### Measures Addressing Global Climate Issues in the Electric Power Reference **Business**

#### Establishment of the Electricity Business Council for a Low-Carbon Society

(Excerpted from Federation of Electric Power Companies of Japan press release dated February 8, 2016)

The member companies\*1 of the Federation of Electric Power Companies, J-Power, The Japan Atomic Power Company, and cooperating power producers and suppliers (PPSs) today established an electricity business, the Electricity Business Council for a Low-Carbon Society ("the Council"), aiming to steadily encourage efforts to meet the targets of the Action Plan for the Electricity Business for Achieving a Low-Carbon Society.

In July 2015, the electric companies formulated the Action Plan for the Electricity Business for Achieving a Low-Carbon Society ("the Action Plan") to organize industry-wide efforts to achieve a low-carbon society, in addition to the framework of voluntary efforts by the electricity business. (Announced July 17, 2015)

The Council will promote and support the individual measures that the member companies formulate and implement based on their respective business situations, and ensure that the Council's efforts for achieving the target will be effective. To ensure even greater effectiveness, the Council will check and evaluate the progress of the members' efforts and implement a Council-wide PDCA cycle.

### Establishment of an Action Plan for the Electricity Business for Achieving a Low-Carbon Society\*2

(Excerpted from a July 17, 2015 Federation of Electric Power Companies of Japan press release.)

The ten member companies of FEPC, together with J-Power, JAPC and 23 power producers and suppliers (PPSs)\*3 (hereinafter referred to as "the participating companies" have established a new voluntary framework for achieving a low-carbon society, and formulated the Action Plan for the Electricity Business for Achieving a Low-Carbon Society.

The participating companies have all positioned global warming as an important business challenge, and have been working on both the supply and demand sides of electricity, based on their own action plans for achieving a Low-Carbon Society.

Meanwhile, for the electricity industry to orchestrate collective action for achieving a low-carbon society and jointly tackle the expected changes in environment, the participating companies set up a study group in March 2015, and have considered specific plans.

With the announcement of the government's energy supply-demand outlook for FY 2030 and the draft GHG reduction target, the participating companies together decided to set a new target based on their integrated action plans, as described below.

#### Action Plan for the Electricity Industry to Achieve a Low-Carbon Society

- Reduce the user-end emission intensity to approximately 0.37 kg-CO<sub>2</sub>/kWh.
- Utilize the best available technology (BAT) affordable in new thermal power plants to secure a maximum reduction potential of approx. 11 million t-CO2.

Going forward, the participating companies will enhance their efforts to achieve a low-carbon society by steadily taking actions to achieve these targets, and following up on the progress each year.

<sup>\*1:</sup> Hokkaido Electric Power Co., Inc., Tohoku Electric Power Co., Inc., Tokyo Electric Power Company Holdings, Inc., Chubu Electric Power Co., Inc., Hokuriku Electric Power Company, Kansai Electric Power Co., Inc., Chugoku Electric Power Co., Inc., Shikoku Electric Power Co., Inc., Kyushu Electric Power Co., Inc., Okinawa Electric Power Co., Inc. 2: After the Electric Power Council for a Low Carbon Society was established, the name was changed to the Electric Power Council for a Low Carbon Society Action Plan for Achieving a Low-Carbon Society

<sup>\*3:</sup> There are 42 participating companies in all as of July 13, 2016.

# **External Evaluation and Outside Opinions**

## The Accuracy of This Report

To ensure the accuracy and comprehensiveness of important environmental and societal data as well as performance indicators (hereinafter "sustainability information") contained in the J-POWER Group Sustainability Report 2016, the sustainability information herein has been independently reviewed and certified by Ernst & Young Sustainability Co., Ltd. in accord with the sustainability report review and registration system of the Japanese Association of Assurance Organizations for Sustainability Information (J-SUS). As a result of this review, an "Independent Assurance Report" has been received. Guaranteed data calculated according to calculation standards\* is indicated by a star (★).



