

Spring 2010

# European Natural Gas Retainer Service

## “Knowing the Numbers” in a Liberalized Market

European gas markets offer a strange combination of distinct supply/demand fundamentals and a new position at the center of the global gas trade. The U.K. and continental markets continue to go through the struggles of finding a happy balance between spot pricing in its future and oil-indexed pricing of its past. Spot markets have popped up in several key markets, but oil-indexed pricing continues to loom over trade as a central tendency indicator. Supply/demand fundamentals have never mattered more, as all eyes focus on stock changes and weather-related demand issues with unprecedented vigor. Europe's massive import flexibility and utilization of both LNG and pipeline gas at unparalleled volumes has created a market that is no longer just relevant to European trade, but also gas markets in the Americas, Asia, and the fast-growing Mideast. Never has understanding the fundamentals of supply and demand — “knowing the numbers” — been as important as it will be in the years to come. And “knowing the numbers” is what PIRA Energy Group does best.

### A paperless service providing:

- Regular insights on market and infrastructure developments
- An up-to-date, dynamic online database
- A wealth of “drill-down” information
- Private consultation

The breakdown of traditional commercial structures in terms of supply, demand, and prices is meeting head-on with a wide open market structure, and PIRA is here to guide you. Like in the U.S. and U.K. markets before it, opportunities to market and trade gas will emerge all over Europe, with third-party access to the continent's most important pipelines providing inroads into previously untouchable markets.

PIRA Energy Group's European Natural Gas Retainer Service (ENG) is designed to complement PIRA's Global Oil, Global LNG, and European Electricity Retainer Services. ENG covers Europe's emerging market for natural gas trade by grasping the market fundamentals and giving clients a clear view of these fundamentals and how they will affect prices.

### ENG will assist your company in several aspects of the European market:

1. Understanding the confluence of a well-established infrastructure and a “new market” feel.
2. Highlighting the shifts in market trends that will affect supply, demand, and price direction.
3. Digging deep into the numbers to reveal significant issues affecting long/short-term markets.
4. Integrating PIRA's gas and oil forecasts in addressing interfuel competition.

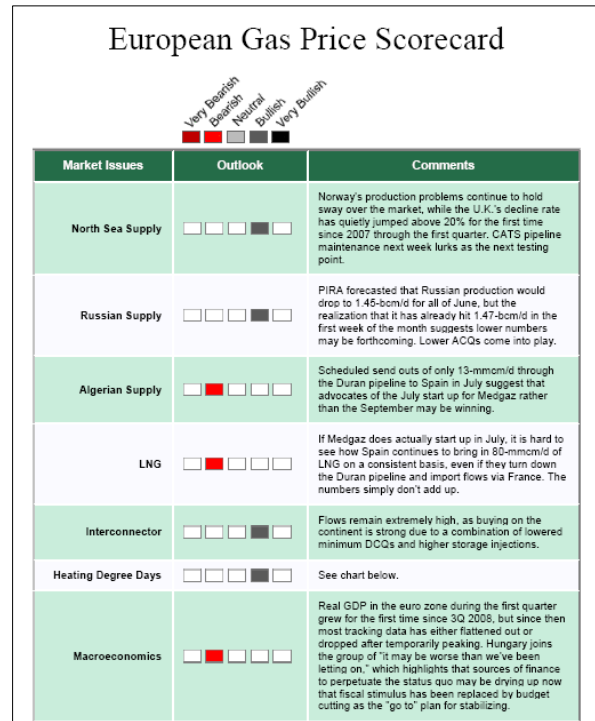
This type of fundamental analysis — the hallmark of PIRA's consulting services — provides the foundation for a detailed assessment of European gas markets. This analysis enables PIRA to address:

- How liberalization and macroeconomic shifts affect demand growth?
- Why new supply links and infrastructure will create regional imbalances?
- What third-party access will mean to the market's established players and new arrivals?
- Which players appear to be gaining the upper hand?
- Where opportunity knocks?

