



SALIENT FEATURES OF YEMEN AND 400 MW MARIB PHASE-II GAS TURBINE PROJECT

Country Overview

- The reputed home of the Queen of Sheba, Yemen has been at the crossroads of Africa, the Middle East and Asia for thousands of years thanks to its position on the ancient spice routes. The modern Republic of Yemen was born in 1990 when traditionalist North Yemen and Marxist South Yemen merged after years of border wars and skirmishes. But the peace broke down in 1994 and a short civil war ended in defeat for separatist southerners and the survival of the unified Yemen.
- Since unification Yemen has been modernizing and opening up to the world, but it still maintains much of its tribal character and old ways. Tensions persist between the north and the south; some southerners say the northern part of the state is economically privileged.
- Natural resources : petroleum, fish, rock salt, marble; small deposits of coal, gold, lead, nickel, and copper; fertile soil in west.
- Oil –proved reserves : 3 billion bbl (1 January 2008 est.)
- Natural Gas –proved reserves : 478.5 billion cu m (1 January 2008 est.)

GEOGRAPHY

Location	Yemen is a Arab country located on the Arabian Peninsula in Southwest Asia. It is bordered by Saudi Arabia to the North, the Red Sea to the West, the Arabian Sea and Gulf of Aden to the South, and Oman to the east.
Geographical	15 00 N, 48 00 E
Coordinators	
Area	<i>total:</i> 527,970 sq km <i>land:</i> 527,970 sq km <i>water:</i> 0 sq km
Land boundaries	<i>total:</i> 1,746 km <i>border countries:</i> Oman 288 km, Saudi Arabia 1,458 km
Coastline	1,906 km
Maritime claims	territorial sea: 12 nm contiguous zone: 24 nm



Exclusive economy zones: 200nm
continental shelf: 200 nm or to the edge of the continental margin

Climate	mostly desert; hot and humid along west coast; temperate in western mountains affected by seasonal monsoon; extraordinarily hot, dry, harsh desert in east
Terrain	narrow coastal plain backed by flat-topped hills and rugged mountains; dissected upland desert plains in center slope into the desert interior of the Arabian Peninsula
Elevation extremes	<i>lowest point:</i> Arabian Sea 0 m <i>highest point:</i> Jabal an Nabi Shu'ayb 3,760 m
Natural resources	petroleum, fish, rock salt, marble; small deposits of coal, gold, lead, nickel, and copper; fertile soil in west.
Land use	<i>arable land:</i> 2.91% <i>permanent crops:</i> 0.25% <i>other:</i> 96.84% (2005))
Natural hazards	sandstorms and dust storms in summer
Environment-	
Current issues	limited natural fresh water resources; inadequate supplies of potable water; overgrazing; soil erosion; desertification

Environment-

International agreement	<i>party to:</i> Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Ozone Layer Protection <i>signed, but not ratified:</i> none of the selected agreements
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Geographic Note strategic location on Bab el Mandeb, the strait linking the Red Sea and the Gulf of Aden, one of world's most active



	shipping lanes
Population	23,013,376 (July 2008 est.)
Languages	Arabic
Government type	republic
Capital	sana'a
Legal system	based on Islamic law, Turkish law, English common law, and local tribal customary law; has not accepted compulsory ICJ jurisdiction
Judicial branch	Supreme Court
GDP- growth rate	2.8% (2007 est.)
GDP- per capita income	\$2,500 (2007 est.)
Labor force-	most people are employed in agriculture and herding;
Investment	25 % of GDP (2007 est.)
Inflation(rate)	10 %
Export partners	China 23.3%, India 20.4%, Thailand 19.1%, Japan 7.2%, UAE 5%, US 4.2% (2007)
Import partners	UAE 15.1%, China 11.6%, US 7.8%, Saudi Arabia 7.1%, Kuwait 5.3%, Germany 4.8% (2007)
Reserve of	\$7.76 billion (31 December 2007 est.)
Foreign exchange and gold	
Debt-External	\$6.044 billion (31 December 2007 est.)



