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ENERGY INVESTMENT AND BUSINESS CLIMATE REPORT FOR OBSERVER COUNTRIES

THE REPUBLIC OF YEMEN

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The Energy Charter Treaty is a multilateral international treaty concluded in 1994 currently in force among 54 contracting parties from Europe, Central Asia, South Caucasus and East Asia. The Treaty offers a multilateral cooperation platform for the promotion and protection of energy investments. **The Energy Charter Secretariat** offers its technical assistance to contracting parties, observer and third states by means of energy investment country reports, policy recommendations, model agreements, regional cooperation, seminars and training programs, private sector dialogue. On 21 May 2015, the **International Energy Charter** was adopted in The Hague by more than 75 countries from Africa, Middle East, Latin America, South and East Asia, besides China and the United States of America to share the political objectives development of trade and investment in energy, cooperation, energy efficiency and environmental protection.

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List of Acronyms

Bbl/d	Barrels/day
Bcf	Billion Cubic Feet
BCM	Billion Cubic Meters
CBY	Central Bank of Yemen
CSO	Yemen Central Statistic Organization
CSP	Concentrated Solar Power
CSR	Corporate social Responsibility
GATT	General Agreements on Tariffs and Trade
GCOG	General Corporation for Oil and Gas
GDP	General Domestic Product
GIA	General Investment Authority
GST	General Sales Tax
GW	Giga Watt
KW	Kilowatt
KWh	Kilowatt Hour
LPG	Liquefied Petroleum Gas
MEES	Middle East Economic Survey
MJ	Mega Joules
MOM	Ministry of Oil and Minerals
MW	Mega Watt
NGT	Natural Gas Turbines
OPIC	Overseas Private Investment Corporation
PCWS	Public Corporation of Water and Sanitation
PEC	Public Electricity Corporation
PEPA	Petroleum Exploration and Production Authority
PSAs	Production Sharing Agreements
REA	Rural Electrification Authority
RESAP	Renewable Energy Strategy and Action Plan
Tcf	Trillion Cubic Feet
TPO	Technical Privatization Office
TRIPS	Trade Related Aspects of Intellectual Property Rights

UNCITRAL	United Nations Commission on International Trade Law
USD	United States Dollars
WTO	World Trade Organization
YER	Yemeni Rials
YOC	Yemen Oil Company
YGC	Yemen Gas Company
YLNG	Yemen LNG Company
YRC	Yemen Refining Company

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1.0 General Policy Issues of Yemen

1.1 Yemen Demography

The Republic of Yemen, commonly known as Yemen Listen/ˈjɛmən/, is a country located in Western Asia, occupying the southwestern to southern end of the Arabian Peninsula. It is bordered by Saudi Arabia to the north, the Red Sea to the west, the Gulf of Aden and Arabian Sea to the south, and Oman to the east. Its capital and largest city is Sana'a. Yemen's territory includes over 200 islands, the largest of which is Socotra, about 354 km to the south of mainland Yemen. Yemen is the second largest country in the peninsula, occupying 527,970 km².

The population size of Yemen increased from 7.9 million in 1980 to approximately 25.5 million in 2015 with the present ratio of 75% considered as rural and to 35% urban population. It is expected that the population will keep on increasing to reach approximately 42.5 million in 2050[1].

The growth rate of the population in Yemen increased from 3.99 per cent during the period 1980-1985 to 4.84 per cent for the period 1990-1995. It then started to decrease and got to an average 2.30 per cent in 2005-2015, although the Yemen Central Statistic Organization (CSO) quote the population growth for the year 2013 to be around 3.0%. It is projected that the growth rate of the Yemeni population will continue to decrease and will reach 0.82 per cent for the period 2045- 2050[1].

1.2 Macro-economic Development

Efforts by the Yemen Government were ongoing to develop the monetary policy and monetary system to maintain exchange rate stability and control inflation. The Yemeni Rial (YER) had depreciated by less than 2 per cent against the US dollar in 2006. The local currency had been relatively stable over the period 2007 and 2009, before depreciating by around 10 per cent against the US dollar in the first quarter of 2010. As of mid January 2010, the Yemeni Riyal was trading at YER 219.59/USD 1, decreasing slightly to reach YER

[1] Source: United Nations, World Population Prospects: The 2012 Revision, Available on: http://esa.un.org/unpd/wpp/unpp/panel_indicators.htm * Projections (medium variant)

214.9/USD 1 in the year 2014, but inflation has increase gradually from 8.8% in 2009 to reach 17.5% by the year 2013.

The CBY intervenes regularly in the currency market, selling off U.S. dollar reserves to bolster the local currency. In 2008, the CBY sold USD 1.1 billion to control currency depreciation, an increase from the USD 1.077 billion sold in 2007. By the end of 2009, the CBY had intervened at least seven times, injecting approximately USD 1.24 billion into the exchange market.

Most foreign currencies, especially U.S. dollars, are readily available and trade freely at market rates. Investors may transfer funds in hard currency from abroad to Yemen for the purpose of investment and may re export-invested capital, whether in kind or in cash, upon liquidation or project disposal. Net profits resulting from investment of foreign funds may be transferred freely outside of Yemen. Cash transfers are limited to USD 10,000. Transfers above that amount must be approved by the

Interest rates had been relatively stable over the same period with benchmark interest earned on deposits currently pegged at 20 per cent and lending rates hovering around 22 per cent[1].

The GDP had grown from YER 1,662 billion in 2001 to YER 5,374 billion in 2009 (about $24.5 billion at 2009 exchange rate) and presently (as of 2014) it stands at $43.23 billion. The non-oil sector had been expanding steadily during the period, at a pace of 4.5 to 5.5 per cent per year (in constant prices). Government revenue, including aid and grants, had increased from YER 553.1 billion to YER 2,109 billion (about $9.59 billion at 2008 exchange rate) between 2001 and 2008. Expenditure had kept pace with revenue growth and had expanded from YER 506.7 billion to nearly YER 2,342 billion (about $10.7 billion at 2008 exchange rate) over the same period[2].

Yemen is one of the poorest countries in the Arab world. Poverty, already increasing prior to the latest political crisis, has risen further from 42% of the population in 2009, to 54.5% in 2012. Yemen has one of the highest population growth rates in the world with about 3.0% growth according to Yemen Central Statistical Organization (CSO) for 2013.

In August 2014, Yemen had launched an ambitious economic reform program focused on removal of fuel subsidies, advancing civil service reforms, and enhancing the country's social safety net. Economic prospects will depend on progress on the political and security fronts and implementation of these critical reforms.

1.3 Macro-economics in Figures[2]

GDP (Purchasing Power) (estimate):	$103.6 billion (2014)
GDP (Official Exchange Rates) (estimate):	$43.23 billion (2014)
GDP (Real Growth Rate) (estimate):	4.8% (2013)
GDP (Per Capita) (estimate):	$1,800 (2014)
Gross National Saving (estimate):	6.3% of GDP (2014)

GDP – Composition by End Use (2014 estimate):

- Household consumption: 70.6%
- Government consumption: 15.7%
- Investment in fixed capital: 19.6%
- Investment in inventories: 4%
- Exports of goods and services: 18.5%
- Imports of goods and services: -28.5%

GDP – Composition by Sector of Origin (2014 estimate):

- Agriculture: 9.2%
- Industry: 26.8%
- Services: 64%

Reserves of Foreign Exchange and Gold:	$4.688 billion (31 December 2014 est.)
External Debts:	$8.002 billion (31 December 2014 est.)
Public Debts:	51% of GDP (2014 est.)
Budget:	revenues: $10.26 billion
Taxes and Other Revenues:	22.6% of GDP (2014 est.)

1.4 Industry

Yemen Industries are mainly Crude Oil Production and Petroleum Refining, Small-Scale Production of Cotton Textiles, Leather Goods; Food Processing; Handicrafts; Aluminum Products; Cement; Commercial Ship Repair; Natural Gas Production.

[2] CIA Fact book, www.cia.gov/library/publications/the-world-factbook/geos/ym.html

1.5 Agriculture – Products

The main agricultural products of Yemen are Grain, Fruits, Vegetables, Pulses, Qat, Coffee, Cotton; Dairy Products, Livestock (Sheep, Goats, Cattle, Camels), Poultry and Fisheries.

1.6 Energy Policy

Yemeni government policy on renewable energy is to optimize the use of energy from domestic sources, increase renewable energy in electricity generation to 15 to 20 percent by 2025, and promote sustainable development within the electricity sector.

In March 2009, a new Electricity Law, which sets out to improve the management of the power sector and to facilitate investment by private capital, was issued. One of the stated objectives of the law is to encourage environmentally friendly power production including renewable energy and relying on it as a sustainable source of energy.

The 2009 Electricity Law tasks the Ministry of Electricity and Energy to encourage and develop the use of renewable energy resources in the generation of electrical power.

In addition, the 2009 Electricity Law creates a regulatory office to be known as the Electricity Sector Regulatory Board as well as a new authority called the Rural Electrification Authority.

1.7 Institutional Structure and Responsibilities for Energy Policy

1.7.1 Institutional Structure of the Electricity Sub-Sector

The electricity sector in Yemen is supervised by the Ministry of Electricity and Energy, which is responsible for the electricity sector, as well as electricity policy, the issue and licenses and almost all decisions of consequence except tariffs.

The Public Electricity Corporation (PEC), a State owned enterprise, takes care of most of the electricity generation, transmission and distribution. The remaining power generation is produced mainly by a British company that sells electricity at high prices to PEC.

The Electricity Sector Regulatory Board is provided under 2009 Electricity Law to set the tariffs for businesses across the electric system and monitors the compliance of the industry with regulations. The authority has not been established yet and a management committee for such a body was designated but has yet to begin work.

The Rural Electrification Authority (REA) established under the 2009 Electricity Law under the coordination of a council headed by the Minister for Electricity.

1.7.2 Institutional Structure of the Oil Sub-Sector

The Ministry of Oil and Mineral Resources (*MOM*)[3] is the over-arching governmental body in the oil and natural gas sector. The MOM is responsible for directing all investment in the sector, as well as regulation for the sector.

Yemen's Ministry of Oil and Minerals oversees the country's oil and natural gas sectors. The ministry sets oil and gas policies and manages relations with foreign operators, but any contracts with foreign companies also require parliamentary approval. The national oil company, Yemen General Corporation for Oil, Gas, and Mineral Resources, guides a number of state owned subsidiaries that handle most day-to-day operations and deals with energy sector revenues.

The Petroleum Exploration and Production Authority (PEPA) are to manage, construct and develop all oil concession areas under the direct supervision of the Minister.

The General Corporation for Oil, Gas and Mineral Resources is responsible for managing industry contracts and relations with operators and partners, as well as the government's share of crude exports.

General Corporation for Oil, Gas and Mineral Resources groups together several state-owned subsidiaries including:

Yemen Oil Company (YOC)	
Aden Refinery Company and Production Authority	Oversees operations at the Aden refinery, including transport to international destinations
Petroleum Exploration and Production Authority	Manages petroleum exploration and production; Oversees licensing rounds and contracts with foreign investors
Safer E&P Operations Company	Upstream operator; Second largest producer in Yemen
Yemen Gas Company	Responsible for sales, marketing, and supply of liquefied petroleum gases domestically
Yemen Investments Company for Oil and Minerals	Upstream operator; Focused on Jannah and West Ayad areas
Yemen Petroleum Products Distribution company	Markets and distributes petroleum products in the local market
Yemen Refining Company	Oversees domestic refining operations

Sources: Yemen Ministry of Oil and Minerals, Yemen General Corporation for Oil, Gas, and Minerals, company websites

[3] (MOM, www.mom.gov.ye/).

1.7.3 Institutional Framework for Energy Efficiency

Energy efficiency matters are handled by the Renewable Energy Department in the Ministry of Electricity and Energy.

The Renewable Energy Department was established in 2002 to promote and support renewable energy projects.21 In 2009, it was expanded and reorganized into separate departments for solar and wind energy. The population of Yemen is largely decentralized, ruling out central power grids to cover the whole country but making for an appropriate environment in which to introduce small scale renewable energy applications, energy efficiency measures and a home-appliance labeling system.

1.8 Energy Industry Regulations

In March 2009, a new Electricity Law, which sets out to improve the management of the power sector and to facilitate investment by private capital, was issued. One of the stated objectives of the law is to encourage environmentally friendly power production including renewable energy and relying on it as a sustainable source of energy. It tasks the Ministry of Electricity and Energy to encourage and develop the use of renewable energy resources in the generation of electrical power. In addition, the law creates a regulatory office to be known as the Electricity Sector Regulatory Board as well as a new authority called the Rural Electrification Authority.

Yemeni government policy on renewable energy is to optimize the use of energy from domestic sources, increase renewable energy in electricity generation to 15 to 20 percent by 2025, and promote sustainable development within the electricity sector. To this effect Yemen has embarked setting up a Wind Energy Farm Project of 60MW to be established in Mocha and connect to the main grid by the end of 2016.

A power sector reform strategy, approved by GOY in 2001 (Cabinet Resolution No. 112), consisting of the following:

- Separation of generation and transmission from distribution (G+T, D) initially followed eventually by full functional separation into generation, transmission and distribution. This is designed to achieve increased commercial focus, accountability, and clear definition and lines of authority and responsibilities.
- Creation of an independent regulatory agency.
- Introduction of competition in generation initially via the procurement of new generation capacity through a purchasing agent (a single buyer). The Single Buyer

will initially be a unit within the transmission business unit of PEC, but eventually would be a fully independent agent of PEC.

- ❖ Full corporatization of PEC to make it autonomous and accountable, and commercialization of the operations and administration of PEC. Ministerial responsibilities will be focused on policy-making.
- ❖ Introduction of unbundled tariffs for electricity into the functional components – generation, transmission and distribution – with appropriate commercial arrangements between the PEC businesses.
- ❖ Eventually privatizing one or more of the electricity businesses or introduction of management contracts or joint venture arrangements.

The proposed strategy for Renewable Energy and Energy Efficiency (REN and EE), which is pending the availability of funds to start implementation, has the following **general policy objectives:**

1) To optimize the utilization of domestic energy resources to prevent increasing dependence from future fuel and energy / electricity imports and to improve security of fuel supply (energy security),
2) To diversify the country's energy mix by increasing the share of renewable energies in electricity generation (from the interconnected national grid over isolated grids down to the household level) to decrease the dependence from fossil fuels, to improve the country's economic situation and to protect the environment and climate by avoiding Green House Gas (GHG) emissions,
3) To ensure poverty alleviation, sustainable rural development and economic growth by promoting access to decentralized renewable energy conversion technologies to be incorporated in governmental development plans in all relevant sectors,
4) To eliminate peak and energy shortages faced by the electricity sector through the promotion of renewable energies as well as through improved energy efficiency and conservation among main consumer classes,
5) To alleviate the impact on the poor of future rising fuel and electricity prices by promoting energy efficiency and conservation initiatives and
6) To promote sustainable electricity sector development by creating and opening up the Yemeni electricity market in the field of renewable power generation and power

distribution in rural areas, to foreign and private investors (Independent target Power Producers) as well as to various non-governmental institutions to provide renewable energy services in rural areas (Rural Energy Service Providers).

