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World Oil Markets

Introduction

In 2002, the world depended on oil. Fears of global warming had increased consumption of natural gas, nuclear power and other alternative fuels; still, oil was expected to maintain its 40% market share through 2020.[1]

World oil consumption, which measured 76 million barrels per day (mm bl/d) in 2000, was forecast to increase to 120 mm bl/d by 2020. Oil demand would grow faster in developing countries, especially in Asia and Central and South America. By 2020, developing nations were expected to consume as much oil as industrialized nations. However, in the short term, oil demand will grow slowly. The global economic downturn and the September 11 terrorist attacks had weakened demand. The International Energy Agency (IEA) estimated that demand increased by a meager 100 thousand barrels per day (m bl/d) in 2001. Oil consumption was expected to rebound in 2002 as the world economy recovered. In 2002, the IEA expected demand to rise by 600 m bl/d.[2]

Total proven world oil reserves stood at an estimated 1.03 trillion barrels.[3] With production of 76.7 mm bl/d, the IEA estimated that the world had a spare crude capacity of 4.7 mm bl/d.[4] The rise in demand over the 2000-2020 period would require an increase in world oil supply of 45 mm bl/d. Although both OPEC and non-OPEC producers would gain from production increases, the OPEC nations would be the primary beneficiaries. In the short term, oil supplies remained vulnerable to political, economic, and environmental shocks.

The Petroleum Industry

Petroleum or oil was a dark substance, composed of compressed organic compounds containing carbon and hydrogen. Oil fueled automobiles, heated and cooled homes, and provided the building blocks for thousands of consumer products. Formed millions of years ago, oil deposits were located in the earth's crust along fault lines and cracks in rocks. The Middle East region held the world's largest oil reserves, followed by Central and South America, Africa, Eastern Europe, and North America. **[Exhibit 2]**

The oil industry was broadly divided in two sectors: upstream and downstream development. Drilling, production, and other upstream activities were located closer to the source, while downstream activities, such as refining and marketing, were generally closer to the consumer. Although upstream oil development involved more investment risk than downstream activities, it often yielded greater profits and a higher return on investment.

Professor Richard H.K. Vietor and Research Associate Rebecca Evans prepared this case. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

To locate deposits, oil producers performed seismic tests. Producers then drilled wells to estimate the size of oil reservoirs. Many oil wells also contained gas, which was dissolved in the oil and later extracted. Two different processes helped remove oil from underground. In the Middle East, oil was produced through natural lift measures, whereby built-up reservoir pressures forced oil to the surface. In North America and other parts of the world, oil was extracted by artificial lifts or electric and gas powered pumps. Natural-lift production was cheaper, costing Middle East producers as little as $1.50 per barrel. In contrast, artificial lifting costs were as high as $15 per barrel in some U.S. oil fields.

Oil pipelines and tankers transported crude oil from the major oil producing nations to the top consuming nations in North America, Asia, and Europe. Pipelines helped move landlocked oil across continents and were cheaper than alternative methods such as rail, barge, and truck. Tankers were a low cost, efficient, and flexible means of intercontinental transport. The volume of oil and the distance of the shipping route determined the size of the vessel and the transportation costs. Ideally, oil was transported to the closest market in order to minimize costs. The remaining oil was then shipped to the next closest market, and so on, until all the oil had been placed. However, refinery configurations, product demand mix, product quality specifications, international politics, tariffs, and other restrictions altered the flow of oil.

Refining and other downstream activities were usually located in consuming nations because it was cheaper to ship crude oil than refined products. North America held the world's largest refining capacity, followed by Asia and Europe. Through different refining processes, crude oil was manufactured into a mix of finished petroleum products including liquid petroleum gas, jet fuel, kerosene, gasoline, and diesel. Basic petrochemicals like aromatics and olefins were produced as by-products of petroleum refining. These chemicals were used to make detergents, fertilizer, medicines, paint, plastics, synthetic fibers, and hundreds of other products.[5]

The Origins of the Oil Industry

Colonel Edwin Drake made the first oil discovery in Titusville, Pennsylvania in 1859. Following his discovery, a small oil industry bloomed in western Pennsylvania. John D. Rockefeller entered the business in 1865 and established the Standard Oil Company, which soon controlled 10% of the U.S. oil industry. When disparate state regulations began to impede transcontinental oil transport, Rockefeller formed the Standard Oil Trust to act as a holding company to independent oil companies in different states. By 1900, Standard Oil companies dominated the U.S. oil industry and had a strong foothold in international markets. However, in 1911, the Supreme Court ruled that Standard Oil's monopoly violated the Sherman Anti-Trust Act of 1890. Forced to divest itself, Standard Oil split into 38 individual companies. Many of the Standard Oil companies continued to grow in size and importance. Standard Oil of New Jersey (Exxon), Standard Oil of New York (Mobil), and Standard Oil of California (Chevron) were numbered among the Seven Sisters, a group of international oil companies that controlled oil markets from 1915-1973.[6]

In 1901, an oil discovery at Spindletop had given birth to the Texas oil industry. The two oil majors, Gulf Oil and the Texas Oil Company (Texaco), built pipelines, refineries, and ships that exported Texas oil to European markets. The remaining Sisters, Royal Dutch/Shell and BP, also emerged at the turn of the century. In 1897, British entrepreneur Marcus Samuel built a fleet of tankers and storage installations throughout the Far East, forming the Shell Transport and Trading Company. Nine years later, Shell merged with Royal Dutch to become the Royal Dutch/Shell Group. In 1908, British investors William Knox D'Arcy and G.B. Reynolds struck oil in Persia. A year later, the Anglo-Persian Oil Company was established. The new company would become Anglo-Iranian Oil, British Petroleum, and finally BP.[7]

Oil demand surged after the First World War. The United States and Britain desired greater access to foreign oil supplies, especially those in the Middle East. After the fall of the Ottoman Empire, the United States had urged Britain and France to share their rights to the Turkish Petroleum Company concession. Reaching a compromise in 1928, they granted five American oil companies a 25% stake in the newly renamed Iraq Petroleum Company. The parties also agreed to extend the Red Line agreement of 1914, which held that all companies working in a proscribed region (outlined in red pencil) of the Middle East must pursue joint concessions. Once the agreement was signed, all other companies were excluded from developing oil in the region. The consortium of Shell, BP, Exxon, Mobil, Compagnie Francaise des Petroles (CFP), and C.S. Gulbenkian cooperated to control output and sustain high oil prices.

In 1932, Standard Oil Company of California or Socal (Chevron), which was not hindered by the Red Line agreement, won a concession and found oil in Bahrain. In need of funds, Saudi Arabia's King Ibn Saud granted Socal a concession on its east coast. By 1938, Socal had uncovered Saudi Arabia's vast oil reserves. Texaco partnered with Socal, and production came on stream in early 1939. The operating company changed its name to the Arabian American Oil Company (Aramco) in 1944 and added two more partners, Standard Oil Company of New Jersey (Exxon) and Socony-Vacuum (Mobil), in 1946. These four U.S. companies maintained full control of Aramco until the 1970s.

After the Second World War, the Seven Sisters dominated the international oil market. Producing nearly all the oil outside of the United States, the seven oil majors controlled each step of the production chain. By the 1950s, the companies managed 96% of the world's reserves, 90% of production, 76% of refining capacity, and 74% of product sales.[8] The Seven Sisters ruled world oil markets for several decades until producing nations began to exercise their intrinsic power.*

The OPEC Story

The Organization of Petroleum Exporting Nations (OPEC) was established in Baghdad on September 14, 1960, by the five major oil producing and exporting countries: Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela. By 2000, OPEC's membership had grown to include Algeria, Indonesia, Libya, Nigeria, Qatar, and the United Arab Emirates (U.A.E.). Together, the OPEC nations controlled more than 75% of the world's proven oil reserves and 40% of total world oil production. OPEC's founding mission was to provide a fair and stable petroleum market for the benefit of both oil consumers and producers. Through consensual decision-making, the OPEC cartel aimed to maintain a steady stream of oil revenue to fund member countries' development plans.

In its first decade of operation, OPEC had little influence over world oil markets. With the United States producing most of its oil domestically, OPEC remained a marginal producer. In March 1959, President Eisenhower had instituted a program of mandatory quotas to insure a "vigorous, healthy petroleum industry in the United States."[9]

Seeking greater market influence, OPEC severed the link between the member countries' oil revenues and world oil prices, which had been falling since the late 1950s. A system of posted prices, which had little market significance, was established to determine the per barrel income to the governments and the after-tax cost to the companies. However, as late as 1970, OPEC was still not regarded as a significant factor in world oil markets. There were several sources of downward

* In the late 1990s, a wave of mega-mergers changed the face of the oil industry. In 1998, BP acquired Amoco for $48 billion to become BP-Amoco. This was followed by the $80 billion merger of Exxon and Mobil. In October 2001, Chevron and Texaco merged to form ChevronTexaco Corp.

pressure on the price of oil, including large-scale Russian oil exports and increased competition from aggressive new oil companies such as Italy's state-owned ENI. Despite declining prices, taxes on oil continued to rise, with a corresponding decline in the profit margins of producing companies.

