

Security Code

Tokyo 5020

# Supplementary Information

~ JX Group A to Z ~

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May 11, 2015



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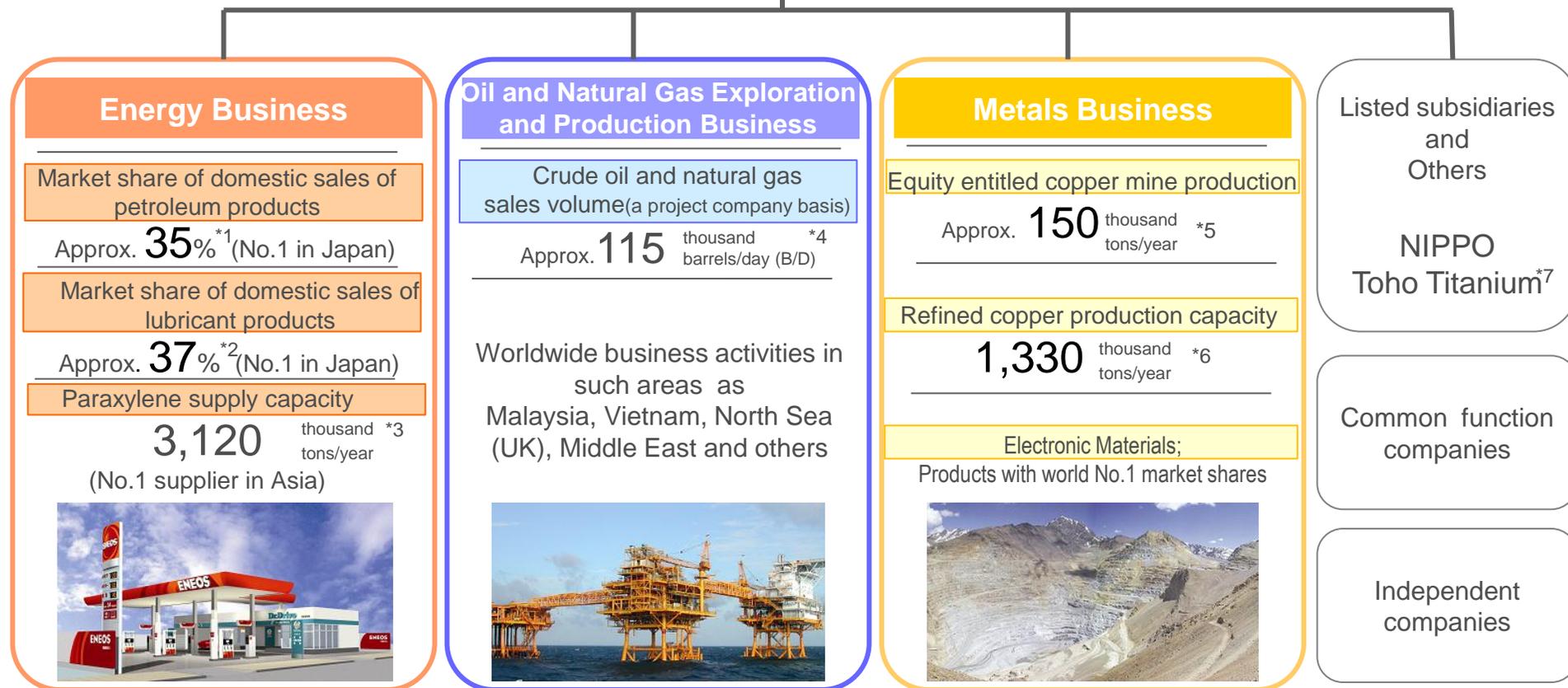


# Summaries of businesses and Financial Results



# Summary of JX Group's Businesses

## JX JX Holdings, Inc.



### Energy Business

Market share of domestic sales of petroleum products

Approx. **35%**<sup>\*1</sup> (No.1 in Japan)

Market share of domestic sales of lubricant products

Approx. **37%**<sup>\*2</sup> (No.1 in Japan)

Paraxylene supply capacity

**3,120** thousand<sup>\*3</sup> tons/year  
(No.1 supplier in Asia)



### Oil and Natural Gas Exploration and Production Business

Crude oil and natural gas sales volume(a project company basis)

