

Introduction of petrochemical industry economics essay

[Economics](#)



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Introduction of Petrochemical Industry

According to the World Bank, 2012 the petrochemical industry in Thailand is ranked among the region's top five and experiences an 8 to 12% annual growth rate and has recently gone through a period of consolidation. The petrochemical industry has been expanded due to the boosting of export growth as well as the domestic consumption. No longer has import dependent, over the last 25 years, Thailand become a net exporter in upstream petrochemical, polymer and plastic products, with the fast growing economy in China and ASEAN as its major outlets. The country has attracted global investments from blue chip corporations including Dow Chemical, ESSO, Mitsui Chemical, Mitsubishi Chemical, TPI, Siam PVC Pipes, and PTT to name a few. Thailand is home to a strong downstream industrial sector, exporting more than 40% of major polymers to international markets. This impressive expansion is supported by significant growth in sectors such as automotives, packaging, electrical and electronics, construction and agriculture. With all major corporations adopting the newest technologies available and enhancing their plants in every way possible, the scenario seems to be quite positive for the petrochemical industry to progress and develop further. It would be extremely important for the industry to sustain the developments made so far because this is one of the few sectors that seems to be picking up rather well in the country and could be a major contributor in enhancing the overall economy of the country in the future.

[1]Post-flood restoration: The overall trend for Thailand's petrochemical industry in 2012 is for continuous growth as the result of the country's post-flood restoration, led by the restoration and confidence stimulation program

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from the manufacturing sector. Private and household sectors are expected to have more expenditure to restore businesses and housing, resulting in more demand for products. The government will also stimulate domestic expenditure. The US financial crisis and the public debt crisis in the European Union are not expected to significantly impact Thailand's petrochemical industry because its primary markets are in Asia, such as China, India and Vietnam, all of which have a high growth of product demands, resulting in high demand for petrochemicals as the raw materials for production.[2]

Global Situation and Trend of the Petrochemical Industry

The petrochemical industry of today is an indispensable part of the manufacturing and consuming sectors, churning out products which include paint, plastic, rubber, detergents, dyes, fertilizers, textiles, and even solvents. The 21st century is seeing a paradigm shift from West to East in the Petrochemicals business, with the Middle East emerging as global production hub with natural advantages of low cost feedstock. Major consumption centers are shifting to Asia given the rapid growth in demand in China on account of chemical intensive and export driven industry & India emerging as global consumption centers. This trend is likely to also shake up the global petrochemical industry with emergence of National Chemicals and Oil Companies as global players and established western companies having to exit or shrink unless they realign by moving eastwards through partnerships or strategic alliances to be near the consumption centers to catch up with Asia Petrochemical boom. However, as regional petrochemicals development continues, the industry will face significant challenges relating to energy and feedstock availability and to climate

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change, particularly carbon dioxide emissions. To sum it up, focus in 2009 remains at construction of olefin projects in Middle East, economic development and demand in Asia Pacific and supply and pricing of petroleum and natural gas.

History of petrochemical industry

The petrochemical industry was in Thailand established in the early 1950s by a few processing manufacturers. During the next twenty years it expanded slowly, relying mainly on imported raw materials. Around the time natural gas and crude oil was discovered in the Gulf of Thailand in the beginning of the 1970s and as a result of the worldwide oil crises in the 1970s² and the very high oil prices, natural gas extraction and separation plants were put up in Map Ta Phut in the Rayong Province. Natural gas can be used as a source of energy or as raw material in the petrochemical industry (where it gets most value-added). From the beginning, the Thai government was seeking to promote higher value added industries and to accelerate the development of its own integrated petrochemical industry in order to generate downstream industrial developments. But Thailand did not have a competitive advantage for the upstream petrochemical industry at the time of the discovery of natural gas, not only because the feed stock³, but also the energy is very expensive. As the country was still largely agricultural - in 1980, agriculture, hunting, forestry and fishery represented 23.4% of its GDP- and did not possess the necessary technological knowhow to build a petrochemical industry, it tried to attract experienced foreign investors on the basis of BOI promoted incentives and the promise of maintaining high import duties during an initial period of eight years. The petrochemical industry became

