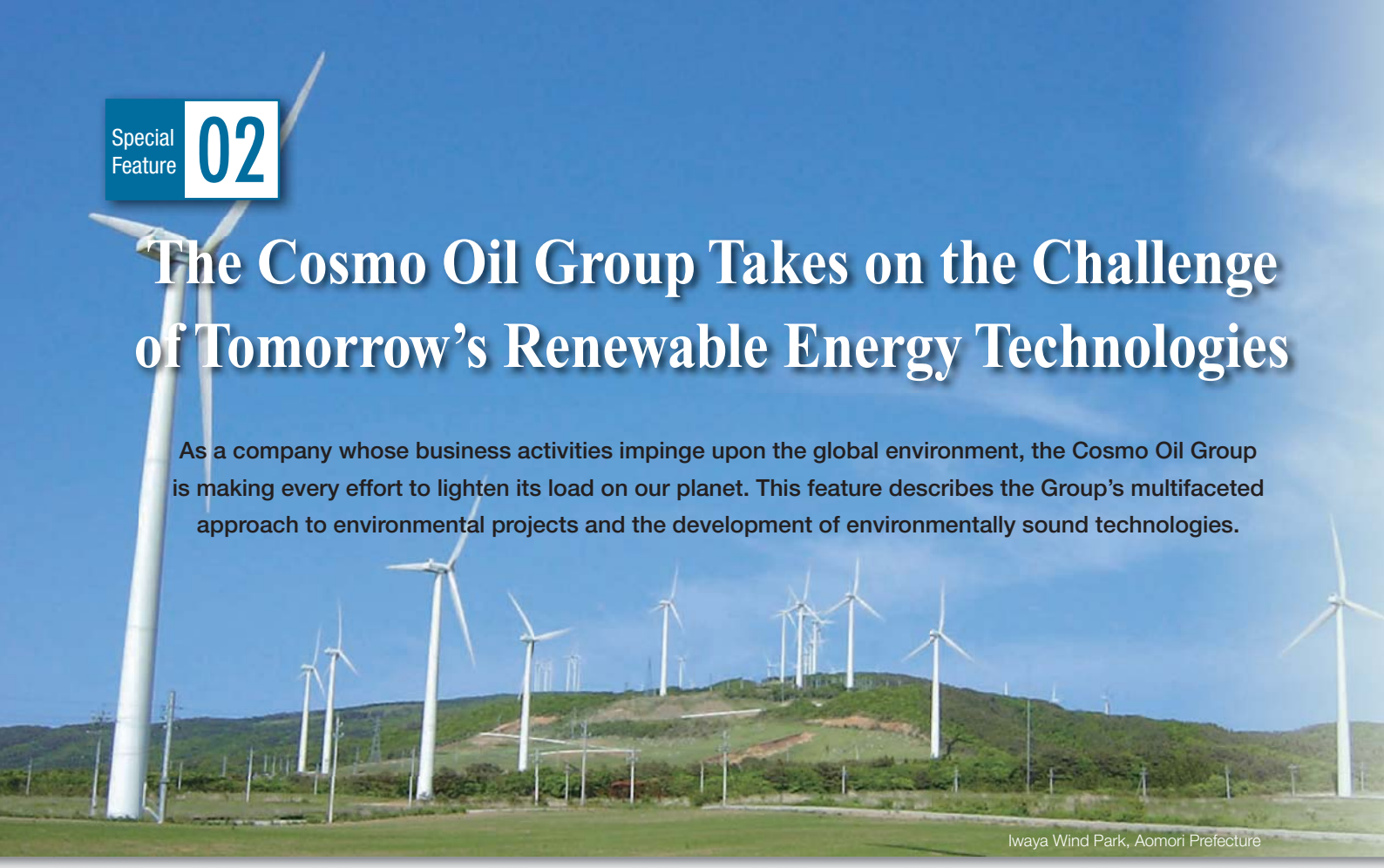
Special Feature 02

# The Cosmo Oil Group Takes on the Challenge of Tomorrow's Renewable Energy Technologies

**As a company whose business activities impinge upon the global environment, the Cosmo Oil Group is making every effort to lighten its load on our planet. This feature describes the Group's multifaceted approach to environmental projects and the development of environmentally sound technologies.**



Iwaya Wind Park, Aomori Prefecture

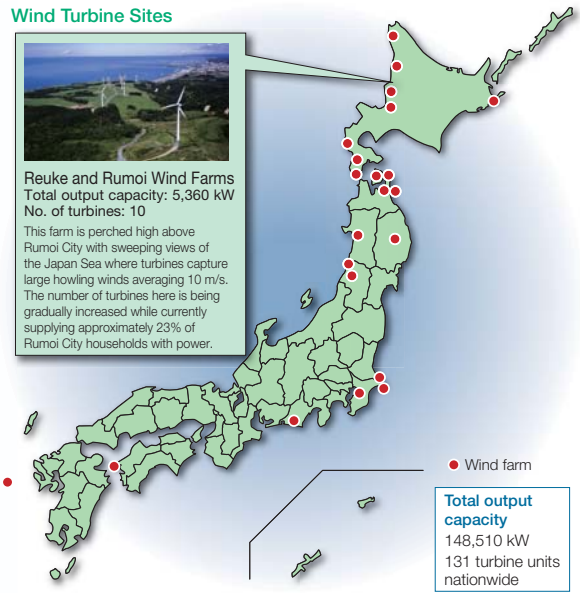
## Wind Power Generation

Guided by its Fourth Consolidated Medium-Term Management Plan, the Cosmo Oil Group is developing environment-conscious businesses and technologies that will firmly establish the eco business as a future leading source of revenue. Among such efforts is the wind power plant (output capacity of 1,500 kW) it has operated in Sakata City, Yamagata Prefecture since 2004. In a move to fully secure this business as a mainstay, the Group acquired wind power generation company Eco Power Co., Ltd. in March 2010.