As for investment in natural resources, it is noted that exploration and extraction of oil and gas is governed by "Special Agreements" between the Yemeni Government, represented by the Ministry of Oil and Minerals, and the petroleum companies in accordance with Article 18 of the Constitution. The "Special Agreements" or "Production Sharing Agreements" covered hydrocarbon exploration concessions. These agreements were approved by the Council of Ministers and subsequently forwarded to the House of Representatives (Parliament) for ratification and enactment into law. Yemen applied such measures in a similar fashion to other countries around the world and the agreements did not raise concerns under any WTO Agreement. The Mines and Quarries Law No. (24) of 2002 regulate the exploration and extraction of minerals.

1.9 Energy Prices

1.9.1 Petroleum Products Prices

Prices of goods and services supplied by the private sector are governed by market forces and not subject to Government intervention. For goods and services provided by State-owned enterprises, the Yemeni Government determines the prices of oil derivatives, fixed telephone services and public goods or essential services such as water, sewage and electricity to accommodate the general public and, in particular, the poor and lower-income segments of the population. The legal basis for the price controls on these items is the decree establishing each enterprise. Some products are subsidized, notably oil derivatives, while the prices of other products includes a modest profit margin. All consumers pay the same prices for these products.

The Government of Yemen had reviewed the price regulations on petroleum products with a view to further liberalization. The prices of turbine aircraft fuel and fuel oil had been liberalized. By the first quarter of 2010, Yemen had reduced the subsidies and brought the administered prices more in line with international prices as shown in Table (1), raising the price (per liter) of petrol by 100%; diesel by 130%; kerosene by 125% and, LPG prices per cylinder) by 390% from prices prior to 2010. All other petroleum products were sold at international market prices.

Table (1): Prices of Petroleum Products after Reducing Subsidies in 2010

Petroleum Product	Prior to 2010 Prices	After 2010 Prices
Petrol	YER 35/liter (US$ 0.16/liter)	YER 70/liter (US$ 0.33/liter)
Diesel	YER 17/liter (US$ 0.08/liter)	YER 45/liter (US$ 0.21/liter)
Kerosene	YER 16/liter (US$ 0.08/liter)	YER 40/liter (US$ 0.19/liter)
LPG	YER 205/cylinder (US$ 0.95/cylinder)	YER 1,000/cylinder (US$ 4.65/cylinder)
All Other Petroleum Products Including Aircraft Fuel		International Market Price

Crude oil had been exported at an average price of US$62.93 per barrel in 2006. Yemen's oil production had declined steadily from 160 million barrels in year 2001 to 107 million barrels in year 2008. Local consumption of petroleum products had amounted to 5.74 million Tonnes in 2008, and exports of oil had totaled 44.45 million barrels.

Following the accession to the WTO (2014), price controls in Yemen had been applied in compliance with Articles III:4 and XI:1 of the GATT 1994 and Article 4 of the Agreement on Agriculture. Yemen confirms that it would apply price controls in a WTO-consistent fashion, including by taking into account the interests of exporting WTO Members as provided for in Article III: 9 of the GATT 1994.

1.9.2 PEC Yemen Electricity Tariff[4]

According to the Public Electricity Corporation (PEC)[5] of Yemen and as of the year 2013 the Electricity Tariffs are as shown in Table (2) below. The prices are shown in Yemeni Rials (YER) and its rounded US Dollars (US$) amount.

Table (2): PEC Yemen Electricity Tariff as of Year 2013

Categories	Year 2013 Prices (YER/KWh)	Year 2013 Prices (US$/KWh)
Urban Households:		
0 -200 KWh	6	0.028
201 – 350 KWh	9	0.042
351 – 700 KWh	12	0.056
➢ 700 KWh	19	0.088
Rural Households:		
0 – 100 KWh	9	0.042
➢ 100 KWh	19	0.088
Small Commercial	25	0.12
Large Commercial	35	0.16
Hotels	30	0.14
Agriculture	30	0.14

[4] PEC Yemen http://www.pec.com.ye/index.files/page455.htm
[5] PEC Yemen **http://www.pec.com.ye/index.files/page455.htm**

Large Industry	35	0.16
Cement Factories	35	0.16
Public Water Pumping	30	0.14
Government Buildings	30	0.14
Urban Masjids:- 0 – 200 KWh 201 – 350 KWh 351 – 700 KWH ➢ 700 KWh	 6 9 12 19	 0.028 0.042 0.056 0.088
Rural Masjids: 0 – 100 KWh ➢ 100 KWh	 9 19	 0.042 0.088

2.0 Energy Supply and Demand

2.1 Electrical Energy

Yemen has the lowest access rate to electricity (i.e. 40 percent of the population) compared to the regional rate of around 85 percent. Inequalities in terms of access to electricity exist among rural and urban households. Although rural accounts for about 75 percent of population, only around 23 percent have access to electricity compared with about 85 percent of urban population. Despite the low access rate of electricity, only about one-half of those populations are connected to public grid, and the other one-half gain access through other private sources including diesel generators which usually operate for few hours for lightening, and less-intensive electric appliances. Alternative lighting devices are being used by non-grid electrified rural households including kerosene Lamps (about 67 percent) and Liquefied Petroleum Gas (LPG) Lamps (about 5 percent) which have serious environmental impacts.

In general, energy supply in Yemen is limited, and weak generation capacity, high electricity losses from the grid (about 30 percent of production capacity), and increasing demand are among the top sector challenges. The total generation capacity of the Yemeni electricity system is about 1.223 GW after accounting for the recently installed capacity of about 341 MW powered by Natural Gas Turbines (NGT), Phase I.

The supply gap against demand is estimated about 500 MW in 2013. The latest Power Development Plan (2009-2020) forecasts a total capacity demand of 3,102 MW at an annual growth rate of 10 percent over the next decade. New capacity of 3,538 MW by 2020 will need to be added to the grid to replace the retiring units and to accommodate the growing

demand with sufficient capacity. It worth mentioning that power demand of industrial development will require additional power supply beyond the aforementioned projections.

The majority of Yemen's supply of electric energy is depending on fossil fuels including Matzoth, Diesel, and recently LPG as is shown below:.

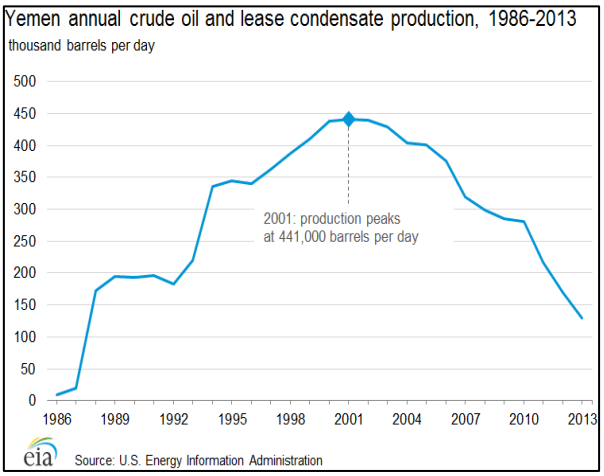
- Electricity from Oil Fuels: 79.91% of Installed Capacity
- Electricity from Natural Gas Fuel: 20%
- Electricity from Renewable Energy: 0.09%

2.2 Oil Products

Yemen's oil consumption has been trending steadily upward, reaching 144,000 bbl/d in 2013.

Yemen regularly imports petroleum products, particularly distillate fuel oil and residual fuel oil. Between 2000 and 2013, Yemen's imports of all petroleum products grew from just 2,000 bbl/d to 78,000 bbl./d, based on data from FACTS Global Energy.

The country has two operating refineries with a total capacity of 140,000 bbl./d. While these refineries produce some of the petroleum products Yemen needs, the refineries do not operate at full capacity, and the country imports additional petroleum products to help meet internal demand. The Aden Refinery is the largest in the country, accounting for almost all of Yemen's total refining capacity of 140,000 bbl./d.



2.3 Natural Gas

As of January 2014, Yemen held 16.9 trillion cubic feet (Tcf) of proved natural gas reserves according to the *Oil & Gas Journal*. One of the larger natural gas deposits in Yemen is in the hydrocarbon rich Marib - Jawf area, where there may be 18 Tcf in recoverable volumes of natural gas, according to Yemen's government.

Until 2009, Yemen re-injected nearly all of the natural gas it produced to aid in oil extraction. In 2009, the Yemen LNG facility opened, and the country began to divert dry natural gas away from the oil fields and toward domestic and international consumers. Yemen's domestic

market began consuming small amounts of natural gas in 2009, and there are plans to increase the use of natural gas in many sectors particularly in power generation—to make up for diminishing petroleum supplies.

3.0 Market Structure by Sub-Sector

3.1 Oil and Gas Sub-Sectors Organization

Foreign operators account for most of the oil production in Yemen. Major international oil companies in Yemen include Total (which operates the Yemen LNG facility in addition to being active in several exploration blocks), Occidental Petroleum Corporation, and Nexen, a subsidiary of the China National Offshore Oil Corporation.

Yemen relies heavily on production sharing agreements (PSAs) with foreign companies, which usually include 20-year concessions for production activities. In 2013, Yemen's government announced plans to transfer any expiring exploration licenses to state owned companies. Production royalties paid to Yemen's government range between 3% and 10%.

3.1.1 Oil Sub-Sector

Yemen began producing crude oil in 1986 at very low levels and gradually increased production throughout 1987. The country's first significant production came in 1988, when it produced 173,000 barrels per day (bbl./d). Yemen's average monthly crude oil production declined after 2001, when production peaked at more than 440,000 bbl./d. Yemen had plans to boost production to 500,000 bbl./d, but declining production at its maturing fields, limited exploration, and frequent attacks on the country's energy infrastructure make that goal infeasible. The U.S. Energy Information Administration estimates that Yemen's crude oil production was about 100,000 bbl./d in March 2014.

Most of Yemen's production is from the Marib-Jawf area in central Yemen and near the Masila area in the east, with production coming from just 13 of the country's 105 exploration blocks. Since 2001, the country's most productive field has been the Tawila field, which averaged nearly 90,000 bbl./d in 2003 but has since declined along with many of the country's other large fields.

Natural decline rates at many of Yemen's major fields including Tawila—account for the country's generally falling production, but the frequent attacks on the country's energy infrastructure since 2011 have caused much sharper declines in recent years. Other factors

contributing to lower production include strikes—Norway's DNO had to cease all production in June 2014 because staff protested that the company failed to fulfill its obligations.

Yemen's Ministry of Oil and Minerals oversees the country's oil and natural gas sectors. The ministry sets oil and gas policies and manages relations with foreign operators, but any contracts with foreign companies also require parliamentary approval. The national oil company, Yemen General Corporation for Oil, Gas, and Mineral Resources, guides a number of state owned subsidiaries that handle most day-to-day operations and deals with energy sector revenues.

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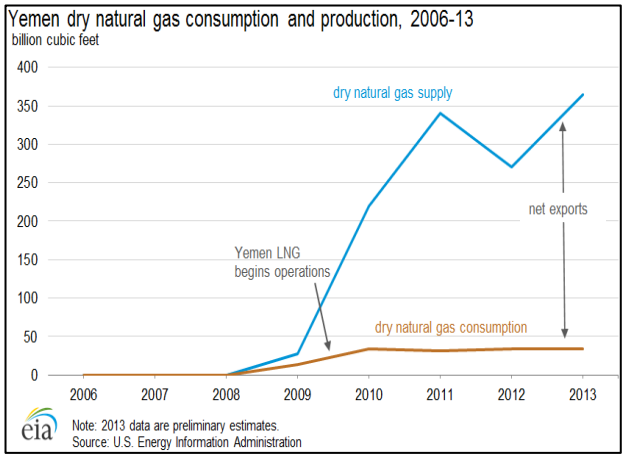
With the continued decline in oil production since the early 2000s, Yemen has struggled to keep its export sector at normal operating levels. The pipeline, which runs from the Marib region in the center of the country to the export terminal at Ras Isa (see map aside), is critical to Yemen's export operations.

Yemen does not have any overland pipeline connections to its neighbors, so all of the country's petroleum exports depart via tanker vessels. In recent years, more than three fourths of their petroleum exports went to destinations in Asia. In 2013, Yemen exported just 124,000 bbl./d of crude oil, according to data from Lloyd's List Intelligence tanker tracking service. Exports are down from more than 350,000 bbl./d 10 years earlier. In addition to crude oil exports, Yemen exports limited amounts of refined petroleum products, averaging just 16,000 bbl./d of refined product exports in 2013, according to data from Global Trade Information Services' Global Trade Atlas.

3.1.2 Natural Gas Sub-Sector

Because Yemen's natural gas was historically re-injected into oil fields to aid oil recovery, there was rarely any exploration specifically targeting natural gas. After the opening of the Yemen LNG facility in 2009, the economic incentives for discovering and producing natural gas changed.



Yemen began producing natural gas in the early 1990s, however, from 1993 until 2009—when the Yemen LNG facility came online—Yemen re-injected virtually all (98%) of the natural gas produced inside the country. With the opening of the country's only LNG facility in November of 2009, Yemen began producing commercial quantities of dry natural gas for the first time in its history. In 2013, Yemen produced 365 billion cubic feet (Bcf) of dry natural gas, up from just 28 Bcf in 2009 when the production of dry natural gas began (see graph on the side).

Yemen has never been a natural gas importer, and until 2009, never consumed natural gas domestically. Since 2009, Yemen's natural gas consumption has grown, but not nearly as fast as its natural gas exports. Yemen's consumption of natural gas remains limited, peaking at just 34 Bcf in 2010. In contrast, Yemen exported about 330 Bcf of LNG in 2013, representing more than 90% of its total dry natural gas production that year. According to IHS Global Insight, Yemen LNG provided approximately 3% of 2013 global LNG volumes.

French company Total operates the 6.7 million ton per year (322 Bcf) Yemen LNG facility, and most of the exported LNG is under contract to GDF Suez, Total, or Korean Gas (KOGAS). The volumes purchased by GDF Suez and Total are non dedicated— meaning that they can go to any willing buyer— while the volumes contracted to KOGAS all go to South Korea.

In late 2012, Yemen LNG began renegotiating its contracts with GDF Suez and Total, claiming that the prices it received for LNG was too far below prices elsewhere in the international market. As of July 2014, these companies have not agreed on a new price. However, in 2013, KOGAS agreed to increase its contract price. Yemen LNG is also in

discussions with Turkey's Petroleum Pipeline Corporation (BOTAS) on a deal that could send up to 35 Bcf of LNG per year to Turkey.

