

COUNTRY ANALYSIS BRIEFS

Chad and Cameroon

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Background

Chad and Cameroon depend upon the oil industry for economic growth. Lending agencies have encouraged the countries to have greater economic diversification.

In the last three years, Chad's economy has experienced strong economic growth from its oil industry. In 2004, foreign investments into Chad and petroleum exports via the Chad-Cameroon pipeline were the primary driving forces behind the country's considerable real gross domestic product growth (GDP) rate of 30 percent. In 2005, high oil prices attributed to Chad's GDP growth rate of 7 percent. Investments in Chad's oil industry have led to growth in other areas as well, such as the trade, transportation, and public services sectors. Additional economic growth is expected to come from foreign investment in new oil exploration licenses that are to be offered in 2007. Although oil production was not impeded, Chad experienced civil strife throughout 2006, which included rebel forces marching on the capital, N'Djamena.



Cameroon's economy has exhibited steady economic growth since the mid 1990's. However, the country saw a slight decline in real GDP growth after the completion of the Chad-Cameroon pipeline. In 2005, the real GDP growth rate was 2.6 percent. High energy prices have helped offset economic growth declines, but they have also increased inflationary pressures in Cameroon. In 2005, inflation was 2 percent. In May 2006, the International Monetary Fund (IMF) and the World Bank indicated that Cameroon had completed its obligations under the Enhanced Heavily Indebted Poor Countries (HIPC) Initiative. Cameroon will now receive more than \$1 billion in bilateral debt relief and additional multilateral aid, which together, will provide a 50 percent reduction in the country's total external debt.

Energy Overview

Chad became a net petroleum exporter after the Chad-Cameroon pipeline came online in 2003. Industry experts still consider Chad under-explored, and future oil discoveries could increase petroleum exports even more. Chad lacks refining infrastructure and relies on neighboring Cameroon and Nigeria for refined product imports, however, delivery problems often leave Chad faced with refined product shortages. Chad has no known natural gas reserves and neither produces nor consumes natural gas. Due to a lack of investment, Chad generates and consumes only small amounts of electricity, of which, 100 percent is conventional thermal electricity. In place of electricity, the majority of Chadians rely on biomass fuels such as wood and animal dung.

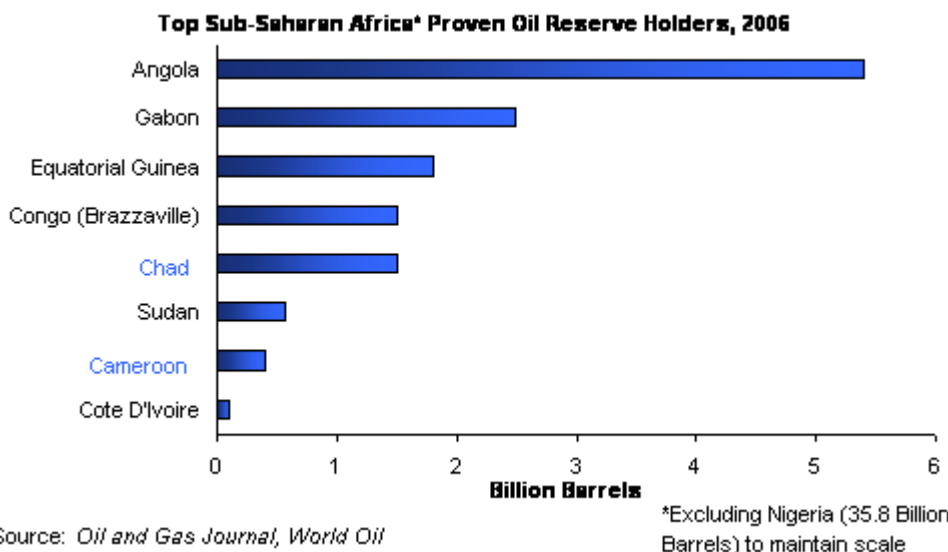
Cameroon has experienced a fairly steady decline in its domestic oil production over the past 20 years. The country is still a net oil exporter, but if new fields do not come online in the near future, Cameroon could become a net oil importer. Currently, Cameroon does not produce any natural

gas, but the country has plans to develop its natural gas reserves for generating electricity in the future. The majority of electricity generated in Cameroon comes from hydroelectric power stations, though droughts can often leave the country dealing with electricity shortages.

