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From the Editor

This edition of *Hitachi Review* describes our work in the fields of photovoltaic, wind, and other forms of renewable energy.

The large-scale installation of renewable energy was triggered in Japan by the introduction in July 2012 of a feed-in tariff (FIT) scheme that guarantees purchase prices for renewable energy. The market is also becoming increasingly global, with the active participation of overseas investors and equipment suppliers.

Meanwhile, Japan has revised its primary energy plan, using the "3E+S" concept (which seeks to balance energy security, economic development, and environmental protection while maintaining safety as a key prerequisite) as a basis for looking at how to achieve a best mix of energy sources given their availability in Japan, and how to improve the balance of supply and demand while also giving consideration to energy efficiency. While renewable energy presents challenges in terms of reliability of supply and cost, the field can expect ongoing government support because of its role as a promising and diversified form of domestic energy production that can help ensure energy security without the need for fuel, while also reducing emissions of greenhouse gases. Forecasts such as those made by The Institute of Energy Economics, Japan anticipate steady ongoing growth in the field out to 2030 or 2050.

Making more effective use of renewable energy will require smart grids that can combine energy saving and advanced systems for balancing supply and demand together with measures for strengthening the power distribution system. If energy saving and energy storage systems can also be combined with the use of distributed generators to provide electric power to the local community during emergencies, this will deliver added benefits. Also important will be ways of utilizing heat, including geothermal and solar thermal energy. While the focus for renewable energy following the introduction of the FIT scheme will be on improving its economics to achieve grid parity, Hitachi also believes it is important to utilize the distinctive characteristics of renewable energy through a mix of technologies. Renewable energy can also be expected to play a role in robust and eco-driven urban development.

Because renewable energy and smart grids are part of an international trend, Hitachi not only pays careful attention to policy developments in Japan and elsewhere, its business operations also encompass partnerships with numerous overseas customers. The lead article in this issue of *Hitachi Review* provides insight into this. Other articles describe how Hitachi is drawing on its broad-based capabilities as an electrical equipment manufacturer (which include power system, power distribution and control, and information technologies) to encourage the wider adoption of renewable energy, including not only the development of renewable forms of electric power generation, but also multifaceted renewable energy systems that incorporate measures for strengthening power grids and electric power storage systems along with control and other technologies. Through these technologies, Hitachi intends to help create a low-carbon society by contributing to the next generation of structural improvements in the energy sector.

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