Energy & Social Infrastructure Division

We will continue to help realize a prosperous and sustainable society by providing sophisticated infrastructure that balances economic growth with environmental impact.

Masakazu Hashimoto
Executive Officer, COO,
Energy & Social Infrastructure Division

Business Models Supporting Value Creation

**Strengths**

- **50 years of LNG business knowledge**
- **Percentage of eco-friendly energy generation in our power generation business:** Around 90%*1
- **A power generation business that will grow by 7.2 times over 10 years***2

*1 Percentage of power generation portfolio made up of gas-fired and renewable energy. Portfolio currently contains no coal-fired energy asset, and the company is committed to avoid their inclusion going forward.

*2 Expected power generation portfolio in FY2021 compared to FY2012

**External Environment**

**Opportunities**

- Increase in energy demand owing to robust economic growth in emerging and developing countries
- Increased demand for clean energy due to heightened environmental concerns
- Expanded demand for privatization (PPP and PFI) of public services and businesses
- Revolutionary changes in business environment due to the advancement of the 5Ds*3

**Risks**

- Economic stagnation due to increasing protectionism
- Tighter environmental regulations around the globe (e.g. introduction of a carbon tax)
- Delays in system development on the assumption of advancing privatization
- Shortened business and product lifecycles due to advancements in IT technology

*3 Mainly refers to the 5Ds—Depopulation, Decarbonization, Decentralization, Deregulation and Digitalization

**Businesses**

**Gas-related businesses**

Our division is developing gas-fired IPP*4 businesses in the Middle East, Asia, and North America. We have used our 50 years’ experience in integrated LNG business, from production to supply, to join a Gas-To-Power project in Indonesia. These projects deal with all stages of the LNG business, from optimal procurement to management of gas to LNG receiving terminals and power generation plants. We are also taking advantage of our networks of contacts in emerging countries in working on a business to supply natural gas, which is leading to less CO2 emission.

*4 Independent Power Producer

- Gas-fired IPP
- LNG liquefaction (LNG Japan Corporation)
- LNG receiving terminal
- Downstream gas businesses

**Renewable energy businesses**

We are developing and operating solar power plants in 12 locations in Japan and 3 locations overseas. Making use of the knowledge and experience we have cultivated through our success with these plants, we have now joined on-shore wind power generation businesses in Ireland and the U.S., an off-shore wind power generation business in Taiwan, and a biomass power generation business in Japan.

- Solar IPP
- Wind power generation
- Biomass power generation

**Social infrastructure businesses**

Through Nissho Electronics, we sell information communications equipment, IT infrastructure, and more. We also provide services including system construction, maintenance, operation, and monitoring. SAKURA Internet Inc.’s data center business provides highly reliable services using the company’s massive IT infrastructure and techniques honed over more than 20 years in server-related businesses.

- Network construction for telecommunication carriers
- Data center (SAKURA Internet Inc.)
**Growth Strategy**

The energy situation around the world is facing a major turning point due to interplay between key regional shifts in supply and demand and the movement towards decarbonization. In terms of supply, the U.S. has become a major player following the shale gas revolution; on the demand side, we believe that the tide of decarbonization will trigger a rapid spread in use of natural gas, LNG, and renewable energy, as China, India, and emerging countries in Asia take the lead in driving future growth.

Experts anticipate that Gas-To-Power will become the pillar that supports expanding energy demand in emerging countries in Asia. This has led us to position it as a core business for the division, which we hope to expand by integrating our experience in LNG businesses and gas-fired power plant PPP/PFI*5 businesses. We are also managing a cutting-edge, high-efficiency gas fired power in the U.S. which utilizes the country’s abundant and inexpensive shale gas as a fuel, thereby further contributing to the realization of a low-carbon society. Meanwhile, for our renewable energy business, we will use our experience with solar power generation businesses in Japan and Germany to accelerate the development of new businesses, in order to respond to the rapid movement towards decarbonization worldwide. Going forward, we will continue to utilize our company’s functions to create high-quality assets and focus on reforming business models using AI and the IoT.

Our mission is to develop sophisticated social infrastructure that promises reliability, safety, and comfort. To fulfill this mission, we will cooperate with excellent partners in Japan and overseas who share our values, contributing to industrialization in different countries around the world.

*5 Private Finance Initiative: A way of developing of public facilities using private funding

**Gas-fired power generation businesses**

We are focused on harnessing the knowledge we have gained from developing the Gas-To-Power project in Indonesia to develop new projects in countries that want to convert to alternative fuels, especially emerging countries in Asia. We are also engaged in developing and operating highly efficient gas-fired power plants in response to U.S. demand shifting from coal-fired electricity generation to gas-fired.

**Gas-related businesses (LNG receiving terminal, downstream gas businesses)**

We will install LNG receiving terminals in countries where expect robust gas demand to underpin strong electricity consumption, so called “Gas-To-Power project.” Furthermore we plan to expand our business supplying natural gas to industrial end-users in Vietnam, together with our Japanese partners, and accelerate the development of new projects in other emerging countries in Asia.

**Renewable energy businesses (solar power plants, wind power plants, biomass)**

We will make use of the knowledge and experience that we have acquired through our participation in solar power generation business in Japan and overseas; wind power generation business in Europe, the U.S., and Taiwan; and biomass power generation business in Japan, to accelerate our expansion into new power sources and initiatives in regions where we expect further growth.

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**MTP 2020: Looking Back at the First Year**

We surpassed our initial target due to favorable resource prices continuing and new solar power in Japan and overseas entering stable operations.

**Change in Gross Profit**

<table>
<thead>
<tr>
<th>Year</th>
<th>(Billions of yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2017</td>
<td>21.1</td>
</tr>
<tr>
<td>FY2018</td>
<td>18.7</td>
</tr>
<tr>
<td>FY2019</td>
<td>20.0 (Forecast)</td>
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</tbody>
</table>

**Change in Profit (Loss) for the Year (Attributable to Owners of the Company) and ROA**

<table>
<thead>
<tr>
<th>Year</th>
<th>(Billions of yen)</th>
<th>(% of previous year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2017</td>
<td>(5.8)</td>
<td>(2.0)</td>
</tr>
<tr>
<td>FY2018</td>
<td>2.1</td>
<td>2.0</td>
</tr>
<tr>
<td>FY2019</td>
<td>5.5</td>
<td>4.0</td>
</tr>
</tbody>
</table>

**Electric Power Holdings**

- **Total power generation**: 1,700MW
- **Gas**: 65% of total
- **Renewable energy (solar/wind)**: 11%
- **Diesel/heavy oil**: 24%

*As of March 31, 2019

**Asset Portfolio**

- **Assets in FY2017**: 278.8 billion yen
- **Assets in FY2018**: 284.5 billion yen