


IHS CHEMICAL



Crude Oil Turmoil and the Global
Impact on Petrochemicals:
Navigating an uncertain course back to “normal”

Special Report Prospectus



IHS Chemical Prospectus

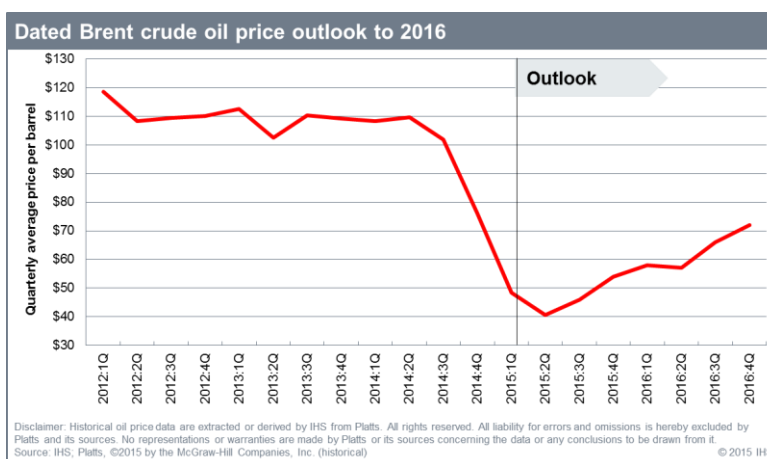
Contents

Contents.....	2
Introduction	3
Study Objective	4
Key Questions Addressed in the Study.....	5
Study Scope.....	6
Deliverables	7
Sample Study Content	8
Table of Contents.....	9
Methodology	10
Study Team.....	12
Qualifications.....	15
About IHS Chemical.....	18
About IHS.....	19
Contact Information.....	20

Introduction

Oil prices have fallen by more than 50% from June 2014 levels due to a global oversupply of crude oil. Looking forward, IHS expects a continued weak crude oil price environment over the next few years, with increased volatility and sometimes excessive price swings. Though oil prices have recently been slowly recovering, another steep decline may be in the future.

The dramatic decline in crude oil prices has complex implications for the global chemical industry. Changing oil prices may increase or decrease chemical demand, affect regional production competitiveness, and shift global chemical trade flows. Chemical companies are rethinking capital expenditure timelines, which could impact future supply and pricing of petrochemicals.



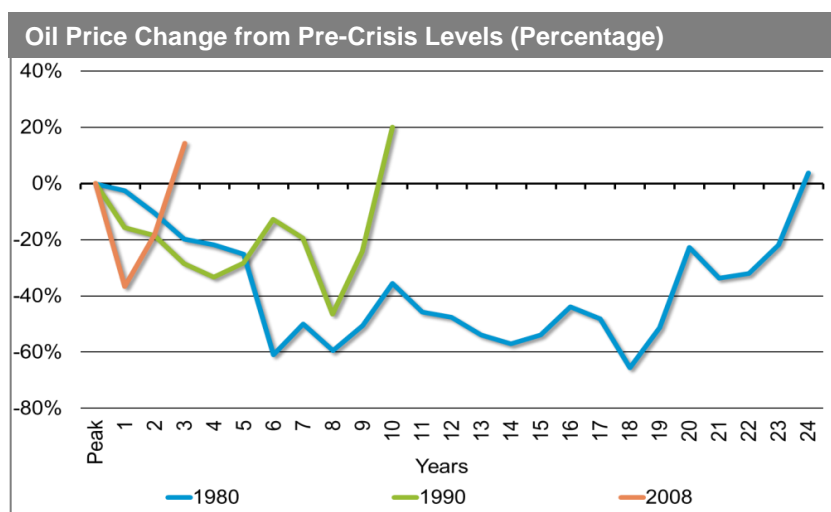
Lower oil prices will have varying impacts on each industry and region. The petrochemical industry has seen changes in regional competitiveness – the playing field is leveling for once-disadvantaged oil-based feedstocks and the margins are shrinking for advantaged low-cost assets. Global trade flows will be affected by the flattening of production cost curves, lower freight rates increasing the competitive field, and changes in currency valuations. Alternative production technologies, such as coal-based chemical investments, will require re-evaluation in the face of a changed relative cost environment.

All other things equal, better economic conditions and the substitution effect for materials (e.g. plastic for metal) as a result of the decline in oil prices should increase demand for many petrochemicals, while oil-based products will see declining costs. On-purpose olefin production economics may be challenged in a world with low oil prices, and some plans to build additional on-purpose units may be postponed or even reconsidered. Investments to optimize supply chain economics through international trade in precursors, such as PVC intermediates, may be postponed as declining regional cost differentials reduce investment incentives. Other capital projects and plans to ship shale-related feedstocks to other regions may be delayed or cancelled, as the investment prospects are re-evaluated for the same reason.

Study Objective

The recovery of oil prices to early-2014 levels could happen over the short, medium, or long term. What types of companies will be “winners” and “losers” in each recovery situation? This study helps petrochemical companies plan for three different oil price recovery cases, discussing the associated risks and opportunities.

In this study, IHS Chemical will present three cases for crude oil price recovery: a “V”-shape (e.g. 2008), a “U”-shape (e.g. 1990), and an “L”-shape (e.g. 1980) recovery. Each of these cases will assume oil reaches new low prices that will significantly change the behavior of petrochemical market participants. The implications for the petrochemical industry will be very different if the drop in oil prices is just a bump in the road (2008), a medium-term situation (1990) or a long-term new reality (1980).



