

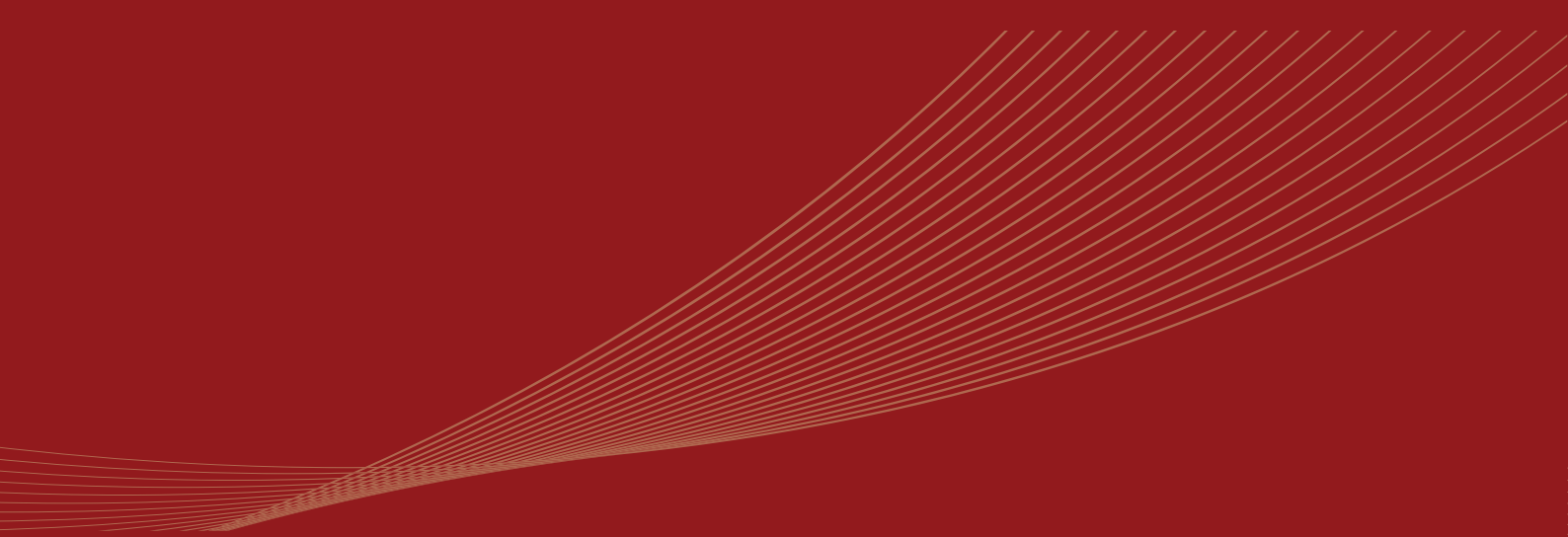
# Yemen LNG Company

Delivering Energy To The World



Corporate Brochure







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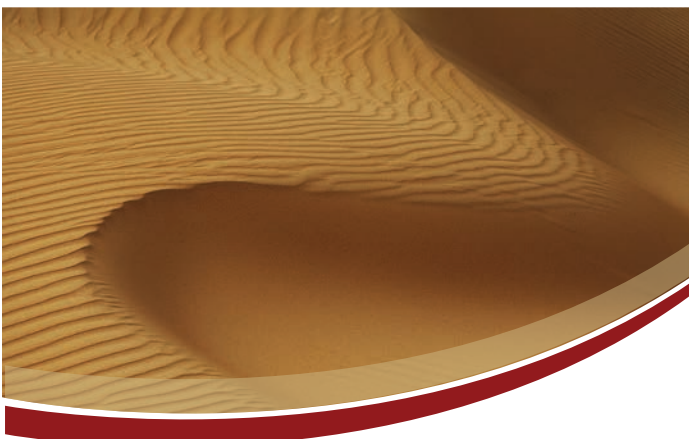
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# Who We Are

A Reliable Supplier Of Energy



Yemen Liquefied Natural Gas Company (Yemen LNG) follows in the footsteps of Yemeni sailors and merchants, who for thousands of years have carried trade throughout the world.

Rising above the sandy beach of Balhaf, on the Gulf of Aden, Yemen LNG is the country's largest industrial project and by far its biggest foreign direct investment.

