

**RAISING THE  
POWER  
OF MC**

## **Fiscal Year 2017 Business Segment IR Meeting**

# **Mitsubishi Corporation Global Environmental & Infrastructure Business Group**



# Future of the Global Environmental & Infrastructure Business Group

The Global Environmental & Infrastructure Business Group is working to help build a sustainable society and enhance the company's corporate value through businesses in the infrastructure field, which has high public significance and growth potential.



Hiroshi Sakuma  
Group CEO, Global Environmental &  
Infrastructure Business Group



**THE  
STRENGTH  
OF 7**

## Group Management Participants

**EVP, Group CEO,  
Global Environmental & Infrastructure Business Group  
Hiroshi Sakuma**

**SVP, General Manager,  
Global Environmental & Infrastructure Business Group CEO Office  
Masao Ikeya**

**SVP, General Manager,  
Global Environmental & Infrastructure Business Group Administration Department  
Tetsuya Aiba**

**SVP, Division COO,  
New Energy & Power Generation Division  
Yoshinori Katayama**

**SVP, Division COO,  
Infrastructure Business Division  
Tetsuji Nakagawa**

**Division COO,  
Environmental Business Division  
Yutaka Kashiwagi**

# Agenda

- 1. Overview of the Group**
  - Mission and Organizational Structure
  - Overview of the Business Divisions
- 2. Progress on Midterm Corporate Strategy 2018/Future Growth and Priorities**
- 3. Risks and Opportunities Surrounding the Entire Group**
- 4. Investments and Profit of the Group**
- 5. Progress on Midterm Corporate Strategy 2018 / Future Growth and Priorities**
- 6. Growth fields under Midterm Corporate Strategy 2018**
  - Power Generation Business
  - Distributed Power Generation Business / Battery Business