Yemen LNG shareholders

Group	Share (percent)
Total (France)	39.62
Hunt Oil Company (United States)	17.22
Yemen Gas Company	16.73
SK Corporation (South Korea)	9.55
KOGAS (South Korea)	6.00
Hyundai Company (South Korea)	5.88
General Social Security and Pension Corporation (Yemen)	5.00

Source: Yemen Ministry of Oil and Minerals

3.2 Electricity Generation Sector

Yemen has one main 132 kV grid as shown in Figure (1). A new gas-fired power plant was commissioned at Ma'rib, to the east of Sana'a in 2010 and connected to the main grid via a 400 kV double circuit transmission line at Bani Hoshish. A second 400 kV transmission line is also planned from Ma'rib to connect to the 132 kV substation at Dhamar, south of Sana'a.

There are smaller grids to the east centered on Wadi Hadramaut (Al Bayda), Al Mukhalla (on the coast), Balhaf (the site of the new LNG liquefaction plant) and Ataq. There is also an isolated network around Sada in the north.

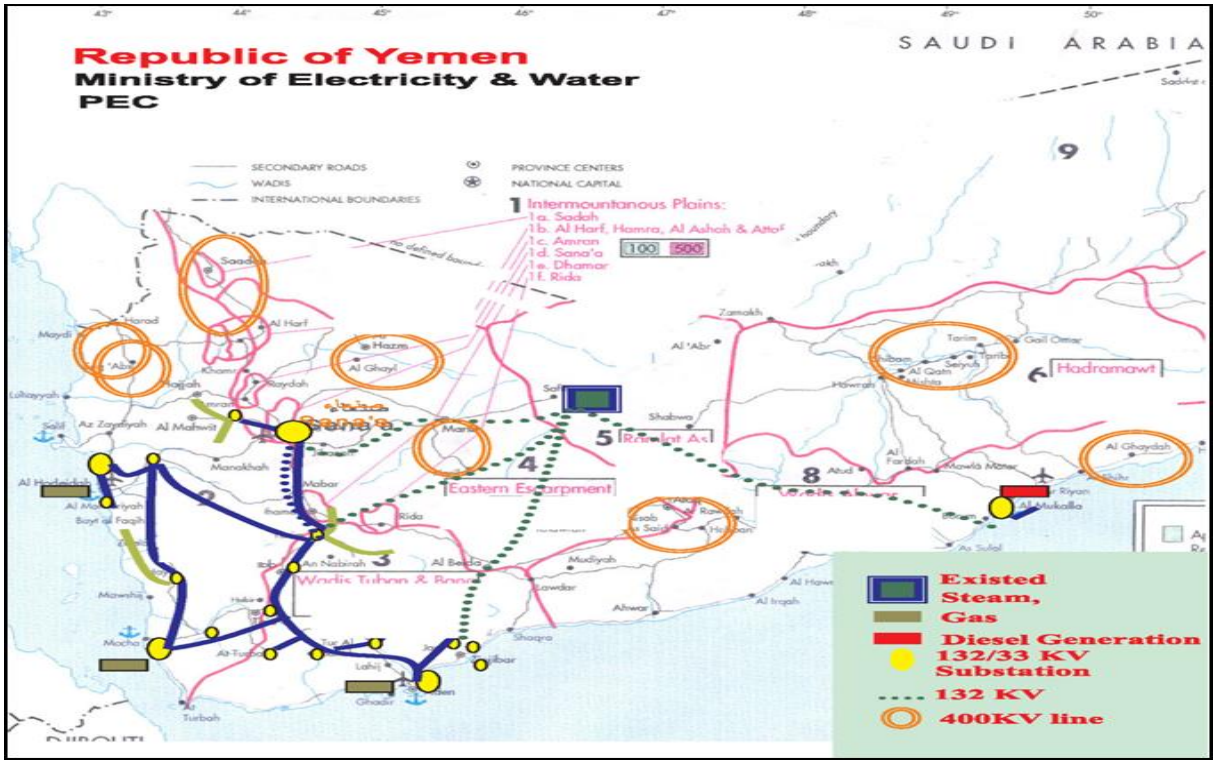


Figure (1): Yemen Electricity Grid Network

A number of studies undertaken in the past have recommended the interconnection of Yemen's isolated grids. The most recent of these, prepared by EdF in 2008 for the Ministry of Electricity and Energy and the Public Electricity Corporation, recommended the connection of three currently isolated grids in the Hadramaut, Al Mukhalla, Balhaf (LNG terminal) and Ataq areas to form an eastern grid and to connect these to the main grid. This scheme is summarized in The EdF study recommended connecting the eastern grid via a 400 kV transmission line from Ma'rib.

Yemen's generating capacity as of 2012 was just 1.5 million kilowatts (1.5 Gigawatts) according to Yemen's Ministry of Electricity, one of the lowest in the Middle East region. According to the Middle East Economic Survey (MEES), capacity in 2013 was only 850 megawatts, or only enough to meet 41% of the country's electricity demand. Likewise, in 2012 Yemen's total net generation (6.2 billion kilowatt hours) were among the lowest in the Middle East, despite the country having the fourth largest population in the region. Many of Yemen's electric plants are now able to use natural gas as fuel, which has helped the country move away from burning petroleum to generate electricity.

In August of 2013, Yemen began construction on a new 400 Megawatt gas fired generating facility, and the facility is set to begin operating in late 2014 but due to the recent turmoil security it has been put back to late 2016.

3.3 Renewable Energy Sector

Four main sources of renewable energies available in abundance in Yemen and which can be harnessed and utilized. Recent study for the "Renewable Energy Strategy" for Yemen carried by the Ministry of Electricity and PEC[6] showed (see aside) that Yemen has very high potential of renewable energy, which can be obtained from Solar, Wind, Biomass, and Geothermal sources. The average solar radiation is about 18

Resource	Theoretical Potential (MW)	Technical Potential	
		Gross (MW)	Practicable (MW)
Wind	308,722	123,429	34,286
Geothermal	304,000	29,000	2,900
Solar electric			
• CSP	2,446,000	1,426,000	18,600
Biomass			
• Landfill gas	10	8	6
Hydropower			
• Existing dams	1	-	-
• Major wadis	12 – 31	11 – 30	-
Solar thermal	$MW_{thermal}$	$MW_{thermal}$	$MW_{thermal}$
• Domestic SWH	3,014	278	278

[6] Renewable Energy Strategy and Action Plan (RESAP) Final Report prepared for Yemeni Government by LAHMEYER International GmbH, Germany 2008.

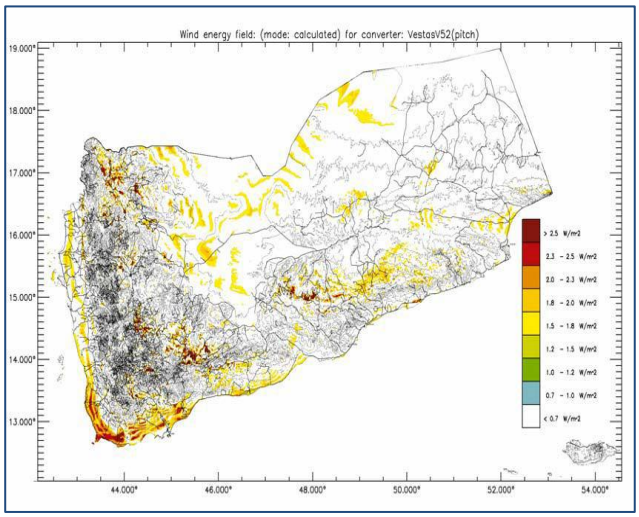
- 26 MJ/m^2/day over 3,000 hours per year clean blue sky[7] and the theoretical potential for solar electric using Concentrated Solar Power (CSP) reaches about 2,446,000MW. Wind Energy on the other hand reaches a potential of 308,722MW and Geothermal Potential of about 304,000MW.

3.3.1 Solar Energy Potential

Yemen is one of the regions in the world that has high levels of solar radiation, with an average of 5.2–6.8 KW/m2 per day. In his article, "Clearing the Hurdles: Renewable Energy in Yemen," General Electricity Director Abdulmati Al- Junaid confirmed that Yemen has one of the world's highest levels of solar radiation. "It is both technically and economically feasible for Yemen to produce 18 Giga Watts (GW) of electricity".

The average sunshine hours in the country, based on CAMAs ground measurements, ranges from 7.3 hours per day in the Northern Region of the country to 9.1 hours per day in Socotra Island. Sana'a has daily average sunshine hours of (7.7 hours per day). The longer average sunshine hours signifies high-energy production from solar energy technologies over the year. Also during the coldest period of the year, the average sunshine hours are over 8 hours per day.

3.3.2 Wind Energy



Yemen has a long coastline and high altitudes with an estimated 4.1 hours of full-load wind per day. According to an assessment of wind potential in Al-Mokha by Egyptian experts, from this regional alone could produce 1.8 GW of power and the average annual wind speed is 7.4 m/s. In Al-Mokha a wind farm of 60 MW capacities is planned. Total wind power potential is estimated to be 34 GW. The technical potential was estimated at 14,200 MW providing about 42,300 GWh of electricity per year.

[7] Abdullah S. Bin Ghauth and Salim M. Bin Qaddhi, "Economic Aspects of Electrification of Rural Households using PV – Technology in Yemen", JST, Vol. 4, No. 2, Special Issue, Oct., 1999, pp. 23-26.

3.3.3 Geothermal Energy

A study estimated that 2,900 MW of power might be available from geothermal sources. A preliminary survey in the 1980s identified that there is some geothermal potential to the south of Sana'a; the most promising of which is located at Dhamar. This resource is thought be sufficient to support a 50 MW plant and the ultimate resource could be between 250-500 MW. A MoU was signed with an Icelandic company to develop a 10 MW plant on the site, but the company went bankrupt during the financial crisis. Exploratory drilling is now being financed by UNEP.

3.3.4 Biomass/Biofuels/Hydropower

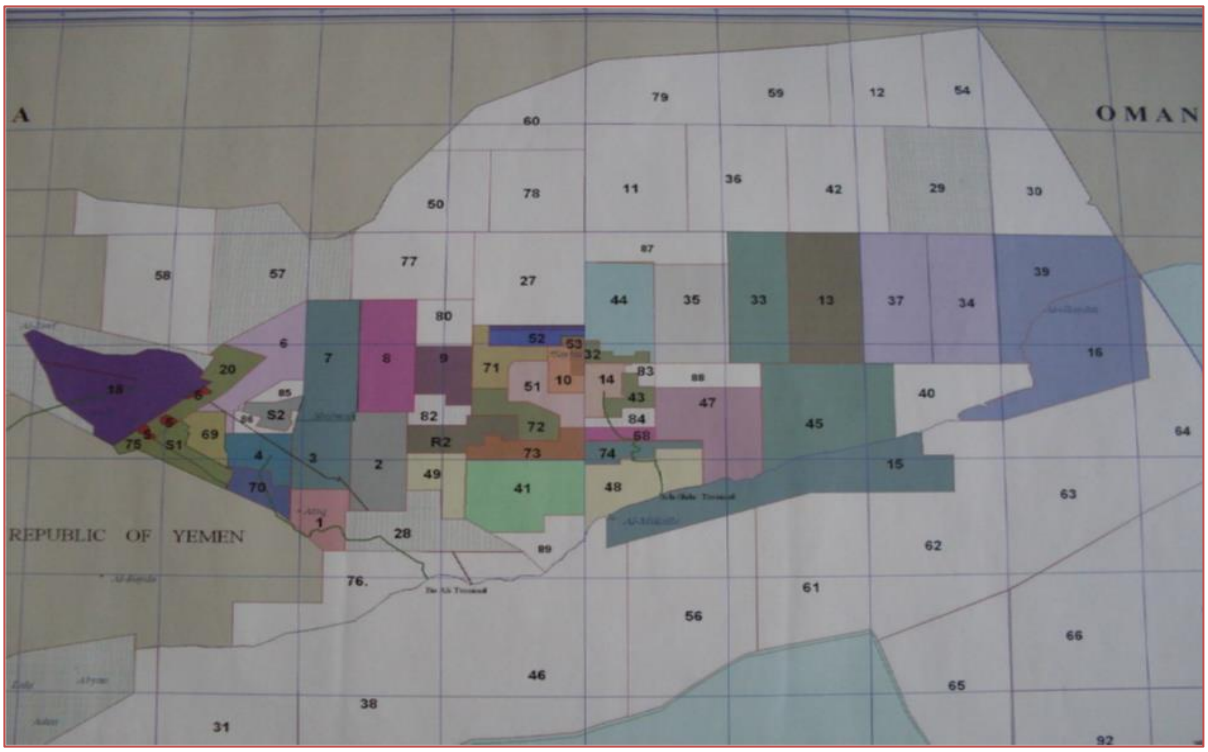
Yemeni potential for these technologies has not been examined. The fragmentation of land ownership in the country would prove a barrier to biofuel/biomass power generation uptake. Around 10 MW of electric power could theoretically be produced from the current rate of municipal solid waste MSW production in the main cities of Yemen. If the restriction is imposed to consider only cities that generate more than 100 thousand tons of solid waste per year the figure falls to around 8 MW. Of this 6 MW could be obtained from landfill sites in the four largest cities of Sana'a, Aden, Hodeidah and Taiz and is most likely to be cost-effective.

4.0 Future Development and Investment Needs in the Energy Sub-Sectors

4.1 Development and Investment Needs in the Oil and Gas Sub-Sectors

An oil concession map for Yemen is shown in Figure (2). Gas reserves are all associated with oil and are primarily located in Blocks 18, 5, S1, S2 and 20. Estimates of reserves in each block are shown in Figure (2).

Information provided by Yemen's Ministry of Oil and Minerals indicates that there are 432 BCM of proven gas reserves in Blocks 5, S1, S2 and 20 and up to 171 BCM available for domestic use after the demand for LNG has been satisfied with 260 BCM (9.2 Tcf) from Block 18 (as of 2009 estimates).



Source: Petroleum Exploration and Production Authority. Uncolored Blocks Have not Been Allocated.

Figure (2): Oil and Gas Concession Map - Yemen

The Yemen LNG Company (YLNG) has completed a 340 km pipeline from Ma'rib to Balhaf on the coast but the pipeline is currently used exclusively to supply the LNG terminal. This pipeline is shown in Figure (3).