LNG-exporting nations form a small and exclusive club. Yemen LNG therefore represents a major vote of confidence in the country. It provides a large, stable and long-running source of government revenues.

Yemen LNG Plant has proved to be one of the most reliable and modern LNG plants in the world. At full capacity, it makes Yemen the third-largest LNG exporter in the Middle East and amongst the top ten in the world. Yemen LNG's strategic location allows it to serve markets in Asia, Europe and the Americas where it is important that customers have the confidence in a steady supply of energy.

**“Located at Balhaf on the Gulf of Aden”**

# Our Vision

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We are an LNG producer that puts its ambition at the service of its performance and in the respect of people and their future; while conducting its business ethically.

# Our Mission

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To sustain our reputation as one of the world's safest, efficient and most reliable companies in the LNG industry. To be a socially responsible citizen, so as to leave an enduring legacy of genuine care for people, communities, and the environment.

**“Investment: \$5 billion,  
including \$2.8 billion  
project financing”**





# Creating Yemen LNG

In 1995, the partners in the Block 18 fields in the Marib area had an ambition. They were producing oil, but they knew the fields also held large quantities of gas. How, in a remote and under-developed area, could they bring this gas to consumers, and so bring earnings to Yemen while assisting the local economy?

Liquefied natural gas – LNG – became during the 1990s a much more large-scale and mainstream way of moving gas over long distances. By cooling the gas to a liquid, its volume decreases by 600 times, so it can be carried by tanker. With reductions in cost, and the growth of the LNG market, the solution for the Marib gas became clear.

Balhaf, a remote location on the Gulf of Aden, was identified as the most suitable site for the massive liquefaction plant that would be needed. A relationship was then established with South

Korea's Kogas, one of the world's largest buyers of LNG.

Yemen LNG has the ideal geography, enabling the company to send cargoes to Asia, Europe or the Americas.

Yemen LNG won a competitive tender from Kogas and secured a further sales contract with Gaz de France Suez to the US. When Total stepped in to buy the remaining volumes, the project was ready to go ahead. In 2005, Yemen's General Authority for Social Security and Pensions (GASSP) entered as a partner, given confidence by the strong line-up of partners.

Yemen LNG's commitment is to be one of the world's safest and most reliable companies of the LNG industry.



Balhaf, Year 2005



Balhaf, Year 2009

**100 Million Hours of Work,  
12,000 Yemeni Builders**

# Yemen LNG

## Progress Timeline

- Jan 1995** ● Yemen LNG established.
- March 1997** ● Yemeni Parliament ratifies the Gas Development Agreement.
- Aug 2005** ● Yemen LNG signs sales & purchase agreements with KOGAS, GDF-Suez and Total Gas & Power Ltd.
- Sep 2005** ● Construction of the plant and pipeline begins.
- May 2008** ● Yemen LNG signs \$2.8 billion of project financing.
- May 2008** ● Yemen LNG completes 320-km gas pipeline construction from Marib fields to Balhaf.
- Nov 2008** ● First gas arrives at Balhaf through the pipeline.
- Nov 2009** ● Yemen LNG exports its first cargo of liquefied natural gas.
- June 2010** ● Yemen LNG fully inaugurated, with both trains operating.
- Nov 2012** ● Yemen LNG successfully achieves Lenders' Completion from its project financing consortium.



# Constructive Partnerships

Yemen LNG has a balanced, robust shareholding between two international oil companies, two Yemeni state corporations, and three South Korean partners.



## Total – technical leader – 39.62%

Total is one of the world's largest integrated oil, gas and chemicals companies, operating in more than 130 countries.

Total holds stakes in LNG plants including Qatar, Abu Dhabi, Oman, Australia, Indonesia, Angola, Nigeria, Norway and, of course, Yemen.



## Yemen Gas Company (YGC) – 16.73%

YGC is State-owned and is in charge of the production and distribution of Liquefied Petroleum Gas (LPG) to meet domestic demand. YGC's activities span the entire gas chain, from exploration and production to transportation and marketing.



## SK – 9.55%

SK Innovation Co., Ltd. is Korea's largest integrated energy and chemical company. It is a partner in the Peru, Oman and RasGas (Qatar) LNG projects.