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even one of Thailand's top priorities in the 1980s, when major industrial sectors, mainly the automotive and electronics industries, expanded rapidly and boosted the demand for plastics. The first integrated petrochemical complex was established in Thailand in 1983 at the Map Ta Phut Industrial Estate, Rayong Province. It is known as the National Petrochemical Complex Phase I (commonly referred to as NPC-1). It was based on the execution of the Master Plan for Natural Gas Utilization of the Eastern Seaboard. It was designed: To maximize the benefits of Thailand's resources, thereby saving millions of Baht through import substitution; To create an economic development area and infrastructure away from the over-developed metropolis of Bangkok; To facilitate a much desired transfer of technology.

Major Player Performance:[3]

Polyvinyl Chloride (PVC)

(Unit: '000 T/Y)

Company

Capacity

Apex Petrochemicals 0 TPC 530 TPC Paste Resin 36 VNT 280

Total

846

Among the four private companies that were selected to invest in the production of plastic or other petrochemical products of the intermediate and downstream petrochemical industry figured Thai Plastic and Chemical Plc.

(TPC). TPC is a joint venture between Mitsui Asahi Caustic Soda Co., an

affiliate of Thai Asahi Chemical Co. (THASCO, which is a joint venture

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between the Japanese based Asahi Glass Co. and the Sri Fuengfung family Group) and Thai partners, with the Sri Fuengfung family group as a silent partner. At present, the shareholding of TPC is: Thai Asahi Chemical Co. (25%); Mitsui and Co. Ltd. (11.6%); Siam PVC Pipes (19.8%); the Euarchukiati family (8.0%) and Mitsui Toatsu Chemical (6.4%). Only TPC produces the products that are namely PVC and caustic soda. One year later, the Thai government wanted the four private companies to join forces with the state owned Petroleum Authority of Thailand (PTT) in an upstream unit (an olefin plant operated by NPC) for the production of the raw materials ethylene and propylene (what they need in their production process), employing only indigenous gas feed stock. It also imposed on them to buy from NPC 73.3% of total demand of ethylene and propylene at fixed contract prices based on a "cost plus" (+ standard profit of 15%) formula. Phase I was completed in December 1989 with an investment of more than 26,000 Million Baht and the companies were granted investment privileges for a period of 8 years. Thailand's economy was growing rapidly. The growth of demand for petrochemical products, mainly coming from the construction sector, was expanding at twice the rate of GDP. In addition, there was a strong growth in the exports of finished plastic products as well. As the increased demand could not be satisfied by the production capacity of the Petrochemical Complex Phase I only, the Eastern Seaboard Development Committee proposed a BOI sponsored master plan for National Petrochemical Complex Phase II (NPC-2). It was to consist of upstream petrochemical plants and other intermediate and downstream petrochemical plants similar to those of Petrochemical Complex Phase I. It was also to be

located in the same Industrial Estate (see annex 1). It was expected to have advantages over NPC-1, as it is naphtha-based. Naphtha-crackers request higher investment cost, but allow producing a higher variety of by-products, such as benzene derivatives and C-4; while a gas-based cracker can only produce ethylene and propylene with lower investment cost. Generally the cash-cost of ethylene of a gas based cracker is more competitive compared to a naphtha cracker, the profitability of which depends strongly on the valorization of the by-products. The price agreement between the upstream unit on the one hand, and the intermediate and downstream units on the other hand, is considered a better deal as the raw material prices are based on world market prices (75% of the total demand of ethylene and propylene had to be bought from Thai Olefins Co. (TOC) at US Gulf contract price + 10%), reflecting the realities of the global market place. This made the production more cost competitive to imported products. NPC-2, however, still limited competition, which resulted in the market remaining segmented. The plan was approved by the government and protection was promised for another 10 years. The public bidding for promoted investment in NPC-2 was launched by the BOI in 1987, which is long before the eight years of privileged treatment promised under NPC-1 was expired. This provoked fierce protest from the companies under NPC-1; the government, however, counter-argued that the promise depended on the condition of a limited market demand. As the market demand had greatly expanded, the promotion of additional investment was justified according to the BOI. Probably because of this protest, TOC, the cracker under NPC-2, has started

operation in 1995 only. However, this is still two years earlier than what was promised under NPC-1.

