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## Sudan

*Sudanese crude oil production and exports have risen rapidly over the past few years, with the Sudanese Energy Ministry expecting production to reach 500,000 barrels per day in 2005. Exploration and production are expected to increase as a result of a December 2004 Comprehensive Peace Agreement to end Sudan's 21-year civil war.*

*Note: Information contained in this report is the best available as of March 2005.*



### GENERAL BACKGROUND

Sudan gained its independence from Egypt and the United Kingdom in 1956. Despite being the largest country in Africa and having considerable natural resources, it is among the world's poorest countries. Sudan's economy was almost exclusively agricultural until the start of significant oil production in 1999.

Stable prices resulting from International Monetary Fund (IMF)-approved macroeconomic policies have led to a slowdown in currency depreciation and an improved fiscal balance. In 2004, Sudan's real GDP grew 6.5% and is expected to grow 6.2% in 2005. Exports have increased sharply since the completion of a main oil export pipeline in 1999, although the country ran a current account deficit of \$727 million in 2003. In an effort to increase its trade potential, Sudan has applied for World

Trade Organization (WTO) membership, with the conclusion of negotiations expected in 2008. Despite its economic progress, Sudan faces various developmental obstacles, including limited infrastructure and an external debt estimated in 2003 at \$24 billion. Continued economic improvements are contingent on the country qualifying for massive debt relief.

**Sudan's civil war**, primarily a struggle between the Muslim North and the Christian and animist South led by the Sudan People's Liberation Front (SPLA), has raged since 1983 and killed an estimated two million people. In May 2004, after two years of negotiations beginning with the Machakos Protocol, the government and SPLA reached agreement on several major issues including the sharing of oil revenues (50/50), the application of Islamic religious law (will not be applied in the South), and self-determination for the southern Sudan (a referendum on secession

will be held after a six-year transitional period). On December 31, 2004, the Sudanese government and the SPLA finalized a comprehensive peace agreement, giving Sudan six months to formulate a new constitution and a transitional, decentralized national unity government in Khartoum, as well as a separate administration for the South. General elections will be held in the third year of a six-year transition period. In January 2005, SPLA leader John Garang requested the presence of United Nations (U.N.) peacekeepers from countries without interests in Sudanese oil. The U.N. Security Council plans to deploy over 10,000 troops throughout 2005 to monitor the peace.

The United States has imposed economic sanctions against Sudan since 1997, prohibiting trade and investment by U.S. businesses in Sudan. In April 2004, as part of a strategy to encourage the Sudanese peace process, the U.S. did not impose additional sanctions under the 2002 Sudan Peace Act.

Continued instability in the western region of Darfur has killed 10,000-30,000 people and created nearly a million refugees. Pro-government militia groups known as the Janjaweed have launched attacks against civilians, mainly non-Arab tribes, in the region, prompting calls from the international community to disarm the militia groups. Although Sudan agreed to disarm militias accused of "ethnic cleansing" in July 2004, the lack of progress led to an August 2004 U.N. Security Council resolution threatening punitive measures against Sudan's oil industry if the situation did not improve. In October 2004, 3,500 African Union (AU) troops entered Darfur to police the situation, which a February 2005 U.N. commission concluded was no less serious than genocide.

## **OIL**

Sudan contains proven reserves of 563 million barrels of oil, more than twice the 262 million barrels estimated in 2001. Because much of Sudanese oil exploration has been limited to the central and south-central regions, Sudanese Energy Ministry representatives estimate proven reserves at 700 million barrels and total reserves at five billion barrels, including potential reserves in northwest Sudan, the Blue Nile Basin, and the Red Sea area in eastern Sudan. Oil production has risen steadily since the completion of an export pipeline in July 1999. Crude oil production averaged 343,000 barrels per day (bbl/d) in 2004, up from 270,000 bbl/d during 2003. In December 2004, Sudanese Energy Minister Awad al-Jaz announced that oil production will likely increase to 500,000 bbl/d in 2005. Sudanese production may reach 750,000 bbl/d by late 2006 if increases in output progress as planned.

