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COUNTRY ANALYSIS BRIEFS

Yemen

Last Updated: October 2007

Background

Yemen is showing political stability but security remains a concern for foreign investment.

Yemen's economy is highly dependent on oil production, with the country's oil exports accounting for around 85 percent of export revenues and 33 percent of gross domestic product (GDP). In 2006, around 240,000 barrels per day (bbl/d) of oil was exported, primarily to Asian markets, including China, India, and Thailand. Recent high oil prices have increased Yemen's hard currency receipts and remittances from Yemeni workers in other Persian Gulf countries. Nonetheless, Yemen continues to be the Middle East's poorest county with a 2006 GDP per capita of US$ 880 according to the World Bank. Inflation was an average of 15.5 percent in 2006, partially resulting from the deteriorating value of the U.S. dollar.

High oil prices have also increased the country's expenditures on petroleum product subsidies, which cost hundreds of millions of dollars per year and constitute a heavy burden on the country's budget. IMF loan conditions have required the government to reduce subsidies for consumers on both oil products and electricity but these measures have proved to be unpopular. In 2005, fuel subsidy cuts resulted in riots.

Though the government of Yemen is fairly stable following the re-election of President Ali Abdullah Saleh in 2006, security remains a concern of foreign firms doing business in Yemen. Since the attacks on the USS Cole in 2000, several other foreign interests, specifically oil interests, have been attacked—these include the bombing of the Limburg oil tanker off the coast of Yemen, causing a massive fire and the leakage of 150,000 barrels of oil into the Gulf of Aden; an unsuccessful firing of a surface-to-air missile at an oil company helicopter in 2002; the 2006 foiled suicide bomb attempt against two oil facilities just prior to the elections; and the more recent attacks on oil company personnel near the border between Marib and Shabwa governorates. In addition, there have been reports of violence in rural areas, attacks on oil company personnel and kidnappings.

Political stability in Yemen is vitally important to regional oil producers, given that Yemen sits at the entrance to the Bab el Mandab strait, which links the Red Sea to the Indian Ocean. The strait is one of the most strategic shipping lanes in the world, with an estimated 3 million barrels per day (bbl/d) oil flow (please see our World Oil Transit Chokepoints report for more information). Disruption to shipping in the Bab el-Mandab could prevent tankers in the Persian Gulf and the Gulf of Aden from reaching the Suez Canal/Sumed pipeline complex, instead diverting them at great cost around the southern tip of Africa.

Oil

Yemen is actively attempting to attract foreign investment in order to reverse a recent decline in crude oil production.

Overview

Yemen is a small, non-OPEC oil producer. According to *Oil and Gas Journal* (OGJ), the country had proven crude oil reserves of 3 billion barrels in 2007, down from 4 billion in 2006. The oil is concentrated in five areas: Marib-Jawf - Block 18 (estimated 800 million barrels) in the north; Masila - Block 14 (estimated 800+ million barrels) in the south; East Shabwa - Block 10A (estimated 180 million barrels); Jannah - Block 5 (estimated 345 million barrels) and Iyad - Block 4 (estimated 135 million barrels) in central Yemen.

In 2006, Yemen's total oil production was around 380,000 bbl/d, down from 400,000 bbl/d in 2005. In part, according to Yemen's Petroleum Exploration and Production Authority (PEPA), this is due to declining production in Masila and Marib, the country's two largest fields. EIA's Short-Term Energy Outlook currently projects oil production to be 360,000 bbl/d for 2007 and 350,000 bbl/d in 2008.

Despite these declines, the national government estimates that the country holds around 9 billion barrels of oil reserves, and that as remaining blocks are explored, production will increase in the near future—particularly from offshore fields. The government hopes to boost output to 500,000 bbl/d in the next few years and to this end is carrying out an offshore licensing round in 2007.

