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Country Analysis Brief: Sudan and South Sudan

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Overview

South Sudan gained independence from Sudan in July 2011. Most of the oil production capacity is now in South Sudan, but the country is landlocked and remains dependent on Sudan because it must use Sudan's export pipelines and port. Disagreements over oil revenue sharing and armed conflict have curtailed oil production from both countries over the past few years.

Sudan and South Sudan, both located in northeastern Africa, became independent countries in July 2011, following a referendum in South Sudan where the people overwhelmingly voted for independence. Prior to the split, the unified Sudan was the second-largest oil producer in Africa in 2010, outside of the Organization of the Petroleum Exporting Countries (OPEC). Since the split, Sudan and South Sudan's production has declined, and together they ranked as the fourth-largest non-OPEC African oil producer in 2013. Disagreements over oil revenue sharing and armed conflict have curtailed oil production from both countries over the past few years.

The unified Sudan began producing oil in the 1990s. Most of the producing assets are near or extend across the de facto border between Sudan and South Sudan. South Sudan gained control of about three-fourths of the oil production when it became independent in July 2011, although the production split has since changed because of reoccurring production outages in South Sudan.

South Sudan's independence and Sudan's production loss was devastating to Sudan's economy. It resulted in the loss of 55% of the Sudan's fiscal revenues and about two-thirds of its foreign exchange earnings, according to the International Monetary Fund (IMF). Sudan's crude oil export revenues fell from almost $11 billion in 2010 to just under $1.8 billion in 2012.

Oil still plays a vital role in the economies of both countries, albeit to a lesser extent in Sudan. According to the IMF, oil revenue accounted for 27% of Sudan's total government revenues and grants in 2012, down from nearly 60% two years prior. Oil represented 98% of South Sudan's

government revenue after the country became independent, although that share is unclear in more recent years because of the frequent disruptions to the country's oil production.

Sudan and South Sudan's oil sectors are still closely linked. Because South Sudan is landlocked, it remains dependent on Sudan to transport its oil through Sudan's pipelines to the Bashayer port along the Red Sea. Sudan also relies on the fees it charges South Sudan for using its pipelines and facilities to help fill Sudan's financing gap because of the loss of oil export revenue. In January 2012, South Sudan voluntarily shut in all of its oil production, mainly because of a dispute with Sudan over oil transportation fees via the pipelines. After nearly 15 months of intermittent negotiations, the countries agreed on a transit fee, and South Sudan restarted oil production in April 2013. In late December 2013, South Sudan's production was partially halted again because of armed civil conflict.

Key oil infrastructure in Sudan and South Sudan

History

Prior to independence, the unified Sudan fought two civil wars. The second civil war ended with the signing of the Comprehensive Peace Agreement that was put into place from 2005 to 2011. South Sudan gained its independence from Sudan in July 2011. However, there are still unresolved issues that have caused tension between the countries after independence. The border between the two countries is undefined, and some areas along the border remain contested.

Since its independence in 1956 from joint British and Egyptian rule, Sudan has experienced several armed conflicts that have affected the country's economic development, particularly its natural resources. The longest conflicts in the unified Sudan were the two civil wars fought between the Northern Sudanese government in Sudan (1955-1972) and the government in Southern Sudan (1983-2005). The second civil war ended with the signing of the Comprehensive Peace Agreement (CPA) that was in place from 2005 to 2011.The CPA set standards for sharing oil revenue (50:50 split) and a timetable toward a referendum on the South's independence. A referendum took place in January 2011 in which the people of the South voted to secede from Sudan. In July 2011, Sudan became two countries: Sudan (Khartoum as the capital) and South Sudan (Juba as the capital).

The border separating Sudan and South Sudan is still not officially defined, and some areas remain contested. The current de facto border was established when Sudan gained independence in 1956, and it is known as the 1956 border. The CPA called for the border to be demarcated, and a Technical Border Committee (TBC) was established in 2005 to demarcate the 1956 border. The committee agreed on most of the border, but five areas remain disputed, according to a report by the International Crisis Group.

One of the most contentious areas, which was excluded in the TBC's mandate, is the Abyei area, located between the states of Bahr al Ghazal, Warrap, and Unity. Oil was discovered in Abyei in 1979, which escalated tensions between both sides. The Abyei Boundary Commission (ABC) was authorized to define the territory, and in 2005 it ruled that the Heglig and Bamboo oil fields fell within Abyei. The North contested the ruling because it placed a significant portion of its oil reserves in the disputed territory. The dispute was later sent to the Permanent Court of Arbitration (PCA) in The Hague. In 2009, PCA redefined the Abyei area and placed the Heglig and the Bamboo oil fields outside of Abyei.

