



REPORT OVERVIEW

This report addresses the cost competitiveness:

- *For a wide range of petrochemical facilities globally, covering 12 countries/regions*
- *For selected chemicals employing various commercial technologies from a variety of feedstocks including ethane, LPG, naphtha, coal, natural gas and bio-based*
- *Analysis provided for the first half of 2012 and for the forecast year 2017*

Global Cost Competitiveness in the Petrochemical Industry

Due to recent dramatic changes in feedstock costs, in particular a significant improvement in the United States and an outlook for less advantage in the Middle East, Nexant believes that a major change in global investment patterns is taking place.

The global petrochemical industry has been growing rapidly for decades. A key trend that has shaped industry development has been the concentration of new investment in two types of geographies: 1) those with low cost feedstocks, and 2) those with high growth markets. Most petrochemical products are commodities, thus leading production costs as a significant determinant that drives decisions on where projects are built. The single most important factor impacting competitiveness is feedstock cost, which often can represent over 90% of the total cost of production for chemicals. The second most important factor is investment capital, which is impacted by government policies as well as the cost and capabilities of local construction industries. These factors contribute to each location's "capital location factor", which measures the relative capital intensity of each region. Other differentiators include the cost/performance of production technology and the cost of operating labor.

Feedstock costs heavily shape the regional cost competitiveness of the petrochemical industry. Recent feedstock price volatility has led to increased changes in feedstock selection by steam cracker operators. Numerous steam cracker operators in Europe, the Americas, and Asia have invested in modifications to permit increased cracking of LPG because of its lower cost relative to naphtha. The volatility of energy markets has provided increasing rewards to cracker operators with feedstock flexibility.

Olefin production in the United States is undergoing a step change as lighter feedstocks from North American shale gas sources make their way into the feedstock slate. As gas feedstocks become more difficult to obtain, steam crackers in the Middle East are more likely to process naphtha, which is currently exported in large quantities. China leads the world in the use of coal for chemicals production due to its substantial and widespread coal reserves, and limited production of natural gas and crude oil. Much research and investment has been focused on bio-based chemicals, so that many applications are now well-understood for the various bio-feedstocks.

This proposed study evaluated and compared the cost competitiveness of a wide range of petrochemical facilities globally. The countries included in the analysis are:

United States	Eastern Europe	Thailand
Canada	Middle East	India
Brazil	South Korea	Singapore
North Western Europe	Japan	China

The chemicals included in the analysis are:

Ethylene	EO/EG	<i>para</i> -Xylene
Propylene	VCM/PVC	Terephthalic Acid
LDPE, LLDPE, HDPE	Benzene	Methanol
Polypropylene	Styrene	Ethanol

Cost comparisons are provided for the current situation based on actual pricing during the first half of 2012, and based on future pricing as forecast by Nexant for 2017.

This report, **"Global Cost Competitiveness in the Petrochemical Industry"**, compares the cost of production for a number of key chemicals in different parts of the world addressing the impact of government incentives, capital costs, utility and other variable costs, labor and other fixed costs, sales and distribution costs, and tariffs.

Nexant's multi-client report will be useful to those planning investments in the petrochemical industry or benchmarking the production costs of petrochemicals.

The **"Global Cost Competitiveness in the Petrochemical Industry"** report was completed in December 2012 and is available for the price of US\$22,000. Please contact ChemSystems@nexant.com for a subscription form.

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