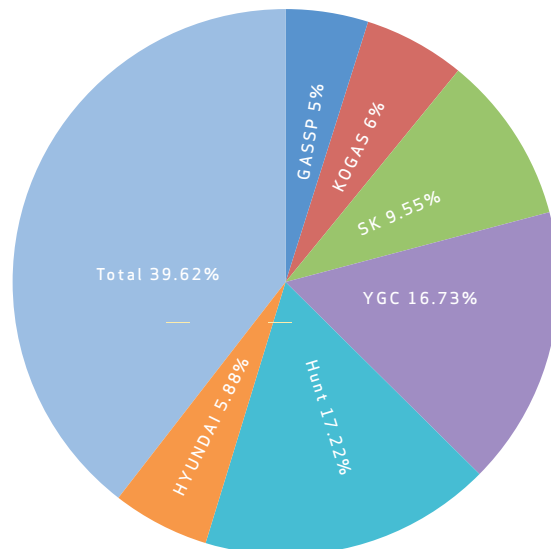
## Hyundai – 5.88%

Hyundai is Korea's leading general trading house with activities in petroleum, petrochemicals, energy and resource development. The company is also a partner in the Oman and Ras Laffan (Qatar) LNG projects.



## Hunt – 17.22%

Hunt is one of the world's biggest independent oil companies, and was one of the first companies to discover oil in Yemen, at the Marib fields in 1984. Hunt is also a partner in the Peru LNG plant.



## Korea Gas (KOGAS) – 6%

Kogas is the world's largest LNG importer. It has a contract to import 2 Mtpa of LNG from Yemen LNG for 20 years. Kogas is also a partner in Oman LNG and Ras Laffan LNG (Qatar).

## GASSP

### General Authority for Social Security & Pensions (GASSP) – 5%

GASSP is State-owned and is the most significant social security organisation in Yemen, covering civil servants who have been permanent employees of the Government.



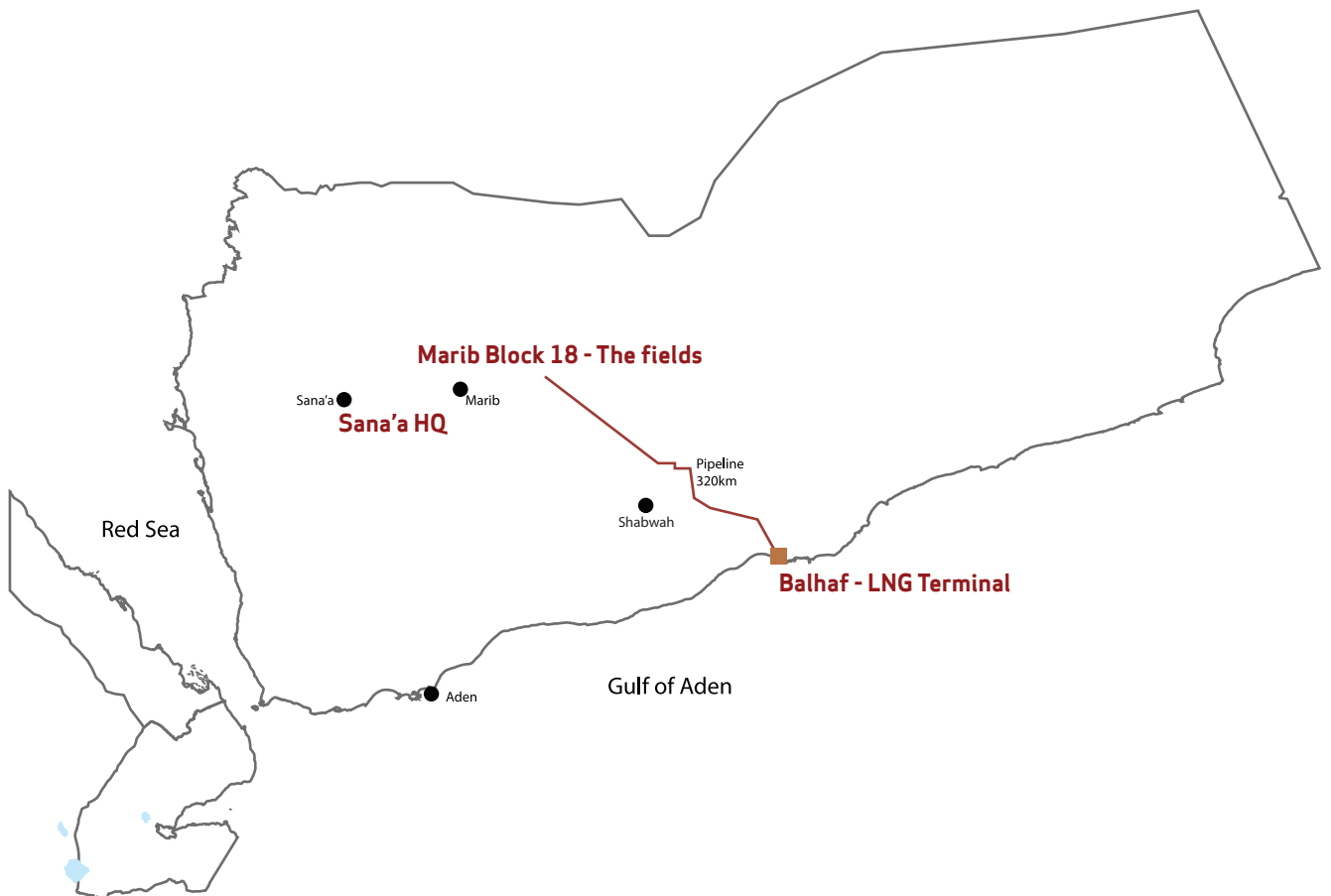
# What is LNG?