## Components of the European Natural Gas Retainer:

### Weekly European Gas Price Scorecard

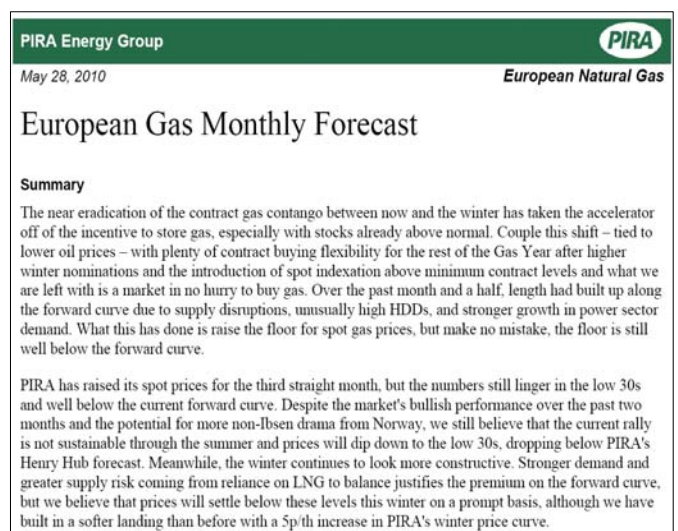
Each Wednesday, PIRA provides an assessment of the key gas fundamental and macroeconomic factors driving price movements over the next month and quarter, including a write-up of key market factors that change the short-term outlook for prices in the U.K. and on the Continent. A quick recap of key factors highlights the forces driving the market in a bullish or bearish direction. Key monthly data foretells shifts in gas demand by sector for Europe's biggest markets. Charts and tables analyze primary elements of the European gas balance such as German storage, Norwegian supply, and U.K. demand.



Weekly European Gas Price Scorecard

### Monthly Gas Market Forecast

ENG's key deliverable, the report features supply, demand, working gas storage, and price forecasts 12 to 18 months ahead for Europe's largest markets, including individual forecasts for over 20 countries, ranging from the largest to the fastest growing. Sent at end-month, this 8- to 12-page report breaks down these four critical sections and builds up the results into a clear viewpoint on market direction, which is summarized on the first page. Monthly reports focus on emerging drivers of price in an analytical framework that incorporates macroeconomic drivers, cross-commodity trends, and changes in other markets around the world that will affect the flow of gas in and out of Europe.



Monthly Gas Market Forecast

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## European Daily Natural Gas Demand Forecast and Portal Data - NEW

A snapshot of 10-days-forward daily gas demand for five European countries. The projections incorporate custom temperature forecasts across Europe, while factoring in the impact of developments from broader economic trends via industrial production forecasts. Detailed daily demand data are available, with sector breakdowns, through the ENG portal. Updated daily, these data also include demand departures from seasonal normals and comparisons to the previous day's forecast.

**Summary of PIRA's European Daily Gas Demand Forecast (MMCM) 24 May 2010, 2:01 AM EST**  
For the forecast archive, please log in to PIRA's ENG Web Portal.

Demand Forecast														
Date	Belgium	France			Italy					Spain			UK	Total
	Total	Industrial & Power	R & C	Total	Industrial	Power	R & C	Other	Total	Conventional	Power	Total	Total	
5/24/10	21	34	24	58	43	74	41	9	166	56	41	97	260	602
5/25/10	28	35	24	59	43	76	39	7	164	58	45	102	267	621
5/26/10	30	36	33	70	43	76	41	7	168	58	43	101	269	638
5/27/10	29	36	36	73	43	75	44	6	167	59	43	101	265	636
5/28/10	26	35	33	68	41	71	40	4	157	56	41	98	259	608
5/29/10	21	32	28	59	34	53	28	4	119	46	31	77	246	522
5/30/10	20	31	28	59	32	44	27	7	110	44	24	67	241	497
5/31/10	27	35	35	70	41	71	41	8	161	54	41	95	244	599
6/1/10	31	36	39	75	42	76	45	6	169	57	46	103	269	647
6/2/10	33	36	40	77	35	56	35	2	128	57	47	104	263	605