Sector Organization

Unlike much of the petroleum production in the Middle East region, Yemeni production is heavily reliant on private foreign companies, with more than 20 foreign firms operating concessions. To date, Yemen is divided into 87 blocks, of which 12 actually produce oil. Twenty six of these blocks are at the exploratory phase, 7 blocks are pending approval and there are 34 open blocks. Yemen is currently tendering 11 offshore oil and gas exploration blocks located in the Gulf of Aden and Red Sea. Since the withdrawal of several major international oil companies in the mid-to-late 1990's because of economic and security issues, the government of Yemen has targeted smaller, independent oil companies to take part in Production Sharing Agreements (PSAs).

Yemen General Corporation for Oil & Gas/Mineral Resources is an affiliation of several state-owned subsidiaries including: the Yemen Oil Company (YOC); the Yemen Refining Company (YRC); PEPA and the General Department of Crude Oil Marketing (GDCOM). The company is responsible for managing the industry contracts and relations with operators and partners, as well as the government's share of crude exports. All branches report to the Ministry of Oil and Mineral Resources (MOMR). MOMR is responsible for oil policy but contracts with foreign oil companies still require parliamentary approval.

Exploration and Production

Oil production in Yemen is dominated by a few international companies including Canada's Nexen, Hunt Oil, Total, Occidental and DNO. Recent exploration activity in Yemen has concentrated on the areas bordering Saudi Arabia and the Alif area. Additional exploration activities for 2007 have targeted offshore blocks where little development has taken place.

US-based Hunt Oil was one of the largest producers in Yemen, with an estimated production of 110,000 bbl/d in 2004. However, on November 15, 2005 the Yemeni government replaced Hunt Oil as operator of Block 18 with Safer Exploration and Production Operations Company (SEPCO) of Yemen. In March 2005, Yemen's Parliament had decided to terminate Hunt's Block 18 concession when it expired in November 2005, despite an earlier agreement to extend it by 5 years. Hunt, which has operated in Yemen since 1984, reacted by filing for arbitration against the Yemeni government, while hinting that the company's participation in the Yemen Liquefied Natural Gas (LNG) project (see below) could be adversely impacted.

Block Name	Governorate	Operator	Area (Km²)	Start Year	Acum. Oil Production (MM BLL)	Avg. Daily Production (BOPD)	Number OF Fields
MARIB (18)	MARIB	Safer E&P Operation Co.	8,479	1986	984.15	66,645	14
MASILA (14)	HADHRAMOUT	Canadian Nexen	1,257	1993	936.81	134,161	16
East SHABWAH (10)	HADHRAMOUT	TOTAL E&P Yemen	964	1997	84.56	42,000	3
JANNAH (5)	SHABWAH	Jannah HUNT	280	1996	156.56	43,677	5
East SAAR (53)	HADHRAMOUT	DOVE Energy	474	2001	31.76	10,032	1
HWARIM (32)	HADHRAMOUT	DNO	592	2000	28.94	14,258	1
DAMIS (S1)	SHABWAH	OCCIDENTAL	1,156	2004	7.97	9,548	2
East AL-HAJR (51)	HADHRAMOUT	Canadian Nexen Yemen Ltd.	2,004	2004	17.64	19,129	2
South HWARIM(43)	HADHRAMOUT	DNO	2,026	2005	4.16	7,484	1
MALIK (9)	HADHRAMOUT	Calvally	3,530	2006	1.38	4,226	3
W. AYAD (4)	SHABWAH	VICOM	1,998	1987	9.35	129	3
Al-Uqlah (S2)	SHABWAH	OMV	2,100	2006	-	3,000	3

Source: Petroleum Exploration and Production Authority (PEPA)

Licensing Rounds

Despite declining output in mature fields, Yemen's immediate goal for the petroleum industry involves increasing oil production and oil exports. In order to realize this goal, oil exploration activity in Yemen has accelerated since 1997, after a downturn following Yemen's civil war. The MOMR recently announced the Fourth International Bid Round for Offshore Exploration and Production. This round is targeting eleven offshore blocks, namely: Kamaran (22), Hodaidah (23), South Balhaf (46), Midi (55), South Mosina'ah (61), Atab (62), South Nashtun (63), Ra's Mume (93), Abd Al Kuri (94), Samhah (95), and South Ra's Mume (96). Click here for a link to full concession map from Yemen's PEPA.

