plan for resilient industrial development until 2030 – setting the fundamentals for future policy development and enabling the industry at all levels. It articulates Malaysia's position and participation in the global economic environment.

The NIMP 2030 serves to:

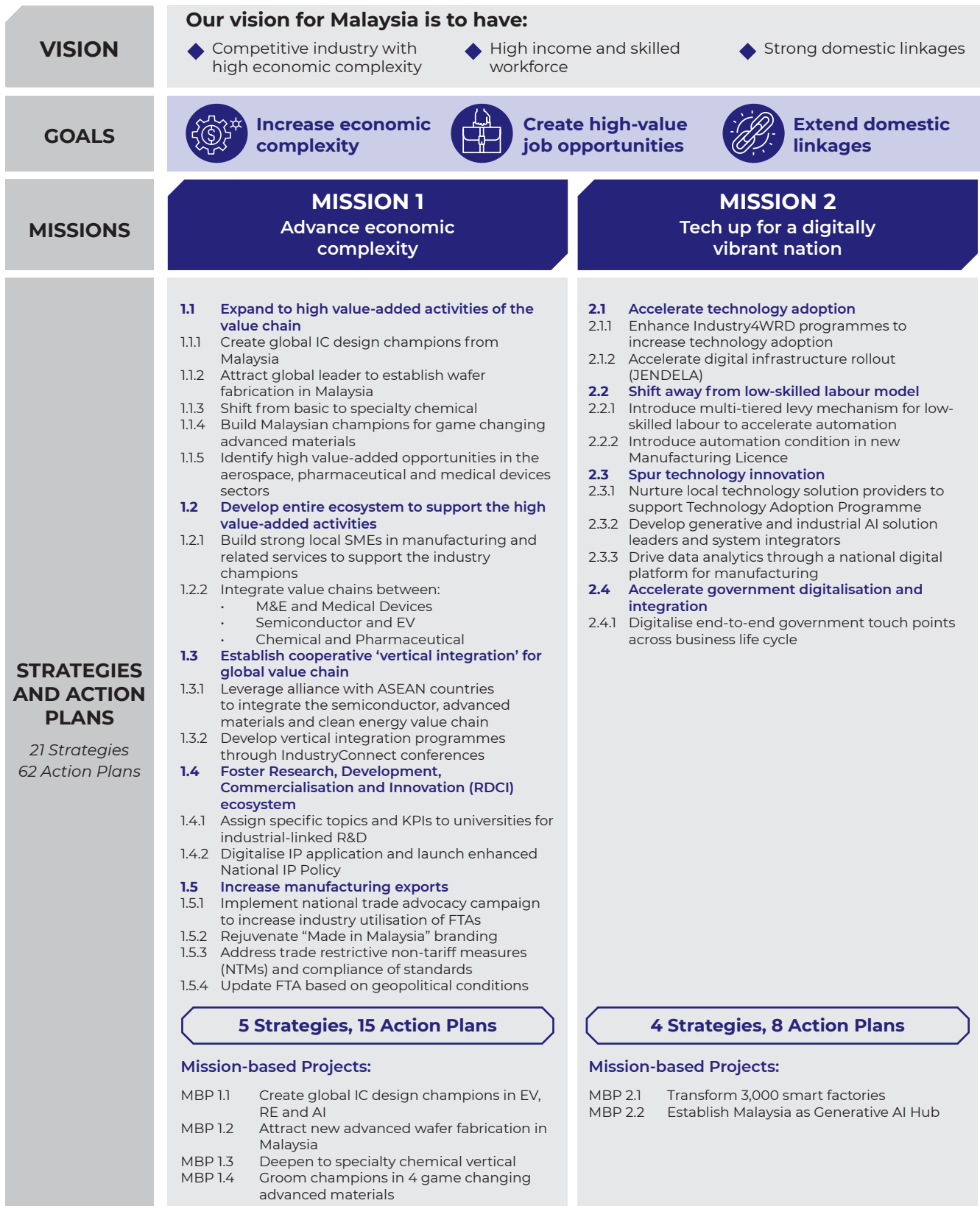
- Provide national strategic direction to lead the industrial development policies;
- Be a conversation piece for investors and other economies on Malaysia's position and direction; and
- Feature the role of the Malaysian Government in shaping the economy.

INTRODUCTION

New Industrial Master Plan 2030

The Missions and Enablers identified will be executed through 21 Strategies and 62 Actions Plans to unlock the needed enabling ecosystems. Several catalytic Mission-based

Projects (MBPs) have been identified to catapult the mission-based implementation. The NIMP 2030 strategic framework is illustrated below:



◆ New and existing industry clusters

◆ Balanced and inclusive participation

◆ Sustainable development

**Develop new & existing clusters****Improve inclusivity****Enhance ESG practices****MISSION 3**
Push for Net Zero**MISSION 4**
Safeguard economic security and inclusivity**ENABLERS****3.1 Accelerate transition towards sustainable practices**

- 3.1.1 Develop sectoral decarbonisation pathways to guide transition
- 3.1.2 Decarbonise "hard-to-abate" sectors
- 3.1.3 Introduce carbon policy, accounting and tax
- 3.1.4 Launch iESG framework and transition programmes

3.2 Transition to renewable and clean energy

- 3.2.1 Enhance adoption scheme for energy efficiency or renewable energy
- 3.2.2 Accelerate availability and accessibility of renewable energy source for the industry

3.3 Catalyse new green growth areas

- 3.3.1 Catalyse EV as a key growth driver
- 3.3.2 Grow carbon capture, utilisation and storage (CCUS) as a new sector
- 3.3.3 Develop circular economy framework for the industry

3.4 Shift towards green infrastructure

- 3.4.1 Accelerate transformation of industrial estates into eco-industrial parks