Demand Forecast vs. Normal														
Date	Belgium	France			Italy					Spain			UK	Total
	Total	Industrial & Power	R & C	Total	Industrial	Power	R & C	Other	Total	Conventional	Power	Total	Total	
5/24/10	-4	1	-10	-9	4	0	4	1	9	2	-1	1	16	14
5/25/10	-2	1	-10	-9	3	-3	1	1	2	1	-1	0	23	14
5/26/10	-3	3	0	3	3	-3	4	-1	5	2	-2	-1	26	30
5/27/10	-4	3	4	7	3	-3	5	0	6	3	-4	-1	23	31
5/28/10	-5	2	3	6	3	-4	6	0	5	1	-3	-2	20	24
5/29/10	-4	2	6	8	3	-2	6	1	7	0	-2	-3	17	25
5/30/10	-4	2	7	9	3	-3	7	0	8	1	-2	-1	12	23
5/31/10	-5	2	4	6	2	-4	7	0	5	1	-2	-2	9	14
6/1/10	-6	2	10	12	3	-6	3	1	1	1	-5	-5	66	69
6/2/10	-3	3	12	14	6	2	16	0	24	1	-4	-4	51	82

Demand vs. Previous Day Forecast														
Date	Belgium	France			Italy					Spain			UK	Total
	Total	Industrial & Power	R & C	Total	Industrial	Power	R & C	Other	Total	Conventional	Power	Total	Total	
5/24/10	1	-2	4	2	1	0	-5	0	-5	2	5	8	8	10
5/25/10	0	-2	2	0	1	0	-4	0	-4	1	2	3	5	5
5/26/10	1	-1	2	0	1	0	-3	0	-2	1	2	3	3	5
5/27/10	1	-1	1	0	1	0	-2	0	-1	1	1	2	3	5
5/28/10	1	-1	1	0	0	0	-1	0	-1	1	1	2	3	4
5/29/10	0	-1	1	-1	1	0	-3	0	-2	1	1	3	1	1
5/30/10	0	-1	0	-1	1	0	-1	0	-1	2	1	3	2	3
5/31/10	0	-1	-1	-3	1	0	-1	0	-1	1	1	2	3	1
6/1/10	0	-1	-1	-2	0	0	0	0	0	2	0	2	2	2

*Note: These tables show PIRA's forecast of daily demand (in MMCM) based on the temperature outlook and a forecast of industrial activity.*

### The European Daily Natural Gas Demand Forecast

### Natural Gas Demand Data Detail on ENG Portal

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## European Daily Electricity Demand Forecast - NEW

A summary report of the 10-day forecast for 20 countries, sent by email every morning (including weekends), showing an overview of the load deviation versus normal and versus the forecast from the previous day. The goal of this new deliverable is to offer a more frequent look at demand drivers affecting movements on the forward price curve.

