

Resources Segment

Review of Operations

The Idemitsu Group is promoting oil and natural gas exploration, development, and production projects in Norway and Southeast Asia, particularly in Vietnam. We are also operating coal mines in Australia and Indonesia to provide a stable supply of coal to customers in Japan and other Asian countries.

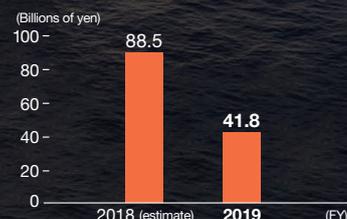
We also develop geothermal resources in Japan, operating a power station in Oita Prefecture.



■ Net sales



■ Operating income + Equity earnings



Social Issues

- Demands to reduce greenhouse gas emissions in response to climate change
- Growing energy demand in emerging countries where population and economic growth is forecast

Risks

- Economic stagnation and ensuing decreases in demand and resource prices due to the COVID-19 pandemic
- Decrease in coal demand due to response to climate change
- Possible changes in political and economic conditions or tightening of regulations

Strengths

- More than 30 years of project experience, mainly in Norway, and relationships of trust with oil-producing countries and partner companies
- Human resources with a wealth of experience in oil and gas field development
- Integrated value chain spanning from coal production to sales and the accumulated knowledge of our specialized coal research institute

Opportunities

- Growing demand for oil and natural gas reflecting economic development and population growth in Asia
- Expansion in oil and natural gas development via exploration in regions where we hold interests
- Growing low-carbon solution needs of coal customers
- Support for geothermal power development through the FIT (Feed-in Tariff Program)

Business Environment

Due to the global spread of COVID-19 in early 2020, energy demand fell sharply, while inventory levels were persistently high, leading to a major temporary drop in crude oil and other resource prices. Reflecting production cuts in oil-producing countries and the restart of economic activities in some regions, resource prices have been recovering, but demand is expected to remain stagnant going forward.

Nevertheless, firm demand is forecast over the medium to long term, and in Europe, a key area for oil exploration, we believe that low-sulfur Norwegian crude oil will continue to be important. In Asia,

where we are advancing gas field development, demand for natural gas for power generation is expected to increase, reflecting growing electricity demand driven by economic development and population growth.

Coal is expected to remain a key fuel for industrial and power generation applications due to its cost advantage. However, as coal has the drawback of producing higher CO₂ emissions than other energy sources, there are needs for efforts to increase the efficiency and reduce the CO₂ emissions of coal energy both in and outside Japan.

Medium-term Management Plan

In light of global energy demand growth, we will maintain and enhance the value of our existing oil and coal resource assets and work to develop gas fields in Asia.

Our oil exploration and production business is producing approximately 20,000 barrels of crude oil per day. Going forward, we will continue to secure revenue from stable production in existing oil fields in which we have interests in the Norwegian Northern North Sea (Snorre, Fram, and Knarr) while advancing development and production following successful exploration in the Northern North Sea and the Barents Sea. Having successfully test drilled at the Dugong structure in August 2020, we will conduct detailed assessments and considerations aimed at development.

In the natural gas development business, aiming to develop natural gas based on a model of local production for local consumption in Asia over the medium term, we are also working to develop sales businesses. In the offshore block project in southern Vietnam, we are developing the gas field discovered in 2010 as the sole operator and plan to begin production by the end of FY2020.

In the coal business, our coal mines in Australia (Muswellbrook,

Ensham, and Boggabri) and in Indonesia (Malinau) are producing approximately 12 million tons of coal per year. Going forward, we will continue to leverage the strength of our value chain, which integrates production, distribution, and sales, while implementing measures to reinforce competitiveness, such as introducing remote controlled automated mining and other new technologies at our existing mines, as we strive to provide a stable supply of high-quality products to our customers. At the same time, through the development of high-efficiency combustion technologies and black pellets at our research institute specializing in coal, we will provide low-carbon solutions, an area in which customer needs have been growing in recent years.

In geothermal power development, we will strive to maintain the safe operation of our existing power stations while advancing new business development in multiple regions of Japan as well as activities aimed at expansion overseas. In particular, we are conducting environmental assessments of the geothermal power development project in the Oyasu district of Akita Prefecture with an eye to commercialization in 2024.

Working Toward the Commercialization of Black Pellets



HIGHLIGHTS

We are developing black pellets, a biomass fuel that can be co-fired with coal at coal-fired power stations to reduce CO₂ emissions. Black pellets are made by pulverizing, drying, and roasting, and semi-carbonizing wood and can be handled in the same way as coal. As such, it is possible to reduce coal usage and increase renewable energy usage simply by replacing coal with black pellets.

The Tokuyama Complex has achieved the use of 20% black pellets in trial combustion in its coal boilers.

In 2020, in addition to the existing demonstration plant in Thailand, we built a sample production plant in Vietnam. Going forward, we will advance preparations to commence commercial production.

Furthermore, unused land at the Ensham Mine in Australia, we have begun plant growing test of the plant "Sorghum" and test production of black pellets using said plant. Going forward, we plan to advance demonstration testing aimed at the commercial export of biomass fuels leveraging our mine infrastructure.



Plant growing test at Ensham coal mine Plant species "Sorghum"



Black pellets