Oil Overview

Chad has experienced rapid growth in its domestic oil industry due in large part to the Chad-Cameroon pipeline coming online. Cameroon has also benefited from the pipeline in the form of royalty payments.

According to *Oil and Gas Journal (OGJ)*, Chad had proven oil reserves of 1.5 billion barrels as of January 2006. International oil companies (IOCs) first discovered oil in the early 1970s in southern Chad in the Doba and Lake Chad basins. Industry experts still consider Chad under-explored, with a high probability of locating new reserves in the future. As of January 2006, *OGJ* estimated that Cameroon had proven oil reserves of 400 million barrels, with the majority of reserves located offshore in the Rio del Rey basin of the Niger Delta. Less significant reserve deposits are located in the Douala/Kribi-Camp basins off Cameroon's western coast, and onshore in the northern Logone-Birni basin.



In 2006, Chad produced approximately 170,000 barrels per day (bbl/d) of oil and Cameroon produced 90,000 bbl/d. Both Chad and Cameroon are net exporters of petroleum, since the two countries only consumed approximately 25,000 bbl/d (combined) of oil in 2006. Oil exported from landlocked Chad is transported via the Chad-Cameroon pipeline, which ends at Cameroon's Kribi terminal (see Pipelines below).

Sector Organization

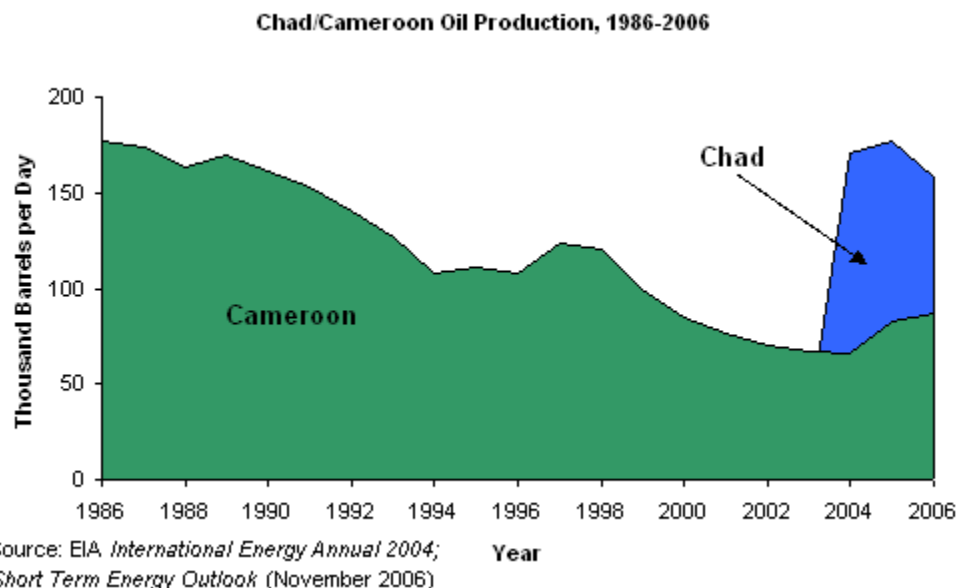
Chad and Cameroon have been in the process of restructuring their oil sectors by developing laws and regulations that encourage greater investment. In 2000, the Chadian government revised its Petroleum Code. The revision allowed for production sharing agreements (PSAs) between foreign companies and the Chadian government. In addition, the government made the investment climate more attractive by reducing the corporate income tax rate from 50 percent to 45 percent. The Cameroonian government revised its petroleum laws to include financial incentives and tax breaks on exploration in both 1999 and 2002. Major players in both countries include ExxonMobil, Chevron, Petronas, Total, Shell, and Perenco.

