

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

April 30, 2013

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# To Our Stakeholders

With the suspension of nuclear power plants becoming a long-term prospect, electric power supply/demand remains unclear, while energy costs continue to rise. Amidst this situation, electricity businesses in Japan are facing a harsh operating environment. Furthermore, enhanced nuclear safety regulations, the Cabinet decision on the policy on electricity system reform and the reformulation of the basic energy plan (which includes a review of measures against global warming) all mark a major transition period for government energy policy.

In this situation, the J-POWER Group will ensure sustainable growth of its corporate value through a growth strategy that focuses on mid- to long-term enhancement of supply capability in Japan and abroad, alongside the strengthening of our business platform to stay a step ahead of changes in the business environment.

To ensure supply capability enhancement in the domestic power generation business, we are pursuing the possibility of new construction and refurbishment of coal-fired thermal power, as seen in the replacement at the Takehara Thermal Power Plant. Construction work at the Ohma Nuclear Power Plant has resumed and we are doing our utmost to ensure that this power plant meets the new regulatory standards and that it is completed and operates as a safe power plant that wins the trust of its local community.

Global growth is the aim for our overseas power generation business. In Thailand, we are aiming to start operations at the large-scale gas combined cycle IPP project, which is currently under construction. In Indonesia, we are preparing to begin construction of the large-scale high-efficiency coal-fired IPP project.

In terms of business platform enhancement, we are keeping ahead of changes and building risk resistance, while transforming these changes into business opportunities. Our efforts include boosting facility maintenance in our coal thermal power plants to withstand continuous full operation; strengthening competitiveness and pursuing expansion of profit opportunities by widening our involvement in the entire coal value chain; reinforcing facility maintenance and value increase at our hydroelectric power plants (which are the leading plants in Japan); promoting renewable energy, using wind power generation as our base, while responding to growth needs and steadily implementing maintenance measures at interconnecting facilities and other network facilities.

The importance of robust financials that support business growth and stability is an invariable fact, and we are therefore strengthening our internal reserves to reach our aim of investing in future growth, as well as maintaining a healthy balance sheet.

We are committed to continuing our management reforms to achieve further cost competitiveness and a robust corporate entity that can sustain stable and effective business operations.

The J-POWER Group is dedicated to the achievement of its mission, which reflects its corporate philosophy, and will continue to meet this challenge in 2013.

We are as always grateful for your continued support.

President



# Initiatives in FY2012

## Initiatives to Promote Stable Supply of Electricity

- Though some facilities suffered stoppage due to natural disasters and facility issues, contributed to stable supply despite tightening electricity supply.
  - Coal-Fired Thermal power: high Capacity utilization rates, 80%, despite facility issues occurring
  - Hydroelectric: Completed comprehensive upgrade works at Tagokura power plant (Output from 380MW→400MW)
  - New cables began to be utilized at Kitahon HVDC Link, for increased reliability
- Ohma Nuclear Power: Construction was suspended after the earthquake disaster, but works resumed (October 2012)
  - Reflecting measures to improve safety in light of Fukushima Daiichi Nuclear Power Station incident



Tagokura Power Plant

## Response to Global Environmental Issues

### <Initiatives regarding Renewable Energy>

- Steady expansion of wind power
  - MInami Ehime Wind Power Plant (tentative name) and Kaminokuni Wind Farm construction started
- Implemented experimental study of ocean-based wind power generation systems at Kitakyushu City offshore
- Increased procurement of biomass fuel to expand co-combustion at coal-fired thermal power plants
  - Started operation of facilities at sewage sludge fuel conversion facility at the Southern Kumamoto City water treatment facility
- Preparations regarding steady moving forward for new geothermal project
  - Commencement of environmental impact appraisal procedures for plans to build new geothermal power plant in Wasabizawa-Akinomiya area, Yuzawa City, Akita Prefecture
- Built Isawa No.1 Hydroelectric Power Plant (14.2MW) and promoted small scale hydroelectric power development using river maintenance discharge at Kuttari dam.



Koriyama-Nunobiki Kogen Wind Farm

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

- Construction works commenced at the oxygen-blown integrated coal gasification combined cycle system demonstration plant (Osaki CoolGen Project)
- Began world first verification in actual power plant of oxyfuel combustion and CO<sub>2</sub> recovery (Callide Oxyfuel Project)