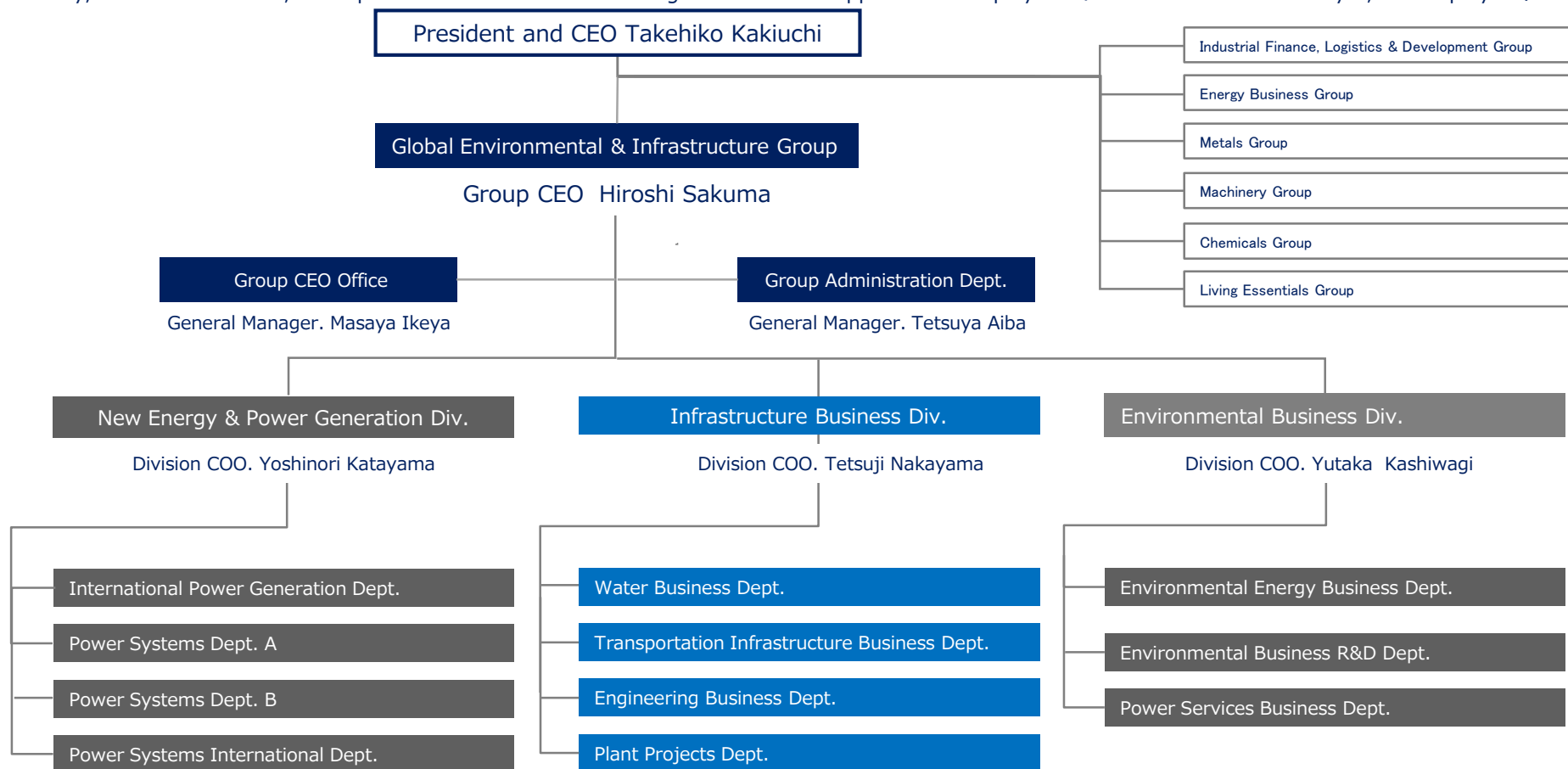
## APPENDIX

- Global Environmental & Infrastructure Business Segment (Six Months Ended September 2017)
- New Energy & Power Generation Business / Environmental Business  
(Our Assets / Operating Business / EPC Construction Site)
- Infrastructure Business(Our assets / Operating Business / EPC Construction Site)

# 1.- ① Overview of the Group (Mission and Organizational Structure)

**[Mission]**  
Accurately monitor the changes of the environment of the Power Generation and Infrastructure business.  
Aim to achieve sustainable growth by providing stable value to users along with pursuing a new business model.

<As of July, 2017> 3 Divisions, 11 Departments and 2 Back-office organizations with approx. 600 employees (consolidated basis: nearly 1,600 employees)



# 1.- ② Overview of the Group (New Energy & Power Generation Div.)

- **Power Generation Business :**  
Expanding thermal and renewable energy power generation businesses worldwide, and developing an electricity retailing business in Japan.
- **Power Transmission Business :**  
Transmitting power from offshore wind power generation plants, progressing aggressively in European countries, to onshore demand areas. Aiming to provide a function indispensable to realize the low-carbon society.
- **EPC\* Trading :** (\*Engineering, Procurement and Construction)  
Supplying and constructing various power generation, transmission and transformation facilities and environmental equipment etc. for customers worldwide.

## Main Initiatives :

### Gas-fired Power Generation Business

- Initiating worldwide IPP businesses that provide electricity to large users and electric power companies on a long term basis, being in charge of the business from development to plant construction and operation.
- Recently started merchant type power generating business to directly sell electricity to the market.



### Renewable Energy Power Generation / Power Transmission Business

- Initiating offshore power transmission business that supports renewable energy and offshore wind power generation business, market demand for which is expected to expand.



### Electricity Retailing Business in Japan

- Established MC Retail Energy as a joint venture with Lawson, developing an electricity retailing business targeting households under the “Machi-Ene” electricity service brand in Japan.

エネルギーを、もっとコンビニエンスに。





# 1.- ③ Overview of the Group (Infrastructure Business Div. )

- **Plant Engineering Business :**  
**Operating large infrastructure business and engaging in EPC** of development and transportation in **oil and gas fields** on and off shore.  
In addition, **initiating large EPC for industrial infrastructure** for steel and chemical production, etc.
- **Transportation Infrastructure Business :**  
Proceeding with EPC of equipment supply and construction works for many years in the transportation infrastructure business centering around airports and railways, and proceeding with the expansion of operating businesses.
- **Water Business:**  
Promoting water business through business investments in the United Kingdom, Middle East and Japan to supply water to the regions of the world.