In July 2006, the Chadian government created the country's first national oil company (NOC), which is called the Société des Hydrocarbures du Tchad (SHT). As a result of SHT, Chad has indicated a desire to control 60 percent of the country's oil sector. In August 2006, Chad's Oil Minister, Mahamat Nasser Hassane, announced the possibility of revising a previous agreement with the ExxonMobil-led consortium, which controls the Chad Cameroon Pipeline Development Project (CCPDP). The revision would allow SHT to become the fourth member of the consortium. Also in August, the Chadian government issued a statement in which Petronas and Chevron were accused of not paying enough oil-profit tax due to a tax advantage agreement signed in 2000. The companies, which together control 60 percent of Chad's oil sector, are partners in the CCPDP with ExxonMobil. After concluding negotiations, the two companies agreed in October

2006, to pay outstanding taxes for 2005 and 2006 totaling \$289 million. The tax payment will allow both companies to continue working in Chad.

Exploration and Production

In 2001, the CCPDP consortium began test drilling in the Doba basin in Chad. In October 2003, first oil from Doba basin arrived at the port of Kribi. Oil from the CCPDP is produced primarily from three major fields, which include Bolobo, Komé and Miandoun. The smaller Nya field began producing through the CCPDP infrastructure in 2005, and the Moundouli field will produce through the CCPDP infrastructure once it comes online in early 2007.



Over the past 20 years, Cameroon has experienced a fairly steady decline in its domestic oil production. Although the country has been well explored, Cameroon's state oil company, the Societe Nationale des Hydrocarbures (SNH), believes that discovery and development of smaller fields is still possible. Renewed interest in oil investment has led to exploration in all three of Cameroon's major petroleum basins -- Logone Birni, Douala and Rio del Rey. SNH, which Cameroon has committed to privatize, engages in exploration and production in conjunction with several foreign oil companies, the largest being Total. In 2005, Total brought its Bakingili discovery online. The IOC also conducted exploratory drilling in three fields.

Licensing Rounds

In December 2004, the Chadian government awarded oil exploration permits to Canada's Energem Petroleum Corporation. The permits are for the Chari-Ouest basin, located near the Doba basin and Largeau basin, in central and northern Chad, respectively. In July 2006, Chad's Oil Minister stated that the Chadian government has a target of releasing 20 oil blocks for bid in 2007. Chad hopes the new exploration will lead to increased production capacity of 400,000 bbl/d by 2010.

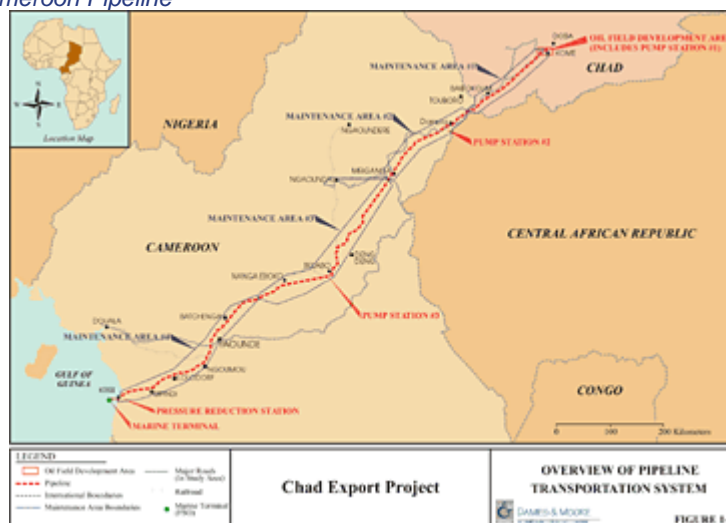
In 2005, SNH awarded Total the first production sharing contract (PSC) in Cameroon's history for the Dissoni permit in the Rio del Rey basin. In 2006, Total announced that it struck oil after drilling its first well on the block. In 2007, Cameroon has plans to open a licensing round which will offer six oil blocks for bid in the Rio del Rey region. The blocks will be awarded under PSCs. In the medium term, Cameroon is expected to open a licensing round for the Bakassi Peninsula, which Nigeria agreed to withdraw from in June 2006. Industry experts believe Bakassi acreage could contain significant amounts of oil reserves as it borders areas in the Gulf of Guinea that, in the past, have yielded numerous oil discoveries.