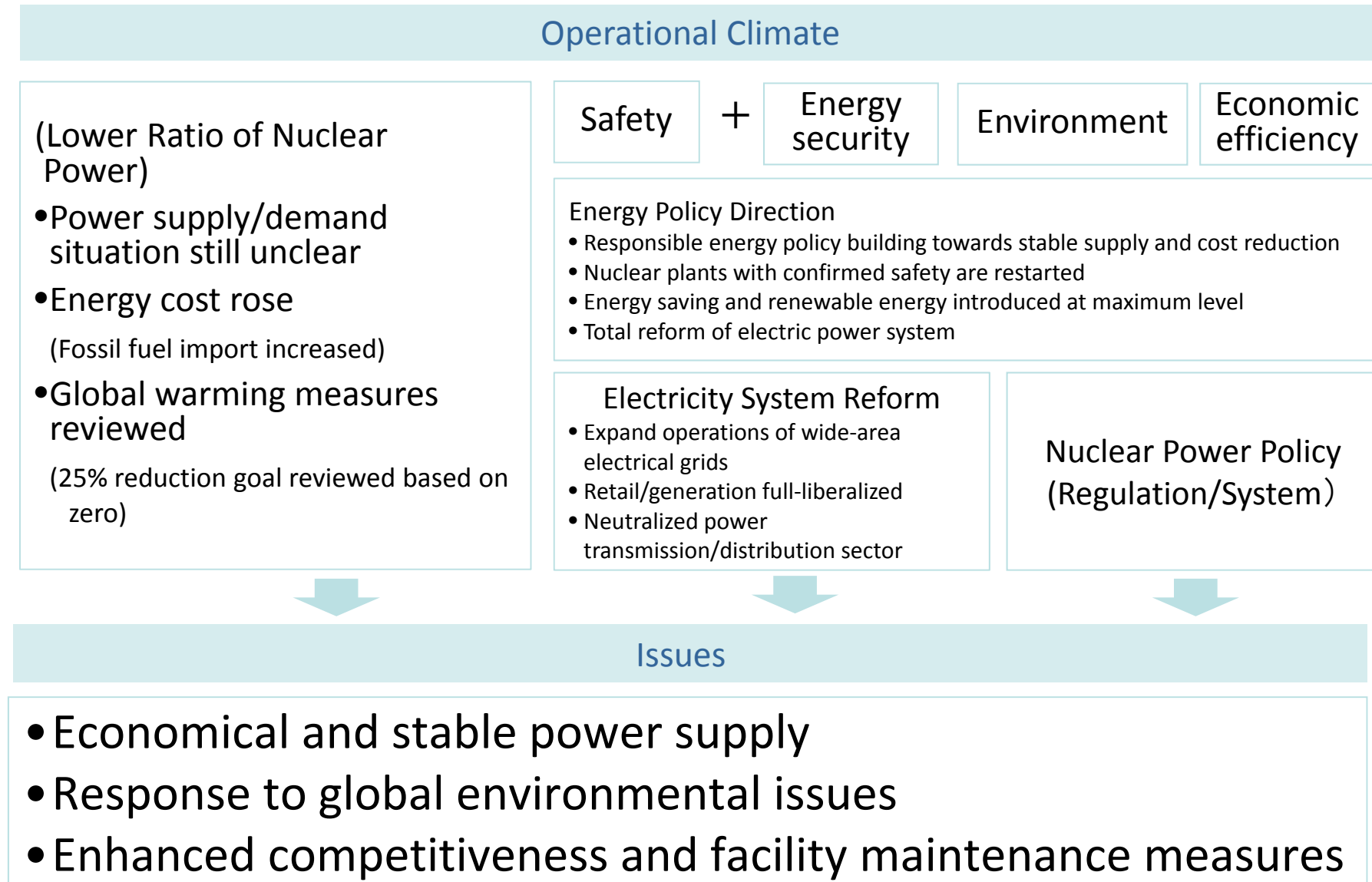
## Initiatives in Overseas Power Generation Businesses

- Achieved steady progress in projects under development in Thailand
  - 7 SPP (790MW in total) : 4 projects(440MW) began operation. Working at remaining 3 projects are steadily under way
  - Nong Saeng IPP (1,600MW): Construction project steadily underway
  - U-Thai IPP (1,600MW) : Concluded project finance contract and began full scale construction works
- Henzou Power Plants (China) (2,090MW) operation started
  - First USC coal-fired thermal power plant in Guangxi Zhuang Autonomous Region
  - Project contributes to stabilization of power supply in China and contributes to energy saving and environmental improvement