Each position in the value chain has a different incentive structure, and will react differently to changes in crude oil prices over time. This study will examine the impact on key petrochemical value chains in major regions for situations where the crude oil price recovery happens rapidly (<2 years), over a medium term (2-5 years), and long term (5-10+ years). For key regions, it will detail “turning points” (i.e. conditions at which industry behavior changes), and show the subsequent effect on production costs, operating rates, demand growth, and chemical prices and margins. Globally, the study will identify possible changes to trade patterns as freight rate changes affect regional competition. While approved new capacity in advantaged regions may go forward, development of new projects may pause or even cease.

IHS currently provides clients an extensive “Base Case” forecast for energy and petrochemicals, which details the expected future markets. This study will help chemical industry participants navigate the recovery in oil prices, understanding the implications for three distinct recovery trajectories. **Participants along the petrochemicals value chain must be prepared for a variety of possible trajectories in the return to “normal” crude oil prices: recognizing the signposts for these unexpected market environments and reacting based on an in-depth understanding of how each case could change the behavior of major chemical participants.**

Key Questions Addressed in the Study

What is the impact of alternative energy cases on the chemicals industry?

How will the V-shape, U-shape, and L-shape oil price recoveries trigger changes in participant behavior?

- As producers sit on historically high abundant cash assets and cash availability, what investment opportunities will be engaged?
- What are the macro-economic implications of each case, given the high/low point and curve shape? What are the underlying economic conditions that might cause each recovery shape?
- How will the competitiveness of other feedstocks (e.g. coal, natural gas, NGLs) compare?
- How will different crude oil recovery paths affect the behavior of petrochemical companies?
- Are certain asset types, business models, or regions advantaged or disadvantaged in each case?

What are the implications for key value chains and major products?

- How much will operating rates and margins for key petrochemical products in each region be affected by each recovery case? How will the flattening playing field affect regional trade?
- If the V-shape, U-shape, or L-shape recovery case is realized, what actions should participants at each position along the value chain take to further their best interests?
- What role will on-purpose production of propylene and butylene play in supplementing supply and setting prices during each recovery case?
- Where should companies be investing in response to changes in the crude oil price? Does the timeline need to be immediate, or can it be put on hold for a few years?
- How will polymers compete? Is substantial product substitution a viable threat/opportunity?

What regions, value chains, and producers are most affected? What will their reactions be?

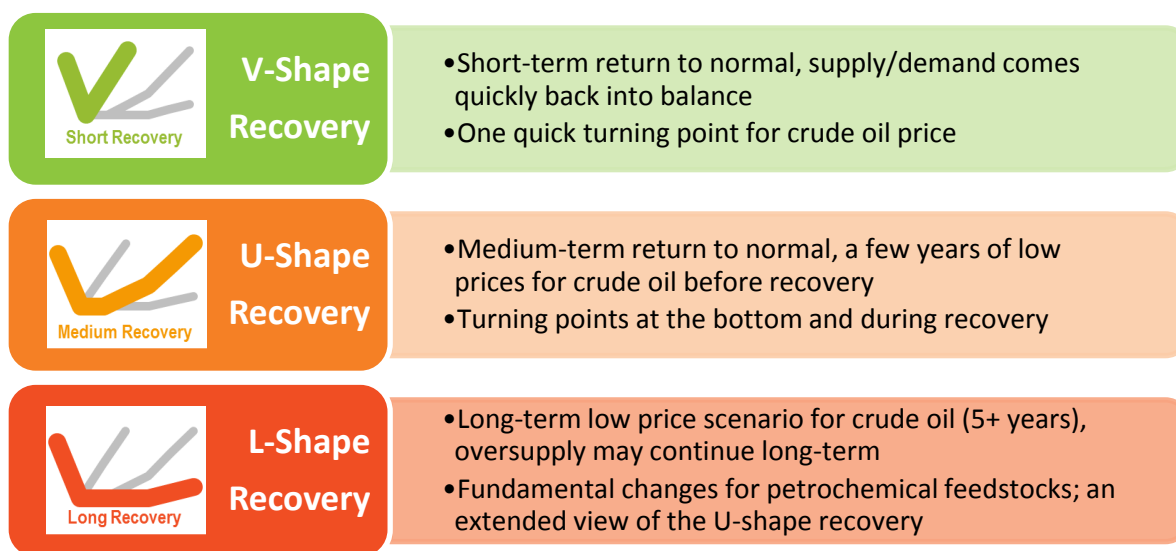
- What will happen to local operating rates, trade flows, and margins?
- Which regions and participants along major petrochemical value chains stand to benefit the most from each recovery case? Which regions and participants will feel the biggest strain?
- How will high-cost producers (regional price setters) change their behavior? Can integrated margins be protected in low-cost producing regions with high exports?

What are the turning points associated with an alternative case?

- What relevant metrics/trigger values (turning points) should participants look for? Where are the turning points of alternative uses (i.e. naphtha to gasoline blending or aromatics) that demonstrate a new pricing mechanism is in effect?
- How will a pause or cancellation of new investment projects impact supply?
- How much capacity change is needed to cause a tightening of petrochemical markets as the end of the decade approaches? How will demand change relative to the base case?

Study Scope

This study will analyze three alternative oil price cases: a V-shape, U-shape, and L-shape forecast for crude oil prices to recover to early-2014 levels. The lowest crude price used for each scenario will be calculated to represent oil/gas-based cost of production parity at the refinery/petrochemical interface – which would significantly affect the petrochemical market. While the low-price turning point will be similar in all three cases, the response of petrochemical companies will be highly dependent on how the crude oil price world evolves.



Each case would significantly affect the behavior of the chemical industry compared to the current Base Case forecast. Each of the three recovery shapes will be calculated by IHS experts, using a bottom price of **oil/gas-based cost of production parity at the refinery/petrochemical interface**, which could significantly shift the market away from the Base Case expectation.

