

Industrial Demand and the Changing Natural Gas Market

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Summary

The U.S. industrial demand for natural gas has been the largest of the five demand sectors identified by the Energy Information Administration (EIA). It also has been the only sector that has exhibited a decline in its total consumption over the decade of the 2000s. Some have attributed this decline in demand to high, fluctuating natural gas prices.

Rising natural gas prices in the 2000s were related to expectations of increased demand coupled with an apparently scarce resource base and declining production. In recent years, the perception of increasing scarcity and the need to open the market to larger volumes of imports has been replaced with estimates of increasing domestic production from a resource base that might provide supply for a hundred years at current consumption rates. The tangible market result of these changing perceptions and economic conditions has been lower natural gas prices in 2009 and 2010.

The industrial demand for natural gas ranges from use as a feedstock in the nitrogen-based fertilizer industry to re-injection in oil wells to enhance production. The ways natural gas is used, the substitutes that are available, and the importance of gas in the cost structure of the industry vary widely. As a result, many factors potentially could contribute to the decline in demand.

The factors identified in this report as contributing to the decline in industrial sector natural gas demand include, in addition to price behavior, the recession, industrial consolidation, electricity substitution, technological improvements, and environmental regulations. These factors are likely to affect different consuming industries to varying degrees, depending on economic conditions.

The nitrogen fertilizer industry is an example of how the dynamics of natural gas prices in conjunction with the other identified factors contributed to decreased demand. While high natural gas prices and a number of other factors caused imports to expand their market share, it is uncertain whether the industry will recover domestically as a result of lower gas prices.

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Introduction

The Energy Information Administration (EIA) divides consumers of natural gas into five categories: residential, commercial, electric power generation, industrial, and vehicle fuel. Over the past decade, industrial demand has generally been the largest component of total natural gas demand in the United States. However, it is also the only component of natural gas demand that has shown a clear downward trend, its use having decreased by over 24% over the period 2000 to 2009.

The behavior of the industrial portion of natural gas demand stands in contrast to the other use categories, where the benefits of natural gas consumption, including domestic supply security, relatively low carbon emissions, and competitive prices have resulted in increased demand.[1] Declining industrial demand for natural gas has consequences for U.S. jobs, foreign trade balances, and overall macroeconomic performance.

The supply side of the natural gas market has been a relatively bright spot in the U.S. energy picture in recent years. The development of nonconventional natural gas resources, of which shale gas might be the most important, have increased reserve estimates to the extent that it has been reported that the United States might have access to a 100-year supply at current rates of consumption.[2] These estimates, viewed in conjunction with recently declining prices, suggest that there is little impediment to increasing consumption of natural gas from the supply side of the market, making the decline in industrial demand harder to explain.

This report analyzes the behavior of the industrial component of natural gas demand, examining the conditions in the industries that consume natural gas that might lead to reduced demand. The nitrogen-based fertilizer industry is examined as an example of a major natural gas consuming industry that has been affected by high and/or fluctuating prices.

Natural Gas Markets

Over the past decade, the demand for natural gas has been relatively stable, averaging 20.8 trillion cubic feet (tcf) per year. The yearly deviation from average demand over the decade generally has been less than 4%. The apparent stability of aggregate demand masks the shifting roles of the demand for natural gas between electric power generation and industrial users. The former increased by 32.6% over the decade, while the latter declined by 23.4%, which, when allowing for the initial differences in base consumption levels in 2000, essentially cancel each other, resulting in relatively stable aggregate demand. Data for natural gas delivered for consumption for the period 2000-2009 are presented in **Table 1**.

[1] Residential and commercial demand, largely for space heating, is dependent on weather conditions, and as a result it is difficult to observe trends in consumption data. While the price of natural gas has been competitively low in 2010, it has fluctuated over the past decade.

[2] Ben Casselman, "U.S. Gasfields Go from Bust to Boom," *Wall Street Journal*, April 30, 2009, U.S. Politics and Policy Section.

