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Iraq

Iraq is estimated to hold 115 billion barrels of proven oil reserves, and possibly much more undiscovered oil in unexplored areas of the country. Iraq also is estimated to contain at least 110 trillion cubic feet of natural gas. The country is a focal point for regional and international security issues.

Note: The information contained in this report is the best available as of March 2004 and can change. Also, please click [here](#) for a complete chronology of events pertaining to Iraq from 1980 through February 2004.



GENERAL BACKGROUND

In the aftermath of war in March and April 2003, Iraq now finds itself in a period of uncertainty and transition after more than three decades of Ba'ath party rule. The events of 2003 mark the latest upheaval which Iraq has faced in its recent history. During the 1980s and 1990s, for instance, Iraq experienced two major wars (Iran-Iraq and the Kuwait war of 1990/1), plus more than a decade of economic sanctions. As a result, the country's economy, infrastructure, environment, health care system, and other social indicators all deteriorated sharply.

Iraq also assumed a heavy debt burden, possibly as high as \$116 billion if debts to Gulf states and Russia are counted, and even more if \$250 billion in reparations payment claims stemming from Iraq's 1990 invasion of Kuwait are included. It is

possible, however, that much of Iraq's debt will be written off in the end, and that reparations will be capped at a certain level, possibly around \$40 billion. In December 2003, former U.S. Secretary of State James Baker was sent as an envoy to several of Iraq's major creditor nations, attempting to secure pledges to write off some of Iraq's debt. Russia stated that it would be willing to write off part or all of the \$8 billion it is owed in exchange for favorable consideration for Russian companies on Iraqi oil and reconstruction projects. In January 2004, Kuwaiti Prime Minister al-Sabah announced that his country would be willing to waive some of the \$16 billion owed by Iraq, and would help reduce Iraq's overall foreign debts as well. Under U.N. Security Council Resolution 1483, Iraq's oil export earnings are immune from legal proceedings, such as debt collection, until

the end of 2007.

Now, with the regime of former President Saddam Hussein no longer in power, the country is being governed temporarily by a "Coalition Provisional Authority (CPA)" led by the United States and the United Kingdom. On May 6, 2003, President Bush named Ambassador L. Paul Bremer as presidential envoy to, and senior CPA official in, Iraq. Current plans call for a handover of power from the CPA to a transitional Iraqi authority on June 30, 2004. In addition to the CPA, there is a 25-member "Governing Council" made up of leading Iraqis, which met for the first time on July 13, 2003. The Governing Council's goals are to help rebuild Iraq as well as to prepare for "full, free and fair democratic elections." On March 8, 2004, the Governing Council signed an interim constitution after last-minute objections were overcome. A permanent constitution is to be written following national elections at some point during 2004 or 2005. The U.S.-led Office of Reconstruction and Humanitarian Assistance (ORHA), the US Army Corps of Engineers (USACE), private contractors like Halliburton (and its subsidiary, Kellogg Brown & Root - KBR), non-governmental organizations, and coalition military forces are also actively involved in helping to rebuild Iraq.

Although Iraq's unemployment rate remains high (perhaps 28%-50%), the overall Iraqi economy appears to be recovering rapidly from its condition just after the war. For 2004, Iraqi real GDP growth is forecast (by Global Insight) to reach 39.7%, following a 21.2% decline in 2003, on top of more than a decade of economic stagnation and decline. GDP growth during 2004 assumes continued increases in Iraqi oil production (and export revenues). On October 15, 2003, a new Iraqi currency -- the "New Iraqi Dinar" (NID) -- was introduced, replacing the "old dinar" and the "Swiss dinar" used in the north of the country. Since then, the NID has appreciated sharply, from around 1,950 NID per \$U.S. then to around 1,300 NID per \$U.S. by late January 2004. In another positive sign, in early February 2004, Iraq was granted observer status at the World Trade Organization (WTO), a possible sign that the country is being reintegrated into the world economy.

In July 2003, World Bank President James Wolfensohn stated that Bank assistance for Iraq's reconstruction could come after "a constitution and an elected government" were in place. Total, long-term Iraqi reconstruction costs could run to \$100 billion or higher, with the World Bank estimating costs of \$55 billion over the next three years alone. In October 2003, a donors conference in Madrid resulted in pledges of \$33 billion for the International Reconstruction Facility Fund for Iraq (IRFFI). In late February 2004, the donor countries pledged that \$1 billion would be injected into trust funds run by the United Nations and the World Bank during 2004. Iraq's interim Planning Minister, Mehdi al Hafidh, stated that Iraq would need \$4 billion for 2004. In addition to foreign aid, Iraqis living abroad reportedly have been sending an estimated \$5 million per day to Iraq's private banks. Also, the U.S. Congress in November 2003 authorized \$18.7 billion for Iraq in a "supplemental allocation" aimed at boosting Iraqi reconstruction and economic development.

In May 2003, the U.N. Security Council passed Resolution 1483, lifting sanctions on Iraq, phasing out the 6-year-old U.N. "Oil-for-Food" program over six months (the program ended on November 21, 2003), and designating a U.N. "special representative" to assist Iraq in its reconstruction efforts. In addition, according to the U.S. State Department, the resolution "stresse[d] the right of the Iraqi people to freely determine their own political future and control their own natural resources" (including oil), "encourage[d] international support for Iraq's recovery," and "enliste[d] the support of international financial institutions" in this effort. In June 2003, Paul Bremer suggested that revenues from oil sales "could be distributed to Iraq's citizens as 'dividends', along the lines of the system used by the State of Alaska." Currently, the revenues go into an Iraqi Development Fund, under control of the CPA.

On May 27, 2003, the U.S. Treasury Department lifted most U.S. sanctions on Iraq, thereby

implementing U.N. Security Council Resolution 1483. For over a decade after Iraq's invasion of Kuwait in 1990, the United States had maintained unilateral economic sanctions against Iraq. Executive Order #12722 (August 2, 1990) imposed a complete trade embargo, and Executive Order #12724 (August 9, 1990) imposed additional restrictions. Under U.S. sanctions, goods or services were not permitted to be imported from or exported to Iraq, with the exception of the U.N. "oil-for-food" program. On December 5, 2003, Deputy Defense Secretary Paul Wolfowitz issued a memo stating that only those countries on an approved list could compete for contracts in Iraq.

OIL

On September 1, 2003, Ibrahim Bahr al-Uloum, a former Iraqi exile, was appointed Iraq's first post-war oil minister by the country's Governing Council. Uloum replaced Thamir Ghadban, who had been the acting oil minister since May 4, 2003. In November 2003, Ghadban was appointed as an advisor to al-Uloum, along with several others. These included: Abdul Saheb Qutub for the upstream (North Oil Company, South Oil Company, Iraq Drilling Co., Oil Exploration Co.); Shumkhi Farraj for the State Oil Marketing Organization (SOMO); and Ahmad al-Brifkani for the downstream (three major refineries) plus the North and South Gas companies. In early August 2003, the CPA put the cost of rehabilitating Iraq's oil sector to its pre-war state at \$1.144 billion, and the time frame to do so at nine months. Much of this work is being performed by KBR under the supervision of the USACE and the "Restoration of Iraqi Oil" (RIO) program. In late January 2004, USACE awarded two major upstream contracts, worth \$1.9 billion, under RIO 2. Contracts went to KBR (for \$1.2 billion) in the south; Parsons and Australia's Worley (for \$800 million) in the north.

