



# **PETROCHEMICALS INDUSTRY**





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## STRATEGIES AND POLICIES

### TARGETS

1.01 During the IMP3 period, the petrochemicals industry will continue to remain important in the manufacturing sector. Its linkages with other industries will be further strengthened, with the integration of the petrochemical zones. The target for investments in the industry has been set at RM34 billion for the entire IMP3 period, while that for exports, at RM36.7 billion in 2020 (Table 1.1).

TABLE 1.1

### PROJECTIONS FOR THE PETROCHEMICALS INDUSTRY

	2006-2010	2011-2015	2016-2020	2006-2020	2006-2020
	<i>(RM billion)</i>				<i>Average Annual Growth (%)</i>
Investments	8.3	11.3	14.5	34.0	6.9
Investments per year	1.7	2.3	2.9	2.3	n.a. <sup>1</sup>
Exports (end period)	20.4	27.7	36.7	36.7	6.3

Note: <sup>1</sup> Not applicable

Source: Ministry of International Trade and Industry

### STRATEGIC THRUSTS

1.02 To realise the targets, ten strategic thrusts have been set:

- (1) expanding and enhancing the value-added of existing capacities and broadening the range of petrochemicals produced;
- (2) diversifying into manufacturing-related services and support industries;
- (3) enhancing linkages with the downstream industries, in particular, plastics and oleochemicals;
- (4) intensifying the development of technologies in materials and product applications;

- (5) improving chemical process technologies and the application of catalysts to increase yields;
- (6) undertaking the full integration of existing petrochemical zones in Kertih, Terengganu; Gebeng, Pahang; and Pasir Gudang-Tanjung Langsat, Johor;
- (7) establishing new petrochemical zones in Bintulu, Sarawak; Gurun, Kedah; Tanjung Pelepas, Johor; and Labuan;
- (8) making available feedstocks at competitive prices;
- (9) improving market access through free trade agreements (FTAs); and
- (10) enhancing the technological and management skills and expertise of the workforce.

**(1) EXPANDING AND ENHANCING THE VALUE-ADDED AND BROADENING THE RANGE OF PRODUCTS**

- 1.03 The establishment of three new crackers will be undertaken to provide additional feedstocks to encourage the expansion of capacities of existing petrochemical plants. These additional feedstocks will provide a base for the broadening of the range of petrochemical products produced. The promoted growth areas within the industry include alpha-olefins and fatty alcohols, vinyl acetate, ethylene dichloride, propylene oxide/polyols, cumene/phenols, acetones, adipic acid/caprolactam, toluene diamine and diisocyanate, methyl methacrylic, polybutadiene, butadiene-styrene-rubber, nylons and polyurethanes.

**(2) DIVERSIFYING INTO THE MANUFACTURING-RELATED SERVICES AND SUPPORT INDUSTRIES**

- 1.04 The following manufacturing-related services and supporting facilities will be promoted:
- engineering and maintenance services;
  - storage facilities and tank farms;
  - CUF;
  - other support facilities, such as waste water treatment and catalyst regeneration;
  - RDCs; and
  - logistics and transportation services.

- 1.05 The private sector will be encouraged to invest in the support facilities, infrastructure and supply services, which are important to the development of the petrochemical zones. These investments will be undertaken through a consortium or joint ventures, to enable the setting and sharing of the costs in building and maintaining the facilities at competitive levels.

### **(3) ENHANCING LINKAGES WITH THE DOWNSTREAM INDUSTRIES**

- 1.06 The development of the plastics fabrication industry will be accelerated and made more efficient, with the establishment of a plastics industry park within the vicinity of the petrochemical zones. The benefits of the plastics industry park include:

- shortening the supply chain, thus leading to cost savings among the producers and customers; and
- providing synergies, especially to converters and fabricators, which mainly comprise SMEs, in mobilising resources and sharing common facilities and services available at the petrochemical zones at competitive costs.

- 1.07 With the widening of the range of petrochemicals produced in the country, the existing oleochemical companies will be encouraged to utilise the available range of petrochemical products for the manufacture of higher value-added products, such as surfactants and washing preparations.