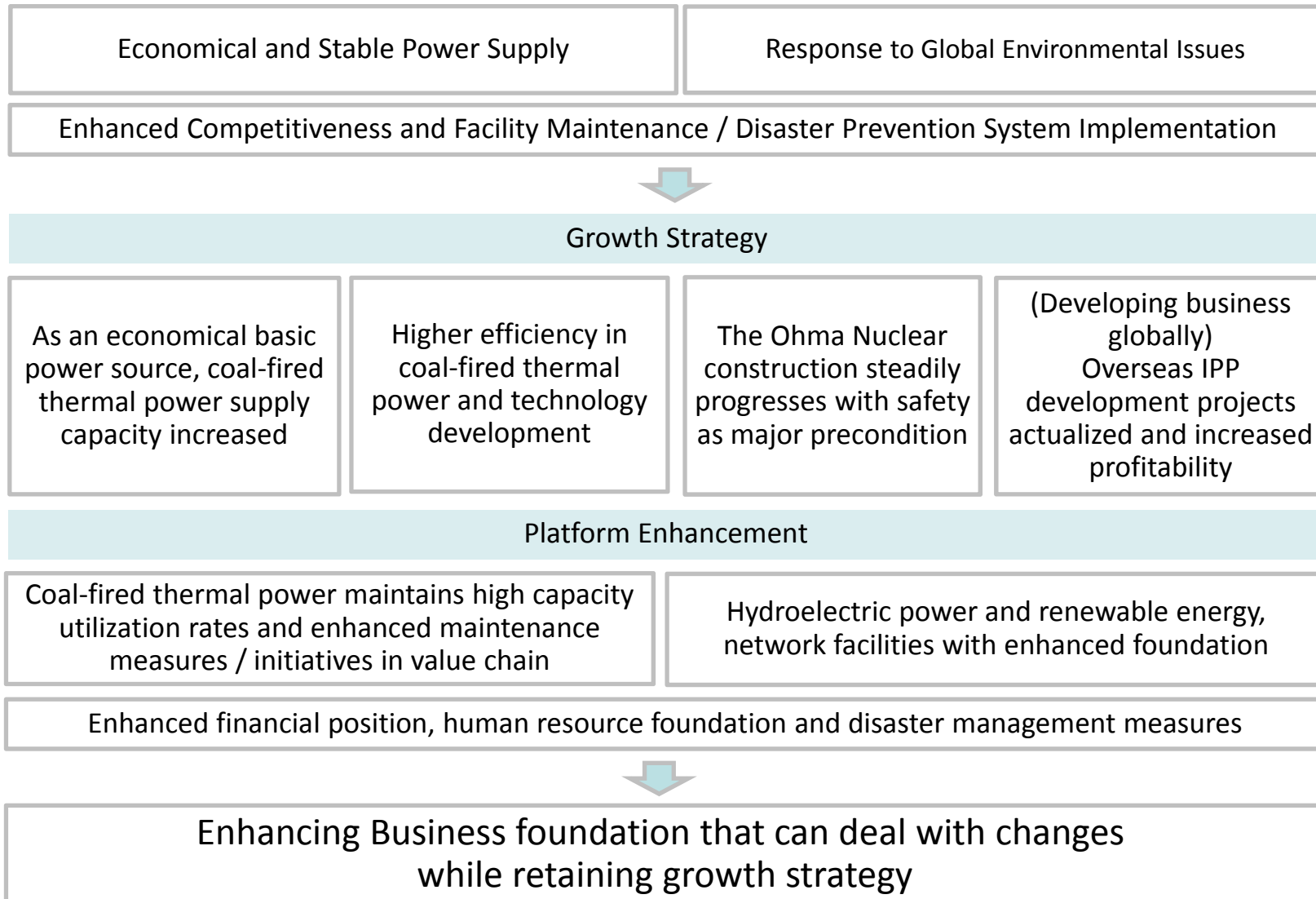


Henzou Power Plant (China)

# Environmental Changes around Business



# Management Direction of J-POWER Group



## Mid to Long Term Initiatives for Enhanced Supply Capability towards Growth Strategy

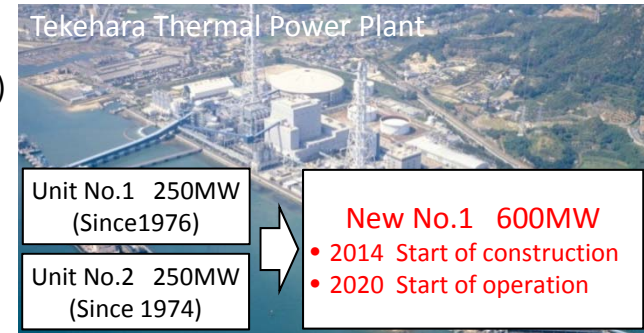
- ❑ Building new, adding on or upgrading existing coal-fired thermal power facilities
- ❑ Initiatives to increase efficiency of coal-fired thermal power
- ❑ The Ohma Nuclear Power
- ❑ Global business development

# Building New, Adding on or Upgrading Existing Coal-Fired Thermal Power Facilities

- Resumption and new development of nuclear power is unclear, while expansion of renewable energy requires time. Coal-fired thermal power is important as economic and stable foundation
- Securing basic electric power supply and upgrading aging thermal power facilities is a nationwide challenge  
(Out of domestic thermal power plants, over 40% have exceeded 30 years of operation)

## Coal-Fired Thermal Power Demand Increase as Basic Power Source

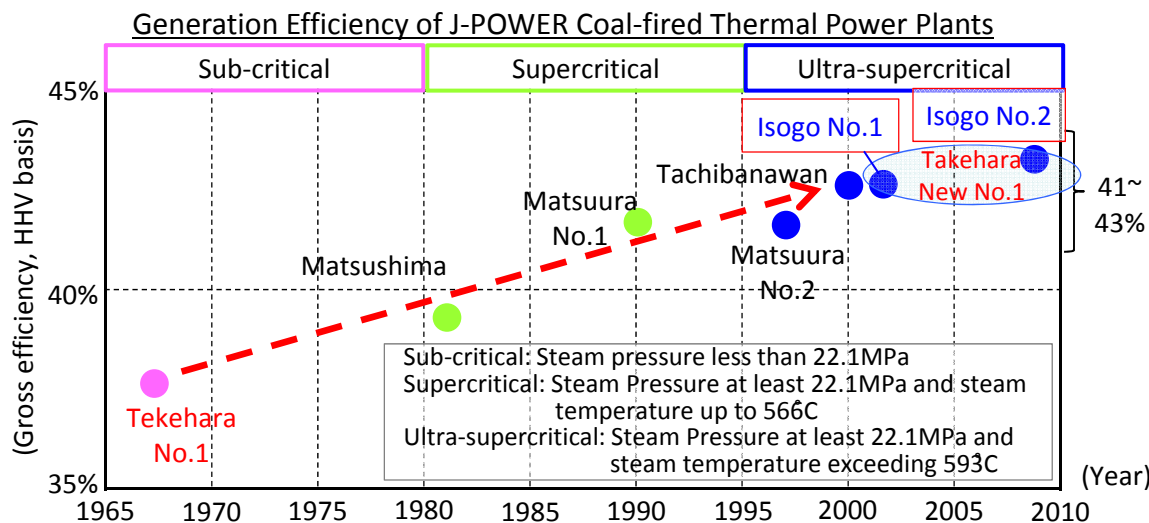
- Pursuing possibility of building new, adding on or upgrading existing facilities, implementing world best standards of high efficiency coal-fired thermal power while keeping an eye on the environment
  - New Unit No.1 at Takehara Thermal Power Plant has progressed with Environmental Impact Assessment
  - For mid to long term stable supply, pursue possibility of building new, adding on or upgrading to high efficiency coal-fired thermal power facilities