Approx. **115** thousand<sup>\*4</sup> barrels/day (B/D)

Worldwide business activities in such areas as Malaysia, Vietnam, North Sea (UK), Middle East and others



### Metals Business

Equity entitled copper mine production

Approx. **150** thousand<sup>\*5</sup> tons/year

Refined copper production capacity

**1,330** thousand<sup>\*6</sup> tons/year

Electronic Materials;  
Products with world No.1 market shares



Listed subsidiaries and Others

NIPPO  
Toho Titanium\*7

Common function companies

Independent companies

\*1 FY2014 actual

\*2 FY2014 actual

\*3 As of Mar. 2015

\*4 Crude oil equivalent (average daily production from Jan. to Dec. 2014 actual)

\*5 Equity entitled copper production contained in copper concentrate (CY2014 actual)

\*6 Pan Pacific Copper (67.6% equity stake) ; 650 thousand tons/year + LS-Nikko Copper (39.9% equity stake) ;680 thousand tons/year (As of Mar. 2015)

\*7 Profit and loss of Toho Titanium is included in the Metals Business.



# Financial Summary

	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015
(JPY billion)	Actual	Actual	Actual	Actual	Actual	Forecast
<b>Net Sales</b>	<b>9,634.4</b>	<b>10,723.9</b>	<b>11,219.5</b>	<b>12,412.0</b>	<b>10,882.5</b>	<b>9,660.0</b>
Energy	8,131.9	9,147.5	9,699.6	10,755.0	9,124.8	7,890.0
Oil and Natural Gas E&P	148.8	187.8	173.1	202.2	226.4	200.0
Metals	940.6	997.2	964.9	1,039.1	1,156.0	1,200.0
Others	413.1	391.4	381.9	415.7	375.3	370.0
<b>Operating Income (Loss)</b>	<b>334.4</b>	<b>327.9</b>	<b>251.5</b>	<b>213.7</b>	<b>(218.9)</b>	<b>250.0</b>
Energy	239.1	208.2	138.9	79.9	(365.3)	142.0
Oil and Natural Gas E&P	51.9	90.5	80.5	83.4	75.4	30.0
Metals	20.7	14.5	6.4	13.8	33.2	50.0
Others	22.7	14.7	25.7	36.6	37.8	28.0
<b>Ordinary Income (Loss)</b>	<b>413.7</b>	<b>407.8</b>	<b>328.3</b>	<b>302.3</b>	<b>(150.1)</b>	<b>310.0</b>
Energy	253.7	232.5	161.6	108.2	(334.6)	173.0
Oil and Natural Gas E&P	59.5	97.5	93.6	105.5	84.9	30.0
Metals	70.7	60.0	44.0	47.4	56.6	71.0
Others	29.8	17.8	29.1	41.2	43.0	36.0
<b>Net Income (Loss)</b>	<b>311.7</b>	<b>170.6</b>	<b>159.5</b>	<b>107.0</b>	<b>(277.2)</b>	<b>160.0</b>
Energy		105.8	117.1	52.2	(292.2)	111.0
Oil and Natural Gas E&P		53.2	33.9	53.4	2.4	(21.0)
Metals		23.8	(2.6)	(11.2)	(5.7)	37.0
Others		(12.2)	11.1	12.6	18.3	33.0
Capex	200.0	286.0	472.0	500.0	420.0	380.0
Depreciation and Amortization	204.6	198.1	180.4	183.6	197.3	260.0

