Contribute to society through the stable supply of energy and address social issues toward realizing the sustainable development goals.

- Explore, develop, produce and deliver oil and natural gas in Japan and overseas.
- Further enhance the natural gas supply chain, consisting of our domestic infrastructures and electric power supply.
- Contribute to addressing challenges toward realizing a sustainable society associated with energy and climate change through the development and commercialization of new technology, drawing from our expertise.
- Place top priority on maintaining trust with all stakeholders and achieve sustainable growth and maximize corporate value.
Oil and Gas E&P Value Chain

Since its establishment, JAPEX has been engaged in oil and gas E&P (exploration and production) and its transportation and supply. It also contributes to the stable supply of energy, drawing from its extensive track record both in and outside of Japan and the broad range of technology and expertise it has accumulated over the years.

Origin of Oil and Natural Gas

Oil and natural gas were said to be formed by the decomposition of prehistoric organisms underground over several to tens of millions of years as a result of high subterranean temperatures and microorganisms. These resources move upward through subterranean cracks and collect in a stratum called the source rock. Then, oil and natural gas is accumulated in formations where reservoir rocks exist, and dense rocks called cap rocks form in domes.

Oil

Oil is a general term for a flammable liquid, mainly composed of various hydrocarbons, that exists underground. Crude oil is the liquid extracted from underground, from which gas and water are removed. Heat is applied to distill and decompose components of the crude oil based on their distinct boiling points to produce liquefied petroleum gas (LPG), naphtha (gasoline), kerosene, diesel oil, heavy fuel oil, and asphalt. Depending on their properties, these products are used as fuel for powering automobiles and machines and as raw material for chemical products such as PET bottles, plastic products, and textiles.

Natural Gas and LNG

Natural gas is a flammable gas mainly composed of methane, which is colorless, odorless and lighter than air. Regarded as an energy source with a lower environmental impact than other fossil fuels such as oil or coal due to its smaller emissions of carbon dioxide (CO2), nitrogen oxide (NOx) and sulfur oxide (SOx) when burned. LNG is liquefied natural gas produced by cooling natural gas to minus 162°C, where it exists in liquid form. When liquefied, its volume is reduced by one six-hundredth, allowing for long-distance transport and mass storage. Most of the natural gas consumed in Japan is imported from overseas as LNG.
Maximizing the Value of E&P Projects

JAPEX leverages its technology and expertise to contribute to overseas oil and natural gas exploration and production (E&P) projects. We are also looking for opportunities to participate in new E&P projects overseas.

JAPEX has been participating in the development and production of crude oil based on development and production rights jointly acquired with the operator, Malaysia’s state-owned oil company PETRONAS, in 2009. Since commercial production commenced in August 2013, the project has been producing between 90,000 and 100,000 barrels of crude oil per day. Development is under way to increase production to the target volume of 230,000 barrels per day.

Production of natural gas is being conducted in several offshore gas fields in East Java, and JAPEX has been participating in the project since 2007. Current production is mainly from the Sirasun and Batur gas fields of the TSB Gas Fields, which began production in March 2019. Total production across the entire project is around 5 million cubic meters of natural gas per day. The natural gas is processed at a floating production unit (FPU) and supplied through the East Java Gas Pipeline to a state-owned electric power company and fertilizer factories in the suburbs of Surabaya City.

Since April 2013, JAPEX has been participating in the shale gas development and production project with partners including a subsidiary of PETRONAS, the Malaysian state-owned oil company, the operator. Average daily shale gas production was approximately 12 million cubic meters in 2019. A significant volume of shale gas assets has been confirmed in the area. To maximize the asset value, the project currently prioritizes the development of areas with high economic potential, considering the prevailing market conditions and natural gas demand in Canada.