Table 1. Natural Gas Delivered to U.S. Consumers

(trillion cubic feet)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Residential	5.0	4.8	4.9	5.1	4.9	4.8	4.4	4.7	4.9	4.8
Commercial	3.2	3.0	3.1	3.2	3.1	3.0	2.8	3.0	3.1	3.1
Electric Power	5.2	5.3	5.7	5.1	5.5	5.9	6.2	6.8	6.7	6.9
Industrial	8.1	7.3	7.5	7.1	7.2	6.6	6.5	6.6	6.7	6.2
Vehicle Fuel	-	-	-	-	-	-	-	-	-	-
Total	**21.5**	**20.5**	**21.2**	**20.6**	**20.7**	**20.3**	**19.9**	**21.2**	**21.4**	**20.9**

Source: Energy Information Administration, Natural Gas Data, available at http://www.eia.doe.gov.

Note: Vehicle fuel deliveries are too small to be expressed as tcf and are presented separately in **Table 2**.

EIA natural gas consumption data for 2010 are available only for the first 10 months of 2010. For that period, total consumption was 19.4 tcf. For comparison, consumption over a similar period in 2009 was 18.6 tcf, while in 2008 consumption was 19.0 tcf. These data suggest that the effects of lower gas prices coupled with reduced effects of the recession were increasing demand. For the first 10 months of 2010 industrial natural gas demand totaled 5.4 tcf, up from 5.0 tcf in 2009, but still lower than the 5.6 tcf demand recorded for the first 10 months of 2008.

While natural gas use as a vehicle fuel has more than doubled from 2000 to 2009, it remains only a fraction of 1% of total U.S. consumption, as illustrated by a comparison of the data in **Table 1** and **Table 2**.

Table 2. Natural Gas Delivered for U.S. Vehicle Fuel

(billion cubic feet)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Vehicle Fuel	12.7	14.5	14.9	18.3	20.5	22.9	23.7	25.6	26.0	29.1

Source: Energy Information Administration, Natural Gas Data, available at http://www.eia.doe.gov.

Note: U.S. vehicle fuel consumption is in billion cubic feet.

U.S. production of natural gas over the period 2000 to 2009 was relatively stable, averaging 19.2 tcf, with yearly deviations from average demand generally less than 7%. **Table 3** shows data for U.S. supply from domestic production and imports.

Table 3. U.S. Natural Gas Supply

(trillion cubic feet)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Production	19.2	19.6	18.9	19.1	18.6	18.0	18.5	19.3	20.1	20.6
Imports	3.8	4.0	4.0	3.9	4.2	4.3	4.2	4.6	4.0	3.7
Total	**23.0**	**23.6**	**22.9**	**23.0**	**22.8**	**22.3**	**22.7**	**23.9**	**24.1**	**24.3**

Source: Energy Information Administration, Natural Gas Data, available at http://www.eia.doe.gov.

Domestic natural gas production during the first 10 months of 2010 was 17.8 tcf, compared to 17.2 tcf for a comparable period in 2009 and 16.7 tcf in 2008. Imports continued to decline in the first 10 months of 2010 as lower-cost domestic production continued to expand its market share.

Most imports of natural gas arrive in the United States from Canada through pipelines. Small quantities of natural gas are imported from Trinidad and Tobago and other sources in the form of liquefied natural gas (LNG). The sum of U.S. production and imports as shown in **Table 3** exceeds the total of natural gas delivered to U.S. consumers as shown in **Table 1**. The difference between the two totals represents natural gas used in re-pressuring the pipeline system, gas vented or flared, removal of non-hydrocarbon gases, and extraction losses. Data from 2008 and 2009 suggest that U.S. production might be increasing enough to displace imports in the future.

Relatively stable production and consumption of natural gas might suggest that prices would similarly be stable. The data show that prices in the natural gas markets have fluctuated.

Table 4. U.S. Consumer Natural Gas Prices

(dollars per thousand cubic feet)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Residential	7.16	9.63	7.89	9.63	10.75	12.70	13.73	13.08	13.89	12.14	11.55
Commercial	6.59	8.43	6.63	8.40	9.43	11.34	12.00	11.34	12.23	10.06	9.31
Electric Power	4.38	4.61	3.68	5.57	6.11	8.47	7.11	7.31	9.26	4.93	NA
Industrial	4.45	5.24	4.02	5.89	6.53	8.56	7.87	7.68	9.65	5.33	5.48
Vehicle Fuel	5.54	6.60	5.10	6.19	7.16	9.14	8.72	8.50	11.75	8.13	NA
Wellhead	3.68	4.00	2.95	4.88	5.46	7.33	6.39	6.25	7.97	3.67	4.25

Source: Energy Information Administration, available at http://www.eia.doe.gov.