# Ordinary Income by segment

	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015
(JPY billion)	Actual	Actual	Actual	Actual	Actual	Forecast
<b>Ordinary Income (Loss)</b>	<b>413.7</b>	<b>407.8</b>	<b>328.3</b>	<b>302.3</b>	<b>(150.1)</b>	<b>310.0</b>
<b>Energy Business</b>	<b>253.7</b>	<b>232.5</b>	<b>161.6</b>	<b>108.2</b>	<b>(334.6)</b>	<b>173.0</b>
Petroleum Products	169.2	74.6	56.1	(77.5)	57.1	108.0
Petrochemicals	27.3	38.2	46.7	69.6	15.1	45.0
Inventory Valuation	57.2	119.7	58.8	116.1	(406.8)	20.0
<b>Oil and Natural Gas E&amp;P Business</b>	<b>59.5</b>	<b>97.5</b>	<b>93.6</b>	<b>105.5</b>	<b>84.9</b>	<b>30.0</b>
<b>Metals Business</b>	<b>70.7</b>	<b>60.0</b>	<b>44.0</b>	<b>47.4</b>	<b>56.6</b>	<b>71.0</b>
Resources Development	44.1	36.6	26.6	22.5	18.1	8.0
Smelting and Refining	12.8	15.5	11.1	12.5	16.8	30.0
Electronic Materials	9.4	5.4	6.3	9.0	16.6	22.0
Recycling and Environmental Services	4.0	5.7	2.5	5.6	6.7	8.0
Titanium	-	-	(1.0)	(5.4)	(3.1)	3.0
Inventory Valuation	0.4	(3.2)	(1.5)	3.2	1.5	-
<b>Others</b>	<b>29.8</b>	<b>17.8</b>	<b>29.1</b>	<b>41.2</b>	<b>43.0</b>	<b>36.0</b>



# Balance Sheets

	Mar. 2011	Mar. 2012	Mar. 2013	Mar. 2014	Mar. 2015
(JPY billion)	Actual	Actual	Actual	Actual	Actual
<b>Total assets</b>	<b>6,260.0</b>	<b>6,690.4</b>	<b>7,274.9</b>	<b>7,781.8</b>	<b>7,423.4</b>
Current assets	3,067.7	3,554.6	3,737.8	3,765.6	2,996.4
- Cash and deposits	233.5	242.0	250.1	281.7	329.3
Noncurrent assets	3,192.2	3,135.8	3,537.1	4,016.2	4,427.0
Property, plant and equipment	1,940.3	1,940.4	2,190.7	2,389.2	2,555.6
Intangible assets	166.1	137.2	134.8	132.7	136.2
Investments and other assets	1,085.8	1,058.2	1,211.6	1,494.3	1,735.2
<b>Liabilities</b>	<b>4,373.7</b>	<b>4,645.7</b>	<b>4,947.5</b>	<b>5,155.5</b>	<b>4,993.6</b>
Interest-bearing debt	2,264.6	2,282.6	2,549.3	2,801.7	2,620.3
Other liabilities	2,109.1	2,363.1	2,398.2	2,353.8	2,373.3
<b>Net assets</b>	<b>1,886.2</b>	<b>2,044.8</b>	<b>2,327.4</b>	<b>2,626.3</b>	<b>2,429.8</b>
Shareholders' equity	1,644.5	1,776.6	1,896.4	1,962.3	1,626.4
Accumulated other comprehensive income (loss)	(16.2)	(32.3)	46.3	172.8	310.4
Minority interests	257.9	300.5	384.7	491.2	493.0



# Performance Indicators

	FY2010	FY2011	FY2012	FY2013	FY2014
(JPY billion)	Actual	Actual	Actual	Actual	Actual
Cash flows from operating activities	211.4	246.6	265.6	305.2	737.2
(Working capital)	(343.7)	(192.2)	(164.5)	(99.0)	725.0
Cash flows from investing activities	(170.9)	(198.6)	(426.1)	(479.8)	(377.8)
Free cash flows	40.5	48.0	(160.5)	(174.6)	359.4
Dividend and others	(31.5)	(56.1)	(18.0)	7.3	(65.4)
Net cash flows	9.0	(8.1)	(178.5)	(167.3)	294.0

	Mar. 2011	Mar. 2012	Mar. 2013	Mar. 2014	Mar. 2015
	Actual	Actual	Actual	Actual	Actual
ROE (%)	5.2	10.1	8.7	5.2	(13.6)
Net D/E Ratio (times)	1.25	1.17	1.18	1.18	1.18
Shareholders' equity ratio (%)	26.0	26.1	26.7	27.4	26.1