A referendum was scheduled for January 2011 to determine whether Abyei would join Sudan or South Sudan, but the referendum did not occur because of disagreements over voter eligibility. Although uncertainties over border demarcation and the ownership of Abyei remain, the Heglig and Bamboo oil fields are considered today to be in Sudan's South Kordofan state.

Petroleum and other liquids

Most of Sudan's and South Sudan's proved reserves of oil and natural gas are located in the Muglad and Melut Basins, which extend into both countries. Natural gas associated with oil production is flared or reinjected into wells to improve oil output rates. Neither country currently produces or consumes dry natural gas.

According to the *Oil & Gas Journal* (OGJ), Sudan had 1.5 billion barrels and South Sudan had 3.5 billion barrels of proved oil reserves, as of January 1, 2014. The majority of reserves are located in the oil-rich Muglad and Melut basins, which extend into both countries. Because of civil conflict, oil exploration prior to the 2011 independence was mostly limited to the central and south-central regions of the unified Sudan. Oil and natural gas exploration in Sudan and South Sudan still remain limited because the lack of evidence of reserves in unexplored acreage and civil unrest. Sudan has held some licensing rounds and recently awarded exploration licenses in 2012-13 for several blocks to smaller companies with less experience in the region.

Natural gas associated with oil fields is mostly flared or reinjected. Despite proved reserves of 3 trillion cubic feet, gas development has been limited. In 2010, the unified Sudan flared approximately 11.8 billion cubic feet of natural gas, according to the latest data from the National Oceanic and Atmospheric Administration (NOAA), representing about 0.2% of the total gas flared globally.

Oil sector management

National oil companies from Asia dominate the oil sectors of Sudan and South Sudan. The China National Petroleum Corporation, India's Oil and Natural Gas Corporation, and Malaysia's Petronas hold large stakes in the leading consortia operating oil fields and pipelines. National oil companies Sudapet (Sudan) and Nilepet (South Sudan) also hold small stakes in operations.

In Sudan, the Ministry of Finance and National Economy (MOFNE) regulates domestic refining operations and oil imports. The Sudanese Petroleum Corporation (SPC), an arm of the Ministry of Petroleum, is responsible for exploration, production, and distribution of crude oil and petroleum products in accordance with regulations set by the MOFNE. The SPC purchases crude oil at a subsidized cost from MOFNE and the China National Petroleum Corporation (CNPC).

South Sudan created the 2012 Petroleum Act, which outlines the institutional framework governing the hydrocarbon sector. The Act established the National Petroleum and Gas Corporation (NPGC). NPGC is the main policymaking and supervisory body in the upstream, midstream, and downstream segments of the hydrocarbon sector and is authorized to approve petroleum agreements on the government's behalf. The Ministry of Energy is responsible for the management of the petroleum sector.

The Sudan National Petroleum Corporation (Sudapet) is the national oil company in Sudan, and the Nile Petroleum Corporation (Nilepet) is its counterpart in South Sudan. At the end of 2011, South Sudan nationalized Sudapet's assets in the South and transferred them to Nilepet. Both companies are active in their respective country's oil exploration and production and are often minority shareholders in production-sharing contracts with foreign oil companies because of their limited technical expertise and financial resources.

National oil companies (NOCs) from Asia dominate the oil sectors in both countries. They are led by CNPC, India's Oil and Natural Gas Corporation (ONGC) and Malaysia's Petronas. These companies hold large stakes in the leading consortia operating in both countries: the Greater Nile Petroleum Operating Company, the Dar Petroleum Operating Company, and the Sudd Petroleum Operating Company.

Table 1: Main oil companies in Sudan and South Sudan

Consortium/Subsidiary	Company	Country of Origin	Share (percent)
Greater Nile Petroleum Operating Company (GNPOC)	CNPC	China	40
	Petronas	Malaysia	30
	ONGC	India	25
	Sudapet*	Sudan	5
	Nilepet*	South Sudan	5
Dar Petroleum Operating Company (DPOC)	CNPC	China	41
	Petronas	Malaysia	40
	Nilepet	South Sudan	8
	Sinopec	China	6
	Egypt Kuwait Holding	Egypt	3.6
	Other partner(s)	--	1.4
Sudd Petroleum Operating Company (SPOC)	Nilepet	South Sudan	41.9
	Petronas	Malaysia	33.9
	ONGC	India	24.1
Petro Energy E&P	CNPC	China	95
	Sudapet	Sudan	5
Star Oil	Ansan Wikfs	Yemen	66
	Sudapet	Sudan	34

