

Progress of Mitsui's LNG Projects



July 8th, 2019
Mitsui & Co., Ltd.

Thank you very much for participating in today's teleconference.

My name is Nozaki, head of Energy Business Unit II.

Today, I would like to explain about progress of our LNG projects. There were 2 recent developments, one is Mitsui's participation in the Arctic LNG 2 Project which we released on 29th June, and the other is the Final Investment Decision for the Mozambique Area 1 LNG project which we released on 19th June.

Participation in Arctic LNG 2 Project in Russia

- 1. Project Overview**
- 2. Development Concept**
- 3. Advantages of the Project**

Project Overview

Site	Gydan Peninsula Yamalo-Nenets Autonomous District, Russian Federation	
Licensed Area	Utrenneye gas condensate field	
LNG Production Capacity	19.8 million tonnes / year (3 trains total)	
Project Company	Arctic LNG2 LLC	
FID timing	3Q, CY 2019 (Plan)	
Estimated Costs	21-23billion USD ⁽¹⁾	
Participants (After Mitsui's participation)	Novatek	60%
	TOTAL	10%
	CNPC	10%
	CNOOC	10%
	Japan Arctic LNG*	10%
	*Joint Venture of Mitsui and JOGMEC	

(1) Estimation of Novatek



©Novatek

This project aims to commercialize the Utrenneye gas and condensate field, located on the Gydan Peninsula in the Yamalo-Nenets Autonomous District within the Russian Arctic Circle, with 19.8 million tonnes of annual LNG production. The gas field is estimated to hold approximately 33 trillion cubic feet of recoverable reserves, and this project will encompass the integrated development from upstream gas development to production of LNG.

The project is being led by the private Russian gas company Novatek. The Yamal LNG project, another project being undertaken by Novatek, also within the Russian Arctic Circle, commenced production in December 2017. Novatek completed construction of Yamal LNG ahead of schedule and within budget, and stable operation and production have continued since the commencement of operations. The knowledge and experience gained by Novatek in the Yamal LNG project will be fully utilized in the Arctic LNG 2 project.

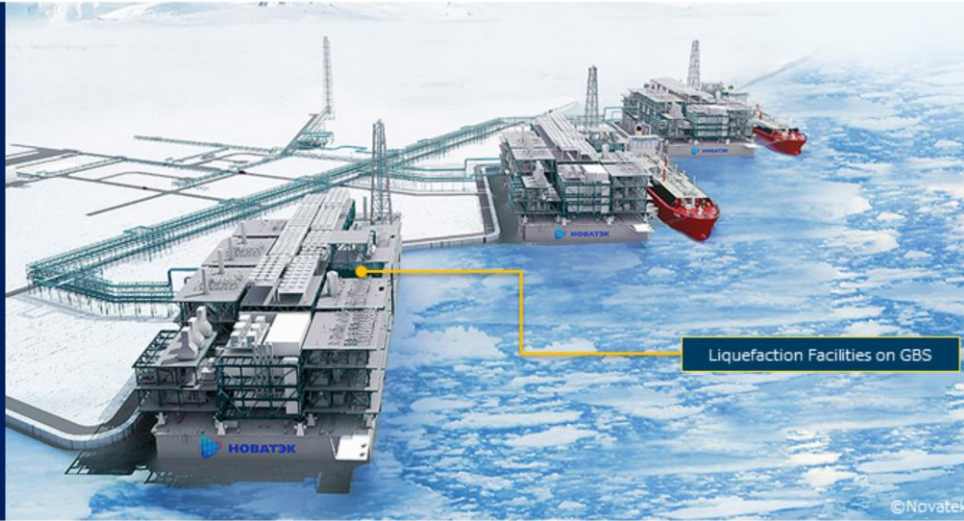
The final investment decision is scheduled for the third quarter of CY 2019, and Novatek's estimate of the total development cost is US\$21 to \$23 billion.

Since concluding a memorandum of understanding concerning potential collaboration with Novatek in December 2016, we have been studying the feasibility of the project. After negotiating the detailed terms of our participation with Novatek and investigating the potential for a joint investment with JOGMEC, we have been considering a firm scheme for equity participation. As a result, we reached an agreement with Novatek to acquire a 10% stake in the project company through Japan Arctic LNG B.V., which is a joint investment company between Mitsui and JOGMEC, and we concluded a share purchase agreement on June 29.