	Old units No.1 and 2	New units No.1 and 2
Output	530MW (265MW x 2 units)	1,200MW (600MW x 2 units)
SOx	60 ppm	10 ppm (20) *1
NOx	159 ppm	13 ppm (20)*1
Dust and soot	50 mg/m <sup>3</sup> N	5 mg/m <sup>3</sup> N
Steam Condition	Sub-Critical	Ultra-supercritical
Efficiency (Gross, HHV basis)	38%	43%
CO <sub>2</sub> emission intensity*2	100	83

\*1 Figures in ( ) are the figures of the New No.1 units

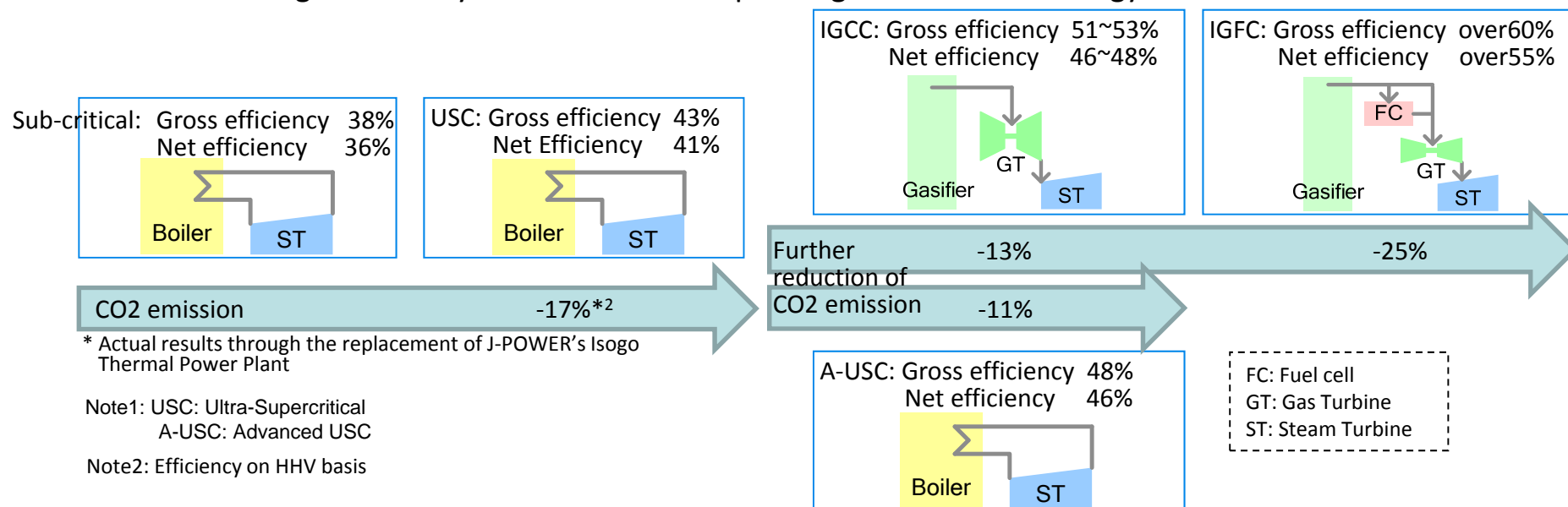
\*2 For the CO<sub>2</sub> emissions per kWh at the sending-end, a relative value against 100, where 100 is emissions/kWh prior to replacement.





# Initiatives to increase efficiency of coal-fired thermal power

- Sustained engagement with efficiency
  - The new units of Isogo Thermal Power Plant have improved thermal efficiency and reduced CO<sub>2</sub> emissions by 17% compared with before upgrading
  - Two directions for high efficiency technology development
    - ✓ Pulverized coal-fired: Further improvement of steam condition (USC→A-USC)
    - ✓ Coal gasification: Integrated coal gasification combined cycle (IGCC)
      - Integrated coal gasification fuel cell combined cycle (IGFC)
- Osaki CoolGen Project (Large scale demonstration) promotion
  - Based on the results of the EAGLE project, a large scale demonstration power plant project aiming for the world's leading high efficiency/low carbon oxygen-blown IGCC, IGFC as well as CO<sub>2</sub> capture technology
  - A joint project with The Chugoku Electric Power Co., Inc. (Osakikamijima, Hiroshima Prefecture). Construction commenced in March 2013 with a view to commence verification testing in FY 2016
- Contribute to global low-carbon power generation and the reduction in global energy consumption through the transfer of high-efficiency coal-fired thermal power generation technology to overseas



# Growth Strategy: Strengthening Supply Capacity

## The Ohma Nuclear Power



- Contribute to stabilization of electric power supply in East Japan where unclear electric power supply/demand conditions persist
- Construction works suspended immediately after the earthquake disaster was resumed October 1, 2012.
- Appropriate incorporation of new regulation standards to be introduced in the future and steadily implement safety measure construction works
- Take all possible measures to ensure safety at Ohma Nuclear Power Plant to strive to become a safe power plant that is trusted by the community