Summary of PIRA's European Electricity Daily Demand Forecast (Issued: 6 Apr 2010, 1:58 AM EST)																							
For detailed hourly current and historical forecasts, please log in to PIRA's EES Web Portal.																							
Baseload																							
Date	Western Europe							IT	PT	ES	UK	Scandinavia				Total	Eastern Europe					Total	
	FR	DE	NL	BE	AT	CH	Total					SE	NO	FI	DK		PL	CZ	RO	BG	HU		SK
4/6/10	56,445	57,250	13,341	9,397	7,425	6,816	150,674	33,888	5,655	28,353	39,482	16,949	14,432	9,415	4,210	45,007	15,623	7,528	5,297	3,344	4,781	3,009	39,562
4/7/10	55,991	60,383	13,488	10,087	7,758	7,028	154,714	37,049	5,692	28,161	39,613	16,834	14,245	9,869	4,115	44,863	16,846	7,434	6,086	3,659	4,770	3,098	41,864
4/8/10	57,328	60,190	13,492	10,111	7,700	7,117	155,938	37,051	5,657	28,120	39,736	16,365	14,141	9,834	4,062	44,403	16,723	7,375	6,000	3,583	4,756	3,061	41,498
4/9/10	56,256	59,184	13,340	9,977	7,554	7,166	153,478	36,704	5,613	27,873	38,600	15,999	14,033	9,789	3,903	43,724	16,517	7,281	5,987	3,470	4,721	3,038	41,015
4/10/10	50,238	50,771	11,876	8,898	6,595	6,320	134,697	31,108	4,880	24,300	34,122	14,563	12,939	9,138	3,358	39,998	15,009	6,426	5,578	3,318	4,289	2,808	37,429
4/11/10	46,267	46,053	11,118	8,427	5,999	5,861	123,725	26,646	4,451	21,733	33,176	14,381	12,616	8,857	3,228	39,082	13,401	6,252	5,068	3,269	4,057	2,701	34,748
4/12/10	53,154	59,106	13,167	9,794	7,548	6,922	149,692	35,338	5,446	27,295	38,592	16,188	13,550	9,714	3,981	43,434	16,094	7,361	5,859	3,467	4,614	3,006	40,401
4/13/10	54,833	60,589	13,407	10,086	7,756	7,104	153,754	36,889	5,686	28,222	39,354	16,283	13,714	9,709	4,067	43,772	16,679	7,437	6,030	3,511	4,746	3,066	41,470
4/14/10	55,349	60,341	13,474	10,100	7,711	7,021	153,995	37,047	5,779	28,462	39,337	16,289	13,806	9,688	4,085	43,869	16,651	7,356	6,015	3,525	4,756	3,061	41,363
4/15/10	55,348	59,899	13,492	10,083	7,650	7,014	153,456	37,020	5,784	28,436	39,196	16,388	13,872	9,728	4,085	44,073	16,557	7,292	5,991	3,496	4,752	3,039	41,127
Baseload vs. Normal																							
Date	Western Europe							IT	PT	ES	UK	Scandinavia				Total	Eastern Europe					Total	
	FR	DE	NL	BE	AT	CH	Total					SE	NO	FI	DK		PL	CZ	RO	BG	HU		SK
4/6/10	-411	-39	12	-61	52	93	-354	52	-66	-9	-253	520	473	187	-8	1,172	-34	32	66	-42	13	4	60
4/7/10	-725	-573	27	-85	-22	-75	-1,452	82	-69	-253	-102	79	94	239	-16	397	19	-67	64	73	13	-4	98
4/8/10	739	-514	5	-20	-55	39	194	116	-101	-136	163	-85	48	198	-29	132	-91	-100	-15	12	1	-29	-222
4/9/10	461	-324	-3	-9	-35	160	250	131	-100	-122	-157	-46	59	125	-27	111	-169	-41	4	-66	10	-37	-299
4/10/10	101	-280	-10	7	-26	109	-99	108	-96	-10	-264	7	-180	164	-14	-23	-154	28	21	-11	7	-40	-149
4/11/10	-792	-413	-1	-2	-37	29	-1,216	99	-80	-45	-159	-10	-256	215	-27	-79	-105	36	2	-1	5	-36	-100
4/12/10	-1,343	-130	12	-11	8	28	-1,436	112	-62	-75	-68	-10	-370	213	-26	-192	0	66	32	-14	6	-21	68
4/13/10	-1,038	-64	11	-9	44	25	-1,021	80	6	40	18	78	-261	220	-20	16	17	16	38	-8	6	-7	62
4/14/10	-403	-373	24	8	-13	-14	-771	83	60	218	13	59	-70	203	-14	178	-64	-71	24	-11	6	-18	-133
4/15/10	-278	-600	16	10	-49	3	-898	73	68	342	7	262	52	235	25	673	-148	-110	6	-25	4	-28	-298
Baseload vs. Previous Day Forecast																							
Date	Western Europe							IT	PT	ES	UK	Scandinavia				Total	Eastern Europe					Total	
	FR	DE	NL	BE	AT	CH	Total					SE	NO	FI	DK		PL	CZ	RO	BG	HU		SK
4/6/10	-86	76	12	6	-25	-9	-25	12	4	-9	108	-96	58	56	-6	12	-20	-12	5	-1	-1	4	-25
4/7/10	276	87	-10	-25	15	-6	338	47	0	-43	336	-184	55	106	-23	-46	-6	-13	18	42	14	8	64
4/8/10	548	-735	-14	-12	-52	-32	-297	-5	-19	-5	227	-266	151	69	-25	-71	5	-62	-2	50	-1	-11	-12
4/9/10	407	-456	-32	-49	-98	14	-215	49	-23	-31	-351	-184	242	42	-6	94	36	-22	19	22	-9	-28	19
4/10/10	96	-110	-29	-36	-43	47	-73	78	-10	104	-636	-99	33	87	31	62	57	56	-52	22	-9	-19	55
4/11/10	-502	17	-7	16	-15	3	-487	33	-11	47	-633	-182	-5	27	5	-155	52	92	-70	-32	-8	-3	32
4/12/10	-1,062	89	-8	2	15	-32	-997	15	-31	-69	-227	-299	-228	-44	-4	-576	86	142	-15	-46	3	2	171
4/13/10	-1,219	320	21	-31	30	-38	-918	-9	26	29	-155	-250	-254	-48	-36	-588	48	34	6	5	12	6	110
4/14/10	-766	-83	38	-47	-44	-69	-992	9	49	38	-476	-365	-194	-78	-67	-704	-53	-76	8	22	11	-13	-101