Pipelines

Since Chad is landlocked, the country's petroleum production depends on its ability to access international markets through the [Chad-Cameroon pipeline project](#), which was completed in October 2004. The pipeline runs 670 miles from Doba basin through Cameroon's Logone Birni

basin to the port of Kribi. Eighty-five percent of the pipeline is located in Cameroon. The pipeline's capacity is estimated at 225,000 bbl/d. Export facilities in Kribi include an onshore-pressure reducing station and a subsea pipeline connected to a floating production storage and offloading vessel (FPSO). The Tchad Oil Transport Company (TOTCO) and the Cameroon Oil Transport Company (COTCO) have respective ownership of each country's portion of the pipeline.

The Chad-Cameroon Pipeline



Source: Esso Exploration & Production Chad, Inc.

Developers spent \$3.5 billion to construct the Chad-Cameroon pipeline and export facilities. The World Bank's approval of the project, a prerequisite for a \$93 million loan to fund each country's government stake in the project, was essential in securing the support of outside countries. Chad was the first country to accept a conditional loan from the World Bank based on oil-revenue spending restrictions. The country's Petroleum Revenues Management Law (PRML), adopted in 1999 as a prerequisite for World Bank financing, outlined the planned allocation of new oil revenues. Eighty percent of Chad's oil revenues were to be allocated to health, education, rural development, environmental concerns, and other social services. The remaining 20 percent was to be divided between government expenditures (15 percent) and a supplement to the Doba region (5 percent). During the first ten years of petroleum exports, Chad is expected to receive \$3.5 billion in oil revenues, which will increase annual government revenues by more than 50 percent. Cameroon will earn an estimated 46 cents on every barrel of oil transported through the pipeline.

In January 2006, a dispute between the Chadian government and the World Bank occurred over the PRML. The Chadian government voted to allow additional oil revenues (surpassing the original 20 percent agreed to with the World Bank) to be allocated to the general budget. In response, the World Bank suspended loans to Chad and froze the country's oil revenue accounts. After months of stalemate, and threats by the Chadian Oil Ministry to shutdown oil production, the two sides reached a compromise in July, with Chad committing 70 percent of revenues towards development programs. Chad can use the remaining 30 percent for government expenditures.

Refining

Since Chad currently lacks domestic refining infrastructure, the country depends on petroleum products imported from Nigeria and Cameroon. However, Chad is often faced with shortages of refined products, due to domestic fuel difficulties in Nigeria and delivery problems from Cameroon's Limbe refinery. Local companies control 35 percent of petroleum distribution and marketing in Chad, followed by Libyan-owned Tamoil (25 percent), ExxonMobil and Total (20 percent each).

Cameroon's only refinery, operated by the Société Nationale de Raffinage (SONARA), is located in the port city of Limbe and has production capacity of 42,000 bbl/d. Cameroon has plans to invest \$383 million in refinery upgrades. The upgrades should increase SONARA's capacity and allow the refinery to handle more of the country's heavy crude oil. Currently, most of Cameroon's heavy crude oil is exported, while light oil processed in the refinery is imported from Nigeria and

Equatorial Guinea. Cameroon has also upgraded its port facilities, which now allow tankers with capacity as large as 90,000 deadweight tons (Aframax) to access the refinery. Total, ExxonMobil, and Chevron market refined products in Cameroon. The petroleum products are distributed domestically by the Cameroon Petroleum Depot Company (SCDP).

