

# **Direction of Management and Near-Term Managerial Policy of the J-POWER Group**

**2014.4.30**

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# To Our Stakeholders

Japan's energy environment has changed dramatically, following the Great East Japan Earthquake and the Fukushima Nuclear Power Plant Accident, and the nation has been facing serious demands for a large scale adjustment to its energy policies. On April 11<sup>th</sup> of this year, Japan's cabinet approved the Fourth Basic Energy Plan, which is a complete revision of the energy policy envisaged prior to the earthquake disaster.

Due to the resumption issue surrounding nuclear power plants, prospects for the supply and demand of electric power in the short-term remains unclear. While a quantified energy mix has not been given, the Basic Energy Plan has indicated that nuclear and coal-fired thermal power will form the crucial baseload electricity source as supply is rebuilt, alongside systemic reforms such as electricity system reform. This agrees with our company's management direction.

In such a climate, the J-POWER Group is engaged in initiatives to enhance our business platform, supporting the stable supply of electric power, as well as continually engaging in the development of new power supplies to sustainably increase our corporate value.

**Initiatives to enhance our business platform:** While responding to changes in the domestic power generation business resulting from the electricity system reform, we are undertaking further enhancement of our business platform. This is based on enhancing our technical strengths and using these strengths to secure the reliability of facilities. This forms the core pillar of our business, which is to contribute to stable supply of electric power domestically and overseas.

With full understanding of the seriousness of the incident at the No.2 Unit of Matsuura Thermal Power Plant on March 28<sup>th</sup>, where a low-pressure turbine rotor fell during a periodic inspection, J-POWER will engage in a large-scale effort towards early restoration. We will also seek timely clarification of its causes and establish recurrence prevention measures, ensuring facility maintenance and going back to the start by committing to securing facility reliability in order to restore trust from customers.

**Initiatives in growth through new development:** In the domestic sphere, while taking environmental load into consideration, we are actively engaged in new development to follow the new No.1 Unit of Takehara Thermal Power Plant and Ohma Nuclear Power Plant. This is to respond to demands for stable supply of electric power in the mid- to long-term, mainly driven by baseload electric sources. Overseas, we will steadily progress committed projects, while promoting cultivation of new projects centered around Asia for future growth.

What is crucial for new investments is seeking to secure appropriate financial health that responds to changes in the operational environment. Careful selection and concentration, as well as innovative business practices will be used to maintain financial health while growing through the development of new power sources.

The J-POWER Group is dedicated to the achievement of our mission, which reflects our corporate philosophy, and will continue to meet this challenge in 2014. We are as always grateful for your continued support.

President



# Initiatives in FY2013

## The incident at the Matsuura Thermal Power Plant

• No. 2 Unit of the Matsuura Thermal Power Plant suffered an incident where the low-pressure turbine rotor fell during a periodic inspection and was damaged. (March 2014). We are committed to early recovery and clarifying the causes of the incident.

## Initiatives to Promote Stable Supply of Electricity

- In response to the electric power supply and demand crunch, returned to basic principles and fully focused on securing the reliability of facilities
- Commenced construction of the new No.1 Unit of Takehara Thermal Power Plant, progress made in the Kashima Power venture (joint venture)
- Progress made in the Ohma Nuclear Power Plant project
  - Safety enhancement measures steadily implemented, taking into account the New Regulatory Requirements and the most updated knowledge, promoting construction of a highly safe power plant
  - Engineering and design relating to safety enhancement measures to make headway in preparing for the early application for permission for the change of reactor installation license

## Response to Global Environmental Issues

### <Initiatives regarding Renewable Energy>

- Steady expansion of wind power
  - Operation commenced at the Kaminokuni Wind Farm (28MW). Minami Ehime Wind Power Plant (tentative name) under construction.
- Commenced verification operation of bottom-fixed offshore wind power generation off the coast of Kitakyushu City
- Increased procurement of biomass fuel to expand co-combustion at coal-fired thermal power plants
  - Concluded agreement with the Kyoto Prefecture for business concerning forming solid fuel from sewage sludge conversion at Katsuragawa Right Bank Watershed Rakusei Water Treatment Facility
- Steadily progressing with preparations for new geothermal project
  - Submitted draft environmental Impact statement relating to the Wasabizawa Geothermal Power Plant Plan (Yuzawa City, Akita Prefecture)
- Promoting development of medium and small scale hydroelectric power plants
  - Isawa No.1 Hydroelectric Power Plant (14.2MW) under construction. Commenced construction of Kuttari Power Plant (Max 0.47MW) using river maintenance discharge at the Kuttari Dam.

### <Initiatives to Increase Efficiency of Coal-fired Thermal Power>

- Oxygen-blown integrated coal gasification combined cycle system demonstration plant (Osaki CoolGen Project) under construction
- Participating in a world first verification test in actual power plant of oxyfuel combustion and CO<sub>2</sub> capture (Callide Oxyfuel Project)

## Initiatives in Overseas Power Generation Businesses

Achieved steady progress in projects under development in Thailand

- Commenced operation for all locations of the 7SPP (790MW in total)
- IPP at Nong Saeng and U-Thai (1,600MW each) under construction with the aim of commencing operation in 2014 and 2015 respectively.



Okutadami Hydroelectric Power Plant



Kaminokuni Wind Farm



NK2 Cogeneration Power Plant in Saraburi, Thailand

# Management Direction of the J-POWER Group (1)

Operational Environment that should be Considered and Basic Direction of Initiatives

## Operational Environment

- Developments in the competitive climate due to electricity system reform
- More difficulties due to age and high operational rates of existing facilities
- Lack of clarity on changes in the government's nuclear power policies
- Global Environmental Issues (CO<sub>2</sub>emissions regulations)

## Basic Direction

- Stable operation of existing facilities, including hydroelectric power, thermal power and networks etc., which support stable domestic supply
- Enhanced domestic supply power through new development of baseload electricity sources
- Steady progress for Ohma Nuclear Power Plant while ensuring safety as the basic precondition
- Actively introducing renewable energies to respond to global environmental issues
- Steady progress in overseas power generation businesses

**<<Aim to increase corporate value by responding to developments in the competitive climate and continuing to contribute to the stable supply of electric power>>**

- While flexibly responding to changes in the domestic electric power generation business due to the electricity system reform, engage in **further enhancement of the business platform**, based around the core activity of enhancing technical strengths, which is the pillar of our business, and securing facility reliability based on them to contribute to stable supply of electric power domestically and overseas.
- In the domestic sphere, while paying attention to environmental loading, **actively engage in new development** to follow new No.1 Unit of Takehara Thermal Power Plant and Ohma Nuclear Power Plant, respond to society's demand for **stable electric power supply in the mid to long term, mainly driven by baseload electricity sources.**