## Main Initiatives :

### **FPSO Business**

(FPSO : Floating Production, Storage and Offloading system)

- Operating multiple floating production, storage and offloading systems of oil and gas with SBM Offshore in Brazil etc.



Courtesy of SBM Offshore

### **Chiyoda Corporation**

- MC is the largest shareholder of Chiyoda Corporation, constructing oil, gas and chemical plants. Expanding our energy and infrastructure businesses centering around Chiyoda.



### **Airport Business**

- Promoting airport business by utilizing the knowledge developed over many years by EPC trading business.
- Concluded a 30 years contract for business right concession with the Myanmar government, and now operating Mandalay International Airport.



# 1.- ④ Overview of the Group ( Environmental Business Div. )

Based on a medium and long term perspective, initiating environment and new energy related development of technology and new-generation businesses.

- **Battery Business :**

Initiating manufacturing and sales business of lithium-ion batteries for electric vehicles and industrial use.

In addition, expanding energy storage business that contributes to stabilization of the power systems and diffusion of renewable energy.

- **Power Service Business (Power downstream business) :**

Creating power service related business including power storage business, considering the moves to distributed power generation that generate and supply electricity close to consumption areas.

- **Environment Business R&D :**

Proceeding the demonstration of a hydrogen value chain to develop next-generation energy towards a low-carbon society.

## Main Initiatives :

### Lithium-ion Battery Business

- With the growing needs of lithium-ion batteries for environmentally-friendly vehicles and energy storage, proceed development, manufacture and sales of lithium-ion batteries partnering with GS Yuasa.



### Distributed Solar Business

- In 2016, invested in Nexamp, a US-based distributed solar power developer. Nexamp has achieved to develop approximately 50MW centering on the Northeast of the United States.



### Power Trading Business

- ElectroRoute has been working on spot, international and green electricity trading businesses in 8 European countries.



### Next-generation Energy

- Initiating a demonstration project to introduce a large amount of hydrogen energy prospective to prevail in industries such as automobile, power generation and gas.





## 2. Progress on Midterm Corporate Strategy 2018/Future Growth and Priorities

- 【Vision】**
- Set up a structure that provides for proactive development and operation (proactively managing businesses)
  - Pursue an optimal portfolio, taking into account efficiency of investments
  - Pursue a new business model for sustainable growth by grasping the changes of markets and regulations

### Business Domain

### Policy

#### **Power Generation**

- Further strengthen power generating business, being the core and our top-priority growth field
- Aim to strengthen the portfolio centering on gas and renewable energy by asset re-profiling
- Collaborate with Energy Business Group and proceed businesses such as “Gas to Power”

#### **Energy Infrastructure Business (Chiyoda Corp., FPSO etc.)**

- Enlarge earnings base of the energy infrastructure business by centering on Chiyoda and SBM.

#### **Water Business**

- Establish stable earnings based on South Stafford Shire (concession business in United Kingdom), Metito and Swing Corp.