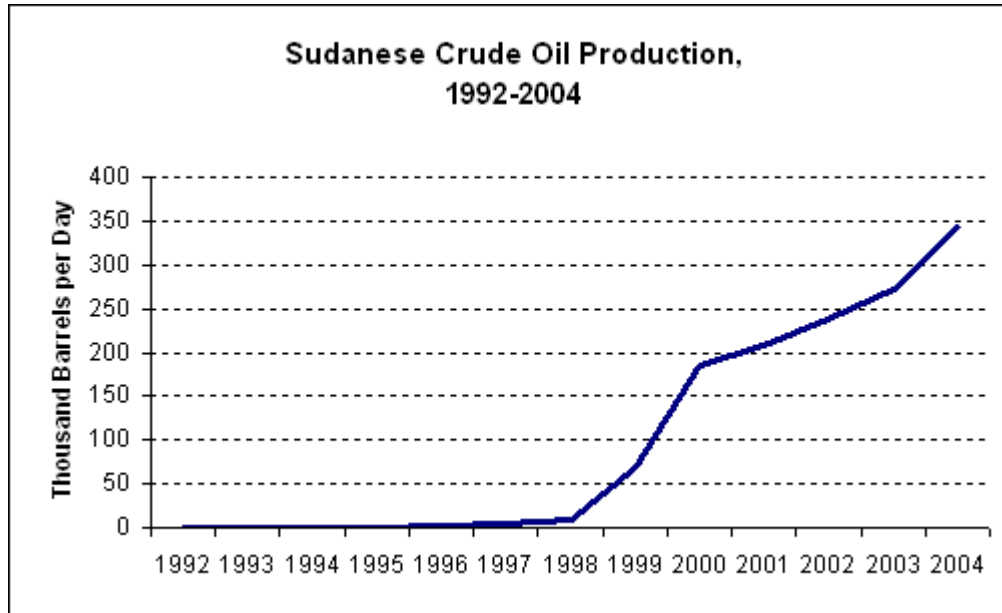
Exploration and development of Sudan's oil resources has been highly controversial. International human rights organizations have accused the Sudanese government of financing human rights abuses with oil revenues, including the mass displacement of civilians near the oil fields. Factional fighting in the South and rebel attacks on oil infrastructure have kept oil production and exploration from reaching full potential to date. In October 2004, for example, the Sudanese government prevented a militia attempt to sabotage the country's main oil export pipeline.

The recent peace agreement between the government and the SPLA will likely lead to substantial investment in both production facilities and new exploration initiatives in the country. In January 2005, after the official signing of the CPA, Total SA, Marathon Oil Corporation, and the Kuwait Foreign Petroleum Company renewed their exploration rights in southern Sudan.

## **Greater Nile Oil Project**

In 1996, Canadian independent Arakis Energy (Arakis) began development of the Heglig and Unity fields (Blocks 1, 2, and 4), estimated to contain recoverable reserves of 600 million to 1.2 billion barrels. Because the fields were not located near the Red Sea coast, Arakis entered into a

consortium with the Greater Nile Petroleum Operating Company (GNPOC) to raise investment for a 994-mile pipeline from the fields to the Suakim oil terminal near Port Sudan. In September 1999, the first cargo of "Nile Blend" crude departed the export terminal. Although the pipeline from the fields to an export terminal near Port Sudan was originally built to move 150,000 bbl/d, its capacity reportedly can be expanded to 450,000 bbl/d. In January 2005, GNPOC reported production of 325,000 bbl/d from Blocks 1, 2, and 4.



In March 2003, Talisman sold its stake in GNPOC (acquired through its purchase of Arakis) to India's national oil company, ONGC Videsh, due to pressure from human rights organizations. In August 2004, ONGC agreed to facilitate Sudan's purchase of the 25% stake. ONGC also plans to give

Sudapet a two percent stake in Block 5A and a one percent stake in Block 5B.