# Management Direction of the J-POWER Group (2)

## Enhance Business Platform that Supports Stable Supply of Electric Power

Securing the reliability of facilities

Legal compliance, safety and disaster prevention

Enhancement of human resources and the organization

Responding to changes in the domestic power generation business due to electricity system reform

Continual cost structure improvements

Maintaining financial health

## Developing Domestic Baseload Electricity Sources that Contribute to Stability of Mid-to Long Term Electric Power Supply

Building new, extending or upgrading existing coal-fired thermal power facilities

Steady progress with the construction of Ohma Nuclear Power Plant


## Decreased Environmental Load

Promoting high-efficiency and low carbon coal-fired thermal power plants  
(Technical development)

Expanding renewable energy  
(Wind power, geothermal, small-scale hydroelectric and biomass)

## Steady Progress in Overseas Power Generation Businesses

Steady progress of projects under construction and cultivation of projects aimed for future growth in the overseas power generation businesses

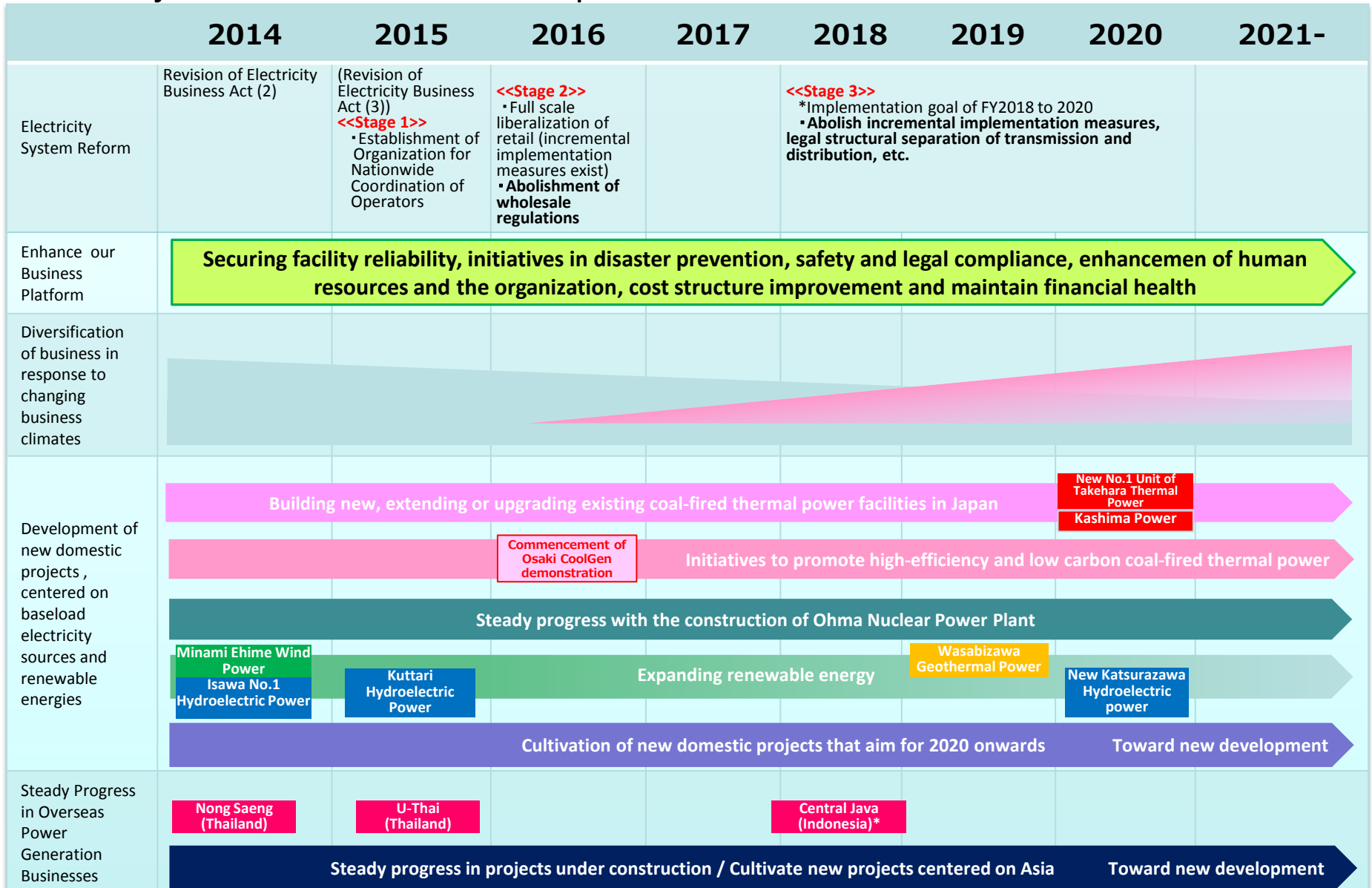


**Aim to increase corporate value by responding to developments in the competitive climate and continuing to contribute to the stable supply of electric power**

# Management Direction of the J-POWER Group (3)



## ● Projection of Business Development



\* Central Java project : Delayed from its original schedule to commence construction due to delay of obtaining necessary land for the project.

## Initiatives to Enhance our Business Platform

- Securing the Reliability of our Facilities (Thermal and Hydroelectric power and Network Facilities)
- Business Operations that Respond to Social Responsibilities (legal compliance, safety and disaster prevention)
- Enhancement of Human Resources and the Organization
- Responding to Changes in the Domestic Power Generation Business
- Continual Cost Structure Improvement
- Maintaining Financial Health