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

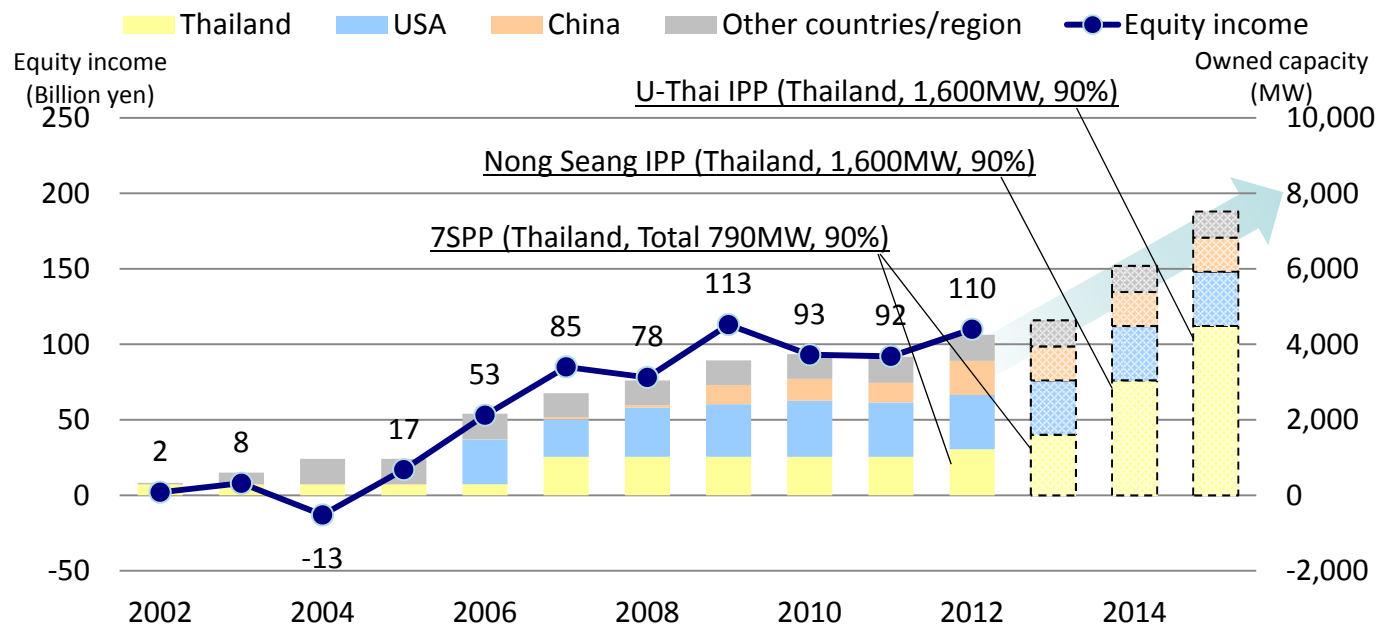
Reactor building	Turbine building, radwaste building	control building, service maintenance building
		



# Growth Strategy: Strengthening Supply Capacity Global Business Development



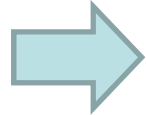
- Currently 31 overseas plants in 7 countries and regions in operation with owned output of 4,253MW  
Including projects to which already committed, owned output is approx. 8,000MW
- Equity income of affiliates under the overseas electric power generation business was 11.0 billion yen in FY2012
- Striving for operational commencement of projects currently under development
  - Thailand: 7 SPPs+2 IPPs (Total 3,990MW) to be rolled out from 2013 to 2015
  - Indonesia: Central Java Coal-Fired Thermal Power IPP (2,000MW) preparing development



2017年  
Central Java IPP (coal-fired)  
(Indonesia, 2,000MW, 34%)

Note: Information in parentheses gives the name of the country, total output, and J-POWER's investment ratio. Owned capacity is calculated by multiplying the plant output for projects J-POWER is participating by J-POWER's equity ratio, and this is the amount recorded as of March.

# Business Platform Enhancement

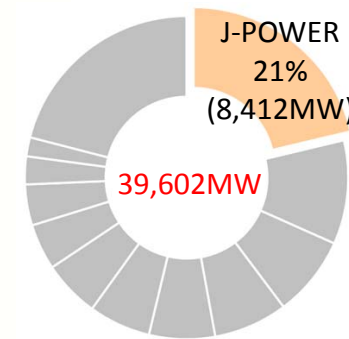


- Keeping a step ahead of the business climate to enhance risk endurance, and convert this to business opportunities
  - Enhance business platform to this end
- 
- ❑ Maintain high capacity utilization rates of coal-fired thermal power
  - ❑ Initiatives in the Coal Value Chain
  - ❑ Enhance facility maintenance and value increase for hydroelectric power
  - ❑ Initiatives regarding Renewable Energy
  - ❑ Steady maintenance measures and possibility of enhancement for network facilities
  - ❑ Financial strategy that supports business growth and stability
  - ❑ Engagement in building a robust corporate structure and quality

# Maintaining High Capacity Utilization Rates for Coal-Fired Thermal Power

- Due to unclear electric power supply/demand, expectations are high for highly economical coal-fired thermal power as the basic power source
  - Competitiveness of coal-fired thermal power has advantageous trends in the mid to long term as well
- ↓
- Facility maintenance enhancement and countermeasures against facility age to ensure continuation of high operating level
  - Further enhancement of competitiveness through efficient operation and maintenance regimes