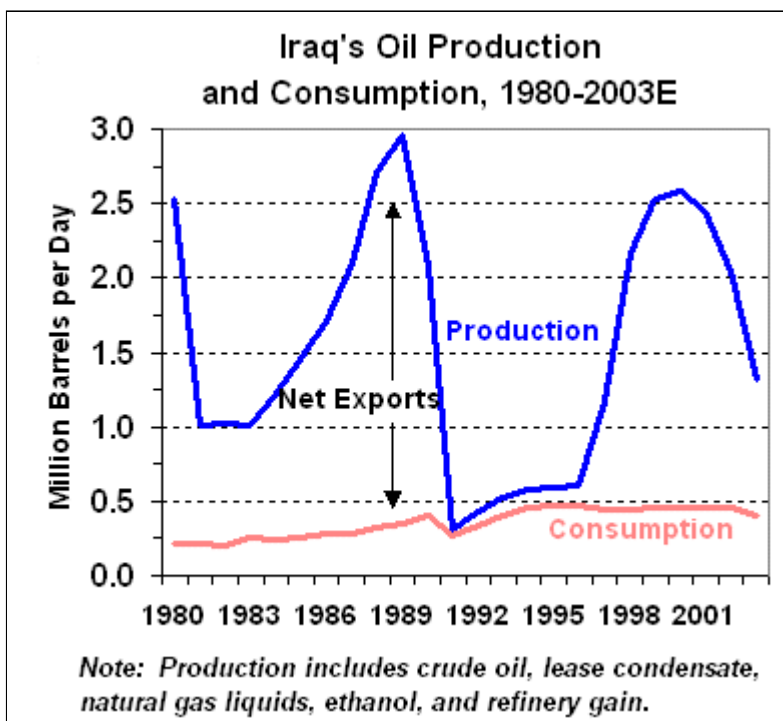
According to the *Oil and Gas Journal*, Iraq contains 115 billion barrels of proven oil reserves, the third largest in the world (behind Saudi Arabia and Canada). Estimates of Iraq's oil reserves and resources vary widely, however, given that only 10% or so of the country has been explored. Some analysts (the Baker Institute, Center for Global Energy Studies, the Federation of American Scientists, etc.) believe, for instance, that deep oil-bearing formations located mainly in the vast Western Desert region, for instance, could yield large additional oil resources (possibly another 100 billion barrels or more), but have not been explored. Other analysts, such as the US Geological Survey, are not as optimistic, with median estimates for additional oil reserves closer to 45 billion barrels.

Iraqi oil development began in 1901, with the first well (Chia Surkh-1) drilled. The Iraq National Oil Company (INOC) was formed in 1964, and with Iraqi oil nationalization between 1972 and 1975, INOC took over from the international oil companies previously running the country's oil industry. In 1987, INOC was dissolved and merged with the Ministry of Oil. In early March 2004, U.S. oil advisor Robert McKee said that the CPA was considering resurrecting INOC ("helping set up a mechanism that allows [Iraq] to have a state oil company, but also allows a significant outside investment into the industry"). Currently, a variety of companies are involved in exploring, producing, transporting and refining Iraq's oil.

According to Tariq Shafiq, a founding Vice President of INOC and currently director of Petrolog and Associates, Iraq's oil development and production costs are amongst the lowest in the world, ranging from as low as \$750 million for each additional million bbl/d day in Kirkuk, to \$1.6 billion per million bbl/d near Rumaila, and as high as \$3 billion per million bbl/d for smaller fields in the northwestern part of the country. In contrast, Cambridge Energy Research Associates (CERA) estimates an average cost for Iraqi oil development of \$3.5 billion per million bbl/d for the country as a whole, which is higher than Tariq Shafiq's estimates, but still relatively low by world standards. Either way, Iraq is considered a highly attractive oil prospect, with only 17 of 80 discovered fields having been developed, and few deep wells compared to its neighbors. Overall, only about 2,300

wells reportedly have been drilled in Iraq (of which about 1,600 are actually producing oil), compared to around 1 million wells in Texas for instance.

In addition, Iraq generally has not had access to the latest, state-of-the-art oil industry technology (i.e., 3D seismic, directional or deep drilling, gas injection), sufficient spare parts, and investment in general throughout most of the 1990s. Instead, Iraq reportedly utilized sub-standard engineering techniques (i.e., overpumping, water injection/"flooding"), obsolete technology, and systems in various states of decay (i.e., corroded well casings) in order to sustain production. In the long run, reversal of all these practices and utilization of the most modern techniques, combined with development of both discovered fields as well as new ones, could result in Iraq's oil output increasing by several million barrels per day. In February 2004, former Iraqi Oil Minister Issam al-Chalabi stated that recent efforts to boost Iraqi production might be harming the country's oil reserves.



Iraqi oil reserves vary widely in quality, with API gravities in the 22° (heavy) to 35° (medium-light) range. Iraq's main export crudes come from the country's two largest active fields: Rumaila and Kirkuk. The southern Rumaila field, which extends a short distance into Kuwaiti territory, has around 663 wells and produces three streams: Basra Regular; Basra Medium (normally 30° API, 2.6% sulfur); and Basra Heavy (normally 22°-24° API, 3.4% sulfur). Basra Blend normally averages around 32° API, 1.95% sulfur, but reportedly is heavier and more sour currently at around 29-30° API and 2%+ sulfur content.

The northern Kirkuk field, first discovered in 1927, forms the basis for northern Iraqi oil production. Kirkuk, with an estimated 8.7 billion barrels of remaining reserves, normally produces 35° API, 1.97% sulfur crude, although the API gravity and sulfur content both reportedly deteriorated sharply in the months just preceding the war. Kirkuk's gravity, for instance, had declined to around 32°-33° API, while sulfur content had risen above 2%. Declining crude oil qualities -- and an increased "water cut" as well -- was likely the result of overpumping -- as high as 680,000 bbl/d, well above the field's estimated optimal production rate of 250,000 bbl/d-- as Iraq attempted to sell as much oil as possible in the months leading up to the March/April 2003 war. Pre-war, Bai Hassan, Jambur, Khabbaz, Ajil (formerly "Saddam"), and Ain Zalah-Butmah-Safaia were the other oil fields in northern Iraq. An estimated 60% of Northern Oil Company's (NOC) facilities in northern and central Iraq were damaged during the Gulf War.

Another major Iraqi oil field is the 11-billion barrel East Baghdad field, which came online in April 1989. Prior to the war, this centrally-located field currently produced around 50,000 bbl/d of heavy, 23° API oil as well as 30 million cubic feet per day (Mmcf/d) of associated natural gas.

For 2004, the United States has budgeted \$1.7 billion for Iraqi oil sector reconstruction, of which \$809 million is slated for construction, \$501 million for import of refined oil products, \$323 million for equipment and raw materials, and \$68 million for infrastructure security.

Production

During the war, 7 Iraqi oil wells were set on fire, out of around 1,500 total wells. On April 14, 2003, the last of these fires were extinguished at the South Rumaila field. This was considered a significant accomplishment, given pre-war speculation that Iraq might set many of its oilfields ablaze as it did with Kuwaiti oilfields in 1991. However, in spite of the fact that little damage was done to Iraq's oil fields during the war itself, looting and sabotage after the war ended was highly destructive, accounting for perhaps 80% of total damage.

On April 22, 2003, the first oil production since the start of the war began at the Rumaila field, with the restart of an important gas/oil separation plant (GOSP). Starting in mid-May 2003, the USACE - which has the lead in restoring Iraq's oil output to pre-war levels -- began a major effort to ramp up production in the country. As of mid-March 2004, Iraqi oil output was fluctuating somewhat, but generally was averaging around 2.4-2.5 million barrels per day (bbl/d) on a "gross" basis.