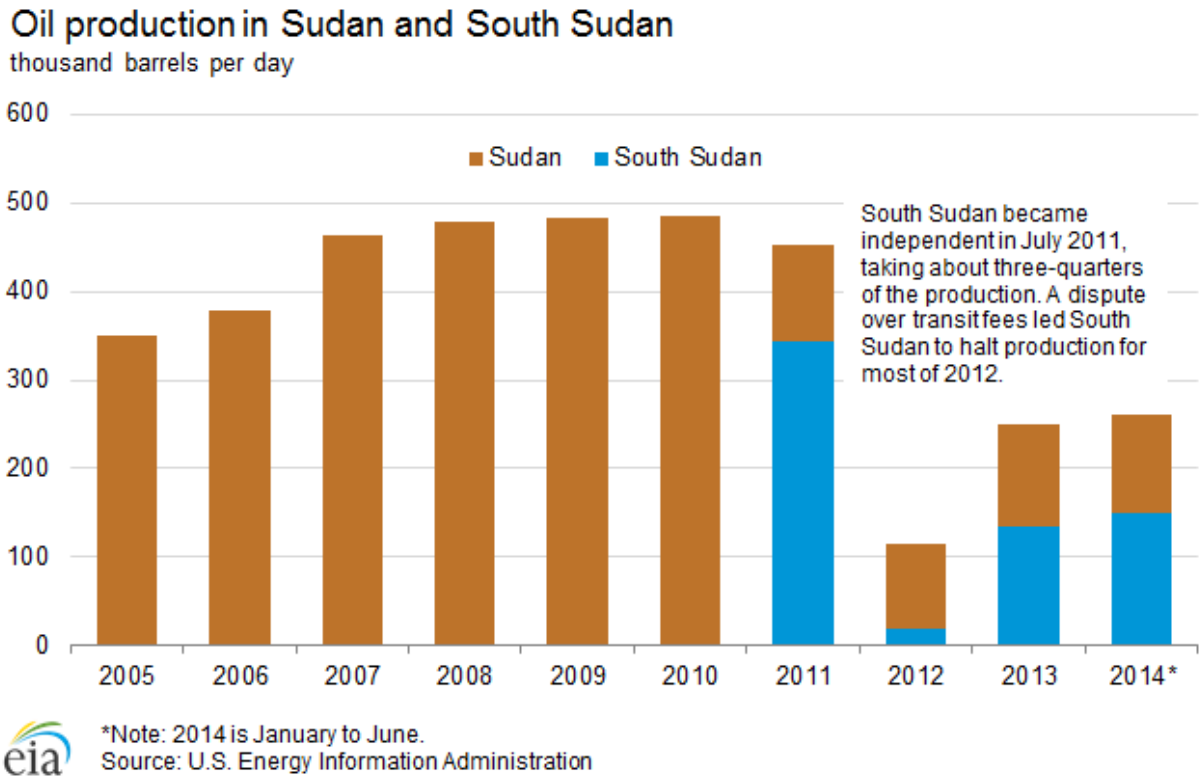
Note: * Sudapet holds a 5% share in GNPOC's operations in Sudan, and Nilepet holds a 5% share in GNPOC's operations in South Sudan.

Source: Company websites, IHS Edin, and Middle East Economic Survey (MEES)

Oil production

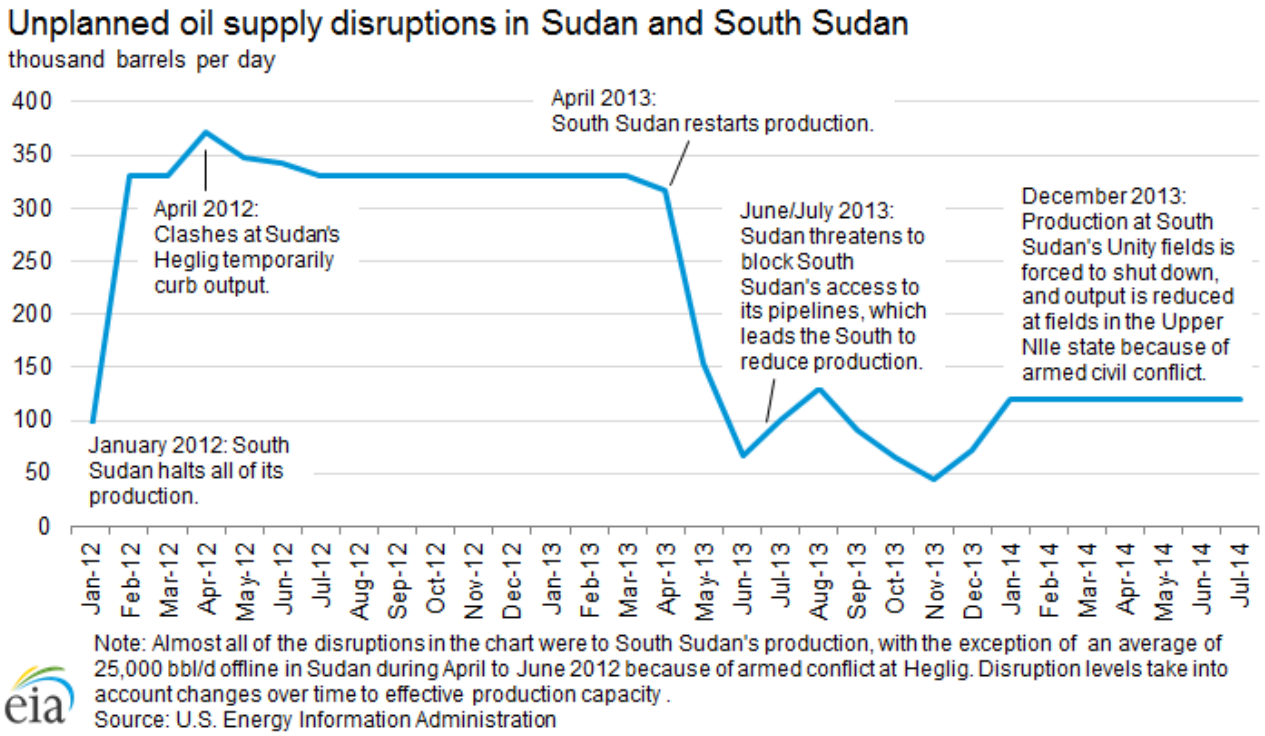
South Sudan has experienced frequent disruptions to production over the past few years. In January 2012, the country voluntarily halted its production because of a dispute over transit fees with Sudan. South Sudan's production was partially shut down again at the end of 2013 because of civil conflict.