4.1 Develop resilient supply chain

- 4.1.1 Identify specific supply chain resilience strategies for critical sectors
- 4.1.2 Establish supply chain cooperation and collaboration through G2G and G2B programme
- 4.1.3 Introduce National Mineral Policy for downstream processing of critical minerals

4.2 Foster climate resilient development

- 4.2.1 Develop sectoral adaptation pathways
- 4.2.2 Foster an adaptation industry to provide adaptation products and services (including exports)
- 4.2.3 Instil climate resilience measures for critical economic infrastructure

4.3 Strengthen industrial clusters for regional development

- 4.3.1 Expand clusters for spillover regional impact
- 4.3.2 Align industrial development plan between Federal and States

4.4 Empower Bumiputera participation and create inclusive workforce

- 4.4.1 Uplift capabilities of *Bumiputera* companies in manufacturing via *Tindakan Pembangunan Bumiputera 2030*
- 4.4.2 Develop programme to increase women participation in high-skilled manufacturing employment

E.1 Mobilise financing ecosystem

- E.1.1 Introduce NIMP Industrial Development Fund and NIMP Strategic Co-Investment Fund
- E.1.2 Boost financing for digitalisation and decarbonisation transition
- E.1.3 Establish green *sukuk* to facilitate transition
- E.1.4 Establish supply chain financing for SMEs
- E.1.5 Increase utilisation of the capital market
- E.1.6 Expand the imSME platform to show all available funding options including government funding and capital market
- E.1.7 Review government funding for consolidation

E.2 Foster talent development and attraction

- E.2.1 Leverage mynext and MYFutureJobs for strategic workforce planning to address long-term demand-supply requirement
- E.2.2 Introduce progressive wage system policy
- E.2.3 Improve policy to enable fast and hassle-free access to high-skilled foreign talents
- E.2.4 Expand TVET programmes for high-skilled jobs in critical sectors
- E.2.5 Raise profile of high-tech manufacturing career to attract interest in STEM subjects

E.3 Establish best-in-class investor journey for ease of doing business

- E.3.1 Establish a unified investment strategy and align investment evaluation to new parameters under NIA
- E.3.2 Harmonise and streamline functions and KPIs across IPA landscape
- E.3.3 Review and design competitive, agile and relevant incentives
- E.3.4 Improve One-Stop Portal for seamless investor experience

E.4 Introduce whole-of-nation governance framework

- E.4.1 Establish public-private collaborative councils
- E.4.2 Set up NIMP 2030 Delivery Management Unit
- E.4.3 Develop NIMP 2030 dashboard system

4 Strategies, 10 Action Plans**Mission-based Projects:**

- MBP 3.1 Create decarbonisation pathway role models
- MBP 3.2 Launch locally-manufactured EV
- MBP 3.3 Deploy large-scale CCUS solutions

4 Strategies, 10 Action Plans**4 Strategies, 19 Action Plans**

NIMP 2030 SECTORAL PLAN

There are individual enclosures of 21 sectors included as a supplementary reference to the main NIMP 2030 document.

They provide a view of the respective sectoral perspective in the context of the main NIMP 2030 document, and were developed with reference to individual sectoral roadmaps, where applicable.

The 21 sectors are:

Category	Industry
Priority Sectors	<ol style="list-style-type: none"> 1. Aerospace 2. Chemical 3. Electrical and Electronics (E&E) 4. Pharmaceutical 5. Medical Devices
Sectors	<ol style="list-style-type: none"> 6. Digital and Information and Communication Technology (ICT) 7. Automotive 8. Food Processing 9. Global Services and Professional Services 10. <i>Halal</i> 11. Machinery and Equipment (M&E) 12. Manufacturing-Related Services (MRS) 13. Metal 14. Mineral 15. Palm Oil-based Products 16. Petroleum Products and Petrochemicals 17. Rail 18. Rubber-based Products 19. Shipbuilding and Ship Repair (SBSR) 20. Textile, Apparel and Footwear 21. Wood, Paper and Furniture

This document is the [NIMP 2030 Sectoral Plan – Electrical and Electronics Industry](#).

OVERVIEW OF THE DOCUMENT

This NIMP 2030 Sectoral Plan – Electrical and Electronics Industry (Document) provides insights into the sector and its prospects during the NIMP 2030 period.

This Document offers a comprehensive understanding of the industry's direction during the NIMP 2030 period based on its historical performance, opportunities and strategies to overcome existing challenges and achieve its targets.

The Document is presented in five sections:

1. Background

- This section sets the foundation to help readers understand the industry.
- It delves into the industry's focus area, encompassing its sub-sectors, for a comprehension of the industry's breadth.¹
- Readers will find details about the industry's value chain and its key players, including the relevant industry associations, in this section.
- The section lists the policies that are related to the industry.

2. Performance

- This section reports the industry's performance during specific periods.
- There are two notable periods for the review of the industry's historical performance:
 - the IMP3 period (2006 to 2020); and
 - from 2021 to 2022.
- The performance review of the industry's development includes its investment trends, export and import dynamics, employment figures, value-added and productivity measures.

3. Trends and Opportunities

- This section highlights the opportunities and potential avenues for growth that the industry can leverage during the NIMP 2030 period.

4. Challenges

- This section provides insights into potential obstacles that could impact the industry's growth and development.

5. Strategies and Action Plans

- The final section of the document outlines the future trajectory for the industry.
- This section provides the Strategies and Action Plans that are intended to catalyse the industry during the NIMP 2030 period.
- The Strategies and Action Plans set in this Document have been aligned to the Missions set in the main NIMP 2030 document.

¹ Incentives available for this industry as of time of writing can be found in Appendix 1

SECTION 1 BACKGROUND

Areas Covered

- The electrical and electronics (E&E) industry is classified into four sub-sectors (Table 3.1).