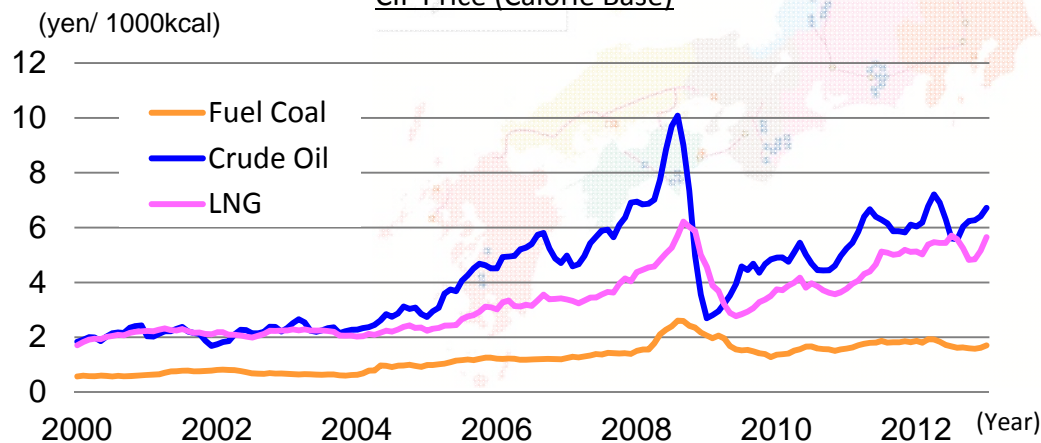
Share of Coal-fired Thermal Power Generation Capacity in Japan



(As of February 2013)

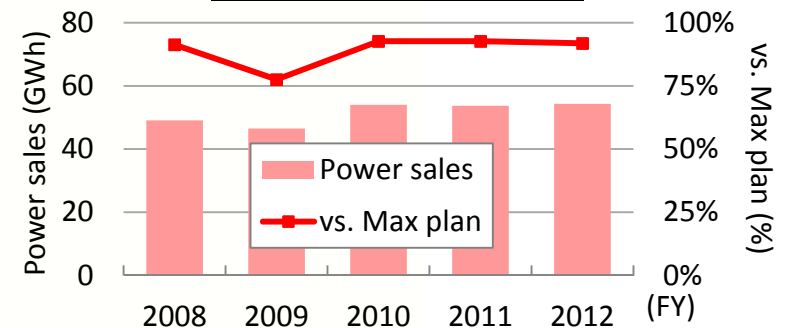
Source: Prepared by J-POWER based on reports issued by the Agency for Natural Resources and Energy, and the Federation of Electric Companies of Japan

CIF Price (Calorie Base)



Data charted up to January 2013  
Source: Prepared by J-POWER based on Trade Statistics of Japan

Thermal Power Performance



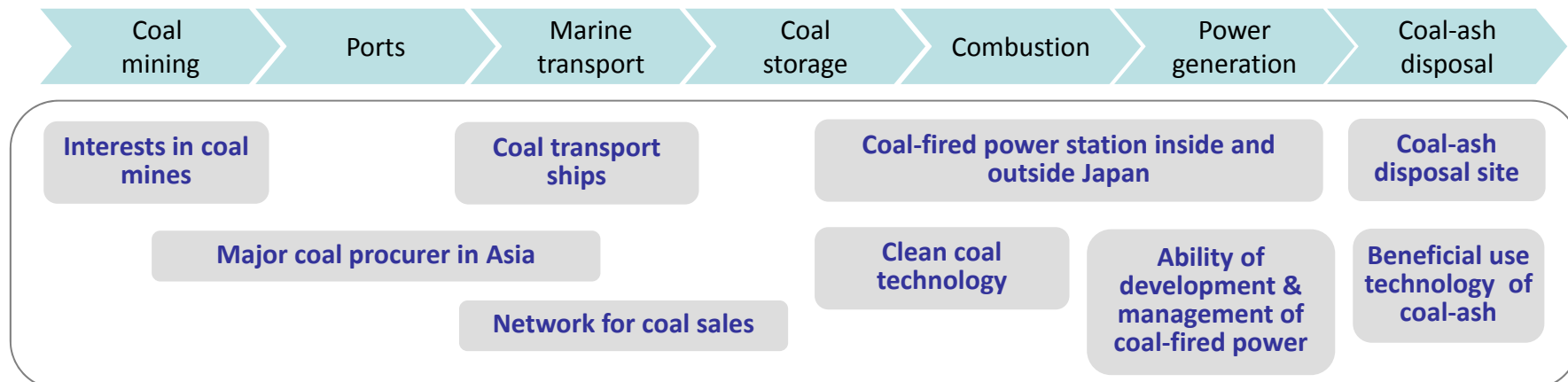
- Coal-fired thermal power plants operating at close to full capacity

$$\text{vs. Max plan} = \frac{\text{Actual annual power generation output (kWh)}}{\text{Assumed annual power generation output with facilities operating at full capacity, excluding periods of regular and interim inspections (kWh)}}$$

## Business Platform Enhancement Initiatives in the Coal Value Chain

- Enhancing competitiveness of coal-fired thermal power
  - Pursue stable procurement of high-grade (greater calorific value and lower ash ratio) coal
  - Utilize a variety of coals that include highly economical low-grade coal
  - Build a global and optimal coal procurement portfolio which is economical and reliable
  - By expanding the incorporation into the entire value chain, pursue cost competitiveness and profit opportunities through efficiency gains in the entire fuel procurement process
  - Expand effective application opportunities for fly ash