Production of oil from the Eagle Ford Shale has been significant since August 2012 by acquiring the interests for the Eagle Ford region of southern Texas. The project is led by Japex (U.S.) Corp., a local subsidiary. JAPEX contributed to establishing the SAGD (steam-assisted gravity drainage) method for using steam to extract bitumen (ultra-heavy oil) from the oil sands layer. Test production of bitumen based on the SAGD method at the Hangingstone leases was conducted in 1999, and commercial production was successfully launched in 2003. Current production is from the area where production commenced in August 2017 and shifted to stable production at the scale of 20,000 barrels per day by the end of June 2018. The production rate is flexibly adjusted based on market conditions.

See: Development of Shale Gas and Tight Oil on page 9

See: Development of Shale Gas and Tight Oil on page 9

See: Development of Shale Gas and Tight Oil on page 9
Ensuring Stable Supply of Oil, Gas and Electricity

JAPEX currently produces oil and natural gas at oil and gas fields in 10 locations around Japan and supplies to domestic clients using various methods. We are also diversifying the types of energy we supply such as LNG and gas-fired power generation.

Domestic Projects
Unlocking New Energy Resources through Technological Progress

JAPEX has consistently sought to establish and enhance development and production technologies for unconventional resources such as oil sands and shale gas, which exist in different forms compared to conventional oil and gas. We also participate in technological development initiatives aimed at the commercial production of next-generation energy resources such as methane hydrate, which has the potential of becoming a new domestic energy resource.

Oil Sands Development by SAGD Method

JAPEX is a pioneer of the SAGD method, for extracting bitumen (ultra-heavy oil) from the oil sands layer. We began its effort for commercialization of the method in 1992 in Alberta, Canada, succeeded in test production in 1999, and commenced commercial production in 2003. Today we conduct the production operation of bitumen at the Hangingstone leases in Canada (see page 5-01).

The SAGD method uses high-temperature, high-pressure steam to heat the oil sands layer and provide liquidity to the bitumen. A pair of horizontal wells are drilled, and as heat is applied to the oil sands layer by injecting steam into the upper well, the bitumen contained in the layer begins to flow downward to be recovered in the lower well.

Methane Hydrate

Methane hydrate is a mixture of methane and water in solid form that has been confirmed to exist abundantly under the seabed at depths of more than 500 meters near Japan, and it has potential as a new domestic energy resource. The government has launched a joint project with private companies to conduct research toward establishing the technology for commercial production.

JAPEX has been contributing toward commercialization as a member of the Japan Methane Hydrate Operating Co., Ltd. (JMH), a joint venture established by 11 private companies in 2014, and participating in the government’s offshore production test through the JMH.
Stable Supply of Natural Gas, with a Lower Environmental Impact

JAPEX has built a natural gas supply chain that incorporates various infrastructure and methods to supply natural gas produced in Japan combined with LNG from overseas, which has less environmental impact compared to other fossil fuels, in order to meet demand for natural gas in the country.

Our 800 km network of high-pressure gas pipelines, mainly consisting of the Niigata-Sendai Gas Pipeline, connects our gas fields as well as the LNG terminals along the way, and supplies natural gas to clients.

In addition to adopting a seismic-resistant design for our natural gas pipelines so they can withstand major earthquakes, we apply anti-corrosive coating for durability and remotely monitor operational status on a 24-hour basis. We also ensure their safe operation by enabling remote shut-downs in case of emergency and having staff patrol the entire length of the pipelines for maintenance and inspections.

Utilizing the Underground Storage of Natural Gas
The Shuni Gas Field in Niigata Prefecture (see page 7-07) is used for underground storage of natural gas. Here we take advantage of the subsurface geological properties of a depleted gas field connected to our gas pipeline network. Underground storage enables us to respond flexibly to seasonal fluctuations in demand by storing gas that has been produced in other gas fields during summer and then reproducing and supplying it during winter.

Transportation of LNG Tank Container on Rail
This breakthrough system was pioneered by JAPEX for transporting LNG on cargo trains so as to supply LNG in ever wider areas.

It has attracted strong interest from overseas as a solution for serving areas where pipeline infrastructure remains underdeveloped and for effectively reducing environmental impact, and so we offer consultancy services for feasibility studies.