Legend FR = France; DE = Germany; NL = Netherlands; BE = Belgium; AT = Austria; CH = Switzerland; IT = Italy; ES = Spain; PT = Portugal; UK = United Kingdom  
SE = Sweden; NO = Norway; FI = Finland; DK = Denmark; PL = Poland; CZ = Czech Rep.; RO = Romania; BG = Bulgaria; HU = Hungary; SK = Slovakia

### The European Daily Electricity Demand Forecast

## Retainer Client Seminar

Clients receive three (3) invitations to PIRA's European Energy Retainer Client Seminar in London (June). The seminar brings PIRA's senior staff and clients together face-to-face for a strategic overview of PIRA's latest thinking on short-, medium-, and long-term energy markets. Clients may also request an individual briefing.

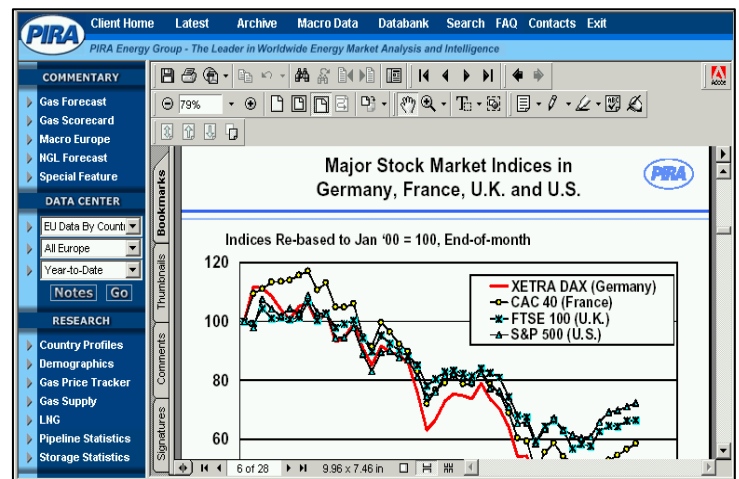
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**PIRA Online**

PIRA's Internet service gives Retainer Clients timely and convenient access to market analysis and short- and long-term price forecasts for European gas markets. PIRA Online allows Clients to utilize multiple-user, multi-site licenses. Some of the reports and data available online include:

**“Macro Europe”**

- Monthly overview of macroeconomic trends that impact gas use in key European markets such as industrial production, GDP, and business confidence.
- Benchmark economic drivers — such as the German IFO and French INSEE — are tracked versus gas demand and gas inventories.
- Large end-users of gas — such as the steel, aluminum, and chemicals — are tracked to assess the possibility and probability of underlying shifts in gas demand in the industrial sector.



Sample slide from “Macro Europe”

**Dynamic Database**

- Supply/demand data for 21 European countries, including production, imports, exports, storage, and demand.
- Links to “data behind the data,” giving users a seamless connection to the entire ENG database.
- Field-by-field production for key producing countries and gas demand by sector.
- Key data on all of Europe's working storage facilities, including withdrawal rates and working capacity.
- Prices for eight of Europe's largest industrial, petrochemical and power markets, including firm and interruptible quotes for multiple size buyers.
- Key European border prices assessments.
- A breakdown of the European gas grid; which companies own and operate key infrastructure and what markets they serve.
- Tracking of key legislation affecting EU market liberalization.
- Online access to PIRA's regularly updated macroeconomic data (currencies, U.S. economy and manufacturing, world economies and air travel)
- **Global Equity Market Performance** – updated weekly, this report tracks the performance of equity markets in countries and regions around the world.
- **Weather-impact maps** for Baltic and Black seas.
- **Temperature maps** for U.S., Europe, the former Soviet Union, and East Asia

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## Data Archive:

Clients receive all ENG-related materials over the Internet, where data and analysis may be retrieved through the client section of [www.pira.com](http://www.pira.com). Monthly forecasts and analytical reports are archived, along with a separate section on special features that will appear each month.

