

# Resources Segment



### Review of Operations

Idemitsu group is promoting oil and natural gas exploration, development, and production projects in Norway and Southeast Asia, particularly in Vietnam. We are also developing coal mining operations in Australia and Indonesia for making efforts to provide a stable supply of oil and natural gas to customers in Japan and other Asian countries.

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## Oil and Natural Gas Development

### Business Environment Outlook

From a medium- to long-term perspective, we are working to secure sufficient reserves to maintain and expand production through oil and gas exploration-to-development activities in Norway and Southeast Asia. In Europe, we believe the importance of low-sulfur Norwegian crude oil from one of our core areas will continue. On the other hand, demand for natural gas for power generation is expected to increase in Southeast Asia, since economic development and population growth in the area will expand the demand for electricity.

### Medium-term Management Plan Business Policy

We will focus on natural gas development in Southeast Asia while securing profits from oil exploration and production in Europe. Over the medium term, we aim to develop natural gas supply chain for local production to consumption in Asia by developing sales businesses as well as production. We signed a contract with Petrovietnam in 2004 for an offshore block in southern Vietnam and conducted exploration. As a result, a gas field was discovered in

### Risks and Opportunities

#### Risk

- Decline in oil demand in Europe
- Volatility in oil resource value

#### Opportunity

- Increased demand for oil and natural gas in Asia
- Expanding electricity demand in Southeast Asia

2010. We are working on the development as an operator, aiming to start production in the latter half of 2020.

In Europe, we are also promoting the stable production of existing oil fields (Snorre, Fram, etc.) in the Norwegian Northern North Sea, together with the development of discovery structures from successful explorations in the Northern North Sea and the Barents Sea.

#### TOPICS

### History of upstream business in Norway

In the late 1980s, we acquired an interest in the Snorre Field in the Norwegian Northern North Sea, and began upstream business in Norway. Since then, we have steadily expanded our business, starting production at the Snorre field (1992), Fram fields (2003) and Knarr field (2015), and discovering the Duva field (2016). In recent years, we expanded the scope of exploration to include frontier areas, and succeeded in discovering oil fields in the Barents Sea in 2013 and 2014. Since its inception, we have engaged in friendly competition on the Norwegian continental shelf, where prominent oil companies from around the world have entered. In 2019, we submitted a development plan for floating offshore wind power generation at the Snorre field to the Norwegian government.

This is the world's first attempt to directly supply electricity generated by offshore wind power facilities to oil and gas production facilities, and we are working to start operations in the second half of 2022.



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Illustration of renewable energy supply to an offshore oil field. Participation in a joint project with Equinor and other partners

**Business Environment Outlook**

Coal is one of the major primary energy sources along with petroleum, natural gas, and nuclear power. Demand for coal is expected to remain strong in the medium term due to its excellent supply stability and economic efficiency. However, because coal emits more CO<sub>2</sub> than other forms of energy, further efforts are required to reduce emissions.

**Medium-term Management Plan Business Policy**

We have a value chain in which production, distribution, and sales work together to supply high-quality coal, and we have the only private comprehensive research institute specializing in coal in Japan. By taking advantage of this strength, we are working to ensure a stable supply to customers and win their trust. As for existing mines in Australia and Indonesia, we will strengthen our competitiveness by robust manage-

**Risks and Opportunities**

**Risk**

- Coal demand decrease due to climate change measures

**Opportunity**

- Expanding opportunities to provide low-carbon solutions
- Expanding renewable energy business opportunities using mine assets

ment and introducing new technologies such as remote controlled coal mining for future environmental changes. We will also promote initiatives to reduce environmental impact and contribute to local communities, such as contributing to the reduction of CO<sub>2</sub> emissions while using coal, and adopting photovoltaic power generation and pumped-storage hydroelectric power generation using mine assets.

**TOPICS 1**

**Provision of low carbon solutions**

- Development of black pellets (biomass fuel)

We are working on the development of black pellets, a biomass fuel that can reduce CO<sub>2</sub> emissions by co-firing with coal at coal-fired power stations. Black pellets are made by pulverizing, drying, roasting, and semi-carbonizing wood. They are superior to conventional white pellets in terms of water resistance and pulverization, and can be handled in the same way as coal. As a result, it is possible to reduce coal consumption and increase the use of renewable energy (black pellet) without modifying existing facilities. We have a demonstration plant in Thailand and are preparing to



Black pellet

expand our business in Southeast Asia.

- Provision of coal boiler control optimization system

The coal boiler control optimization system "ULTY-V plus™" realizes the optimum operation of coal boilers used in power plants and factories by stabilizing steam characteristics through an AI incorporated self-learning function. Installation of this system in addition to existing control systems enables us to reduce coal consumption by approximately 1%, contributing to environmental measures and CO<sub>2</sub> emissions for domestic and overseas customers. That means, if we could reduce coal consumption in Japan by 1%, we could reduce CO<sub>2</sub> emissions by about 2.8 million tons a year.



Coal boiler control optimization system "ULTY-V plus™"

**TOPICS 2**

**Study of renewable energy business utilizing mine assets**

At the Muswellbrook coal mine in Australia, a study is underway with AGL Energy, a leading Australian electric power company, to commercialize a pumped-storage hydroelectric power generation system that utilizes the difference in elevation between the old mine site as a lower reservoir and the adjoining hilly area (Bells Mountain).

We are also considering photovoltaic power generation business using idle land in our own coal mines. By developing renewable energy businesses using mine assets, we aim to reduce the environmental impact of mining operations and contribute to local communities.



Bells Mountain and the former Muswellbrook mine site  
Schematic diagrams (aerial photograph and cross section)