OPEC came into its own during the early 1970s. Distorted reserve inventories had triggered a major oil and gas shortage in the United States. In just 40 months, U.S. spare capacity, which had averaged as much as 4 mm bl/d in 1967, was exhausted.[10] Once spare capacity was gone, the U.S. oil companies lost control of oil prices. OPEC countries—particularly Saudi Arabia-- now held most of worldwide spare capacity. When the Arab-Israeli War unfolded in October 1973, the United States was exceptionally vulnerable. Using oil as a weapon, the Arab producers imposed an embargo on the United States and other nations supporting Israel. At the October 16th OPEC meeting, oil ministers agreed to unilaterally raise prices to $5 per barrel, an effective increase of more than 60%.[11] Their unanimous decision to restrict output marked the beginning of a new era in which price-setting power shifted from the Seven Sisters to the OPEC producers. As oil prices shot up to $12 per barrel, OPEC's coffers swelled. Member countries celebrated revenues of about $120 billion in 1974.[12]

The Iranian revolution sparked a second oil shock in 1979 when Iran's oil production temporarily ceased. Spot prices soared to $40 per barrel, climbing higher after Iraq invaded Iran. Fearing a move away from oil to a substitution, OPEC agreed to fix official prices at $34 per barrel. Still, revenues continued to climb, reaching $280 billion in 1980.[13]

The 1986 Price Collapse

In response to the high price environment of the 1970s, many non-OPEC countries invested in domestic oil production. But as the world's oil supply expanded during the mid-1980s, demand lagged due to conservation and a deep recession. Desperate to boost prices, Saudi Arabia, the swing producer, made dramatic production cuts. Between 1981 and 1985, Saudi producers lowered output from 10 mm bl/d to 3.5 mm bl/d, and revenues shrank from $113 billion to $25.9 billion.[14] Still, prices refused to rally. Saudi officials blamed other OPEC members for cheating or exceeding their production quotas. The Saudis "were losing $20 billion a year because of the swing producer role even though other OPEC countries were cheating," explained one observer.[15] Seeking greater market share, Saudi Arabia abandoned its traditional oil policy and increased production from 2 to 5 mm bl/d. OPEC crumbled as Nigeria, Indonesia, Venezuela, U.A.E., and Iran raced to match Saudi Arabia's price discounting scheme. The ensuing oil glut sent prices plummeting. In 1986, oil prices dropped to $8 per barrel, returning in real terms to 1974 levels.

Faced with low revenues, OPEC producers renewed their commitment to collaborative price setting. After months of heated debate, OPEC again agreed to reduce daily output, this time from 20.5 to 16.7 mm bl/d during a two-month trial period. Although several countries continued to cheat on their production quotas, the new policy proved successful. Oil prices rose from $8 per barrel to $16 per barrel. In 1987, Saudi Arabia pushed for a fixed price system, and OPEC members agreed on a fixed price of $18 per barrel. However, consistent quota-busting and disputes over production adjustments undermined OPEC's ability to maintain the fixed price. **[Exhibit 5]**

OPEC in the 1990s

By mid-1990, OPEC was producing 1.5 million barrels above its quota of 24 mm bl/d. Supply exceeded demand by nearly 2 million barrels despite production cutbacks by non-OPEC countries. The new glut suggested once again that the major producers were more interested in gaining market share than in cooperating to force prices higher.

After the Iraqi invasion of Kuwait in August 1990, oil prices skyrocketed from $18 per barrel to $30 per barrel in just a few days. In a highly political move, Saudi Arabia's King Fahd increased production to cover the loss of Iraqi and Kuwaiti oil. Prices dropped back to $20 per barrel as the market stabilized. Saudi revenues might have been higher had prices stayed at $30 per barrel. But by increasing production, King Fahd had spared the U.S. economy and secured U.S. military support. Following the Gulf Crisis, OPEC held prices around $21 per barrel. The market remained stable until 1993, when overproduction pushed prices down to $15 per barrel. Over the next few years, oil prices remained volatile as quota disputes continued to destabilize OPEC.

In 1997, OPEC increased its production ceiling by 10% just as the Asian markets collapsed. The global economy slipped into recession, and oil demand slumped. Prices dropped 30% to just $10 per barrel in 1998. Dependent on oil revenues, the Arab economies floundered. Yet the crisis helped rebuild OPEC. Reunited by economic misfortune, OPEC members agreed to slash production. Both OPEC and non-OPEC producers reduced output in 1999. Aided by the early recovery of Asian markets, oil prices returned to normal levels by the end of the year.

The Price Band Mechanism

In March 2000, OPEC adopted a price band mechanism aimed at keeping oil prices in a $22-$28 per barrel range. Under the new system, quotas would automatically adjust when prices moved beyond the band. The slowdown of the United States economy tested the system: As demand waned, a series of automatic production cuts kept prices within the band. For most of the year, prices averaged $25 per barrel. But as the global economy soured in 2001, oil prices dipped below the bottom of the band. Then in September, terrorist attacks against the United States pushed prices down to a two-year low of $17 per barrel. Some officials feared that the U.S.-led retaliation against Afghanistan would spark a supply shock and force prices upward. However, the negative economic impact of the terrorist attacks sent oil prices in the opposite direction.

At OPEC's 117th meeting on September 26, leaders had planned to make production cuts to boost prices to $25 per barrel. Given the uncertain economic and political climate, OPEC members decided to postpone the cutbacks. By November, oil prices were still hovering around $18 per barrel. As government revenues tumbled, OPEC leaders grew anxious and agreed to reduce supply by 1.5 mm bl/d, effective January 1, 2002. OPEC warned that the cutbacks were contingent on production cuts by the major non-OPEC producers. Without their cooperation, oil prices would remain below the desired price band. Hoping to avoid a price war, Saudi Arabia's oil minister, Al Naimi, traveled to Russia, Mexico, and Norway to persuade oil ministers to cut oil production by a total of 500,000 barrels per day. "Everyone should heed the lessons of the past, and that means that going after market share just creates losses," said Naimi. "We are in a crisis mode and we need help. This is a serious appeal."[16] After initial resistance, Mexico agreed to shave production by 100,000 barrels per day, while Norway consented to cuts of 100,000 to 200,000 barrels per day. But Russia refused to kowtow to OPEC, choosing instead to forgo profits for greater market share.

The Emerging Non-OPEC Producers

OPEC started losing market share to non-OPEC countries in the early 1980s. The high price environment of the l970s had encouraged non-OPEC exploration and production. Security issues had prompted consuming nations to invest in domestic oil production. Originally, the growth of non-OPEC producers had not threatened OPEC members. Most assumed that limited resources and high production costs would inhibit future production. However, technological advances, cost-reduction programs, and efforts to attract outside investment made production economically viable in many

non-OPEC countries. Production in these countries increased every year from 1993 to2000.[17] **[Exhibit 3]**

In 2000, non-OPEC countries supplied 60% of the world's oil but held less than 20% of the world's proven reserves. Seven of the top ten oil producers were non-OPEC nations. Non-OPEC production, which had grown by 1.8 mm bl/d in 2000-2001, was expected to increase by 800,000 barrels per day in 2002.[18] Non-OPEC output was forecast to grow in the future, with the greatest production increase coming from the former Soviet Union. The United States, Russia, Mexico, Norway, the United Kingdom, China, and Canada were among the top non-OPEC producers. **[Exhibit 4, Appendices A & B]**

United States The United States, with proven oil reserves of only 21.8 billion, was the world's third largest oil producer and the largest consumer. In 2000, the United States imported an estimated 11.5 mm bl/d of oil, satisfying 58% of U.S. oil demand. Top suppliers included Canada, Saudi Arabia, Venezuela, and Mexico, with OPEC nations supplying 45% of U.S. imports. Following the September 11 terrorist attacks, President Bush ordered the Energy Department to increase the Strategic Petroleum Reserve to full capacity.[19] In the future, the United States hoped to become less dependent on Middle East imports.[20]

Russia With oil reserves around 50 billion barrels, Russia was the second largest oil producer and exporter. Although production had been stagnant during the early to mid-1990s, investment increased when oil prices rose in 1999. During the next two years, production grew by 10.6%, and exports surged. Oil revenues rallied Russia's flagging economy and boosted GDP growth to a record 8.3% in 2000. Russia's willingness to cooperate with OPEC cutbacks dissipated in 2001. As OPEC called for production cuts, Russia continued to increase production. Ignoring OPEC's threats to raise production and induce a price war, Russia remained intent on growing its 7% market share. As its relations with the United States improved, Russia hoped to export oil to its former adversary.[21]

