

## **Petrochemicals**

### **THAILAND'S PETROCHEMICAL INDUSTRY – Join the Success**

*July 2009, updated September 2012*

Thailand's petrochemical industry came into being in the 1970s with the discovery of a wealth of natural gas reserves in the Gulf of Thailand. After this, the Kingdom launched the Eastern Seaboard Project to maximize the benefits of the country's critical new industry. Public and private investments have poured into Thai petrochemicals ever since.

The Eastern Seaboard has evolved into a premier industrial cluster which includes the Map Ta Phut area, one of the leading petrochemical facilities in the world. Map Ta Phut's development has involved extensive collaboration among the Industrial Estate Authority of Thailand, petrochemical manufacturers and service providers. This ongoing cooperation has turned Map Ta Phut into a world model of industrial excellence as regards development planning and production.

Today, Thailand is a net exporter in intermediate and downstream petrochemicals, polymers and plastic products. China and ASEAN are the primary export destinations. Thailand attracts global investments from blue chip corporations such as Dow Chemical, ESSO, Mitsui Chemical, Mitsubishi Chemical, TPI, Siam Cement and PTT. The global market demand – from pharmaceuticals to fashion to automotive – continues to be met by Thailand's ever-growing petrochemical industry.

Thailand placed sixth in Business Monitor International's 2012 Asia Petrochemical Business Environment Rankings matrix, ahead of India, Malaysia and Australia. Thailand is set to climb up the BMI rankings over the coming years with the production capacities of ethylene, PE and PP expected to continue increasing. Capacities have shot up by 80%, 80% and 52%, respectively, since 2008.

### **DEVELOPMENT OF THE PETROCHEMICAL INDUSTRY**

*Competitiveness, Integration and Alliances*

The Thai government is currently in the third wave (2004-2018) of its development plan for petrochemical growth. Phase III places an increased focus on competitiveness, asset integration, strategic alliances for growth, and added value. With growth and efficiency at its heart, the continuing process of achieving goals leaves opportunity open for investors.

As ASEAN's largest production base for petrochemicals, Thailand offers suppliers within the value chain the opportunity to develop global capacities in manufacturing. Thailand's petrochemical plants are primarily located in Rayong Province, which includes Map Ta Phut and surrounding areas. This province accounts for 94% of the country's petrochemical capacity. Chonburi and Samut Prakarn provinces are second and third for capacity.

### **PETROCHEMICALS MARKET**

In 2011, the import value of intermediate petrochemical products was US\$1.15 billion, an increase of 15% over 2007. The import value of downstream petrochemical products was US\$3.70 billion, up 35% from 2007.

Thailand is a strong exporter of downstream petrochemicals, exporting approximately US\$8.23 billion worth in 2011. The export value of intermediate petrochemicals was US\$2.10 billion. That of upstream petrochemical products was US\$1.93 billion.

Domestic demand for upstream petrochemicals is increasing. New investments would therefore not only see good prospects in the established export market but also in the burgeoning local market.

Thailand's petrochemical capacity continues to grow as well. The Petroleum Institute of Thailand (PTIT) puts the country's capacity at 29.97 million tons in 2011, a substantial increase over 20.89 million tons in 2007. The primary catalyst of growth is the olefins and derivatives sector, where capacity in 2011 is double that of 2004.

### **STRONG FOUNDATION IN UPSTREAM MANUFACTURING**

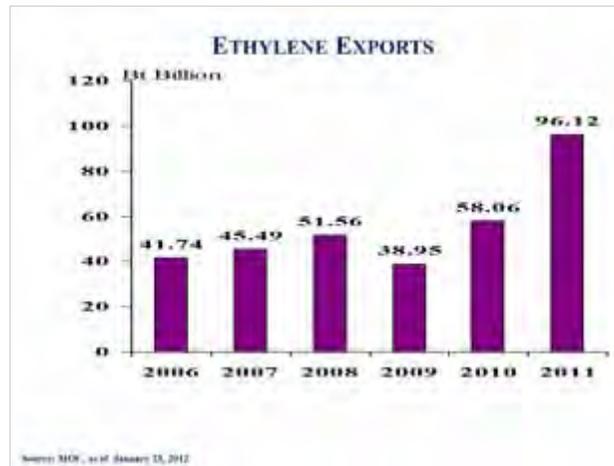
*Leader in ASEAN Ethylene and Polyolefin Capacity*

Thailand has consistently been a leader in ASEAN when it comes to ethylene production. The country's total ethylene capacity in 2010 is estimated at 50.30 million tons, a significant increase of 2.10 million tons over 2007.

