

Planning for Tomorrow: PIRA's Five-Year Outlook for Crude Oil and Refined Product Markets, 2010-2015

A Multi-Client Study to Support Planning and Global Market Research

OVERVIEW

Effective strategic planning in the oil industry requires a set of assumptions that is comprehensive, global, and internally consistent. Developing these detailed assumptions and bases requires time-consuming analysis by experts in many different disciplines. In its updated annual multi-client study, **PLANNING FOR TOMORROW: PIRA'S FIVE-YEAR OUTLOOK FOR CRUDE OIL AND REFINED PRODUCTS MARKETS, 2010-2015**, PIRA saves companies the time associated with this arduous task by bringing together its global energy analysis, models, and forecasting intelligence to provide a comprehensive, internally consistent, and up-to-date outlook for oil industry planning and market research.

PLANNING FOR TOMORROW, 2010-2015 will be **comprehensive**, not only covering conventional liquids, the rapidly growing volume of alternative fuels, and refined-product markets, but also placing oil demand and supply in the context of all other fuels and the specific characteristics of each end-use. While the study will cover the **global market as a whole**, it will also delve deeply into **key regions and countries**, taking into account the relationships of specific markets and arbitrage opportunities between them. And it will be **internally consistent** between these regions/countries and across products to allow the accurate comparison of project economics in different business units and regions.

PLANNING FOR TOMORROW will draw on PIRA's Global Crude Oil & Refined Products Retainer Service, Global Biofuels Service, World Refinery Database, and Freight Market Outlook, as well as PIRA's detailed and unique country-by-country energy demand and oil supply models. **PLANNING FOR TOMORROW will provide an invaluable tool for oil industry planning and market research by offering these features:**

- **A comprehensive online database.** Providing history back to 1995 and forecasts through 2015, the database covers, by key region and country, economic growth and energy demand; crude oil supply and demand, call on OPEC, and prices; refined products supply and demand, prices, cracks, and margins; as well as refinery configuration and capacity, trade flows, and freight rates. **See page 3 for a complete outline.**
- **The outlook for global energy demand.** Starting with the outlook for economic and population growth in key countries and regions, the outlook for global energy demand will be examined and quantified by fuel and end-use sector, placing the demand for each oil product in its proper context. In addition, trends in energy intensity and energy-related CO₂ emissions will be calculated for key countries and regions.
- **The outlook for liquids supply.** Based on PIRA's models of resource base, project development, new exploration and decline rates, the study will provide the outlook for crude oil production divided into six major quality grades, distinguishing production both by region and between OPEC and non-OPEC. The outlook for other liquids production, including NGLs, synfuels and biofuels, is added to complete the supply/demand balance.

- **A forecast for crude oil pricing.** Based on the outlook for overall energy demand, the detailed outlook for crude oil demand will be matched with PIRA's outlook for liquids supply. The crude oil supply/demand balance and call on OPEC production lead to the outlook for crude oil prices, which will be reported for the benchmark crudes WTI, Brent and Dubai.
- **The outlook for global refining.** Drawing on information contained in PIRA's World Refinery Database, the outlook for global refining will include projections of crude oil refinery runs by region, refinery configuration, and capacity (including a list of planned refinery projects with PIRA's expected probability of completion), taking into consideration the impact of changing product specifications.
- **The outlook for refined product pricing.** The study will provide PIRA's outlook for prices for five major products (naphtha, jet/kero, gasoline, gasoil/distillate and fuel oil) in the U.S. Gulf, Rotterdam, the Mediterranean, Singapore and the Arabian Gulf. Product cracks and refining margins will be calculated from the product and crude oil prices.
- **The outlook for crude and refined product trade.** The study will detail the outlook for trade between regions for crude oil and refined products, based on PIRA's regional outlook for oil product demand, refinery production and crude oil runs. Also included will be PIRA's outlook for crude oil freight rates for the key crude oil voyages.
- **A PowerPoint presentation — delivered via a WebEx workshop and available in print and online — that communicates the study's key findings.** This comprehensive presentation — some 100 slides in length — explains the assumptions, analysis and conclusions, allowing PLANNING FOR TOMORROW subscribers to get the most out of the study. **Option: For an additional fee, the presentation may be provided to a subscribing company via a private WebEx briefing or in person at a client site.**