# 1) Securing the Reliability of our Facilities (1)

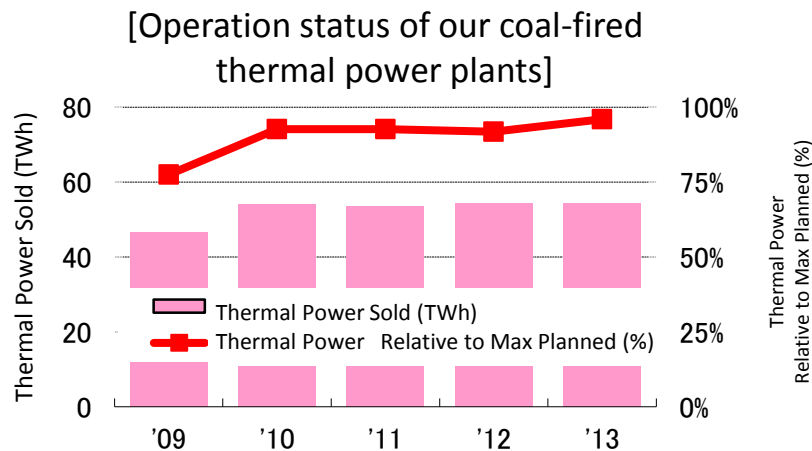
## Ensuring facility reliability

- ◆ With full understanding of the seriousness of the incident at the No.2 Unit of Matsuura Thermal Power Plant on March 28th, where a low-pressure turbine rotor fell during a periodic inspection, J-POWER will engage in a large-scale effort towards early restoration. We will also seek timely clarification of its causes and establish recurrence prevention measures
- ◆ Ensuring facility maintenance and going back to the start by committing to securing facility reliability in order to restore trust
  - Further progress towards stable operation through enhanced facility maintenance to withstand high operating levels as well as anti-aging measures
  - Progress with facility maintenance that appropriately responds to disaster and the needs of environmental measures

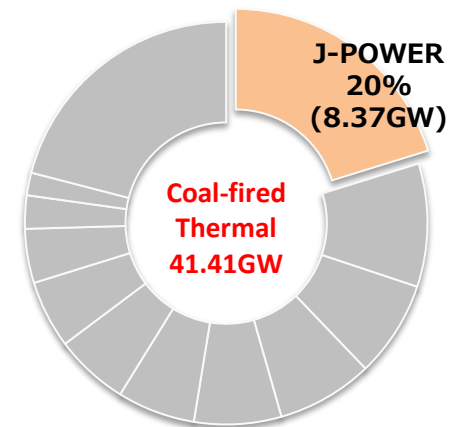
## 1) Securing the Reliability of our Facilities (2)

### -Thermal Power-

- Maintain high operating levels of coal-fired thermal power in order to respond to the heightened expectations around baseload electricity source that combines economy and stability
- Further enhance competitiveness through effective operation and maintenance
- Stable procurement of high-grade coal and utilization of various coals including the economically superior low-grade coal
- Expansion of effective utilization pathways for fly ash



[Share of Coal-fired Thermal Power Generation Capacity in Japan]



$$\text{*Ratio to Max Planned} = \frac{\text{Annual Generated Power Output Volume (kWh)}}{\text{Annual projected electric power volume assuming full operation of facility exclusive of periodic inspection and mid-term inspection periods (kWh)}}$$

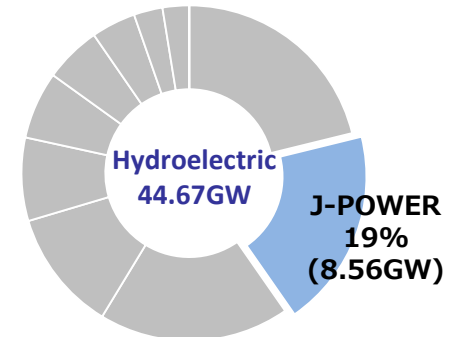
Note) As of end of February 2014  
 Source) "Survey of Electric Power Statistics" Agency for Natural Resources and Energy  
 "Electric Power Industry Handbook" The Federation of Electric Power Companies

## 1) Securing the Reliability of our Facilities (3)

### -Hydroelectric Power-

- Steady maintenance of facilities including large scale reservoir type hydroelectric power and pumped-storage power in order to reflexively respond to changes in demand and contribute to stable supply
- CO<sub>2</sub> free renewable energy
- Further enhance competitiveness through effective operation and maintenance
- Expansion of facility output and power generation by implementing overall renewal of water turbine generators, etc.

[Share of Hydroelectric Power Generation Capacity in Japan ]

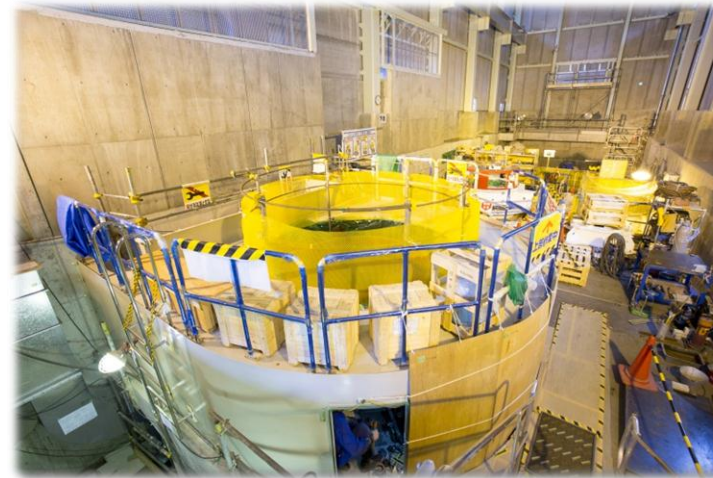


Note) As of end of February 2014 Source) "Survey of Electric Power Statistics" Agency for Natural Resources and Energy "Electric Power Industry Handbook" The Federation of Electric Power Companies

[Overhaul works at the Shimogou Power Plant]



[Isawa No.1 Power Plant Construction Project\*]



\*Utilizing the Isawa Dam (designated multi-purpose dam ; being constructed by the Ministry of Land, Infrastructure, Transport and Tourism) in Ousyu City, Iwate, construct the Isawa No.1 Power Pant (Capacity 14.2MW) on the right bank, directly below the dam. (Commenced February 2011).