The MOMR places oil tenders up for bid on a semi-annual basis. Contracts typically involve a 2-3 year exploration period and a 20-year production concession. The Petroleum Exploration and Production Board of MOMR authorizes all licenses for exploration and production in Yemen, subject to ratification by parliament. All contracts are signed between a company or group of companies, as a contractor to the government of Yemen.

In early 2006, Yemen began looking at ways to revise the oil and natural gas licensing terms to increase transparency. One revision includes a seven-stage process for all exploration tenders, which will be undertaken by PEPA.

Pipelines

Yemen has an integrated network of pipelines to transport crude oil and natural gas produced in three central areas. This 560-mile network connects with four longer pipelines that transport oil to several major export terminals. The 260-mile Marib-Ras Isa pipeline is the longest of the domestic pipelines, transporting oil from the Marib basin to the Ra's Isa offshore export terminal on the Red Sea. The pipeline has a capacity of 225,000 bbl/d. The Masila-Shahir pipeline, capable of transporting 300,000 bbl/d, has the largest capacity of pipelines in Yemen. It runs approximately 90 miles from Masila to the export terminal at Ash Shahir. The Shabwa-Rudhum pipeline carries up to 135,000 bbl/d from the Eyad-Shabwa block to the Rudhum terminal on the Gulf of Aden. Jannah-Safir, built in 1996, carries 120,000 bbl/d to production facilities in the Marib region.

Downstream

Yemen currently has a crude refining capacity of 130,000 bbl/d from two aging refineries. The refinery in Aden, operated by Aden Refinery Company (ARC), has a capacity of between 90,000 and 120,000 bbl/d, while capacity at the Marib refinery, operated by Yemen Hunt Oil Company, is 10,000 bbl/d. The Aden refinery, which had a design capacity of 170,000 bbl/d, sustained significant damage during the country's 1994 civil war, but was later partially rebuilt.

The Yemeni government is planning to upgrade these refineries in the near future. Plans include upgrades of Aden refinery to 150,000 bbl/d while the Marib plant that currently processes Marib

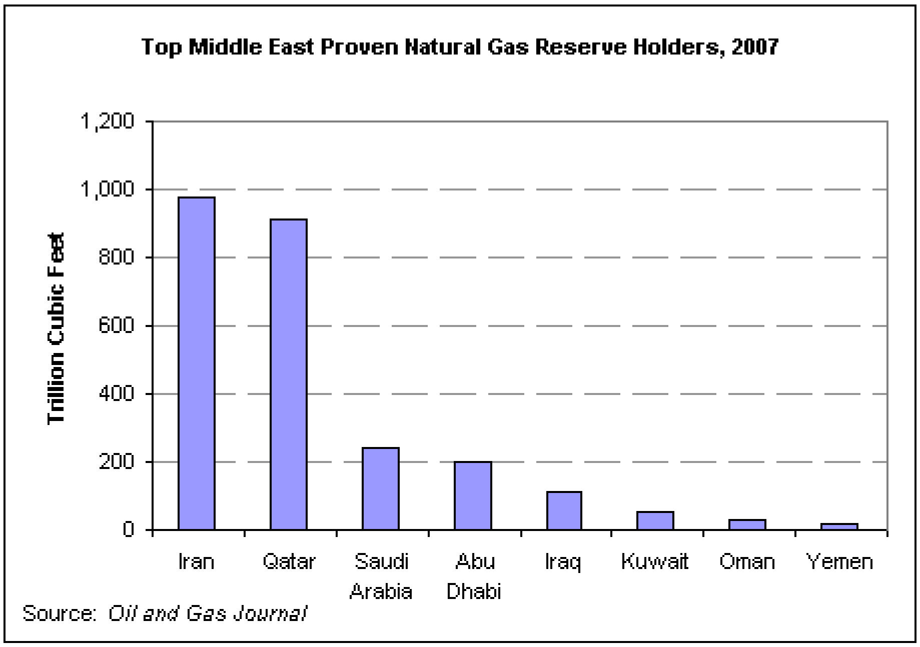
Light crude will be upgraded to also refine Masila crude and expanded to a capacity of 25,000 bbl/d.