LNG Bunkering (LNG Direct Supply to Vessels)
Due to the enforcement of environmental regulations for ocean-going vessels in 2020, the increased use of LNG-fueled vessels is expected to continue. Furthermore, the adoption of LNG bunkering, the direct supply of LNG to ships as fuel, is currently accelerating in and outside of Japan.

JAPEX aims to establish LNG bunkering in Japan and overseas by leveraging our infrastructure and experience acquired by ship-to-ship LNG transfer operations offshore of Tomakomai Port, Hokkaido, in 2011 and 2012.
New Business through Energy Development Expertise

JAPEX is applying the expertise and experience it has accumulated through oil and gas E&P and other businesses to new areas. These include the development of CCS and CCUS technologies, by which commercialization is expected to lead to promising solutions for reducing CO₂ emissions, in addition to power generation fueled by LNG, which has fewer impacts on the environment, and development of renewable energy.

Natural gas-fired power generation is fueled by vaporized LNG, which has the lowest environmental impact of all fossil fuels. It is expected to be a cleaner energy source as well as a power supply source for part of Japan’s medium-to-long-term energy demands.

Adjacent to the Soma LNG Terminal at Soma Port in Fukushima Prefecture, the Fukushima Natural Gas Power Plant, which has a maximum output of 1.18 million kWh of electricity using LNG vaporized gas as fuel, commenced commercial operations in 2020. This power plant achieved world-class efficiency by adding cutting-edge technology components to the well-tested equipment of the gas turbine combined cycle (GTCC) method. Furthermore, the plant is safe and has lower environmental impact, since it is designed to withstand disasters nearly equivalent to the Great East Japan Earthquake, and was built with consideration for its surrounding environment.

JAPEX plays a significant role in the project as a leading shareholder of Fukushima Gas Power Co., Ltd., a special purpose company for the operation. Moreover, the Soma LNG Terminal is engaged in consignment work on a storage facility for LNG used by all partners and provides fuel to power plants.

CCS is a technology to store CO₂ stably underground for a long period. In CCS, the CO₂ emitted by industrial facilities and power plants is captured before it is released into the atmosphere and when being injected through the well at a depth suitable for geological sequestration. The establishment and commercialization of CCS technology is expected to significantly reduce CO₂ emissions, which are understood to be one cause of climate change. JAPEX participates in a demonstration for CO₂ injection in Tomakomai City, Hokkaido, and contributes to subsurface structure surveys and drilling wells.

We are also developing CCUS technology, which effectively uses the captured CO₂ and stores it underground. CO₂-EOR (Enhanced Oil Recovery) is a method of CCUS that injects CO₂ into a declining production well to push out its remaining crude oil and store the CO₂ underground. Since the method is also capable of offsetting CO₂ emissions, we are seeking opportunities of verification and surveys in Japan and overseas.
Trust Relationships with Stakeholders for Sustainable Growth and Corporate Value Enhancement

Based on the idea that our stable energy supply is one of our corporate social responsibilities, JAPEX seeks sustainable growth and increased corporate value by forging trust relationships with various stakeholders while ensuring safety and due consideration to the environment.

FOCUS HSE as Corporate Culture

Initiatives on Occupational Safety and Health
JAPEX ensures and maintains HSE (Health, Safety and Environment), as stated in the JAPEX HSE Policy, and we continuously strive to ensure and protect HSE in our business operations on a company-wide basis as well. We also set an original HSE management system (HSE-MS), which is deployed at all projects, in which JAPEX serves as the operator. Under the HSE-MS, we are working to promote and strengthen our HSE continuously, manage and reduce risks effectively, foster and improve our HSE culture, and promote employee health. The HSE-MS audits are conducted at each worksite for checking a wide range of HSE activities such as confirming compliance, the status of HSE-MS implementation, risk assessment, and progress of HSE education.