# 1) Securing the Reliability of our Facilities (4)

## -Network-

- Significant contributions to stable supply of electric power through network facilities, led by interconnection facilities between regions
- With the intent of the electricity system reform in mind, respond to wide-area and neutral transmission and distribution, and contribute to needs of enhancing interconnection facilities between regions and frequency converter stations
  - By facilitating interconnection among regions, contribute to stable supply during serious incidents
  - Contribute to facilitation of electric power trading at a national scale through enhancement of wide-area interconnection functionality
  - Enhance adjustment functionality through utilization of interconnection facilities for full-scale introduction of renewable energies

[Sakuma Frequency Converter Station]

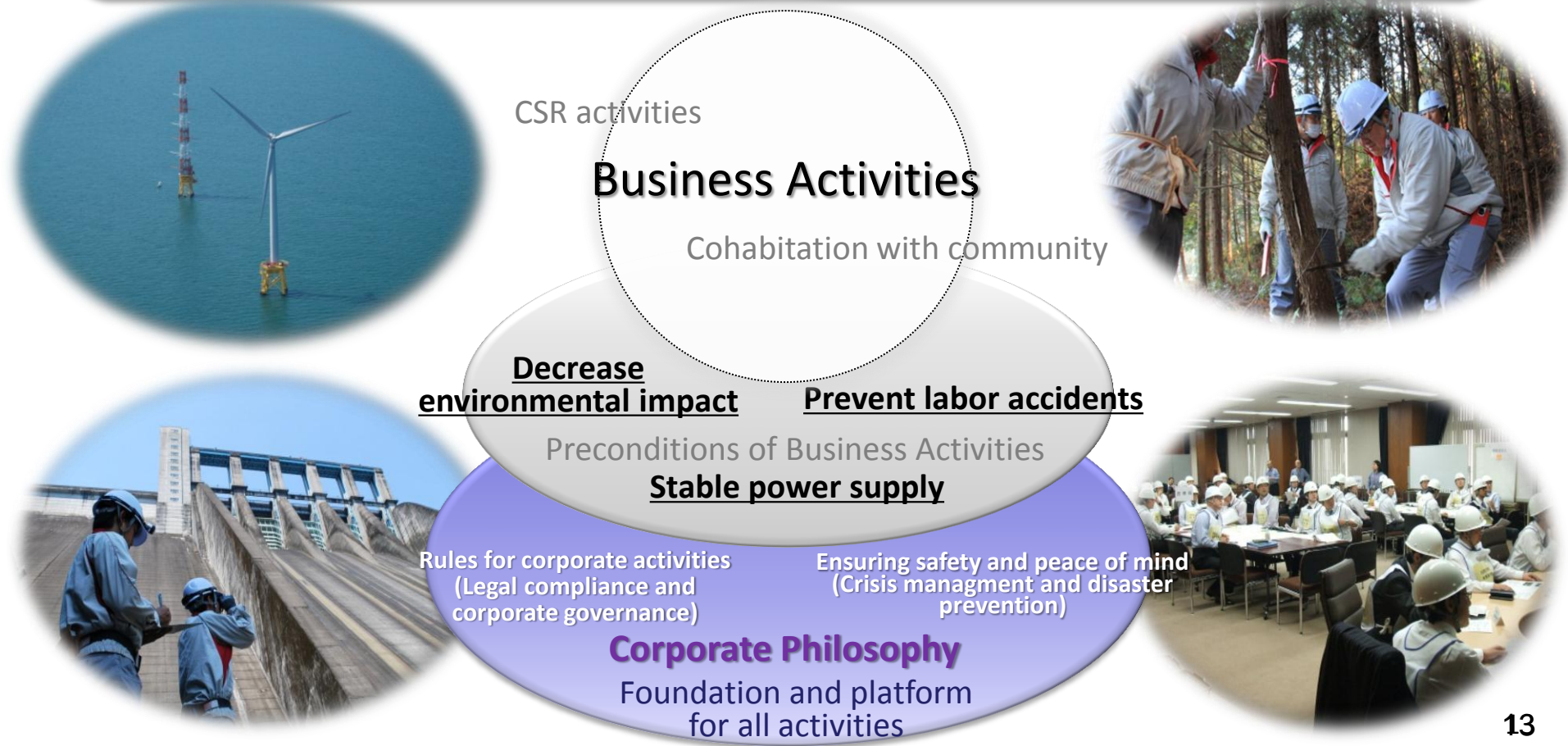


[Honshi Interconnecting Line]



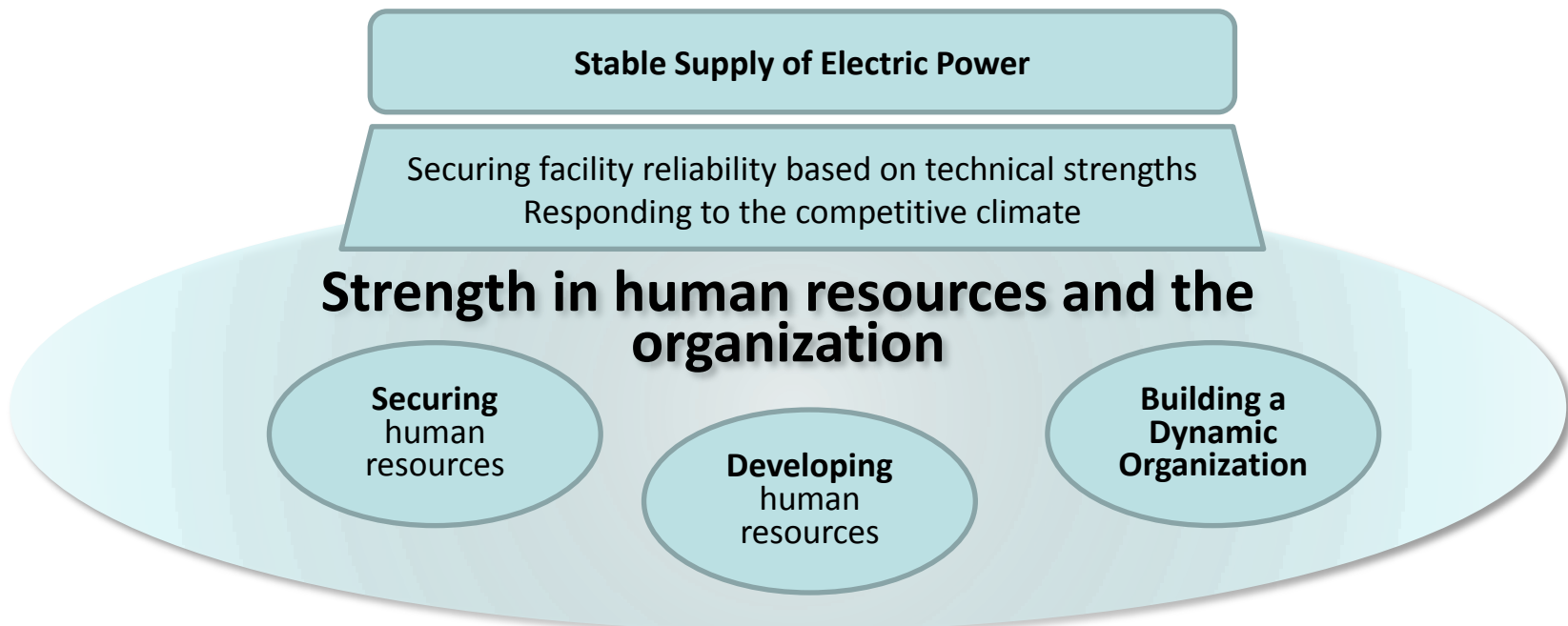
## 2) Business Operations that Respond to Social Responsibilities