Table 3.1: Sub-sectors of E&E Industry

Sub-sectors	Products/ Activities
i. Electronic components	<ul style="list-style-type: none"> Integrated circuit (IC) design Wafer fabrication LED substrate Epitaxy manufacturing Printed circuit board (PCB) Precision plastic parts
ii. Consumer electronics	<ul style="list-style-type: none"> TV/ Radio receivers Media players Speakers Electronic games Embedded systems
iii. Industrial electronics	<ul style="list-style-type: none"> Computer and peripherals Data storage Office equipment Telecommunication devices Transmitters and routers
iv. Electrical products	<ul style="list-style-type: none"> Electric motors, generators and transformers Solar cells, modules and Balance of Systems (BoS) Wire, cables and batteries Lighting equipment and luminaires Domestic appliances

Source: Ministry of Science, Technology and Innovation (MOSTI)

Value Chain

- The value chain of the E&E industry is illustrated as per Figure 3.1.

Figure 3.1: Value Chain of E&E Industry



Source: New Investment Policy (NIP)

- The industry's value chain is divided into five main processes:
 - research and development (R&D) – focuses on technological advancements and innovation;
 - design – involves conducting activities to create new products or improve existing products;
 - manufacture of components – includes production of various components which are required for final products;
 - assembly, test and packaging (ATP) – involves the process of assembling and integrating the manufactured components into the final products; and
 - marketing, distribution and sales – involves activities related to promoting and advertising the products. This segment is not covered as part of the industry's focus area for the NIMP 2030.

4. Apart from E&E players, the manufacturing of E&E end products includes players such as intellectual property (IP) companies, electronic design automation (EDA) companies and original design manufacturers (ODM).

Market Players

5. Industry players are predominantly small and medium enterprises (SME), accounting for approximately 89.0 per cent of total companies in the industry. These companies serve domestic and international markets.
6. At present, industry players primarily engage in assembly, test and packaging activities (Figure 3.2). There are limited to moderate participation in R&D, design and manufacturing activities.

Figure 3.2: Presence of Industry Players along the Value Chain of E&E Industry

Value Chain		Research and Development (R&D)	Design	Manufacture (of components)	Assembly, Test and Packaging	
Sub-Sectors	Electronic Components	Low Presence	Medium Presence	Low Presence	High Presence	
	Consumer Electronics	Low Presence	Low Presence	Low Presence	High Presence	
	Industrial	Computer Equipment	No Presence	Low Presence	Low Presence	High Presence
		Communication Equipment	No Presence	No Presence	High Presence	Medium Presence
	Electrical	Low Presence	Medium Presence	High Presence	High Presence	

Source: NIP

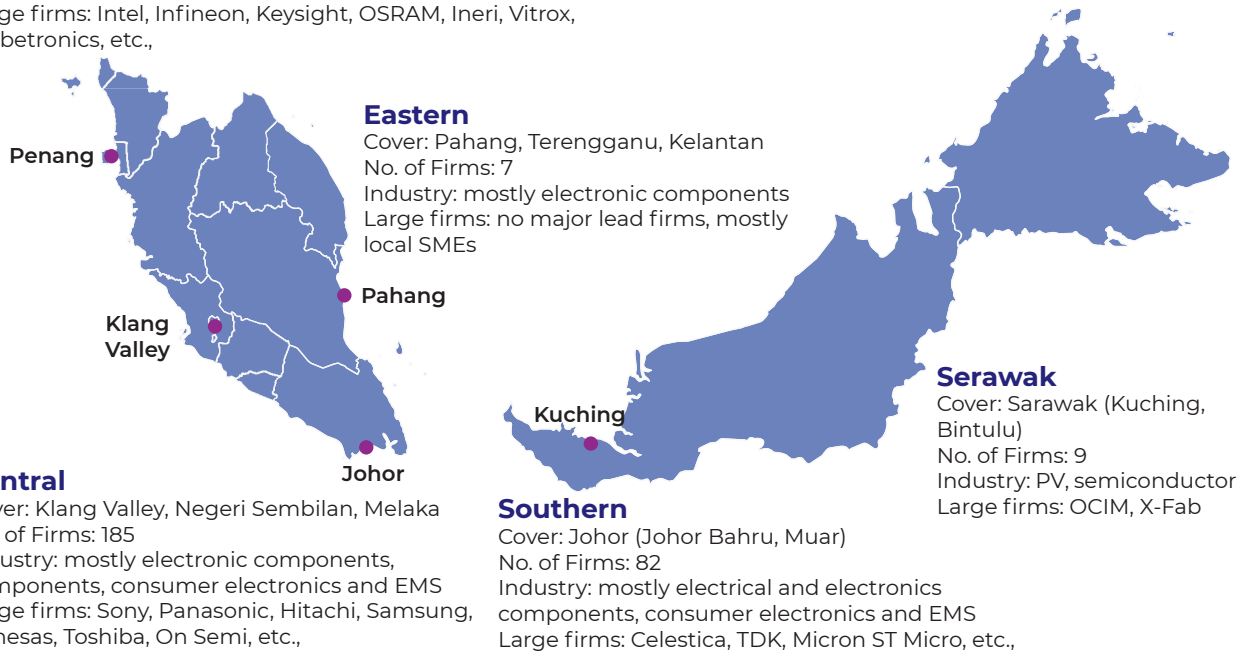
Figure 3.3: Geographic Distribution of E&E Industry Players²**Northern**

Cover: Penang, Kedah (Kulim, Sungai Petani), Perak (Ipoh)

No. of Firms: 212

Industry: mostly electronic components, solar PV, electronic manufacturing services (EMS), LED etc.,

Large firms: Intel, Infineon, Keysight, OSRAM, Ineri, Vitrox, Globetronics, etc.,