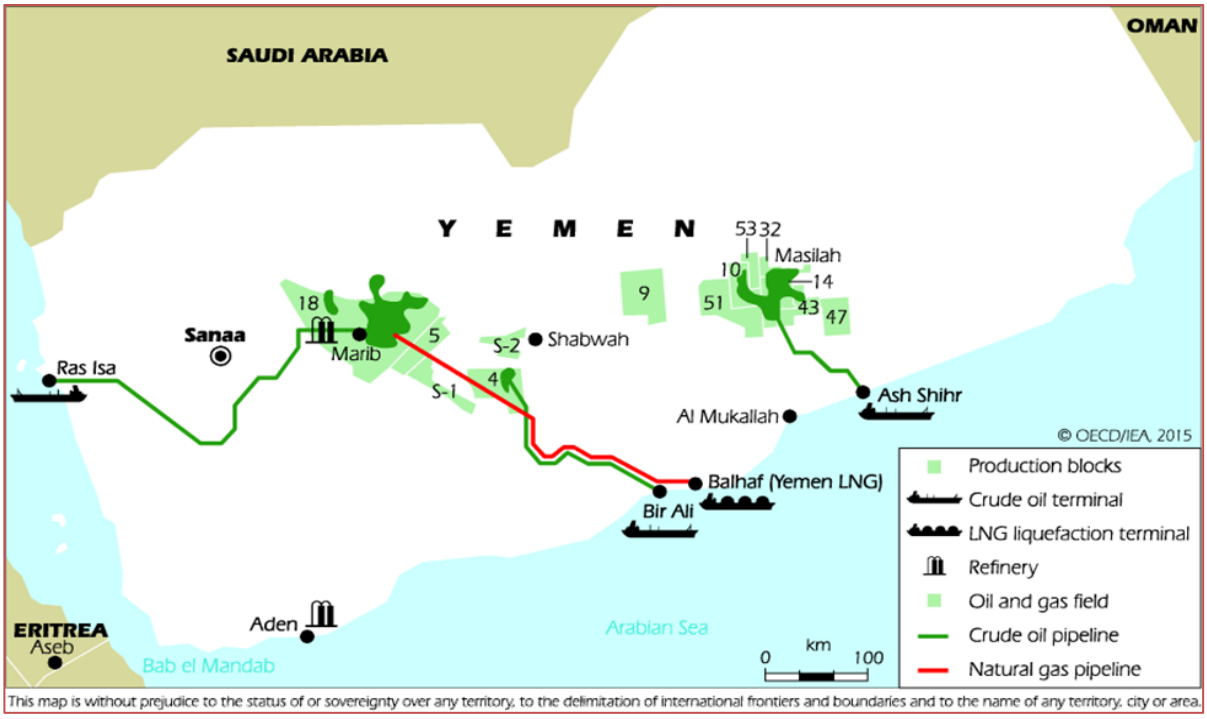
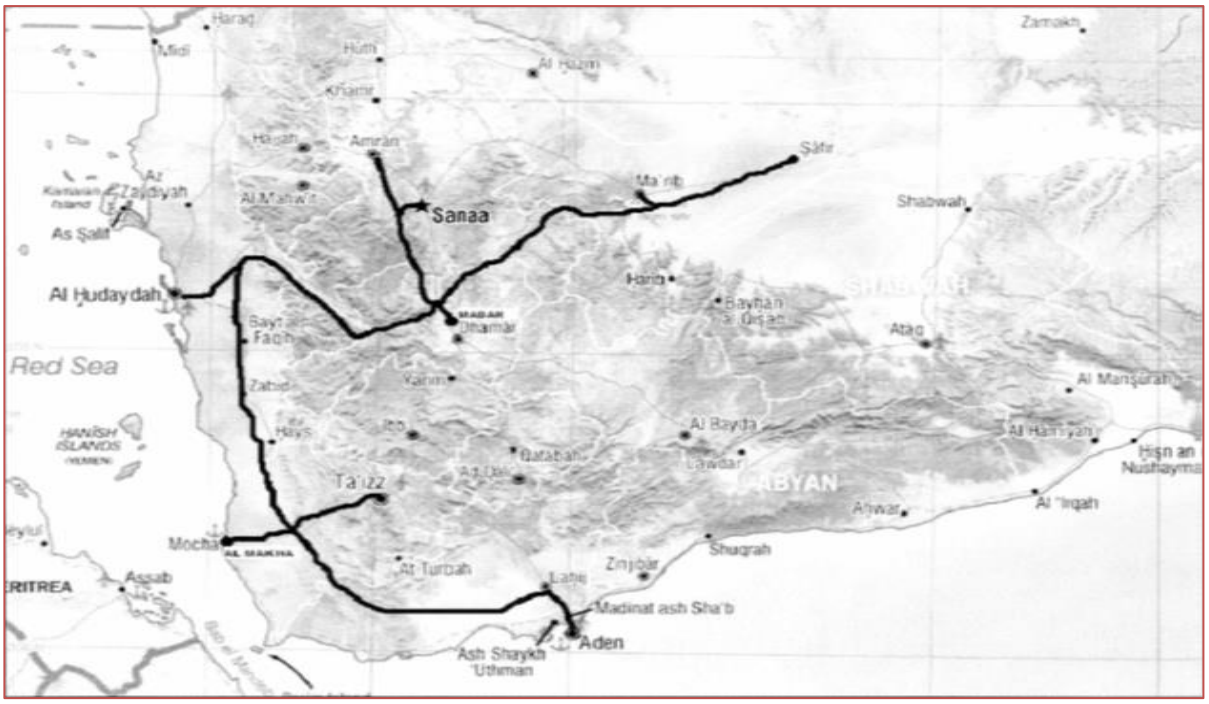


Figure (3): Yemen LNG company (YLNG) present supply pipeline

There is a future plan to build a pipeline to supply proposed power plants at Ma'bar (south of Sana'a) as well as Al Hodeidah, Mocha, Taiz and Aden. The proposed pipeline route is shown in Figure (4). An almost 1,500 Km of Gas pipeline will be needed to be built.



Source: Ramboll, Gas Utilization and Pipeline Feasibility study, 2005

Figure (4): Proposed Future Expansion of Gas Pipeline Route by Yemen LNG

4.2 Development and Investment Needs in the Electricity Sub-Sector

The future Electricity Demand projection for Yemen's domestic, commercial and agricultural use is as shown in Table (4) below where it is expected to reach more than 3,000 MW in the year 2020 according to the Ministry of Electricity and Energy projection forecast in 2010. Industry may need a further 1,500 MW of generation by the year 2020 also.

Table (4): Projection of Electricity Demand for Yemen

Year	Generation (GWh)	Peak Demand (MW)
2010	9,903	1,615
2011	10,504	1,713
2012	10,357	1,819
2013	11,007	1,933
2014	11,610	2,039
2015	13,945	2,449
2016	14,616	2,567
2017	15,323	2,691
2018	16,063	2,821
2019	16,843	2,958
2020	17,663	3,102

Source: Ministry of Electricity and Energy of Yemen

With Yemen's present Generation Capacity of 1,500MW as of 2012, there is a need of an investment to build at least 1,600MW to meet the domestic, commercial and agricultural needs and a further investment in building 1,500MW generating power plants to meet the industrial needs of electrical energy.

In September 2012, Yemen reached an agreement with the China National Corporation of Overseas Economic Cooperation on the construction of three natural gas fueled power plants. Each will have more than 400 megawatts of generating capacity. Further, the government of Turkey agreed to help Yemen construct a 263 Megawatt electric plant capable of burning both petroleum and natural gas in late 2012.

Over the past several years, Yemen worked to integrate its electric grid with neighboring Saudi Arabia's. In 2007, the two countries established a grid interconnection, and there is a $400 million interconnection expansion program that should allow for transfers of between 500 megawatts and 1,000 megawatts between the two countries (see Figure (5)).

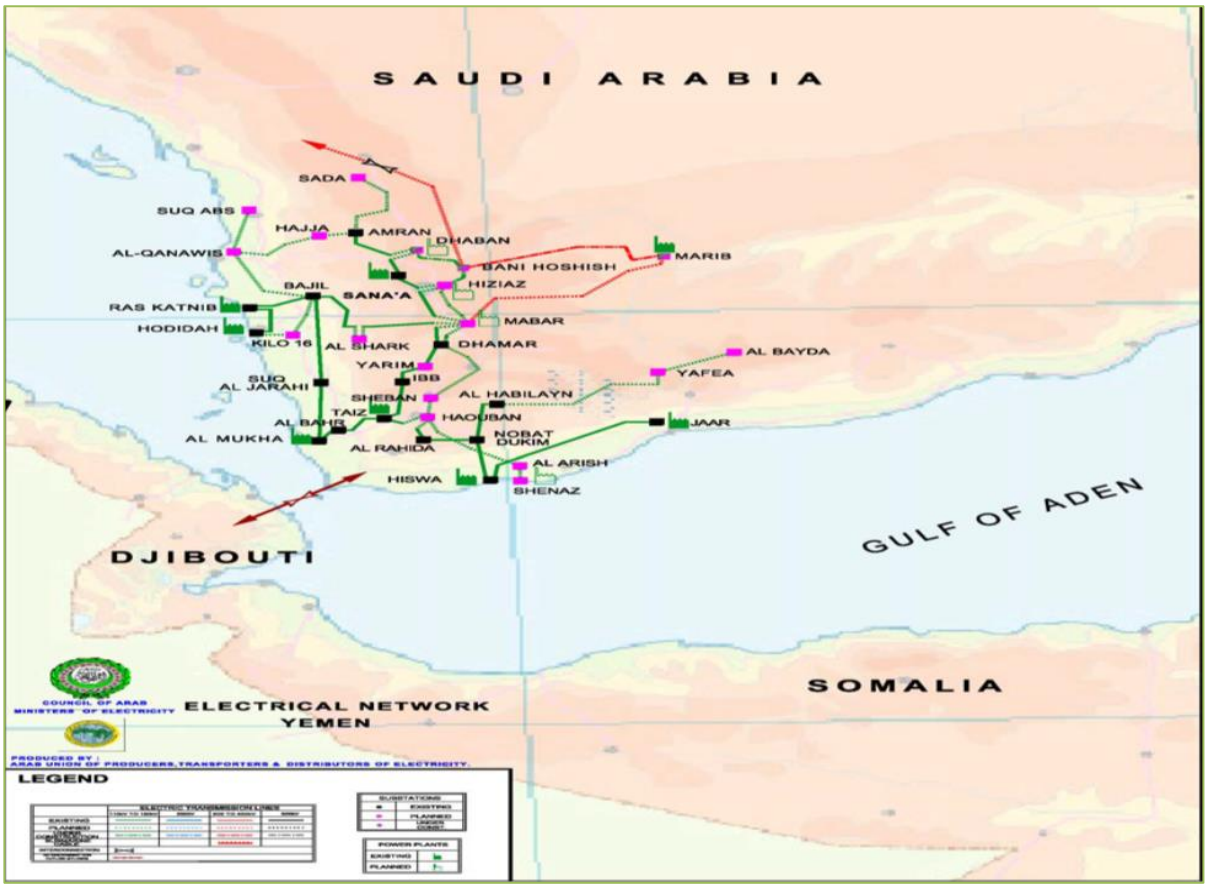


Figure (5): Yemen-Saudi and Yemen-Djibouti (Ethiopia) Proposed Electric Grid Interconnections

The proposed interconnector would involve a 416 km, 400 kV double-circuit AC line from Bani Hoshish to Kudmi, both in Saudi Arabia, and a back-to-back AC/DC converter station

(required to convert between the 50 Hz system in Yemen and the 60 Hz system in Saudi Arabia) to connect Saudi Arabia with Yemen‘s main grid. The convertor station was to be built in phases with a 250 MW convertor to be commissioned in 2009 and then to be upgraded to 500 MW in 2013. The construction of the interconnector was assumed to start in 2007-2008 in order to have the first convertor in operation by 2009.

The total interconnector investment cost of US $331 million included the following three components:

- A back-to-back converter station (500 MW at US$170/kW) costing US$85 million;
- A 400 kV double-circuit AC line (US$0.5 million/km for flat terrain routing and US$1 million/km for mountain terrain routing yielding a weighted average cost of $0.584 million/km) with a total line cost of US$242.9 million; and
- An AC shunt reactor costing US$2.9 million.

Furthermore, Yemen has entered into negotiations with Ethiopia to interconnect with them to buy electrical energy from the Hydropower produced in South of the country via an electrical HVDC connection between Yemen and Djibouti (see Figure (5)). The negotiation is still in progress until this present moment.

4.3 Development and Investment Needs in the Rural Electrification and Renewable Energy Sub-Sectors

4.3.1 PEC Distribution Expansion Plan

The Public Electricity Corporation of the Republic of Yemen serves more than 1.1 million consumers in 20 Governorates through centralized electricity supply or isolated generation systems accounting around 41 percent of the total number of dwellings. PEC is committed to increase access to grid electricity services of rural population in the country. In accordance to the Electricity Master Plan, PEC recently carried out a study to supply electricity in local areas either through isolated diesel power generation or distribution network expansion from 2006-2020[6] (see Figure (6)). This distribution projects will cover 12 Governorates and target almost 637,000 consumers[8].

[8] Off-Grid Renewable Energy Development Strategy Final Report, LAHMEYER International 2008.

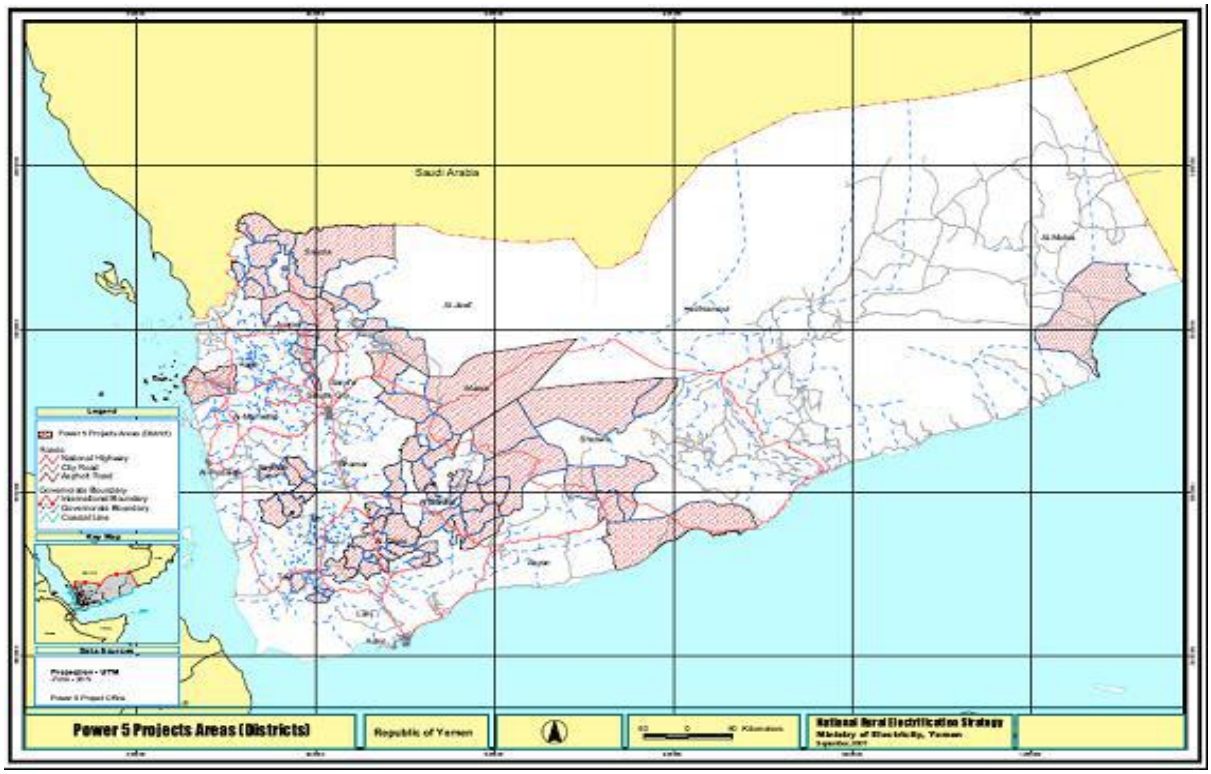


Figure (6): Areas to be covered by the Distribution Expansion Plan 2006-2020

4.3.2 Grid-Based Service Territories Expansion

The National Rural Electrification Strategy Study[9] identified and proposed the development of 27 grid-based service territories in 12 Governorates of the country. This proposed service territories are shown in Figure (7).