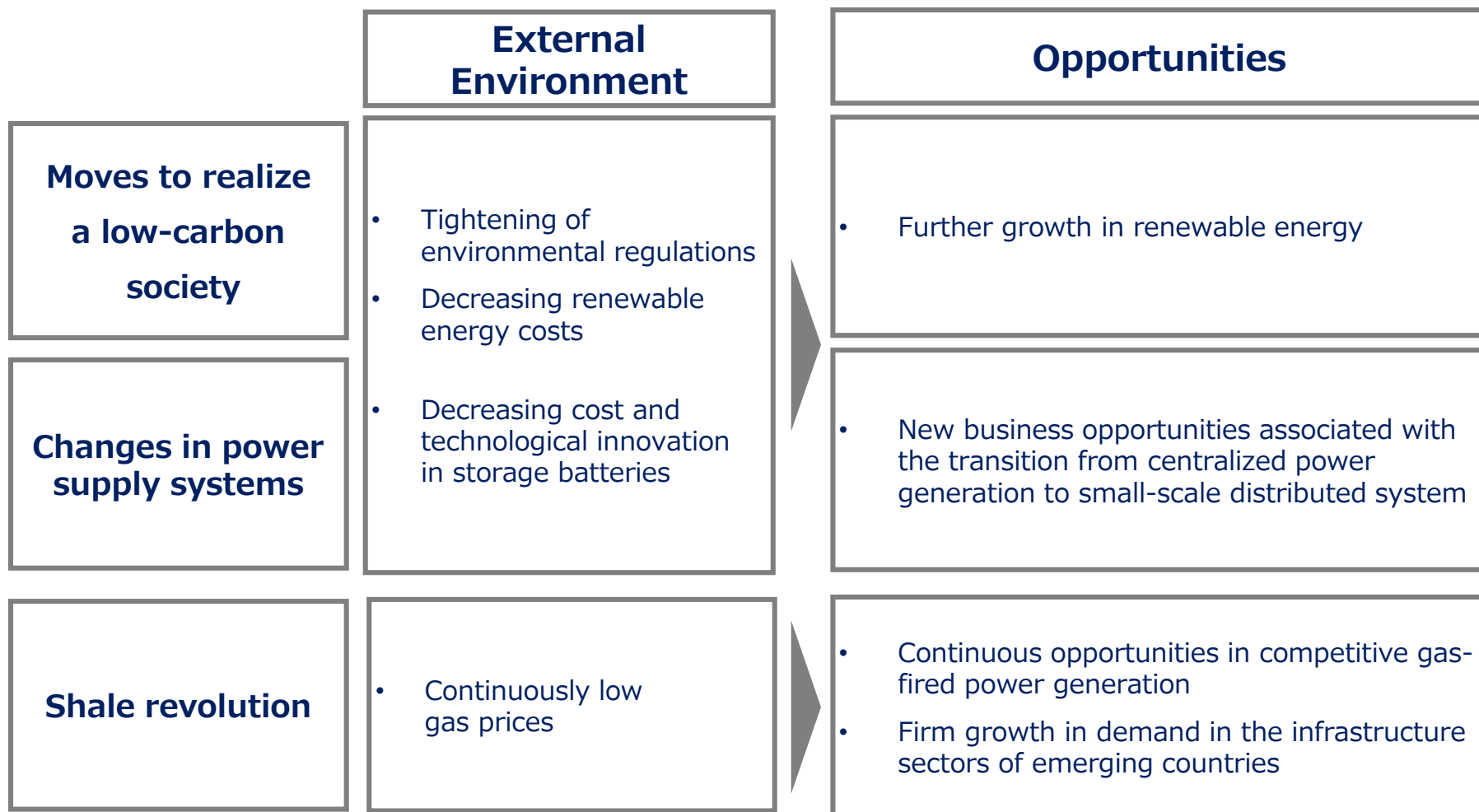
#### **Transportation Infrastructure Business**

- Aim to operate large scale airport businesses, utilizing knowledge from airport businesses centering on Asia.

#### **Environmental-related**

- Generate profits in the battery manufacturing business, expanding the battery-related business
- Create downstream initiatives by corresponding to changes in the energy market environment
- Develop new business domains (hydrogen-related business etc.)

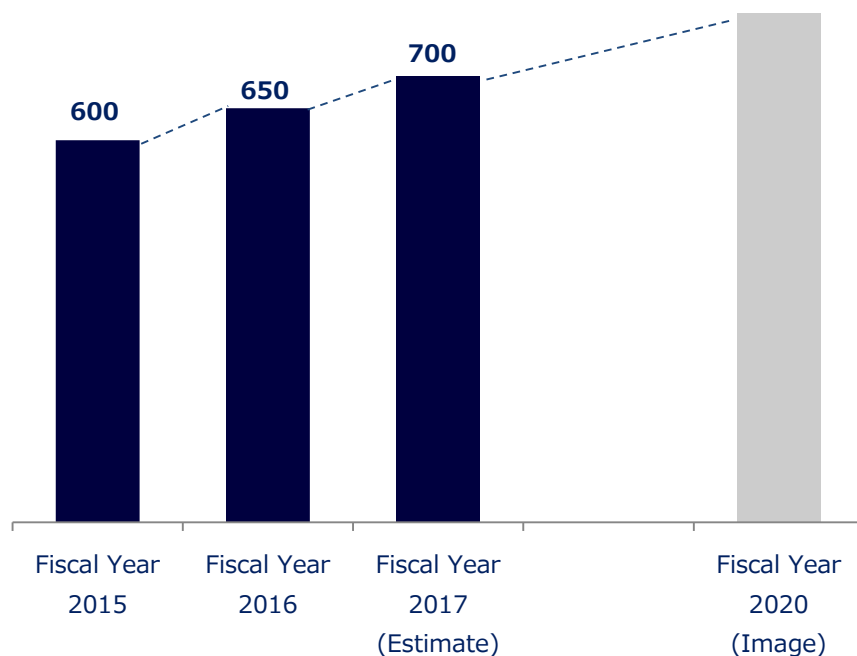
### 3. Risk and Opportunities Surrounding the Entire Group