## The Liquefied Natural Gas

- Liquefied Natural Gas is simply natural gas that has been cooled to minus 162 degrees Celsius.
- At this temperature, it becomes a liquid, with a volume 600 times less than the gas.
- It can then be transported on special tankers around the world.
- At the destination, it is warmed to convert it back into gas.
- Major buyers of LNG include Japan, South Korea, Taiwan, China, India, the UK, France and Spain.
- Natural gas is a clean fuel with much lower emissions of carbon dioxide than coal or oil.



## The Assets



# The Fields and Pipeline

Gas feedstock for Yemen LNG comes from the Block 18 fields in Marib governorate. The fields hold 9.15 trillion cubic feet (Tcf) of gas for export, and 1 Tcf dedicated for the domestic market. Reserves are sufficient to supply Yemen LNG for at least 20 years.

**“9.15 trillion cubic feet  
of gas for export”**



Production facilities at Block 18, Marib  
(Courtesy: SEPOC)

The creation of an outlet for gas production extends the oil-fields' producing life. Yemen LNG invested in a new plant to extract 12,000 barrels per day of liquefied petroleum gas (LPG – a mixture of propane and butane – used in cooking and heating) to supply Yemen's domestic market. The fields also feed gas to the Marib power plant, to provide electricity to the country. From the fields, Yemen LNG's 38-inch pipeline runs, for 320 kilometres across a rugged plateau, slopes, scorching deserts, and the coastal plain to Balhaf, Shabwah. The pipeline crosses deserts and sparsely-populated rocky areas, so having minimal impact on the local environment and communities. It is buried along its length.

# The Liquefaction Plant

Balhaf is near the picturesque fishing village of Bir Ali, about 200 kilometres west of the town of Mukalla and 400 kilometres east of Aden. This is where the liquefaction plant stands. The Balhaf site was chosen because of the limited impact on the environment and local communities, the deep harbour, and shelter from the rough seas of the winter monsoon.

The Balhaf facility has a capacity to produce 6.7 million metric tonnes per year (Mtpa) of LNG. It makes Yemen the third largest LNG exporter in the Middle East, and around the tenth largest globally.

Yemen LNG uses Air Products' industry standard C3/MCR process. It has all required ancillary facilities to enable it to be self-sufficient – power generation, steam generation, desalination and waste-water treatment. Access is assured by an international airport.