The proposed development will cover:

i) Interconnection of existing rural electric systems to achieve a minimum of 10,000, but no more than 40,000 consumers,

ii) Immediate expansion of service territory to connect rural communities within a buffer of approximately ten kilometers,

iii) Consolidation of isolated distribution systems through interconnection, and to either provide power through interconnection to the national transmission system, or to consolidate power generation in a single, larger power plant, and,

iv) Creation, where possible, of no more than four service territories per governorate, unless the above criteria cannot be satisfied.

[9] Off-Grid Renewable Energy Development Strategy Final Report, LAHMEYER International 2008.

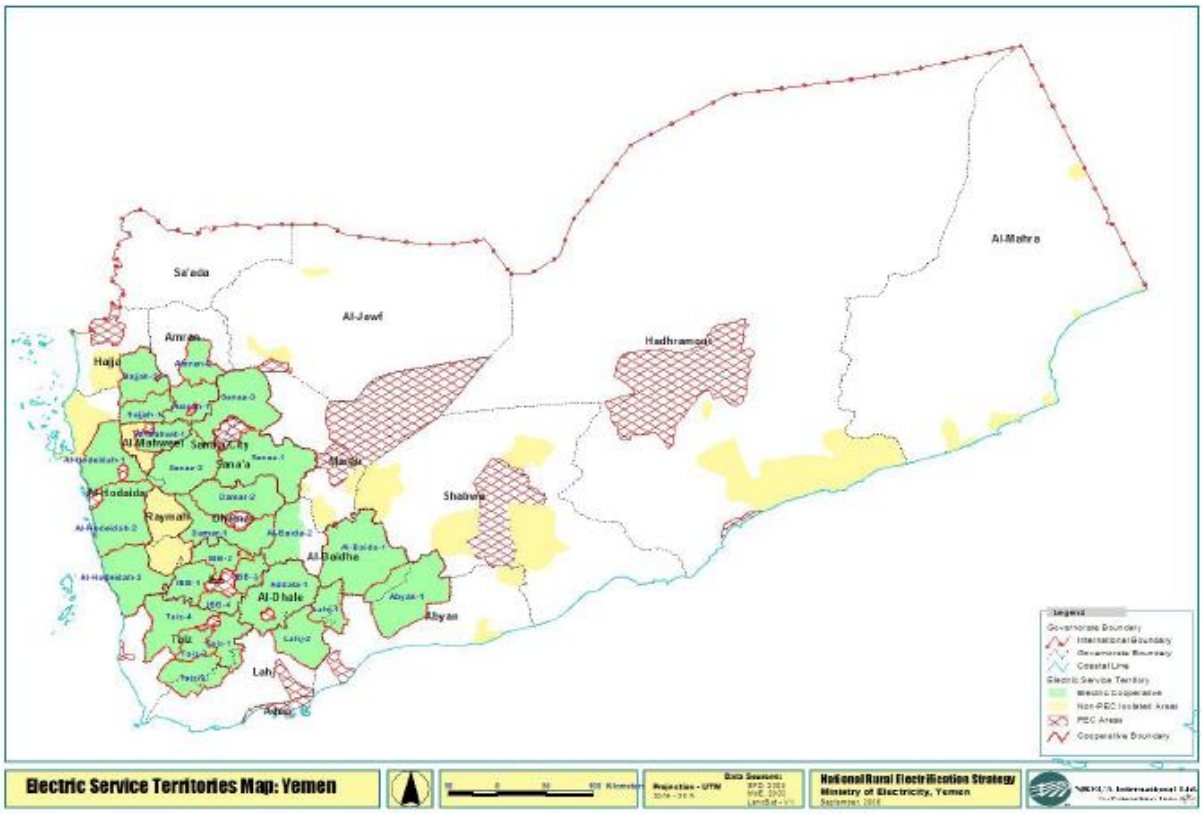


Figure (7): Proposed Grid-Based and Off-Grid Service Territories in Yemen

4.3.3 Off-Grid Service Territories Expansion

This consists of 7 Governorates that will not be covered by the proposed service territories. These Governorates are the following: Abyan, Al-Jawf, Al-Mahra, Marib, Shabwa, Hadramout, and Raymah (Figure (7)). Some districts and large villages of these Governorates are however currently being served by either PEC or non-PEC isolated grids. The study focuses on the un-served districts of these Governorates.

4.3.4 Off-Grid Districts and Villages

Despite the proposed aggressive grid rural electrification in the country (combination of service territory development and PEC distribution network expansion), there remain around 54 districts in 11 Governorates that are not targeted for grid electricity services. These off-grid areas, shown in Figure (8), are planned to be supplied with renewable energies.

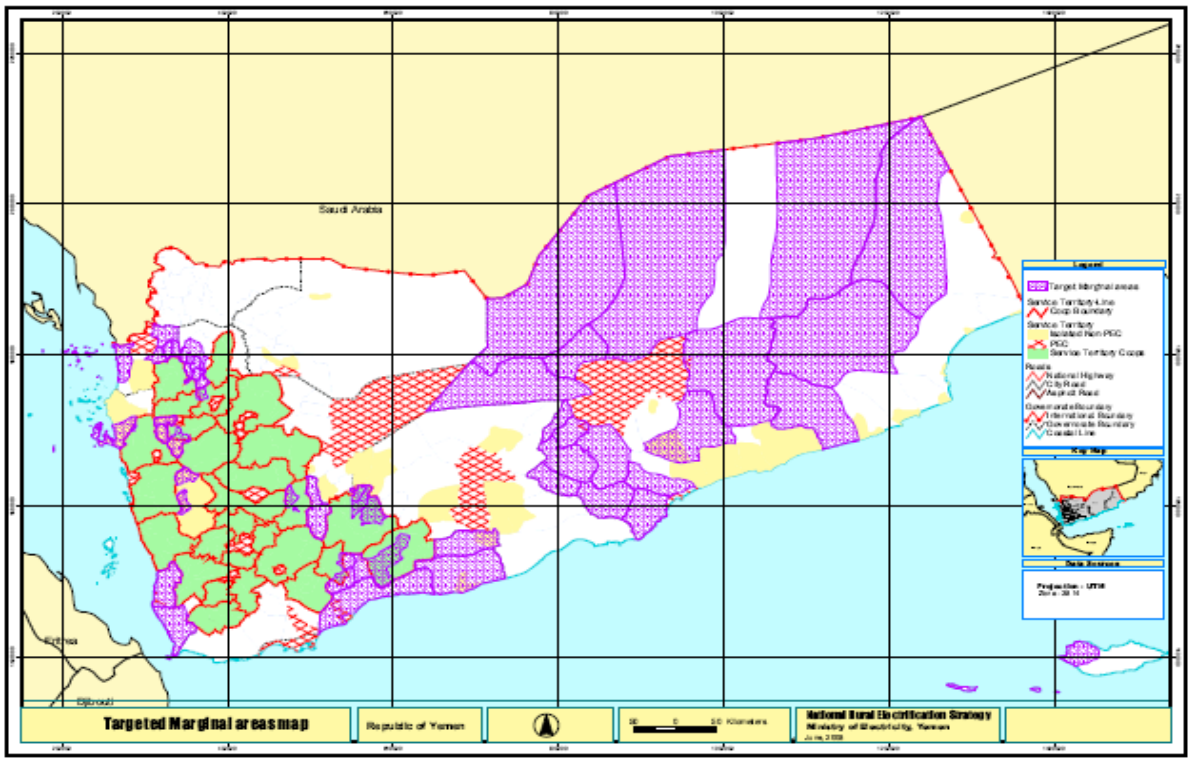


Figure (8): Off-Grid Areas Which are Proposed to be Supplied With Renewable Energies

These districts are estimated to have around 1.6 million inhabitants, representing around 8 percent of the total population of Yemen in 2004[10]. Governorates with high number of off-grid population are Hadramaut, Lahj, Al Mahwit and Amran.

At present, these areas encompass around 6,276 villages. Most of these villages have however, low population density. More than 60 percent of the total villages have less than 50 households. Also, many larger villages with more than 100 households are already part of an urban agglomeration.

4.4 Development and Investment Needs in Generating Bulk Electrical Energy for International Market and Sea Water Desalination from Solar Power

There is a large potential for renewable resources in the Middle East, which up to this point, have remained largely untapped. This is especially true of solar power; its potential in the MENA region alone far exceeds global electricity demand[11]. Figure (9a) illustrates the economically viable renewable electricity potential in MENA.

[10] Central Statistic Organization (CSO), Yemen Census of 2004.
[11] Concentrating Solar Power in the Mediterranean Region
http://www.dlr.de/tt/desktopdefault.aspx/tabid-2885/4422_read-6573/

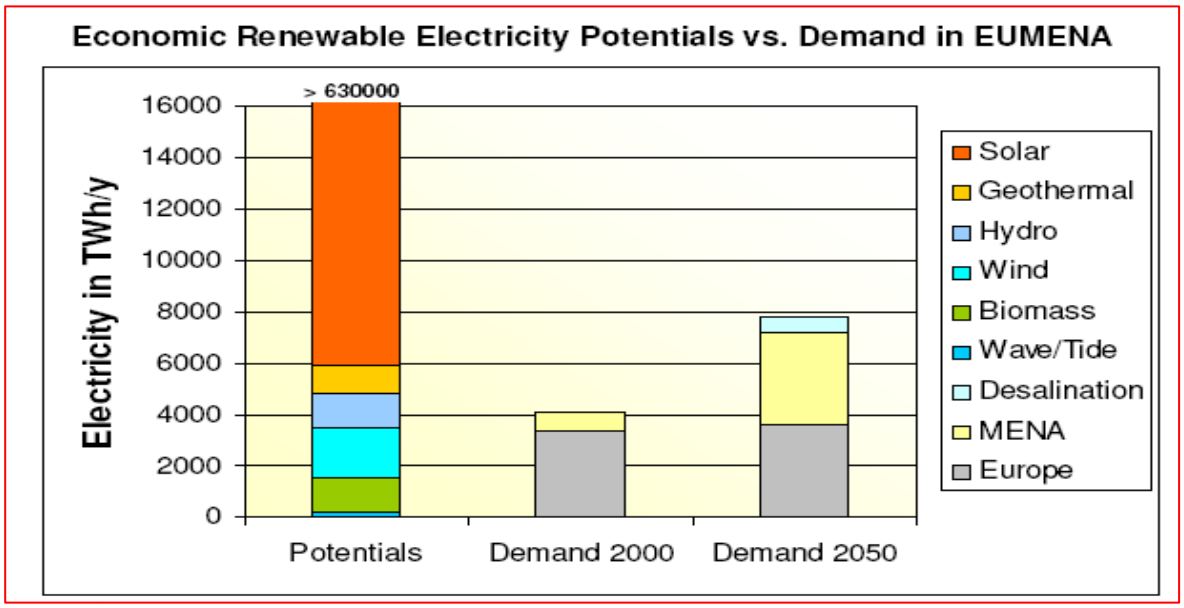


Figure (9): Economical Renewable Electricity Potential in the MENA Region

As seen in the image below of (Figure (9b), a concentrated solar plant the size of Lake Nasser would have the production capacity equivalent of all of the Middle East's oil production:

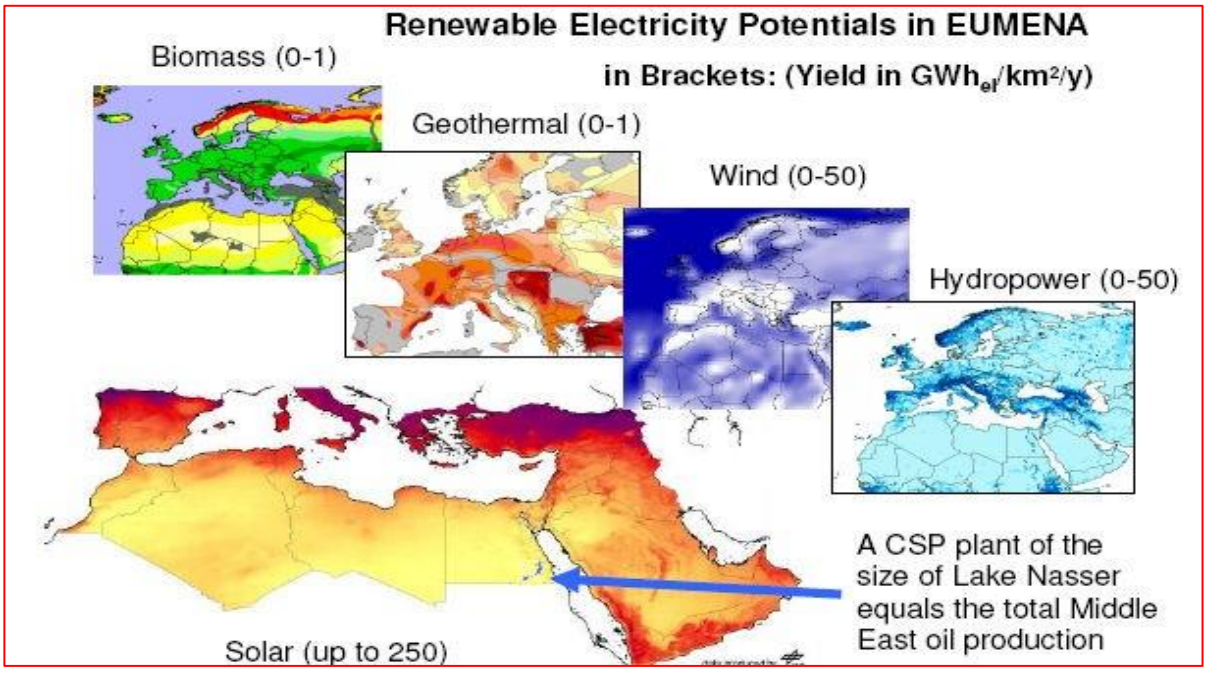


Figure (9b): Renewable Electricity Potentials in EUMENA

According to a report by the Electrical Engineering Department at King Saud University, the Middle East receives 3,000 - 3,500 hours of sunshine per year, with more than 5.0 kW/m2 of solar energy per day[12].