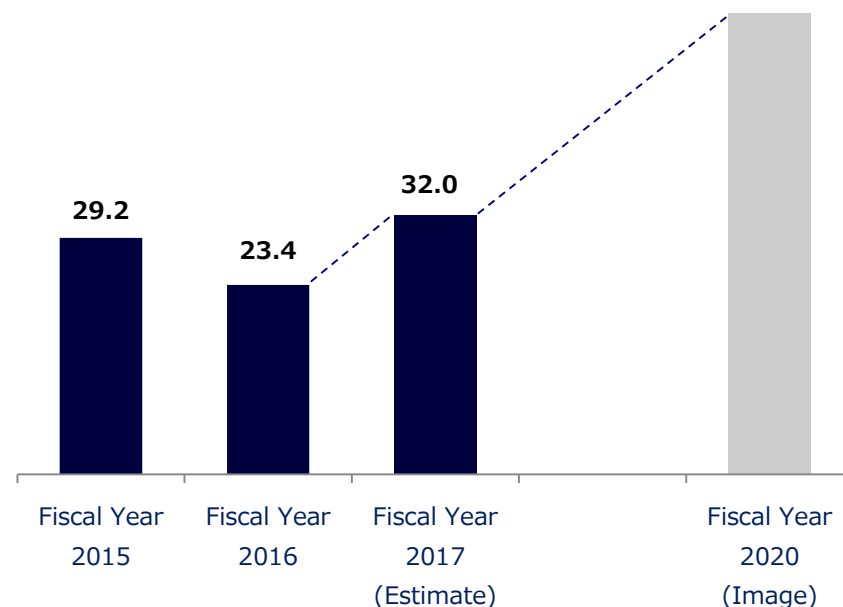
## 4. Investments and Profit of the Group

Profit level will increase toward 2020, and profitability relative to risk assets is prospected to improve.

<Investment balance amounts (bil JPY)>



<Consolidated income (bil JPY)>



## 5. Progress on Midterm Strategy 2018 and Future Growth and Priorities

### Progress on Midterm Strategy 2018

#### Power Generation

- **Drove portfolio optimization by re-profiling assets**

Sold certain power generation assets and power transmission assets  
Invest in new gas-fired thermal power projects and new offshore wind power projects  
Acquired business rights in new offshore power transmission business

#### Infrastructure Business

- **Steadily generated earnings from projects**

Began FPSO\* operations  
(\*Floating Production, Storage & Offloading System)  
Promoting the execution of industrial infrastructure and urban transportation facilities etc.

- **Developing the airport operation business**

Participated in airport privatization projects worldwide

#### Environmental Business

- **New Business Initiatives**

Battery Storage business in Germany  
Distributed Solar business  
Power trading business  
Established joint venture in the battery service business with EDF

### Future Growth and Priorities

- **Strengthen functions to refine business management**

Strengthen initiatives in the electricity value chain  
Initiatives to realize a low-carbon society  
Address the diversification of power purchasers (from long-term contracts to market sales)

- **Growing number of opportunities in the energy infrastructure business, mainly in North America and Asia**

Promote collaboration with the Energy Business Group among other initiatives

- **Deregulation and privatization trends in various business fields**

Greater need for private funds and financing, and growing number of privatization opportunities

- **Growing number of opportunities in the battery business**

Initiatives in anticipation of growth in markets for automotive and industrial batteries

- **Business for power downstream**

Initiatives to address technological innovation in battery storage and distributed power generation

