



ELECTRICAL AND ELECTRONICS INDUSTRY



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STRATEGIES AND POLICIES

TARGETS

1.01 During the IMP3 period, the electrical and electronics (E&E) industry is expected to undergo rapid expansion and diversification and maintain its position as the largest exporter of manufactured goods. For the period, targets set for investments and exports are:

- total investments of RM82.4 billion; and
- exports to reach RM738.9 billion in 2020 (Table 1.1).

TABLE 1.1

PROJECTIONS FOR THE ELECTRICAL AND ELECTRONICS INDUSTRY

	2006-2010	2011-2015	2016-2020	2006-2020	2006-2020
	(RM billion)				Average Annual Growth (%)
Investments	19.9	27.1	35.4	82.4	7.2
Investments per year	4.0	5.4	7.1	5.5	n.a. ¹
Exports (end period)	411.7	558.5	738.9	738.9	7.1

Note: ¹ Not applicable

Source: Ministry of International Trade and Industry

STRATEGIC THRUSTS

1.02 Towards realising the objectives and targets set for the industry, seven strategic thrusts have been set:

- (1) strengthening and deepening the semiconductor sub-segment;
- (2) deepening and widening the development of the ICT industry value chain;
- (3) intensifying R&D and design activities;
- (4) promoting the application of new and emerging technologies;

- (5) integrating the industry into the regional and global supply chain networks;
- (6) making available a sufficient supply of highly skilled and innovative workforce; and
- (7) strengthening the institutional support for the further development of the industry.

(1) STRENGTHENING AND DEEPENING THE SEMICONDUCTOR SUB-SEGMENT

- 1.03 The industry will be further strengthened through the realisation of a fully developed semiconductor cluster, covering the North-Western Corridor, including Pulau Pinang, Perak, Kulim High Technology Park and the neighbouring industrial areas in Kedah. The Federal Government, in collaboration with the relevant State Governments, will identify and designate these areas to cater for the development of the entire semiconductor value chain.
- 1.04 The development of the semiconductor value chain will involve:
 - core activities, such as design centres for integrated circuits and fabless houses, slicing and polishing of silicon wafers, photo masking, wafer fabrication and assembly, testing and packaging;
 - support industries, such as metal fabrication (including lead frames, moulds and dies, and automation equipment), bonding wires, surface treatment (including plating and machining), engineering plastics (including magazines and anti-static trays), speciality chemicals and gases, clean room equipment and accessories, and recycling of silicon wafers;
 - support services, such as failure analysis, burn-in testing and engineering and clean room maintenance;
 - high quality infrastructure, utilities and common facilities, for example, waste management and disposal system;
 - enhancing the Institute of Microelectronics to serve as the Centre of Excellence for semiconductors in areas such as R&D, design of integrated circuits, wafer fabrication, testing and packaging, training and other related services;
 - establishing dedicated training institutes, in collaboration with the industry and international bodies; and
 - encouraging other leading semiconductor companies to invest in the core activities. More SMEs will also be encouraged to become suppliers to the core semiconductor manufacturers.

(2) DEEPENING AND WIDENING THE DEVELOPMENT OF THE INFORMATION AND COMMUNICATION TECHNOLOGY VALUE CHAIN

1.05 The industrial electronics segment will be further developed through the enhancement of the ICT industry value chain. The value chain, presently centred around MSC Malaysia in Klang Valley, will be progressively expanded to designated areas across the country. Leading multinational ICT companies and local SMEs will be encouraged to establish or expand their operations in these areas. Collaborations, through strategic partnerships and joint ventures, between the MNCs and local SMEs will be promoted.

1.06 The designated areas will be complemented with the full range of activities along the value chain:

- core activities
 - ICT services, such as R&D, software development, multimedia content, supply chain management, business process outsourcing and internet service providers;
 - ICT products, such as computers (servers, desktops, notebooks, palmtops and other related peripherals), multimedia equipment and telecommunications equipment (handheld devices, base stations, facsimile machines, scanners, and networking equipment and devices); and
 - ICT support parts and components, such as hard disk drives, magnetic heads, data storage media, printer heads and laser pick-up units.

The application of advanced technologies, such as flat panel displays, wireless communication technologies, microcomputers and photonics, will be promoted in these areas; and

- infrastructure facilities
 - broadband networking facilities;
 - wireless communication equipment and devices;
 - information kiosks; and
 - wireless internet connections in designated areas (hotspots).

(3) INTENSIFYING RESEARCH AND DEVELOPMENT AND DESIGN ACTIVITIES

1.07 Measures will be introduced to promote the specialisation of R&D activities and the creation of Centres of Excellence among existing R&D centres in public universities and research institutes, to avoid the duplication in research

areas and facilitate the development of new and emerging technologies. Four public universities will be designated as Centres of Excellence in specific areas:

- Institute of Microelectronics, located in *Universiti Sains Malaysia*, Pulau Pinang - in semiconductors;
- *Universiti Teknologi Malaysia*, Johor and Multimedia University, Cyberjaya - in ICT;
- *Universiti Kebangsaan Malaysia*, Selangor - in micro-electromechanical systems; and
- *Universiti Malaya*, Kuala Lumpur - in photonics.