### Other Fields

In June 2004, Petrodar, a consortium of the China National Petroleum Corporation (CNPC) (41%), Petronas (40%), Sudapet (8%), Gulf Oil Petroleum (6%), and the Al-Thani Corporation (5%) awarded a \$239 million contract to Malaysia's Ranhill International and Sudan's Petroneeds Services International for development work on blocks 3 and 7. The blocks contain the Adar Yeil and Tale fields, anticipated to come online in 2005 with a combined capacity of 200,000 bbl/d. Capacity is expected to increase to 300,000 bbl/d by late 2006. Construction will include a 300,000 bbl/d central processing facility at Al-Jabalayan, production facilities at Palogue, and a pipeline linking the two. CNPC's Block 6 also came online in November 2004 at a rate of 10,000 bbl/d, expected to eventually reach 170,000 bbl/d.

In October 2004, Malaysian Peremba began construction of a \$232 million marine export terminal for the Melut Basin Oil Development Project. The terminal, scheduled for completion in December 2005, will have a capacity of 2 million bbl/d. Malaysia's Nam Fatt and Italy's Bentinin have been contracted to build six pumping facilities in the basin by April 2006. Construction on a 870-mile pipeline linking the Melmut Basin to the export terminal near Port Sudan has been divided into four parts, with separate consortiums to undertake each of the segments. In July 2004, a consortium led by MMC Corporation was contracted to build a 304-mile portion, scheduled for completion in May 2005. In August 2004, Russian Stroitransgas began construction on a 227-mile section, which it expects to complete within 12 months.

New exploration activity recently commenced in several regions of Sudan. In June 2004, oil exploration began for the first time in northern Sudan, on Block 9 in the Jazira region north of Khartoum. Exploration drilling in the Nile Valley's al-Damir began in November 2004.

**Refining**

Sudan has been self-sufficient in producing all petroleum products except aviation fuel since the June 2000 opening of the Khartoum Oil Refinery. The Khartoum refinery, built and operated by CNPC, produces benzene and butane gas for domestic consumption and export, as well as gasoline for local consumption. Although the Khartoum refinery has a named crude refining capacity of 50,000 bbl/d, this reportedly increased to 70,000 bbl/d in June 2004.

The Port Sudan facility, located near the Red Sea, is Sudan's smallest refinery and has a current capacity of 21,700 bbl/d. In November 2004, the Sudanese government announced plans to expand its refining capacity by upgrading facilities at Khartoum and Port Sudan, giving them capacities of 100,000 bbl/d each, by primarily capitalizing on CNPC's \$340 million injection into the Khartoum refinery in September 2003.

In August 2004, ONGC agreed to invest \$200 million in a 460-mile Sudanese pipeline in return for payment in crude oil. The pipeline will have a capacity of 18,330 bbl/d and transport gas, oil, and gasoline from the Khartoum refinery to Port Sudan. Completion is expected in October 2005.

In addition to refineries at Khartoum and Port Sudan, the country has two other refineries -- El Gily, with a capacity of 50,000 bbl/d; and El Obeid, with a capacity of 10,000 bbl/d.

**ELECTRICITY**

Sudan's electricity sector is plagued by poor infrastructure and frequent outages. Sudan has 728 megawatts (MW) of electricity generation capacity, and the country's total electricity generation was 2.4 billion kilowatthours (kwh) in 2002. The country's main generating facility is the 280-MW Roseires dam located on the Blue Nile river basin, approximately 315 miles southeast of Khartoum. The facility comes under frequent attack by rebel groups, and low water levels often cause its output to fall to 100 MW.