[12] Potential for economic solar desalination in the Middle East
http://www.sciencedirect.com/science/article/B6V4S-3TK6GM5-1T/2/0d6d01afd4d4696a232e21f2faf6ebc1

4.4.1 Solar Thermal Energy

Solar thermal technologies concentrate energy by heating up water in a dark vessel. The heat is then transferred to operate a conventional power cycle. The heat may be preserved to be utilized at night by storing it in liquid or solid media such as molten salts, ceramics, concrete, or newly developed salt mixtures[13]. Concentrating Solar Power can either focus sunlight directly onto solar cells or generate electricity through an intermediate, such as heating water to drive steam turbines. It may be used for domestic water heating, space heating in residential and commercial buildings, swimming pool heating, solar-assisted cooling, industrial process heat and the desalination of drinking water.

4.4.2 Concentrated Solar Thermal-Power

There are three systems, which utilize solar thermal technology and they are:

- Central Receiver (Solar Towers) Systems
- Parabolic trough systems
- Parabolic dish systems

The image of Figure (10) illustrates how solar thermal technologies tap into electric power grids:

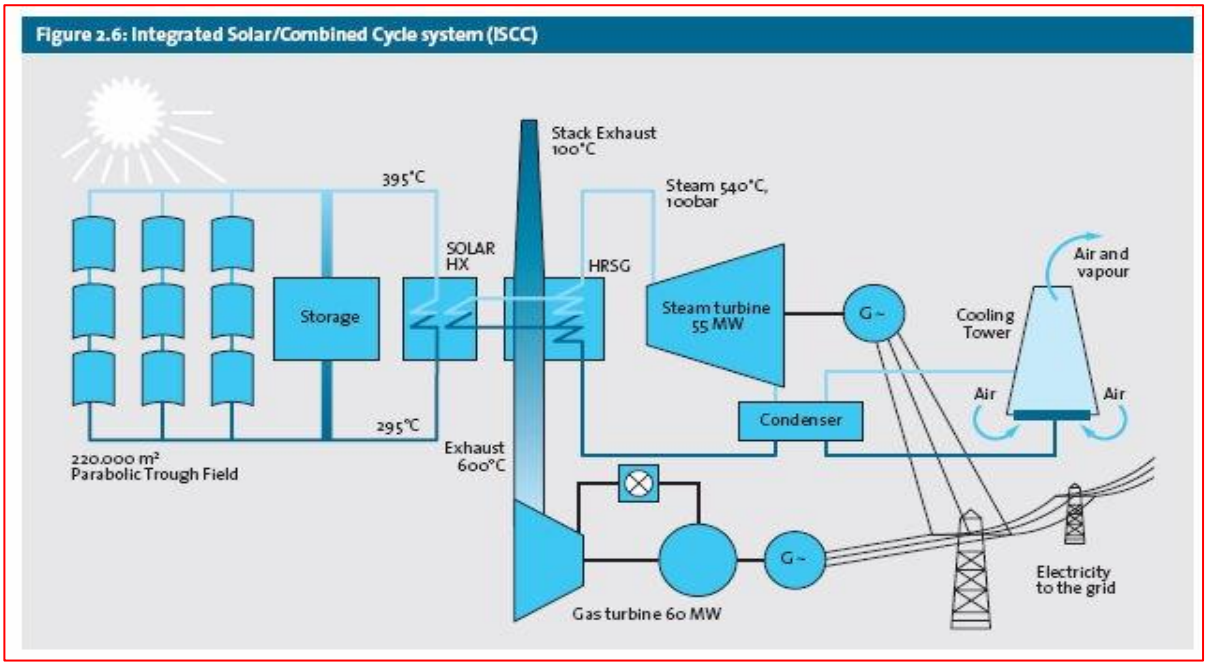


Figure (10): CSP Generating Power Plant

[13] Concentrated Solar Thermal Power-Now! http://www.greenpeace.org/international/press/reports/

A partnership between the EU and MENA will greatly benefit both sides: MENA may utilize and export their vast solar resource for economic growth while the EU can provide the technologies and the capital to activate these potentials[14].

Grid infrastructure is not dependent on renewable development alone. According to the German Aerospace Center, "its construction will probably take place anyway, with the purpose to stabilize the growing Pan-European grid, to provide higher security of supply, and to foster competition"[15].

The image of Figure (11) indicates the proposed transmission grid (where Yemen is considered part one of the Sources and interconnected to the Grid).

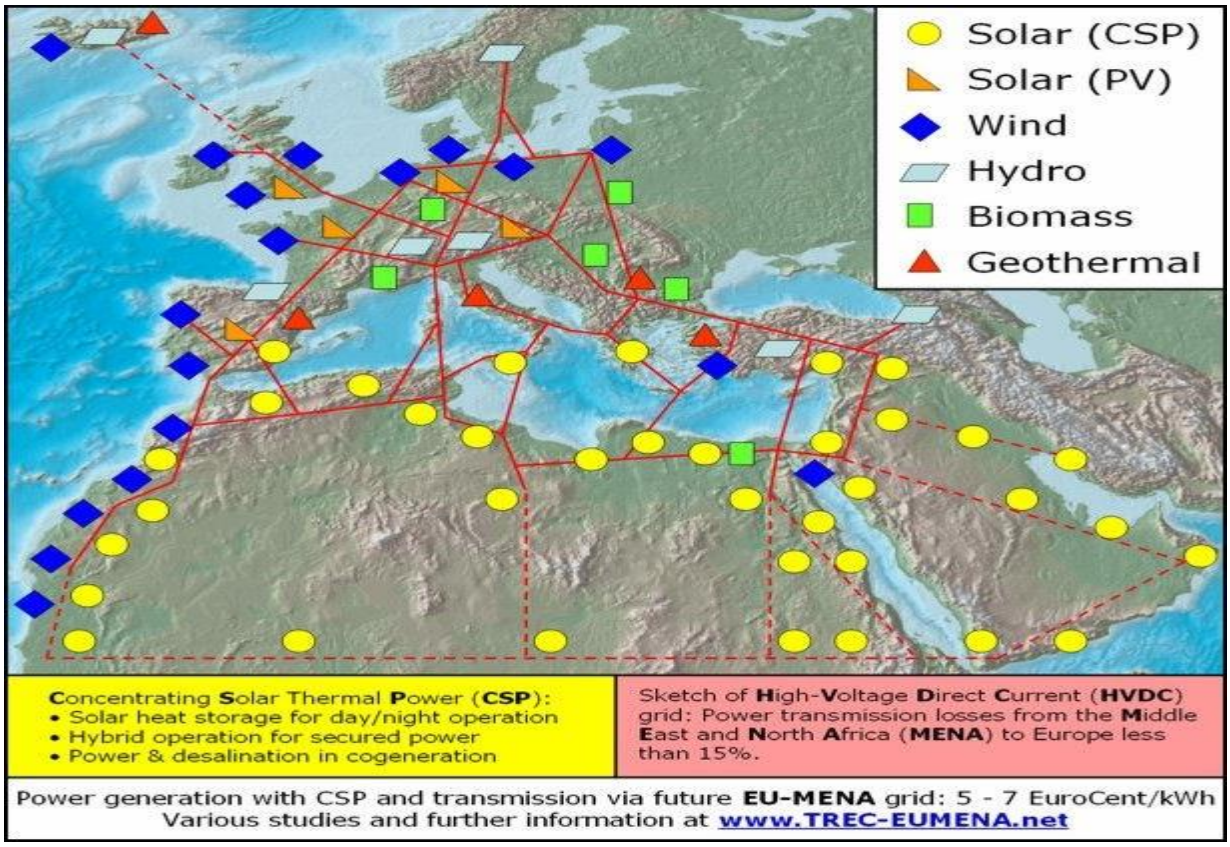


Figure (11): EU – MENA Proposed Future Transmission Grid

North Africa alone could provide the EU with 700,000 GW-hours per year of electricity by 2050 through an interconnected electric grid, according to the European Commission's Directorate-General for Energy and Transportation. By 2050, twenty power lines with 5000 MW capacity could be developed, each providing about 15 % of the European electricity

[14] Concentrating Solar Power in the Mediterranean Region http://www.dlr.de/tt/desktopdefault.aspx/tabid-2885/4422_read-6573/

[15] Trans-Mediterranean Interconnection for Concentrating Solar Power http://www.dlr.de/tt/desktopdefault.aspx/tabid-2885/4422_read-6588/

demand by solar imports[12].

Conventional Alternating Current (AC) energy grids are not capable of transferring electricity such long distances. Thus, a combination of AC grids and High Voltage Direct Current (HVDC) transmission technology will be used in a Trans-European electricity grid[16].

A future HVDC grid will have a low number of inlets and outlets to the conventional AC system as it will primarily serve long distance transfer, while the AC grid will have a function analogous to country roads and city streets. HVDC over long distances contributes considerably to increase the compensational effects between distant and local energy sources and allows system operators to compensate for outages of large power stations through distant backup capacity[17].

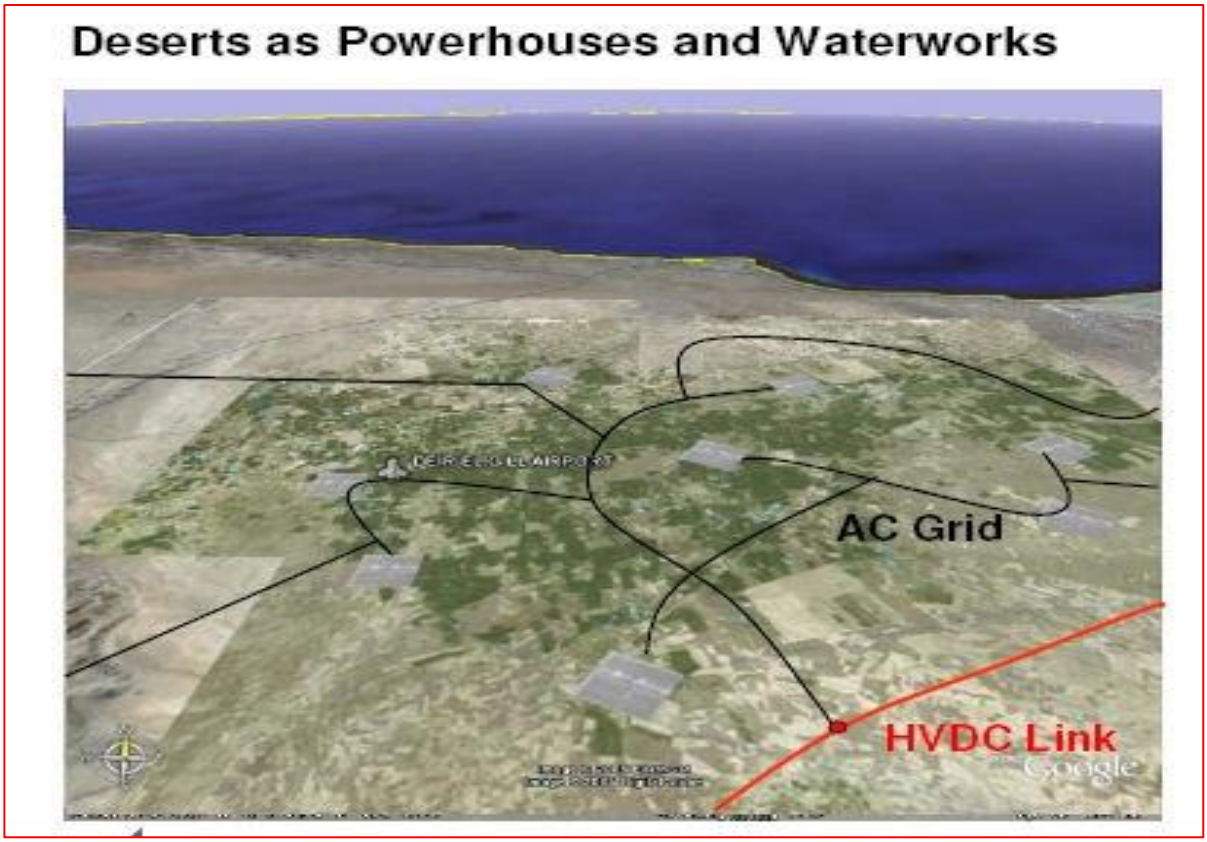


Figure (12): EU – MENA Proposed High Voltage Direct Current (HVDC) Link

Only 10 % of the generated electricity will be lost by HVDC transmission from MENA to Europe over 3,000 km distance[15].

[16] Trans-Mediterranean Interconnection for Concentrating Solar Power
http://www.dlr.de/tt/desktopdefault.aspx/tabid-2885/4422_read-6588
[17] Trans-Mediterranean Interconnection for Concentrating Solar Power
http://www.dlr.de/tt/desktopdefault.aspx/tabid-2885/4422_read-6588

4.4.3 Solar Desalination of Sea Water

Water is desalinized by solar energy through low temperature seawater evaporation and condensation cycles similar to a normal multi-stage flash distillation (MSD) and multiple effect distillation (MED). It operates twenty-four hours a day with energy storage and hybrid operation[18]. According to the German Aerospace Center, energy from solar thermal power plants will become one of the least cost options for desalted water in MENA within a decade[16].

As an example, solar powered water desalination is already utilized in Bahrain. The Al Hidd independent water and power plant (IWPP), once complete, will triple Al Hidd IWPP's current desalination capacity from 136 million liters per day (MLD) to 409 MLD.

Yemen have a desperate need to Desalinate not less than 200MCM/Year of Red Sea Water & pump it through 170Km with a Lift of 2,700m above Sea Level from Hodiadah to Sana'a to cover the need of the capital city of Yemen Sana'a with its population needs by the year 2020. An investment opportunity is thus foreseen for both the CSP System and the Pumping System (Figure (13) for such a project in the near future.

A CSP Desalination System could be set up in Hodiadah to provide the necessary energy for the Desalination and Pumping and such a system capable of producing and pumping 200 MCM/Year will Likely to cost around $2 Billion.