Compared to other plants built at the same time, Yemen LNG had:

- The lowest cost per tonne of capacity
- The shortest construction period
- The fastest start-up
- The quickest ramp-up to full production



## Key plant parameters

LNG capacity	2 trains x 3.35 Mtpa
Storage tanks	2 x 140,000 m <sup>3</sup>
Jetty	Up to 205,000 m <sup>3</sup> LNG carriers
Technology	Air Products C3/MCR® (Multi-Component Refrigerant)

**“Yemen: the third largest  
LNG exporter in the  
Middle East, and around  
the tenth largest  
globally”**



# The LNG Carriers

Three thousand years before the present, Bilquis, Queen of Sheba, ruled over a land famed for its wealth from her palace in Marib. The great dam of Marib, whose ruins are still visible, sustained the city, an oasis luxuriant with palms, for more than a thousand years. Its people traded the valuable perfumes frankincense and myrrh – the oil and gas of their day.

A thousand years ago, Queen Arwa al Sulayhi ruled Yemen from her palace in Jibla, south of Sana'a. She was renowned for her intelligence and vast knowledge of poetry, history and culture.

The names of Yemen LNG's four ships commemorate these two powerful women, as well as the sites of the gas fields and the liquefaction plant. Two of the ships, Seri Balhaf and Seri Balquis, were contracted with MISC Berhad of Malaysia and were built in Nagasaki, Japan, by Mitsubishi Heavy Industries. Seri means "splendour" in Malay. The Marib Spirit and Arwa Spirit were built in the Samsung shipyards in Geoje in South Korea.

Each ship is chartered for 20 years. This enables Yemen LNG to meet its contractual obligations to deliver to its buyers and to make flexible sales around the world. These ships have cargo tank capacities ranging between 157,600 m<sup>3</sup> and 165,600 m<sup>3</sup>.

**"The Names of  
Yemen LNG's  
four ships  
commemorate two  
powerful queens  
of Yemen, the gas  
fields & the  
liquefaction  
plant"**



# Project Financing



LNG is a large and costly business. Yemen LNG has succeeded to win the trust of some of the world's leading lenders to provide financing. This was achieved by the combination of technical excellence, the strong support of the Yemeni government, and the confidence of world-class LNG buyers in the project.

In May 2008, Yemen LNG signed agreements with a consortium of international banks from Europe and Japan, and export credit agencies from Japan, South Korea

and France, for \$2.8 billion of financing – 58% of the project cost. In November 2012, the lenders confirmed that the company had achieved Lenders' Completion. This guarantees that the Yemen LNG facilities have been completed and are performing to the strict standards laid down in the lending documents.

The final maturity date of the loans is December 2023. The successful conclusion of this massive project financing, by far the largest ever in Yemen, was a key milestone for the project.

**“The Yemen LNG \$2.8 billion of project financing is by far the largest ever in Yemen”**

K-Exim

JBIC

COFACE

Export credit agencies

NEXI Lender Banks



Bank of Tokyo-Mitsubishi UFJ

coface



JAPAN BANK FOR  
JBIC INTERNATIONAL COOPERATION

citibank

Korea Eximbank



NEXI

RBS  
The Royal Bank of Scotland

ING



SOCIETE GENERALE  
Corporate & Investment Banking



Succursale en France

MIZUHO

CALYON  
CRÉDIT AGRICOLE CIB

# Operations

The Operations Department is responsible for the production of Liquefied Natural Gas (LNG) and maintenance of the facilities in Balhaf. It also operates the ISPS certified Port facility used to load more than 100 LNG cargoes every year to various countries in Asia, America and Europe. It has more than 400 positions involving high-expertise skills in Production, Maintenance, Logistics, Engineering & Construction, HSE and Technical Support sections.

Yemen LNG plant at Balhaf produces 6.7 million metric tonnes (MMT) per year of LNG. The gas is received from Upstream Facilities, operated by the State-owned Company SAFER, 320 km away via a 38" diameter buried pipeline and is further purified to remove the impurities such as carbon dioxide, sulphur compounds, mercury and heavier hydrocarbons. The gas is then progressively cooled to minus 162°C using Air Products Propane/Mixed Refrigerant technology to reduce the volume of gas by about 600 times and liquefying it to store in two LNG tanks each having 140,000 m<sup>3</sup> capacity.