For the first half of 2014, Sudan and South Sudan's oil production averaged 260,000 barrels per day (bbl/d), down from almost 490,000 bbl/d in 2010. Disagreements over oil revenue sharing and armed conflict have curtailed oil production in both countries over the past few years. Also, the oil fields in both countries are mature, and output has naturally declined. Sudan has applied enhanced oil recovery (EOR) techniques at its oil fields, which has slowed some of the decline. Sudan also brought online two small oil fields at the end of 2012, which has helped to keep overall production steady around 110,000 bbl/d. South Sudan's production averaged 150,000 bbl/d during the first half of 2014.



South Sudan, and to a lesser extend Sudan, have experienced frequent disruptions to production over the past few years. In 2012, combined production from Sudan and South Sudan plummeted to 115,000 bbl/d because South Sudan shut in all of its production at the end of January 2012. Total unplanned disruptions in both countries averaged about 315,000 bbl/d in 2012, peaking at about 370,000 bbl/d in April 2012 because of military clashes around Sudan's Heglig field that temporarily halted production. Supply disruptions have since declined to an average of 120,000 bbl/d during the first half of 2014, all of which is in South Sudan.

The disruption estimates take into account adjustments to South Sudan's effective capacity and assume that a portion of pre-shut-in production was compromised because of technical issues surrounding the shut-in and its duration. As a result, EIA assumes that even if there are no production outages in South Sudan, the country's production cannot recover to its pre-shut-in 2011 average level of 340,000 bbl/d at least in the near term because of permanent damage and natural decline, particularly at mature fields in Unity state.



All of the oil produced in Sudan and South Sudan originates from the Muglad Basin (Blocks 1, 2, and 4, Block 5A, Block 6, and Block 17) and Melut Basin (Blocks 3 and 7). Currently, oil produced from Blocks 2, 4, 6, and 17 is counted as Sudan's production, while oil from Blocks 1, 5A, 3, and 7 belongs to South Sudan.

Table 2: Sudan and South Sudan oil fields and operators

Country	Location	Main Fields	Blend	Operator
Sudan	Block 2	Heglig, Bamboo	Nile	GNPOC
Sudan	Block 4	Diffra, Neem	Nile	GNPOC
Sudan	Block 6	Fula, Hadida	Fula	Petro Energy
Sudan	Block 17	al-Barasaya	NA	Star Oil
South Sudan	Block 1	Unity, Toma, Munga	Nile	GNPOC
South Sudan	Block 3 & 7	Palogue, Adar-Yale	Dar	DPOC
South Sudan	Block 5A	Mala, Thar Jath	Nile	SPOC

Source: Rystad, Middle East Economic Survey (MEES), and Energy Intelligence Group

Export oil pipelines and port

Sudan has two export pipelines that travel northbound across the country to the Bashayer Marine Terminal, located about 15 miles south of Port Sudan. The Petrodar pipeline transports the Dar Blend, a heavy sour crude oil, from South Sudan's Blocks 3 and 7. The Dar Blend sells at a discount to the Nile Blend along with Brent, the international benchmark for the crude oil price.

The pipeline stretches 850 miles, and its design (maximum) capacity is 500,000 bbl/d. It includes several heating units along its length to facilitate the movement of the waxy crude oil.