- **An optional add-on to the study is a forecast of netback values and an analysis of the drivers of the differential relationships between key regional benchmark crudes,** including PIRA's analysis of the drivers of pricing differentials between key regional benchmark crudes. **The netbacks are:**

WTI	LLS	Maya	Mars	Brent	Dubai	WCS
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WHAT HAS CHANGED SINCE LAST YEAR'S EDITION

The oil market has always been dynamic, and never more so than in 2008 and 2009. After soaring to almost \$150/Bbl in July 2008, WTI dropped below \$35/Bbl in December and then rebounded to more than \$70 in August 2009. The "Great Recession" of 2008-09 has led to the largest annual decline in global oil demand in 25 years. By mid-2009 the global economy had begun to recover, but uncertainty remains around several critical issues: How robust will the economic recovery be? How will the oil price shock of 2008 impact oil demand? Will the experience of 2008-09 accelerate implementation of energy and environmental policies? Will the oil price surge of 2008 boost prospects for non-OPEC supply, or will the financial crisis and 2008-09 oil price slump lead to further supply declines?

The 2010 edition of PLANNING FOR TOMORROW incorporates PIRA's latest analysis of all these developments. In addition, the outlook will extend through 2015 to provide the latest guideposts for five-year strategic plans. Like its predecessors, the 2010 edition of PLANNING FOR TOMORROW provides a comprehensive, global, and internally consistent outlook covering the key aspects of the oil market: oil demand, supply, and price; refined products, cracks, and margins; trade flows; and freight rates.

DATABASE OUTLINE

Central to the study is a comprehensive database (see full list of deliverables on page 5), the contents of which are shown below. Unless otherwise noted, all concepts/series are provided for each of the following country/regions.

Regions and Countries Covered in the Study Database			
United States	Former Soviet Union	China	Middle East
Canada	Japan	Southeast Asia and Korea	Africa
Western Europe	Australia/New Zealand	India and other South Asia	Latin America
Eastern Europe			

A. Energy Demand and Key Drivers

- a. Real GDP level and growth
- b. Population and growth
- c. Energy demand by fuel (oil, natural gas, hydro, nuclear, solid fuels, biofuels, etc.) and sector (industrial, electric generation, transportation and residential/commercial)
- d. Measures of energy intensity; e.g. energy/GDP, energy/population, etc.
- e. Energy-related CO₂ emissions

B. Liquids Supply

- a. Crude oil production by quality (light sweet, medium sweet, heavy sweet, light sour, medium sour and heavy sour)
 - i. In addition to key regions, production will be split between OPEC and total non-OPEC
- b. NGLs production; Ethanol, biodiesel and other non-conventional liquids supplies

C. Crude Oil Pricing

- a. Prices for the key crudes WTI, Brent and Dubai

D. Refined Products Markets

- a. Demand for major refined products (naphtha, jet/kero, gasoline, gasoil/distillate, low sulfur fuel oil and high sulfur fuel oil) plus demand for LPG
- b. Crude oil refinery runs by region
- c. Refinery configuration and expected total capacity by region
 - i. Major projects, both expansion and upgrading, with expected probability of completion

E. Refined Products Pricing

- a. Product prices for the major refined products (naphtha, jet/kero, gasoline, gasoil/distillate and fuel oil) in the U.S. Gulf, Rotterdam, Med, Singapore, and the Arabian Gulf
- b. Product cracks
- c. Refining margins for reference crudes

Oil and Refined Products Trade

- d. Crude oil trade flows between regions
- e. Refined product trade flows between regions for jet/kero, gasoline, gasoil/distillate and fuel oil
- f. Crude oil freight rates: AG to Japan, AG to NWE, AG to USGC, Africa to Asia, West Africa to USGC, Black Sea to Med, West Africa to USEC, and North Sea to USEC

WHO WILL BENEFIT FROM THIS STUDY

Effective strategic planning and budgeting in the oil industry requires more than just an outlook for crude oil prices. The decisions faced by oil companies are far more complex and require detailed assumptions covering a range of crude oil and refined product prices with all the associated arbitrages, cracks and margins. For capacity and transportation planning, the level of demand and inter-regional product flows need to be projected for each key region. These, in turn, need to consider the relationship between regional crude availability, refining capacity, and product demand. All these assumptions need to be internally consistent by means of an integrated, global, bottom-up analysis of all aspects of the oil market.