Production/Consumption and Export/Import Figures of Five Major Products 2008-2011[4]

(Unit '000 T/Y)

Products

2008

2009

2010

2011

Ethylene

Production2201245528843666Import21018099110Export022869Consumption2435257630383889

Propylene

Production1120126316512085Import531310Export3365154240Consumption1141131315481855

Polymer

Production2184249927322726Import3000Export1207133914461516Consumption980116012861210

PE (including EVA)

Production1782183322593150Import339311404386Export1008100513962112Consumption1146114013421498

PP

Production1087112013421611Import172183269230Export314318500737Co
nsumption94598511111104

Capacity, Production and Consumption of PVC

Historical Unit: '000 T/Y

Particulars

2008

2009

2010

2011

Total Capacity

1035896945846

Production

832825833779

Consumption

446458512462

Export

424424382387

Import

37566170

Business Environment

At the start of 2011, the world recovered from deep economic recession, which the recovery is becoming self-sustained and more broad-based despite some difficulties that could undermine growth, including rising oil and commodity price, European debt crisis and slower growth of the international trades. However, the IMF's Statistics Department estimated the growth of the world economy in 2011 at 3.8% much lower than the 5.2% rate achieved in 2010. Thailand, meanwhile, following the global economic trend, the Thai economy has been picked up a long with an internal problem that has been improved as political infighting has calmed down. On the petrochemical side, with the Map Ta Phut issue resolved, Thailand's petrochemical producers began to operate plants that had halted production, the situation, meanwhile, creates more favorable impacts on overall business performance of petrochemical industries. In the meantime, Thailand's major petrochemical producers are moving toward innovation, starting with R&D and going beyond it as innovation is commenced as a key to solving many economic problems and also a key pillar for the green growth strategy for the petrochemical industry and other industries as well. Nevertheless, 2012 will be definitely a year of difficulties for all business sectors in Thailand, as the country's business environment will be weighed down by many unfavorable factors - from the euro-zone crisis and fragile US economic recovery to the poor post-flood sentiment.[5]

Vision

The business enterprise is a living platform acting as a motor central to the orbits of family, community, government, education and the environment.

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Continuous improvement in the quality of life for all stakeholders is realized by the innovative and persistent application of our core values with integrity and passion.[6]

Mission Statement

Improve on the investment in, and development of, our People
Continuously improve Quality
Learn to work as a Team
Ensure Unequivocal Communications via Standardized Processes to provide a clear understanding of expectations
Promote the living of our Corporate Culture, in accordance with our Core Values
Invest in Vertical, Horizontal and Geographic Growth as a One-Stop Shop for energy and infrastructure industries to improve opportunities for all stakeholders
Enhance the ability to influence our world through the Growth in Scale of our business[7]

Present Situation and Future Prospect of the Thai Petrochemical Industry

The petrochemical industry in Thailand staged a comeback since mid 2010 before recovery towards the year 2011. The court decision on September 2, 2010 to allow 74 out of 76 industrial projects in the Map Ta Phut area suspended in September 2009 to proceed, leading several new petrochemical plants came on stream in the first half of 2011. Meanwhile, some projects are still seeking EIA approval such as TOC Glycol's 95, 000-ton/year monoethylene glycol (MEG) and Thai Plastic and Chemicals (TPC)'s 90, 000-ton/year vinyl chloride monomer (VCM). The more favorable economic climate in the first half of 2011 and the resumption of activity in Map Ta Phut have helped boost investor sentiment. But, counteracting these factors were floods crisis that hit Northern and Central parts of Thailand and <https://assignbuster.com/introduction-of-petrochemical-industry-economics-essay/>