Mexico A net oil importer until 1976, Mexico developed its oil industry during the presidency of Jose López Portillo (1976-1982). By 2000, Mexico had emerged as the seventh largest world oil producer and the tenth largest oil exporter. On a daily basis, Mexico produced 3.0 mm bl/d and exported 1.5 mm bl/d. Oil accounted for a third of government revenue. Pemex, the state-owned oil and gas monopoly, dominated Mexican oil production. Although privatization plans had been rejected, the government maintained its commitment to modernize the oil giant. The EIA estimated that production would continue to grow, reaching 4 mm bl/d by 2010. Mexico had a history of cooperating with OPEC nations. During the 1998 price collapse, Mexico was the only non-OPEC producer to make significant output cuts.[22]

Norway As the world's sixth largest oil producer and third largest oil exporter, Norway played an influential role in the world oil market. Large oil discoveries in the North Sea during the 1980s and 1990s contributed to some of the highest current account surpluses in Norway's history. Norway's political stability and proximity to Western Europe offset its high production costs, allowing the country to expand its market share. With 9.4 billion barrels of proven reserves, Norway was expected to produce 3.4 mm bl/d in 2001, an increase of 130,000 barrels per day from 2000. Production would likely peak in 2006 at 3.7 mm bl/d.[23]

United Kingdom The largest oil producer and exporter in the European Union, the United Kingdom ranked ninth in world oil production and thirteenth in net exports. The U.K. held an estimated 5 billion barrels of proven oil reserves, mostly located in the North Sea. Production, which measured 2.47 mm bl/d in 2000, was expected to shrink to 1.9 mm bl/d in 2001. With British oil production in the hands of private oil majors Royal Dutch/Shell and British Petroleum, government revenues would be unaffected by the production decline.[24]

China With the world's largest population, China was the fifth largest oil producer and one of the world's fastest growing consumers. China produced more than 3.2 mm bl/d, with 1 mm bl/d coming from the Daqing field alone. As onshore oil fields matured, China had begun to invest in offshore exploration and development on the Bohai Sea. Fearing dependence on oil imports, China had acquired oil concessions in Kazakhstan, Venezuela, Sudan, Iran, Iraq, and Peru.[25]

Canada Ranked tenth among the world's top oil producers, Canada held proven oil reserves of only 4.7 billion barrels. Close to 60% of Canadian oil was produced in the western province of Alberta. The Athabasca Oil Sands Deposit, with 1.7 trillion to 2.5 trillion barrels of bitumen, was one of the world's largest petroleum resources.[26] Canada exported 30% of its oil and was the largest supplier of U.S. oil.[27] In 2000, the United States imported 1.81 mm bl/d from Canada, 1.57 mm bl/d from Saudi Arabia, 1.55 mm bl/d from Venezuela and 1.37 mm bl/d from Mexico.[28]

Saudi Arabia's Oil Empire

With 259 billion barrels of proven oil reserves, Saudi Arabia was the world's largest oil producer and exporter. Europe, Asia and the United States were Saudi Arabia's main export markets.[29] In 2000, Saudi Arabia produced 8.4 mm bl/d, witholding excess capacity of around 2 mm bl/d. Plans were underway to increase capacity to 12.5 mm bl/d. In Saudi Arabia, production costs were $1.50 per barrel compared to the world average of $5 per barrel. Discovery costs were equally low—less than $0.10 per barrel compared with $4 per barrel in other parts of the world.[30] More than one-fourth of the world's total oil reserves was located in Saudi Arabia. Ghawar was the largest onshore oilfield and held estimated reserves of 70 billion barrels. The largest offshore oilfield, Safaniya, contained estimated reserves of 19 billion barrels.[31] **[Exhibit 1]**

Saudi Aramco

The Saudi Arabian Oil Company, or Saudi Aramco, managed nearly all of Saudi Arabia's oil and gas operations. In 1976, Saudi Arabia's King Faisal had nationalized Aramco but retained U.S. executives to run the company. Twelve years later, King Fahd officially established the Saudi Arabian Oil Company by royal decree and placed the company under Saudi management. In 2000, Oil Minister Ali Al Naimi headed the board of directors that managed the company and its 56,500 employees.[32] **[Exhibits 7 & 8]**

As the world's largest oil producing company, Saudi Aramco invested heavily in exploration and development. Most of Saudi Arabia's oilfields were located in the east, in the politically unstable Persian Gulf region. Following the Gulf War in 1990-91, Saudi Arabia followed a diversification strategy that aimed to develop oilfields south of Riyadh. The development of the Shaybah field in the southwest Empty Quarter region was expected to yield reserves of 7 billion barrels. Other pending development projects included the Qatif field, which had an expected capacity of 500,000 barrels per day, and the Khurais field, with an expected capacity of 800,000 barrels per day. The newly formed Supreme Council for Petroleum and Mineral Affairs had approved $15 billion per year to increase oil and gas output during the 2000-2004 period.[33]

There were seven oil refineries in Saudi Arabia, with combined capacity of 1.75 mm bl/d. Saudi Aramco's overseas refineries had an additional capacity of 1.6 mm bl/d. Downstream development plans included a $1.2 billion upgrade of the 300,000 barrels per day Ras Tanura refinery. Another project would boost capacity at the Rabigh refinery to 400,000 barrels per day. Saudi Arabia also had ambitious plans to expand its petrochemical sector.[34]

The Natural Gas Sector

Saudi Arabia held the world's fourth largest natural gas reserves, estimated at 204.5 trillion cubic feet.[35] The government pledged to increase gas production in order to satisfy growing domestic demand. New water desalination and power generation plants were to be powered by natural gas. In 1999, Saudi Aramco had announced that it would invest $45 billion over the next 25 years on upstream gas development and processing facilities. But foreign investment was crucial for meeting development goals. In May 2001, the Saudi government selected ExxonMobil, Shell, BP, Phillips, Occidental, Marathon, TotalFinaElf, and Conoco to develop the kingdom's upstream gas sector. In June, oil executives met with Saudi officials in Jeddah to sign preliminary agreements for the historic Saudi Gas Initiative, which marked the first reopening of the gas sector since its nationalization in the 1970s. However, the March 2, 2002 deadline passed without an official agreement after disputes over access to gas fields and the proper rate of return stalled the deal. **[Exhibit 6, Appendices C & D]**

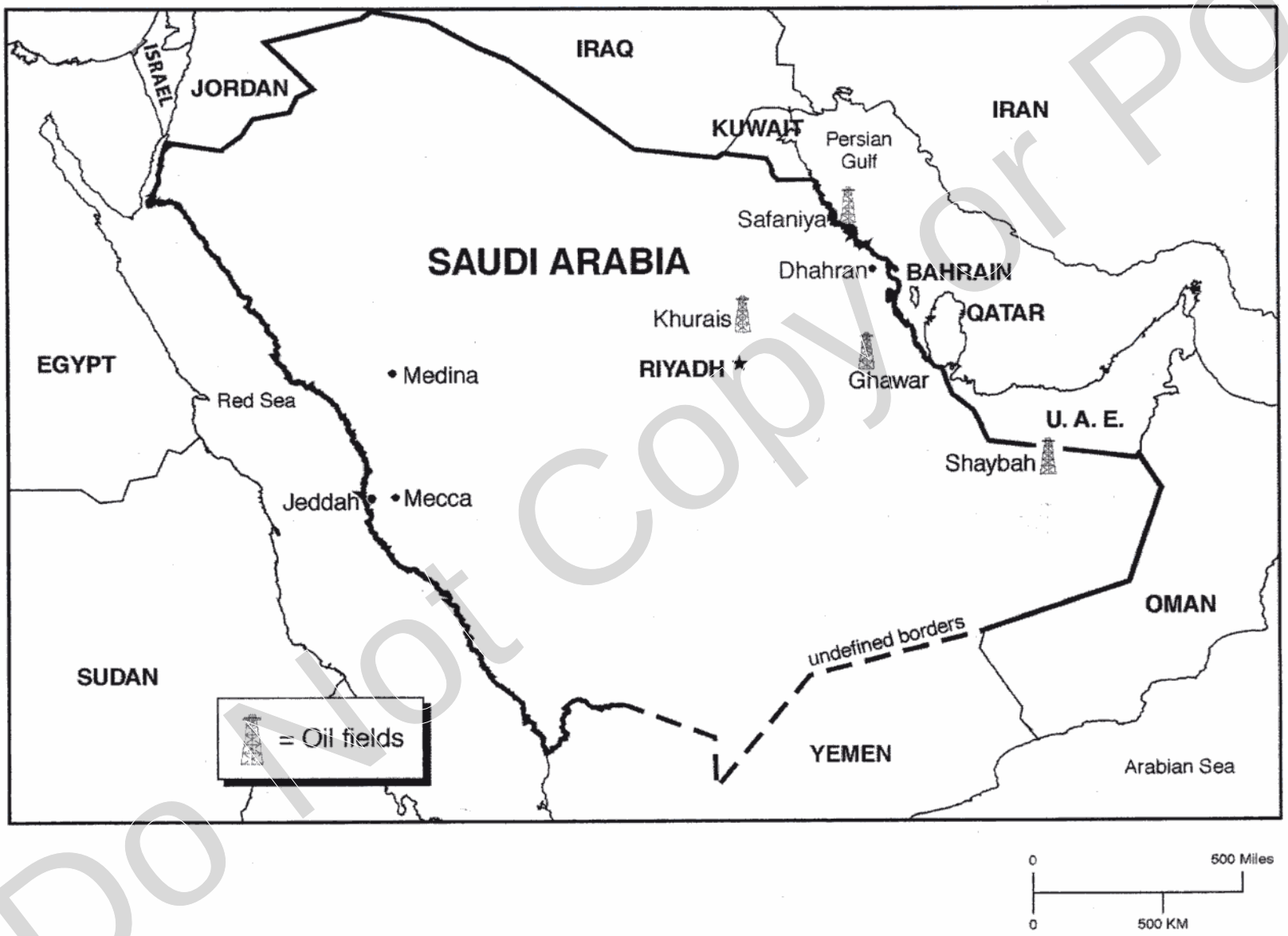
Hoping to position themselves for the opening of the upstream oil sector, the eight oil giants agreed to invest $25 billion on upstream gas development. The Initiative was divided into three core ventures. ExxonMobil, Shell, BP, and Phillips would oversee core venture one in South Ghawar. This project would include exploration, pipelines, two gas-fired power plants, two petrochemical plants, and two desalination units. Core venture two, led by ExxonMobil and Occidental, included exploration in the Red Sea, development of the Barqan and Midyan fields, and the construction of petrochemical, power, and desalination plants. In core venture three, Shell, TotalFinaElf, and Conoco would explore the Shaybah field, development in the Kidan field, and lay pipelines from Shaybah to the Haradh and Hawiyah gas treatment plants.[36]

