



REPORT OVERVIEW

Topics and Themes:

North American developments relating to:

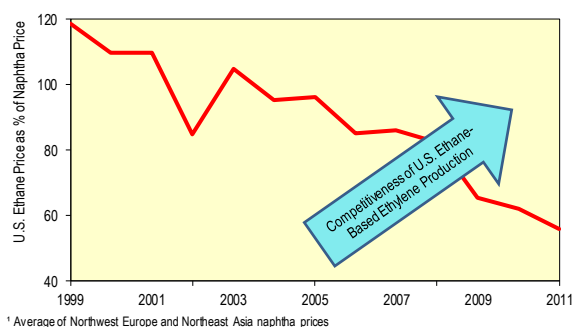
- Shale gas exploration and production activity
- Shale gas regulatory issues
- NGL production
- Steam cracker feedstock mix
- Ethylene production

Global competitiveness of ethylene production

North American Shale Gas: Opportunity or Threat for Global Ethylene Producers?

The fall in natural gas prices and increases in gas liquids production, driven by dramatic increases in North American shale gas production during the past five years, has been the primary driver for renewed profitability and growth in the North American petrochemical industry. In response to rising margins and their enhanced global competitiveness due to attractively priced ethane relative to the cost of the naphtha, the principal steam cracker feedstock in other major markets (Figure 1), firms are considering major capacity additions in the United States for the first time in decades. Specifically, multiple brownfield capacity additions are being considered as well as several greenfield projects at the U.S. Gulf Coast and in the U.S. Northeast near the Marcellus shale gas resource.

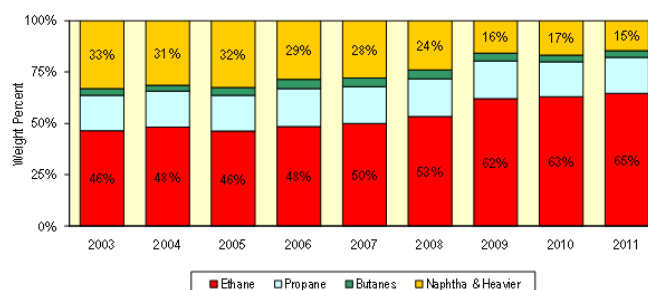
Figure 1: U.S. Ethane versus Naphtha Pricing¹
Price Ratio on Weight Basis



Surging North American shale gas production coupled with sluggish U.S. recovery from the economic recession has substantially depressed regional gas prices. Henry Hub prices have essentially decoupled from crude oil prices. The current disconnect between Henry Hub prices and crude oil prices have favored increased U.S. shale-based NGL production. The favorable outlook for North American ethylene production rests upon the continuation of this trend. To date, low natural gas prices and high oil prices have encouraged upstream players to focus on liquids-rich shale gas plays, resulting in high levels of ethane output.

North American ethylene crackers have gone "light" driven by cheap feedstock availability. Ethane has steadily increased as the feedstock of choice for ethylene in the U.S., displacing C₅+ liquids (Figure 2). The result of these developments has been a significant increase in the competitiveness of U.S. producers in global markets.

Figure 2: U.S. Ethylene Feedstock Sources, 2003-2011



In response to these developments, Nexant has completed a new multi-client report to address new opportunities and uncertainties facing global ethylene producers.

This report, **"North American Shale Gas: Opportunity or Threat for Global Ethylene Producers?"** profiles and evaluates current and future North American shale gas production, and analyzes its future impact on global ethylene producers. Nexant has generated a forecast for North American shale gas output to determine the effect on natural gas pricing and NGL production. The report also analyzes future trends in the mix of North American steam cracker feedstocks, scenarios for the North American ethylene industry and the implications for the global industry.

The **"North American Shale Gas: Opportunity or Threat for Global Ethylene Producers?"** report was published in July 2012 and is available for US\$20,000. Please contact ChemSystems@nexant.com for a subscription form.

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