For much of the past year, some Iraqi oil -- perhaps 200,000-300,000 bbl/d -- has been reinjected into northern oil reservoirs due to constraints on both domestic processing ability as well as export outlets. With the opening of the Kirkuk-Ceyhan oil pipeline, however, this practice may come to an end. According to the U.N. Joint Logistics Centre (JLC), in August 2003 "about 40% of [northern Iraqi] production [was being] transferred to the Baiji refinery, with the balance reinjected into the fields, ostensibly to maintain pressure. This is a most unusual practice but extraction of the surplus crude is necessary to produce much needed LPG. It means, however, that crude oil production is overstated by the volume reinjected (it not being available for refining or export, but counted as production). The reinjected crude may be lost forever." Meanwhile, the USACE has stated that its mission was to focus on war-damaged, above-ground oil facilities, not "redeveloping the oil fields," with Iraqi engineers reportedly estimating that expected recovery rates at Kirkuk have fallen as low as 9%, far below industry norms.

On August 13, 2003, Iraq's main oil export pipeline from its main northern oilfield of Kirkuk to the Turkish port of Ceyhan reopened (see below for more details), but the line was shut down once again shortly thereafter due to sabotage on August 15 and 17. The pipeline reopened once again in early March 2004. Iraq currently is aiming to increase its exports to around 2.0 million bbl/d by the end of March 2004, but this goal depends in large part on security being maintained. Between April 2003 and the end of the year, there were an estimated 86 attacks on [Iraqi oil infrastructure](#), including the [country's 4,350-mile-long pipeline system](#) and 11,000-mile-long power grid. In response, the U.S. military set up a 9,700-person force, called Task Force Shield, to guard Iraq's oil infrastructure, particularly the Kirkuk-Ceyhan line. Under Saddam Hussein, Iraqi pipelines were guarded in part by local tribes, and in part by two army divisions dedicated to the task.

Historically, Iraqi production peaked in December 1979 at 3.7 million bbl/d, and then in July 1990, just prior to its invasion of Kuwait, at 3.5 million bbl/d. From 1991, Iraqi oil output increased slowly, to 600,000 bbl/d in 1996. With Iraq's acceptance in late 1996 of U.N. Resolution 986, which allowed limited Iraqi oil exports in exchange for food and other supplies ("oil-for-food"), the country's oil output began increasing more rapidly, to 1.2 million bbl/d in 1997, 2.2 million bbl/d in 1998, and around 2.5 million bbl/d during 1999-2001. Between December 1996 and March 20, 2003, some 3.4 billion barrels of Iraqi oil valued at about \$65 billion were exported under the oil-for-food program. According to the United Nations, 72% of the total was allocated towards humanitarian needs, with the balance going to: Gulf War reparations through a Compensation Fund

(25% since December 2000); UN administrative and operational costs for the program (2.2%) and costs for weapons inspection (0.8%). In addition, there is evidence that billions of dollars went to such things as palaces for Saddam Hussein and into secret accounts.

During 2003, Iraqi oil production averaged 1.33 million bbl/d, down from 2.04 million bbl/d in 2002, 2.45 million bbl/d in 2001, and 2.69 million bbl/d in 2000. Iraqi monthly oil output increased in the last few months of 2002 and into early 2003, peaking at around 2.58 million bbl/d in January 2003, just before the war. As of early March 2004, Iraqi production (on a net basis) had reached perhaps 2.2 million bbl/d, with "gross" production (including reinjection) of around 2.4 million bbl/d. Although Iraq is a member of OPEC, its oil output has not been constrained by OPEC quotas since it resumed oil exports in December 1996.

Prior to the latest war, oil industry experts generally assessed Iraq's sustainable production capacity at no higher than about 2.8-3.0 million bbl/d, with net export potential of around 2.3-2.5 million bbl/d (including smuggled oil). Approximately 2 million bbl/d of Iraq's production pre-war capacity came from oil fields in the southern part of the country, particularly North Rumaila (0.8 million bbl/d), South Rumaila (0.5 million bbl/d), West Qurnah (250,000 bbl/d at the end of 2002), Az Zubair (200,000-240,000 bbl/d), Misan/Buzurgan (100,000 bbl/d), Majnoon (50,000 bbl/d), Jabal Fauqi (50,000 bbl/d), Abu Ghurab (40,000 bbl/d), and Luhais (30,000-50,000 bbl/d). Iraq's remaining pre-war oil production capacity was located in the northern and central fields of Kirkuk (around 550,000-700,000 bbl/d), Bai Hassan (100,000-150,000 bbl/d), Jambur (75,000-100,000 bbl/d), Khabbaz (30,000 bbl/d), Ajil (formerly "Saddam," 25,000 bbl/d), East Baghdad (20,000 bbl/d), and 'Ayn Zalah/Batmah (17,000-20,000 bbl/d).

Among other challenges in maintaining, let alone increasing, oil production capacity, were Iraq's battle with "water cut" (damaging intrusion of water into oil reservoirs) especially in the south. In 2000, Saybolt International had reported that NOC and SOC were able to increase their oil production through use of short-term techniques not generally considered acceptable in the oil industry (i.e., "water flooding," injection of refined oil products into crude reservoirs). The Saybolt report now appears to have been largely accurate. In addition, a U.N. report in June 2001 said that Iraqi oil production capacity would fall sharply unless technical and infrastructure problems were addressed. Oil market consultants PFC Energy have stated that "unless water injection used to maintain pressure in the southern fields is restarted, there is a strong possibility that [they] will go into more rapid decline and suffer permanent reservoir damage." PFC added that "this means the rehabilitation work at the Garmat Ali water processing plant is crucial." U.N. oil experts reportedly have estimated that some reservoirs in southern Iraq have been so badly managed that their ultimate recovery rates might be only 15%-25%, well below the 35%-60% usually seen in the oil industry.

Iraq's southern oil industry was decimated in the 1990/1991 Gulf War, with production capacity falling to 75,000 bbl/d in mid-1991. That war resulted in destruction of gathering centers and compression/degassing stations at Rumaila, storage facilities, the 1.6-million bbl/d (nameplate capacity) Mina al-Bakr/Basra export terminal, and pumping stations along the 1.4-million bbl/d (pre-war capacity) Iraqi Strategic (North-South) Pipeline. Seven other sizable fields remain damaged or partially mothballed. These include Zubair, Luhais, Suba, Buzurgan, Abu Ghirab, and Fauqi. Generally speaking, oilfield development plans were put on hold following Iraq's invasion of Kuwait, with Iraqi efforts focused on maintaining production at existing fields.

Exports

Iraqi oil sales and exports currently are being handled by SOMO, under CPA supervision. SOMO operations were seriously disrupted by war and turmoil during 2003, but the organization has now been reconstituted and has resumed many of its operations. On June 5, 2003, SOMO issued its first

oil sales tender since the war started, for 8 million barrels of Kirkuk crude stored in tanks at Ceyhan and 2 million barrels stored at Basra. Dozens of companies placed bids for the oil, with winners including ChevronTexaco, Cepsa, ENI, Repsol, Total, and Tupras. Bids for the Kirkuk oil reportedly ranged around \$2.70-\$3.30 per barrel below dated Brent (f.o.b. Ceyhan). On June 22, a tanker arrived at Ceyhan to load the first oil since March 20, 2003, when the 600,000-barrel tanker "Caithness" completed loading one day after the outbreak of war. On July 3, SOMO issued its second spot tender, for 8 million barrels of Basra Light.