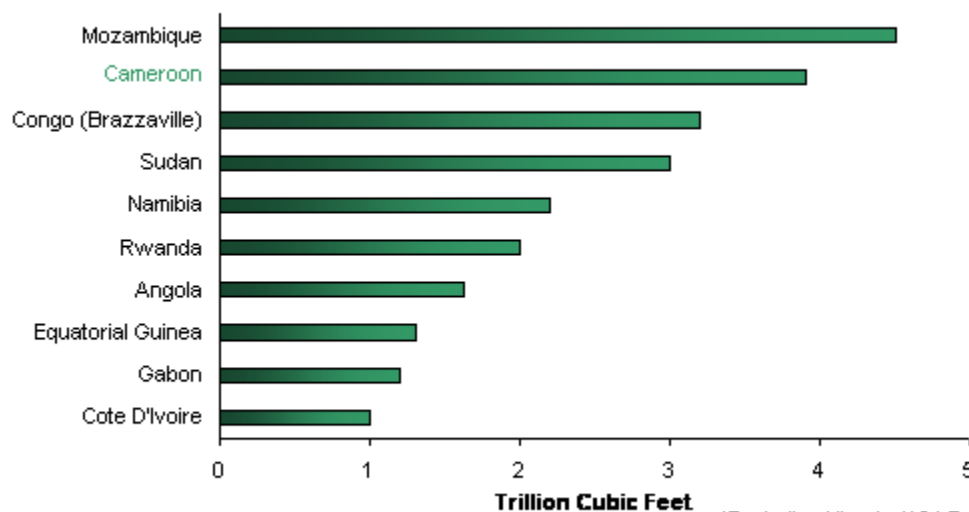
Natural Gas

Cameroon has proven natural gas reserves that it would like to develop, while Chad has no proven natural gas reserves.

According to *OGJ*, Cameroon has 3.9 trillion cubic feet (Tcf) of proven natural gas reserves. The majority of the reserves are located in the Rio del Rey, Douala and Kribi-Campo basins. In 2006, Perenco signed a 25-year contract with SNH to develop the offshore Sanaga Sud natural gas fields. The Sanaga Sud fields are located in the Douala/Kribi-Campo basins. Cameroon will use natural gas produced from the fields to generate power at the Kribi plant. Both Perenco and SNH will invest \$50 million in the project. Previously, in 2005, Syntroleum Corporation had studied the feasibility of developing gas-to-liquids (GTL) at Sanaga. However, it now appears that power generation project will preempt the GTL development. Currently, Cameroon utilizes natural gas to enhance oilfield performance and generate in-field electricity.

Chad has no proven natural gas reserves, and it neither produces natural gas nor consumes natural gas.

Top Sub-Saharan Africa* Proven Natural Gas Reserve Holders, 2006



Source: *Oil and Gas Journal*

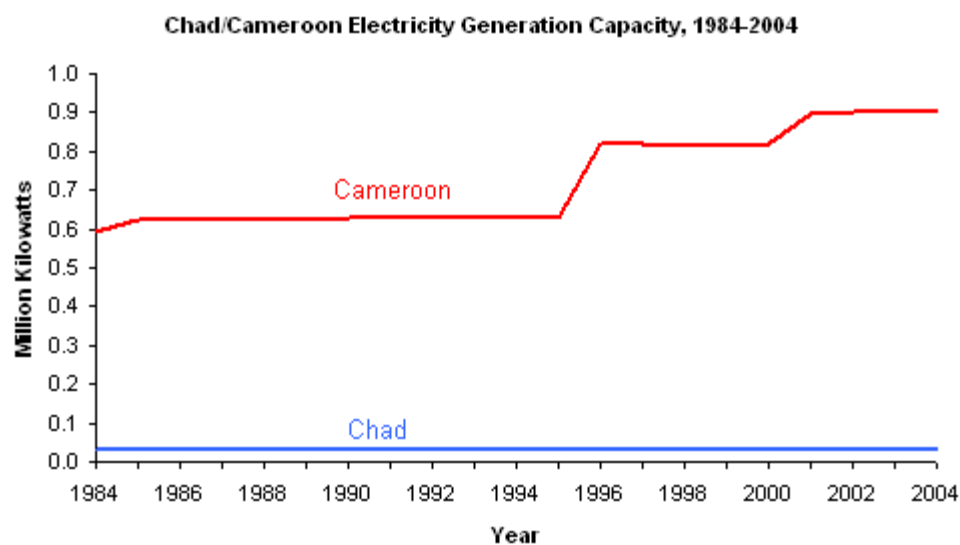
*Excluding Nigeria (184.7 Tcf) to maintain scale

Electricity

The majority of people in Chad and Cameroon use biomass as their primary energy source due in large part to a lack of electricity accessibility.