**Eastern**

Cover: Pahang, Terengganu, Kelantan

No. of Firms: 7

Industry: mostly electronic components

Large firms: no major lead firms, mostly local SMEs

Pahang

Klang Valley

Johor**Central**

Cover: Klang Valley, Negeri Sembilan, Melaka

No. of Firms: 185

Industry: mostly electronic components, components, consumer electronics and EMS

Large firms: Sony, Panasonic, Hitachi, Samsung, Renesas, Toshiba, On Semi, etc.,

Southern

Cover: Johor (Johor Bahru, Muar)

No. of Firms: 82

Industry: mostly electrical and electronics components, consumer electronics and EMS

Large firms: Celestica, TDK, Micron ST Micro, etc.,

Sarawak

Cover: Sarawak (Kuching, Bintulu)

No. of Firms: 9

Industry: PV, semiconductor

Large firms: OCIM, X-Fab

Source: Ministry of Investment, Trade and Industry (MITI)

7. Malaysia's E&E industry is concentrated in five geographical regions – Northern, Central, Southern, Eastern and Sarawak (Figure 3.3).
 - i. Penang as the leading E&E hub focuses mostly on the manufacturing of semiconductor components.
 - ii. Klang Valley and Seremban focus primarily on consumer electronics and other electrical end-products.
 - iii. Johor focuses on mostly manufacturing-related services (MRS) and semiconductor back-end operations.
 - iv. East Coast states such as Pahang, Terengganu and Kelantan are mostly dominated by SME.
 - v. Sarawak mainly focuses on producing raw materials for the industry.
8. Industry associations in Malaysia's E&E industry play important roles in representing the interest of manufacturers, influencing regulations and safeguarding the welfare of manufacturers and consumers. Non-exhaustive examples of these associations include:
 - i. Federation of Malaysian Manufacturers (FMM);
 - ii. Malaysia Semiconductor Industry Association (MSIA);
 - iii. The Electrical and Electronics Association of Malaysia (TEEAM); and
 - iv. Malaysia Photovoltaic Industry Association (MPIA).
9. Several Ministries and Agencies have prominent roles in Malaysia's E&E industry including:
 - i. Ministry of Investment, Trade and Industry (MITI);
 - ii. Malaysian Investment Development Authority (MIDA); and
 - iii. Malaysia External Trade Development Corporation (MATRADE).

² Note: The number of companies illustrated herein are based on data gathered from MIDA's "Malaysia E&E Discovery" databased and is only intended to provide a general profile of the five E&E cluster in Malaysia. The actual number of E&E companies may be more than those indicated herein

Policies, Laws and Regulations

10. The industry's development is guided by:
 - i. Twelfth Malaysian Plan, 2021-2025 (RMKe-12);
 - ii. Malaysia Solar Industry Roadmap 2030;
 - iii. Industry4WRD: National Policy on Industry 4.0 (Industry4WRD); and
 - iv. Electrical and Electronics (E&E) Roadmap: Technology Development 2021-2030.
11. Laws related to the E&E industry are:
 - i. Industrial Co-ordination Act (ICA) 1975; and
 - ii. Promotion of Investment Act (PIA) 1986.

SECTION 2 PERFORMANCE

IMP3 Focus and Performance

12. During the IMP3 period (2006 to 2020), the E&E industry focused on seven areas:
 - i. strengthening and deepening the semiconductor segment;
 - ii. deepening and widening the development of the ICT industry;
 - iii. intensifying R&D and design activities;
 - iv. promoting the application of new and emerging technologies;
 - v. integrating the industry into the regional and global supply chain;
 - vi. networking workforce; and
 - vii. strengthening the institutional support for further development of the industry.
13. During this period, the E&E industry contributed significantly to Malaysia's Gross Domestic Product (GDP), accounting for 6.8 per cent (RM95.8 billion) of total GDP.
14. The E&E industry was the largest contributor to Malaysia's manufacturing sector, with investments totalling RM186.7 billion during the IMP3 period.
15. As the 12th largest exporter of E&E products and the sixth largest exporter of semiconductor globally, the industry's export contributed 38.3 per cent of the national exports in 2022.

Investments

16. Investment performance (2006 to 2022) of the E&E industry is recorded in Table 3.2.

Table 3.2: Approved Investments of E&E Industry

Items	Units	IMP3			2021	2022	2021-2022
		2006	2020	2006-2020			
Total Investment	RM billion	10.1	15.6	186.7	148.0	29.3	177.2
Domestic Investment	RM billion	1.5	2.1	17.8	1.7	1.4	3.1
Foreign Investment	RM billion	8.6	13.6	168.9	146.3	27.9	174.1
Number of projects	#	176	148	1,849	94	106	200
Employment	persons	24,441	19,541	344,505	28,362	27,072	55,434

Source: MIDA

17. During the IMP3 period, a total of 1,849 projects were approved in the E&E industry with a total investment of RM186.7 billion. These investments committed a total of 344,505 job opportunities.
18. In 2021 and 2022, a total of 200 projects were approved with a total investment of RM177.2 billion. These investments committed a total of 55,434 job opportunities.
19. Overall, the industry's investment trend was attributed to:
 - i. expansion of local operations by foreign multinational corporations (MNC), such as Intel, Infineon and OSRAM; and
 - ii. the growing demand due to increased adoption of automation and Industry 4.0 technology in industries such as automotive, medical and transportation.
20. From 2006 to 2022, 1,641 (80.1 per cent) of the 2,049 approved projects were implemented.