\* List of calculation standards http://www.jpower.co.jp/english/company\_info/environment/index.html



Power plant inspection during a review (Matsushima Thermal Power Station, Nagasaki Prefecture)



# Readers' Opinions

We received many comments from readers in response to the J-POWER Group Sustainability Report 2015 (published August 2015). We consider these valuable comments to be important guidelines for compiling subsequent reports and for the future initiatives of the J-POWER Group, and intend to put their lessons to use in our corporate activities.

#### Expectations for the J-POWER Group

Typical Comments	Typical Comments
Coal is high in $CO_2$ emissions, and I want you to give an easily understandable explanation of measures for development of the technology to overcome that issue.	This report has special features that introduce measures for reduction of carbon emissions from coal-fired power. We will continue to carry readily understandable articles about measures for reduction of carbon emissions, including development of technology. Please refer to "Thermal Power" on pp. 11-18 of this report.
Renewable energy is going to take on importance in the times ahead. I hope you will take active measures to expand renewable energy even more than you have so far.	In this report, we introduce not just the reduction of carbon emissions from coal-fired power, but also carbon emissions reduction that includes renewable energy. We are implementing a variety of measures with regard to renewable energy in particular, including hydroelectric power, wind power, geothermal power, and biomass. We will continue taking measures for expanded use in the future, as well. Please refer to "Hydroelectric Power" on pp. 9-10, and "Renewable Energy" on pp. 19-20 of this report.

# Third-Party Opinion

To help us meet society's expectations regarding our corporate social responsibility (CSR) and play our part in the sustainable development of Japan and the world the J-POWER Group asked outside experts who specialize in energy, the environment, and CSR to give their opinions concerning the Group's business efforts and the disclosure of information through this sustainability report from the perspective of achieving harmony between energy and the environment.



Chuo University Faculty of Science and Engineering, Department of Integrated Science and Engineering for Sustainable Society Laboratory of conservation ecology, professor and doctor of science

Izumi Washitani

Recent years have brought greater changes in the natural environment than we had imagined, as witnessed by giant typhoons and "hit-and-run" rainstorms. Consequently, corporations will need to revise the yardsticks they have had for safety so far and secure the safety of their facilities while also making improvements.

The complete deregulation of retail electricity, the expanded introduction of renewable energy, and other such measures also show how greatly the societal environment of the electricity utilities has changed. It is becoming conceivable that in the future not just the value of electricity itself, but also the value of the method of generating electricity will be evaluated. Therefore J-POWER should also aim to achieve a proper power source composition that is not simply economical, but that gives full consideration to the social and ethical consequences and to the environmental impact, as well.

There is something more required in order for energy enterprises to respond precisely to these kinds of changes in the natural environment and societal environment. They must have the vision to see ahead, beyond the changes, and it is crucial that they develop and secure human resources with the ability to make analyses, make evaluations, and make judgments scientifically and objectively.

In the field of biodiversity, which is my own specialization, I feel that there are still only few corporations taking measures for essential biodiversity protection. In fact, the number of specialists is still small, and corporate interest is not yet adequate, so in some sense this can't be helped, but I think that it is necessary first to thoroughly address the matters that are prescribed by legal statute, such as environmental assessment, and deal with them seriously. By means such as these, corporations must reach a profound awareness of the substance and the extent of the environmental impact that results from their own business. Then they should use technology and intelligence to accurately mitigate that environmental impact. I expect this is what it means for energy enterprises to coexist with the environment and society.



Journalist, Environmental Counselor NPO Genki Net for Creating a Sustainable Society Director

Yuko Sakita

I have sensed that the importance of reducing the carbon emissions from coal-fired power, which J-POWER had already been working toward, has grown even greater since the conclusion of the Paris Agreement at COP21 (21st session of the Conference of the Parties to the Framework Convention on Climate Change) last year. One method of approaching the reduction of carbon emissions from coalfired power is by measures for the mixed biomass fuel combustion. It is necessary, however, to procure large quantities of fuel in a stable manner over the long term, so the recent increase in plans to build coal-fired power stations on the premise of biomass fuel imported from other countries seemed like a major issue. It is also important to promote the development of forests and the effective utilization of natural resources here in Japan, and I think that the measures taken by J-POWER, which has been manufacturing, procuring, and co-combusting biomass fuels domestically, can be rated highly from that perspective, as well.