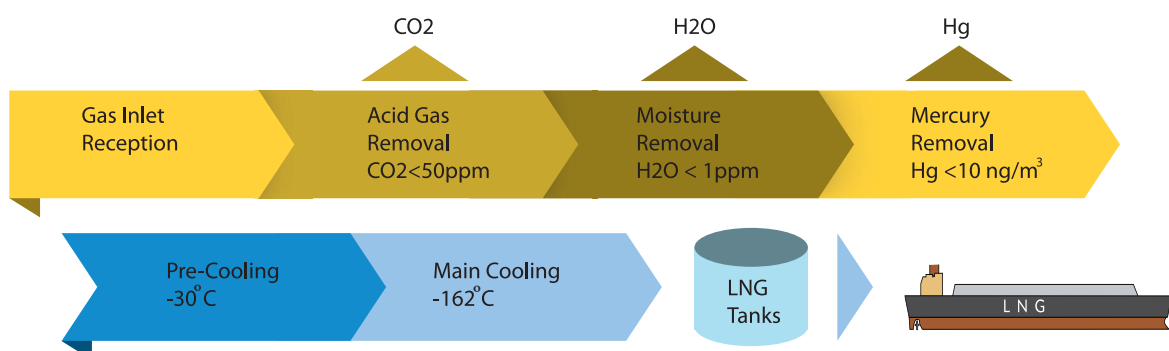
Yemen LNG has been operating with a high Plant Availability of more than 98% and with an Energy Efficiency of more than 90% while continually striving to improve its performance.

The Safety performance of Yemen LNG remains in the top quartile of OGP performance. Yemen LNG initiated in 2012 the ISRS and obtained a Level 5 certification from DNV. It has also completed the



**“Yemen LNG plant at Balhaf produces 6.7 million metric tons (MMT) per year of LNG”**

requirements to obtain ISO 17025 Accreditation for its Laboratory and ISO 14001 Certification for the plant complex in Balhaf and head office in Sana’a. Yemen LNG has invested heavily in training the nationals with its dedicated world-class training facility, LNG School of Technology. 300 courses and 9000 man-days of training have been provided in 2012 to Yemen LNG’s and Contractor’s employees. With a Yemenisation rate close to 90%, Yemen LNG provides opportunity to young and competent locals to fulfill their career goals while delivering operational excellence.





# Serving Customers

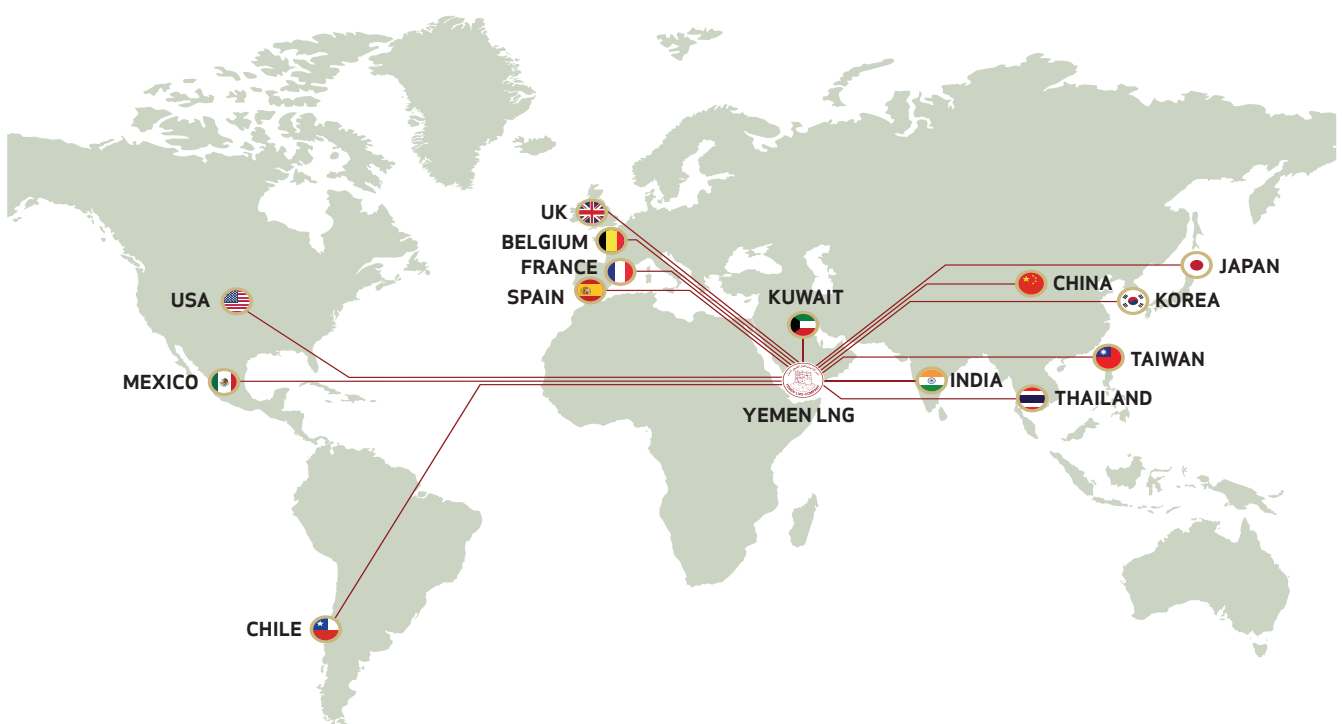
Gas is one of the world's fastest growing fossil fuels. It is abundant, affordable, efficient and clean-burning. Asian economies dependent on energy imports, and European countries seeking to diversify their fuel sources and improve the environment, are key customers for LNG.