## Equity in earnings of unconsolidated subsidiaries and affiliates

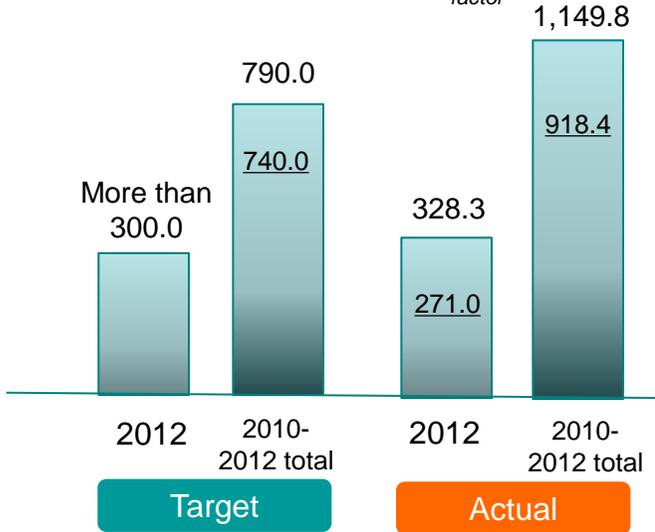
	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015
(JPY billion)	Actual	Actual	Actual	Actual	Actual	Forecast
Energy	5.4	3.6	5.9	6.9	6.8	7.0
Oil and Natural Gas E&P	7.8	6.4	9.4	6.6	5.9	1.0
Metals	55.8	51.0	43.5	39.6	33.1	35.0
Resources Development	48.8	41.2	35.0	32.0	27.6	24.0
Smelting and Refining	7.0	9.8	8.5	7.6	5.5	11.0
Others	7.0	1.1	0.9	1.5	1.3	1.0
Total	76.0	62.1	59.7	54.6	47.1	44.0



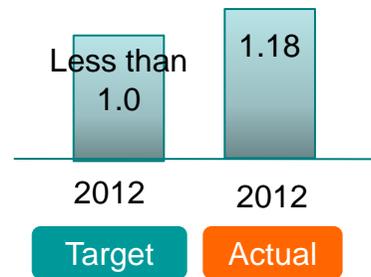
# Review of 1<sup>st</sup> Medium-Term Management Plan

## Ordinary Income (billion yen)

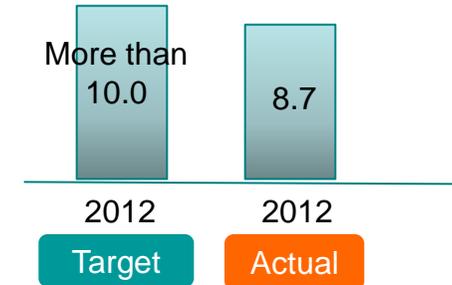
\*Numbers with underline mean ordinary income excluding inventory valuation factor



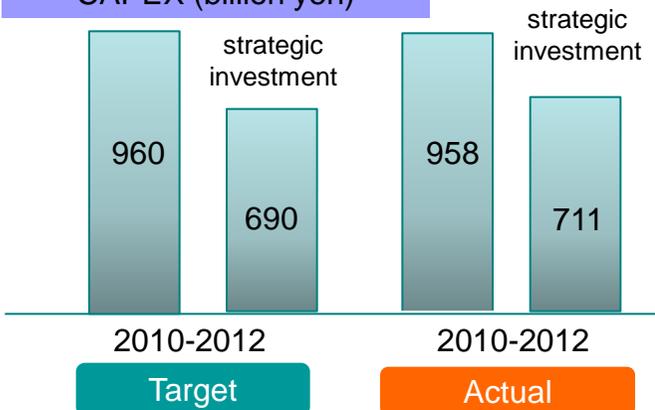
## Net D/E Ratio



## ROE(%)



## CAPEX (billion yen)



## Action for 1<sup>st</sup> Medium-Term Management Plan

### ➤ Dramatical transformation of petroleum refining and marketing business

- (1) Realized capacity reduction
  - ✓ 400 thousand BD (STEP1)
  - ✓ 180 thousand BD (STEP2, Conversion to chemical factory of Muroran Refinery in Mar. 2014)

(Refining capacity of JX group)  
 FY2009    FY2014  
 1,790    ⇒    1,210 thousand BD

- (2) Integration Synergies
  - ✓ Realized the effect more than original plan

Accumulated effect vs. FY 2009  
 Original Plan    FY2012  
 109.0    ⇒    115.9 billion yen