- **Develop new business (hydrogen-related business, etc.)**

## 6. Growth Drivers under Midterm Corporate Strategy 2018:

### ① Power Generation Business

#### Initiatives in the Offshore Wind Farm Business

- In 2016, MC acquired an equity interest in a company operating the Norther offshore wind farm project. It is now in the construction phase, and operations are set to start in summer 2019. The project has a total cost of 150 billion Yen and total capacity of approximately 370MW.
- This is the second offshore wind farm business project for MC, following the Luchterduinen offshore wind farm in the Netherlands, which started operations in 2016. These projects are examples of MC's policy of increasing its presence in the renewable energy sector in the aim of realizing a low-carbon society, and focus on offshore wind farms centered on Europe.



(Photo: Luchterduinen offshore wind farm located in the Netherlands began operating in 2016)

#### Initiatives in the North American Gas-Fired Power Generation Business

- In 2016, MC participated in two natural gas-fired power plant projects in the northeast of the United States. Each of the projects has a total cost of more than 100 billion Yen. Currently under construction, the projects are set to begin operations in 2018 and 2019, and will sell electricity to local power markets.
- MC oversees the power development business in the United States through Diamond Generating Corporation (DGC). We contribute to a stable electricity supply through our nine gas-fired thermoelectric power plants in the United States.

In addition, by leveraging the upstream business expertise we have cultivated in the natural gas business, we are now taking on initiatives in the gas-to-power business which span upstream to downstream operations in the power generation business mainly in North America.



(Photo: Valley plant)

<Valley plant>  
Gas combined cycle generation  
(total capacity 720MW)

<Westmoreland plant>  
Gas combined cycle generation  
(total capacity 920MW)

## 6. Growth Drivers under Midterm Corporate Strategy 2018:

### ② Distributed Power and Battery Businesses

#### Initiatives in the US Distributed Solar Business: Nexamp

- In 2016, MC invested in Nexamp, a distributed solar development company in the United States.
- In the United States, this business is gaining attraction as a growth field, by installing solar power systems on the rooftops of homes, commercial buildings and idle land.
- Nexamp has a record of developing approximately 50MW, mainly in the northeast of the United States. MC is contributing by promoting the introduction of renewable energy and helping to lower retail electricity prices for end-consumers, and thereby maximize the project value.

<Example of assets owned by Nexamp>



#### Initiatives in the Energy Storage Business in Germany: EnspireME

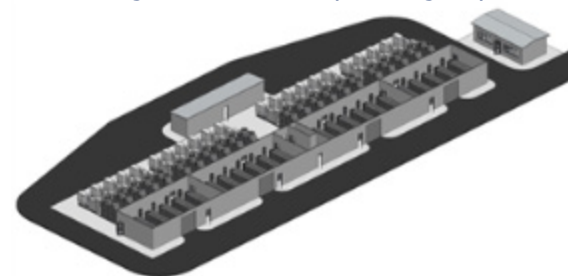
- MC has established a 50-50 joint venture named EnspireME with Eneco, an energy company from the Netherlands, to provide services based on a large-scale battery storage system.

Installing battery storage systems with a capacity of 50MW in Germany, we aim to begin offering services for renewable energy generation companies and the capacity reserve market\* in the 2018.

- Through this business, we aim to encourage the proliferation of renewable energy and contribute to a more stable electricity supply. We also intend to foster the transition to a low-carbon society.

\* Capacity reserve market: Transmission system operators in Europe secure a certain capacity reserve through market transactions in order to prepare for sudden shortfall of power supply or extensive blackouts. The services offered on the market vary according to the degree of urgency and duration of supply.