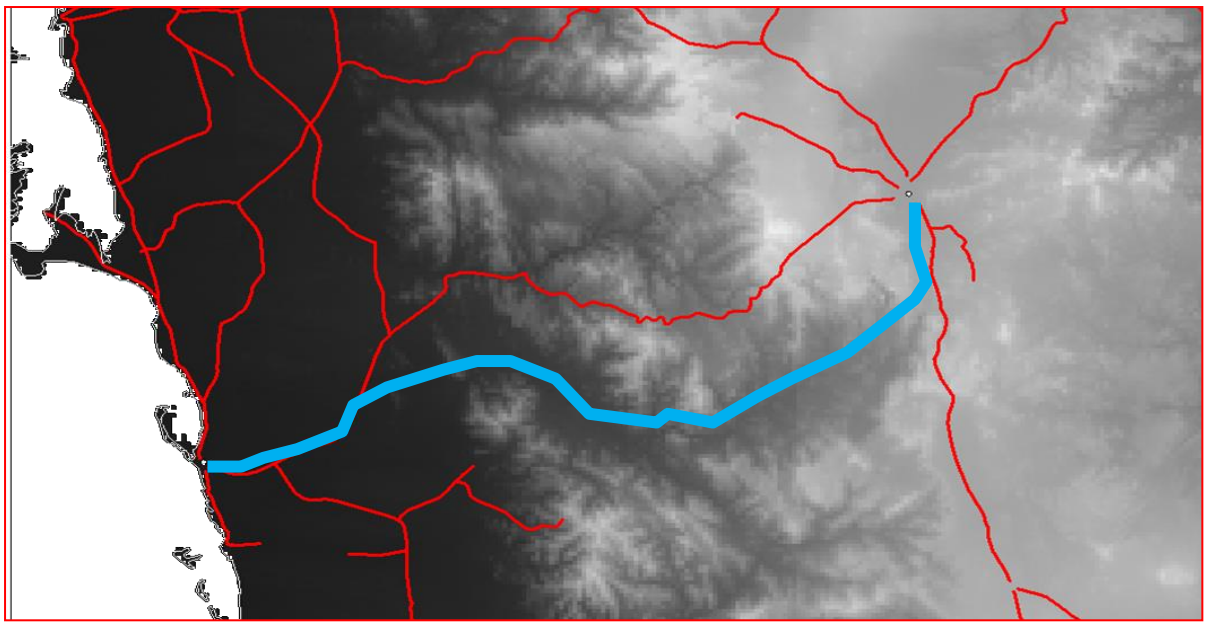


Figure (13): Sea Water Desalination Proposed Pipe Line from Hodiedah to Sana'a

[18] Concentrating Solar Power for Seawater Desalination http://www.dlr.de/tt/desktopdefault.aspx/tabid-3525/5497_read-6611/

The possible economical returns for a **project costing $2 Billion USD** will be as shown in the graph of Figure (14) below. If billing starts at $3.00/m3 which is below average of present cost, the pay back for everything will be in 5 years, and a possible return of about $18 Billion in net profit over the 25 Years Project Life can be made[19].

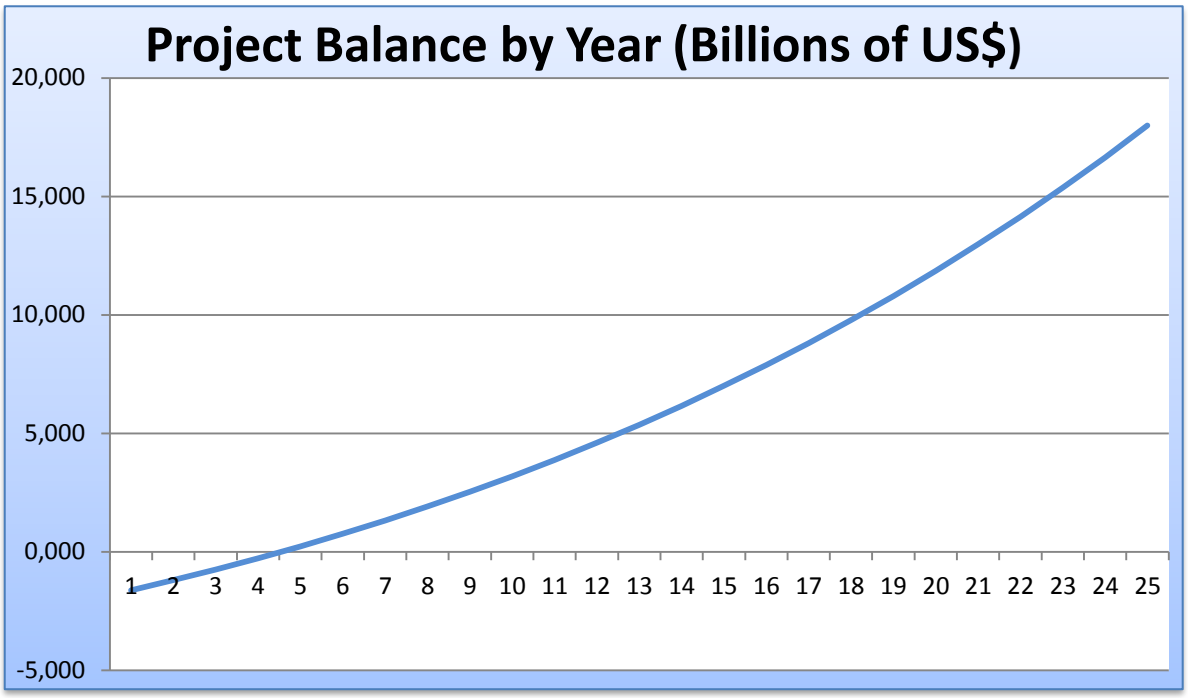


Figure (14): Possible Economic Returns of an Investment Desalination Project Cost of US$2 Billion

5.0 Monopolies and Privatization According to Each Energy Sub-Sectors

5.1 Monopolies

The Law No. 19/1999 "On Competition Promotion, Monopoly, and Commercial Deception Prevention" provide the legislative basis for promoting competition and preventing monopolistic behavior and deceptive trade practices in Yemen. The Law excluded from its scope provisional measures taken by the Council of Ministers in emergency or force majeure instances; rights conferred through the protection of intellectual property; the activities of commercial enterprises linked to the Government through valid concession agreements; State

[19] Mr. C. Block, Consultant, Zeitgeist Holdings Ltd., Hong Kong, China & Prof. Dr. T. Sufian, Sana'a University, Yemen, "Study Presented to Yemen Government on Sea Water Desalination for Sana'a", Sana'a, Oct. 2010.

monopolies; commercial agencies; and, franchising or licensing agreements with foreign producers.

Law No. 19/1999 established a Government authority - the "Anti-Monopoly and Competition Protection Authority" - to define the policies and procedures needed to protect and encourage competition. The Authority could intervene against monopolistic or anti-competitive behavior in the form of monopolies; cartels; agreements limiting production, trade or competition in various forms; price fixing; collusion etc. Individuals and enterprises could bring complaints against restrictive business practices to the Authority, which would investigate the claims. Having established the merits of a claim, the Authority would approach the Ministry of Industry and Trade to hand over the matter to the general prosecutor for further investigation and action before the court against the perpetrator. A new draft Law "On Monopoly and Anti-Competitive Behavior" is in preparation.

Monopolies had been established for fixed-line telephone services (the Public Telecommunication Corporation), international telecommunication services (Tele-Yemen), electricity production and distribution (the Public Electricity Corporation (PEC)), and water and sewage (the Public Corporation of Water and Sanitation (PCWS)). Yemen had no plans to break up the existing monopolies, but would allow private sector participation gradually to ensure universal access to essential services. In this regard, public-private partnership had been introduced in the power sector with the private sector generating electricity for sale and distribution by the Public Electricity Corporation (PEC) .

Yemen General Corporation for Oil and Gas (GCOG), owned by the Ministry of Oil and Natural Resources, is a State-owned holding company responsible for industry regulation and all imports and exports of crude oil, natural gas and petroleum products. In this respect, the holding company and its affiliates - the Yemen Oil Company, the Yemeni Company for Distribution of Oil Derivatives, the Aden Refinery Company, the Yemen Gas Company and the Yemen Refining Company - hold exclusive rights in the exploration, distribution, refining, processing, marketing, importation and exportation of oil, gas and refined petroleum. The holding company was exempt from payment of all customs duties and taxes.

Trading in petroleum products is supervised to conserve an exhaustible natural resource and to rationalize its use. The GCOG determines the quantity of crude oil and derivatives required for domestic consumption through market research and in consultation with other institutions and Government bodies. Local consumption of petroleum products is forecasted

annually on the basis of consumption in the previous year, adjusted for the estimated growth (5-10 per cent) in domestic demand. The estimates are forwarded to the Aden Refinery Company, which supplies up to 90 per cent of the petroleum products needed to satisfy domestic demand. The balance is covered by the Marib refinery or through imports. The imported quantity depended on the size of the estimated deficit and available storage capacity. Domestic production is set to expand with two privately owned refineries in the pipeline. All petrol stations private or State-owned, purchase petroleum products from the Yemeni Company for Distribution of Oil Derivatives. Importation of petrochemical products is handled by the private sector.

The private sector had no incentive to import petroleum products such as diesel and liquefied petroleum gas , as they were sold at prices below world market levels in Yemen. As the Treasury subsidized the two products, the Ministry of Oil and Minerals determined the imported quantities in consultation with the Ministry of Finance. The Ministry then assigned the respective GCOG affiliate to purchase and distribute the imports. The decisions on where to source the imports from were based on commercial considerations. The private sector imported non-subsidized petroleum products.

Based on the available information, it is considered that the Yemen General Corporation for Oil and Gas a State-trading enterprise in the meaning of Article XVII of the GATT 1994.

5.2 Privatization

As part of comprehensive economic reforms, the Government of Yemen initiated a privatization program in early 1995 that aimed to privatize about 70 per cent (in employment terms) of its 212 public enterprises (SOEs) by the year 2000 and came to a standstill in April 2001 when Parliament refused to approve a World Bank credit to fund a larger, long-term privatization program. However, a few years later, the government funded the privatization program. In April 2004 Presidential directive decreed that land be granted to investors at no cost and that the investment projects enjoy profit tax exemption if the project capital is more than 10 million USD[20].

A privatization program started in 1998 with sixteen enterprises in industry, tourism and trade. Between 2003 and 2004, eight companies were privatized, seven of which was in

[20] World Bank, 2002, Economic growth in the Republic of Yemen: sources, constraints and potentials. Washington, D.C.: World Bank.

public auction. Recently, the Yemen government announced it would continue the process of privatization by privatizing fifteen factories in which are suffering from economic stagnation. Airport services, cements and medications are at the top of the privatization list[8].

6.0 General Legislation Relevant to Investment

6.1 Foreign Investment Legislations

Investment Law No. (15) of 2010 of 23 August 2010 had replaced Investment Law No. (22) of 2002 and now serves as the regulatory basis for foreign and domestic investment in Yemen. Pursuant to Article 4 of Law No. (15) of 2010, all sectors are open for investment barring the manufacture of weapons and explosive materials. Investments in certain sectors, namely oil and gas; minerals; banking and finance; import, export, wholesale and retail trade were outside the purview of the Investment Law and governed by separate legislation.

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The Investment Law does not distinguish between domestic and foreign investors, and there is no requirement for foreign investors to partner with local companies. The General Investment Authority (GIA), Yemen's primary agency tasked with promoting investment, publicizes investment opportunities and coordinates government support on behalf of investors. GIA is currently implementing a "one-stop shop" process to simplify and streamline the process to register investments.

The Authority (GIA) provides data requested by investors; streamlined procedures to initiate, expand, develop and register investment projects in accordance with the Investment Law and by-laws; simplified procedures to establish investment companies and their branches; and, simplified procedures to bring in foreign expertise not available in Yemen. The General Investment Authority (GIA) considers the investment applications together with supporting documentation against criteria such as compliance with applicable technical standards and disciplines; commitments to implement the project as per approved plans; and, ensuring

limited or no negative environmental impact. Foreign and domestic investors were subject to the same registration procedures and requirements. Applications are processed within 15 days.

Interested investors can obtain information packets from GIA, including a copy of the investment law; an investment guide summarizing GIA activities, and an application form with instructions can be obtained from the Promotion Section, General Investment Authority[21].

GIA or the Investment Law does not cover some investment sectors. The Ministry of Oil and Minerals govern investment in the oil and gas sector, and the Central Bank of Yemen oversees investment in the banking sector. The government of Yemen has sought to attract more international oil companies to invest in the hydrocarbon sector, which generates 60 percent of the government's budget.

In April 2014, Yemen's Parliament agreed to join the World Trade Organization (WTO), with the hope that Yemen's eventual accession will lead to a freer and more open market for international and domestic investors.

Guarantees and other benefits accorded to investment pursuant to the Investment Law include:

1. Non-discrimination and equality for Yemeni and foreign investors with respect to rights, obligations, rules and procedures (Article 5 of Law No. (15) of 2010);
2. Guarantees against nationalization of investment projects or confiscation by any decision other than a judicial order;
3. Allowing all investors 100 per cent ownership of an investment project, including any real estate associated with it;
4. Full freedom to manage the projects and export any resulting goods or services without limitations;
5. Allowing insurance of investments against non-commercial risks at any international institution of which Yemen was a member; and,
6. Free transfer of foreign currency in cash to or from Yemen, or re-export of the capital invested whether in kind or in cash, in case of liquidation or disposal of the project. In case of expropriation, foreign investors were entitled to the same compensation as

[21] Website: http://investinyemen.org/

that offered to domestic investors. Investors were permitted to employ foreign nationals according to the needs identified in the project's list of requirements. Non-Yemeni personnel could be granted three-year renewable work permits and residence visas upon the recommendation of the General Investment Authority.

7. In the event of any dispute between the investor and the government with regard to the project, the dispute may be referred to arbitration in accordance with the following rules:
    - The arbitration rules and procedures of any national or regional approved arbitration center; or
    - The applicable arbitration rules and procedures of the United Nations Commission on International Trade Law (UNCITRAL).
8. In the event the land allocated for the investment project is part of the state owned lands and the investor has finalized all contracts and permits necessary to establish the project, should any claim with regard to the ownership of the land arise, it should be addressed to the General Authority of Land Survey & Urban Planning. However, filing such a claim shall not hinder the progress of the work in the investment project.
9. Any article in any other applicable law in contradiction of the Investment Law No. (15) of 2010 shall be deemed null and void.

6.2 Establishment of Enterprises

State-owned enterprises play a minimal role in the national economy. Although data is scarce, the estimated State-owned enterprises in the industrial sector accounted for approximately 1.2 per cent of the number of firms and around 10 per cent of the output of the sector in 2005. The operation of State-owned enterprises is governed by Law No. (35) of 1991 "On Public Authorities, Corporations and Companies", as amended by Law No. (7) of 1997, or by the decrees establishing these enterprises.

The State-owned enterprises face private sector competition since the majority of them operated on free market principles. However, monopolies had been established for fixed-line telephone services (the Public Telecommunication Corporation), international telecommunication services (Tele-Yemen), electricity production and distribution (the Public Electricity Corporation), and water and sewage (the Public Corporation of Water and Sanitation). Yemen had no plans to break up the existing monopolies, but would allow private sector participation gradually to ensure universal access to essential services. In this

regard, public-private partnership had been introduced in the power sector with the private sector generating electricity for sale and the Public Electricity Corporation (PEC) carries the distribution.

State-owned enterprises operated on an equal footing with the private sector and on the basis of market forces and principles. In the Government view no exclusive rights or privileges within the purview of Article XVII of the GATT 1994 were accorded to any enterprise. Although the obligations of Article XVII of the GATT 1994 applied to all State owned or controlled enterprises regardless of their privileged trading status, the Yemeni Government confirmed it's commitment to Article XVII of the GATT 1994.