Exports

21. Export performance (2006 to 2022) of the E&E industry is depicted in Table 3.3.

Table 3.3: Exports of E&E Industry

Item	IMP3			2021	2022	2006-2020	2020-2021	2021-2022
	2006	2020	2006-2020			CAGR ³	Annual Growth	
Exports (RM billion)	280.3	386.3	4,292.4	456.0	593.5	2.3%	18.0%	30.2%

Source: MATRADE

22. During the IMP3 period, the industry's exports grew by a CAGR of 2.3 per cent from RM280.3 billion (2006) to RM386.3 billion (2020).
23. In 2021 and 2022, exports increased further by 18.0 per cent and 30.2 per cent, totalling RM456.0 billion and RM593.5 billion respectively.
24. The upward trend in exports can be attributed to several factors, such as:
- rise in demand of the smart mobility sector;
 - higher demand for semiconductor – increased use of electronics due to the shift towards remote working arrangement, online learning and digitalisation during the COVID-19 pandemic; and
 - global shift towards automation technologies creating higher demand for sensors, controllers and embedded systems.
25. In 2022, major export destinations included:
- Singapore (RM115.3 billion, 19.4 per cent);
 - United States (US) (RM96.0 billion, 16.2 per cent);
 - China (RM81.0 billion, 13.7 per cent);
 - Hong Kong (RM78.9 billion, 13.3 per cent); and
 - Taiwan (RM30.5 billion, 5.1 per cent).
26. In 2022, top exported products were:
- semiconductor (RM386.9 billion, 65.2 per cent);
 - telecommunication equipment and parts (RM51.1 billion, 8.6 per cent);
 - automatic data processing machines (RM33.8 billion, 5.7 per cent);
 - electrical machinery and apparatus (RM31.8 billion, 5.4 per cent); and
 - electrical apparatus for electrical circuits and printed circuits (RM24.5 billion, 4.1 per cent)

³ Compound annual growth rate

Imports

27. Table 3.4 presents the import performance of the E&E industry (2006 to 2022).

Table 3.4: Imports of E&E Industry

Item	IMP3			2021	2022	2006-2020	2020-2021	2021-2022
	2006	2020	2006-2020			CAGR	Annual Growth	
Imports (RM billion)	208.5	253.0	3,097.8	314.5	393.5	1.4%	24.3%	25.1%

Source: MATRADE

28. During the IMP3 period, the industry's imports grew by a CAGR of 1.4 per cent from RM208.5 billion (2006) to RM253.0 billion (2020).
29. In 2021 and 2022, the industry's imports increased further by 24.3 per cent and 25.1 per cent, totalling RM314.5 billion and RM393.5 billion – influenced by Malaysia's position as a major player in the global market, accounting for 7.0 per cent of global semiconductor trade and approximately 13.0 per cent of global semiconductor ATP.
30. In 2022, major import sources included:
- China (RM110.1 billion, 28.0 per cent);
 - Taiwan (RM76.7 billion, 19.5 per cent);
 - US (RM42.3 billion, 10.7 per cent);
 - Singapore (RM38.4 billion, 9.8 per cent); and
 - Japan (RM28.4 billion, 7.2 per cent).
31. In 2022, major import products were:
- semiconductor devices, ICs, transistors and valve (RM255.3 billion, 64.9 per cent);
 - electrical apparatus for electrical circuits and printed circuits (RM36.7 billion, 9.3 per cent);
 - telecommunication equipment and parts (RM27.1 billion, 6.9 per cent);
 - electrical machinery and apparatus (RM20.4 billion, 5.2 per cent); and
 - automatic data processing machines (RM15.7 billion, 4.0 per cent).

Value-added

32. The E&E industry's value-added (GDP) performance (2006 to 2022) is recorded below (Table 3.5).

Table 3.5: Value-added of E&E Industry

Item	IMP3		2021	2022	2006-2020	2020-2021	2021-2022
	2006	2020			CAGR	Annual Growth	
Value-added ⁴ (RM billion)	51.1	81.2	93.6	107.8	3.4%	15.2%	15.1%

Source: Department of Statistics Malaysia (DOSM)

⁴ Value-added is measured by the GDP of the industry; 2006 GDP data is based on constant 2005 prices, while 2020 to 2022 data are based on constant 2015 prices

33. During the IMP3 period, the industry's GDP contribution grew by a CAGR of 3.4 per cent from RM51.1 billion (2006) to RM81.2 billion (2020).
34. In 2021 and 2022, the industry's GDP contribution grew by 15.2 per cent and 15.1 per cent to RM93.6 billion and RM107.8 billion respectively.
35. Increased production of semiconductor was a key contributor to the industry's GDP growth.

Employment

36. The E&E industry's employment (2019 to 2022) is tabulated below (Table 3.6).

Table 3.6: Employment in E&E Industry

Item	IMP3		2021	2022	2019-2022
	2019	2020			CAGR
Employment⁵ (persons)	422,257	417,390	444,399	469,035	3.6%

Source: DOSM

37. Employment in the E&E industry grew by a CAGR of 3.6 per cent from 422,257 persons (2019) to 417,390 persons (2022).
38. The rise in employment was attributed to the MNC establishing manufacturing plants and expanding existing operations in Malaysia. These projects have created new job opportunities within the manufacturing sector including supporting roles such as finance, procurement and human resources.

Labour Productivity

39. Performance of the industry's labour productivity (2019 to 2022) is tabulated as follows (Table 3.7).

Table 3.7: Labour Productivity of E&E Industry

Item	IMP3		2021	2022	2019-2022
	2019	2020			CAGR
Labour Productivity⁶ (RM)	187,227	194,604	210,601	229,729	7.1%

Source: DOSM

40. The labour productivity of the E&E industry grew by a CAGR of 7.1 per cent from RM187,227 (2019) to RM229,729 (2022).
41. The productivity growth was contributed by the increasing demand in E&E products, such as semiconductors with growing demand for electronics including smartphones, computers and medical devices.