In March this year, the French company Total formally acquired a 10% interest in the project, and China National Petroleum Corporation (CNPC) and China National Offshore Oil Corporation (CNOOC) have also concluded agreements for participation in the project with a 10% interest each. Following Mitsui's participation, Novatek holds 60% of the project's shares, and Total, CNPC, CNOOC, and Japan Arctic LNG each hold 10%.

With the Sakhalin II steadily running, Mitsui is continuing its stable operations in Russia, which holds one of the world's largest gas reserves. By building this new partnership with Novatek and establishing the second LNG base in Russia following Sakhalin II, we aim to strengthen our LNG business and contribute to securing a stable supply of energy.

Development Concept



Development Concept

- ◆ Upstream development of conventional onshore gas field.
- ◆ Liquefaction facilities on Gravity-Based Structure (GBS)
- ◆ Decrease of site work with Modular liquefaction facilities
- ◆ Construction of GBS and facilities modules in dedicated yards

Production Start⁽¹⁾

- ◆ 1st Train : 2023
- ◆ 2nd Train : 2024
- ◆ 3rd Train : 2025-26

(1) Estimation of Novatek

This project operates integrally from upstream gas field development to LNG production. The natural gas produced at the onshore Utrenneye gas field will be delivered via pipelines to the liquefaction facility, where it will be liquefied and then exported. The gas field being developed is conventional and onshore, which contributes to keep drilling costs lower.

As for the liquefaction facility, the project has also developed a concept that will lead to cost competitiveness.

The first of these is the adoption of a system where the liquefaction facility is built on a concrete Gravity-Based Structure (GBS). The GBS platform on which the liquefaction facility is mounted is towed alongside the quay where it is stabilized on the sea bed. The GBS contains tanks for LNG and condensate, and by reducing the overall size of the liquefaction facility, it is possible to reduce the amount of construction work required.

Secondly, a modular construction method has been adopted for the liquefaction facility. While some liquefaction facilities can be built from scratch on site, in this project, the facility will consist of modules that are manufactured individually and then mounted and assembled on the GBS, which allows the works to be conducted more efficiently.

By carrying out all the process from the manufacturing of the GBS to the modular production of the facility and assembling of the facility on the GBS in a dedicated yard, the work performed on site can be minimized and the construction period and cost can be reduced.

The same method will be used to construct all 3 trains, and production is expected to commence in sequence from 2023.

Advantages of the Project

Area utilizing ice-class LNG carriers

- ◆ Integrated upstream development in the Yamalo-Nenets region based on competitive rich gas reserves
- ◆ Cost competitiveness based on optimized development concept
- ◆ Project location enables access to markets in Asia, Europe and other areas via Northern Sea Route

Transshipment Terminals (Kamchatka/Murmansk)

This project is based on an integrated operation from development of the gas field to production of LNG in the Yamal-Nenets region, which contains abundant gas reserves. As explained in the previous slide, a competitive development concept has been adopted for this project, and it is also consistent with one of Mitsui’s basic strategies for the LNG business, that is, “to establish a competitive asset portfolio”.

The LNG produced in the project will be off-taken and sold by the participating companies in quantities proportionate to their share of equity. In other words, the LNG will be sold by means of equity lifting. The investment company established by Mitsui and JOGMEC is to take and sell approximately 2 million tonnes of LNG per year.