In late July 2003, SOMO signed its first term contracts since the war, for Basra Light oil from Iraq's southern fields. Major purchasers included BP, ChevronTexaco, ConocoPhillips, ENI, ExxonMobil, Marathon Oil, Mitsubishi, Petrobras, Repsol, Shell, Sinochem, Total, and Vitol. As of February 2004, Basra Light reportedly was being priced at \$4.25 per barrel below dated Brent. On March 8, 2004, SOMO issued a tender for Kirkuk oil via the Turkish port of Ceyhan, the first such sale from Iraq's northern oil fields in a year. The SOMO tender offers 6 million barrels of oil for March 12-19 delivery, to be sold in shipments of 1 or 2 million barrels.

Pre-War State of Iraq's Oil Sector

In December 2002, the [Council on Foreign Relations and the Baker Institute](#) released a report on Iraq's oil sector. Among other things, the report concluded that: 1) Iraq's oil sector infrastructure is in bad shape at the moment, being held together by "band-aids," and with a production decline rate of 100,000 bbl/d per year; 2) increasing Iraqi oil production will require "massive repairs and reconstruction ...costing several billions of dollars and taking months if not years;" 3) costs of repairing existing oil export installations alone would be around \$5 billion, while restoring Iraqi oil production to pre-1990 levels would cost an additional \$5 billion, plus \$3 billion per year in annual operating costs; 4) outside funds and large-scale investment by international oil companies will be needed; 5) existing oil contracts will need to be clarified and resolved in order to rebuild Iraq's oil industry, with any "prolonged legal conflicts over contracts" possibly "delay[ing] the development of important fields in Iraq;" and 6) any "sudden or prolonged shut-down" of Iraq's oil industry could result in long-term reservoir damage; 7) Iraq's oil facilities could easily be damaged during any domestic unrest or military operations (in early February 2003, the Patriotic Union of Kurdistan claimed that Iraqi soldiers were mining oil wells in the north of the country in anticipation of war); and 8) given all this, a "bonanza" of oil is not expected in the near future.

According to the *Middle East Economic Survey (MEES)*, problems at Iraqi oil fields include: years of poor oil reservoir management; corrosion problems at various oil facilities; deterioration of water injection facilities; lack of spare parts, materials, equipment, etc.; damage to oil storage and pumping facilities; and more. *MEES* estimates that Iraq could reach production capacity of 4.2 million bbl/d within three years at a cost of \$3.5 billion. The International Energy Agency, in contrast, estimates a \$5 billion cost to raise Iraqi output capacity to 3.7 million bbl/d by 2010, and a \$42 billion cost to raise capacity to 8 million bbl/d by 2030.

Status of Oil Development Deals with Foreign Companies

Prior to the toppling of Iraq's Ba'athist regime, the country reportedly had signed several multi-billion dollar deals with foreign oil companies mainly from China, France, and Russia. Deutsche Bank estimated that \$38 billion worth of contracts were signed on new fields -- "greenfield" development -- with potential production capacity of 4.7 million bbl/d if all the deals came to fruition (which Deutsche Bank believed was highly unlikely). The former Ba'athist government reportedly had been growing increasingly frustrated at the failure of these companies actually to begin work on the ground, and had been threatening to no longer sign deals unless firms agreed to do so without delay. Iraqi upstream oil contracts generally required that companies start work immediately, but U.N. sanctions dissuaded companies from doing so for the most part.

Now, following the toppling of Saddam Hussein's regime, the legal status of these agreements is up in the air, increasing the uncertainty level for companies interested in doing business with Iraq. Besides legal issues, companies are also looking for a relatively stable security situation, a functioning government, and other conditions to be in place before they move heavily into the country. In May 2003, Philip Carroll stated that contracts signed under the previous regime would be assessed to determine whether "they were made in the best interests of the Iraqi people." In February 2004, Iraqi Interim Trade and Investment Minister, Ali Allawi, announced that negotiations with potential investors in Iraq's upstream oil sector would be left for an elected, sovereign government, possibly delaying such deals until 2005 at least.

Russia, which is owed billions of dollars by Iraq for past arms deliveries, has a strong interest in Iraqi oil development. This includes a \$3.7 billion, 23-year deal to rehabilitate Iraqi oilfields, particularly the 11-15 billion barrel West Qurna field (located west of Basra near the Rumaila field). West Qurna is believed to have production potential of 800,000-1 million bbl/d. In a surprising development, the Iraqi Oil Ministry had announced in mid-December 2002 that it was severing its contract with the Lukoil consortium on West Qurna due to "fail[ure] to comply" with contract stipulations. Specifically, the Iraqis had cited Lukoil's failure to invest a required \$200 million over three years. Two other, smaller, stakes in West Qurna by Russian companies Zarubezhneft and Mashinoimport apparently were left intact. As of early February 2004, Lukoil reportedly was discussing a Memorandum of Understanding with Iraq's Oil Ministry on West Qurna.

In addition, three exploration and production deals were signed between Iraq and Russian companies (Soyuzneftegaz, Sroytransgas-Oil, and Tatneft, to develop the 100,000-bbl/d Rafidain field, the Western Desert's Block 4, and the Western Desert's Block 9, respectively). Despite all this, Russia's Foreign Ministry had stated that it viewed the Iraqi decision on Lukoil and West Qurna "with regret." In May 2003, Lukoil said it would fight to keep the contract, and Russia's Deputy Foreign Minister said that Russia would seek compensation if contracts signed under the Saddam Hussein regime now were not honored.

In May 2003, another Russian company, Tatneft, set up a joint venture with Germany's MRH in order to win work in Iraq's oil sector. According to Tatneft's President, the company had been close to reaching a deal on exploring Block 9 in Iraq's Western Desert region prior to the war. In October 2001, a joint Russian-Belarus oil company, Slavneft, had signed a \$52 million service contract with Iraq on the 2-billion-barrel, Suba-Luhais field in southern Iraq. Full development of Suba-Luhais could result in production of 100,000 bbl/d (35° API) at a cost of \$300 million over three years. In early February 2004, Iraq's Oil Ministry issued a tender for development of Suba-Luhais, with bids due by April 15, 2004.

In early April 2001, Russia's Zarubezhneft received U.N. approval to drill 45 wells in the Ajil (formerly "Saddam") field, plus Kirkuk and Bai Hassan, as part of an effort to reduce water incursion into the fields. The Ajil field contains 3 billion barrels of oil and 5 trillion cubic feet (Tcf) of associated gas. Iraq had been seeking foreign assistance for a second-phase Ajil development, which would raise oil production capacity to 50,000 bbl/d, as well as 300 Mmcf/d of gas.

In January 2004, Iraq's State Company for Oil Projects (SCOP) issued tenders for development of the Khurmala dome -- the largest complex in the Kirkuk field -- with the goal of increasing production at Kirkuk by 100,000 bbl/d. Development of Khurmala is aimed at compensating for declines in output at the mature Kirkuk field. SCOP also invited bids for the Hamrin field, north of Tikrit, for production of 60,000 bbl/d.