Note: 2010 prices reflect the average price for the first 10 months of the year.

The natural gas price paid by a specific category of consumers depends on several factors, including volume and seasonal stability of demand and the dispersion of the consumer base. Residential consumers face the highest natural gas prices because they tend to be small-volume users with a cyclic demand pattern that peaks during the winter heating season and is much lower the rest of the year. Residential consumers are also widely dispersed, with over 65 million different consuming locations in 2009. Commercial consumers use more natural gas per location than residential consumers, exhibit peaks in demand similar to residential consumers, and numbered over 5 million in 2009. Industrial consumers use large amounts of natural gas per consuming location, exhibit relatively constant demand over the calendar year, and numbered 207,443 in 2009.

EIA does not publish data on the number of natural gas consumers for the electric power or vehicle fuel categories.

While consumer demand decisions for natural gas are based on their respective prices in **Table 4**, decisions concerning exploration and production are based on the wellhead price. The low wellhead prices from 2000-2003 resulted in reduced exploration and development, setting the stage for rising prices later in the decade. Similarly, the high prices observed from 2005 to 2008 set the stage for the development of nonconventional natural gas resources which, if they flood

the market, could, and have, begun to result in depressed prices. The low wellhead prices observed in 2009 and 2010 suggest that continued expansion of domestic nonconventional production might not be economically sustainable.

Natural gas reserves represent the stock from which domestic production is drawn. Reserves are reduced each year by production, and augmented by discoveries. U.S. natural gas reserves are located onshore and offshore, and include conventional and nonconventional deposits. Some natural gas is produced in conjunction with oil production, while other gas is recovered from dedicated wells. Conventional natural gas deposits have been augmented by nonconventional sources, notably shale gas and, to a lesser extent, coal bed methane deposits.

Table 5. U.S Natural Gas Proved Reserves

(trillion cubic feet)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Dry Gas	177.4	183.5	186.9	189.0	192.5	204.4	211.1	237.7	244.6	272.5
Shale Gas	-	-	-	-	-	-	-	23.3	34.4	60.6
Coal Bed Methane	15.7	17.5	18.5	18.7	18.4	19.9	19.6	21.9	20.8	18.6

Source: Energy Information Administration, available at http://www.eia.doe.gov.

Note: - means no data reported.

The natural gas market is currently well-supplied, prices are currently low, and expectations are that the market has the potential to be favorable for consumers in the future. These conditions might suggest that U.S. industrial demand for natural gas might increase in the future.

Industrial Demand

Natural gas has many and varied industrial applications. It serves as a basic raw material for products such as fertilizers, plastics, antifreeze, pharmaceuticals, and fabrics. An important use of natural gas is in the production of chemicals, including methanol, ammonia, butane, ethane, propane, and acetic acid. Besides being a raw material for other products, burning natural gas also provides a heat source for a variety of industrial processes involving melting, drying, baking, and glazing products, including glass, steel, cement, bricks, ceramics, tile, paper, and food products. Natural gas is also used for fueling incineration in a wide variety of applications. In addition, firms that produce and transport oil and natural gas use natural gas at compressing stations as a fuel, and for heating and power generation at refineries.

A number of factors likely contributed to the decline in industrial natural gas demand in any particular application. Because of the various ways in which natural gas is used in production processes, the contribution of any one factor is likely to be different, depending on the product and industry.

EIA, in the Annual Energy Outlook 2010, projects no change in industrial demand for natural gas in 2035 compared to 2008 in the reference case. Long-term stagnation of industrial natural gas demand suggests structural, rather than transitory, explanations are important in determining demand. One important structural factor is the changing composition of U.S. gross domestic

product (GDP). Energy consumption per dollar of U.S. GDP has been declining for decades, as shown in **Table 6**. The measured energy usage shown in **Table 6** includes all energy sources, including oil, coal, natural gas, and others. Two major forces are likely affecting the energy/GDP relationship. The economy continues to become more service-oriented, moving away from heavy industry, while remaining heavy industry finds it advantageous to become more energy-efficient for both cost and environmental compliance reasons.