The GNPOC pipeline transports the Nile Blend, a medium, low-sulfur waxy crude oil, 1,000 miles from the Heglig processing facilities to the Bashayer Marine Terminal. The pipeline has a design capacity of 450,000 bbl/d. The Nile Blend is sourced from Blocks 2 (Heglig and Bamboo fields) and 4 (Diffra and Neem fields) in Sudan and Blocks 1 (Unity field) and 5A (Mala and Thar Jath fields) in South Sudan. Production from all the oil fields serving the GNPOC pipeline has been naturally declining since 2007.

South Sudan is considering the construction of an export crude oil pipeline that would allow the country to bypass the current route through Sudan. South Sudan has been discussing options with authorities in Kenya, Ethiopia, and Djibouti to possibly build a pipeline either to the Kenyan Port of Lamu or to the Port of Djibouti via Ethiopia. South Sudan has signed a Memorandum of Understanding (MOU) with all three governments to build the pipelines. Japan's Toyota Tsusho Corporation completed a feasibility study to construct the pipeline to the Port of Lamu and may finance and build the pipeline. However, plans to build the pipeline have been stalled because of the civil conflict.

An alternative pipeline route would reduce South Sudan's reliance on Sudan to transport its crude oil for export. But the feasibility of the pipeline is questionable because South Sudan's production continues to suffer unplanned disruptions and natural decline. Also, there are no major oil fields scheduled to come online in South Sudan.

Table 3: Crude oil pipelines in Sudan and South Sudan

Operator	Start of pipeline	Destination	Crude oil blend type	Approx. length (miles)	Design capacity ('000 bbl/d)
Main crude oil pipelines					
DPOC	Block 3 and 7	Bashayer Terminal 2, Port Sudan	Dar	850	500
GNPOC	Heglig facilities	Bashayer Terminal 1, Port Sudan	Nile	1000	450
SPOC	Block 5A	Connects to Heglig facilities	Nile	60	200
CNPC	Block 6	Khartoum Refinery	Fula	450	200
Proposed crude oil pipelines					
--	South Sudan	Lamu (Kenya)	--	--	450
--	South Sudan	Djibouti via Ethiopia	--	--	--

Source: Petrodar, GNPOC, Energy Intelligence Group, and IHS Edin

Cooperation agreements, oil production restart, and ongoing supply disruptions

In January 2012, South Sudan voluntarily shut in all of its oil production because of a dispute with Sudan over oil transit fees. Following South Sudan's secession, Sudan requested transit fees of $32-36/barrel (bbl) in an attempt to make up for the oil revenue loss, while South Sudan offered a transit fee of less than $1/bbl. Tensions escalated at the end of 2011 when Sudan began to confiscate a portion of South Sudan's oil as a payment for unpaid transit fees, and shortly after, South Sudan shut down production. After nearly 15 months of intermittent negotiations, South Sudan restarted oil production in April 2013.

Corporation agreements
While oil production was halted, representatives from Sudan and South Sudan met several times in Addis Ababa, Ethiopia for negotiations that were mediated by the African Union. On September 27, 2012, both sides signed a series of cooperation agreements on a host of post-independence issues, such as sharing oil revenue, border demarcation, security, migration, banking, and trade.

The agreement on oil called for the resumption of oil production in South Sudan and granted that country access to use oil transportation and processing facilities in Sudan. It stipulates that South Sudan will pay Sudan processing, transit, and transportation fees to use facilities and pipelines in Sudan. The total fee to use the GNPOC facilities and pipeline is $11/bbl; the Petrodar facilities and pipeline fee is $9.10/bbl, as established in the August 2012 provisional agreement. The $3.028 billion compensation can be paid over time at a rate of $15/bbl and must be paid within three and a half years. All fees associated with moving the crude oil to Sudan's export terminal, in addition to the compensation fee, bring the total payment to $24.10/bbl for use of the Petrodar facilities and $26/bbl for use of the GNPOC facilities.

Both sides agreed to cancel and forgive any claims of oil-related arrears and outstanding financial claims. This includes South Sudan's previous claims that Sudan diverted the South's crude oil to the refinery in Sudan. However, Sudan is still expected to give the South proceeds from the oil confiscated prior to the 2012 shutdown and shipped by the Trafigura Group in February 2012. The agreement on oil also stipulates that if operations related to production or use of processing and/or transportation facilities becomes technically or economically unsustainable, then the country must provide a 60-day notice prior to shutting down production or suspending access to processing and transportation facilities.

The agreement on security arrangements called for a Safe Demilitarized Border Zone between the shared de facto border. Both sides agreed to withdraw 6 miles from the border to minimize military clashes in the designated 14-mile buffer zone. It also operationalized the Joint Border Verification and Monitoring Mission to oversee and verify the withdrawal. The agreement also reinforced the pledge made by both countries to not lend support to rebel groups against the other country.