Crisis Management Initiatives
Crisis management and ensuring employee and workplace safety are our top priorities when promoting business in Japan and overseas. At JAPEX, the HSSE Committee formulates basic policies and deliberates on material issues. We have established an initial response manual for an earthquake on the scale of six or above or other large-scale natural disasters, and we undertake various related operations such as comprehensive drills in preparation for a crisis caused by an earthquake. We also regularly conduct drills, including employee safety confirmations and a walk-home (from work) drill. In addition, we conduct practical drills for handling emergencies involving our overseas business sites, and safety seminars for expatriate employees and staff being dispatched abroad are also organized regularly.

JAPEX strives to be a trusted company by engaging with various stakeholders in the regions where we promote our business activities. We also contribute to their interests by responding to their requests.

In Japan, we participate in and otherwise support events and lectures hosted by local governments and offer facility tours and work experience programs. We take part in local events as a member of the community in order to deepen local relationships. Also, the overseas projects in which we participate help with the development of social infrastructure for local needs as their members engage in cooperative and exchange activities with local communities and other stakeholders.

FOCUS Establishing the Best Place to Work

In accordance with the JAPEX Diversity Policy, all employees, with diverse backgrounds and regardless of sexuality, nationality, age, career path, and workstyle, are encouraged to work actively and grow as self-directed professionals. To support each individual’s career development, we continuously enhance our working environments and systems. Based on our career development program, we offer educational programs to strengthen employee’s career and business-related capabilities. In addition, we support their work-life balance by career support programs for various workstyles, flexible working hours, and remote work from home.
### Corporate Profile

**Company Name:** Japan Petroleum Exploration Co., Ltd.  
**Established:** April 1, 1970  
**Paid-in Capital:** JPY14,288,694,000  
**Number of Employees:** 1,739 (consolidated basis)  

**Main Businesses:** Exploration, development, production and sales of oil, natural gas, and other resources and contract service-related operations, such as drilling.

### Main Offices

- **Headquarters:**  
  **Address:** SAPIA Tower, 1-7-12 Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan  
  **Tel:** +81-3-6268-7000

- **Hokkaido Representative Office:**  
  **Address:** 334-6-448, Numahashita, Tomakomai City, Hokkaido 059-1344, Japan  
  **Tel:** +81-144-51-2205

- **Akita District Office:**  
  **Address:** 85-2, Hirune, Terauchi, Akita City, Akita 011-0901, Japan  
  **Tel:** +81-18-864-9511

- **Nagoya District Office:**  
  **Address:** 2-2-83 Higashi-Zao, Nagaoka City, Niigata 940-8555, Japan  
  **Tel:** +81-25-891-1401

- **Soma District Office:**  
  **Address:** 159-2, Imagami, Kernagamine, Shinchu Town, Soma County, Fukushima 979-2411, Japan  
  **Tel:** +81-26-24-9866

- **Sendai Liaison Office:**  
  **Address:** 1-1-20 Kakyoin, Aoba-ku, Sendai City, Miyagi 980-0025, Japan  
  **Tel:** +81-22-224-0731

- **JAPEX Research Center:**  
  **Address:** 1-2-1, Hamada, Mihama-ku, Chiba City, Chiba 261-0025, Japan  
  **Tel:** +81-43-275-9311

### Executives

<table>
<thead>
<tr>
<th>Representative Director and Chairman</th>
<th>Representative Director and President</th>
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<tbody>
<tr>
<td>Osamu Watanabe</td>
<td>Masahiro Fujita</td>
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<tr>
<th>Director</th>
<th>Executive Vice President</th>
<th>Director</th>
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<tr>
<td>Tetsuo Ito</td>
<td>Yasuake Higai</td>
<td>Kazuhiko Ozeki</td>
<td>Toshiyuki Hira</td>
<td>Tetsuo Ito</td>
<td>Toshiyuki Hira</td>
<td>Michio Yamashita</td>
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### Subsidiaries and Affiliates