- Steady engagement to ensure thorough governance and compliance that are foundational to corporate activities
- Thoroughly ensuring safety and enhancing responses to manage crises and disaster to support stable supply of electric power
- Cohabitation with each community and society as well as promoting environmental business management to contribute to the sustainable development of society



### 3) Enhancement of Human Resources and the Organization

- Stable procurement of human resources that contribute to the business with expertise and a broad perspective.\*  
\*Human resources with expertise that support stable supply including new development projects and overseas projects or human resources that can appropriately respond to changing operational climates
- Aim for enhanced ability of each group member, such as technical strengths that form the core of the business and nurture human resources that increase the value of the individual and the company.
- While accurately responding to electricity system reform, build a dynamic organization that is able to combine stable electric power supply and further cost reductions.



# 4) Responding to Changes in the Domestic Power Generation Business

- Respond to electricity system reform (abolishing regulations) and flexibly reform business structure in conjunction with the characteristics of the power sources and other factors. While developing new power sources, ensure reliability of existing facilities and engage in cost reduction for a synergistic enhancement of competitiveness, establishing a business platform that can respond to changes in the operational environment.
- While securing facility reliability and financial health, conduct appropriate business management that responds to expanded revenue opportunities accompanied with increase of business volatility.

### ◆ Schedule of electricity system reform

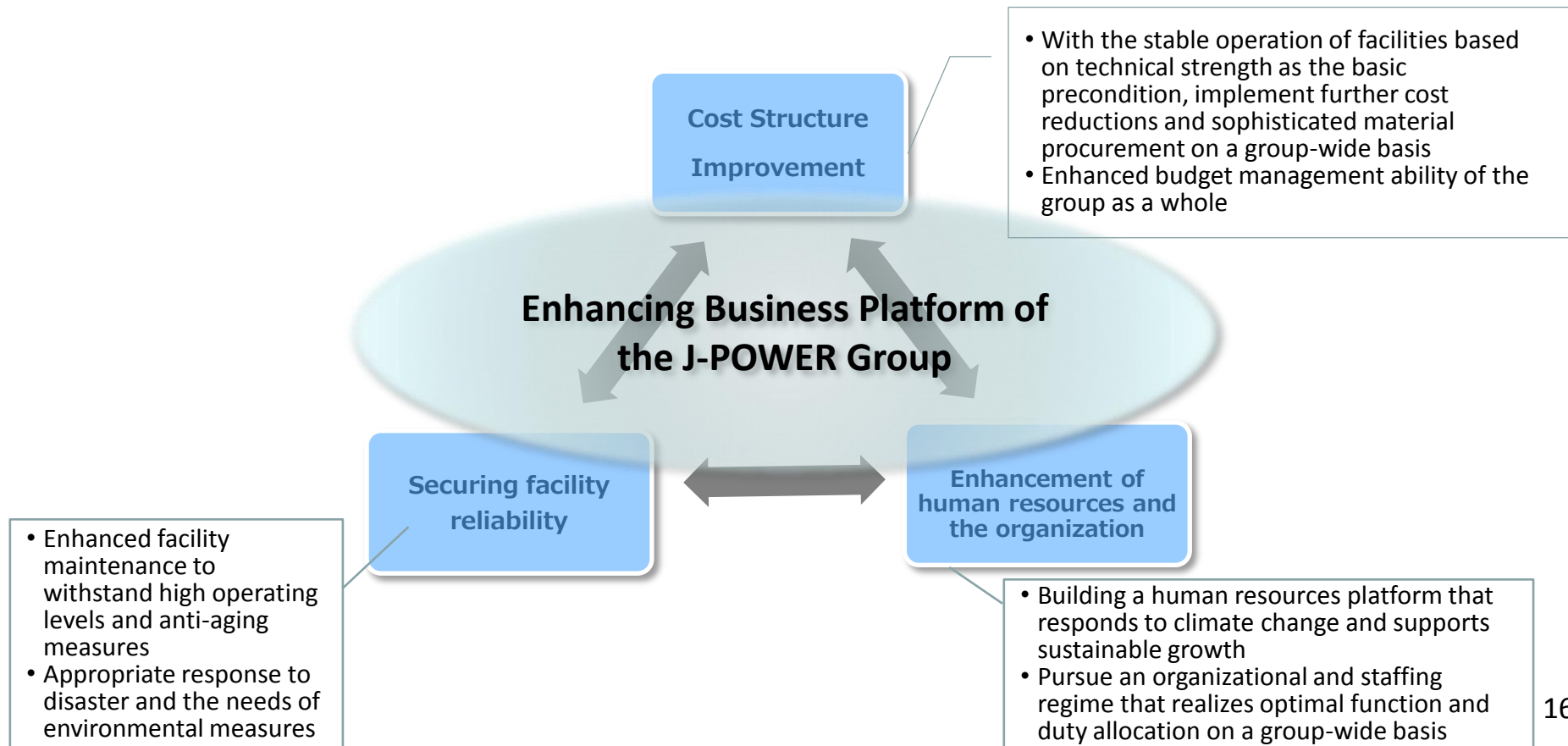
Stage 1 (2015): Establish the Organization for Nationwide Coordination of Operators

Stage 2 (2016): **Abolishment of wholesale regulations**, full-scale liberalization of retail participation

Stage 3 (goal of 2018 to 20): Legal structural separation of transmission and distribution, complete liberalization of retail prices

## 5) Continual Cost Structure Improvement

- Amidst significant changes taking place in the operational climate surrounding the J-POWER Group, aim to enhance our business platform through promoting stable and efficient business operations and initiatives for continual improvement in the cost structure.





## 6) Maintaining Financial Health

- Secure appropriate financial health that responds to changes in the operational environment.
- Carefully Select and concentrate new investment and use innovative business practices for growth through development of new power sources while maintaining financial health.
- Maintain financial health and secure favorable fund procurement conditions to support the economy and competitiveness of our facilities.