South Sudan restarts production
On March 12, 2013, Sudan and South Sudan released an implementation matrix with a timeline to carry out the activities in the cooperation agreements. Most notably, the implementation matrix set dates to demilitarize the buffer zone along the shared border and to restart oil production. South Sudan resumed limited oil production on April 6, 2013. Initial production of 4,000 to 6,000 bbl/d came from the Thar Jath field in Block 5A. Production at South Sudan's largest fields in the Upper Nile State (Blocks 3 and 7) started about one month later.

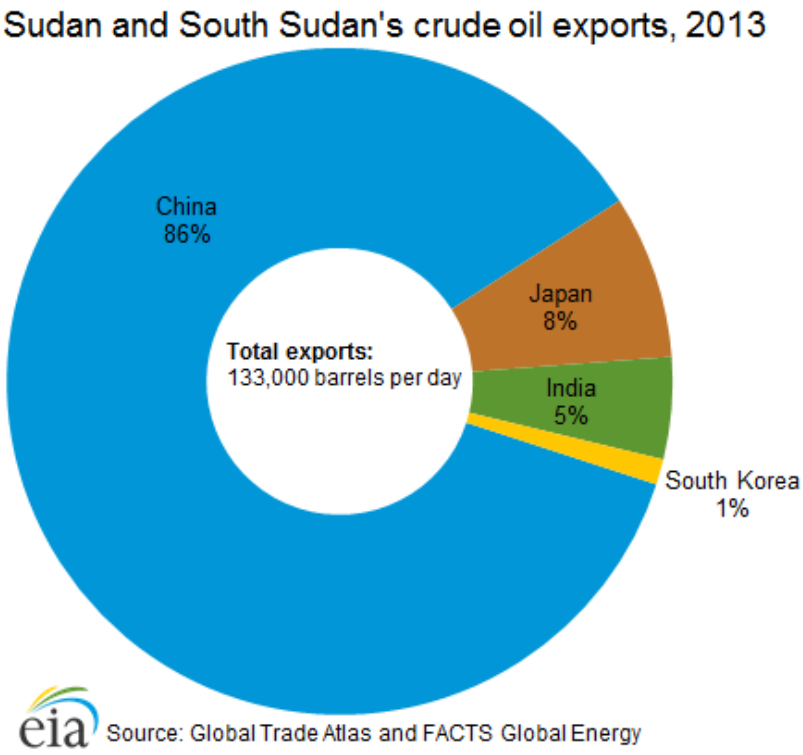
Ongoing supply disruptions in South Sudan
The road to recovery has been very rocky for South Sudan, and the country's oil production has still not recovered fully. In May 2013, South Sudan was forced to partially shut in production for a few days at Blocks 3 and 7 after Sudan turned off the pump station at the central processing facility in Jebelein, Sudan. Sudan claimed it turned off the pump station because of technical problems, but South Sudan believes the decision was politically motivated. In June 2013, Sudan threatened to cut South Sudan's access to its two export pipelines after accusing South Sudan of backing antigovernment rebels in Sudan, an allegation that South Sudan denies. South Sudan reduced its production until September 2013, when Sudan announced it would continue to allow South Sudan to export its oil through Sudan's pipelines.

In late December 2013, armed conflict between forces loyal to the current President Salva Kiir of South Sudan and the former Vice President Riek Machar led to the evacuation of hundreds of foreign works and the shutdown of 45,000 bbl/d of oil produced at fields in Unity state. Satellite images taken by the U.S.-funded Satellite Sentinel Project show that key oil infrastructure was severely damaged, including oil storage tanks and manifolds. Production in the Upper Nile state was reduced as well because of the violence.

Crude oil exports

China is by far the leading export destination for crude oil from Sudan and South Sudan. In 2013, Sudan and South Sudan's crude exports accounted for 2% of China's total crude oil imports, down from 5% in 2011.

Sudan and South Sudan export the Nile and Dar blends to Asian markets. In 2013, both countries exported 133,000 bbl/d of crude oil, up from 60,000 bbl/d exported in 2012, but still well below the 337,000 bbl/d exported in 2011 before the major production shut-in. China is by far the largest recipient of Sudan and South Sudan's oil. Sudan exported 49,000 bbl/d, and South Sudan exported 65,000 bbl/d to China in 2013, together accounting for 86% of Sudan's and South Sudan's total exports.