An additional 50,000 bbl/d of refining capacity is expected to come online in 2010 from a joint venture announced between India's Reliance Industries and Hood Oil. The refinery is planned for Ras Issa on the Red Sea coast and will be designed for the Yemen market. Construction is planned to begin late 2007.

Natural Gas

Yemen LNG expects the first shipments of LNG to the United States and South Korea by early 2009.

According to *OGJ*, Yemen had 16.9 trillion cubic feet (Tcf) of proven natural gas reserves in 2007. The bulk of Yemen's natural gas reserves are concentrated in the Marib-Jawf fields, with 10.2 trillion cubic feet (Tcf) of proved reserves. Despite longstanding plans to develop an export-based natural gas industry, Yemen has yet to produce any natural gas. The sector has lagged due to weak investment and marketing prospects, but the push to develop the liquefied natural gas (LNG) sector is likely to increase opportunities for exploration and production (see below).



Liquefied Natural Gas

Of the 16.9 Tcf of proved natural gas reserves in Yemen, 9 Tcf have been earmarked for the Total-led Yemen LNG (YLNG) project. Despite problems negotiating with the government-owned Safer Exploration and Production for the supply of natural gas from its Marib fields and other delays, work is currently underway at YLNG's gas liquefaction plant, located at the port of Balhaf near Aden on Yemen's southern coast.

The facility is expected to produce 6.7 million tons per year (900 million cubic feet per day) of LNG. YLNG is also building a 20-mile pipeline connecting the gas processing facilities in Marib's Block 18 to the liquefaction facilities. Train 1 was expected to come online by December 2008, but delays have pushed back the start up into early 2009. Train 2 is expected to come online by May 2009. The plant plans to export approximately two-thirds of its production to the U.S. and the remainder to Asia.

The Yemen Gas Company holds a 23 percent share in the YLNG project and the sector is regulated by the MOMR. The government also has plans to develop the gas resources for domestic industry and 1 Tcf of the country's proved reserves have been allocated for domestic usage (see Electricity) but the downstream sector is limited and there is no established legal framework in place.

Electricity

Yemen is attempting to meet its rapidly

Overview

Yemen had 1 gigawatt of installed electric generating capacity in 2005. Conventional thermal

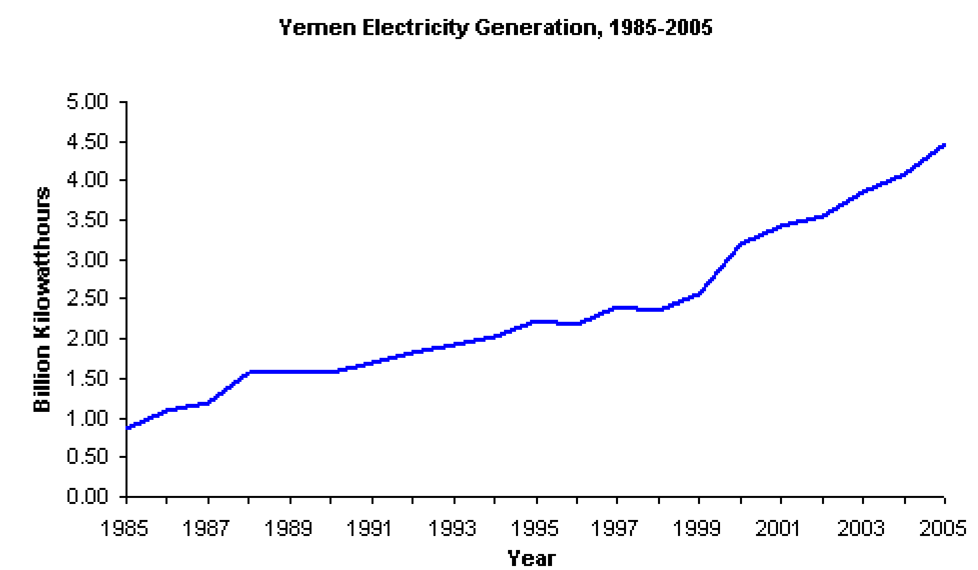
growing power needs while reducing its dependence on oil for electricity generation.

electricity comprises all of Yemen’s electricity generation, which, in 2005, Yemen generated 4.1 billion kilowatthours (Bkwh) of electricity while consuming 3.4 Bkwh. According to Yemen's Public Electricity Corporation (PEC), the country's electricity distribution network is inadequate.