### ➤ Allocating management resources to highly profitable operations on a priority basis

# Forecast for FY2015

	FY2014 (Actual)	Forecast for FY2015	2'nd Mid-term Mgt. Plan
Key Factors (FY2015)	Exchange Rate	110 yen/\$	90 yen/\$
	Crude Price (Dubai spot)	83 \$/bbl	60 \$/bbl
	Copper Price(LME)	297 ¢/lb	270 ¢/lb
Index	Ordinary Income	-150.1 billion yen	310 billion yen
	Ordinary Income Excl. inventory valuation	255.2 billion yen	290 billion yen
	ROE	-13.6%	8%
	Net D/E Ratio	1.2 times	1.1 times
	Capex	920 billion yen (FY2013-2014 total)	1,300 billion yen or less (FY2013-2015 total)
			400 billion yen or more
			10% or higher
			0.9 times or lower
			1,300+α billion yen (FY2013-2015 total)

- Setting forecast for FY2015 reflecting resource price decline, demand and margin of petroleum and petrochemical products, and delay of return from strategic investment
- Piling up profit by taking all measures and improving financial position by compressing investment in FY2015



Making this year preparation for  
3'rd Mid-term Management Plan

# Approach to the Forecast for FY2015

## Recognition of Issue

- ✓ Building management system corresponding to business environment change

### Energy

- Strengthening profitability in Petroleum Refining and Marketing business

### E&P of Oil and Natural Gas

- Business strategy under crude price

### Metals

- Establishing highly profitable and well-balanced business structure

## Way to Resolution

- ✓ Promoting restructuring existing business
- ✓ Promoting cash flow generating action (Revising investment plan, Selling assets)

- Building strong and competitive production and marketing structure
- Considering corresponding to 2<sup>nd</sup> Sophisticated Methods of the Energy Supply Structure

- Improve profitability by cost reduction
- Promoting replacement of asset portfolio

- Realizing early and stable full operation of Caserones copper mine
- Strengthening profitability of middle and down stream business

# Constructing Business Structure Corresponding to Environmental Change

## Cost Reduction

Implementing cost reduction with a focus on reducing expenditure, energy conservation and efficiency aiming profit expansion in existing business



**Ensure profitability, which does not depend on the market environment**

## Cash Flow Creation

Generating 200 billion yen of cash flow through property sales and freezing CAPEX

Property Sales	135 billion yen
Freezing CAPEX	65 billion yen
<b>Total</b>	<b>200 billion yen</b>

Implemented 80 billion yen in FY2014



**Building strong financial base which can withstand risks**

**Constructing Business Structure Corresponding to Environmental Change**

# Shareholder Return Policy

## Basic Shareholder Return Policy

Redistribute profits by reflecting consolidated business results while striving to maintain stable dividends

## Indication of Shareholder Return for 2nd Medium-Term Management Plan Period

Based on the basic policy, during the 2nd medium-term management plan period (FY2013-2015), we will strive to maintain dividends of 16 yen per share per annum. When we secure stable profitability in existing business and foresee realization of return from strategic investments, we will expand shareholder return centering on increase of dividend.