For each major value chain and region, IHS will examine the effect of each case on competitive economics and regional operating rates, demand, and trade.

Regions Covered:

- North America
- Western Europe
- Middle East
- Northeast Asia
- Southeast Asia

Value Chains Covered:

- Ethylene and Polyethylene
- Propylene and Polypropylene
- Benzene, Styrene, and Xylenes, p-Xylene
- Chlor-Alkali and PVC
- Methanol and Derivatives

IHS will provide supply/demand tables for 2014-2020 and a 2025 snapshot for the major points in each chemical value chain for major regions, and provide global competitive economics showing the relative regional production costs. The key deviations of each recovery case from the current IHS base case will be provided. A trade grid, showing shifts in global petrochemical movement will also be included for key petrochemicals.

Most importantly, IHS experts will further discuss the signposts and implications for the V-shape, U-shape, and L-shape recovery cases for each of the participants along the value chain. For example, ethylene producers may watch the competitive advantage of propane/butane feedstock in North America compared to naphtha cracking in Europe or Asia. Aromatics market participants will carefully watch developments in refinery run rates and capacity changes as an indicator of supply changes. Producers and consumers along the chlor-alkali chain may postpone plans to export ethylene-derivatives, such as EDC, from low-cost production regions, as the economic advantage is reduced by low oil prices. For participants along the petrochemical chain, understanding the key signs of recovery trajectory is critical in planning a response to the drop in crude oil prices.

Deliverables

An initial 2-hr presentation will be given to discuss the V-shape, U-shape, and L-shape oil price recovery cases addressed in the study. This high-level qualitative discussion of the implications for each case will lay out the study framework.

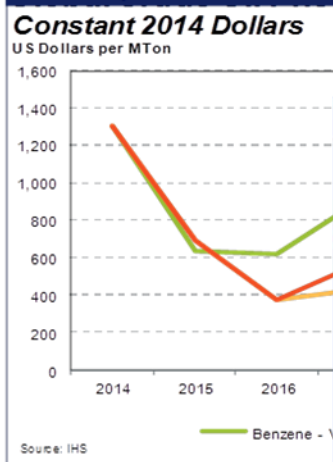
The findings of this study will be presented in a 2-day (optional) workshop with IHS experts. All clients will receive the following deliverables:

- Presentation PowerPoint slides from workshop in PDF format
- Supply/demand balances of the V-shape, U-shape, and L-shape case for key global regions in Excel
- Comparative economics for the V-shape, U-shape, and L-shape cases in Excel
- Price and margin sensitivity analysis from 2014-2020, and 2025

Sample Study Content

V-, U-, and L-Shape Recovery Comparison			
	V-shape <small>Short Recovery</small>	U-shape <small>Medium Recovery</small>	L-shape <small>Long Recovery</small>
Prices	Sharp decline followed by a steep recovery	Winners and Losers for each Recovery Scenario	
Capacity	Short pause and review of investment plans, LPG & Coal based investments	Winners	Losers
Supply	Surge due to inventory draw and restocking	North American refiners, light crackers, and styrene. Other winners include alternate feeds to aromatics production and recyclers.	Benzene derivatives, naphtha crackers, benzene downstream derivatives, and Western Europe.
Demand	Demand growth softening due to a slowdown in China demand	Conventional styrene producers are winners. Survivors, the recession expedites consolidation in aromatics, BZ, PX, Europe SM, US phenol.	BZ & PX producers in the West are facing increasing supply from the East and weak recessionary demand. PCDM producers reduce rates to match PO demand.
Trade	Trade grows after prices start to recover	Downstream derivatives have lower costs, demand grows. Naphtha crackers are not as disadvantaged. Styrene producers are also winners.	New technology developers, such as coal to aromatics and LPG to aromatics. Integrated oil companies, with lower revenue and lower capex. Recyclers are also "losers" in the case.

WestEurope Benzene Scenario Price Forecast



Ethylene Trade Flow Analysis



V Case Regional Cash Costs

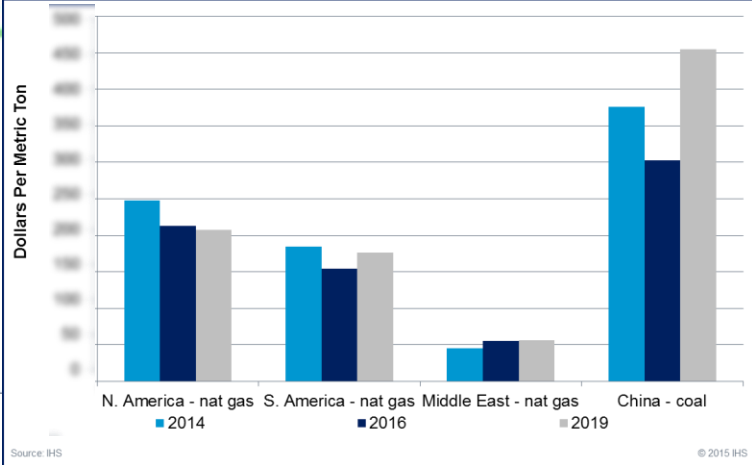


Table of Contents

I. Defining the Price Cases

a. Base Case

- i. Key assumptions for base case
- ii. Price & price ratio in key regions for 2014-2020 and 2025: crude oil, natural gas, LPG, coal, naphtha

b. V-shape, U-shape, and L-shape Cases

- i. Oil/gas-based cost of production parity at the refinery/petrochemical interface
- ii. Key changes for crude oil price (compared to Base Case) that create significant shifts in petrochemical market behaviors
- iii. Defining the shape of each case (V, U, and L)
- iv. Price and price ratio in key regions for 2014-2020 and 2025: crude oil, natural gas, LPGs, coal, naphtha
- v. Economic signposts – what does the economy look like in each case?