Electricity shortages are seen as limiting economic growth in Yemen. Currently, it is estimated that only 35 percent of the urban population and 5 percent of rural households have access to electricity from the national power grid; only 42 percent of the total population has access to electricity. Even for those connected to the grid, electricity supply is intermittent, with regular blackouts. The government has reached out to international development agencies for new electricity projects and there has been some upgrade and maintenance carried out. However, the demand is still much higher than available capacity.

Under conditions set by the IMF in its lending program, the government has been required to reduce electricity subsidies that are estimated to be around US$50 million per year. Government attempts to raise tariffs have been unpopular and have led to some degree of unrest.

Yemen’s government plans to allocate US$1 billion towards the improvement of its power supply. The Ministry of Electricity and Water (MEW) has plans to increase the country's power generating capacity an additional 1,400 megawatts (MW) by 2010. The government is taking steps to boost generation mainly from gas-fired power stations, but also renewable resources, and nuclear energy.



Source: EIA *International Energy Annual*

Long term development of Yemen's power sector includes a reduction in oil dependence, thus maximizing oil for export. Yemen's plans include the construction of several natural gas-fired power stations, expansion of the national power grid, and the introduction of renewables, such as solar energy, to rural areas. In the immediate term, the government is promoting large-scale IPPs in order to increase generation capacity over the next few years. However, achieving this goal may prove difficult.

Sector Organization

Yemen's state-owned PEC, under the Ministry of Electricity and Water, operates an estimated 80 percent of the country's generating capacity as well as the national power grid. The remainder of Yemen's electricity is generated by small, off-grid suppliers and privately-owned generators in rural areas. The PEC distributes electricity in the national grid through two 132Kv transmission systems, one serving the northern region of Sanaa-Hodeidah-Aden, the other serving Mukalla and Hadramout.

Over the past decade, the government has taken steps toward alleviating Yemen's electricity shortage, including reform, expansion and integration of the country's power sector through the privatization of all domestic generators (5-20 MW) small-scale privatization and independent (private) power projects (IPPs). Plans to privatize the power stations have been slow in implementation. Currently, Yemen's two largest power plants are the 165-MW power station at Ra's Kanatib, near Al Hodeidah, and the 160-MW station in Al Mukha, south of Al Hodeidah.

Recent Developments

In March 2005, Siemens signed a contract to build a 340-MW gas-fired power plant in Yemen for $160 million. The plant will be fueled by natural gas from the Marib field, and is to begin commercial operations in 2008. Ultimately, a total of 1,000 MW in generating capacity is to be built at the Marib site.

Another possible gas-fired power plant is planned for the undeveloped Safar fields. Funding is to come from the Arab Fund for Economic and Social Development, the Saudi Development Fund, and the Yemeni government. The plant is to have a generating capacity of 400 MW and transmission line connecting it to the national grid.

Yemen has recently signed an agreement with the Powered Corporation of Houston to build five nuclear reactors that will generate 5,000 megawatts of energy; construction is scheduled to begin in early 2009. The International Atomic Energy Agency will provide technical help for the use of nuclear energy for producing electricity and water desalting.

To date, much of Yemen's electricity infrastructure improvements have been funded by multilateral development organizations. In 2006, the World Bank approved a $50 million loan to help finance the “Power Sector Project”. The project’s objectives include relieving power constraints, enhancing electricity supply efficiency and strengthening corporate governance in the electricity sector. In 1998, the World Bank and the International Development Foundation (IDF) granted Yemen a $33 million loan for the "Sanaa Emergency Power Project," an upgrade of the Dhaban power plant to 50-MW total capacity (completed in June 2004).The Kuwait-based Arab Fund for Economic & Social Development (AFESD) provided the initial $54 million of the $64 million required for the national grid linkage (completed in July 1997). The AFESD and the Saudi Fund for Development (SFD) are also major backers of the first phase of the Marib power plant project.