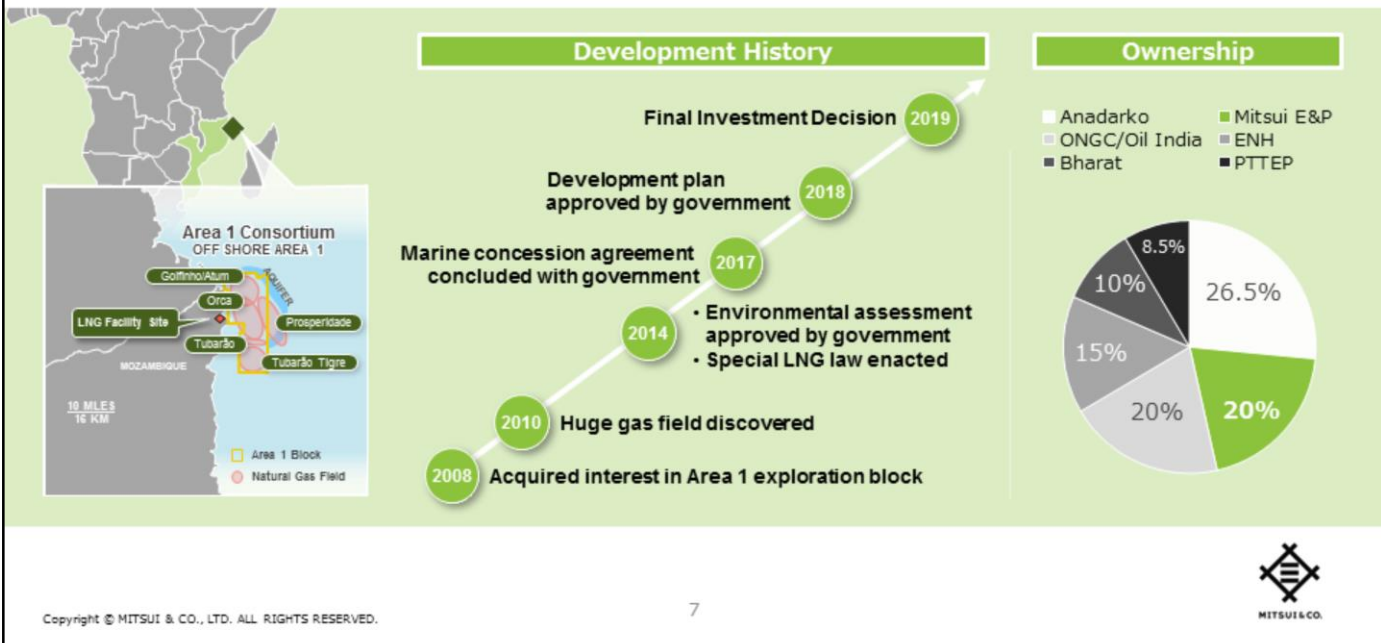
The location of the project allows the Northern Sea Route to be used to provide access to markets in both east and west, including Japan and other Asian markets as well as Europe. Through this project, we will promote our marketing activities in accordance with one of our basic strategies for the LNG business, that is, “to expand and optimize our LNG sales and logistics portfolio”.

Furthermore, this project is consistent with the country’s energy export strategy, and is supported by the Russian government. Therefore, the business environment is already well established as an LNG project.

Mozambique Area 1 LNG Project

- 1. Exploration Block & Development History**
- 2. Development Overview**
- 3. Artist's Rendering**
- 4. Features**

Exploration Block & Development History



The yellow-bounded area in the graphic is the offshore block in northern Mozambique near the border with Tanzania, known as Area 1.

Mitsui first participated in this block in 2008 through a subsidiary with the support of JOGMEC.

Since participation, the joint venture has explored the Area 1 block, ultimately discovering five offshore gas fields. Some fields have gas reservoir of more than 100m in thickness. It is estimated that the entire block has maximum 75 trillion cubic feet in recoverable reserves.