Electricity is transmitted through two interconnected electrical grids -- the Blue Nile Grid and the Western grid -- which cover only a small portion of the country. Regions not covered by the grid rely on small diesel-fired generators and wood fuel for power, although blackouts and brownouts are common. Only 30% of Sudanese currently have access to electricity, but the government hopes to increase that figure to 90% in coming years. In June 2004, Sudanese Electricity Minister Ali Tamim Fartak said that Sudan has secured more than \$2 billion of the estimated \$3 billion necessary to meet that goal.

Several projects are underway to increase Sudanese generating capacity. The largest include the proposed 2,500-MW Merowe and 300-MW Kajbar hydroelectric facilities in northern Sudan. France's Alstom, China's Harbin Power, and several Arab investors have contributed funding to construction of the Merowe facility, which is scheduled for completion in July 2008. China is financing 75% of the \$200 million Kajbar dam construction, with Sudan providing the remaining 25%. Environmental groups have expressed concern about the Kajbar project, citing potential damage to the Nile ecosystem and the culture of displaced Nubian residents of the area.

In addition to the Merowe and Kajbar facilities, in June 2004, Sudan inaugurated two electric power stations located north of Khartoum, estimated to have a combined capacity of 330 MW. In November 2004, Sudan's first independent power production (IPP) project also went onstream. Located near Khartoum, the 257-MW diesel plant sells output to the state-owned Sudan Electricity Corporation (SEC). Several additional power stations with a total capacity of 700 MW are scheduled for completion before 2008.



Foreign investment in the Sudanese power sector is expected to increase with the cessation of the recently-ended civil war. In June 2004, for example, the United Arab Emirates (UAE) pledged to invest in the Sudanese power sector following the signing of a peace accord.

Sources for this report include: Africa Intelligence; Africa Oil and Gas; Agence France Presse; CIA World Factbook 2004; CountryWatch.com; Economist Intelligence Unit ViewsWire; Factiva; Global Insight; International Market Insight Reports; International Monetary Fund; MBendi; Panafrican News Agency; Petroleum Economist; Petroleum Intelligence Weekly; Reuters News Service; Suna News Agency; U.S. Energy Information Administration; World Bank; World Markets Research Centre.

## COUNTRY OVERVIEW

**President:** Lt. Gen. Umar Hassan Ahmad al-Bashir (since 1989)

**Independence:** January 1, 1956 (from Egypt and the United Kingdom)

**Population (7/04E):** 39.1 million

**Location/Size:** Northern Africa, bordering the Red Sea between Egypt (on the north); Eritrea and Ethiopia (on the east); Kenya, Uganda and the Democratic Republic of Congo (on the south); and Libya, Chad and the Central African Republic (on the west) / 2,505,810 square kilometers (967,000 square miles), slightly larger than the combined size of Texas, New Mexico, Arizona, Nevada, California, Oregon, and Washington

**Major Cities:** Khartoum (capital), Juba, Kassala, Medani, Nyala, El-Obeid, Omdurman, Port Sudan

**Languages:** Arabic (official), Nubian, Ta Bedawie, diverse dialects of Nilotic, Nilo-Hamitic, Sudanic languages, English

**Major Ethnic Groups:** Black (52%), Arab (39%), Beja (6%), Foreigners (2%), Other (1%)

**Religion:** Sunni Muslim (70%, in north), indigenous beliefs (25%), Christian (5%, in south)

## ECONOMIC OVERVIEW

**Finance Minister:** Ahmed Hassan al-Zubeir

**Currency:** Sudanese dinar (SDD)

**Market Exchange Rate (2/1/05):** US\$1 = 255.3 SDD

**Nominal Gross Domestic Product (GDP) (2004E):** \$20.7 billion

**Real GDP Growth Rate (2004E):** 6.5% **(2005F):** 6.2%

**Inflation Rate (2004E):** 8.6% **(2005F):** 6.9%

**Current Account Balance (2003E):** -\$727 million

**Major Trading Partners:** China, Japan, Saudi Arabia, South Africa, India, UK, Germany, Indonesia, Australia

**Merchandise Exports (2003E):** \$2.4 billion

**Merchandise Imports (2003E):** \$2.7 billion

**Merchandise Trade Balance (2003E):** -\$0.3 billion

**Major Export Products (2003):** Crude oil, sesame, livestock, cotton, gum arabic

**Major Import Products (2003):** Machinery and equipment, manufactured goods, oil products, transport equipment, chemicals, wheat