As of January 2004, Chad had 30 megawatts (MW) of installed electricity generating capacity, of which 100 percent was conventional thermal. In 2004, the country generated 0.09 billion kilowatthours (Bkwh) of electricity, while consuming 0.09 Bkwh. Generation and consumption of electricity in Chad have increased by 0.02 Bkwh, or 22 percent in the last 20 years. The small increase is due to a lack of investment in the electricity sector. Only a small portion (2 percent) of Chad's population has access to electricity. The vast majority of Chadians rely on biomass fuels, such as wood and animal dung.

In 2004, Cameroon had installed electricity generating capacity of 900 MW, of which 95 percent was hydroelectric and five percent was conventional thermal. Cameroon generated 3.92 Bkwh of electricity in 2004, while consuming 3.65 Bkwh.



Source: EIA, *International Energy Annual 2004*

Sector Organization

In 2001, US-based AES Corporation purchased a majority stake in Cameroon's state-run, Société Nationale d'Electricité (SONEL). Since then, AES-SONEL has managed Cameroon's power generation and distribution to around 500,000 people. Most of Cameroon's population does not have access to electricity, while those who do are often subject to brownouts, which ultimately forces AES-SONEL to implement load-shedding and power cuts to maintain electricity supplies. During 2003-2009, AES-SONEL plans to invest \$500 million to improve Cameroon's electrical infrastructure. The completion of an 85-MW, oil-fired plant at Limbe, in August 2004, marked the first step in the electricity network improvements. AES-SONEL has additional plans to build hydroelectric plants, as well as Cameroon's first natural gas-fired plant at Kribi, which will be supplied with natural gas from the Sanaga natural gas fields.

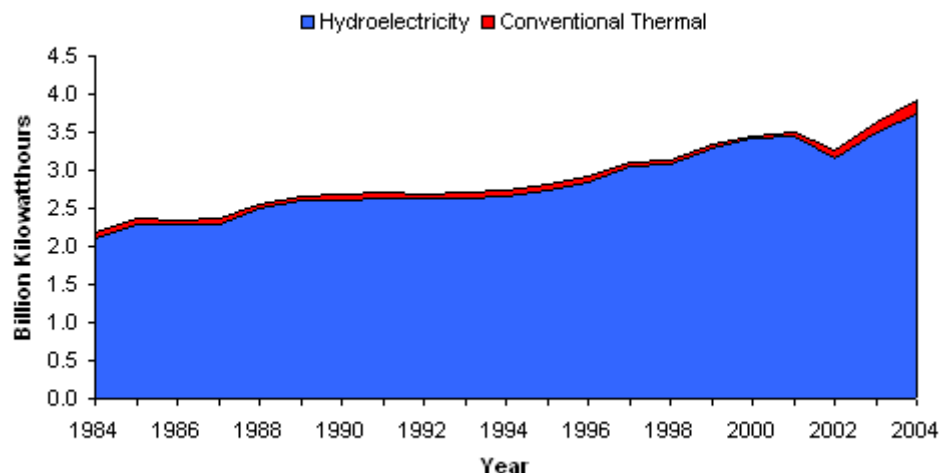
Generation and distribution of electricity in Chad are handled by the state-run Société Tchadienne D'eau et D'électricité (STEE).

Hydroelectricity

Cameroon's two main hydroelectric stations, Edea and Song-Loulou, are located on the Sanaga River, while the smaller Lagdo station is located near Garoua. In the future, successful development of Cameroon's hydroelectric potential could make the country a net electricity exporter. However, Cameroon's heavy reliance on hydroelectric power leaves its electricity sector extremely vulnerable to droughts. Cameroon relies on approximately 30 aging diesel power stations as back-up facilities, the largest of which are located in Garoua (20 MW), Douala (15 MW), and Yaounde (11 MW).