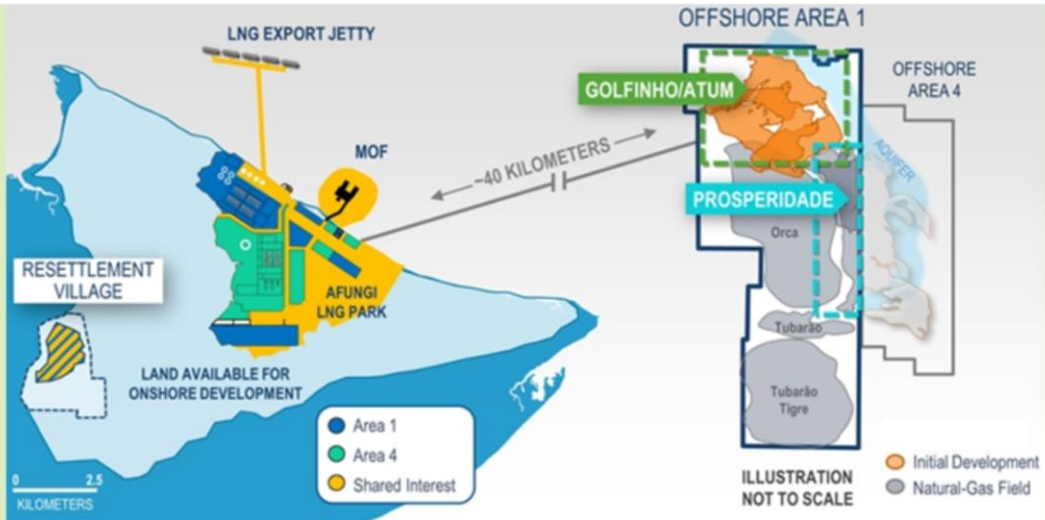
As a means of commercializing the natural gas discovered, which requires establishing a project to export the LNG, we have been implementing a range of initiatives with the Mozambique government and the operator Anadarko.

Initially, we discussed with the Mozambique government to create a special law for this LNG project, which was established in 2014. Thereafter, we solidified the essential legal framework to promote the LNG project, concluded an agreement for the use of ports and received approval for the development plan. We also moved forward with LNG sales and funding. After securing long term sales contracts with global LNG buyers including those in Japan, with the completion of project finance in sight, we made our final investment decision on 18th June.

Mitsui E&P Mozambique Area 1 Limited owns 20% interest, the second-largest after the operator Anadarko.

Other joint venture participants include Mozambique’s state-owned oil company ENH with 15%, India’s state-owned oil companies ONGC and Oil India with a collective 20%, another Indian state-owned oil company, Bharat, with 10%, and the Thai state-owned oil company PTTEP with 8.5%.

Development Overview



The Area 1 block has an area of approximately 4,600km², more than twice the area of Tokyo (2,188 km²).

In the project for which we recently made a final investment decision, we will develop the Golfinho/Atum gas field highlighted in orange within the area bounded with the dark blue line.

Natural gas will be produced in this gas field through 18 production wells, collected through pipelines on the seafloor, transported to onshore approximately 40km away through a large-scale pipe-line and then liquefied.

Artist's Rendering

- ◆ LNG Production Volume :
12 million tons / annum
(2 trains)
- ◆ LNG Storage Capacity :
360,000 m³ (2 tanks)
- ◆ Total Development Costs :
Approx. US\$ 23 billion
- ◆ Production Start :
CY 2024



In this project, two liquefaction trains will be built. The liquefaction capacity of one train is 6.44 million tons, with two trains providing 12.88 million tons in liquefaction capacity.

We forecast 12 million tons in annual LNG production when regular maintenance is considered.

We have selected the consortium of Saipem, McDermott, and Chiyoda Corporation as the contractors to carry out the engineering, procurement, and construction of these onshore production facilities.

We expect total development costs of approximately \$23 billion made up of costs related to the development of the onshore production facilities and offshore development costs as well as finance costs.

Furthermore, we aim to begin producing LNG in 2024.

Features

- ◆ One of the world's largest natural gas reserves (75 trillion cubic feet)
- ◆ Located in East Africa, a new supply source
- ◆ Strategic location provides access to markets in the Far East, Asia, Europe, Central and South America, and others
- ◆ Strong support from the Mozambique government

LNG sales destination	Annual sales volume (million tons)
Tokyo Gas & Centrica	260
Shell	200
JERA & CPC	160
CNOOC	150
EdF	120
Bharat	100
Pertamina	100
Tohoku Electric Power	28

Total of over **11m** tons



As I just mentioned, we have confirmed maximum 75 trillion cubic feet of recoverable gas reserves in Area 1.

With this enormous gas reserves and enough land for a large-scale plant secured, Mozambique could become a major LNG producing country like Australia, Qatar, or the US.