# Initiatives in Growth through New Development



- Building New, Extending or Upgrading Existing Coal-fired Thermal Power Facilities in Japan
- Initiatives to Promote High-efficiency and Low Carbon Coal-fired Thermal Power Facilities
- Steady Progress with the Construction of Ohma Nuclear Power Plant
- Expanding Renewable Energy
- Steady Progress in Overseas Power Generation Businesses

## 1) Building New, Extending or Upgrading Existing Coal-fired Thermal Power Facilities in Japan

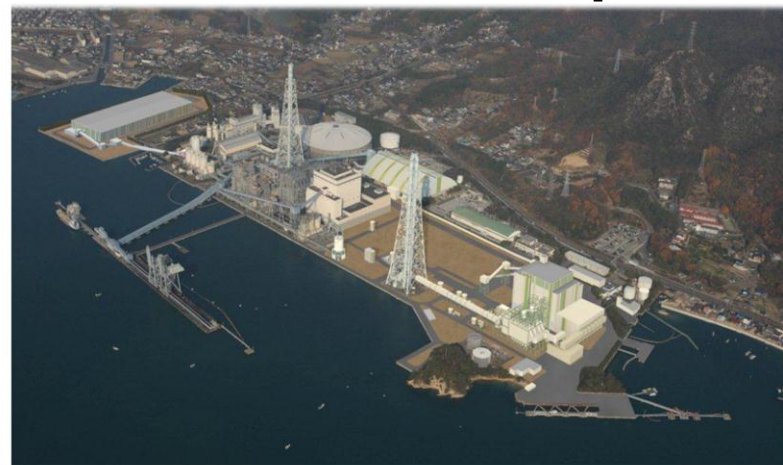
- ◆ While the positioning and restarting of nuclear power plants remains uncertain, secure baseload electricity sources utilizing the economy and reliability of coal-fired thermal power, as well as replacing aging thermal power facilities with higher efficiency facilities, in order to respond to the social demands of stable supply of electric power in the mid to long term, which takes into account environmental load.
- ◆ Maximum pursuit of business opportunities in new, extending or upgrading existing coal-fired thermal power facilities. Deploy high-efficiency coal-fired thermal power plants that are world leading.
  - Steady progress with construction of new No.1 Unit of Takehara Thermal Power Plant and Kashima Power, with the goal of operation commencement in 2020.
  - Diversification of the business structure to respond to developments in the competitive climate due to reforms.
  - Maximum pursuit of business opportunities by baseload high-efficiency coal-fired thermal power through new facilities, or extending / upgrading existing facilities for stable supply in the mid to long term.

[Overview of Kashima Power project]

Corporate Name	Kashima Power Co., Ltd
Equity Ratio	J-POWER 50%, NSSMC* 50%
Generation Equipment	640MW-class coal-fired thermal power station
Location	On the premises of NSSMC Kashima Works
Business category	Power supply (To be supplied to J-POWER and NSSMC)

\*Nippon Steel & Sumitomo Metal Corporation

[Rendering of the completed New No.1 Unit of Takehara Thermal Power Plant]



## 2) Initiatives to Promote High-efficiency and Low Carbon Coal-fired Thermal Power Facilities

- ◆ Actively engaging in initiatives on technical development of next generation low-carbon technologies such as the integrated coal gasification combined cycle (IGCC) technology and other high-efficient coal-fired thermal power technologies, CO<sub>2</sub> capture and storage (CCS) technologies through the promotion of the Osaki CoolGen Project.
- ◆ With high-efficient coal-fired thermal power technologies at the core, develop business and transfer technology overseas to contribute to low carbon and the reduction in global energy consumption.

### <Major R&D Projects>

#### Osaki CoolGen Project

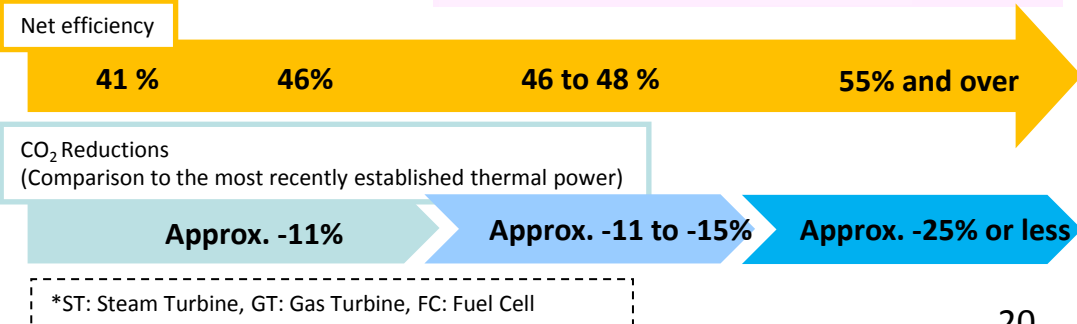
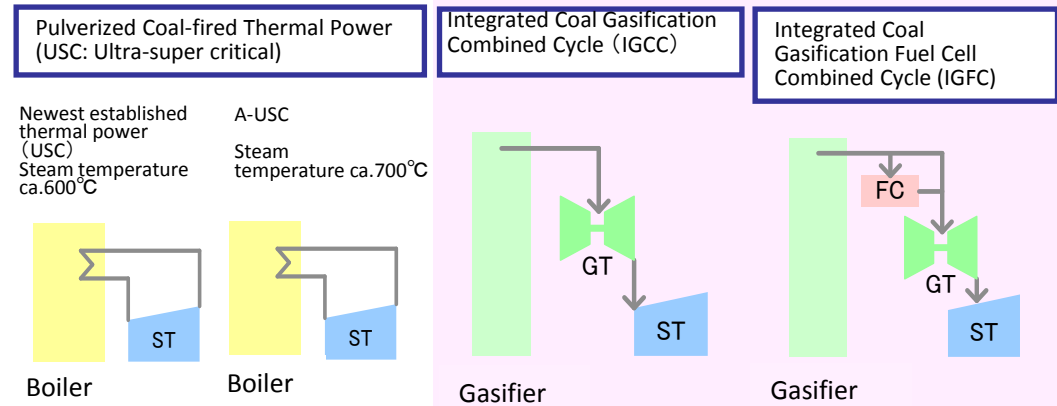
- A **large-scale demonstration power plant project**, based on the successes of the EAGLE project, which aims to become the world leader in high efficiency and low carbon emissions and demonstrates **oxygen-blown integrated coal gasification combined cycle power generation technologies (IGCC, IGFC) and CO<sub>2</sub> capture and storage technologies**.
- A project jointly implemented with the Chugoku Electric Power Co., Inc. (Osakikamijima, Hiroshima Prefecture). Construction commenced in March 2013, with a goal to commence verification testing in FY2016.