c. Turning Points Along V-shape, U-shape, and L-shape Recovery Paths

- i. Assessment of costs for key supply tranches
- ii. Economic value development for alternative uses for feedstocks and implications on chemical products (breakeven values)
- iii. Identification and cost level of discontinuous disruptions (e.g. virgin substitution for recycle polyolefins; PVC production share shift in China from ethylene versus coal-based acetylene)
- iv. Option evaluation as competing end-use economics begin to converge and the resulting implications on cost, price, and margin from 2014-2020 (to 2025 for “L”-shape case)

II. Impact of V-shape, U-shape, and L-shape Cases for Petrochemicals

a. Global Competitive Economics for 2014, 2016, 2020, 2025 in Key Regions

- i. Olefins Value Chain – ethylene, propylene, and key derivatives
- ii. Aromatics Value Chain – benzene, toluene/xylene, and key derivatives
- iii. Chlor-Alkali Value Chain – chlor-alkali and PVC
- iv. Methanol Value Chain – methanol and derivatives

b. Supply/Demand/Trade Impact on Key Value Chains 2014-2020, and 2025 in Major Regions

- i. Olefins Value Chain – ethylene, propylene, and key derivatives
- ii. Aromatics Value Chain – benzene, toluene/xylene, and key derivatives
- iii. Chlor-Alkali Value Chain – chlor-alkali and PVC
- iv. Methanol Value Chain – methanol and derivatives

c. Change in Behavior for each value chain

- i. Effect on regional high-cost producers
- ii. Impact on global trade flows
- iii. The role of on-purpose production in supply availability for each recovery case

d. Risk Management

- i. Options/actions to mitigate risk
- ii. Options to capitalize on dislocations

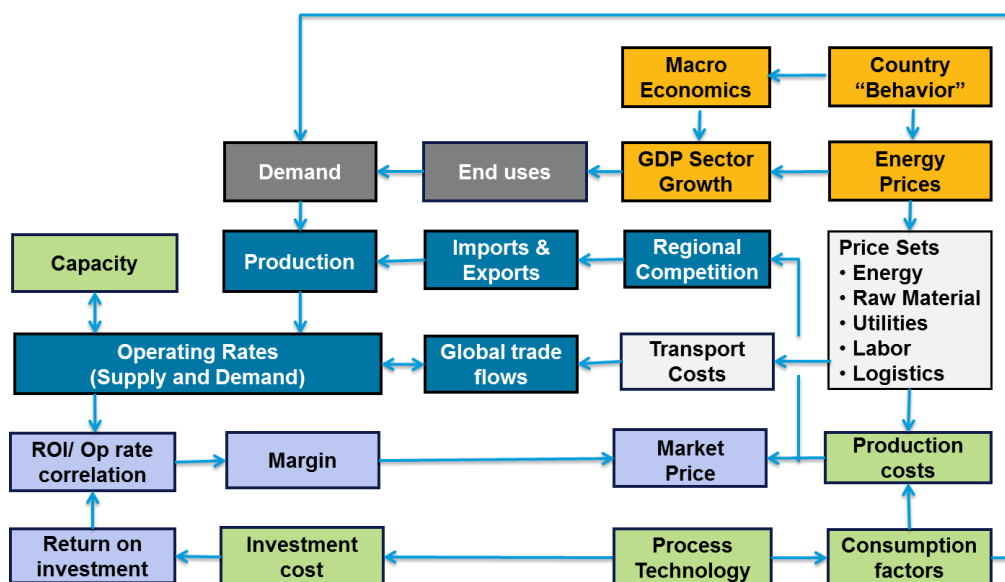
e. Winners and Losers

- i. Investment options definition and comparison review
- ii. Advantaged and disadvantaged regions
- iii. Value chain positions
- iv. Asset classes most affected by change
- v. Possible changes to business models

Methodology

IHS Chemical has a well-defined and prescriptive methodology for understanding and forecasting chemical industry dynamics, as shown in the following figure.

Chemical Industry Fundamental and Dynamics Relationships



It is a balance between chemical demand, starting with end-use products and largely driven by GDP sector growth, and the cost of production starting with energy (feedstock) price and through the chemical building blocks, intermediates and derivatives chemical production cost and prices. Moreover, it is the balance of these fundamentals that drives manufacturing margins on the various value chain products, determines the regional competitive cost competitiveness, and ultimately leads to country and regional trade patterns, and operating rates, as well as capital investment (and shutdowns) which in turn is driven by production needs and estimated returns on capital investment.