The Future of Saudi Arabian Oil

Over the past 25 years, Saudi Arabia had followed a price moderating policy. As the swing producer, Saudi Arabia bore the brunt of production cuts in order to maintain stable oil prices. As government revenues fell in 2001, Saudi Arabia had refused to cut production to accommodate OPEC cheaters. To maintain the welfare state that had emerged during the high price environment of the 1970s, Saudi officials recognized that future policy decisions would be driven by revenue needs.[37] While price moderation would remain important, Saudi Arabia would focus on growing its market share.

As OPEC headed into the new millennium, the future of the organization looked uncertain. Disputes over quota-busting threatened to break up the cartel. In October 2001, OPEC members produced 800,000 barrels per day more than the agreed ceiling of 23.2 mm bl/d (OPEC's spare capacity was estimated at 4.5 mm bl/d).[38] Like a Band-Aid, the price band mechanism had held the warring factions of the cartel together and had kept oil prices stable. However, the terrorist attacks and global recession had proved the band's ineffectiveness in the face of macroeconomic events. Meanwhile, OPEC continued to lose market share to non-OPEC producers. Officials reported that OPEC's market share had slipped from 60% in the late 1970s to 30% in 2001.[39] OPEC's production decisions had become reliant on cooperation from non-OPEC producers. In November 2001, Russia announced that it would reduce oil production by just 50,000 barrels per day. OPEC had pushed for a 150,000 barrels per day reduction. As January approached, OPEC questioned whether it should proceed with its planned production cuts of 1.5 mm bl/d. This would require Saudi Arabia to hold its production at just 7.0 mm bl/d.

Exhibit 1 Map of Saudi Arabia and Oil Fields



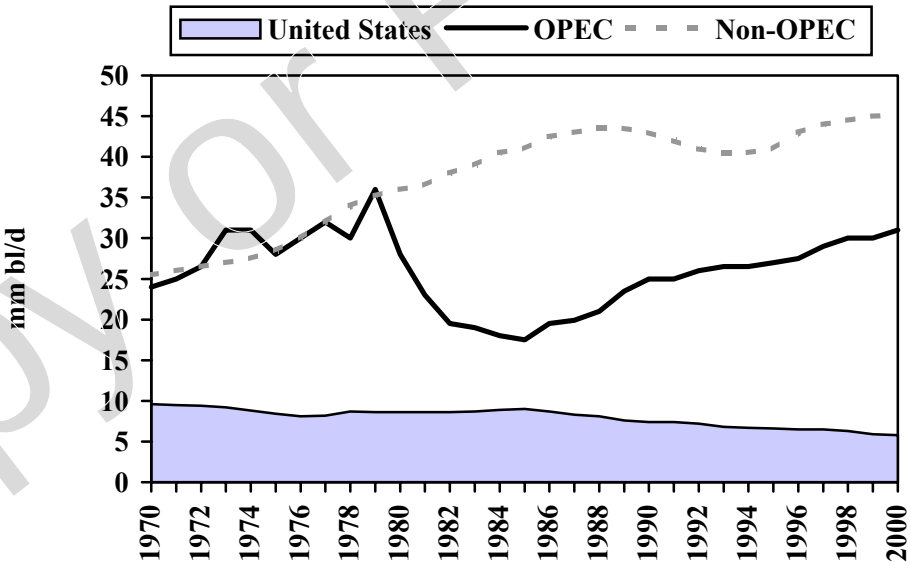
Source: Created by Casewriter

Exhibit 2 World Crude Oil and Natural Gas Reserves, January 1, 2000

	Crude Oil (billion barrels)	Natural Gas (trillion cubic feet)
North America	**55.1**	**261.3**
Canada	4.9	63.9
Mexico	28.4	30.1
United States	21.8	167.4
Central & South America	**89.5**	**222.7**
Brazil	7.4	8.0
Venezuela	72.6	142.5
Western Europe	**18.8**	**159.5**
Norway	10.8	41.4
United Kingdom	5.2	26.7
Eastern Europe & Former U.S.S.R.	**58.9**	**1,999.2**
Russia	48.6	1,700.0
Middle East	**675.6**	**1,749.2**
Iran	89.7	812.3
Iraq	112.5	109.8
Kuwait	96.5	52.7
Saudi Arabia	263.5	204.5
United Arab Emirates	97.8	212.0
Africa	**74.9**	**394.2**
Algeria	9.2	159.7
Angola	5.4	1.6
Libya	29.5	46.4
Nigeria	22.5	124.0
Far East & Oceania	**44.0**	**363.5**
China	24.0	48.3
Indonesia	5.0	72.3
World Total	**1,016.8**	**5,149.6**