In 2013, Thailand's total ethylene capacity is expected to rise by 80% compared with 2008 to 4.47 million tpa. PE capacity is projected to increase by the same percentage to 4.04 million tpa in 2013. Thailand's PP capacity is expected to rise 52% from 2008 levels to 2.05 million tpa.

### Ethylene Capacity in Asia, 2004 and 2010

Thailand has consistently been a leader in ASEAN when it comes to ethylene production. The country's total ethylene capacity in 2012 remains higher than that of Singapore, Malaysia and Indonesia.



In 2013, Thailand's total ethylene capacity is expected to rise by 80% compared with 2008 to 4.47 million tpa. PE capacity is projected to increase by the same percentage to 4.04 million tpa in 2013. Thailand's PP capacity is expected to rise 52% from 2008 levels to 2.05 million tpa.

Thailand also leads in polyolefin production in ASEAN. The country's total polyolefin capacity reached an estimated 5.30 million tons in 2012, meaning that Thailand would account for nearly half of ASEAN's polyolefin production.

### VIBRANT DOWNSTREAM INDUSTRIES

Thailand is home to a strong downstream petrochemical sector, exporting more than 40% of major polymers. As domestic consumption increases, so too will the country's production and capacity.

### DISTRIBUTION SYSTEMS

Currently, Thailand's natural gas pipeline extends approximately 4,268 kilometers in total length. It consists of a network of 3,498 kilometers of transmission pipeline and 770 kilometers of distribution pipeline.

### EXCELLENT INVESTMENT ENVIRONMENT

Thailand offers a number of unique advantages for the petrochemical industry. These include:

**State-of-the-art petrochemical complex:** Thailand is home to one of the world's largest petrochemicals sites in the Map Ta Phut area. Map Ta Phut's facilities include liquid jetties and buffer tank farms.

In addition, Thailand is home to the world's largest hydrogen peroxide (HP) plant, with a production capability of over 330 ktpa of HP at 100% concentration. A joint venture by Dow and Solvay, the plant serves as a raw material source for the manufacturing of propylene oxide (PO).

*"Thailand is an attractive location for an HPPO investment due to its fertile business climate and easy access to the entire Asia-Pacific region." – Pat Dawson, Asia Pacific President, The Dow Chemical Company*

### Polyurethanes

In November 2011, The SCG-Dow Group, a joint venture between Dow and Siam Cement Group, began commercial operations at a world-scale propylene oxide (PO) plant. Propylene Oxide is a core ingredient for the polyurethanes industry. The new production facility has a name plate capacity of 390 kilotons per annum (KTA) of PO via the innovative and award-winning hydrogen peroxide to propylene oxide (HPPO) technology. The Thailand PO facility is

only the second in the world to employ the HPPO technology, which has environmental benefits, including a reduction of wastewater and lower energy usage.

**Excellent logistics systems:** With its unbeatable location in the heart of Southeast Asia, and its state-of-the-art ports, airports and communications facilities, Thailand is an exceptional hub of petrochemical manufacturing and distribution.

One of Thailand's key ports, Laem Chabang, is strategically positioned on the Eastern Seaboard in the upper Gulf of Thailand. This area is central to the country's largest industrial area and features a wide array of manufacturing activities, petrochemical industries and auto assembly plants.

**Excellent investment climate:** Thailand offers an ideal climate for investment in the petrochemical industry, as well as those industries related to it. As business has expanded, so too has the economy and demand for plastics and other petrochemicals. Enterprises will see Thailand become even more attractive as a petrochemical-products investment location when the surrounding region forms the ASEAN Economic Community single market of 600 million consumers in 2015.

**Strong support:** The Thailand Board of Investment (BOI) grants attractive tax and non-tax incentives to investors in the manufacturing of petrochemicals and petrochemical-related industries, including oil refineries and plastic or plastic-coated products for consumer products, and parts and components for industrial goods.