Currency	Yemeni rial (YER)
Exchange rate	Yemeni rials (YER) per US dollar - 199.14 (2007), 197.18 (2006), 192.67 (2005), 184.78 (2004), 183.45 (2003)
Pipeline	gas 71 km; liquid petroleum gas 22 km; oil 1,309 km (2007)
Roadways	<i>total</i> : 71,300 km <i>paved</i> : 6,200 km <i>unpaved</i> : 65,100 km (2005)
Port and terminals	Aden, Hudaydah, Mukalla

Economy

- Yemen, one of the poorest countries in the Arab world, reported average annual growth in the range of 3-4% from 2000 through 2007. Its economic fortunes depend mostly on declining oil resources, but the country is trying to diversify its earnings. In 2006 Yemen began an economic reform program designed to bolster non-oil sectors of the economy and foreign investment. As a result of the program, international donors pledged about \$5 billion for development projects. In addition, Yemen has made some progress on reforms over the last year that will likely encourage foreign investment. Oil revenues probably increased in 2007 as a result of higher prices.

Power

- The present installed capacity in Yemen is around 1000 MW, the majority of which are through DG sets that are not connected to national power grid. 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. The Government of Yemen has reached out to International development agencies for funding of new electricity projects and plans are expected to get USD 1 billion towards the improvement of the power supply to their consumers. It plans to augment the country's present power generating capacity by 1400 MW by 2010 which includes a contract with Siemens for building a 340 MW gas fired power plant at Marib. A total of 1000 MW generating capacity is to be built at the Marib site itself by Public Electricity Corporation, Ministry of Electricity and Energy, Republic of Yemen..

Project Site



Marib is located in the east of Yemen. High mountains, beautiful valleys, plains and desert are all nearby. The most important valley in Marib is Wadi Dhanah or Shebe Valley', in the banks of which flourished the Sabean dynasty, the foundation of Yemeni history. Marib is the most famous ancient city in Yemen. The old city of Marib lies in the Sabean plains on the outskirts of the east Yemen desert Mafazet Saihad'. It's strategic position lends itself to its important role in history, as it controlled the ancient incense routs. It was a meeting point for caravans coming from the Qana port on the Arabian Sea coast, crossing the Wadi Hadhramout.

Project

400 MW + 20%/- 5% Marib Phase-II Gas Turbine Power Project with 4 nos (it may be 3 or 5 also depending upon the equipment offered by bidders) of Gas Turbine Generators in simple cycle mode to be installed adjacent to phase-I. Funding for Part of project is by Arab funding agencies. Remaining portion is by Saudi Fund for Development Riyadh, Kingdom of Saudi Arabia , and Government of Republic of Yemen. M/s Fichtner Germany are the consultants to the project. PEC is presently in the process of constructing 300 MW Marib Gas Turbine Power Plant comprising of 3 Nos of Siemens Gas Turbine model V94.2 in simple cycle mode alongwith complete Balance of Plant on EPC basis.

Primary fuel is natural gas which is available at plant boundary at 60-80 bar pressure. The incoming fuel gas pipeline has been sized to meet the ultimate project power output of 1000 MW. Distillate oil is the standby fuel. Completion period is 33 months from the date of notice to proceed. The plant has further provision of installation of 3 nos of gas turbines having total capacity of 300 MW+/- 20% which will be implemented in future as phase-III. Space provision shall be kept for this and subsequent conversion to combined cycle plant.

All construction equipment required to perform the works pursuant to the contract shall be exempted from duties or impositions imposed under the laws of Republic of Yemen provided that such items are either consumed in performance, reexported or transferred to owner at the conclusion of the contract.

Custom duties for importation of plant, equipment including spare parts and consumables have to be paid by contractor @ 5% according to Yemeni laws.

BHEL Scope

400 MW Power Station phase-II and Housing Complex of Marib Gas Power Station including, but not limited to, Designing, engineering, furnishing, fabricating, manufacturing, inspection, insurance, export, packing, delivering, storing, installing, testing, training, start-up, and commissioning of gas turbine generators, transformers, fuel systems and all balance of plant systems including all required foundation building, all civil and construction works to result in a fully functional gas turbine simple cycle power generating station in accordance with the issued tender document.