Source: Compiled from *Oil and Gas Journal*

Exhibit 3 World Oil Production, 1970-2000



Source: Energy Information Administration: www.eia.doe.gov

Exhibit 4a Top World Crude Oil Producers (Includes Lease Condensate), 2000

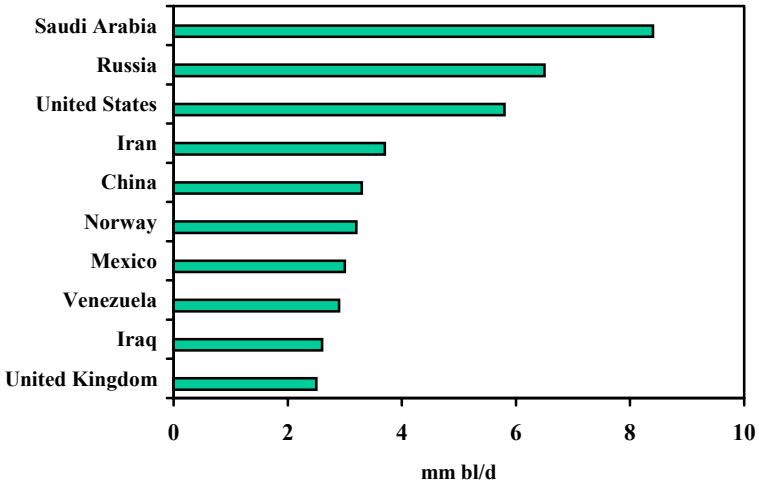


Exhibit 4b Top World Oil Net Exporters, 2000

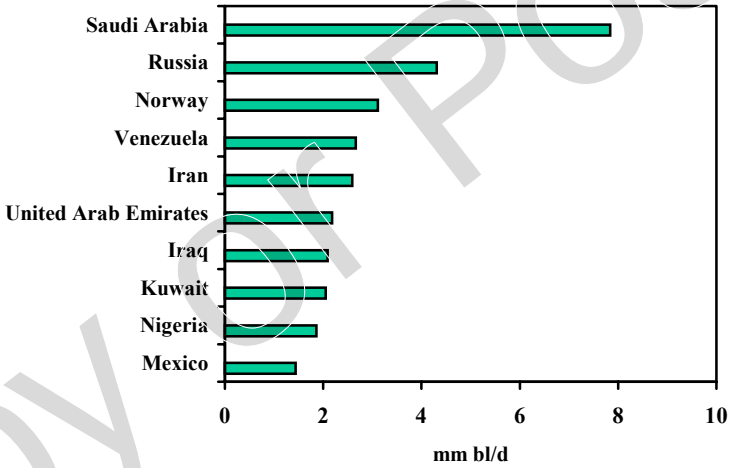
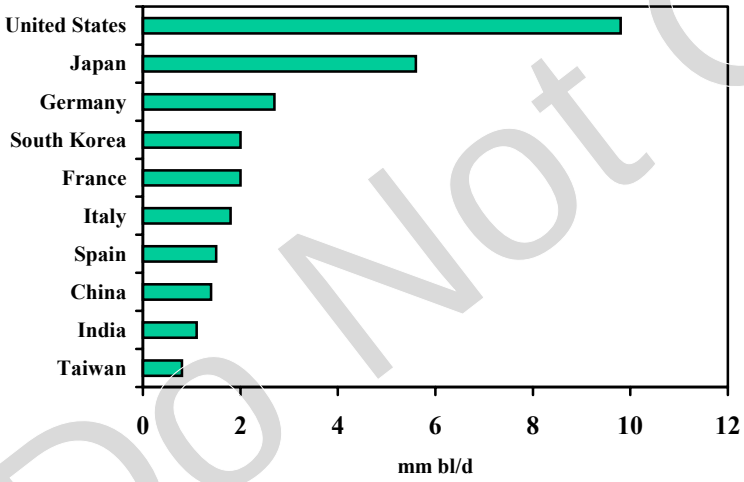
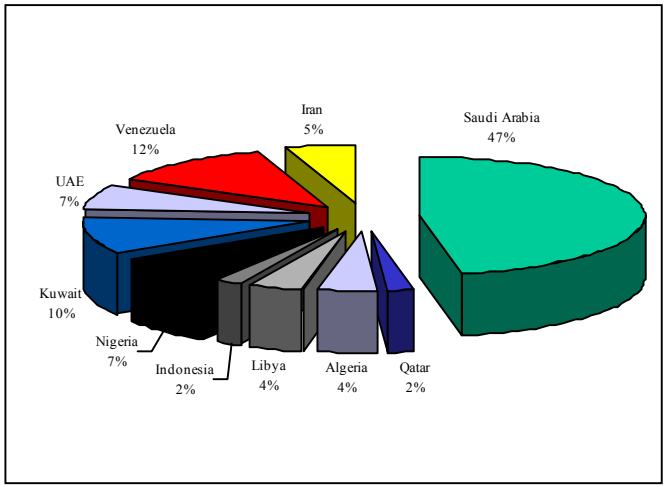


Exhibit 4c Top World Oil Net Importers, 2000



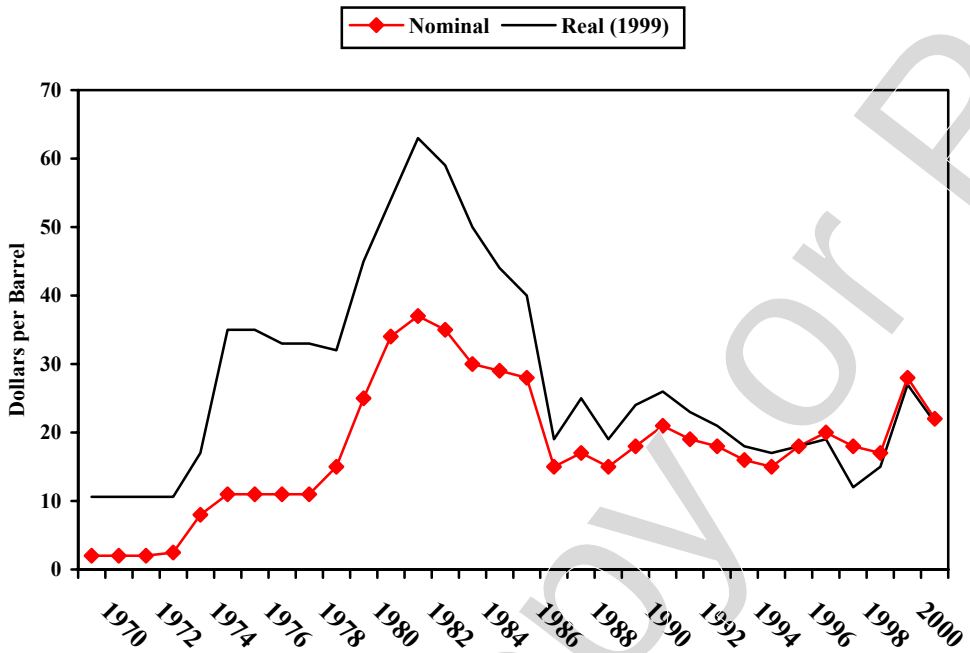
Source 4a-4c: Energy Information Administration, www.eia.doe.gov

Exhibit 4d OPEC Spare Production Capacity



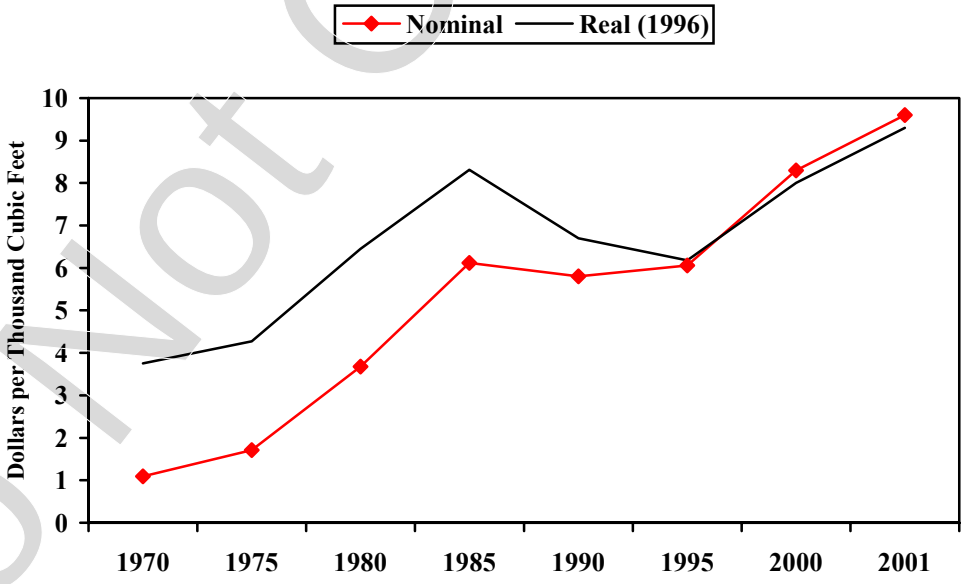
Source: Adapted from Nawaf E. Obaid. *The Oil Kingdom at 100.* Washington D.C.: The Washington Institute for Near East Policy, 2000, pg. 133.

Exhibit 5 Real and Nominal Crude Oil Prices, 1970-2001



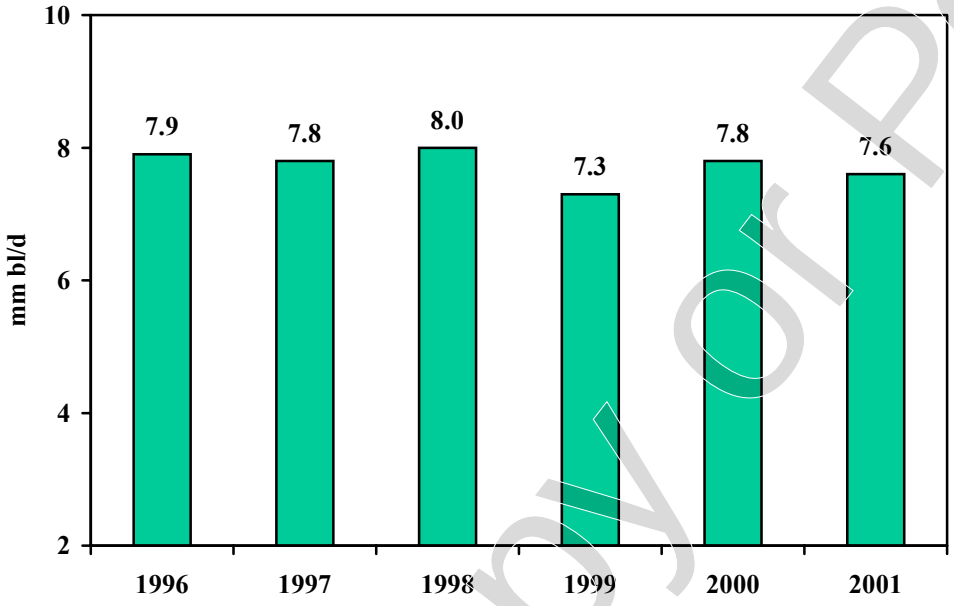
Source: Energy Information Administration, www.eia.doe.gov