Cameroon continues to study the Lom Pangar Dam project. Construction on the dam has yet to occur as environmental impact studies are currently ongoing. The World Bank has voiced concern over the Lom Pangar project, especially since a reservoir created by the dam would submerge part of the Chad-Cameroon pipeline. AES-SONEL and Électricité de France (EDF) have also conducted studies concerning a Chad-Cameroon interconnector project. Power would be transported from the Lagdo Hydroelectric plant to N'Djamena, Chad.

Cameroon's Electricity Generation, by Source, 1994-2004



Source: EIA, *International Energy Annual 2004*

Conventional Thermal

Conventional thermal capacity comprises all of Chad's power supply. Four generators, which are fueled by oil imported from Nigeria and Cameroon, make up the country's only major power station (22 MW). The plant is located in N'Djamena, where approximately nine percent of households have electricity. The high cost of importing petroleum to fuel power generation makes Chad's electricity prices among the highest in the world. World Bank loans to develop the electricity sector have focused on sustainable energy (\$5.3 million) and equipment refurbishment (\$55 million).

Additional efforts to increase electricity generation in Chad have not made much progress. Attempts to utilize oil from the Sedigi field in electricity generation have been unsuccessful, partly due to a malfunctioning pipeline between Sedigi and N'Djamena. In the short-term, both Libya and France have provided generators to increase Chadian electricity supply, and Libya has offered to export electricity to the country.

Tables

Country Profile

Country	Chief of State	Location	Independence	Population 2006E	Capital City
Chad	President: Idriss Deby	Central Africa, south of Libya	August 11, 1960	9.9 million	N'Djamena
Cameroon	President: Paul Biya	Western Africa, between Equatorial Guinea/Nigeria	January 1, 1960	17.3 million	Yaounde

Sources: CIA World Factbook

Economic Profile

Country	Gross Domestic Product (GDP), 2005E (Billions of U.S. \$)	Real GDP Growth Rate, 2004E (percent)	Real GDP Growth Rate, 2005E (percent)	Per Capita GDP, 2005E	Inflation Rate, 2005
Chad	4.2	30.0	7.0	\$464	3.2
Cameroon	17.3	3.6	2.6	\$1,032	2.0

Sources: Global Insight

Energy Profile

Proven Reserves,			

Oil	2006E	Production, 2006E	Consumption 2006E	Net Exports 2006E
	Billion Barrels	Thousand Barrels per Day	Thousand Barrels per Day	Thousand Barrels per Day
Chad	1.5	170	2	168
Cameroon	0.4	90	23	67
Total	1.9	260	25	235
Natural Gas	Proven Reserves, 2006E	Production, 2004E	Consumption 2004E	Net Exports 2004E
	Billion Cubic Feet	Billion Cubic Feet	Billion Cubic Feet	Billion Cubic Feet
Chad	0	0	0	0
Cameroon	3,900	0	0	0
Total	3,900	0	0	0
Electricity	Installed Capacity, 2004E	Generation, 2004E		Consumption 2004E
	Gigawatts (GW)	Billion Kilowatthours (Bkwh)		
Chad	0.03	0.09		0.09
Cameroon	0.9	3.92		3.65
Total	0.93	4.01		3.74

Sources: EIA *International Energy Annual 2004, Short Term Energy Outlook, December 2006, Oil and Gas Journal*

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste 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 figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

Links

EIA Links

[EIA - Country Information on Cameroon](#)

[EIA - Country Information on Chad](#)

U.S. Government

[CIA World Factbook - Cameroon](#)

[CIA World Factbook - Chad](#)

[Library of Congress Country Studies - Chad](#)

[U.S. State Department Background Notes - Cameroon](#)

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

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

[U.S. State Department: Human Rights Report - Cameroon](#)

[U.S. State Department: Human Rights Report - Chad](#)

Associations and Institutions

[International Monetary Fund \(IMF\): Cameroon](#)

[International Monetary Fund \(IMF\): Chad](#)

[World Bank Chad-Cameroon Project](#)

[World Bank Country Brief: Cameroon](#)

[World Bank Country Brief: Chad](#)

Oil and Natural Gas

[Esso Exploration and Production Chad, Inc.](#)

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Reuters News Service
U.S. Energy Information Administration
World Bank
World Markets Analysis

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