Another large oilfield slated for development is Majnoon, discovered by Braspetro of Brazil in 1975, and containing reserves of 11-30 billion barrels of 28^o-35^o API oil. Majnoon is located 30 miles north of Basra on the Iranian border. In the 1990s, French company Elf Aquitaine (now merged with Total) negotiated on a possible \$4 billion deal with Iraq on development rights for Majnoon. In 1999, however, TotalFinaElf declined to sign a 23-year production sharing agreement (PSA) with Iraq on Majnoon. Following this, the field reportedly was brought onstream (under a "national effort" program begun in 1999) in May 2002 at 50,000 bbl/d. Future development on Majnoon ultimately could lead to production of 450,000 bbl/d within two years or so at an estimated (according to Deutsche Bank) cost of \$4 billion. Eventually, Majnoon could produce significantly more oil than that, possibly as high as 3 million bbl/d.

In early June 2003, China's National Petroleum Company (CNPC) refuted a comment by Thamir Ghadban that CNPC's contract on the 90,000-bbl/d al-Ahdab development was now "void by mutual agreement." CNPC agreed in 1997 to spend \$1.3 billion on Al-Ahdab, located in southern Iraq, but no progress was made while sanctions remained in place.

The 2.5-5 billion-barrel Halfaya project is the final large field development in southern Iraq. Prior to the war, several companies (BHP, CNPC, Agip/ENI) reportedly had shown interest in Halfaya, which ultimately could yield 200,000-300,000 bbl/d in output at a possible cost of \$2 billion. Smaller fields with under 2 billion barrels in reserves also had received interest from foreign oil companies. These fields included Nasiriya (Eni, Repsol), Tuba (ONGC, Sonatrach, Pertamina), Ratawi (Shell, Petronas, CanOxy), Gharaf (Mashinoimport, Rosneftgasexport), Amara (PetroVietnam), Noor (Syria), and more.

In May 2003, Thamir Ghadban stated that three exploration agreements for blocks in Iraq's Western Desert were still valid. These included Indonesia's Pertamina on Block 3, Russia's Stroitransgas on Block 4, and Indian's Oil and Natural Gas Corp. for Block 8. In January 2003, Stroitransgas signed a \$33.5 million contract for exploration on Block 4, and in July 2003, it indicated its interest in winning post-war business in Iraq. In September 2003, Pertamina announced that it planned to begin oil and gas exploration in Block 3, investing around \$24 million over the next three years. The small Irish company, Petrel Resources, also has expressed interest in exploring and developing oil resources in western Iraq.

Oil Export Pipelines

Under optimal conditions, and including routes through both Syria and Saudi Arabia that are now closed or being utilized for other purposes, Iraq's oil export infrastructure could handle throughput of more than 6 million bbl/d (2.8 via the Gulf, 1.65 via Saudi Arabia, 1.6 via Turkey, and perhaps 300,000 bbl/d or so via Jordan and Syria). However, Iraq's export facilities (pipelines, ports, pumping stations, etc.) were seriously disrupted by the Iran-Iraq War (1980-1988), the 1990/1991 Gulf War, the most recent war in March/April 2003, and periodic looting and sabotage since then. Currently, Iraq has export capacity as high as 2.5 million bbl/d (around 2.0 via the Gulf and 0.3-0.5 via Turkey). Additional export capacity could be added in coming months, though, via the Gulf, Syria, and Turkey.

The 600-mile, Kirkuk-Ceyhan (Turkey) dual pipeline is Iraq's largest crude oil export line. One, 40-inch line has a fully-operational capacity of 1.1 million bbl/d, but reportedly could handle only around 900,000 bbl/d pre-war. The second, parallel, 46-inch line has an optimal capacity of 500,000 bbl/d and was designed to carry Basra Regular exports, but at last report was inoperable. Combined, the two parallel lines have an optimal capacity of 1.5-1.6 million bbl/d. Unfortunately, the pipeline's size has made it a main target for sabotage, with two attacks in June 2003, two in August 2003, two

more in September 2003, and one in December -- the day after the capture of Saddam Hussein. Currently, Kirkuk-Ceyhan is open (as of early March 2004) but is operating far below capacity (300,000-500,000 bbl/d), with significant repairs still required. Among other problems, the line was damaged by a bridge ("Al Fatah") that collapsed on it after being bombed by U.S. planes during the war. This will require major repairs, including the drilling of a new tunnel under the Tigris River and the laying of a new pipeline. In addition, the IT-1 pumping station on the Kirkuk-Ceyhan line was damaged by looters, but reportedly is operable manually. The IT-2 pumping station on the same line reportedly was looted and destroyed.

At least since 2001 until March 2003, Iraq and Syria were utilizing the [50-year-old, 32-inch Banias oil pipeline](#) in violation of U.N. sanctions. The pipeline, from Iraq's northern Kirkuk oil fields to Syria's Mediterranean port of Banias (and Tripoli, Lebanon), reportedly was being used to transport as much as 200,000 bbl/d of Iraqi oil, mainly from southern Iraq, to Syrian refineries at Homs and Banias. The oil was sold at a significant price discount and freed up additional Syrian oil for export. Iraq and Syria also had talked of building a new, parallel pipeline as a replacement for the Banias line. In March 2003, flows on the pipeline were halted, although the U.S. Defense Department denied that its forces had targeted the line. In early March 2004, it was reported (by Dow Jones) that the Iraq-Syria pipeline was ready for use at 250,000 bbl/d.

During the Iran-Iraq War, Iraq also built a pipeline through Saudi Arabia (called IPSA) to the Red Sea port of Mu'ajiz, just north of Yanbu. IPSA has a design capacity of 1.65 million bbl/d, but was closed after Iraq invaded Kuwait in August 1990. In June 2001, Saudi Arabia expropriated the IPSA line, despite Iraqi protests. In June 2003, Thamir Ghadban said that he hoped Iraq would be able to use the IPSA line again. However, the Saudis have stated that they are not willing to do this, having converted the line to carry natural gas to the Red Sea industrial city of Yanbu for domestic use.

In order to optimize export capabilities (i.e., to allow oil shipments to the north or south), Iraq constructed a reversible, 1.4-million bbl/d "Strategic Pipeline" in 1975. This pipeline consists of two parallel 700,000-bbl/d lines. The North-South system allows for export of northern Kirkuk crude from the Persian Gulf and for southern Rumaila crudes to be shipped through Turkey. During the 1990/1991 Gulf War, the Strategic Pipeline was disabled after the K-3 pumping station at Haditha as well as four additional southern pumping stations were destroyed. In June 2003, the NOC estimated that it would take "a long time" to repair the K-3 pumping station and resume operations on the Strategic Pipeline. The whole system also reportedly is in need of modernization.

In April 2003, there was some discussion of "reopening" the old oil pipeline from Mosul in northern Iraq to Haifa, Israel. The line, which was built in the 1930s, carried 100,000 bbl/d at its peak, but has been closed since Israel's establishment in 1948. Today, however the Mosul-Haifa pipeline is in extremely poor condition (the Iraqi section is completely rusted and the Jordanian section was sold as scrap metal several years ago), and reportedly would require hundreds of millions of dollars to repair/rebuild, even if this were politically feasible. Along those lines, Jordan strongly denied any interest in rebuilding this pipeline at the present time, stating that "the pipeline no longer exists in Jordanian territory."

Jordan and Iraq had agreed in 1998 to build a pipeline for the transport of Iraqi oil to Jordan's 100,000-bbl/d Zarqa refinery, and renewed this commitment in their most recent oil supply agreement. This would eliminate the necessity of transporting oil over 600 miles of highway from Haditha, Iraq, using a fleet of 1,500 tanker trucks, as was done for several years prior to 2003. Eventually, the line was seen as transporting as much as 300,000 bbl/d of Iraqi crude through Jordan, including oil for export. In December 2002, the Jordanian government was evaluating bids on the project from four competing contractors. However, it now seems unlikely that the project

will move forward in the near future. With Iraqi oil supplies to Jordan halted since the war started, Jordan has been receiving oil from Kuwait, Saudi Arabia, and the UAE at a discounted price.