## Country Analysis

- Supply/demand data for individual markets.
- Periodic online updates of significant changes in the market.
- Gas price and tax structure assessments.
- Updates on changes in infrastructure.
- Identification of the key players and what they're doing to stay ahead or fall behind.
- Notification of major changes in the market and their potential impact.

Date	Closing Stocks All Europe	Demand All Europe	Demand EU	Demand Non-EU	Exports All Europe	Imports All Europe	Production All Europe	Stock Change All Europe
YTD 2003	296,356	269,972	192,208	45,429	78,604	173,806	159,894	-18,311
YTD 2002	243,916	249,850	181,123	39,267	74,564	164,226	156,829	-9,591
YTD 2001	289,128	290,009	194,487	37,407	62,842	148,463	185,219	-9,851
YTD 2000	255,933	240,779	100,171	34,444	61,659	147,050	156,702	-4,711
YTD 1999	249,423	231,891	174,668	31,840	62,615	132,731	148,136	-4,711
YTD 1998	265,064	218,744	167,997	28,460	48,983	116,371	140,409	-7,811

Gas Balances by Country (with ENG Navigation Bar)

The *Commentary* section provides analyses of European and NGL markets as well as monthly features.

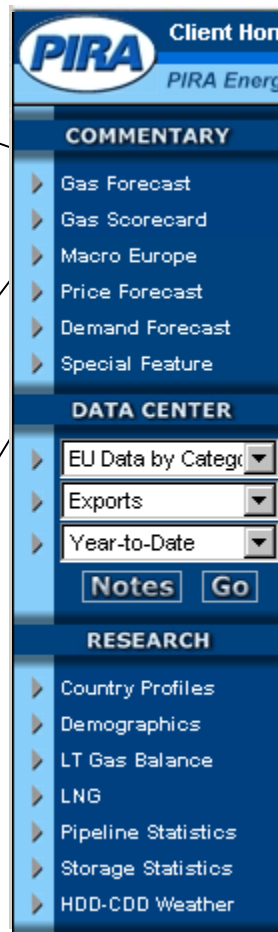
Monthly analysis of macroeconomic drivers and how they will impact gas markets in the months to come.

The **Data Center** offers clients easy access to data for 21 countries on supply, demand. Users may search by category of country and can receive data in a monthly, quarterly, YTD or annual formats.

Overview of NGL markets in Europe, with attention paid to spot markets and contract prices.

*Special Features* address topics of primary importance that have significant long-term impact on European gas.

How much storage is Austria? What does Gazprom charge for sales to Ukraine? *Research* offers clients one reference point for all those questions that require a trip to library or the Internet. New material is added every month.



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## Approach & Methodology

The ENG service, which provides both a Pan-European and regional focus to its analysis, is divided into four primary components. Each of the four components provides a monthly assessment of the entire European gas market, along with special attention paid to specific countries or issues on a timely basis. The approach relies on PIRA's fundamental market analysis, starting with gas supply from Europe's "big four" providers (Algeria, the Netherlands, Norway, and Russia) and demand trends among the most mature and fastest growing European markets. An assessment of the overall European gas transportation market establishes the context for regional analyses and, finally, an overview of oil indexes on gas markets provides an outlook for prices.

In addition to PIRA's well-known analytical command of the market fundamentals, ENG takes the product one step further by providing readily available and easy-to-access research upon which the analysis is built. It provides you with the entire pyramid of information, so you not only can know the story for Europe in its entirety but several different breakdowns of 21 individual countries as well. As an Internet-based product, ENG offers new levels of depth in terms of providing "the data within the data." It also offers a tracking system for key gas contracts as well as a survey of pipeline tariffs and transit costs.

PIRA has defined regions with common infrastructure and market issues but breaks these regions down into interlocking circles of competition, rather than separate spheres of influence. There is the "PIRA Big Five": France, Germany, Italy, the Netherlands, and the UK. These countries hold the biggest gas markets in Europe and offer a diverse end-user base. One or two gas suppliers have dominated these countries for decades. Growth has been steady, but liberalization is changing how demand grows.