⁵ This employment data is based on Monthly Manufacturing Statistics December 2022 and includes electrical and electronics industry. Due to the change in methodology for employment statistics tabulation in 2019, industry's employment breakdown from 2006 to 2018 is not available

⁶ Annual labour productivity is derived from value added per employment

SECTION 3 TRENDS AND OPPORTUNITIES

42. Moving forward, the E&E industry is expected to expand significantly driven by growth of semiconductors.
43. The global semiconductor and electronics market size is expected to double in size, reaching RM5.4 trillion⁷ by 2030.⁸ Factors contributing to this growth includes:
 - i. rise in emerging technologies which requires semiconductors (i.e. Internet of Things (IoT), artificial intelligence (AI), Electrical Vehicles (EV), 5G);
 - ii. increase in demand for higher performance semiconductor; and
 - iii. growing use of telecommunication devices, which is expected to reach 7.5 billion users by 2025.⁹
44. These opportunities include developing new industrial clusters, shifting towards higher value-added activities of the value chain and outsource manufacturing.
45. This prospective growth has created opportunities for Malaysia to expand and strengthen the local industry, enabling it to remain competitive globally.

Industrial Clusters

46. At present, Malaysia's E&E clusters primarily lies in the Northern, Central and Southern regions of the country. Each region exhibits diversity in production, encompassing a wide array of sub-sectors.
47. The industry has the opportunity to develop industrial clusters focusing on IC Design by leveraging on Malaysia's strength in semiconductors.
48. These clusters could consist of incubators with shared facilities, such as IC design tools, test laboratories and shared corporate services as well as wafer fabrication firms as it plays a significant role in the production of ICs.
49. Participation in the industrial clusters could include MNC, local SME, academia, research institutes and other parties which provides mutual benefit.
50. Refer to Action Plan 2 (AP2) in Section 5 for strategies and action plans related to industrial clusters.

Value-Added Activities along the Value Chain

51. Currently, the industry players are focused on the back-end activities of the value chain such as assembly, test and packaging.
52. This presents an opportunity for the industry to expand towards higher value-added activities of the value chain such as R&D, design and development (D&D) and embedded system design. For example, within the semiconductor value chain, industry players need to expand towards R&D, IC design and wafer fabrication.

⁷ USD1.2 trillion, converted based on exchange rate USD1.0 to RM4.48

⁸ Source: AT Kearney

⁹ Source: Statista

53. Industry players could consider increasing the value-added component through adopting higher level of technologies in existing processes. For example, in terms of assembly, testing and packaging, industry players should adopt a higher level of technology in advanced packaging such as Fan-Out Wafer-Level Packaging (FO-WLP) and Chiplet die-to-die packaging.
54. The industry has the opportunity to increase its capability and competency of Automation and Test Equipment (ATE) amongst Malaysian companies through increased support for E&E manufacturing investment.
55. Refer to Action Plan 4 (AP4), Action Plan 9 (AP9) and Action Plan 10 (AP10) in Section 5 for strategies and action plans related to higher value-added activities of the value chain.

Outsource Manufacturing

56. The E&E industry operates in a highly competitive setting which requires high capital investments, that serve as entry barriers for SME. However, this provides SME with an opportunity to utilise outsource manufacturing firms or external contract manufacturers.
57. This prospect allows SME to focus on their core competencies (i.e. product design, marketing, etc.) while delegating the manufacturing process to the expertise of the outsourced manufacturers. This strategy will lower production cost and widen access to specialised manufacturing capabilities and scalability, among others.
58. The industry could encourage cooperation between SME and local manufacturing related services and ODM to take advantage of this opportunity. As result, SME's participation in higher value-added activities along the value chain can be increased, concurrently boosting the production of Malaysian-made products and systems.
59. Refer to Action Plan 8 (AP8) in Section 5 for strategies and action plans related to outsource manufacturing.

SECTION 4 CHALLENGES

Domestic Value-added Activities

60. Despite accounting for 89.0 per cent of the local market share, SME contribute approximately 9.0 per cent of the overall industry value-add. This is caused by high value-added activities being capital intensive which poses as a challenge particularly for SME.
61. The industry could leverage on the strengths of existing MNC, Government-linked companies (GLC) and Government-linked investment companies (GLIC) in the domestic landscape to address this challenge.
62. This can be done through fostering collaboration with local SME and large local companies (LLC) as well as encouraging and incentivising MNC to relocate their regional and shared services to Malaysia. The collaboration would aid in several areas including knowledge transfer, technology upgrading and market expansion.
63. Through these efforts, capital opportunities for local SME and LLC will be wider, allowing them to shift towards higher value-added activities as well as comply with environmental, social and governance (ESG) requirements within their processes.
64. This leads to greater industrial development, thus increasing Malaysia's position in the E&E global markets.
65. Refer to Action Plan 5 (AP5) and Action Plan 3 (AP3) in Section 5 for strategies and action plans related to increasing domestic value-add.

Assembly, Test and Packaging

66. The increase in global usage of technologies such as AI, IoT and big data analytics (BDA) are factors that have driven the demand for semiconductors.
67. Semiconductor ATP activities are labour intensive. To enhance ATP capabilities, increased adoption of Industry 4.0 technologies is required. Utilisation of emerging technologies, such as collaborative robots (COBOT), could potentially automate processes that were previously deemed non-automatable. Adoption of AI in planning, production and quality assurance process contributes to boosting productivity.
68. Advancing ATP would reduce the industry's dependency on labour to strengthen Malaysia's semiconductor capabilities and sustain the industry's competitiveness.
69. Refer to Action Plan 1 (AP1) and Action Plan 6 (AP6) in Section 5 for strategies and action plans related to ATP.

Research and Development

70. Despite being significantly dependent on innovation, the E&E industry engages in limited R&D activities.
71. There is a mismatch between suppliers of research from universities and industry demand. Universities predominantly focuses on basic research and aim to publish discoveries, while industry players conduct minimal R&D to improve processes.
72. It is crucial to revise the roles and functions of public research institutes (PRIs) to address this challenge. PRIs provide support to the industry in terms of access to expertise, infrastructure and technologies to conduct R&D.
73. R&D activities focus area could include the adoption of Industry 4.0 technologies.
74. Refer to Action Plan 7 (AP7) in Section 5 for strategies and action plans related to strengthening roles of PRIs.