This is a very time-consuming effort, requiring the development of models and tools covering oil supply, demand and transportation and expertise in many different disciplines: macroeconomics, energy demand, refined product demand, oil supply, refinery economics and logistics, and more. As a practical matter, many companies find it difficult to justify hiring and developing the internal expertise and models in all these areas. **Rather than attempting to duplicate this entire complex analytical effort themselves, industry participants such as these should take advantage of the work of PIRA's expert analysts:**

- **Integrated state and private oil companies**, which need to have a consistent basis for planning and project evaluation covering the entire spectrum of the oil market, from crude oil to refined products and including the impact of alternative fuels, transportation costs and regional differences.
- **Crude producers**, who need to understand not only the global outlook for crude oil supply, demand and pricing, but also how the changing slate of crude qualities will interact with the evolving refining system to change the relative value of different crude streams. The study will provide them an outlook for strategic planning that incorporates PIRA's detailed analysis of crude oil production, refined product demand, and the current and future capabilities of the global refinery system.
- **Refiners**, who need to understand the interplay between regional demand by product, changing product specifications, changing crude quality, growth in non-conventional liquids such as biofuels and the evolution of regional refinery capability. The outlook provided by PIRA's PLANNING FOR TOMORROW study will allow refiners to evaluate a range of alternative strategies.
- **Trading companies**, which need to anticipate regional supply/demand changes and price dynamics. The study's five-year outlook will provide the longer-term context for short-term trading strategies.
- **Other investors in oil infrastructure**, such as storage and pipelines, who need to understand the prospective changes in crude oil and refined product flows on a regional basis and the implications for supporting infrastructure.

WHAT STUDY SUBSCRIBERS RECEIVE

Each authorized user of the **PLANNING FOR TOMORROW** study will obtain the following valuable set of deliverables upon release of the study in March 2010.



A COMPREHENSIVE ONLINE DATABASE that provides historical data back through 1995 and forecasts through 2015 in Excel spreadsheets covering the study regions and countries for:

- Economic growth and energy demand, by fuel and by sector
- Supply and demand for crude oil, call on OPEC, and crude oil prices
- Refined products supply and demand
- Refined product prices, cracks, and refining margins
- Crude oil and key refined products trade flows, including freight rate outlook

See a more complete description of the database starting on page 3.



AN EXECUTIVE SUMMARY, printed and online, that documents the medium-term outlook for oil and petroleum products. Approximately 30 pages in length, it will discuss PIRA's Reference Case outlook for the demand, supply and price of oil and refined products by grade in key countries and regions of the world.



A POWERPOINT PRESENTATION, via a WebEx workshop, in print, and on PIRA online, that explains the key assumptions, analysis and conclusions of the study. **Option:** For an additional fee, the presentation may be provided to a subscribing company via a private online briefing or in person at a client site. See below for details.

FEES AND OPTIONS

PLANNING FOR TOMORROW can be purchased by both PIRA retainer clients and non-clients. **Existing PIRA clients receive a reduced price. Companies that order before January 22, 2010, receive a 10% "early bird" discount. Companies that purchased the 2008 or 2009 edition receive an additional discount.** Subscriptions allow for three authorized users (3 user IDs to access online content and 3 printed copies of the Executive Summaries and PowerPoint presentations). See the [Acceptance Form on page 8](#).

Optional Add-Ons:

1. Private Presentation:

The PowerPoint Presentation deliverable may be provided via a private WebEx briefing for an additional fee of \$4,000 (\$2,500 for PIRA clients), OR in person at a client site. If on-site, and/or if the briefing requires excess preparation, a special fee will be quoted; please contact your PIRA sales representative if you are interested in this option.