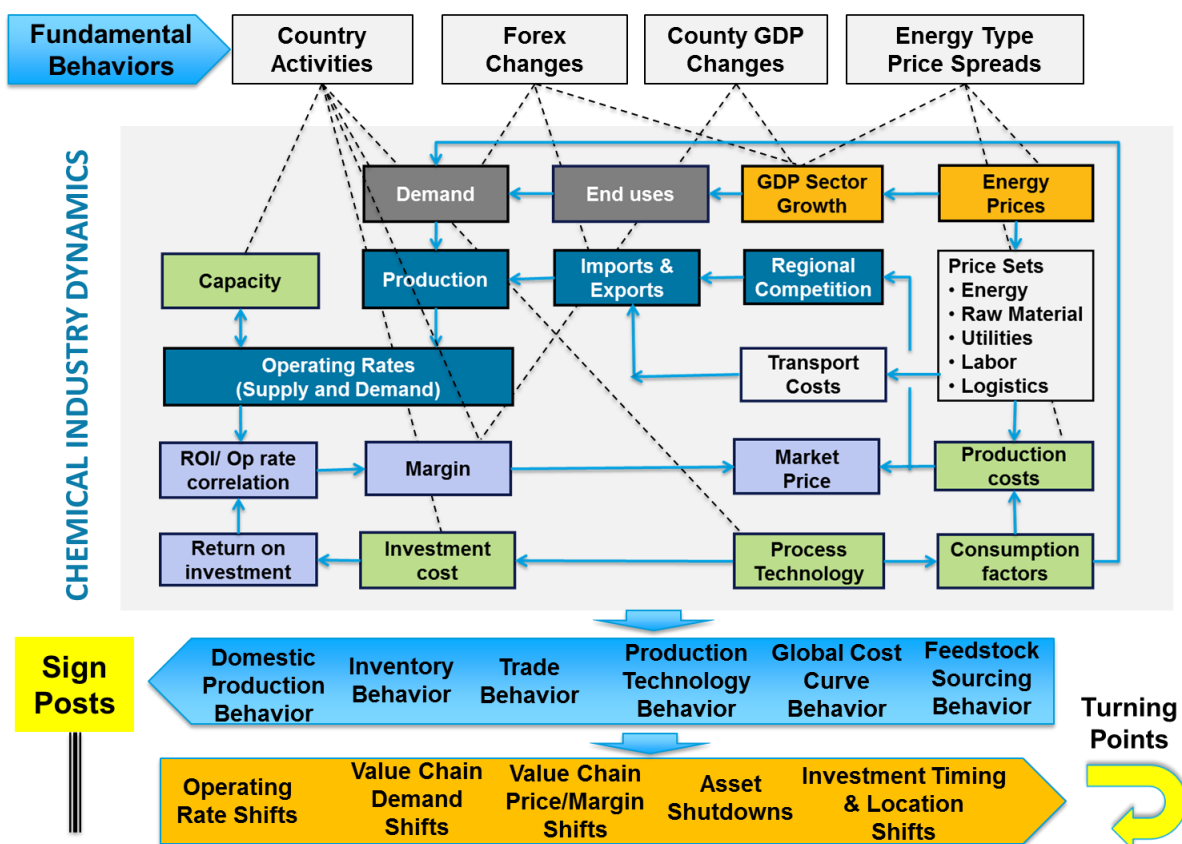
IHS Chemical maintains a current awareness and insight along all major value chains related to these commercial, technical and economic elements through our current offerings, databases, and economic and technical models, which are refined by our dedicated product experts' frequent discussions with industry participants.

For this study, we will employ our insights, data and models to assess detailed regional and/or country-specific elements by value chain in order to project the pathways of various industry scenarios discussed in the scope of this study.

As illustrated in the following figure, we will assess macro-industry fundamental behaviors such as energy price spreads, changes in global and regional GDP, country activities, and currency changes related to the various elements of the industry dynamics. Using these market conditions combined with the varying

trajectories of the changing dynamics, we will project likely signposts or behavioral changes in domestic production, trade patterns, employed production technology, shape of the global value chain cost curve, regional feedstocks sourcing, etc.

The Impact of Global Macro Fundamental Changes on the Chemical Industry



We will project the structural changes or turning points for country/regional product operating rates, demand, price/margins, shutdowns and/or investment timing and location of new capacity in each of the three study cases. The study deliverables will show the results from this analysis and address the questions highlighted in the study scope.

As a starting point for setting the bottom of the oil price (in effect, the “most narrow” but reasonable oil-gas price spread), our approach will be to estimate (calculate) the various cost parities for the manufacture of building-block chemicals from oil, gas, NGLs and/or coal. From these "low" points, we will then set the shape of the return-to-"normal" energy prices as discussed in the scope of this study

IHS Chemical – via a Webex meeting with our study participants – will present our view of the industry fundamentals and their specific impact on the elements on key value chain products. From these, the metrics for the anticipated signposts will be assessed and their impacts and turning points will be evaluated. This and the addressed “Questions” will be the final deliverable in the face-to-face optional workshop with our study participants.

Study Team



Bill Hyde – Senior Director, Olefins and Elastomers Executive Project Manager

William “Bill” Hyde directs the olefins and elastomers market advisory services for IHS Chemical. In that capacity, he is responsible for the company’s global practice covering olefins and synthetic rubber markets, including feedstock and derivatives. His primary focus has been in the areas of C4 olefins and derivatives, including the analysis of the butadiene, butylenes and synthetic rubber markets for hundreds of global clients. Prior to joining IHS Chemical (formerly CMAI) in 2002, Bill worked with Texas Petrochemicals and Union Carbide Corporation.

Bill received his bachelor’s and master’s degrees in chemical engineering from Brigham Young University in 1987 and 1990, respectively, and earned his Masters of Business Administration from Tulane University in 1994.



Mark Wegenka – Managing Director, Chemical Consulting

Mark is a Managing Director in the IHS Chemical Consulting group, and has a wide range of consulting experience covering olefin, polymer, and fertilizer markets. Prior to joining IHS Chemical in 2008, Mark worked for 33 years at Dow Chemical, where he served as the global business analyst for ethylene, propylene, butadiene, and alpha olefins and the senior business analyst for aromatic derivatives.

Mark earned a BS in Mechanical Engineering from Indiana Institute of Technology, a MA in Industrial Management from Central Michigan University, and a Certificate in Evaluation of Capital Projects from the University of Virginia.



John Mulholland – Vice-President, Chemical Strategy Consulting

John serves as Vice President of IHS Chemical Strategy Consulting, responsible for the sale and delivery of IHS strategy engagements globally. With more than 25 years in the chemical industry, John has extensive experience in advising senior industry executives on critical strategic issues and complex business challenges. John joined IHS in 2012 from Charles River Associates where he was a Principal in the chemicals practice. Previously, John worked in the North American chemicals strategy practice at Accenture, the supply chain services company e-Chemicals, the consultancy Arthur D. Little, and in sales and marketing at Shell Chemicals.