disrupted the production of petrochemical end-user markets along the supply chain. The overall picture of petrochemical production and consumption are as follows: Ethylene production climbed 27% in 2011 as many new crackers starting since 2010, i. e., a 1, 000, 000-ton/year cracker of PTT Polyethylene (PTTPE) and a 900, 000-ton/year cracker of Map Ta Phut Olefins (MOC), operated at close to full capacity. Meanwhile, consumption surged 28% in tandem with the start up of new derivatives plants, including a new 300, 000-ton/year LDPE plant of PTTPE and a new 250, 000-ton/year HDPE plant of Bangkok Polyethylene (BPE) in Q1 2011 and a full production rate at a 350, 000-ton/year LLDPE plant of Siam Polyethylene. The production of major polymers in 2011 surged 20% from the previous year. The gain was the result of new polyolefin's capacities began to come on stream and rising production rate at many downstream plants because internal and external petrochemical demands were likely to be healthy. Consumption of major polymers, meanwhile, was relatively stable. It was due to a downward trend in domestic end-user market demand for aromatic-based polymer such as PS, EPS and ABS/SAN resins particularly. Despite local polyolefin's production kept growing, consumption for polyolefin's grew with a declining growth compared with last year.[8]

Role in the Economy of Selected Country

Contribution in GDP

According to World Bank, Thailand's GDP growth rate was 7. 8% in 2010 and is expected to be 0. 1% in 2011 as a result of an expected slowdown in external demand and high base effects. Thailand' s GDP shall be around ~ 320 Billion USD with almost 40% dependency on exports . Thai

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petrochemical industry is around 20 billion USD contributing 5% to the GDP. Out of which almost 8 billion USD (5. 5%) is from exports of petrochemical products.

9

Contribution in budget income of Thailand (take last budget)

Year

Agriculture Manufacturing Services Total GDP contribution (In USD)

In %

In USD

In %

In USD

In %

In USD

2011

13.30%

45.965

34%

117.5

52.7%

182.131

345.6

2010

10.40%

33.176

45.6

145.46

44.00%

140.36

319

2009

12.30%

32.472

44%

116.16

43.70%

115.38

264

2008

11.40%

31.122

45.50%

124.22

41.10%

112.203

273

2007

10.80%

26.676

45.30%

111.89

43.80%

108. 186

247

Contribution in foreign investment of Thailand

With a trade fair and business exhibition, the Thai Board of Investment (BOI) hopes to attract foreign companies and investors into Thailand's market.

Especially petrochemical and process industries are expected to be the stars of this exhibition. Thailand courts foreign investors on this year's Board of Investment (BOI) fair at Bangkok. Stars of this year's exhibition are the country's booming petrochemical industry, producers of polymers and plastics as well as paper manufacturers. Experts see this year's election as an acid test for the country's democracy and stability. Bangkok/Thailand –

With a new 'greener' approach the country hopes to become more attractive to foreign investors. The country's recent figures indicate a solid growth: already the first quarter of 2011 saw a rise of investment proposals of 56 percent in numbers compared to 2010. A total of 485 operations were approved in this time span, covering a total investment volume of 117. 8 billion Baht (around € 2. 7 billion). To attract further foreign investors for the Thai market, the BOI plans a third issue of its BOI-Fair trade fair and exhibition held from November 10th to 25th 2011 in Bangkok/Thailand. Motto of the exhibition will be the slogan " Going Green for the Future" with the BOI creating additional benefits for 'green' investments.[10]

According to World Bank 2011

Years

FDI, net inflows (BoP, US \$)

20088, 538, 342, 44220094, 853, 961, 11120109, 103, 993, 91020117, 780, 007, 829

11

Business opportunity in future:

Petrochemical Industry, Polymers and Plastics – Stars of This Year's BOI–Fair

Thailand's petrochemical industry, producers of polymers and plastics as well as paper manufacturers as especially attractive opportunities, covering investments of about 30 billion Baht for the first quarter of 2011. But also pipeline projects and alternative energies performed well. The petrochemical industry currently contributes about five percent of the country's economic performance and is expected to profit from current projects like the Ma Ta Phut industrial zone.