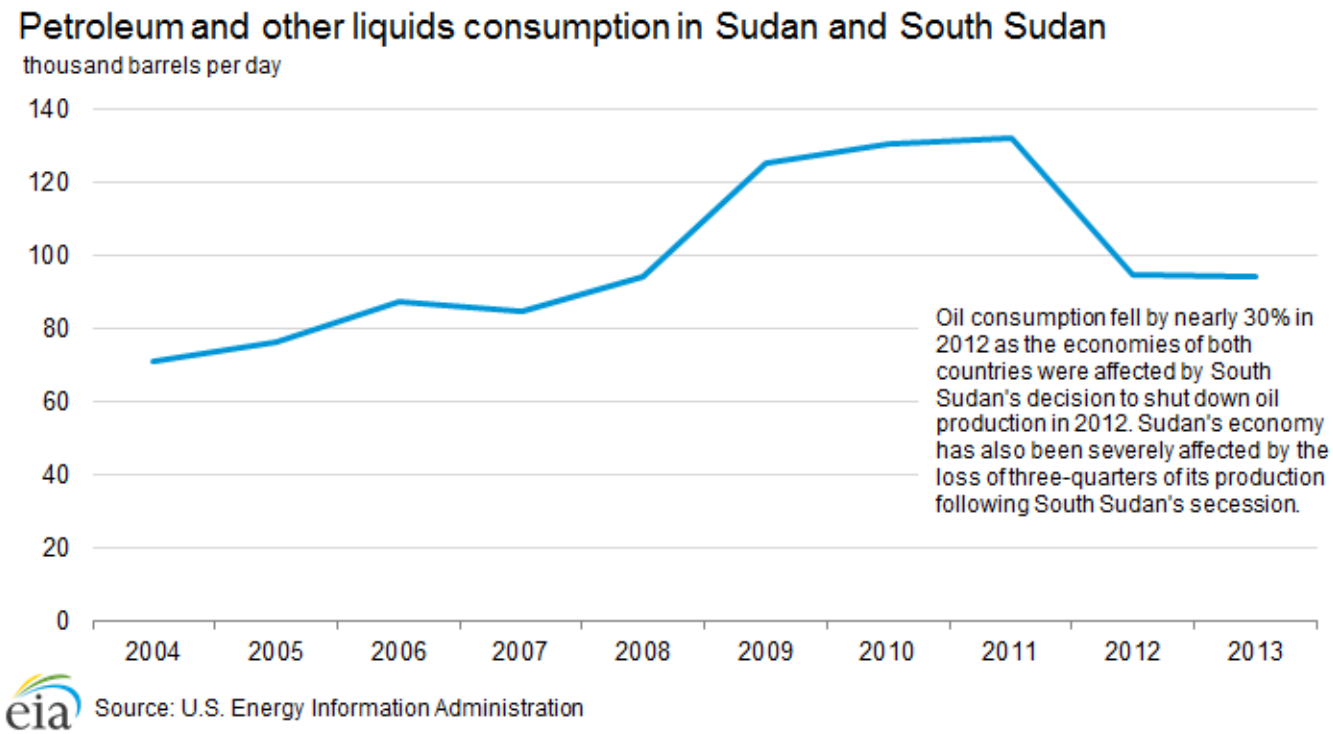


Oil consumption and fuel subsidies

Oil consumption in Sudan and South Sudan increased by an annual average of around 10% between 2000 and 2011 and reached its highest level of 132,000 bbl/d in 2011, most of which was consumed by Sudan. Oil consumption grew because of increased industrialization, car ownership, and access to electricity, according to the IMF. However, oil consumption decreased to 95,000 bbl/d in 2012, nearly a 30% drop from the previous year, as Sudan's economy was affected by the loss of export transit fees when South Sudan's oil production was shut down. Consumption remained stagnant in 2013.

Sudan's loss of substantial amounts of oil revenue, following South Sudan's secession, has led the country to rethink its fuel subsidies, which accounted for 15% of total government expenditure in 2012. Sudan initiated its subsidy reform program in 2011, and in September 2013 it implemented the third phase of the reform, which substantially increased prices for gasoline, diesel, and LPG by between 65% and 75% each, according to the International Institute for Sustainable Development. The price increases were followed by mass protests and unrest in Khartoum and nearby cities, which resulted in dozens of civilian deaths.

Oil demand is met by domestically refined crude oil, along with imported refined products. Diesel, used for electricity generation and transportation, accounts for most of the consumption, followed by gasoline (transportation) and fuel oil (electricity), according to the IMF. Both countries also import diesel, jet oil (aviation), and LPG (cooking and heating) to supplement the domestic supply. Sudan exports small quantities of refined products, mostly to neighboring countries.



Oil refineries

Sudan has two oil refineries with a total capacity of 121,700 bbl/d and three topping plants, which are small scale, less complex refineries, with a total capacity of 22,000 bbl/d. The largest refinery, the Khartoum or al-Jaili refinery, is located just north of Khartoum and has a distillation capacity of 100,000 bbl/d. It initially came online in 2000 with a capacity of 50,000 bbl/d to process the Nile Blend. The refinery's capacity was expanded in 2006 to also process Sudan's highly acidic Fula Blend. According to one of its operators, China's CNPC, the Khartoum Refinery was the world's first modern refinery with a delayed coking unit for high-acid and high-calcium crude oil.