John earned a Bachelor’s of Science in Chemical Engineering from the University of Michigan and a Masters of Business Administration in Finance and Marketing from the Booth School of Business at the University of Chicago.



Don Bari – Vice President, Technology and Analytics Group

Don is a Vice President at IHS Chemical, responsible for the Technology and Analytics Group. Prior to joining IHS, Don worked at Nexant, ChemSystems as Senior Vice President and Director starting in 1981, where he was responsible for Nexant’s Global Energy Resources and Chemicals Business Unit. Don also has experience as a Process Design Chemical Engineer at Kvaerner (JohnBrown Constructors).

Don earned both a Bachelor’s of Science degree in Chemical Engineering and a Masters of Business Administration from the University of Connecticut.



Steve Lewandowski – Senior Director, Global Olefins

Steve is the Senior Director, Global Olefins at IHS Chemical. During a career spanning 25 years in the refining and chemical industry, Steve has experience across the spectrum of refining and petrochemical hydrocarbon value chains covering a wide array of financial, strategic, technical, and commercial issues. Prior to IHS, Steve worked for TOTAL Petrochemicals & Refining in a variety of roles covering base chemicals and aromatics markets.

Steve earned a Bachelor’s of Science in Chemical Engineering from Michigan State University and an MBA from the University of Texas at Dallas.



Chuck Carr – Senior Director, Global Olefins

Chuck is the Senior Director Global Olefins and service leader for the North American Light Olefins Market Advisory service. Chuck joined IHS (formerly CMAI) in 2006, with a focus primarily in olefins and the analysis of the propylene and propylene derivative market. Prior to IHS, Chuck worked with Total Petrochemicals USA for 21 years, working in refinery engineering/operations, purchasing, plastics logistics, and olefins commercial activities.

Chuck received a B.S. in Chemical Engineering from the University of Oklahoma and is a registered professional engineer in the state of Texas.



Joel Morales – Director, Polyolefins North America

Joel joined IHS in March 2013 as Director of Polyolefins for North America. Prior to joining IHS, Joel managed resin procurement for Silgan Plastics, a major blow-molding plastics converter. He brings a processor’s perspective to the organization, and will take an active role in the continued development of the company’s global plastics services. Joel began his career with polyethylene manufacturer, Solvay Polymers, which later became Ineos, in technical services and then field sales.

Joel graduated from The Massachusetts Institute of Technology with a Bachelor’s of Science in Chemical Engineering and a minor in psychology.



Peter Feng – Senior Director, Aromatics

Peter is the Senior Director of Aromatics and service leader for the North American Aromatics Market Advisory Service. He currently covers the benzene, toluene and mixed xylenes market. Peter joined IHS (formerly CMAI) as Director of Styrenics in 2006 and has covered all of the major benzene derivatives. He has over 22 years of experience in the chemical industry working first for Air Products and Chemicals and then for Sterling Chemicals. During this time he has had assignments and responsibilities ranging from process design, project start up, supply chain, product management, and sales.

Peter holds a Bachelor and Master of Science degree in Chemical Engineering from Northwestern University and an MBA from the University of Houston.



George Eisenhauer – Director, Chlor-Alkali

George joined IHS Chemical in 2013 and currently serves as a Director of the Chlor-Alkali group. George has more than 15 years of experience in the chemical industry. He began his professional career at Union Carbide in 1995 as a Process/Project Engineer supporting a number of plants including ethylene oxide, oxide derivatives, olefins, acrolein, acrylic acid and infrastructure. When Carbide was acquired by Dow Chemical, George served as Project Manager for polypropylene, supporting projects at the Oyster Creek and Seadrift plants.

George earned a Bachelor's of Science in Chemical Engineering from the University of Texas at Austin and an MBA from Rice University.



Vipool Bhatt – Senior Manager, Scenarios Forecasting

Vipool joined IHS Chemical as the manager of the Scenario Program in 2014. Vipool has 30 years of chemical industry experience; the last 14 as a senior project manager at Chemical Market Resources (CMR) in Houston. At CMR, Vipool was responsible for a variety of consulting projects and industry seminars involving the commercial and economic aspects of the global petrochemical and polymer industries.

Vipool graduated from the University of South Wales with a Bachelor's of Science degree in Chemical Engineering.



Ed Glatzer – Managing Director, Global Technology

In 2010, Ed joined IHS Chemical (formerly CMAI) and is currently the Business Director – Global Technology engaged in insight products dealing with technology. Prior to IHS, Ed worked at Nexant ChemSystems from 1989 to 2010 as Director of Technology. He is highly experienced in all areas of technical assessment, including technical and economical evaluations, plant operation benchmarking, and business analysis and market evaluation. Ed has almost twenty years prior experience with John Brown Engineering as a Process and Project Manager.

Ed received his Bachelor's of Science degree in Chemical Engineering from City College of New York in 1970.

Qualifications

The IHS Chemical Consulting team has conducted extensive single-client work in chemical markets, advising companies, governments, financial institutions, and technology providers operating at all point along the industry value chain. In addition, IHS Chemical provides a wide range of multi-client products that provide chemical industry data insights, analytics, and solutions, including the Process Economics Program, Chemical Economics Handbook, and World Analysis program.