Ma Ta Phut – Future Home of Thailand's Petrochemical Business

To attract further companies for the new Ma Ta Phut industrial complex, the BOI announced tax reductions for investments that help to reduce the complex's ecological footprint. The replaPVC Pipes of old, ineffective machinery is rewarded by an eight years exemption from corporate taxes (previously three years and 70 percent of the investment sum). These

provisions are valid for running and new projects – newly planned projects will nevertheless face an eco-audit in advance.

2. 1 Organization Structure or Industry Structure

According to World Bank, 2011

1. Organized Structure

Organized Structure Type

Thailand Petrochemical Industry

Percentage

Unorganized

-

-

Organized



100%

The Petrochemical Industry in Thailand is totally Organized Structure.

2. Type of an Organization Structure

The Petrochemical Industry in Thailand is having Centralized organization structure. The Centralized structure is one where organization is having one point for control and policy. It benefits the organization by improving efficiency, reducing cost and giving constant policies and procedures.

Type of Structure

Thailand Petrochemical Industry

Centralized



Decentralized

-

3. Hierarchy & Departments in selected company

2. 2. Functions and Business Activities of Petrochemical Industry

2. 2. 1. Forms of Business

Forms of Business

Thailand Petrochemical Industry

Sole Proprietorship



Partner ship



HUF

-

Co-operative

-

In Thailand Petrochemical industry has two forms of business can be seen.

That is sole proprietorship and partnership.

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Transportation & Communication System needed for Petrochemical Industry

Modes of Transportation

Thailand Petrochemical Industry

Railway Road For the transportation mainly there are two categories Road and Railway. But for the internal transport road transport is more preferred than air transport.

Modes of Communication

Thailand Petrochemical Industry

Telephonic E-Mail Post The mode of communication in Thailand is good all the medium of communication facilities is been provided by government and is used by the industry people as the above graph show.

Labor force availability for Petrochemical Industry

According to Board of Investment, 2008 the manufacturing sector in Thailand employed 5.2 million workers, making it the third largest employer sector, accounting for 13.8 per cent of total employment by economic activity.

Employment in manufacturing has grown slowly, at an average annual rate of 0.6 percent, compared to 1.7 percent nationally. In 2002, employment in manufacturing was 5.0 million workers and it peaked in 2007 at about 5.6 million, before declining to 5.2 million workers in 2008. The manufacturing sector's contribution to Thailand's gross domestic product in value added terms has been significant; accounting for 40 percent of the total in 2008.

The share of manufacturing has increased since 2000 when it accounted for nearly 36 percent of value added GDP. When total labor force involved in

petrochemical industry is 3.2% of whole working population. This is very good in Thailand compare to other industry.

Development in Science and technology

The emphasis is on the downstream plastic products industry. Key technologies identified are compounding, molding for plastic products, and production management technology. Development strategies include improving the properties of plastics from commodity plastics to intermediate and engineering plastics, and establishing a design center to provide products and mold and die design. The plastics industry has always responded to society's ever-changing needs by developing products and applications that make use of cutting-edge processes and materials.

Academic Activities in Polymers and Plastics
Degradable Plastics
Nanotechnology

Value chain Model of Petrochemical Industry

Finnenlation Feedstock

Hydrocarbon Feedstock

Consumer Products

Plastic Resigns

Intermediates

Intermediates

Building Blocks

Building Blocks

Crude oil

Biomass

Balance of payment (In US\$)