Profile

Energy Overview

Proven Oil Reserves (January 1, 2007 – O&G Journal)	3 billion barrels
Oil Production (2006E)	380 thousand barrels per day
Oil Consumption (2006E)	140 thousand barrels per day
Proven Natural Gas Reserves (January 1, 2007-O&G Journal)	16.9 trillion cubic feet
Natural Gas Production (2006E)	None
Natural Gas Consumption (2006E)	None
Recoverable Coal Reserves (2005E)	None
Coal Production (2006E)	None
Coal Consumption (2006E)	None
Electricity Installed Capacity (2005)	1 gigawatt

Electricity Production (2005E)	4.08 billion kilowatt hours
Electricity Consumption (2005)	3.38 billion kilowatt hours
Total Energy Consumption (2005)	0.256 quadrillion Btus*, of which Oil (100%), Natural Gas (0%), Coal (0%), Nuclear (0%), Hydroelectricity (0%), Other Renewables (0%)
Total Per Capita Energy Consumption (2005)	12.4 million Btus
Energy Intensity (2005)	8,049 Btu per US$2000-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2005)	17.5 million metric tons of carbon, of which: Oil (100%), Natural Gas (0%), Coal (0%)
Per-Capita, Energy-Related Carbon Dioxide Emissions (2005)	0.83 metric tons
Carbon Dioxide Intensity (2005)	0.54 Metric tons per thousand US$2000-PPP**

Oil and Gas Industry

Organization	Yemen General Corporation for Oil & Gas/Mineral Resources – loose affiliation of several subsidiaries, including: Yemen Petroleum Company (YPC) – manages a nominal government interest in production (PSAs), handles marketing; General Corporation for Oil and Mineral Resources (GCOMR) – investment and holding company; Yemen Refining Company (YRC) – manages refining industry; General Department of Crude Oil Marketing (GDCOM) – handles government shares of exports; The Petroleum Exploration and Production Authority (PEPA) – contract negotiations
Major Oil Producing Blocks	Masila (including the Camaal and Heijah fields), Marib al Jawf (including Alif, Asaad Al-Kamil, Azal, and Wasi Bana fields), Jannah, East Sarr, East Shabwa, Howarin (including the Tasour field), and Iyad
Foreign Company Involvement	Calvalley, Cepsa, Dove Energy, DNO, ExxonMobil, Hunt Oil, Korea National Oil Company, Kufpec, Nexen, Occidental, Oil Search, OMV, PanCanadian, SK Corporation, Sinopec, Soco, Total, Vintage Oil
Natural Gas Reserves	Marib al Jawf, Jannah, East Shabwa, Iyad
Major Pipelines	Marib-Ra's Isa Pipeline, Masila-Shahir, Shabwa-Rudhum Pipeline (pipeline linking the Iyad – Shabwa fields to the Rudhum terminal on the Gulf of Aden at Hisn an Nushaymah), Jannah-Safir (pipeline from Jannah to production facilities in Safir, Marib),, East Shabwa-Masila (pipeline from East Shabwa to Masila)
Major Refineries (capacity, bbl/d)	Aden (120,000), Marib (10,000)
Major Oil/Gas Ports	Aden, Al Hodeidah, Bir Ali, Ash Shihr/Al Mukalla, Mocha, Nishtun, As Salif-Ra's (offshore)

* 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

U.S. Government
CIA World Factbook - Yemen

General Information
AME Info Middle East Business Information

Yemen Gateway
The Yemen Times

Government Agencies
Central Bank of Yemen
Government of Yemen
Petroleum Exploration and Production Authority of Yemen (PEPA)

Oil and Natural Gas
Oil Exploration Blocks in Yemen
Petroleum Exploration and Production Authority of Yemen (PEPA)
Safer Exploration and Production Operations Company (SEPCO)

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