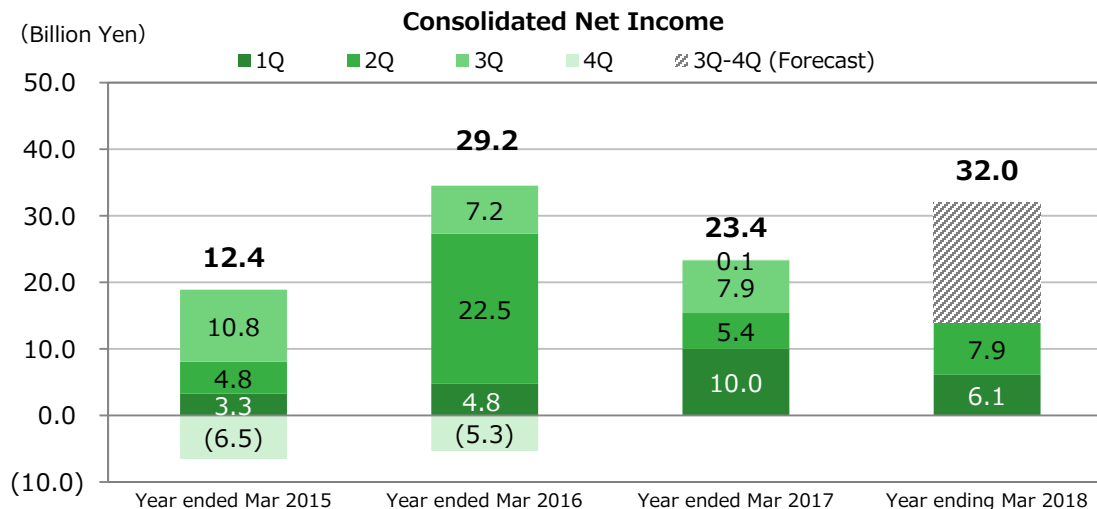
<Image of the battery storage system>





# Appendix

# Global Environmental and Infrastructure Business Segment

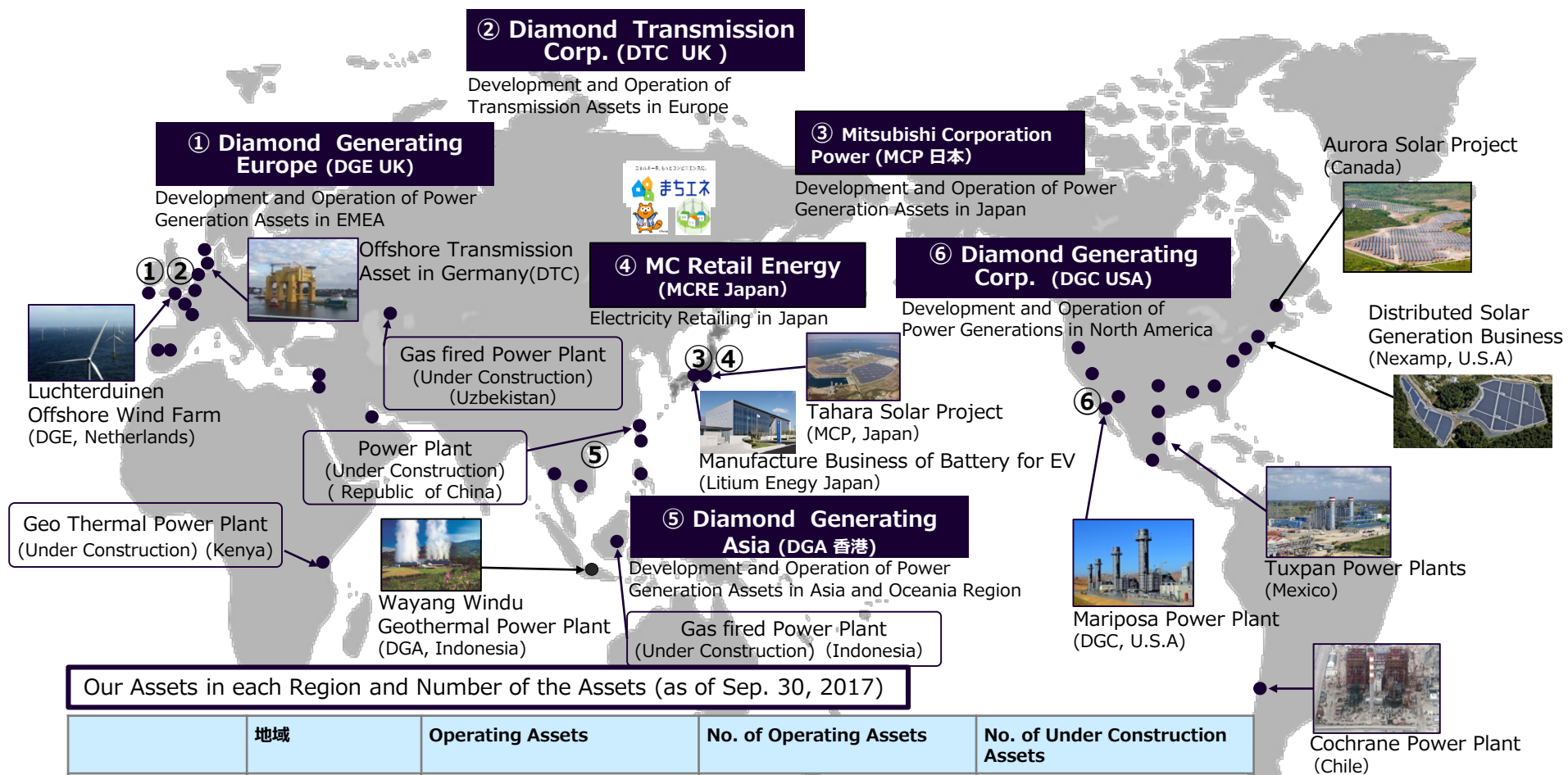


(Billion Yen)	Six Months ended September 2016	Six Months ended September 2017	YoY Change	Main Reasons
Gross Profit	18.1	16.0	-2.1	Lower transaction income at an overseas fertilizer plant construction project, etc.
Equity-method income	21.0	14.9	-6.1	One-off losses related to overseas power generation business, etc.
Consolidated Net Income	15.4	14.0	-1.4	Rebounds on one-off gains recorded in the previous period at overseas power generation and FPSO businesses, etc.

Forecast for Year Ending March 2018	Main Reasons	Rate of Progression	Main Reasons
-	-	-	-
-	-	-	-
32.0	The full-year forecast has been revised from 23.0 billion yen to 32.0 billion yen. This is due to one-off gains recorded in overseas power generation business.	44%	Influence of one-off gains at overseas power generation business in the second half of the period.

(Billion Yen)	March 2017	September 2017
Segment Assets	1,005.7	1,017.9

# New Energy & Power Generation Business /Environmental Business Global Environmental & Infrastructure Business Group



Our Assets in each Region and Number of the Assets (as of Sep. 30, 2017)

	地域	Operating Assets	No. of Operating Assets	No. of Under Construction Assets
Power Generation	Americas	2,850MW	12	4
	Asia and Oceania	1,100MW	13	1
	EMEA	450MW	12	2
	Japan	600MW	19	4
	TOTAL	5,000MW	57	12
Transmission	TOTAL	900km	9	0