**Total External Debt (yearend, 2003E):** \$24.2 billion

## ENERGY OVERVIEW

**Minister of Energy and Mining:** Awad Ahmad al-Jaz

**Proven Oil Reserves ( *Oil and Gas Journal* ; 1/1/05E):** 563 million barrels

**Crude Oil Refining Capacity ( *Oil and Gas Journal* ; 1/1/05E):** 121,700 barrels per day (bbl/d) at three **Refineries:** El Gily (50,000 bbl/d); Khartoum (50,000 bbl/d); Port Sudan (21,700 bbl/d)

**Oil Production (2003E):** 271,000 bbl/d **(2004E):** 343,000 bbl/d

**Oil Consumption (2004E):** 91,000 bbl/d  
**Net Oil Exports (2004E):** 252,000 bbl/d  
**Natural Gas Reserves ( *Oil and Gas Journal* ; 1/1/05E):** 3 trillion cubic feet (tcf)  
**Natural Gas Production (2002E):** None  
**Natural Gas Consumption (2002E):** None  
**Electric Generation Capacity (2002E):** 728 megawatts (55.6% thermal, 44.4% hydroelectric)  
**Electricity Generation (2002E):** 2.4 billion kilowatthours (kwh)  
**Electricity Consumption (2002E):** 2.4 billion kwh

## ENVIRONMENTAL OVERVIEW

**Minister of Environment and Urban Planning:** Maj. Gen. Adam al-Tigani Tahir  
**Total Energy Consumption (2002E):** 0.15 quadrillion Btu\* (<0.1% of world total energy consumption)  
**Energy-Related Carbon Dioxide Emissions (2002E):** 8.6 million metric tons (<0.1% of world total carbon dioxide emissions)  
**Per Capita Energy Consumption (2002E):** 4.5 million Btu (vs. U.S. value of 339.1 million Btu)  
**Per Capita Carbon Dioxide Emissions (2002E):** 0.26 metric tons (vs. U.S. value of 20.0 metric tons)  
**Energy Intensity (2002E):** 2,319 Btu/\$nominal -- PPP (vs. U.S. value of 9,348 Btu/\$nominal)\*\*  
**Carbon Dioxide Intensity (2002E):** 0.13 metric tons of carbon dioxide/\$nominal (vs. U.S. value of 0.55 metric tons/\$ nominal)\*\*  
**Fuel Share of Energy Consumption (2002E):** Oil (91.1%), Hydroelectricity (8.7%)  
**Fuel Share of Carbon Emissions (2002E):** Oil (100.0%)  
**Status in Climate Change Negotiations:** Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified November 19th, 1993 ). Not a signatory to the Kyoto Protocol.  
**Major Environmental Issues:** Inadequate supplies of potable water; wildlife populations threatened by excessive hunting; soil erosion; desertification; periodic drought  
**Major International Environmental Agreements:** A party to Conventions on Biodiversity, Climate Change, Desertification, Endangered Species, Law of the Sea, and Ozone Layer Protection.

\* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar and wind electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

\*\* GDP based on OECD purchasing power parity (PPP) figures.

## LINKS

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Links to other U.S. government sites:

[CIA World Factbook - Sudan](#)

[U.S. State Department Travel Warning - Sudan - July 2004](#)

[U.S. State Department Consular Information Sheet - Sudan](#)

[U.S. Department of the Treasury, Office of Foreign Assets Control, Sudan Sanctions Fact Sheet \(requires Acrobat Reader\)](#)

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[Human Rights Watch: "Sudan, Oil and Human Rights"](#)

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