2. Netback Analysis:

A forecast and analysis can be provided of netback values for 7 key benchmark crudes as well as an analysis of their pricing differentials, delivered in an Excel Workbook, for an additional fee of \$9,750 (\$5,750 for PIRA clients).

ABOUT PIRA ENERGY GROUP

PIRA Energy Group, founded in 1976, is an international energy consulting firm, offering Retainer Client Services as well as multi-client studies and customized consulting on a broad range of subjects in markets for international oil, natural gas (and LNG), coal, electricity, biofuels, and freight, as well as related environmental issues. PIRA provides evaluation of key U.S. and international energy issues that impact the behavior and performance of the industry and its various markets and sectors. Currently, more than 500 companies spread across some 60 countries retain PIRA, including international and national integrated oil and gas companies, independent producers, refiners, marketers, oil and gas pipelines, electric and gas utilities, industrials, trading companies, financial institutions, and government agencies.

THE STUDY TEAM

Peter Jaquette (Director, Global Oil Group) is the coordinator of the PLANNING FOR TOMORROW study, working closely with PIRA's Global Oil, Refining, Biofuels and Freight groups. He is a key contributor to PIRA's Scenario Planning Service, and was the coordinator of the 2008 edition of the PLANNING FOR TOMORROW study. Peter joined PIRA in 2007 with more than 25 years of experience in corporate strategic planning and economic consulting, including 14 years with ARCO and nine years with Weyerhaeuser, where he was involved in evaluating cellulosic ethanol and other energy projects. Peter has a B.A. in economics from Swarthmore College and an M.A. in economics from Stanford University.

Richard Joswick (Managing Director, Global Oil Group) develops PIRA's outlook for crude and products pricing, refinery margins, and inter-regional supply balances. He authors PIRA's monthly European Oil Market Forecast. He was the study leader for the 2008 multi-client study: *Bottom of the Barrel: The Future for Residual Fuel Oil*, and its successor study, *Heart of the Barrel: The Future of Middle Distillate Fuels*, released in early 2009. Rick joined PIRA in 2004 after 20 years with ExxonMobil in supply logistics, planning, refining, and engineering. During his time at ExxonMobil, he had assignments developing near-term oil market forecasts, designing heavy oil upgrading processes and evaluating refining economics. Rick has M.S. and B.S. degrees from Rutgers University in chemical engineering.

Dr. Mark Schwartz (President) works closely with PIRA's Global Oil and Natural Gas groups to evaluate the key assumptions underlying their outlooks and to develop plausible alternative assumptions and outcomes. Before joining PIRA in 2002, he was the Chief Economist of ExxonMobil Corp., where he was responsible for developing the company's long-range economic and energy outlook. During his 25 years at Exxon he also had assignments in Upstream Planning, Treasurers, and Corporate Planning functions. Mark holds a Ph.D. in economics from the University of Pennsylvania.

Doug Bulger (Managing Director) heads up the Project Consulting Group. Before joining PIRA in April 2005, Doug was Manager - Supply & Trading for Shell Canada, and previously Manager - Refinery Supply for Deutsche Shell AG in Hamburg, Germany. In these positions, Doug led Crude and Products Supply, Supply Strategy and Optimization, Marine, Logistics and Risk Management teams. During his 29 years at Shell, Doug was also an Advisor in Corporate Strategies at Shell Canada undertaking studies in Strategy Development, Competitive Positioning, Acquisition and Corporate Restructuring. He holds a B.Eng. in chemical engineering from McGill University and an M.B.A. from the University of Calgary.

David A. Zinamon (Managing Director, Refining and Environmental Affairs) specializes in refined products, refinery operations, NGLs, alternative fuels and environmental matters, particularly as they affect petroleum product markets. Among other activities he is responsible for PIRA's World Refinery Database. Dave also authors PIRA's monthly NGL market report. Dave joined PIRA in 1984 after seven years of international energy consulting experience with Chem Systems. This followed several years of manufacturing, marketing and planning positions with Celanese Chemical, GAF Corp., and Airco. He has a B.Ch.E. from City College of New York and an M.B.A. from Rutgers University.