IHS Chemical Consulting – Sample Projects

Market Study for Petrochemical Plant

A leading petrochemical manufacturer in South America was planning to construct a steam cracker. IHS Chemical analyzed the progress of olefin and polyolefin projects announced in the Americas and the Middle East and their impact on the global petrochemical business and the client's strategy. IHS also developed a detailed spreadsheet-based techno-economic model of the steam cracker and derivative plants, which was configured to support material balanced evaluation options for various feedstock alternatives, downstream byproduct processing options for C4 and pyrolysis gasoline processing and recovery, hydrogenation and internal recycle of C4s for cracking feedstock, etc. IHS provided input with respect to the evaluation of the feedstock flexibility for the olefins plant (e.g., naphtha, LPG), as well as options for the recovery, processing, and disposition of the co-products (e.g., crude C4s, butadiene, pygas, toluene).

North America Shale-Based Investment Market Study

A global group of energy and petrochemical companies and a leader in the oil and gas industry was developing plans to build a world-scale ethylene cracker with integrated derivative units in the Appalachian region of the United States. The cracker would process ethane feedstock from Marcellus natural gas to produce ethylene and the client was evaluating derivative choices. IHS Chemical provided a detailed outlook for shale gas and associated NGLs, including ethane availability in the United States. The project then identified the most suitable and profitable end products for the conversion process and provided a market analysis for these products. Finally, IHS identified potential investment opportunities and strategies in olefins and polyolefins, and considered alternative business models for the client's participation and investment.

Marcellus Shale Gas Availability and Downstream Petrochemical Investment Opportunity Study

Significant shale gas deposits in the US resulted in a large increase in US gas production and corresponding increase in the availability of ethane and other natural gas liquids (NGLs). Consequently, the US ethylene industry had swung to cracking lighter feedstocks where ethane cracking had an advantaged cost position relative to naphtha cracking. With these developments, a petrochemical producer sought the assistance of IHS to understand the longer term availability and pricing of gas and related NGLs from the US Marcellus shale gas deposits with a view to determine the viability of investment in a world scale ethane cracker and derivatives complex.

IHS engaged the client to complete the following evaluations in support of their investment decision making:

- Outline in detail shale gas and associated NGL including ethane availability
- Identify the needed mid-stream requirements to monetize the gas for petrochemical development
- Identify potential investment opportunities in olefins and polyolefins to define potential markets for future derivatives demands both domestic and exports
- Consider alternative business models for the client’s participation/investment.

Master Plan for Development of Naphtha / LPG based Petrochemical Project

A Middle Eastern government company wished to carry out a Master Plan study covering the optimum use of naphtha and LPG in petrochemical projects in the Middle East. The IHS team worked in close collaboration with a major engineering contractor, providing a comprehensive product screening and configuration selection through to market, technology and cost competitiveness analyses, project economics, social and economic impact assessment of the Master Plan. The master plan was successfully translated into a business case to show the impact on the economy of the country, its competitive position and overall economic attractiveness. The Master Plan showed the potential for new industry clusters to emerge in downstream industries reliant on petrochemicals as primary inputs. It also included a socio-economic impact analysis which catalogued the social and economic impacts the region could expect.

Competitive Cost and Margin Analytics Program

IHS Chemical’s **Competitive Cost and Margin Analytics (CCMA)** program provides detailed country-level economics for the world’s major chemicals. This data is based on an analysis of the cost structure of each individual production unit around the globe and spans a 10-year timeframe, with 5 years of history and a 5 year forecast. With this information clients can examine how variations in capacity, feedstocks and process technologies are impacting plant economics at the country level to:

- Analyze across value chains
- Identify lowest-cost regions, countries and plants
- Gain insight into which technologies and feedstocks are advantaged
- See how planned capacity additions will change relative economics
- Understand the feedstock cost advantage from integrated producers
- Explore how economics shift under different future price scenarios

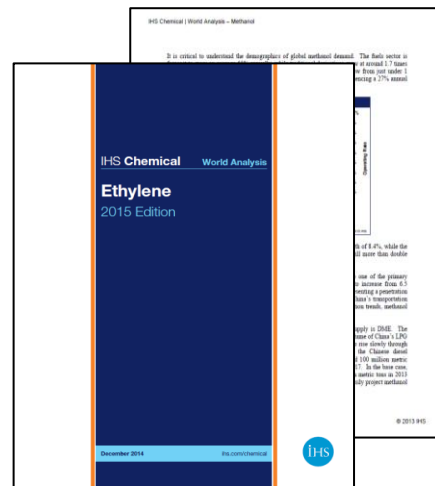
Understanding the structure of chemical production costs requires detailed and complex calculations and an in-depth base load of knowledge and insight. The IHS Chemical Competitive Cost and Margin Analytics service applies our deep understanding of the chemical industry and extensive databases to examine relative production costs in the major producing regions—down to the plant level—over an extended period of time.



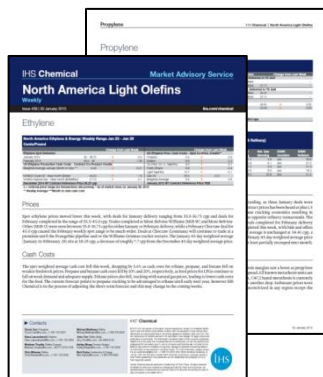
World Analysis

The IHS Chemical **World Analysis** program offers dozens of individual studies, each focusing on a key chemical, fiber, or plastic product or product family. Studies are produced on an annual basis with mid-year supply/demand updates. Each study contains a 16-year analysis period (five years history, base year, ten years forecast). Clients receive detailed data on each chemical and its major derivatives in 10 geographic regions and for major countries within each region.

Each World Analysis includes detailed plant capacities, comprehensive supply and demand data, trade grids, location maps, company ownership, and subsidiary capacity integration. This service provides clients with annual strategic planning information on chemical markets at both the regional and country level.