In February 2004, there were reports that Iraq was negotiating with Iran on possible construction of a 250,000-bbl/d oil pipeline to the Abadan refinery in southwestern Iran. In exchange, Iran would export a similar volume of its own oil in a so-called "swap" arrangement. The pipeline was discussed by Iraqi Oil Minister al-Uloum visited Tehran in December 2003 and met with Iranian Oil Minister Zanganeh.

Oil Terminals

In the Persian Gulf, Iraq has three tanker terminals: Basra (formerly known as Mina al-Bakr), Khor al-Amaya, and Khor az-Zubair (which mainly handles dry goods and minimal oil volumes, plus natural gas liquids and liquefied petroleum gas). Basra is Iraq's largest oil terminal, with four 400,000-bbl/d capacity berths capable of handling very large crude carriers (VLCCs). Gulf War damage to Basra (Mina al-Bakr at the time) appears to have been repaired in large part and the terminal reportedly was handling around 1 million bbl/d in early 2003. A full return to Basra port's nameplate capacity (1.6 million bbl/d) would require extensive infrastructure repairs. The port also is constrained by a shortage of storage and oil processing facilities, most of which were destroyed in the Gulf War. Basra's nameplate loading capacity is 85,000 barrels per hour (around 2 million bbl/d), which is significantly above nameplate capacity and suggests that potentially higher volumes of oil than the nameplate capacity could be shipped out of the port.

Iraq's Khor al-Amaya terminal was heavily damaged by Iranian commandos during the Iran-Iraq War (and completely destroyed during Operation Desert Storm in 1991) and has been out of commission since then. In early March 2004, Khor al-Amaya reportedly reopened for oil exports, with initial capacity of 300,000-400,000 bbl/d. Upon full completion of repairs, Iraq projects Khor al-Amaya's capacity will rise to 1.2 million bbl/d. In February 2004, Iraq extended a \$750 million tender for reconstruction at Khor al-Amaya and its other southern ports to March. The tender was originally issued in November 2003. As of late February 2004, international oil companies reportedly were concerned about lifting oil from Khor al-Amaya for security and logistical reasons.

Refining

Iraq's refining capacity as of January 2004 was believed to be 587,500 bbl/d, compared to a nameplate capacity of 700,000 bbl/d. Iraqi refineries are estimated to be running at around 60% capacity utilization rates. Before the latest war, it was believed that Iraq needed to refine 560,000 bbl/d in order to produce 400,000 bbl/d of needed products for domestic consumption. In late April 2003, the Basra refinery restarted at 70,000 bbl/d, or half of its total capacity. As of November 2003, the 150,000-bbl/d plant (design capacity) was experiencing periodic stoppages due to electric power problems and insufficient crude oil supplies, reducing its output to around 125,000 bbl/d.

Overall, Iraq has 10 refineries and topping units, none of which were damaged during the March-April 2003 war itself. The largest refineries are the 310,000-bbl/d Baiji, 150,000-bbl/d Basra, and 100,000-bbl/d Daura plants. Prior to the war in March-April 2003, a lack of light-end products, low quality gasoline, and rising pollution levels because of a lack of water treatment facilities were some of the major problems faced by Iraq's refining sector. Following the war, significant investment will now be needed to perform refinery upgrades (Iraq had identified dozens of such projects prior to the war) and possibly to build new refineries. In February 2004, there were reports that Iraq was planning to offer tenders on two new refineries with a combined 280,000 bbl/d in capacity. The plants would be located at Mosul and at Msaib, south of Baghdad.

At the present time, problems with Iraq's refineries -- stemming largely from post-war looting and

sabotage, plus power outages and illegal smuggling of products out of the country-- continue to force the country to import fuel oil for gasoline and liquid petroleum gas (LPG) from neighboring countries (Iran, Jordan, Kuwait, Syria, and Turkey). According to the UNJLC, as of late January 2004, "the Coalition and Ministry of Oil are continuing to import significant quantities of fuel to meet domestic demand. At present, 30% to 40% of overall fuel requirements are imported," with Swiss trader Vitol handling Iraqi gasoline imports from the Mediterranean. Current Iraqi LPG production capacity appears to be only about 25% of demand.

In early January 2004, the U.S. military announced that it was taking over fuel distribution in Iraq from Halliburton, after the U.S. government accused the company of overcharging for fuel deliveries by \$61 million. Within Iraq, gasoline is generally sold for just 5-15 cents per gallon, while Halliburton reportedly was being paid \$2.64 per gallon to import gasoline from Kuwait. In comparison, SOMO reportedly pays around 96 cents per gallon to import gasoline from Kuwait, while the Pentagon's Defense Energy Support Center pays \$1.08-\$1.19 per gallon.

Also as of late January 2004, the UNJLC was reporting that "production levels were stable in the country's three major refineries," and that this had "helped stabilize the domestic fuel market, reducing the effect of panic buying and hoarding." The UNJLC added that "Baiji Refinery, the country's largest, operated at an estimated 85% of capacity; Baghdad's Daura Refinery is thought to have worked at full capacity; and Basra at 75% of capacity. Combined, these refineries process around 350,000-400,000 bpd of crude oil into refined products, out of the 600,000 bpd domestic requirement. Smaller refineries throughout the country may be processing up to a further 100,000 bpd." Overall, the UNJLC reports that, as of late January 2004, "availability of fuel products throughout Iraq [was] generally good. Gasoline (benzene) [was] available at most service stations with a limited black market. The long queues common in December [were] no longer evident.

NATURAL GAS

Iraq contains 110 trillion cubic feet (Tcf) of proven natural gas reserves, along with roughly 150 Tcf in probable reserves. About 70% of Iraq's natural gas reserves are associated (i.e., natural gas produced in conjunction with oil), with the rest made up of non-associated gas (20%) and dome gas (10%). Until 1990, all of Iraq's natural gas production was from associated fields. In 2002, Iraq produced 83 billion cubic feet (Bcf) of natural gas, down drastically from peak output levels of 700 Bcf in 1979. Since most of Iraq's natural gas is associated with oil, progress on increasing the country's oil output will directly affect the gas sector as well. Associated gas often is simply flared off. Significant volumes of gas also are used for power generation and reinjection for enhanced oil recovery efforts.

Iraq plans to increase its natural gas output in order to reduce dependence on oil consumption, to use for petrochemicals production, and possibly for export at some point. Prior to the war in March-April 2003, Iraq had even been developing plans to build a liquefied natural gas terminal. In December 2003, Iraq renewed a natural gas supply agreement with Kuwait that dates back to the 1980s, under which Iraq was to supply natural gas to Kuwait via an overland pipeline. Natural gas used to be pumped from Rumaila into northern Kuwait via a 40-inch, 105-mile pipeline. The gas was used to supply Kuwaiti power stations and LPG plants, but was halted following Iraq's invasion of Kuwait in August 1990. Current plans call for Iraqi gas exports to Kuwait of 50 million cubic feet per day (Mmcf/d) initially, possibly rising to 250 Mmcf/d. In addition, Iraq and Kuwait have discussed joint development of the Siba natural gas field which straddles the two countries border near Iran.