A Japanese pioneer in the wind power industry, Eco Power Co., Ltd. possesses a wealth of developmental and technical strength as well as many wind turbines in Tohoku and Hokkaido where wind conditions are ideal.

As of March 31, 2010, the Cosmo Oil Group's fleet of wind turbines has grown to 131 units with a total output capacity of 148,510 kW. On an annual basis, these turbines are expected to reduce $CO_2$ emissions by approximately 150 kilotonnes.

**Wind Turbine Sites**




### Voice

Kei Hirowatari
Business Development Division
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#### Creating a Recycling Oriented Society, as a Member of the Cosmo Oil Group

Wind power generation, which occurs year-round in consistently windy areas, is one of the lowest-cost sources of renewable energy and is expected to see future expansion. There is, however, the frequent issue of turbine damage caused by wild winds and heavy snow in wind farming areas that are likely to be situated in difficult area in Japan's uniquely complex terrain.

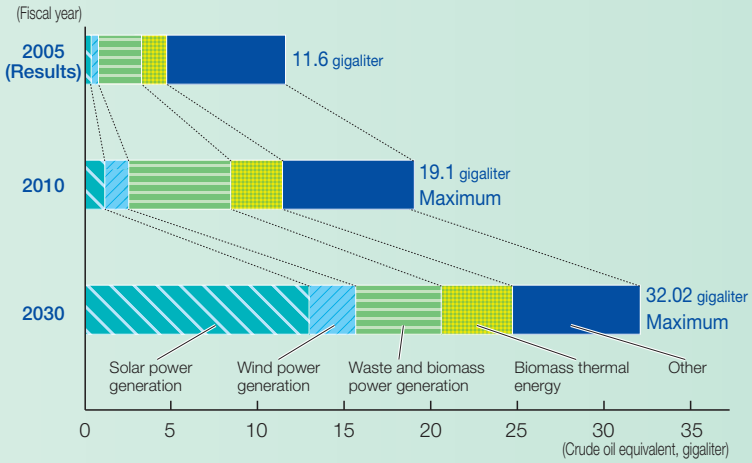
Eco Power became a part of the Cosmo Oil Group in March 2010. As such, I would like to see the full utilization of this union—Cosmo Oil's long history of plant and equipment management know-how and our company's accumulated experience and knowledge in this field—to realize efficient wind power generation facility operation. The Cosmo Oil Group aims to peacefully coexist and prosper with the residents near its wind power generation facilities while working to secure domestic energy needs and contribute to $CO_2$ emission reduction.

# Renewable Energy Aims to “Stabilize Energy Supply” and “Halt Global Warming”

The oil upon which Japan relies to meet half of its energy needs is largely imported. However, greenhouse gas such as carbon dioxide emitted through the consumption of fossil fuel is believed to be one of the root causes of global warming.

Renewable energy with few emissions and as a contributor to the diversification of energy sources is an important element in responding to global warming and the stable supply of energy. In June 2010, Japan’s Ministry of Economy, Trade and Industry announced its Basic Energy Plan that aims to expand renewable energy sources to account for 10% of Japan’s primary energy supply by 2020. Accordingly, growth in development of renewable energy is anticipated.

**Past and Future Performance in the Introduction of New Energies**




Note: Kyoto Protocol Target Achievement Plan (revised March 2008) stipulates the introduction of 15.6–19.1 gigaliters in new energy for fiscal 2010.

Source: *Long-term Energy Supply and Demand Outlook* (Energy Supply and Demand Subcommittee of the Advisory Committee for Natural Resources and Energy, METI)

## Concentrated Solar Power Generation

Cosmo Oil has joined forces with the Abu Dhabi Future Energy Company (Masdar), a governmental organization of the UAE Emirate of Abu Dhabi, and the Tokyo Institute of Technology to develop concentrated solar power generation technology. In October 2009, a 100 kW capacity solar beam-down demonstration and pilot plant was completed in Masdar City, where experiments are currently being held. While the beam-down model has proven to have a high solar concentration capacity, issues such as commercialization, enhancing performance and bringing down costs are still being reviewed.

## BTL and Bioethanol

Cosmo Oil is participating in a biofuel production research project led by the New Energy and Industrial Technology Development Organization (NEDO). As part of this project, the Company has taken on research in two specific areas: a biomass to liquid (BTL) process that produces diesel oil from biomass resources such as lumber and conjointly with Nippon Paper Chemicals Co., Ltd., bioethanol, which involves the production of ethanol through the fermentation of sugar in black liquor that comes from pulp factories.

## Polysilicon Manufacturing for Photovoltaic Cells

Accompanying the recent popularization of the photovoltaic cells is an increasing demand for high purity polysilicon that is used in its production. Addressing this demand, Cosmo Oil is not only working to establish a business for the production of polysilicon for photovoltaic cells, but also to develop unique production techniques to drastically cut current manufacturing costs.

**High-Purity Polysilicon R&D**