6.3 Legislative Framework for Privatization

Privatization is carried out within the framework of the Government's economic reform program, the national poverty reduction strategy, and economic needs. Legislation related to privatization included the Republican Decree No. (150) of 1994 "On Privatization of Public Institutions"; Republican Decree No. (8) of 1995 "On Regulatory and Executive Procedures for Privatization"; Republican Decree No. (399) of 1999; and, Law No. (45) of 1999 "On Privatization".

The legislation had been adopted to regulate and streamline privatization procedures; limit or redefine the role of the State in the management of the economy; reduce the expenditure and increase the efficiency of State-owned enterprises; encourage private investment and ownership; and, enhance the inflow of investment and advanced technology. Local and foreign investors enjoy equal opportunities to participate in the privatization process. Yemen had no fixed timetable for the completion of its privatization process.

Privatization is carried out pursuant to Article 5 of Law No. (45) of 1999 by offering shares for public subscription; partial or complete sale to the employees; sale of assets or components; capital and operational partnerships; management contracts and leases; sale of State-owned shares in the mixed sector, provided this did not contravene laws or create monopolies; and, denationalization or return of State-owned units to the previous owners.

All privatizations involving either a partial or full transfer of ownership are subject to the Council of Ministers' approval. The Supreme Committee for Privatization - chaired by the Prime Minister and comprising the Ministers involved in privatization and the Technical Privatization Office (TPO) - had been established to ensure that privatization procedures were

standardized, transparent, neutral and non-discriminatory. The TPO provide technical information and inputs (e.g. studies, proposals, design of privatization programs, tendering procedures and contracts), and is the technical body servicing the Supreme Committee for Privatization.

The functions of the Supreme Committee for Privatization include:

I. Approving studies and proposals to assist decision-making and evaluation of the privatization approach or methods under consideration;
II. Approving executive programs, documents and contracts drafted in accordance with the privatization procedures or methods specified in Article 5 of Law No. (45) of 1999. These documents were submitted to the Council of Ministers for final approval;
III. Appointing temporary members to the Executive Board of Directors in enterprises slated for privatization;
IV. Addressing the financial, administrative and legal aspects of units being privatized;
V. Approving proposals for the liquidation, merger or division of units and branches, if this was deemed necessary, and served economic or institutional interests; and,
VI. Approving designs of privatization programs prepared by the TPO, covering all phases of the privatization process from the preparatory phase to the final execution of the project. The tasks and functions of the Supreme Committee for Privatization are being modified in a draft amendment to the Law No. (45) of 1999.

6.4 Corporate Social Responsibility

Law does not mandate corporate Social Responsibility (CSR), but establishing positive community relations can be crucial to sustaining operations, particularly in tribal areas. Foreign and domestic firms often promote CSR through educational scholarships or charities run by family firms. Companies with operations outside of Sana'a, particularly oil companies working in tribal regions, have faced sabotage of their infrastructure and blockades of supplies by locals who were excluded from jobs, and felt that they did not have a stake in the success of the companies in their regions. Tribes in oil-producing regions claim they are not benefitting fairly from the economic activity in their areas, and investors should be very sensitive to the need to build strong and lasting community relations. The provision of community-based services, such as healthcare and education, can contribute to protecting investments in isolated areas, where the tribal structure is more influential than the formal legal system.

6.5 Legislation on Property Rights

The Intellectual Property Rights Law No. (19) of 1994 provided the basis for intellectual property protection in Yemen. The Law regulated and protected different forms of intellectual property, including trademarks, copyright, industrial designs and patents. The Government of Yemen had undertaken a review of the Intellectual Property Rights Law No. (19) of 1994 and had adopted new laws to ensure compliance with the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS Agreement).

Industrial Property Laws had been enacted and implemented, including the Law "On Trademarks and Geographical Indications" adopted on 21 November 2010; the Law "On Industrial Designs" adopted on 26 December 2010; and the Law "On Patents, Utility Models, Integrated Circuits and Undisclosed Information" adopted on 12 January 2011. The Law "On the Protection of Copyright and Related Rights" had been approved by Parliament in April 2012. The full implementation of the TRIPS Agreement would be effective by the end of 2016 (except for patent protection of pharmaceuticals covered by the Decision on TRIPS and Public Health (WT/L/641)).

As part of Yemen's WTO accession requirements, Yemen has taken concrete steps to adequately protect intellectual property rights. Yemen has acceded to the Berne Convention for the Protection of Literary and Artistic Works, the Paris Convention for the Protection of Industrial Property, and the International Agreement on Protecting Intellectual Property Rights. Yemen is not yet compliant with the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), but the government has an action plan to become compliant by the end of 2016.

Yemen had become a member of the World Intellectual Property Organization (WIPO) in 1979, and had acceded to the Paris Convention on 15 November 2006 and to the Berne Convention on 14 April 2008.

The Intellectual Property Rights Law No. (19) of 1994 generally provided national and MFN treatment to foreign natural and legal persons. However, for patents, Article 120 of the Law provided national treatment only to foreigners living outside Yemen, and not explicitly to non-nationals residing in Yemen. However, the Government of Yemen is revising its law to ensure full conformity with Article 3 of the TRIPS Agreement.

Concerning copyright and related rights and the protection accorded to works of Yemeni or foreign authors - whether resident in Yemen or living abroad, Article (3)(b) of the draft Law "On the Protection of Copyright and Related Rights" took account of the national treatment principle of the TRIPS Agreement. Protection was given to Yemeni and foreign authors from countries that were signatories to treaties and international agreements on intellectual property to which Yemen was also a party.

6.6 Concessions, Facilitations, Exemptions and Incentives

According to the Investment Law No. (15) of 2010, Tax Law No. (17) of 2010 and Customs Law No. (12) of 2010 the following facilitations, exemptions and incentives are given to the foreign and local investments in addition to the guarantees listed above:

6.6.1 Facilitation

- One-stop-shop services through GIA to obtain all information, services and legal requirements from the relevant governmental agencies for the establishment of projects
- The investor may hire foreign labor for his project
- The investor may obtain land to establish his project through GIA
- Aftercare services for investment projects
- GIA assists investors in obtaining funding and guarantees for their projects
- Matchmaking between local and foreign investors
- All competent authorities and governors shall exert sufficient efforts and cooperate with the General Investment Authority to enforce the provisions of the Investment Law (15) of 2010 within the framework of the one-stop shop system.

6.6.2 Exemptions and Incentives

Investment projects established in accordance with the provisions of this law and the laws in force shall enjoy any incentives or benefits provided for in those applicable laws

1. The Corporate income tax across sectors is 15% under the following conditions:
    - The investment capital should not be less than the equivalent of 3 million U.S. dollars while hiring not less than 100 local labor
    - Investment projects should submit their tax files audited by a certified accountant
    - The project should engage in the same activities as per its registration

- The project should regularly pay all taxes including those related to wages
- Project should be in the following sectors: infrastructure (energy, water and roads), transportation, health, IT, tourism, industry, agriculture and manufacturing
- All projects in sectors not specified above will be subject to 20% corporate income tax except telecommunication and tobacco
- Depreciation of fixed assets

2. Customs exemptions for projects shall apply as follows:
    - Exemptions provided for in the international conventions in force to which Yemen is a signing party, and the agreements concluded with international and regional organizations, or foreign parties that have completed the constitutional requirements
    - Fixed and imported assets to establish investment projects including machinery, equipment, fishing and marine freight vessels and aircraft for air transportation, as per the lists prepared and submitted by the General Investment Authority
    - Production inputs for industrial projects are exempt at a rate of 50% of duties during the lifecycle of the project.

6.7 Taxation by Sub-Sectors

Yemen authorities, with the help of foreign donors and DFIs, continuously review legislation related to trade and investment in order to ascertain its effectiveness. An effort to encourage more investment and to promote the private sector growth has been made through a new Investment law promulgated in 2010, which offers reduced tax rate base, right of ownership in real estate, customs exemptions, and guarantees of no expropriation of project. This new law aims to improve tax revenues by streamlining tax and customs incentives and reducing tax exemptions. The law has been introduced in conjunction with new income tax law designed to lower corporate income tax rates from 35% to 20% (and 15% for investment projects that create significant new job opportunities). Furthermore, the law includes reforms for the investment regulatory body and establishment of a new independent authority for investment. This new authority is primarily targeting foreign investors, and is supervised by

the Prime Minister. The new authority is providing material and logistical support for prospective investments in the country.

6.7.1 Tax Structure

Income tax law No. 17 of 2010 includes corporate profits, salary tax, real estate tax on property and rental income. Tax year is normally calendar year, unless otherwise stated. Tax incentives offered for early submission of tax return ranges from 1.5% to .5%. Multiple tax rates are applicable as shown in the following Table (3). Taxpayers defined in three categories as Large tax payers, Medium.

Table (3): Tax Rates

No.	Description	Applicable Rates
1	Corporate	Tax The standard corporate tax rate is 20% Mobile phone companies 50% Oil & Gas companies 35% International telecom companies 35%
2	Capital Gain	Subject to tax corporate tax rate
3	Withholding on dividend	0%
4	Withholding on Royalties	10%
5	Withholding on interest	No withholding on interest paid to foreign banks, else 10%
6	WHT on brokerage & Commission	10%
7	WHT on local services	3%
8	VAT	General rate is 5%, telecom (GSM & CDMA)Services 10%
9	Foreign Exchange control	None

6.7.2 Corporate Tax

The Income Tax Law No. 17 of 2010 governs the taxation of corporations. The taxability of a foreign entity in Yemen is determined based on provisions of the law and its executive regulations. In practice, income tax is imposed on all Yemeni companies on their worldwide income. The legislation provides the scope of tax imposition, with respect to legal entities, as follows:

Government of the Republic of Yemen has entered into an agreement with the following governments for the avoidance of double taxation on income specified in the respective treaties: Algeria, Egypt, Lebanon, Sudan, Tunisia, Syria, Kuwait, UAE, Qatar, Bahrain, Oman, Iraq, Jordon and Ethiopia.

6.7.3 Personal Income Tax

The Income Tax Law No. (17) of 2010 governs the taxation of individuals. Tax is imposed on the income of all individuals, residents and non-residents, which is generated or collected in the Republic from salaries, wages and the like, as well as allowances and bonuses paid to all persons for their performance of any job, task or function.

The rate applicable on salaries and wages progresses from 10% to 15% maximum for resident salaried individuals and 20% flat is applicable for nonresidents.

Allowable deductions include monthly allowances up to YER 65,000 (about $ 300) + YER 10,000 (about $50) being non-taxable salary + 6% of gross salary being social security contribution of employee's part. Other income like bonus, overtime etc. is subject to 15% flat rate.

6.7.4 General Sales Tax

The General Sales Tax Law No. 19 of 2001 governs the taxation of corporations. General Sales Tax (GST) is imposed in Yemen at a rate of 5% on the following, except for the exempted services and commodities and services taxed at special rate:

- Sales value of commodities and services in the Republic of Yemen, at the time of sale occurrence.
- Import value of commodities and services at the time of importation.

In the case of Imported commodities and services, the sales tax is payable by the importer, and is collected in the following means:

- Tax on imported commodities is paid before release from customs in accordance to the procedures decided for the collection of custom duties and the custom authority shall not release these commodities except after payment of the due tax.

- The sales tax paid by the importer at the time of import can be recovered at the time of resale of commodities and services to third parties

- Tax on imported services is paid at the time when its value is paid. The beneficiary person or the person who the service is provided thereby is obligated to present the declaration, deduct, and pay the tax amount to the tax authority.

6.8 Customs

The Yemeni Customs Authority follows Customs Law No. (37) of 1997, which regulates tariffs on imported goods.

The Yemeni Customs Authority assesses the value of imports at the Central Bank exchange rate, which is allegedly the same as the market rate. The tariff schedule consists of ad-valorem duties of 5, 10, 15 and 25%.

7.0 Transit Regulations

The provisions of the Customs Law No. 14/1990 govern Yemen transit trade. The Customs Law provided for the use of international transit documents, unified forms, and security and safety procedures. Goods in transit were not subject to restrictions or prohibitions unless specified otherwise in domestic laws and regulations. In the Yemeni Government view, the Customs Law is consistent with Article V of the GATT 1994.

The Customs Authority supervises transit trade. The Authority could identify the entry points, the transportation means and the itinerary for the passage of goods, taking into account agreements concluded with other countries. Goods in transit are declared and, if necessary, inspected and sealed. The Customs Authority could request a guarantee to cover the customs duties applicable if the cargo was diverted to the domestic market. The Authority issues permits that could be cancelled in case of violation or misuse.

8.0 Bilateral Investment Treaties

Yemen had concluded bilateral investment treaties with Algeria, Austria, Belarus, Belgium, Bulgaria, China, Croatia, Djibouti, Egypt, Eritrea, Ethiopia, France, Germany, Hungary, India, Indonesia, Iran, Italy, Jordan, People's Democratic Republic of Korea, Kuwait, the Lebanese Republic, Malaysia, Mauritania, Mongolia, Morocco, the Netherlands, Oman, Pakistan, Qatar, Romania, the Russian Federation, South Africa, Sudan, Sweden, Syria,

Tunisia, Turkey, Ukraine, United Arab Emirates and the United Kingdom. Yemen was a member of the International Convention for the Settlement of Investment Disputes and the Islamic Corporation Agreement for Investment Guarantee and Export Credit. However, Yemen was not a party to the Convention on the Recognition and Enforcement of Foreign Arbitral Awards. For more information on Yemen's bilateral investment agreements, one may refer to the Yemen investment website (http://investinyemen.org/)

The Overseas Private Investment Corporation (OPIC) can provide support to finance and insure both private and public sector projects in Yemen under the terms of a 1972 investment guarantee agreement, but OPIC has not supported any project in Yemen since at least 2006. Potential investors should consult early on with representatives from OPIC regarding the financing profile of a given project. The Export-Import Bank (Ex-Im Bank) is currently barred from operating in Yemen. Yemen is a member of the Multilateral Investment Guarantee Agency.

9.0 List of Laws Concerning Foreign Investments

Investment Law No. (15) of 2010,
Income Tax Law No. (17) of 2010,
Customs Law No. (12) of 2010,
Customs Law No. (14) of 1990,
Investment Law No. (22) of 2002,
Trade Law No. (23) of 2007,
General Sales Tax Law No. (19) of 2001,
Mines and Quarries Law No. (24) of 2002,
Intellectual Property Law No. (19) of 1994,
Commercial Companies Law No. (22) of 1997,
Republican Decree No. (150) of 1994 "On Privatization of Public Institutions",
Republican Decree No. (8) of1995 "On Regulatory and Executive Procedures for Privatization",
Republican Decree No. (399) of 1999,
Privatization Law No. (45) of 1999,
Law No. (35) of 1991 "On Public Authorities, Corporations and Companies".

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