### **(4) INTENSIFYING THE DEVELOPMENT OF TECHNOLOGIES IN MATERIALS AND PRODUCT APPLICATIONS**

- 1.08 Potential areas of development of technologies in materials and product applications include:

- continuing to develop new uses for petrochemical-based products, with emphasis on environment-friendly and biodegradable products. New applications of petrochemical products will also be developed, through the adoption of new technologies, such as photonics and nanotechnology;
- undertaking efforts to encourage applications of composite materials. This will include the formulation of guidelines for the definition, production and usage of such materials, which will, in turn, create new demand for petrochemical products; and
- undertaking new research on the development of renewable and biodegradable materials, for example, polyhydroxybutaric acid or esters, which are hybrids of natural materials (either glucose or palm oil) with petrochemicals.

**(5) IMPROVING CHEMICAL PROCESS TECHNOLOGIES AND THE APPLICATION OF CATALYSTS TO INCREASE YIELDS**

1.09 To enhance technology improvement and R&D, PETRONAS Polymer Research Centre in Bangi and local universities will be encouraged to undertake research in priority areas, including:

- chemical processes and process technologies;
- management and innovative utilisation of catalysts;
- new composite materials and applications; and
- inter-linkages with other industries.

**(6) UNDERTAKING THE FULL INTEGRATION OF EXISTING PETROCHEMICAL ZONES**

1.10 Efforts will be undertaken to realise the full potential of the existing petrochemical zones, through a more systematic and coordinated approach. The zones will be complemented with the full range of related manufacturing services and other industries, for example, manufacturers of plastics products, which utilise petrochemical products, to take advantage of the existing infrastructure.

1.11 A review of the facilities, services and infrastructure of the integrated petrochemical zones in Kertih, Terengganu and Gebeng, Pahang will be undertaken, in terms of costs and capacities, to enhance their positions as strategic locations for the further development of the petrochemical industry. The full provision of the facilities, services and infrastructure will prepare the zones for the next phase of development of the industry. In this respect, the extension of CUF in Gebeng 3 to all the petrochemical projects in the entire Gebeng industrial estate, will be considered. The Government will consider improving the utilities, facilities and infrastructure of the petrochemical zone in Pasir Gudang-Tanjung Langsat, Johor for the further development of the zone.

**(7) ESTABLISHING NEW PETROCHEMICAL ZONES**

1.12 The development of new petrochemical zones will be considered. Factors which will be considered include the need to adopt competitive pricing in providing all the required facilities, such as port facilities and CUF, as well as support services. Upstream and downstream linkages will also be developed for the zones. Areas with potential for development into new petrochemical zones include Bintulu, Sarawak; Gurun, Kedah; Tanjung Pelepas, Johor; and Labuan.

- (8) ENSURING THE AVAILABILITY OF FEEDSTOCKS AT COMPETITIVE PRICES**
- 1.13 The availability and stable supply of basic feedstocks at competitive prices is important for the development of the industry. The enhancement of existing petrochemical zones and the development of new petrochemical zones depend on sufficient feedstocks being made available.
- 1.14 Natural gas and condensates will continue to remain the major feedstocks for the petrochemical zones in Kertih, Terengganu and Gebeng, Pahang. PETRONAS will be able to harness enough natural gas feedstock to consider another ethane cracker and propane dehydrogenation plant. Nevertheless, the present dependence on the gas resources as basic feedstocks to the industry in these two zones, will be broadened and diversified in the future to include oil-based feedstocks, to provide greater feedstock flexibility and wider growth options in the industry. To develop the petrochemical zone in Pasir Gudang-Tanjung Langsat, Johor, there will be a need to facilitate the supply of naphtha to this zone. Backward integration into the production of naphtha from an oil refinery will be considered.
- (9) IMPROVING MARKET ACCESS THROUGH FREE TRADE AGREEMENTS**
- 1.15 Market access for the petrochemical products will be further facilitated through the various regional and bilateral FTAs. Outward investments in the other ASEAN countries and inflow of foreign investments will be encouraged through the progressive implementation of the AIA and other bilateral agreements. Investments in the downstream industries, through joint-ventures and M&As with regional partners, will be promoted.
- (10) ENHANCING THE TECHNOLOGICAL AND MANAGEMENT SKILLS AND EXPERTISE**
- 1.16 Efforts will be undertaken to create a sufficiently large pool of the required skills to support the implementation of the next phase of development in the industry. Special training programmes will be designed to create the pool of skilled human resources, with the cooperation of the industry. The training programmes will address, among others, issues related to safety, health and the environment. In addition, strategies will be undertaken to enhance total factor productivity (TFP) in the industry. Apart from sustaining the quality of the workforce, other strategies on TFP include applying technologies in the downstream processing activities and diversifying into high value-added products, as well as improving operations by focusing on long term investments in R&D and applying new technologies.