These centres will be responsible in providing technology support, R&D facilities, incubators for new start-up companies, market intelligence and access to funding for the industry. Collaborations between the centres and the relevant industries will be initiated to enable effective transfer and exchange of know-how. The Government will provide sufficient support to equip the centres with the required infrastructure and resources.

1.08 Measures will be undertaken to enhance R&D activities in the industry, including:

- enhancing the incubator programmes of Government-led research institutes and technology parks to provide a more conducive environment for start-up companies among SMEs;
- encouraging Government-linked companies (GLCs) involved in the industry to intensify their R&D activities in new and emerging technologies;
- considering more attractive incentives to promote R&D activities among domestic companies; and
- strengthening and enforcing the regulations on intellectual property (IP) to provide greater confidence to potential investors in technology and R&D activities.

1.09 A more conducive working and living environment will be created for researchers. Measures include:

- reviewing the rules and regulations in public universities to enable researchers to participate in the commercialisation of their research work, as stakeholders or joint-venture partners; and
- providing due recognition and instituting an attractive reward system to enhance the image of researchers. This will include granting of national awards, upgrading their salary scales and improving their working and living conditions.

(4) PROMOTING THE APPLICATION OF NEW AND EMERGING TECHNOLOGIES

1.10 The application of new and emerging technologies will be encouraged to improve the competitiveness of domestic companies:

- nanotechnology - for medical products and devices;
- micro-electromechanical systems - for telecommunications, automotive electronics, vehicle sensors and airbags, and optical switchings;
- photonics - for ICT, imaging and medical devices;
- wireless technologies - for mobile communication and data transfer; and
- advanced display technology - for thin-film transistors and liquid crystal displays (TFT-LCD) and organic light emitting diodes (OLEDs).

1.11 The Government, in collaboration with the industry, will formulate and implement a comprehensive action plan to enable all stakeholders to gain optimum benefits from these technologies. The plan will include areas such as R&D, human resource development (HRD), infrastructure and other institutional support.

(5) INTEGRATING DOMESTIC COMPANIES INTO THE REGIONAL AND GLOBAL SUPPLY CHAIN NETWORKS

1.12 Measures will be undertaken to nurture existing domestic companies with growth potential to expand and integrate into the regional and global supply chain networks, as well as become major producers on their own. The measures include:

- assisting and facilitating local companies to expand into the potential growth areas of the supply chain;
- promoting R&D and D&D to develop and enhance indigenous technological capabilities;
- promoting external linkages with the global E&E cluster through outsourcing and offshoring of various activities in the value chain;
- encouraging M&As, as well as strategic partnerships, among and across related industries;
- promoting outward investments by Malaysian companies in key markets; and
- encouraging the compliance of Malaysian made E&E products with international standards and certifications.

(6) MAKING AVAILABLE SKILLED WORKFORCE

1.13 Measures will be undertaken in the development of the required human resources in the industry to ensure that skilled personnel and qualified workforce will be readily available, including:

- introducing special courses in universities in the areas of physics, chemistry, engineering, microelectronics, photonics and material science. The number of science and engineering graduates undertaking post-graduate studies, especially in these areas, will be increased. The universities and their research facilities will be provided with modern laboratories;
- considering attractive benefits for post-graduate and post-doctoral fellows, to generate a pool of post-doctoral fellows with the relevant expertise in the industry; and
- strengthening collaborations between universities and the industry to ensure that the skilled workforce meets the requirements of the industry, including internship and exchange programmes to encourage the mobility of skilled research personnel and graduates.

(7) STRENGTHENING THE INSTITUTIONAL SUPPORT

1.14 Measures will be undertaken to strengthen the institutional support for the further development of the industry:

- **Enhancement in total factor productivity**

Continuous improvements of the productivity performance of the industry will be encouraged to sustain the competitiveness of Malaysian E&E products in the global market. Initiatives to enhance the growth contribution of TFP in the industry include:

- upgrading the quality of the workforce through collaborations between universities and the industry; and
- undertaking internship and exchange programmes to facilitate the matching of skills requirements by the industry.

- **Support schemes**

A comprehensive package of support schemes will be formulated to assist public research institutes and encourage private sector participation in the growth initiatives:

- creation of a semiconductor cluster;
- enhancement of the ICT industry value chain;
- productivity improvements through mechanisation and automation;

- promotion and intensification of R&D, including prototyping and commercialisation;
- application of new and emerging technologies;
- outward investments, including M&As;
- creation of Centres of Excellence; and
- utilisation of environment-friendly materials.

- **Standards certification**

The Government, through SIRIM Berhad, will formulate a standardised quality control management system to ensure that Malaysian E&E companies comply with international standards. The required infrastructure will be established to facilitate the calibration, testing and certification of E&E products. The standards will be benchmarked against global best practices to enhance the confidence among buyers of Malaysian E&E products.

- **Management and disposal of scheduled wastes**

Existing rules and regulations governing the management and disposal of scheduled E&E wastes will be reviewed to:

- institute proper management and storage of wastes;
- prevent overstocking of wastes at factory premises;
- promote greater utilisation of the central storage facility at Kualiti Alam; and
- encourage recycling activities.

- **Strengthening the role of industry associations**

Private sector representation in key areas in the industry will be strengthened through:

- encouraging further establishment of industry associations; and
- expanding the roles and functions of existing industry associations.