Table 6. U.S. Energy Use and Gross Domestic Product

(billion constant dollars)

Year	GDP	Energy per dollar GDP
1970	4.27	15.89
1980	5.84	13.38
1990	8.03	10.54
2000	11.23	8.82
2001	11.35	8.49
2002	11.55	8.47
2003	11.84	8.24
2004	12.26	8.18
2005	12.64	7.95
2006	12.97	7.69
2007	13.25	7.66
2008	13.31	7.47
2009	12.98	7.28

Source: Energy Information Administration, Annual Energy Review 2009, Table 1.5, p.13.

Notes: GDP is measured in 2005 chained constant dollars. Energy per dollar of GDP is measured in thousand Btus per dollar of constant GDP.

Even with decreasing energy use per dollar of GDP, the mix of energy sources used by industry could shift. Some of these shifts might encourage the industrial demand for natural gas, and others could reduce demand, as discussed in the following paragraphs.

Structural Factors Affecting Industrial Demand

Because the industrial demand for natural gas is spread across many industries, utilizing natural gas in a wide variety of processes, not every factor analyzed in this section of the report will be applicable to every industry equally, or in the same way. However, each may be important in the analysis of any particular industry.

Industrial Consolidation

As industries consolidate through merger and acquisition, cost-cutting and increasing efficiency become critical. If natural gas technologies are efficient, they may replace older, less energy-efficient technologies, increasing natural gas demand. For example, in many industrial

applications, natural gas fired heat and power generation systems normally have important energy efficiency advantages over systems running on coal or petroleum. Offsetting the efficiency advantages are the up-front capital investment costs, which can be high, especially for firms recently involved in financing mergers or acquisitions.

Firms, after consolidation, may produce at the same, higher, or lower output levels as the separate firms before the merger and/or acquisition activity. If the newly combined firm produces less than the sum of the two original firms, it might be expected that energy demand would decrease. In many applications, industrial demand for natural gas is likely to be proportional to output levels.

Electricity Substitution

In certain applications where natural gas is not a direct raw material in the production process, electricity may be an efficient substitute. If electricity generating firms attempt to expand market share by offering industrial consumers attractive pricing, coupled with enhanced availability, the industrial demand for natural gas could be reduced. However, natural gas fired distributed generation technologies and combined heat and power applications can allow industrial consumers to bypass grid-based electricity generators.[3] The decision of any industrial consumer concerning energy sources will likely depend on up-front investment costs, fuel costs, and the expected reliability and flexibility of supply. Even for those industrial consumers that substitute electricity for natural gas, a portion of their natural gas demand will not be lost, but merely transferred from EIA's industrial category to its electricity generating category as a large portion of electricity supply is derived from burning natural gas to operate generating turbines. Although available data do not track how much of the reduction in industrial demand for natural gas observed in **Table 1** has migrated to the electric power category, it is likely that some has occurred.

Environmental Regulations

Although the form and exact nature of future regulation cannot be known, if environmental pollution regulations on industry become more, rather than less, stringent over the EIA projection period to 2035, industrial demand for natural gas might be affected. Because natural gas is cleaner-burning than either coal or petroleum, and generates fewer waste disposal or storage problems for consumers, it may have a natural advantage in meeting tighter regulations. These conditions would tend to increase the industrial demand for natural gas by encouraging substitution of natural gas for other fuels. However, it is also possible that some industrial processes that use natural gas may not be able to meet tighter regulations efficiently in the United States, and may choose to move production overseas. Nations with lax regulatory monitoring, or weak environmental laws, can offer industrial firms cost advantages. This factor would tend to decrease the U.S. industrial demand for natural gas.

If some form of carbon reduction regulation emerges over the period out to 2035, this could encourage some firms to invest in new, clean-burning natural gas equipment.

[3] Distributed generation refers to small-scale, on-site, decentralized generation of electricity.

Natural Gas Prices

The data in **Table 4** show that the 2000s were generally characterized by high industrial prices for natural gas, peaking in 2008, and moderating in 2009 and 2010. Rising natural gas prices, or a period of high prices, are likely to contribute to reduced industrial demand for natural gas. Whether demand declines, and the extent of the decline, is likely to depend on the interaction of a variety of economic factors. The level of macroeconomic activity, investment in energy-efficient technologies, and fuel switching contribute, along with nominal and relative prices, to the determination of final demand of commodities like natural gas that are used in production processes.