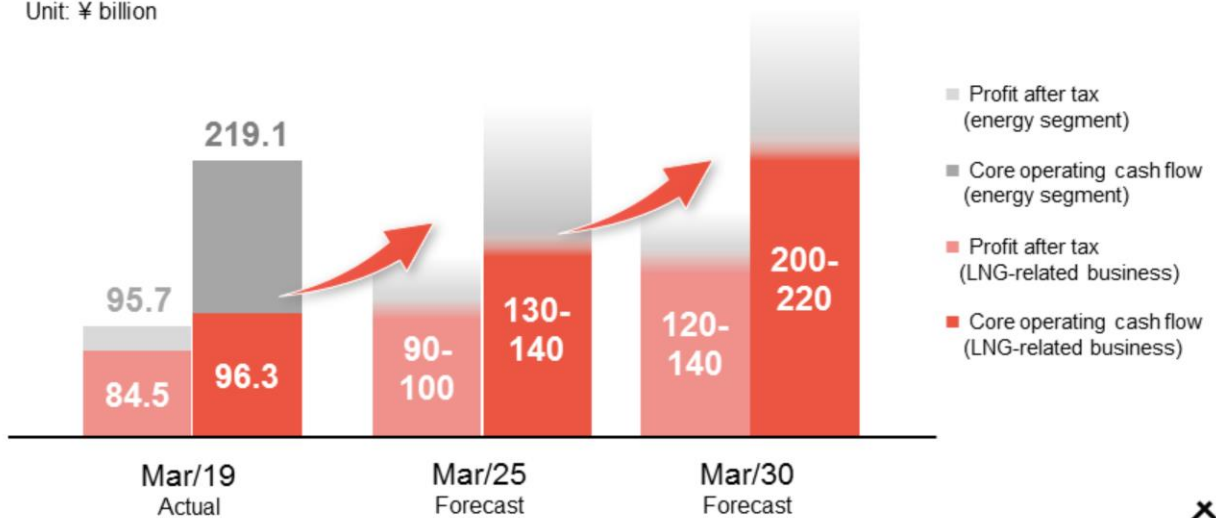
Moreover, our customers have high expectations for Mozambique as a new long-term, stable source of LNG given its abundant gas reserves.

Geographically, customers from around the world are showing interest in Mozambique due to its strategic positioning in having direct access to areas with demand for natural gas such as the Far East, Asia, Europe, and Latin America.

Furthermore, the Mozambique government positions the Area 1 LNG project as a key project for national development. We are working to launch the project as soon as possible with the government and the joint venture partners.

Quantitative Forecast

Unit: ¥ billion



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This slide shows forecasts for the profit for the year and the core operating cash flow for the entire Energy segment, and the expected contributions for each generated from LNG-related businesses.

For the fiscal year ending March 2019, the Energy segment generated ¥219.1 billion in core operating cash flow and ¥95.7 billion in profit, of which LNG-related businesses accounted for ¥96.3 billion and ¥84.5 billion, respectively. For the year ending March 2025, the LNG-related businesses, backed mainly by full-scale contributions from the Cameron LNG project, are expected to exceed ¥140 billion in core operating cash flow. And, for the year ending March 2030, by which Mozambique LNG and Arctic LNG 2 are to come on full stream, we aim for over ¥200 billion in core operating cash flow. The contribution from Mozambique Area 1 and the Arctic LNG 2 is quite substantial, and we will strive for early start up and stable operations for both of these projects.

The increasing demand for MORE energy and CLEANER energy, presents a dual challenge for the Energy sector. Natural gas, especially LNG which has the flexibility to be transported in LNG tankers, is seen as a solution to the Dual Challenge because it releases comparatively low amounts of greenhouse gasses when burned.

Starting with Abu Dhabi in the 1970s, Mitsui has participated in LNG projects throughout the world such as in Australia, Qatar, and the US, engaging in broad business development including the entire value chain of LNG production, transport, and marketing. Leveraging the knowledge of the LNG business we have accumulated, and our relationships with gas-producing countries and project partners, Mitsui will pursue growth and enhancement of its LNG business, to coincide with Mitsui's materiality of "Secure sustainable supply of essential products", "Enhance quality of life", and "Create an eco-friendly society".

360° business innovation.