Market Advisory Services



IHS Chemical dedicates a team of industry-experienced researchers to the complex tasks of tracking, evaluating and forecasting change in major chemical value chains.

In these Market Advisory Services clients receive an integrated analysis of the entire chemical value chain, from upstream feedstocks to downstream derivatives. Clients receive a balance of weekly market updates and monthly price forecasting, along with critical market analysis, for the chemical and its major derivatives in the United States, Western Europe and Asia. The weekly market update provides near-term price discovery and market analysis for major olefins markets around the globe.

Chemical Economics Handbook



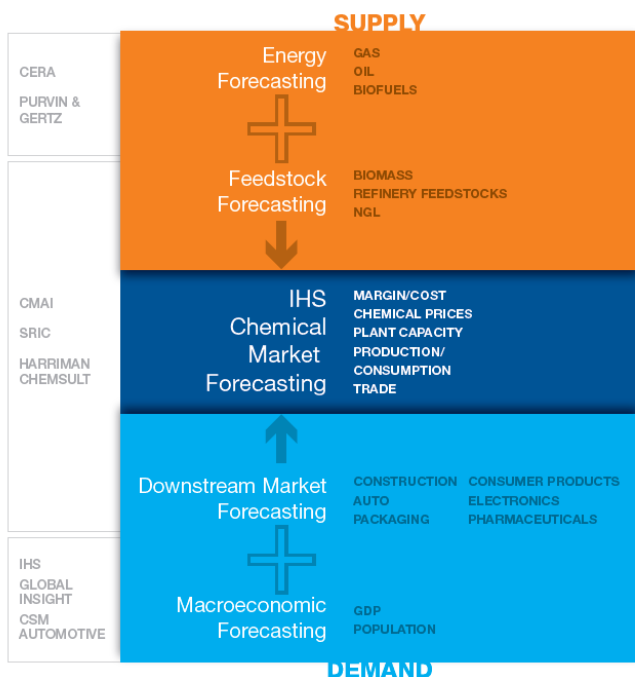
The **Chemical Economics Handbook (CEH)** is a core market research program. It provides accurate and timely information on the history, status, and projected trends of hundreds of raw materials, primary and intermediate chemicals, and end products of the commercial chemical industry. Published continuously since 1954 and now more than 20,000 pages in length, CEH is supported by more than 250 sponsors in more than 35 countries.

CEH reports typically include a global summary and regional coverage of chemical markets, listing the producers and annual capacities in each region. The studies also include production and consumption volumes by region and end-use application for each chemical product. Both trade imports and exports by region are also estimated in CEH reports.

About IHS Chemical

Best-in-Class Brands

IHS Chemical now combines the former CMAI and SRI Consulting groups together with Chemical Week Magazine, Harriman Chemsult, IntelliChem and PCI Acrylonitrile into one integrated business unit comprising its multiclient and single client services. IHS Chemical's experts, analysts and researchers who are well respected throughout the industry for their deep-rooted analysis and forecasts, extends the value that IHS can now offer by connecting clients with the vast resource of insight and expertise that exists across IHS including energy, supply chain and economics.



Comprehensive Coverage

IHS Chemical provides the most comprehensive chemical market content and industry expertise in the world. The company has more than 200 dedicated chemical experts working together to create a consistent and integrated view across more than 300 industrial chemical markets and 2,000 chemical processes for 95 industries. Ensure that your decisions are based on broad, comprehensive information, forecasts, intelligence, and analysis.

IHS has assembled a team of chemical experts that offers an unprecedented coverage level for core chemical markets and technologies. Backing them is a larger IHS community of experts covering related markets, from energy and the macro economy to the world's largest chemical-using industries, such as automotive, construction and others. IHS Chemical's intellectual capital is built on an operating model that utilizes over 1,800 consultants, researchers and economists to advance cross-disciplinary collaboration and analysis.

About IHS

IHS is the leading source of information, insight and analytics in critical areas that shape today's business landscape. Businesses and governments in more than 165 countries around the globe rely on the comprehensive content, expert independent analysis and flexible delivery methods of IHS to make high-impact decisions and develop strategies with speed and confidence.

IHS has been in business since 1959 and became a publicly traded company on the New York Stock Exchange in 2005. Headquartered in Englewood, Colorado, USA, IHS is committed to sustainable, profitable growth and employs more than 8,000 people in 31 countries speaking 50 languages around the world.

IHS serves businesses and all levels of governments worldwide ranging from 85% of Global Fortune 500 to small businesses. IHS provides comprehensive content, software and expert analysis and forecasts to more customers in more than 180 countries worldwide.



Information, analytics, and expertise

IHS offers must-have business information, advanced research and analytics, and deep expertise in core industry sectors, such as energy and natural resources, chemicals, electronics, and transportation. We focus on business-critical workflows that support our customers' needs, including:

- Strategy Planning & Analysis: Strategic Planning, Corporate Development, M&A, Investment Analysis, Risk Assessment
- Energy Technical: Exploration-Production, Geoscience, Engineering, Commercial Development
- Product Design: Engineering Design, Research and Development
- Supply Chain: Procurement, Logistics, Operations, Manufacturing
- Environmental Health, Safety & Sustainability: Sustainability, Regulatory, Environment Health and Safety

This interconnected information, expertise, and analytics across industries and workflows allows IHS to provide best-in-class solutions that power growth and value for our customers.

Contact Information

To make an inquiry about this study, please reach out to the IHS Chemical Special Reports team at ChemicalSpecialReports@ihs.com.

IHS Chemical Special Reports

IHS Chemical Special Reports address topical issues in the chemicals industry. Please find a list of available Special Reports below. If you would like to learn more about any of these products, please contact the Special Reports team at ChemicalSpecialReports@ihs.com.

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Lubricants in Brazil