Main sources of associated natural gas are the Kirkuk, Ain Zalah, Butma, and Bai Hassan oil fields in northern Iraq, as well as the North and South Rumaila and Zubair fields in the south. The

Southern Area Gas Project was completed in 1985, but was not brought online until February 1990. It has nine gathering stations and a larger processing capacity of 1.5 billion cubic feet per day. Prior to the March/April 2003 war, natural gas gathered from the North and South Rumaila and Zubair fields is carried via pipeline to a 575-Mmcf/d natural gas liquids (NGL) fractionation plant in Zubair and a 100-Mmcf/d processing plant in Basra. At Khor al-Zubair, a 17.5-million-cubic-foot LPG storage tank farm and loading terminals were added to the southern gas system in 1990. After the 2003 war, gas gathering and treatment facilities in southern Iraq reportedly deteriorated to the point that most gas produced in the area was simply flared off. The North Rumaila gas plant was scheduled to start up in December 2003 and to boost gas utilization by around 500 Mmcf/d. In addition, Iraq is looking at plans for increasing associated natural gas processing capability in Zubair and West Qurna and to reduce gas flaring.

Iraq's only non-associated natural gas production is from the al-Anfal field (200 Mmcf/d of output) in northern Iraq. Al-Anfal production, which began in May 1990, is piped to the Jambur gas processing station near the Kirkuk field, located 20 miles away. Al-Anfal's gas resources are estimated at 4.5 Tcf, of which 1.8 Tcf is proven. In December 2001, Russia's Gazprom reportedly was negotiating possible development of al-Anfal. In November 2001, a large non-associated natural gas field reportedly was discovered in the Akas region of western Iraq, near the border with Syria, and containing an estimated 2.1 Tcf of natural gas reserves. It is not clear whether the field is associated or non-associated.

Besides al-Anfal, Iraq has four large non-associated natural gas fields (Chemchamal, Jaria Pika, Khashm al Ahmar, Mansuriya) located in Kirkuk and Diyala provinces. In February 2000, Iraq's Oil Ministry named Agip and Gaz de France as leaders on a \$2.3 billion PSA (production sharing agreement) project to develop these fields, which reportedly have total recoverable reserves of more than 10 Tcf.

Currently, Iraq has a major natural gas pipeline with the capacity to supply around 240 MMcf/d to Baghdad from the West Qurna field. The 48-inch line was commissioned in November 1988, with phases II and III of the project never completed due to war and sanctions. The last two phases of the pipeline project were meant to supply Turkey. Iraq's Northern Gas System, which came online in 1983, was damaged during the Gulf War as well as by the Kurdish rebellion of March 1991. The system supplied LPG to Baghdad and other Iraqi cities, as well as dry gas and sulphur to power stations and industrial plants. Iraq also has a Southern Gas System, which came online in 1985.

ELECTRIC POWER

As of February 2004, indications were that Iraq had no more than 4,000-4,500 MW of power generating capacity, an improvement from several months ago but still below the amount needed (6,000 MW) to satisfy peak Iraqi summer demand. Baghdad alone is estimated to require 2,400 MW of power during the summer's extreme heat for refrigeration and air conditioning, but received perhaps half that amount during the summer of 2003. The Daura plant, which supplies the capital, was only running at 30% capacity as of late July 2003, while power lines between the Baiji facility, which also serves Baghdad, had been cut or looted. As a result, the CPA introduced a rationing system for the entire country, except for Basra, with three hours on and three hours off. In late February 2004, the CPA announced that it had opened a 184-MW mobile power plant, comprised of eight portable diesel generators, in Baiji. The plant is slated to increase overall Iraqi power generating capacity and specifically to provide power to the nearby Baiji oil refinery, which has experienced numerous power interruptions in recent months.

For 2004, the US Agency for International Development (AID) reportedly plans to spend nearly \$500 million to add 1,000 MW of electric generating capacity by the end of the year. This will

include rehabilitation of the Baiji power plant, plus new plants in Kirkuk, South Baghdad and Mussayib. Plans also include repair of power transmission lines (132-kilovolt and 400-kilovolt) and towers, many of which are still out of commission due to sabotage and looting. Overall, Iraq's electricity ministry would like to reach 7,000 MW of capacity by the summer, and at least 9,000 MW of capacity by the end of 2004 (and 15,000 MW in the next few years), but this looks optimistic at present. The World Bank estimates that restoring and improving Iraq's electric power sector will require about \$12 billion in investment, more than double the \$6 billion that the U.S. Congress appropriated in the fall of 2003. Iraqi Electricity Minister, Ayham al-Sammarai, reportedly has drawn up a list of 200 power projects that he hopes to start by 2006, at a cost of \$6 billion. In the meantime, Iraq has reached deals with Syria to provide Iraq with 50 MW of power, and Turkey for another 200 MW (plus an additional 500 MW of mobile power generators). In January 2004, al-Sammarai said that Iraq intended to allow independent power projects, on both Build-Own-Transfer (BOT) and Build-Own-Operate (BOO) bases.

Around 85%-90% of Iraq's national power grid (and 20 power stations) was damaged or destroyed in the 1990-1991 Gulf War. Existing generating capacity of 9,000 megawatts (MW) in December 1990 was reduced to only 340 MW by March 1991. In early 1991, transmission and distribution infrastructure also was destroyed, including the 10 substations serving Baghdad and about 30% of the country's 400-kilovolt (kV) transmission network. In early 1992, Iraq stated that it had restarted 75% of the national grid, including the 1,320-MW Baiji and Mosul thermal plants as well as the Saddam Dam. The U.N. Iraq Program estimated in November 2002 that Iraq's generating capacity was 4,300-4,400 MW, and that the country's generating capacity could reach 5,900 MW by the summer of 2004, with several power stations (Al-Quds, Beji, Hamrin, Yousfiya, Rumaila -- all gas-fired) under construction and several others (Dibs, Hart, Najaf, Nassriya -- gas and thermal) awaiting approval and/or funds.

Sources for this report include: Agence France Presse; APS Review Oil Market Trends; Associated Press; BBC Summary of World Broadcasts; Business Week; CIA World Factbook; Deutsche Bank; Dow Jones; The Economist; Economist Intelligence Unit (EIU) Viewswire; Energy Compass; Energy Intelligence Briefing; Financial Times; Global Insight; Gulf News; Hart's Africa Oil and Gas; Heritage Foundation; Interfax News Agency; Janet Matthews Information Services (Quest Economic Database); Los Angeles Times; Middle East Economic Digest (MEED); Middle East Economic Survey (MEES); Nefte Compass; New York Times; Oil & Gas Journal; Oil Daily; Petroleum Economist; Petroleum Finance Company (PFC); Petroleum Finance Week; Petroleum Intelligence Weekly; Platt's Oilgram News; Reuters; Russian Oil and Gas Report; Stratfor; U.N. Office of the Iraq Programme; U.S. Energy Information Administration; Washington Post; Weekly Petroleum Argus; World Markets Research Centre.

COUNTRY OVERVIEW

Head of Government: N.A. For a discussion of Iraq's current governing structure, please see above.

Independence: October 3, 1932

Population (2003E): 24.7 million

Location/Size: Middle East/168,709 square miles, slightly more than twice the size of Idaho.