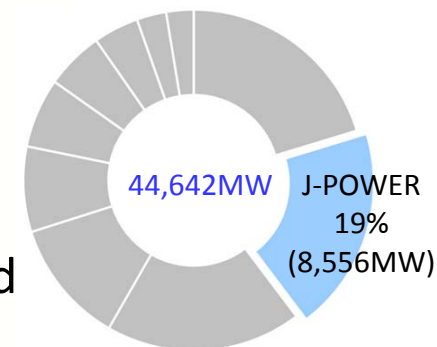
### J-POWER's initiative in coal value chain



# Enhanced Facility Maintenance and Value Increase for Hydroelectric Power

- A leading hydroelectric generation facility in Japan
    - Large scale reservoir type hydroelectric power and pumped-storage power able to reflexively respond to demand fluctuations and provide stable supply capability
  - The core of CO<sub>2</sub>-free renewable energy
- ↓
- Facility maintenance that adequately responds to disasters and environmental requirements
  - Further enhancement of competitiveness through efficient operation and maintenance regimes
  - Application and facility enhancement that strives for every kWh gain possible
    - Built Isawa No.1 Plant (14.2MW) and promoted small scale hydroelectric power development using river maintenance discharge at Kuttari dam
    - Output gains by comprehensive upgrade of water turbine generators

Share of Hydroelectric power Generation Capacity in Japan



(As of February 2013)  
Source: Prepared by J-POWER based on reports issued by the Agency for Natural Resources and Energy



Increasing generation output and electricity volume through across-the-board upgrades to water turbine generators (Nukabira Power Plant and Tagokura Power Plant completed)

### Construction of the Isawa No. 1 Power Plant

In February 2011 we began construction of the Isawa No. 1 Power Plant (14.2MW output) on the right bank directly below the Isawa Dam, which is currently being built by the Ministry of Land, Infrastructure, and Transport in Oshu City, Iwate Prefecture (designated multi-purpose dam), to take advantage of the dam.



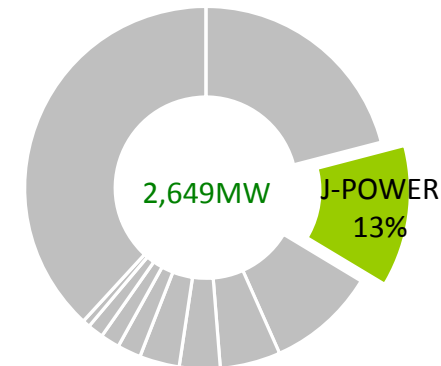
# Initiatives regarding Renewable Energy

- Promote Renewable Energy

- Wind Power Generation

- Output capacity: 353MW (No.2 in Japan)
- 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

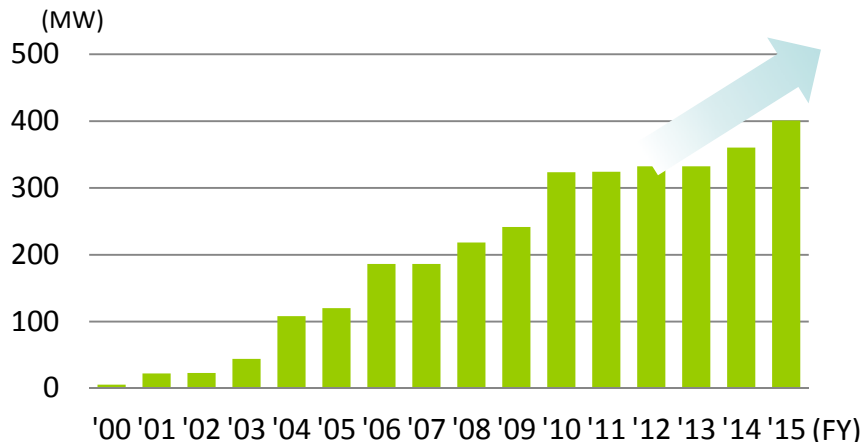
Share of Wind Power Generation Capacity in Japan



(As of March 2013)

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

J-POWER's Wind Power Generation Owned Capacity



Offshore Wind Power Generation System Demonstration Research



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



# Initiatives regarding Renewable Energy

## – 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

## – Geothermal

- Yuzawa Geothermal Project is in the process of environmental impact assessment procedures towards operation commencement in 2020 (scheduled)
- Other new projects are under consideration as well

### Sewage sludge fuel projects

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

\*Dewatered sludge

### Yuzawa geothermal project



[Exploratory Well Drilling]



[Venting Test]

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

# Steady Maintenance Measures and Possibility of Enhancement for Network Facilities

- In the midst of an electric power supply/demand crunch, J-POWER's network facilities and particularly the interconnection facilities between regions have greatly contributed to stable electric power supply
- Steady progress is being made with maintenance measures for existing network facilities
- Promotion of wide area and more neutral electricity transmission, distribution and the need to enhance interconnection facilities
  - By facilitating interconnection among regions, increase reliability when serious accidents occur
  - Interconnecting function enhancement to facilitate and invigorate electric power trading on a national scale
  - Adjustment functionality expansion for large scale introduction of renewable energy using interconnecting lines
- While contributing to stable supply of electric power, utilize previous experience and technologies to respond to growth needs in interconnecting facilities among regions and frequency converter stations