- **Akita Natural Gas Pipeline Co., Ltd.**  
  **JAPEX SKS Corporation**  
  **SK Engineering Co., Ltd.**  
  **North Japan Oil Co., Ltd.**  
  **Shinjyu Gas Co., Ltd.**  
  **Japex Pipeline Ltd.**  
  **JGI, Inc.**  
  **Geophysical Surveying Co., Ltd.**  
  **Japex (U.S.) Corp.**  
  **Japan Natural Gas Pipeline Co., Ltd.**  
  **JRA Corporation**  
  **North Japan Security Service Co., Ltd.**  
  **Canada Oil Sands Co., Ltd.**  
  **Japex Offshore Ltd.**  
  **GEOSYS, Inc.**  
  **Japex Energy Co., Ltd.**  
  **Japex Garrall Ltd.**  
  **JAPEX Monrey Ltd.**  
  **JAPEX UK E&P Ltd.**  
  **TOHOKU NATURAL GAS CO., INC.**  
  **JJI S&N BV.**  
  **TELNETE CO., LTD.**  
  **Hitachi LNS Sales and Leroy Transport Corp.**  
  **Energy Mega Pratama Inc.**  
  **Kanagawa Energy Indonesia Ltd.**  
  **EMP Exploration Koguard Ltd.**  
  **Diamond Gas Netherlands B.V.**  
  **Sakakin Oil and Gas Development Co., Ltd.**  
  **Fukushima Gas Power Co., Ltd.**

### Corporate History

- **Founder:**  
  **Date:** Mar. 1955  
  **Detail:** Founded as a government-owned company by the law of Japan Petroleum Exploration Co., Ltd.

- **Mitsukai oil field:**  
  **Date:** Mar. 1958  
  **Detail:** Discovered in production from 1958 to 2016

- **Sanuki oil field:**  
  **Date:** Jul. 1958  
  **Detail:** Discovered in production from 1959

- **Higashi-Naga oil field:**  
  **Date:** Jun. 1959  
  **Detail:** Discovered in production from 1959

- **Kamimina gas field:**  
  **Date:** Apr. 1960  
  **Detail:** Discovered in production from 1960

- **Kawaii gas field:**  
  **Date:** Dec. 1960  
  **Detail:** Discovered in production from 1960

- **Shiroma gas field:**  
  **Date:** Aug. 1962  
  **Detail:** Discovered in production from 1963

- **Sai oil field:**  
  **Date:** May 1965  
  **Detail:** Expanded the operation range overseas by the law article revision

- **Japan Petroleum Development Corporation (JPDC):**  
  **Date:** Apr. 1968  
  **Detail:** Separated from the Japan Petroleum Development Corporation (JPDC) and reorganized as a private company

- **Yuruha oil and gas field:**  
  **Date:** Jun. 1976  
  **Detail:** Discovered in production from 1976

- **Hokkaido Gas Co., Ltd.:**  
  **Date:** Dec. 1978  
  **Detail:** Participated in the oil sands project in Canada and in production from 1990

- **Fukushima oil field:**  
  **Date:** Jun. 1983  
  **Detail:** Discovered in production from 1987

- **Tominaga oil field:**  
  **Date:** Nov. 1989  
  **Detail:** Discovered in production from 1995

- **Iwafune-oki oil field:**  
  **Date:** Mar. 1996  
  **Detail:** Commercial operation of the Nigata-Sendai Gas Pipeline began in production

- **Shiunji oil field:**  
  **Date:** Mar. 1999  
  **Detail:** Listed on the First Section of the Tokyo Stock Exchange

- **Katakai gas field:**  
  **Date:** Dec. 2003  
  **Detail:** Participated in the Kangan project in Indonesia(development and production)

- **Higashi-Niigata gas field:**  
  **Date:** May 2007  
  **Detail:** Participated in the Garraf project in Iraq (in development and production)

- **Tsuneta gas field:**  
  **Date:** Mar. 2010  
  **Detail:** Participated in the shale gas project in Canada (in development and production)

- **Fukushima Oil and Gas Co., Ltd.:**  
  **Date:** Apr. 2013  
  **Detail:** Commercial operation of the Fukushima Natural Gas Power Plant (Fukushima Gas Power Co., Ltd.)

- **Amane waseda:**  
  **Date:** Apr. 2020  
  **Detail:** Commenced commercial operation of the Fukushima Natural Gas Power Plant