SECTION 5 STRATEGIES AND ACTION PLANS

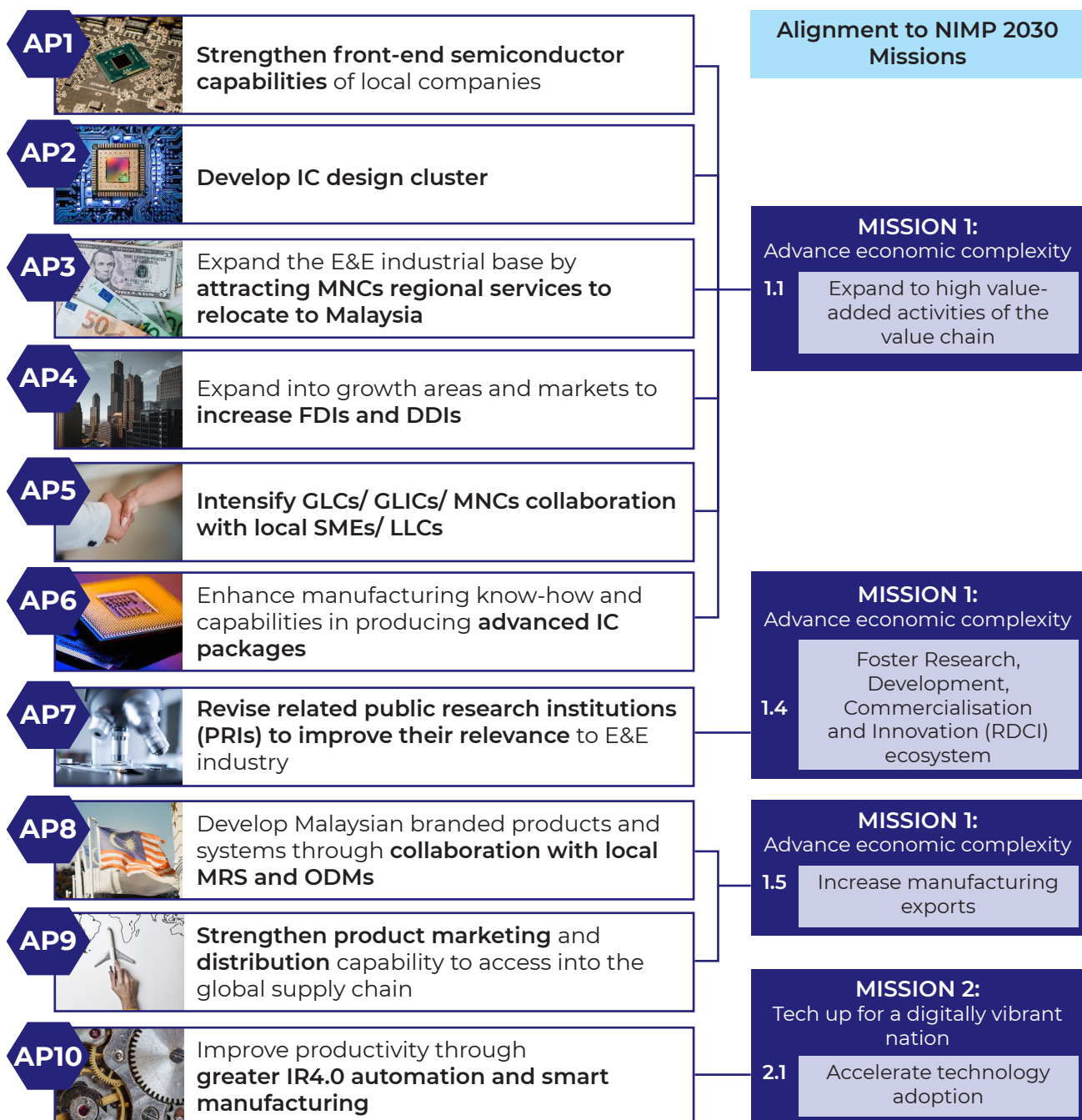
NIMP 2030 Focus

75. During the period of the NIMP 2030, the industry will continue to:
- enhance manufacturing capabilities and capacities through Industry 4.0 automation and manufacturing; and
 - increase integration efforts to expand to the global economy.

Action Plans

76. Strategies and Action Plans relating to the NIMP 2030's Missions and Enablers are applicable to this industry (Figure 3.4).