Exhibit 6 Residential Natural Gas Prices, 1970-2001



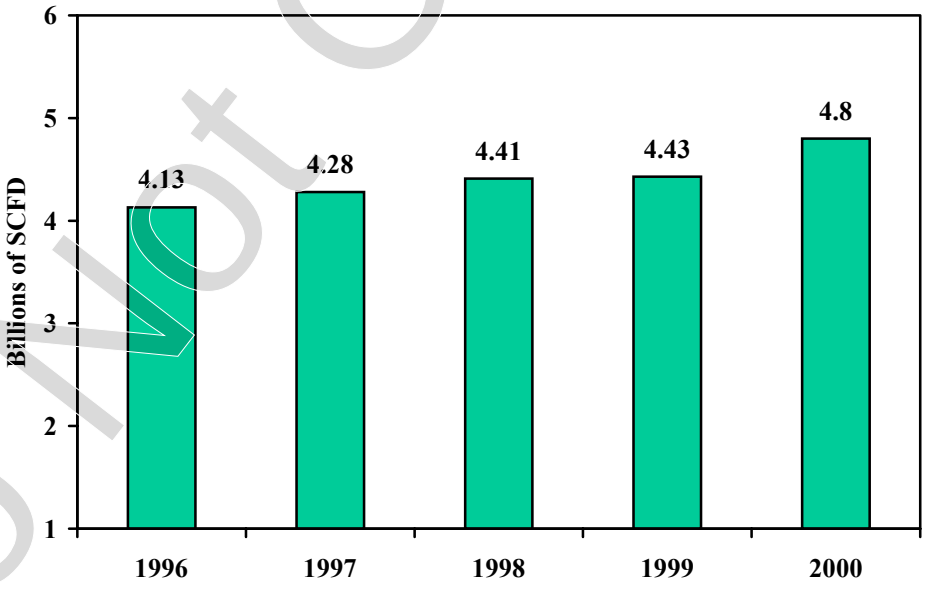
Source: Energy Information Administration, www.eia.doe.gov

Exhibit 7 Saudi Aramco, Crude Oil Production (Excludes lease condensate), 1996-2001



Source: adapted from *Saudi Aramco* , www.saudiaramco.com

Exhibit 8 Saudi Aramco, Raw Gas to Gas Plants, 1996-2000



Source: adapted from *Saudi Aramco,* www.saudiaramco.com

Appendix A World Crude Oil Production (Includes lease condensate), 1980-2000 (Thousand Barrels per Day)

Country	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
North America	**11,968**	**12,170**	**12,668**	**12,733**	**13,097**	**13,187**	**12,589**	**12,432**	**12,268**	**11,693**	**11,461**	**11,644**	**11,446**	**11,199**	**11,093**	**10,982**	**11,156**	**11,396**	**11,303**	**10,694**	**10,814**
Canada	1,435	1,285	1,271	1,356	1,438	1,471	1,474	1,535	1,616	1,560	1,553	1,548	1,605	1,679	1,746	1,805	1,837	1,922	1,981	1,907	1,980
Mexico	1,936	2,313	2,748	2,689	2,780	2,745	2,435	2,548	2,512	2,520	2,553	2,680	2,669	2,673	2,685	2,618	2,855	3,023	3,070	2,906	3,012
United States	8,597	8,572	8,649	8,688	8,879	8,971	8,680	8,349	8,140	7,613	7,355	7,417	7,171	6,847	6,662	6,560	6,465	6,452	6,252	5,881	5,822
Central & South America	**3,647**	**3,656**	**3,457**	**3,432**	**3,612**	**3,602**	**3,813**	**3,700**	**3,950**	**3,995**	**4,318**	**4,535**	**4,621**	**4,817**	**5,059**	**5,481**	**5,848**	**6,326**	**6,435**	**6,293**	**n/a**
Brazil	182	213	260	339	475	564	572	566	554	596	631	630	626	643	671	695	795	841	969	1,132	n/a
Venezuela	2,168	2,102	1,895	1,801	1,798	1,677	1,787	1,752	1,903	1,907	2,137	2,375	2,371	2,450	2,588	2,750	2,938	3,280	3,167	2,826	2,899
Western Europe	**2,531**	**2,705**	**3,026**	**3,399**	**3,660**	**3,847**	**3,983**	**4,028**	**4,001**	**3,947**	**4,125**	**4,326**	**4,676**	**4,873**	**5,543**	**5,878**	**6,299**	**6,300**	**6,275**	**6,349**	**n/a**
Norway	528	501	520	614	697	788	870	1,022	1,158	1,554	1,704	1,890	2,229	2,350	2,521	2,768	3,104	3,143	3,017	3,018	3,200
United Kingdom	1,622	1,811	2,065	2,291	2,480	2,530	2,539	2,406	2,232	1,802	1,820	1,797	1,825	1,915	2,375	2,489	2,568	2,518	2,616	2,684	2,470
Eastern Europe & Former U.S.S.R.	**12,038**	**12,185**	**12,269**	**12,336**	**12,203**	**11,909**	**12,221**	**12,366**	**12,339**	**11,989**	**11,216**	**10,191**	**8,727**	**7,764**	**7,131**	**7,017**	**6,917**	**7,054**	**7,066**	**7,416**	**n/a**
Former U.S.S.R.	11,706	11,850	11,912	11,972	11,861	11,585	11,895	12,050	12,053	11,715	10,975	9,992	0	0	0	0	0	0	0	0	0
Russia	0	0	0	0	0	0	0	0	0	0	0	0	7,632	6,730	6,135	5,995	5,850	5,920	5,854	6,079	6,479
Middle East	**18,442**	**15,766**	**12,641**	**11,624**	**11,369**	**10,307**	**12,462**	**12,936**	**14,513**	**16,013**	**16,545**	**16,130**	**17,373**	**18,265**	**18,669**	**18,979**	**19,174**	**19,923**	**21,178**	**20,502**	**n/a**
Iran	1,662	1,380	2,214	2,440	2,174	2,250	2,035	2,298	2,240	2,810	3,088	3,312	3,429	3,540	3,618	3,643	3,686	3,664	3,634	3,557	3,684
Iraq	2,514	1,000	1,012	1,005	1,209	1,433	1,690	2,079	2,685	2,897	2,040	305	425	512	553	560	579	1,155	2,150	2,508	2,566
Kuwait	1,656	1,125	823	1,064	1,157	1,023	1,419	1,585	1,492	1,783	1,175	190	1,058	1,852	2,025	2,057	2,062	2,007	2,085	1,898	2,126
Saudi Arabia	9,900	9,815	6,483	5,086	4,663	3,388	4,870	4,265	5,086	5,064	6,410	8,115	8,332	8,198	8,120	8,231	8,218	8,362	8,389	7,833	8,404
United Arab Emirates	1,709	1,474	1,250	1,149	1,146	1,193	1,330	1,541	1,565	1,860	2,117	2,386	2,266	2,159	2,193	2,233	2,278	2,316	2,345	2,169	2,268
Africa	**6,125**	**4,772**	**4,733**	**4,751**	**5,121**	**5,371**	**5,175**	**5,232**	**5,581**	**5,962**	**6,432**	**6,721**	**6,755**	**6,638**	**6,674**	**6,954**	**7,112**	**7,368**	**7,340**	**7,296**	**n/a**
Algeria	1,106	1,002	987	968	1,014	1,037	945	1,048	1,040	1,095	1,175	1,230	1,214	1,162	1,180	1,202	1,242	1,277	1,246	1,202	809
Libya	1,787	1,140	1,150	1,105	1,087	1,059	1,034	972	1,175	1,150	1,375	1,483	1,433	1,361	1,378	1,390	1,401	1,446	1,390	1,319	1,410
Nigeria	2,055	1,433	1,295	1,241	1,388	1,495	1,467	1,341	1,450	1,716	1,810	1,892	1,943	1,960	1,931	1,993	2,001	2,132	2,153	2,130	2,140
Far East & Oceania	**4,848**	**4,822**	**4,687**	**4,980**	**5,426**	**5,758**	**5,984**	**5,972**	**6,085**	**6,264**	**6,468**	**6,660**	**6,615**	**6,680**	**6,822**	**7,043**	**7,205**	**7,323**	**7,324**	**7,319**	**n/a**
China	2,114	2,012	2,045	2,120	2,296	2,505	2,620	2,690	2,730	2,757	2,774	2,835	2,845	2,890	2,939	2,990	3,131	3,200	3,198	3,195	3,250
Indonesia	1,577	1,605	1,339	1,343	1,412	1,325	1,390	1,343	1,342	1,409	1,462	1,592	1,504	1,511	1,510	1,503	1,547	1,520	1,518	1,472	1,286
World Total	**59,600**	**56,076**	**53,481**	**53,256**	**54,489**	**53,982**	**56,227**	**56,666**	**58,737**	**59,863**	**60,566**	**60,207**	**60,213**	**60,236**	**60,991**	**62,335**	**63,711**	**65,690**	**66,921**	**65,870**	**68,200**