Yemen LNG's operations are underpinned by a number of key long-term contracts. It is governed in law by the Gas Development Agreement, ratified by the Yemeni Parliament in March 1997. In August 2005, Yemen LNG signed 20-year gas sales agreements with France's GDF-Suez (2.7 Mtpa), Kogas of South Korea (2 Mtpa) and Total Gas & Power Ltd. of France (2 Mtpa). These companies are amongst the five largest LNG importers in the world. The first sales agreement, with Kogas, was won in an open call for tenders, demonstrating Yemen LNG's competitiveness. The LNG buyers have Take-or-Pay obligations – if they choose not to purchase their minimum quantity in a year, they are obliged to pay for it, and receive make-up deliveries in future. Sales are audited by KPMG.

The prices vary depending on market conditions. Yemen LNG seeks constantly to maximise its sale prices by shifting its output towards more lucrative markets, sharing the added value between the buyer, Yemen LNG and the Yemeni government.

## Revenues to Yemen

- The Yemen government received first revenues from Yemen LNG in 2009.
- The shareholders received their first dividend in 2012. The Government's profit share will increase from 25% to 90%.
- Profits will increase once the project financing loans have been repaid.



# Benefiting People

The plant has been constructed in Yemen, mostly by Yemenis. Five thousand people are employed today directly and indirectly and the company is constantly involved in the development of the neighbouring communities, everywhere from schools, electricity, water, health, agriculture to scholarships. Today, Yemen LNG stands at around 90% of Yemenisation, and is bringing more and more Yemenis into senior positions, where at least one quarter of the hires are women.

## Education Programs

To continue raising the skills of the workforce, the LNG School of Technology on the plant site runs a range of courses, building up to a Masters-equivalent graduate diploma in LNG. The school was established in partnership with the prestigious Institut Français du Pétrole, and is led by professors from IFP. The school is designed to serve, not just the needs of Yemen LNG, but training for ministries and other oil companies in Yemen, making Yemenis more employable in the oil and gas

sector in Yemen and abroad. Yemen LNG runs the largest scholarship program in Yemen providing Yemenis the opportunity to study at universities in the country and in France. Since 2010, Yemeni students, male and female, have been supported annually to study their bachelor and master degrees in France and in Yemeni universities as well as in specialised technical and vocational centres. At least 180 young people will get this opportunity each year.



**Winners of Scholarships to France**





## Marine Cadetships

The MISC Berhad and TEEKAY Shipping Ltd. (previously known as AP Möller-Maersk) shipping companies have created a Marine Trainee scheme in partnership with Yemen LNG, to train Yemeni nationals on three- to four-year courses at maritime colleges in Malaysia and India.

Graduates are employed as certified officers on Yemen LNG's LNG tankers.

## Empowering local businesses

Local contractors have been key in constructing and operating the Yemen LNG plant, and providing security and catering and many other services, and Yemen LNG worked with them to help develop their skills.

On the back of success at Yemen LNG, local companies are now able to compete to win further contracts in Yemen and abroad, providing more jobs and development opportunities for Yemenis.