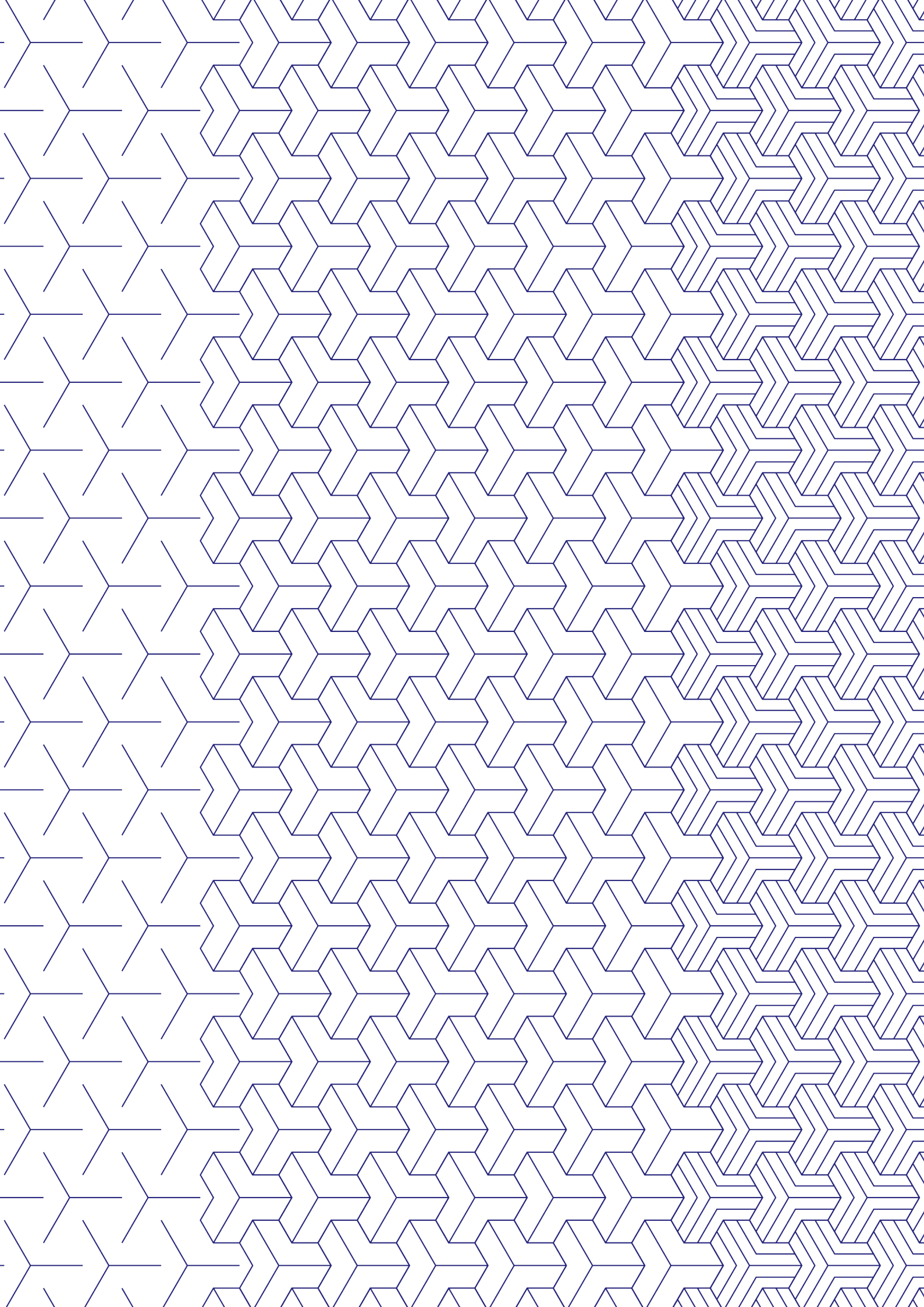
Figure 3.4: Strategies and Action Plans for E&E Industry

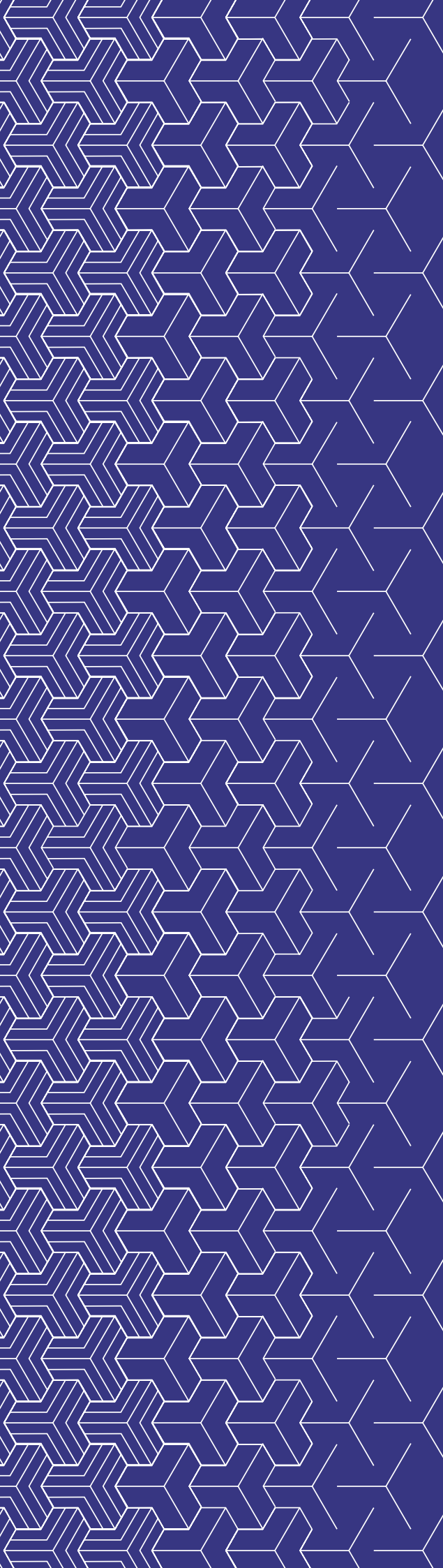


APPENDIX 1 INCENTIVES

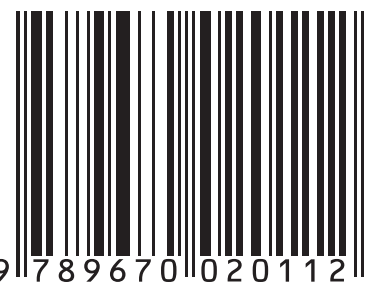
There is an array of incentives offered for key players of E&E industry, these include the following:

Incentives	Agency
Pioneer Status (PS)	Malaysian Investment Development Authority (MIDA)
Investment Tax Allowance (ITA)	
Import Duty Exemption	
Incentives for High Technology Projects	
Incentives for Strategic Projects	
Reinvestment Allowance	Inland Revenue Board of Malaysia (LHDN)





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