F.W.A. (Bill) Fuller (Sr. Director, International Oil) had over 30 years of energy forecasting and analytical experience with Exxon International before joining PIRA in 1997. He now oversees PIRA's analysis and forecasting of near-term industry oil balances and monitors events impacting PIRA's oil market view. Bill has a B.S. in chemical engineering from Cornell University.

Kenneth M. Bogden (Director, Freight Markets) is responsible for PIRA's monthly Freight Market Outlook. Prior to joining PIRA in 2005, Ken worked for ExxonMobil for 27 years, primarily in its oil supply and trading and planning functions, and also served as Coordinator of Transportation Planning. Ken has a B.S. in chemical engineering from Lafayette College and an M.B.A. from Columbia University.

Joseph T. (Joe) Pezzino (Director) maintains PIRA's Worldwide Refinery Database, including capacity analysis, product quality implications, and margins. Before joining PIRA in 2000, he led refinery process tech services, economics, and planning during a 30-year career at Mobil. He also worked in Corporate Supply & Distribution and subsequently at Mobil Research specializing in supply chain optimization. Joe has an M.B.A. and B.S. in chemical engineering from S.U.N.Y. at Buffalo.

Gary Greenstein (Director, Global Oil Group) joined PIRA in 2008 following 38 years of experience with ExxonMobil, where he was involved in all aspects of the refining business, including planning, operations, engineering and research. Gary has a B.Ch.E. from City College of New York, an M.S. in chemical engineering from New Jersey Institute of Technology, and an M.B. A. from Fairleigh Dickinson University.

Dr. Naing Oo (Associate Director) joined PIRA's Global Oil Group in 1995. He focuses on quantitative and econometric analysis for forecasting oil demand and prices. He also analyzes crude and product balances and trade flows. Naing holds a Ph.D. in economics from the City University of New York.

Clayton Vernon (Director of Energy Modeling) is responsible for PIRA's global energy demand model. Clayton came to PIRA from Bank of America, where he was in charge of Fundamentals Analysis for their Commodities Trading group. Prior to joining B of A, Clayton was Director of Fundamentals Analysis for Enron in Houston. Clayton has an M.S. in econometrics from the University of Texas at Austin and a B.S. in mathematical physics from Rice University in Houston.

Su Hyung Ryu (Associate Director) focuses on crude and product price forecasts. Su maintains and develops integrated oil demand and pricing models and information systems. Since joining PIRA in 1998, she has participated in numerous benchmarking and competitive analysis projects, crude and product marketing assessments, and asset valuations. Prior to joining PIRA, Su worked at Citibank Global Banking, where she analyzed and developed investment database applications. She holds M.S. in business computer information systems from Baruch College in New York.

ACCEPTANCE FORM

(Company Name) _____ wishes to subscribe to the multi-client study **PLANNING FOR TOMORROW: PIRA’S FIVE-YEAR OUTLOOK FOR CRUDE OIL AND REFINED PRODUCT MARKETS, 2010-2015** for ____ number of users. We understand and agree that the fees are as follows:

	PIRA Client, 3 Users	Client, Add'l Users	Non-Client, 3 Users	Non-Client, Add'l Users
Standard Fee*	\$26,000	\$1,000 each	\$41,000	\$1,500 each
Buyers of prior Editions	\$22,000	\$850 each	\$34,500	\$1,275 each
<i>Before Jan. 22, 2010</i>	\$23,400	\$900 each	\$36,900	\$1,350 each
<i>Buyers of Prior Editions</i>	\$19,800	\$765 each	\$31,050	\$1,150 each
	Best rates			

Optional Add-Ons	Custom Presentation		Netback Analysis	
	PIRA Client	Non-Client	PIRA Client	Non-Client
Standard Fee*	\$2,500	\$4,000	\$5,750	\$9,750

* New York City-based companies, please add 8.375% sales tax; Long Island-based companies, please add 8.625% sales tax; all other New York State companies, please add the county-appropriate sales tax.

Name/Title: _____

Company: _____

Address: _____

Phone/Fax/e-mail: _____

Total Fee (includes optional add-ons fee): _____

Signature: _____

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