Source: Energy Information Administration, www.eia.doe.gov

Appendix B World Oil Consumption, 1980-2000 (Thousand Barrels per Day)

Country	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
North America	**20,204**	**19,229**	**18,354**	**18,034**	**18,655**	**18,701**	**19,277**	**19,739**	**20,532**	**20,706**	**20,364**	**20,036**	**20,404**	**20,639**	**21,245**	**21,208**	**21,873**	**22,354**	**22,715**	**23,432**	**23,800**
Mexico	1,270	1,399	1,476	1,350	1,452	1,466	1,486	1,520	1,550	1,640	1,679	1,695	1,723	1,710	1,795	1,724	1,763	1,872	1,935	1,975	2,073
United States	17,056	16,058	15,296	15,231	15,726	15,726	16,281	16,665	17,283	17,325	16,988	16,714	17,033	17,237	17,718	17,725	18,309	18,620	18,917	19,519	19,701
Central & South America	**3,573**	**3,517**	**3,375**	**3,192**	**3,217**	**3,185**	**3,407**	**3,518**	**3,565**	**3,576**	**3,591**	**3,654**	**3,748**	**3,887**	**4,050**	**4,248**	**4,455**	**4,645**	**4,859**	**4,949**	**n/a**
Brazil	1,148	1,085	1,061	980	1,033	1,079	1,238	1,263	1,300	1,317	1,339	1,346	1,369	1,429	1,511	1,596	1,718	1,823	1,915	1,950	n/a
Venezuela	400	433	427	400	379	383	402	404	397	388	396	405	414	427	440	448	444	455	457	470	n/a
Western Europe	**14,322**	**13,169**	**12,723**	**12,379**	**12,413**	**12,385**	**12,785**	**12,927**	**13,084**	**13,159**	**13,246**	**13,660**	**13,841**	**13,731**	**13,815**	**14,347**	**14,525**	**14,726**	**14,985**	**14,800**	**n/a**
Eastern Europe & Former U.S.S.R.	**10,707**	**10,550**	**10,621**	**10,474**	**10,417**	**10,461**	**10,463**	**10,508**	**10,383**	**10,190**	**9,725**	**9,434**	**7,910**	**6,710**	**5,885**	**5,681**	**5,173**	**5,045**	**4,968**	**4,912**	**n/a**
Russia	0	0	0	0	0	0	0	0	0	0	0	0	4,423	3,750	3,179	2,976	2,619	2,562	2,449	2,396	n/a
Middle East	**2,058**	**2,199**	**2,352**	**2,612**	**2,673**	**2,854**	**2,977**	**3,055**	**3,154**	**3,283**	**3,377**	**3,376**	**3,581**	**3,778**	**3,941**	**4,067**	**4,081**	**4,238**	**4,339**	**4,424**	**n/a**
Africa	**1,474**	**1,577**	**1,660**	**1,698**	**1,758**	**1,826**	**1,827**	**1,844**	**1,905**	**1,985**	**2,076**	**2,131**	**2,169**	**2,207**	**2,243**	**2,303**	**2,359**	**2,432**	**2,463**	**2,523**	**n/a**
Far East & Oceania	**10,729**	**10,662**	**10,417**	**10,350**	**10,699**	**10,679**	**11,024**	**11,408**	**12,196**	**13,017**	**13,595**	**14,269**	**15,105**	**16,044**	**17,108**	**18,024**	**18,945**	**19,617**	**19,312**	**19,865**	**n/a**
China	1,765	1,705	1,660	1,730	1,740	1,885	2,000	2,120	2,275	2,380	2,296	2,499	2,662	2,959	3,161	3,363	3,610	3,916	4,106	4,320	4,600
Hong Kong	124	128	125	119	115	110	113	116	121	124	127	133	152	158	180	186	183	138	184	229	n/a
India	643	729	737	773	824	895	947	988	1,084	1,150	1,168	1,190	1,275	1,311	1,413	1,575	1,681	1,765	1,844	1,930	n/a
Indonesia	408	455	479	470	470	465	470	493	524	583	651	695	707	765	778	814	886	1,003	954	990	n/a
Japan	4,960	4,848	4,582	4,395	4,576	4,384	4,439	4,484	4,752	4,983	5,140	5,284	5,446	5,401	5,674	5,711	5,867	5,711	5,512	5,572	5,528
Korea, South	537	536	534	561	587	569	607	639	731	843	1,025	1,202	1,456	1,690	1,856	2,027	2,183	2,392	1,973	2,040	2,146
Singapore	202	214	222	220	235	227	257	285	304	329	363	389	420	469	503	512	541	620	599	592	n/a
Taiwan	380	340	330	337	384	378	405	420	483	521	542	545	557	616	659	737	780	775	808	825	n/a
World Total	**63,067**	**60,903**	**59,503**	**58,739**	**59,831**	**60,091**	**61,759**	**62,999**	**64,819**	**65,917**	**65,974**	**66,559**	**66,758**	**66,996**	**68,286**	**69,878**	**71,411**	**73,057**	**73,642**	**74,905**	**75,525**

Source: Energy Information Administration, www.eia.doe.gov

Appendix C World Dry Natural Gas Production, 1980-1999 (Trillion Cubic Feet)