#### Callide Oxyfuel Project

- World first **verification test in an actual power plant relating to a unified process of oxyfuel combustion\* and CCS (CO<sub>2</sub> Capture and Storage)**.
- A joint project in Australia between 7 parties in Australia and Japan including IHI Corporation and Mitsui & Co., Ltd. Currently demonstrating oxyfuel combustion and CO<sub>2</sub> capture (From December 2012).

\*As it burns coal using oxygen instead of air within the boiler, there is a higher concentration of CO<sub>2</sub> within the combustion emissions compared to traditional air combustion processes, and CO<sub>2</sub> capture is facilitated through compression and liquification of the emitted gases.

### <High-efficiency coal-fired thermal power and reduction in CO<sub>2</sub> emissions through technological development >



### 3) Steady Progress with the Construction of Ohma Nuclear Power Plant

- ◆ Ohma Nuclear Power Plant is being promoted to secure baseload electricity source for stable energy supply in Japan (which is resource-poor) and to respond to the need for measures against global warming.
- ◆ A nuclear fuel cycle that reuses uranium and plutonium ejected by reprocessing spent fuel from the nuclear reactor, Ohma is a project that forms the core of the nuclear fuel cycle through the use of plutonium.
- ◆ Steady progress is ensured while continuing to obtain the understanding of the local community and ensuring safety as the basic precondition.
  - Currently implementing preparation activities for the Change of Reactor Installation Permit Application such as design and engineering regarding safety enhancement measures, based on the New Regulatory Requirements (enacted in July 2013)
  - The application will require a preparation period of at least half a year
    - \* After submitting the application as soon as possible, undergo inspections from the Nuclear Regulation Authority, and aim for an early-stage commencement of operation while obtaining the understanding of the local community with the understanding of safety as the basic precondition.

※We announced status of preparation for application on May 2014

**【Overview of Ohma Nuclear Power Plant】**

Location: Ohma, Shimokita-gun, Aomori Prefecture  
 Nuclear reactor type: Advanced Boiling Water Reactor(ABWR)  
 Fuel: Enriched uranium and uranium-plutonium mixed oxide(MOX)  
 Capacity: 1,383MW    Construction started : May 2008  
 Commencement of operation : To be determined



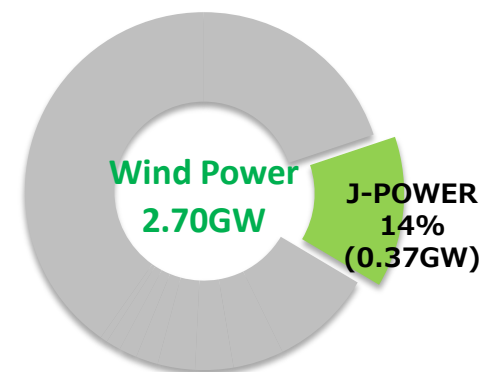
# 4) Expanding Renewable Energy (1)

## — Wind Power Business —

◆ Increase profitability through expanding wind power business and advanced/ efficient maintenance

[Share of Wind Power Generation Capacity in Japan]  
\*Based on owned capacity

- Capacity: 0.38GW ( No.2 in Japan, Owned capacity: Approx. 0.37GW)
- Increase profitability through capacity utilization rates improvement and efficient maintenance and operation
- Promote steady progress in new development through continual sourcing of suitable sites with good wind conditions
- Engage in initiatives to promote commercial viability of offshore wind power



(As of March 2014)

Source: Anticipated by J-POWER based on reports issued by Japan Wind Power Association

[Koriyama-Nunobiki Wind Farm]



[Initiative in Offshore Wind Power]



As a joint research project with the New Energy and Industrial Technology Development Organization, the Offshore Wind Power Generation System Demonstration Research is carried out off the coast of Kitakyushu City, Fukuoka Prefecture  
(Right) Offshore wind power generation facility  
(Left) Offshore wind condition observation facility

# 4) Expanding Renewable Energy (2)

## — Geothermal Business —

- Wasabizawa Geothermal Project is in the process of environmental impact assessment procedures towards commencement of operations scheduled for 2019
- Cultivation and consideration of other new projects

[Wasabizawa geothermal project]



(Exploratory Well Drilling)



(Venting test)

Joint investment with Mitsubishi Materials and Mitsubishi Gas Chemical at Yuzawa City in Akita Prefecture. (Capacity: 42MW-class)

## — Biomass Co-combustion —

- Engage in ongoing initiatives in the steady introduction of biomass co-combustion at coal-fired power plants by expanding the biomass fuel generation business using sewage sludge, etc.
- Contribute to carbon reduction of coal-fired thermal power through biomass co-combustion

## — Midium and Small scale Hydroelectric Business —

- Kuttari Power Station is under construction, with commencement of operations scheduled for 2015
- Cultivation and consideration of other new projects

[Kuttari Power Plant]



River maintenance discharge

Hydroelectric power station exploiting unused river maintenance discharge (Capacity: 470 kW)