It should go without saying that implementing measures to strengthen safety in compliance with new safety standards is a way of addressing the risk of nuclear power plants. At the same time, however, it is also necessary to establish good communication with local and regional communities. It is important for operators to engage in repeated dialogue with residents, to deal politely with their unsophisticated questions, and to take a sincere and receptive attitude toward local feelings. It is also desirable for the employees who are in charge of dealing with matters on-site to blend into the local community so that business goes forward with the company and the local community working as a single entity.

Recently there seems to be an increase in the occasions when I hear the key expression, "hydrogen-based society." Development of various different technologies for realizing a hydrogen-based society, including products, power generation, and elimination of  $CO_2$  emissions, is presently underway, but it seems to me that the dissemination of information to society regarding the use of hydrogen has not caught up with this development. Given also the concern that the low level of acceptance in society may impede the popularization of hydrogen in the future, it seems necessary not only to take measures for hydrogen safety and for the effective reduction of environmental impact, but also to engage in vigorous public information activities regarding the changes and the benefits that will be brought to people's lives by the realization of a hydrogen-based society.



Associate Professor and Doctor of Engineering Graduate Course of Technology Management for Innovation, School of Engineering, The University of Tokyo

Gento Mogi

In thinking about Japan's future supply of energy, a balanced use of energy is necessary from the perspectives of energy security and economic efficiency. For that purpose, it is also necessary to expand the introduction of renewable energy that is considerate to the surrounding environment, and it is important to make efficient use of nuclear power, with safety management as the major premise, as well as of fossil fuels, and particularly coal, which is very economical and which has a relatively manageable distribution of supply sources. J-POWER possesses advanced technologies relating to coal-fired power, and it is committed to measures for further increasing the efficiency of coal-fired power and to advancing the development of technology in the future. I think that J-POWER should make more vigorous efforts to communicate the significance of using coal.

Compared to other methods, however, coal-fired power generates a larger volume of carbon dioxide emissions during power generation. In this sense, therefore, coal also presents a major risk from the perspective of the global warming problem. The movement toward decarbonization will no doubt become unavoidable in future, but that is not something that is possible to address immediately. It will have an impact so great that it brings major change to the very framework of the corporation, and so it is crucial to have a plan for dealing firmly with such movements in the future.

For example, J-POWER has technology and knowledge relating to hydroelectric power, wind power, and other such renewable energy. Perhaps J-POWER should make use of this to deploy renewable energy not only in Japan, but globally to those places suited to it, and so orient itself toward reducing carbon dioxide emissions in the world as a whole.

When expanding business into other countries, the diversity of human resources becomes more important. Recent years have seen a rising number of university students from other countries who want to take long-term internships in Japanese corporations. Addressing needs like these should provide good opportunities for employees to think about diversity. When J-POWER develops business in other countries, it becomes a receptacle for university students from Japan and overseas who are interested in doing global work, and this will probably make it possible to secure a diversity of human resources over the long term.

### A Response to Opinions

I would like to thank everyone for their valuable opinions regarding the environmental management of the J-POWER Group.

As everyone indicated, ensuring the stable supply of energy while working to steadily reduce carbon is one of the top management priorities of the J-POWER Group. As discussed in this report, we will steadily take various actions in Japan and overseas with a focus on technology.

We will also disclose information through means such as this report and improve communication with all concerned parties in order to increase transparency and raise confidence with regard to the Group's business activities.

Each member of the J-POWER Group is committed to raising awareness regarding the increasing importance of environmental preservation as well as the diversifying and deepening responsibility of companies expected from society, and to directly addressing the issues that we are confronting one by one.

I request your continued guidance and support.



Executive Vice President Chairman of J-POWER Group Environmental Management Promotion Board

Shuji Eto



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