Major Cities: Baghdad (capital), Basra, Mosul, Karbala, Kirkuk

Languages: Arabic, Kurdish

Ethnic Groups: Arab 75-80%, Kurdish 15-20%, Turkmen, Assyrian, or other 5%

Religions: 97% Muslim (Shi'a 60-65%, Sunni 32-37%), Christian or other (3%)

ECONOMIC OVERVIEW

Currency: New Iraqi Dinar (NID)

Unofficial Exchange Rate (1/23/04E): US\$1=ID 1,300, compared to around US\$1=ID1,950

following the launch of the NIC in mid-October 2003

Gross Domestic Product (at market exchange rates) (2003E): \$25 billion **(2004F):** \$40 billion
Real GDP Growth Rate (Global Insight: Base Case Scenario) (2002E): 5.5% **(2003E):** -21.2%
(2004F): 39.7%

Inflation Rate (Global Insight: Base Case Scenario) (consumer prices) (2002E): 24.6%
(2003E): 10.7% **(2004F):** 4.9%

Major Export Products (2003): Crude oil and oil products

Major Import Products (2003): Food, medicine, consumer goods

Merchandise Exports (2002E): \$13.0 billion

Merchandise Imports (2002E): \$7.8 billion

Merchandise Trade Balance (2002E): \$5.2 billion

Current Account Balance (2002E): \$2.3 billion

Oil Export Revenues (2003E): \$9.6 billion **(2004F):** \$16.6 billion

Oil Export Revenues/Total Export Revenues: 90% or more

External Debt (2004E): estimates range upwards from \$100 billion, depending on what is counted

ENERGY OVERVIEW

Minister of Oil: Ibrahim Bahr Al Uloum replaced Thamir Ghadban on September 1, 2003

Proven Oil Reserves (1/1/04E): 115.0 billion barrels (around 75 billion barrels of which has not yet been developed; "probable" and "possible" reserves are as high as 220 billion barrels)

Current Net Oil Production (3/04E): 2.2 million bbl/d (gross production is around 2.4 million bbl/d, including 200,000 bbl/d of "reinjection" and other "unaccounted for" oil)

Latest Annual Oil Production (2003E): 1.33 million bbl/d

Pre-War Oil Production (January-February 2003E): 2.58 million barrels per day (bbl/d), with around 2.1 million bbl/d of exports

Oil Production (2002E): 2.04 million barrels per day (bbl/d), of which 2.02 million bbl/d was crude oil

Pre-war Oil Production Capacity, Maximum Sustainable: 2.8-3.0 million bbl/d (declining by about 100,000 bbl/d per year)

Current Oil Production Capacity, Maximum Sustainable (3/04E): 2.2 million bbl/d

Oil Export Routes: Kirkuk-Ceyhan pipeline; Mina al-Bakr port; to Jordan and Turkey via truck; reportedly to Syria via the Kirkuk-Banias pipeline; smuggling by boat along the Gulf coast

Oil Consumption (2002E): 460,000 barrels per day (bbl/d) **(2003E):** 300,000-350,000 bbl/d
(3/04E): 400,000 bbl/d

Net Oil Exports (2002E): 1.58 million bbl/d **(2003E):** 0.9-1.0 million bbl/d **(2004F):** 1.8 million bbl/d

U.S. Oil Imports from Iraq (2002E): 459,000 bbl/d (down from 795,000 bbl/d during 2001)
(2003E): 470,000 bbl/d

Crude Oil Refining Capacity (1/1/04E): 587,500 bbl/d (according to the *Oil and Gas Journal*)

Natural Gas Reserves (1/1/04E): 110 trillion cubic feet (Tcf)

Natural Gas Production/Consumption (2002E): 83 billion cubic feet (Bcf)

Electricity Generation Capacity (2002E): 4.3-4.4 gigawatts (90% thermal) **(3/04E):** 4.0-4.5 gigawatts

Electricity Production (2001E): 36.0 billion kilowatthours

ENVIRONMENTAL OVERVIEW

Total Energy Consumption (2001E): 1.08 quadrillion Btu* (0.3% of world total energy consumption)

Energy-Related Carbon Emissions (2001E): 20.0 million metric tons of carbon (0.3% of world total carbon emissions)

Per Capita Energy Consumption (2001E): 45.6 million Btu (vs U.S. value of 341.8 million Btu)

Per Capita Carbon Emissions (2001E): 0.85 metric tons of carbon (vs U.S. value of 5.5 metric tons of carbon)

Energy Intensity (2000E): 13,172 Btu/ \$1995 (vs U.S. value of 11,014 Btu/ \$1995)**

Carbon Intensity (2000E): 0.24 metric tons of carbon/thousand \$1995 (vs U.S. value of 0.17 metric tons/thousand \$1995)**

Fuel Share of Energy Consumption (2001E): Oil (90%), Natural Gas (9%); Hydroelectric (<1%)

Fuel Share of Carbon Emissions (2001E): Oil (90%), Natural Gas (10%)

Status in Climate Change Negotiations: Iraq is not a signatory to the United Nations Framework Convention on Climate Change or to the Kyoto Protocol.

Major Environmental Issues: Under Saddam Hussein, government water control projects drained most of the inhabited marsh areas east of An Nasiriyah by drying up or diverting the feeder streams and rivers. A once sizable population of "Marsh Arabs," who have inhabited these areas for thousands of years, were displaced, while the destruction of the natural habitat harmed the area's wildlife populations. Other problems include inadequate supplies of potable water, development of Tigris-Euphrates Rivers system contingent upon agreements with upstream riparian Turkey, air and water pollution, soil degradation (salination) and erosion, and desertification.

Major International Environmental Agreements: A party to the Law of the Sea and the Nuclear Test Ban.

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power.

**GDP based on EIA International Energy Annual 2001

OIL AND GAS INDUSTRY

Major Oil Fields (proven reserves - billion barrels, 2004E): Majnoon (12-30), West Qurna (11.3-15.0), East Baghdad (11+), Kirkuk (10+), Rumaila (10+), Bin Umar (6+), Rattawi (3.1), Halfaya (2.5-4.6), Nassiriya (2-2.6), Suba-Luhais (2.2), Tuba (1.5), Khurmala (1.0), Gharaf (1.0-1.1), Rafidain (0.7), Amara (0.5)

Oil Refineries (crude refining capacity bbl/d, 2004E): Baiji (310,000), Basra (150,000), Daura (100,000), Khanakin (12,000), K-3/ Haditha (7,000), Muftiah (4,500), Qayarah Mosul (2,000), Kirkuk (2,000)

Major Ports: Mina al-Bakr, Khor al-Amaya, Khor al- Zubair, Umm Qasr

Major Pipelines (nameplate capacity): *Kirkuk-Ceyhan (Dortyol) Pipeline* - around 1.5-1.6 million bbl/d (currently partly operational); *Iraq-Saudi Arabia Pipeline (IPSA1, 2)* - possibly 1.65 million bbl/d (closed by Saudi Arabia in 1990 and now being used for domestic natural gas shipments); *Banias/Tripoli Pipeline* - possibly 0.3 million bbl/d (currently closed); *Iraq Strategic Pipeline* - less than 1.4 million bbl/d (reversible, internal transportation only)

LINKS

For more information on Iraq, see these other sources on the EIA web site:

[Iraq Chronology: 1980-2004](#)

[EIA - Country Information on Iraq](#)

Links to other U.S. government sites:

[CIA World Factbook - Iraq](#)

[CIA Iraq Oil Map](#)

[Coalition Provisional Authority Home Page](#)

[US Dept. of Commerce Iraq Reconstruction Task Force](#)

[US State Dept. Iraq Reconstruction Contracts Page](#)

[US State Dept. International Information Programs: Iraq](#)
[U.S. Office of Foreign Assests Control \(for information on Iraqi Sanctions\)](#)
[Radio Free Europe "Iraq Report"](#)
[U.S. State Department's Consular Information Sheet - Iraq](#)
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