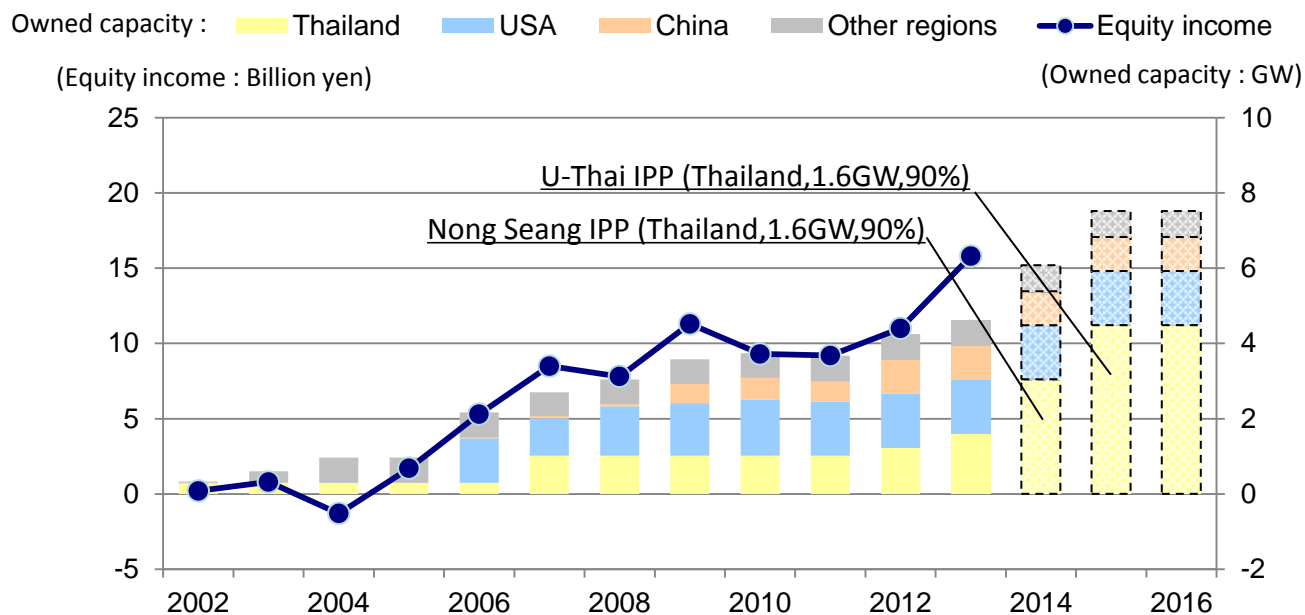
### Sewage sludge fuel projects

	Hiroshima	Kumamoto	Osaka	Nagaokakyo
Processing capacity*	Approx. 28kt/year	Approx. 16kt/year	Approx. 49kt/year	Approx. 13.2kt/year
Fuel manufacturing capacity	Approx. 4.5kt/year	Approx. 2.3kt/year	Approx. 8.6kt/year	Approx. 1.5kt/year
Project period	20 years from 2012	20 years from 2013	20 years from 2014	20 years from 2017

\*Dewatered sludge

## 5) Steady Progress in Overseas Power Generation Businesses

- ◆ Revenue platform enhancement toward sustainable and stable growth
  - There are 35 power plants in operation with owned capacity of 4.64GW (8GW if owned capacity for committed projects are included)
  - Realization of revenues through steady progress in 2 IPPs in Thailand (3.2GW in total)
  - Preparations for development of Indonesia Central Java coal-fired thermal power IPP (2GW)
  - Enhanced revenues from existing assets
- ◆ Cultivation of new projects for future
  - Progress cultivation of new projects centered around Asia for future growth



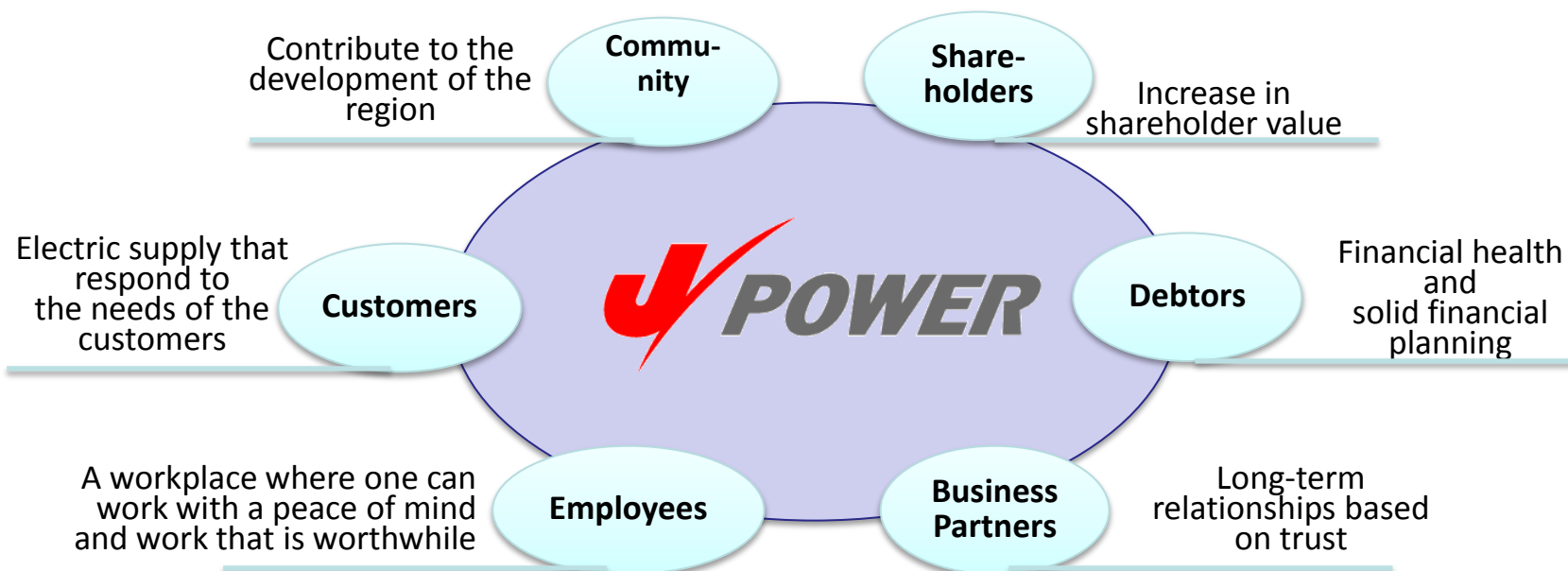
[Preparing for development]  
 Central Java Coal-fired  
 Thermal Power IPP  
 (Indonesia, 2.0GW, 34%)

※ Parenthesis ( ) shows nation, total capacity and J-POWER's investment ratio.  
 Owned capacity is calculated by multiplying the plant capacity for projects J-POWER is participating by J-POWER's equity ratio.  
 Owned capacity is as of the end of March 2014



# Sharing the Increase of Corporate Value with our Stakeholders

- Our business model is to recover investments through long-term business operations after infrastructure investments in power plants and other assets.
- Based on this model, we will contribute to the stable supply of electric power in the future for the sustainable increase in corporate value, securing returns for our stakeholders through successes in our businesses in the long term.



We will meet people's needs for energy without fail, and play our part for the sustainable development of Japan and the rest of the world.

This material contains statements that constitute forward-looking statements, plans for the future and management targets, etc. relating to the Company and/or J-POWER group. These statements are made based on certain assumptions of future events, and there exist possibilities that such assumptions are objectively incorrect and that actual results may differ from those in the statements as a result of various factors.

Furthermore, information and data other than those concerning the Company and its subsidiaries/affiliates are quoted from public information, and the Company has not verified and will not ensure its accuracy or appropriateness.