Country	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
North America	**23.06**	**22.82**	**21.59**	**19.68**	**21.26**	**20.50**	**19.81**	**20.62**	**21.58**	**21.90**	**22.56**	**22.65**	**23.24**	**23.95**	**25.06**	**25.16**	**25.70**	**25.92**	**26.02**	**26.17**
Canada	2.76	2.67	2.72	2.56	2.79	3.04	2.86	3.10	3.57	3.73	3.85	4.06	4.52	4.91	5.27	5.60	5.78	5.86	6.05	6.26
United States	19.40	19.18	17.82	16.09	17.47	16.45	16.06	16.62	17.10	17.31	17.81	17.70	17.84	18.10	18.82	18.60	18.85	18.90	18.71	18.62
Central & South America	**1.23**	**1.36**	**1.43**	**1.49**	**1.70**	**1.75**	**1.78**	**1.74**	**1.87**	**2.13**	**2.01**	**2.15**	**2.14**	**2.30**	**2.44**	**2.58**	**2.76**	**2.92**	**3.12**	**3.32**
Western Europe	**7.46**	**7.29**	**6.73**	**6.99**	**7.15**	**7.38**	**7.21**	**7.43**	**7.06**	**7.31**	**7.24**	**7.83**	**7.92**	**8.33**	**8.44**	**8.80**	**10.09**	**9.71**	**9.64**	**9.90**
Netherlands	3.40	3.15	2.69	2.85	2.88	3.01	2.76	2.77	2.45	2.67	2.69	3.04	3.06	3.11	2.95	2.98	3.37	2.99	2.84	2.65
Norway	0.92	0.92	0.90	0.91	0.97	0.94	0.99	1.04	1.05	1.09	0.98	0.97	1.04	0.97	1.04	1.08	1.45	1.62	1.63	1.76
United Kingdom	1.32	1.33	1.36	1.40	1.36	1.52	1.60	1.68	1.62	1.58	1.75	2.01	1.96	2.31	2.47	2.67	3.18	3.03	3.14	3.49
Eastern Europe & Former U.S.S.R.	**17.06**	**18.15**	**19.50**	**20.79**	**22.59**	**24.52**	**26.05**	**27.18**	**28.96**	**29.71**	**30.13**	**29.85**	**28.58**	**27.98**	**26.47**	**25.93**	**26.28**	**24.85**	**25.16**	**25.41**
Former U.S.S.R.	15.37	16.43	17.68	18.93	20.74	22.71	24.19	25.36	27.19	28.11	28.78	28.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Romania	1.20	1.24	1.35	1.40	1.34	1.27	1.34	1.32	1.28	1.13	1.00	0.88	0.78	0.75	0.69	0.68	0.63	0.61	0.52	0.50
Russia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.62	21.81	21.45	21.01	21.23	20.17	20.87	20.83
Turkmenistan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.02	2.29	1.26	1.14	1.31	0.90	0.47	0.79
Uzbekistan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.51	1.59	1.67	1.70	1.70	1.74	1.94	1.96
Middle East	**1.42**	**1.45**	**1.37**	**1.52**	**2.00**	**2.38**	**2.63**	**3.03**	**3.31**	**3.69**	**3.72**	**3.84**	**4.14**	**4.43**	**4.69**	**4.99**	**5.53**	**6.22**	**6.60**	**6.81**
Iran	0.25	0.21	0.25	0.31	0.48	0.60	0.54	0.57	0.71	0.78	0.84	0.92	0.88	0.96	1.12	1.25	1.42	1.66	1.77	1.87
Qatar	0.18	0.16	0.19	0.17	0.21	0.19	0.19	0.20	0.21	0.22	0.28	0.33	0.40	0.48	0.48	0.48	0.48	0.61	0.69	0.85
Saudi Arabia	0.33	0.56	0.43	0.42	0.62	0.72	0.89	0.95	1.03	1.05	1.08	1.13	1.20	1.27	1.33	1.34	1.46	1.60	1.65	1.63
United Arab Emirates	0.20	0.23	0.20	0.27	0.34	0.48	0.54	0.68	0.66	0.81	0.78	0.92	1.02	0.94	0.91	1.11	1.19	1.28	1.31	1.34
Africa	**0.69**	**1.04**	**1.24**	**1.69**	**1.80**	**1.86**	**1.88**	**2.10**	**2.24**	**2.39**	**2.46**	**2.69**	**2.77**	**2.81**	**2.72**	**3.01**	**3.23**	**3.52**	**3.70**	**4.10**
Algeria	0.41	0.77	0.94	1.31	1.36	1.36	1.33	1.52	1.63	1.71	1.79	1.93	1.97	1.90	1.81	2.05	2.19	2.43	2.60	2.90
Far East & Oceania	**2.44**	**2.62**	**2.69**	**2.99**	**3.54**	**4.00**	**4.22**	**4.50**	**4.78**	**4.98**	**5.44**	**5.76**	**6.06**	**6.55**	**7.11**	**7.50**	**8.13**	**8.47**	**8.55**	**8.98**
Indonesia	0.63	0.66	0.67	0.78	1.06	1.23	1.18	1.29	1.34	1.42	1.53	1.72	1.79	1.97	2.21	2.24	2.35	2.37	2.27	2.34
Malaysia	0.06	0.06	0.06	0.15	0.33	0.44	0.53	0.55	0.58	0.61	0.65	0.75	0.80	0.88	0.92	1.02	1.23	1.36	1.37	1.45
World Total	**53.35**	**54.73**	**54.56**	**55.15**	**60.05**	**62.39**	**63.57**	**66.61**	**69.80**	**72.13**	**73.57**	**74.78**	**74.84**	**76.36**	**76.93**	**77.96**	**81.71**	**81.61**	**82.79**	**84.69**

Source: Energy Information Administration, www.eia.doe.gov

Appendix D World Dry Natural Gas Consumption, 1980-1999 (Trillion Cubic Feet)

Country	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
North America	**22.56**	**22.11**	**20.80**	**19.64**	**20.91**	**20.44**	**19.23**	**20.22**	**21.26**	**22.11**	**22.01**	**22.38**	**23.10**	**23.99**	**24.56**	**25.41**	**26.07**	**26.12**	**25.41**	**26.06**
Canada	1.88	1.84	1.86	1.86	2.02	2.17	2.13	2.11	2.33	2.43	2.38	2.40	2.60	2.74	2.82	2.79	3.00	2.98	2.87	3.10
Mexico	0.80	0.87	0.94	0.95	0.95	0.99	0.88	0.89	0.90	0.88	0.92	0.95	0.96	0.98	1.03	1.04	1.10	1.18	1.28	1.26
United States	19.88	19.40	18.00	16.84	17.95	17.28	16.22	18.03	18.80	18.72	19.04	19.54	19.54	20.28	20.71	21.58	21.96	21.97	21.26	21.70
Central & South America	**1.24**	**1.32**	**1.42**	**1.42**	**1.70**	**1.75**	**1.78**	**1.74**	**1.87**	**2.13**	**2.02**	**2.15**	**2.14**	**2.30**	**2.44**	**2.58**	**2.76**	**2.92**	**3.12**	**3.25**
Venezuela	0.52	0.57	0.60	0.58	0.61	0.62	0.67	0.66	0.66	0.77	0.76	0.79	0.76	0.82	0.88	0.89	0.96	0.99	1.11	1.09
Western Europe	**8.66**	**8.51**	**8.36**	**8.52**	**9.17**	**9.48**	**9.68**	**10.07**	**9.89**	**10.41**	**10.50**	**11.29**	**11.23**	**11.67**	**11.89**	**12.76**	**13.80**	**13.60**	**14.00**	**14.64**
Belgium	0.37	0.34	0.28	0.30	0.31	0.31	0.27	0.30	0.30	0.33	0.34	0.36	0.37	0.39	0.40	0.44	0.49	0.47	0.52	0.55
France	0.98	1.00	0.98	1.00	1.08	1.11	1.13	1.04	0.96	0.98	1.00	1.13	1.15	1.16	1.16	1.18	1.31	1.30	1.31	1.35
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.78	2.74	2.83	2.97	3.17	3.16	3.01	3.03	3.04
Germany, East	0.00	0.00	0.00	0.50	0.59	0.58	0.60	0.56	0.60	0.59	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany, West	2.13	2.02	1.84	1.90	2.00	1.97	1.99	2.18	2.11	2.25	2.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.97	0.94	0.94	0.97	1.13	1.15	1.22	1.35	1.46	1.58	1.67	1.78	1.76	1.80	1.75	1.92	1.98	2.05	2.20	2.40
Netherlands	1.49	1.42	1.51	1.45	1.54	1.62	1.62	1.67	1.51	1.55	1.54	1.72	1.67	1.71	1.65	1.70	1.87	1.76	1.75	1.70
Spain	0.06	0.07	0.07	0.08	0.07	0.08	0.09	0.10	0.13	0.17	0.19	0.22	0.23	0.22	0.24	0.30	0.33	0.44	0.45	0.51
United Kingdom	1.70	1.74	1.74	1.81	1.85	1.99	2.02	2.08	1.97	1.95	2.06	2.22	2.17	2.41	2.54	2.69	3.18	3.01	3.07	3.26
Eastern Europe & Former U.S.S.R.	**15.86**	**16.97**	**18.23**	**19.59**	**21.28**	**23.11**	**24.48**	**25.44**	**26.94**	**27.49**	**27.83**	**27.56**	**26.08**	**25.99**	**23.92**	**23.04**	**23.46**	**22.22**	**22.21**	**22.32**
Belarus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.60	0.50	0.45	0.49	0.53	0.54	0.61
Former U.S.S.R.	13.33	14.44	15.52	16.82	18.51	20.30	21.52	22.46	24.09	24.53	24.96	25.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Russia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.48	16.18	15.21	14.51	14.50	13.43	14.04	14.01
Ukraine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.50	3.87	3.33	2.97	2.93	2.83	2.61	2.75
Uzbekistan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	1.54	1.23	1.35	1.43	1.45	1.41	1.42
Middle East	**1.31**	**1.30**	**1.21**	**1.43**	**1.90**	**2.27**	**2.53**	**2.93**	**3.28**	**3.58**	**3.60**	**3.60**	**4.02**	**4.27**	**4.54**	**4.74**	**5.27**	**5.85**	**6.24**	**6.34**
Africa	**0.74**	**0.61**	**0.82**	**1.00**	**1.10**	**1.07**	**1.14**	**1.24**	**1.31**	**1.34**	**1.35**	**1.51**	**1.48**	**1.54**	**1.61**	**1.69**	**1.79**	**1.79**	**1.84**	**1.97**
Far East and Oceania	**2.52**	**2.69**	**2.78**	**3.03**	**3.63**	**4.12**	**4.28**	**4.67**	**5.00**	**5.26**	**5.61**	**5.89**	**6.31**	**6.80**	**7.41**	**7.79**	**8.50**	**8.91**	**9.08**	**9.62**
Japan	0.90	0.92	0.96	1.02	1.37	1.47	1.49	1.54	1.62	1.73	1.85	1.98	2.02	2.03	2.18	2.21	2.39	2.44	2.53	2.65
World Total	**52.89**	**53.51**	**53.63**	**54.63**	**59.69**	**62.24**	**63.12**	**66.31**	**69.55**	**72.32**	**72.91**	**74.38**	**74.35**	**76.58**	**76.36**	**78.02**	**81.65**	**81.41**	**81.90**	**84.20**

Source: Energy Information Administration, www.eia.doe.gov

Endnotes

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