Considering the specific role of nominal prices, a rise in the natural gas price is more likely to reduce industrial demand if industrial consumers cannot pass cost increases on to the final consumers of their products. An inability to pass through cost increases might occur as a result of competition from imported goods that are not facing higher natural gas costs. Because the market for natural gas is regional, with relatively little production moving between regions, it is common for prices in Europe, Asia, the Middle East, and other areas to differ from those in the United States.[4] One way domestic industrial consumers might react to lower-cost international competition is to close domestic facilities and move production overseas. This strategy would allow domestic firms to take advantage of lower gas prices in other regions. Another strategy might be to acquire domestic competitors. The acquiring firm might then close inefficient operating units in both its own and in the acquired firm. The result could be a firm with expanded production capacity and reduced costs, although total domestic production capacity is likely to fall.

International trade between the regional markets would tend to equalize world natural gas prices, but existing trade is limited to relatively costly liquefied natural gas (LNG). LNG trade is mostly by long-term contract and is of a relatively small volume in the North American market, so that it does not set prices, but must meet domestic prices to gain access to the market. Pipeline imports, in the case of natural gas coming into the United States from Canada, have to be price competitive with domestically produced supply.

Another reason industrial natural gas producers might not be able to pass cost increases on to the final consumers of their products is related to the price elasticity of final product demand.[5] If the demand is very price elastic (sensitive), a small increase in price will result in a relatively large loss in sales. This result is more likely if consumers have alternative goods that they can easily substitute for the good in question. Firms whose products face elastic demand are more likely to follow either acquisition or foreign production strategies.

In terms of the production process of the industrial consumer, if there are no substitutes for natural gas, or if natural gas is a small portion of the total cost of production, the effects of higher natural gas prices on industrial demand might be relatively small. If natural gas is easily

[4] A Canadian fertilizer producer, Potash Corp., in its Outlook, cites expected natural gas prices for the Middle East at $1.00 per thousand cubic feet (mcf), $3.50 per mcf for Trinidad Tobago, and $2.50 per mcf for Russia Togliatti, an industrial gas consuming region.

[5] Economists define price elasticity of demand as the percentage change in quantity demanded by the percentage change in price.

substitutable, or if natural gas is a large part of the cost structure, the effects of higher prices on demand are likely to be larger.

The relative price of natural gas, the oil to natural gas price ratio, is important when fuel switching is feasible. The switching decision is not dependent on the movement of either single price, but depends on whether one fuel becomes cheaper relative to an alternative fuel. Fuel switching also depends on available technology, and the planning price ratio of the two fuels, especially for rapidly fluctuating prices.

Macroeconomic Conditions

The industrial demand for natural gas was likely affected by the economic recession that began in December 2007. The low point of the recession in the spring of 2009 was consistent with the bottoming of the industrial demand for natural gas. The downturn in economic activity reduced the demand for many goods, and, as a result, reduced the demand for inputs in production processes, including natural gas. However, the effects of the recession were being felt as the market entered a period of declining natural gas prices, reflecting increasing domestic reserves and production, which likely moderated the recessionary effect. In addition, the long-term trend toward greater energy efficiency also continued to contribute to declining amounts of natural gas consumed during the recessionary period.[6]

Nitrogen-Based Fertilizers

An important use of natural gas is as an industrial feedstock in fertilizer production.[7] In this process, natural gas is used to produce ammonia, which has a high nitrogen content, and is the main component of nitrogen fertilizers. The fertilizer industry consumed about 60% of total industrial demand for natural gas in 2009.

Four firms, CF Industries, Koch Nitrogen, PCS Nitrogen Fertilizer, and Terra Industries, accounted for about 70% of U.S. ammonia production in 2009 and control a similar amount of total production capacity. These same four firms produced over 80% of urea, another nitrogen-based fertilizer, in 2009.[8] Twelve other firms produce the remaining amounts of domestic ammonia fertilizer.

Between 1999 and 2008 U.S. ammonia production capacity declined by 42%, from 20.2 million tons to 11.7 million tons, and annual production declined by 38%, from 17.9 million tons to 11.2 million tons.[9] U.S. demand for fertilizers increased over the period, and the difference was made up by imports. Nitrogen-based fertilizer imports increased by 383%, from 2 million tons to 9.7

[6] See Zhen Zhu, Donald Murry, and Mike Knapp, *The Recession's Impact on Industrial Natural Gas Consumption*, available at http://dialogue.usaee.org/index.php?option=com_content&view=article&id=122&itemid=238, for an econometric analysis of the recession's effect on the industrial natural gas demand.