Then there's also the "PIRA Pacemakers" — Czech Republic, Hungary, Poland, Spain, and Turkey — a group of newly emerging gas markets, which in some cases were nothing more than transit countries in the past but are now emerging as central markets of their own. PIRA also distinguishes between Northern and Southern European markets, which, while integrated through EU liberalization, are evolving quite differently. Southern Europe's future is inextricably tied to the Mediterranean market and North African suppliers; Northern Europe contends with a flood of suppliers from the North Sea. And then there's Russia's Gazprom, a single company that controls 20% of the European market. The lines continue to blur when addressing Central Europe and the Balkans, two markets where gas demand plunged a decade ago and is still a good 10 BCM/Y lower than a decade ago. The market is there, but who will supply it and will it be at prices that end-users in developing countries can afford?

## Analytical Framework & Service Details

PIRA takes the analytical approach of recognizing the various inter-relationships between four key factors. Understanding these fundamental issues and value drivers is critical.

- 1. Gauging the Fundamentals:** Exports, imports, production and stock changes all affect demand, but so does gross domestic product, heating degree days and industrial production. All of these variables are woven into PIRA's demand forecast for a dozen countries in Europe on a monthly basis.

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2. **Marketing Issues:** What's a more profitable play, buying gas at Zeebrugge or at the German border? What's the easiest way to sell Russian gas in France, directly from Gazprom, through a location swap, or from storage? What's more important to producers, establishing direct sales to end-users or maintaining the profitability of existing transmission companies in which they own stakes? Storage was completely irrelevant a few years ago; now it is a primary price setter and creator of hubs.
3. **New Competition:** How does gas-on-gas competition impact your market? For example, new Russian and North African gas pipelines to Europe will affect gas prices, raising them at some price points and lowering them at others — even at locations hundreds of kilometers away from the new pipes being developed in the region.
4. **Supply Changes:** Russia, Norway and Algeria are shifting from their traditional positions as baseload suppliers to more flexible schemes. Can they compete with private producers in the North Sea? Market control will shift away from transmission companies, but into whose hands and how will those transmission companies respond?

**Fees**

Existing PIRA Retainer Clients may subscribe to ENG under discounted terms, which are determined by the scope of their current license. For prices, please contact your PIRA Account Executive.

**Who Can Benefit from the European Natural Gas Service?**

The stakes are high when making decisions regarding European gas markets, where participants can be on either side of million-dollar gains or losses. In order to maximize your profit potential while staying ahead of the competition, PIRA believes that “knowing the numbers” of supply, demand and price is essential to winning success in this new and hard-to-predict market. The European Natural Gas Service can make a winner out of:

**Gas Marketers:**

The shifting nature of pricing, unbundled services, and pipeline availability make the European energy market one of the world's most difficult markets to assess. ENG not only offers gas analysis, but also PIRA's respected forecasts for European oil products. Simply put, we call the market. Gas-on-gas pricing and interfuel competition are covered comprehensively. ENG will assist you on a monthly basis in pinning down prices, key markets for demand growth, and potential supply changes.

**Pipeline Companies:**

Europe's well-established pipeline and distribution companies are undergoing the greatest change of all. Competitive challenges and opportunities outside of traditional markets provide kilometers of uncharted markets to conquer. Pipeline companies will be dealing with a plethora of new firms looking to do everything from gaining third-party access to transmission pipelines to deciding how to stretch highly profitable distribution grids into neighboring countries. ENG's fundamental analysis offers these firms a glimpse of how extra-territorial markets will be affecting the bottom line, providing an assessment on the most promising growth opportunities in the region.



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## End-Users:

Perhaps no other type of client will find ENG as valuable as the end-user. As the driving force behind European market liberalization, buyers of gas, power, and oil are now faced with the daunting task of choice. Power generators, industrial buyers, petrochemical firms, and commercial buyers will be offered deal after deal, but with these choices comes a complex web of commercial decisions: Is the supply source reliable? What price can be obtained? Where is the market heading? ENG provides end-users with the numbers and analysis to correctly answer these critical questions.