# Infrastructure Business Global Environmental & Infrastructure Business Group

## ① South Staffordshire (UK)

Water supply service including O&M and asset management as well as customer management and billing services.



Seedy Mill Water Treatment Plant (UK)

Fertilizer Plant (Under Construction) (Turkmenistan)



Fertilizer Plant (Under Construction) (Uzbekistan)



Dubai Investment Park Water Treatment Plant (Metito, UAE)

TCV Stevedoring Company – Port of Valencia (Spain)

## ② Metito Holdings Ltd. (UAE)

Water company based in Dubai. Providing Asset Management, EPC and O&M in Middle East, Africa and Asian market.



Dhaka Metro (Under Construction) (Bangladesh)

Doha Metro (Under Construction) (Qatar)

## ④ TRILITY (Australia)

Water company based in Adelaide. Providing Asset Management, EPC and O&M in Australia and NZ.



New Ulaanbaatar International Airport (Mongolia)

## ③ Swing Corp. (Japan)

Water company based in Tokyo. Providing Asset Management, EPC and O&M over 552 sites in Japan and overseas.

SAIL Construction of Hot Strip Mill (Under Construction) (India)



Mandalay International Airport (Myanmar)

④

Canberra Light Rail Transit (Under Construction) (Australia)



FPSO(\*1) Charter (Brazil/US)

Operation and maintenance of 4 FPSOs which produce crude oil and natural gas from deepwater oil fields, in collaboration with SBM Offshore.

Aguas CAP (Chile) Providing desalinated water for mining sites in Chile.

(\*1) Floating Production, Storage and Offloading System  
Photo: Copyright © SBM Offshore