201220112010200920081 Exports (f. o. b.) 7, 029, 411. 886, 675, 068. 116, 060, 184. 025, 157, 644. 025, 831, 085. 792 Imports (f. o. b.) 6, 768, 697. 696, 160, 220. 425, 122, 934. 604, 036, 589. 525, 255, 544. 933 Trade balance 260, 714. 19514, 847. 70937, 249. 421, 121, 054. 50575, 540. 854 Net services, primary income and secondary income -175, 181. 95-334, 210. 84-624, 305. 43-365, 718. 20-508, 160. 355 Current account balance 85, 532. 24180, 636. 86312, 943. 99755, 336. 3067, 380. 506 Capital account 7, 245. 72-1, 198. 017, 718. 632, 263. 94 n. a. 7 Financial account 357, 971. 38-162, 567. 13794, 947. 66-93, 834. 07414, 816. 268 Central Bank 32, 403. 48-5, 392. 1084, 139. 5350, 005. 181, 096. 669 General government 183, 109. 09115, 395. 52113, 274. 6819, 448. 00-15, 461. 1210 Other depository corporations 425, 029. 45-268, 804. 89330, 330. 69277, 628. 9627, 465. <https://assignbuster.com/introduction-of-petrochemical-industry-economics-essay/>

8911Other sectors-282, 570. 64-3, 765. 67267, 202. 76-440, 916. 21401, 714. 8212Other financial corporations-390, 383. 89-38, 498. 4385, 566. 64-871, 550. 56-581, 914. 5813Nonfinancial corporations, households, and NPISHs107, 813. 2534, 732. 76181, 636. 12430, 634. 35983, 629. 4014Net errors & omissions-287, 779. 9318, 198. 28-128, 984. 66160, 834. 02329, 652. 0115Overall balance162, 969. 4035, 070. 00986, 625. 62824, 600. 18811, 848. 77

Major Business Functions:

Accounting System Adopted.

Among the first decisions we will make when you start our business involve how to account for our income and expenses. First, we must adopt a tax year for your business. Second, we must adopt an appropriate accounting method. Cash tax planning is very important in this period of economic challenges. Companies are struggling to be the best in this troubled market and compete to make a profit. Liquidity and cash flow have become more critical than ever to a company's ability to drive its strategic plan to the corporate income statement. This economic struggle has also resulted in an extremely tight lending environment for all industries. In order to begin to determine if a method change may be advantageous, company executives will need to consider current tax methods and assess opportunities.

Documents that should be reviewed to determine if a company is using optimal methods of accounting include: Copies of tax returns filed for the past couple of years, Tax provisions and Schedule M work papers supporting the tax returns, Detailed schedules of deferred tax assets and liabilities for the most recent tax year, As well as general ledger details supporting the

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most recent taxable year-end financial statements. The method of accounting a company uses not only involves the taxpayer's overall method of accounting but also the accounting treatment of each item of income and expense. Frequently situations arise in which a customer disputes a bill or the particular amount charged by the taxpayer. More than often the taxpayer incorrectly recognizes a disputed amount of income, when in fact the taxpayer does not have to recognize the amount as income until the dispute is resolved. Another issue that taxpayers commonly have is the proper treatment of advance payments. They may be allowed to recognize income under a deferral method that provides for recognition in a year after receipt. In order to qualify as an advance payment, the taxpayer must have a continuing obligation under the basic contract.

HR Practices:

The HR function can be a crucial player in a small business' strategy. This usually means that HR's top experts are part of the senior leadership team. They help set goals related to employees and HR practices with top leaders. They help suggest what kinds of strategies will be used to implement these goals and how goal achievement will be measured. They will use their professional development and research to identify new HR initiatives which will contribute to employee satisfaction and optimal performance. HR experts can serve as important advisers to managers who analyze why some employees do not meet their performance goals. They learn how to improve training for managers who must use a coaching model, which includes observing performance, offering feedback and coaching until they get better results. They can also suggest rewards that will work better to motivate

individuals, such as programs that provide employee recognition and appreciation. This kind of consultative model ensures that managers receive the support they need to develop their direct-reports as business assets. Such practices are Create Healthy work environment, Taking performance initiatives, Employee evolution, Getting and measuring performance feedback, Sharing the knowledge, Publicize the good performance, Discussion regarding problems, Appropriate Rewards to the employee.