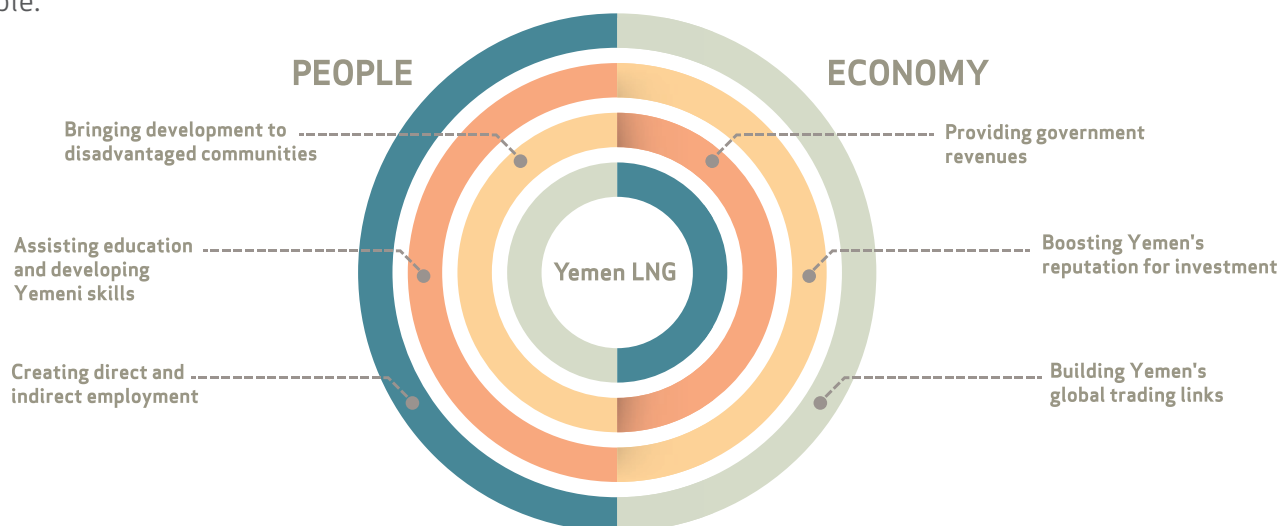






# Building Yemen

Yemen LNG brings two main groups of benefits to the country: advancing the economy, and developing people.



In addition to oil, LNG is critically important in offering an alternative source of government funding. Moreover, Yemen LNG's intense concentration on community relations pays dividends in helping the Company continue operations at all times.

# Sustainable Development

Yemen LNG is keenly aware of the need for people in the area of the plant and pipeline to see benefits. Realising that the Company is not only to generate revenues, but to support the development of the country, Yemen LNG has established the largest sustainable development program ever by an energy company in Yemen. Community officers are engaged in constant dialogue to understand local needs and anticipate the problems of each community – herders, farmers, or fishers.

Sustainable development projects in target areas in Marib and Shabwah include: education, fishery, water dams and irrigation, beekeeping, electricity, water networks, health facilities, women development, humanitarian support and promoting small local enterprises.

**“Yemen LNG has established the largest sustainable development program ever by an energy company in Yemen”**



## Preserving archaeology and culture

Archaeological and cultural heritage issues were not an afterthought for Yemen LNG, but an integral part. The pipeline was rerouted to avoid some important archaeological sites, only discovered during the course of the survey, and now on display in the Sana'a National Museum.



## Health, Safety and Environment

Yemen LNG's Health, Safety and Environment (HSE) policy is to conduct all activities in a responsible manner that protects the environment and the health and safety of employees, contractors, visitors, and the public.

This policy includes continuous improvement of performance, prevention of pollution of marine and terrestrial environments and compliance with national environmental regulations and international standards.

The determination of Yemen LNG to achieve the highest standards in the field of health, safety and the environment manifests itself in training programs, consultation and through implementation of internal and external audits.

**“The highest standards in the field of health, safety and the environment”**

## Preserving marine life

The rich coastal waters around Balhaf contain 79 different species of coral.

International specialists were engaged during plant construction to transplant corals away from construction areas.

1,500 corals were moved with a survival rate of over 91%

The largest coral moved weighed 4 tonnes, a world record for relocating a living coral.









الشركة اليمنية للغاز الطبيعي المسال  
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