The country's other full conversion refinery is the Port Sudan refinery (21,700 bbl/d). The three small topping plants are El Obeid (10,000 bbl/d), Shajirah (10,000 bbl/d), and Abu Gabra (2,000 bbl/d). The Malaysian company Petronas had planned to construct a 100,000 bbl/d refinery in Port Sudan, but plans have been frequently postponed and no progress has been reported.

There are no oil refineries operating in South Sudan. However, according to some government officials, construction of the small refinery at Bentiu, located in Unity State, was near completion. But the refinery's operations cannot start until production restarts at the nearby oil fields, which were shut down in late December 2013 because of military clashes. The refinery's capacity is 3,000 bbl/d and will be expanded in the future to process 5,000 bbl/d. Construction has stopped at South Sudan's second planned 10,000-bbl/d refinery in the Upper Nile near Blocks 3 and 7 because of the conflict.

Table 4: Oil refineries in Sudan and South Sudan

Country	Refinery	Capacity ('000 bbl/d)	Operator
Sudan	Khartoum (al-Jaili)	100	CNPC/Sudapet
	Port Sudan	21.7	Sudapet
	El Obeid	10	Sudapet
	Shajirah	10	Concorp
	Abu Gabra	2	Sudapet
	Total Capacity	**143.7**	
Planned Refineries			**Operator and/or builder**
South Sudan	Unity State (Bentiu)	5	Safinat (Russia)/Nilepet
	Upper Nile (Thiangrial)	10	Frontier Resource Group/Ventech Engineers International
Proposed Refineries			
Sudan	Port Sudan	100	--
	Khartoum (expansion)	100	--

Note: Construction at the Bentiu refinery in South Sudan is nearly completed to process 3,000 bbl/d. It will later be expanded to process 5,000 bbl/d.

Source: Arab Oil & Gas Journal, Embassy of Sudan (in Malaysia), Sudan Petroleum Corporation, the Middle East Economic Survey (MEES), and Bloomberg

Electricity

Sudan

Total electricity generation in Sudan and South Sudan was 9.7 billion kilowatthours (kWh) in 2012, of which almost all was generated in Sudan. Hydroelectricity is Sudan's largest source of power, accounting for 68% of generation in 2011, followed by diesel and heavy fuel oil (27%) and biomass and waste (5%). Although power generation has more than tripled since 2000, millions of people are still without access to electricity. According to the International Energy Agency, only 29% of Sudan's population had access to electricity in 2011.

According to Sudan's Dams Implementation Unit, electricity is transmitted through two interconnected regional grids, the Blue Nile and Western grids. The grids cover only a small portion of the country, and the parts not connected to the grid depend on small diesel-fired generators or firewood to generate power. Power plants connected to the grid use diesel and residual fuels, according to IHS CERA. Using natural gas to generate electricity could reduce energy costs, but Sudan's natural gas sector is undeveloped. Hydroelectricity is generated from five dams: Roseires, Sinnar, Jebel Aulia, Khashm el-Girba, and Merowe. The newest hydro plant, Merowe, is located on the Nile River and has the country's largest generation capacity at 1,250 Megawatts (MW). Hydroelectricity generation was 6.6 billion kWh in 2012.

South Sudan
South Sudan has the lowest per capita electricity consumption in Africa, according to the African Development Bank (AfDB). Only 1% of South Sudan's population is connected to the electricity grid, while more than 96% of the population uses firewood and charcoal for household heating and cooking. Even those connected to the power network still experience infrequent service because of aging equipment and limited maintenance. As a result, load shedding, or forced blackouts, are a regular part of South Sudan's power system.

In December 2013, the AfDB announced that it would provide South Sudan with a $26 million grant to expand the country's electricity distribution networks. The project will be undertaken by the state-owned utility, the South Sudan Electricity Corporation, but the project's progress is most likely stalled now because of the conflict.

According to IHS CERA, South Sudan has about 20 MW of total installed capacity fueled by oil. The largest source of power is the 12-MW Warsila plant in Juba, South Sudan. The government plans on expanding diesel generation capacity by 20 MW over the next few years. South Sudan also plans to build hydropower stations. The 38-MW Fula Rapid hydropower plant, which is being funded by the AfDB, Norwegian government, Emerging Africa Infrastructure Fund, and South Sudanese government, is scheduled to be completed in October 2016, although it will most likely be delayed if the current conflict continues. South Sudan signed a preliminary agreement with Chinese companies to provide most of the funds to construct the proposed 540-MW Bedden Dam hydropower plant, which is estimated to take seven years to build and will cost $1.4 billion.

Notes

- Data presented in the text are the most recent available as of September 3, 2014.
- Data are EIA estimates unless otherwise noted.

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