Kitahon HVDC Link

Laying down the new cable (Use started in December 2012)

Sakuma Frequency Converter Station  
(Capacity: 300MW)

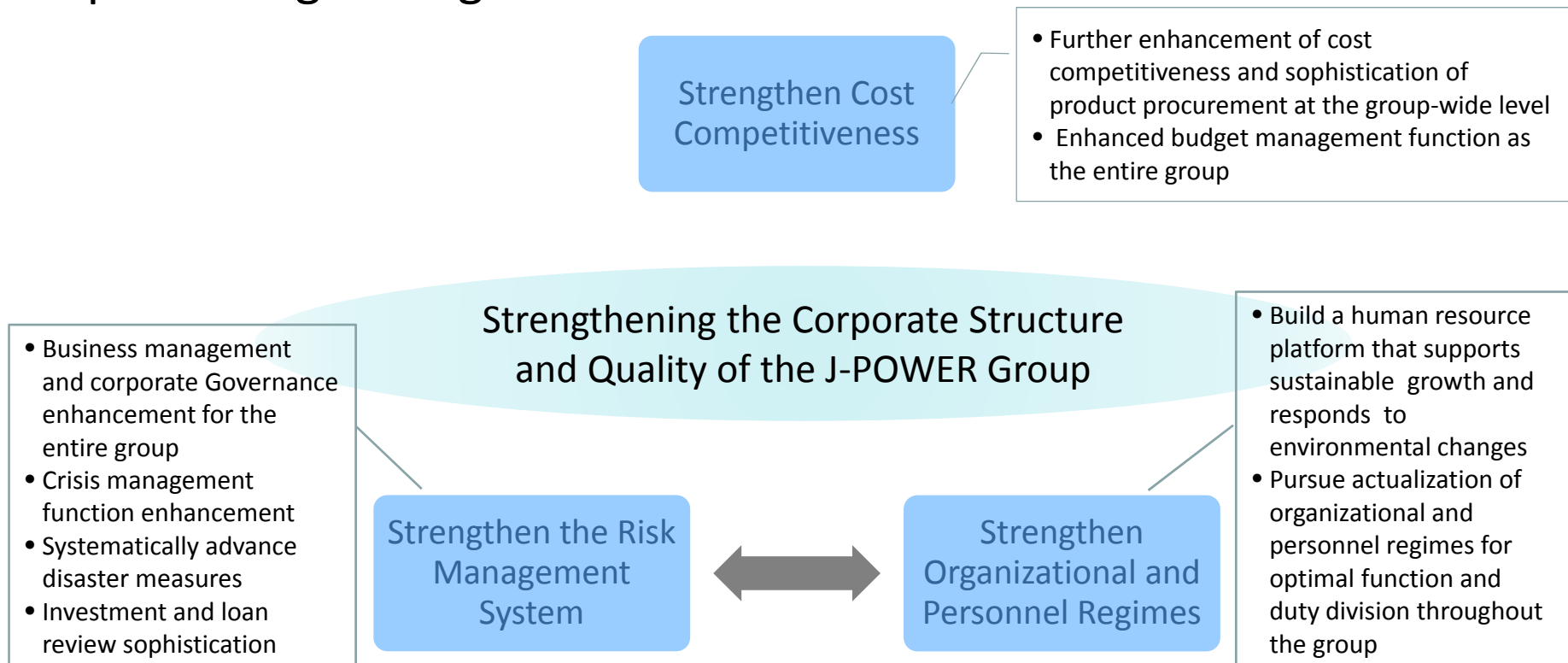


# Financial Strategy to Support Business Growth and Stability

- Direction of business management for ongoing strengthening of financial position does not change
  - While business climate changes are inevitable, the need remains for firm responses to growth investment and maintenance of a healthy balance sheet
  - To maintain stable fund-raising capacity, steadily increase business profits to expand and strengthen internal reserves
    - Further cost competitiveness enhancement and a corporate robustness that can sustain stable yet efficient business operations
    - Further improvement of investment returns
    - Strive to continually improve shareholders' equity ratio

# Engagement in Building a Robust Corporate Structure and Quality

- Amidst dramatic changes in the climate surrounding the J-POWER group, we are aiming for a robust corporate structure and quality that can sustain stable and efficient business operations and further enhancement of cost competitiveness, and continually promoting management reforms



# Summary

- Growth Strategy
  - Respond to basic power source enhancement needs
  - Strive to lead technologies that support the next generation
  - Advance construction of the Ohma Nuclear Power Plant
  - Steadily develop overseas power generation business
- Business Platform Enhancement
  - Platform enhancement of each business division to stay one step ahead of coming changes
  - Contribute to stable supply by maintaining high capacity utilization
  - Further cost competitiveness enhancement

## Profit Distribution Policy

- In consideration of the company's business model characteristic of securing investments through long term operation by investing in infrastructure such as power plants, we place the utmost importance on a sustainable dividend policy
- While advancing sustainable corporate value improvement engagements, we will endeavor to increase returns to shareholders through business results generated over the long-term

## J-POWER's Mission

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.

- The energy industry in Japan stands at the center of a major shift in paradigms, occasioned by the major disaster that occurred in March 2011.
- As a company at the center of these changes, the J-POWER Group is determined to further accelerate our initiatives to meet the challenge of fulfilling our universal mission.

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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.