## Gas Producers:

The ability to access markets will be a key element in targeting Europe as a growth area. The big suppliers in the North Sea, Algeria, and Russia all need to stretch their market reach beyond traditional sales areas. In the UK, markets are already liberalized, and the Interconnector Pipeline to Belgium has created the first real spot market on the continent at Zeebrugge. In Russia, several new pipeline projects could flood Europe with low-cost gas. Will all of these projects materialize, and when? For commercial producers, this question is critical for investment. With a bevy of new producers now able to market their own gas, competition will be keen. ENG helps producers understand which regions will be pipeline-capacity constrained and how these bottlenecks will impact basis differentials. Indigenous production, as well as imports from Russia, North Africa and the Mideast, are assessed, with long-term forecasts provided annually, helping clients assess investment opportunities.

## Financial Institutions:

As financial institutions are called upon to provide debt for new pipeline and electric generation facilities, it will be imperative for them to analyze accurately the market environment for these projects. Lending to the power sector requires a thorough understanding of the natural gas markets that will support the gas-fired facilities being built to compete in the deregulated European market. ENG can be a valuable resource for conducting due diligence on regional markets, growth potential, and constraints.

## European Natural Gas Service Group Key Members:

**Ira Joseph (Executive Director, International Gas)** manages PIRA's European Energy Service, which includes distinct services on European Natural Gas (ENG) and European Electricity (EES). In 2001, Ira co-authored PIRA Energy's multi-client study on Atlantic Basin LNG markets and recently completed a study on prospects for LNG in the Balkan and Central European gas markets. Ira joined PIRA in 1999 after working at Energy Intelligence Group (EIG) for over a decade, as Senior Editor of *Petroleum Intelligence Weekly* and Editor-in-Chief of *World Gas Intelligence*. He has authored several books on crude oil marketing and natural gas, including versions of EIG's *International Crude Oil Market Handbook* and *World Gas Handbook*, as well as several articles on natural gas swaps and gas marketing strategy.



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**Bruno Brunetti (Senior Director, European Electricity)** joined PIRA Energy in 2001 to launch the European Electricity Service. Bruno's deep understanding of the European energy economics and the regulatory framework of the liberalized electricity and gas markets comes from having worked with the strategic consulting division of Caminus Corp. There he carried out a wide range of market studies, including a recent electricity market report in conjunction with Enel's divestment of Elettrogen. Bruno began his career in the strategic planning department of Enel in Rome, followed by an internship with Cedigaz in Paris, where he drafted the study, "Natural Gas in Power Generation." He has authored a wide variety of articles in Italian, French and English, including a significant contribution on the restructuring of the Italian electricity market. Bruno graduated magna cum laude in economics and management from Bari University (Italy) and obtained a masters degree in energy economics from the ENSPM, the School of the French Institute of Petroleum (Paris).

**Mickey Kwong (Director, International Gas)** is responsible for analyzing Global LNG market fundamentals including demand, production, and imports and contributes to all of the Group's reports. From 1998 to 2006, he was an LNG/natural gas consultant at Poten & Partners, where he advised clients from Asia, Europe and the Americas on pricing, demand, and price risk management. Mickey has a BBA in Finance from Baruch College.

**Jakub Duba (Director, European Energy)** joined PIRA recently to focus on the development of econometric tools to analyze and predict pricing mechanisms, while also following closely the developments in Eastern European power markets. Prior to PIRA, he worked in risk and market analyst roles in the leading European electricity company CEZ, where he was responsible for market analytics and price modeling on the trading floor. Jakub holds doctorate degrees in mathematics both from Charles University, Prague and University of Missouri-Columbia. Jakub also spent two years as a Feinberg Postdoctoral Fellow at Weizmann Institute of Science in Rehovot, Israel, and he also worked as Senior Assistant Professor at the Faculty of Mathematics and Physics of Charles University, Prague.

**Madeline Jowdy (Director, Global LNG)** joined PIRA after working at Energy Intelligence Group (EIG) as the LNG correspondent for *World Gas Intelligence* and *Natural Gas Week*. She has authored several books on crude oil marketing and natural gas, including versions of EIG's *Top 100 Oil Companies* and *World Gas Handbook*, as well as studies on the Atlantic Basin LNG trade and LNG shipping. Ms. Jowdy has a B.A. in economics and international relations from American University and has completed a master's program in Middle East studies at Georgetown University's School of Foreign Service.