[7] It takes 33,500 cubic feet of natural gas to manufacture 1 ton of anhydrous ammonia fertilizer. Eddie Funderberg, *Why are Natural Gas Prices So High?*, available at http://www.noble.org/ag/soils/nitrogenprices/index.htm.

[8] Tom Philpott, "Tracking U.S. Farmers' Supply of Nitrogen Fertilizer," *Grist*, February 11, 2010, available at http://www.grist.org/article/2010-02-11-tracking-u.s.-farmers-supply-nitrogen-fertilizer/.

[9] Wen-yuan Huang, *Factors Contributing to the Recent Increase in U.S. Fertilizer Prices, 2002-2008*, USDA Report AR-33, February 2009, p. 4.

million tons from 1999 to 2008. The industry stabilized in 2009, with production capacity, total production, and imports at about the same levels as in 2008.

The annual production capacity and annual production data for 1999 and 2008 suggest that capacity utilization increased over that 10-year period. Consolidation took place in the industry over the period, and it is likely that the remaining firms continued to operate only the more efficient facilities. Imports came mostly from Trinidad and Tobago, Canada, Russia, and the Middle East. Each of these countries/regions is a natural gas exporter, with available production in excess of domestic requirements. Historically, each has searched for new outlets on the world market. Trinidad and Tobago were poised to play a major role in North American LNG supply, but the emergence of nonconventional natural gas resources in the United States has reduced the potential growth of that market. In the Middle East, Qatar holds large natural gas reserves, and has developed a major position in LNG..

Imports of nitrogen fertilizers rose during the period 1999-2009. Trinidad and Tobago, which exported about 3 million tons to the United States in 1999, increased its exports 50% to over 4.5 million tons in 2009. Qatar, which exported about 266,000 tons of nitrogen fertilizer to the United States in 1999, expanded its exports to about 550,000 tons. Imports of nitrogen fertilizers from Russia increased from approximately 750,000 tons in 1999 to almost 1.4 million tons in 2009. All of these nations have relatively large natural gas reserves compared to domestic requirements, and export gas in the form of LNG or natural gas based products.

The behavior of the nitrogen fertilizer industry in the face of high natural gas prices is consistent with industries that face price competition from imports and for which the production input whose price has risen is a large portion of total costs. The strategy outlined in this report of reducing domestic production capacity through mergers and acquisitions and ceding the market to imports has been observed in this industry.

Whether the domestic fertilizer industry will rebound to former production levels as a result of the apparent increase in domestic natural gas supplies and potentially reduced and more stable prices is likely to depend on the interaction of a variety of factors. While domestic natural gas prices are likely to be lower than the prices observed from 2005 to 2008, the price is also not likely to fall below the prices available in exporting nations like Russia, Qatar, and Trinidad and Tobago, among others. As a result price may not be a major incentive for the industry in the United States.

Furthermore, the nitrogen fertilizer industry is not a “clean” industry. The industry emits large amounts of carbon dioxide as well as toxic chemicals from ammonia production. Relatively lax environmental rules in Trinidad and Tobago and Russia make production easier in those nations. The combination of low-cost natural gas and a favorable business environment in the form of weaker regulations form a strong incentive for the industry to remain offshore. The result is likely to be a continuation of the use of imported fertilizers with adverse implications for the U.S. trade balance and employment.

While it is possible that the new emerging market of low prices could reverse the trends of the 2000s, much depends on consumers’ long-term expectations of the direction of the market.

Conclusion

Changing prices for both production inputs and final products, environmental regulations, technologies, and competitive conditions all can cause industries to evolve. The industrial demand for natural gas sector has experienced decline and consolidation. Also, migration of natural gas consuming industries to other countries has occurred, along with an increase in imports of manufactured goods. Whether the changing market for natural gas, with the promise of greater supply and lower price, is sufficient to reverse these trends is unknown. However, business conditions, relative to the United States, are likely to remain attractive overseas, even as the domestic natural gas market becomes more attractive for consumers.

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