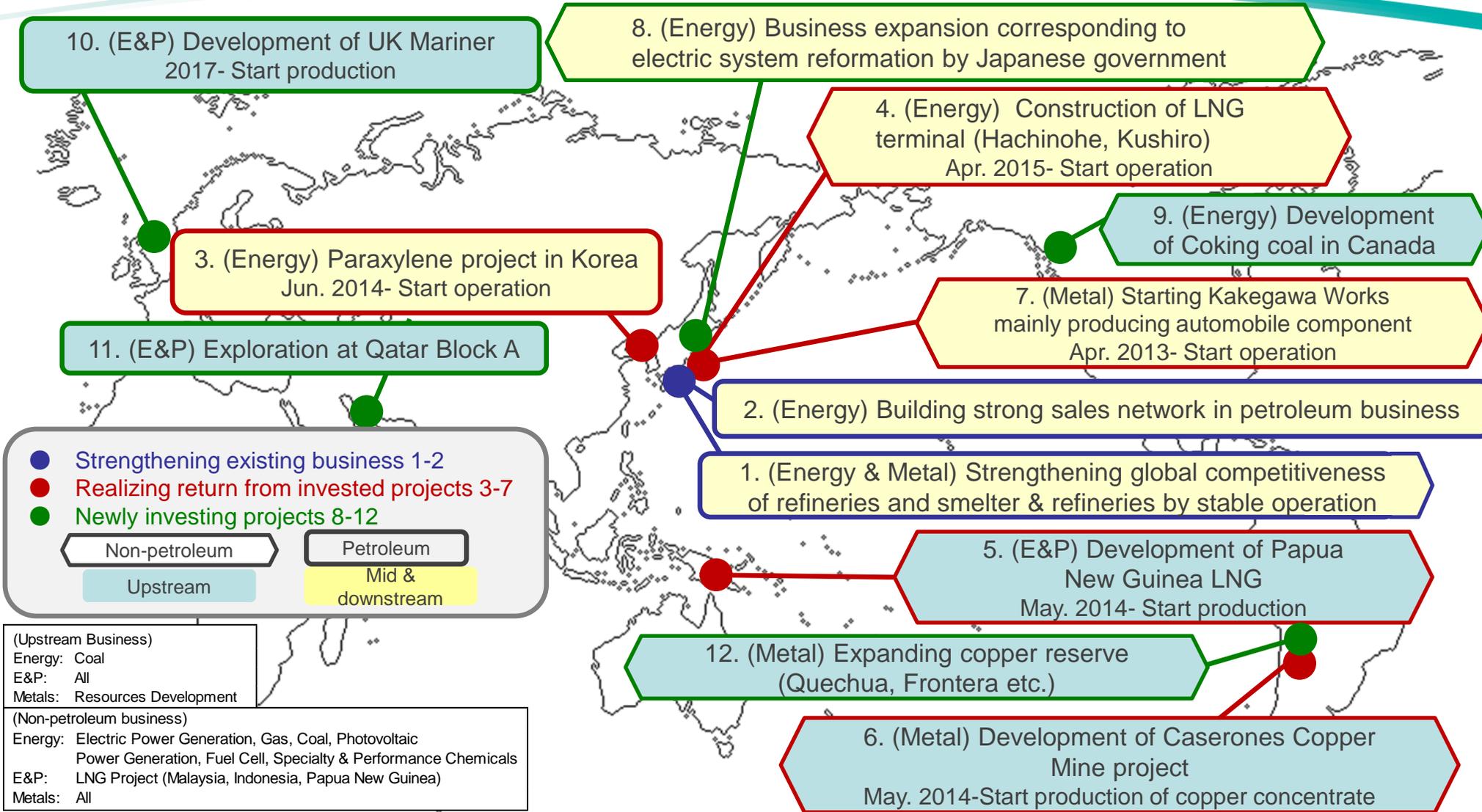
### Reference) Dividend from FY2010-2015

	2010	2011	2012	2013	2014	2015 (Forecast)
Dividend (yen/share)	15.5	16.0	16.0	16.0	16.0	16.0
EPS (yen/share)	34 *	69	64	43	▲ 111	64

\*Excluding impact of negative goodwill



# Highlight of Major Projects



- Strengthening existing business 1-2
- Realizing return from invested projects 3-7
- Newly investing projects 8-12



(Upstream Business)  
 Energy: Coal  
 E&P: All  
 Metals: Resources Development

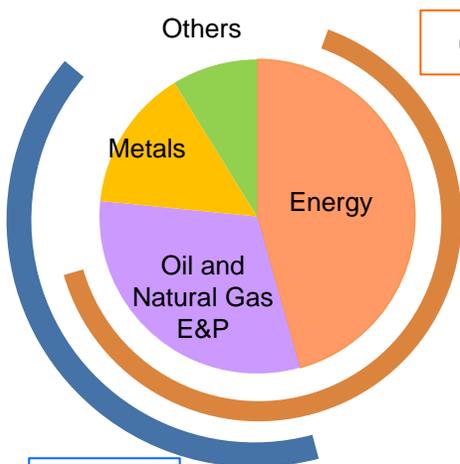
(Non-petroleum business)  
 Energy: Electric Power Generation, Gas, Coal, Photovoltaic Power Generation, Fuel Cell, Specialty & Performance Chemicals  
 E&P: LNG Project (Malaysia, Indonesia, Papua New Guinea)  
 Metals: All

# Target of JX Group (2020)

Well-balanced business portfolio  
petroleum and non-petroleum, upstream and mid & downstream business

Balance of ordinary income  
excl. inventory valuation

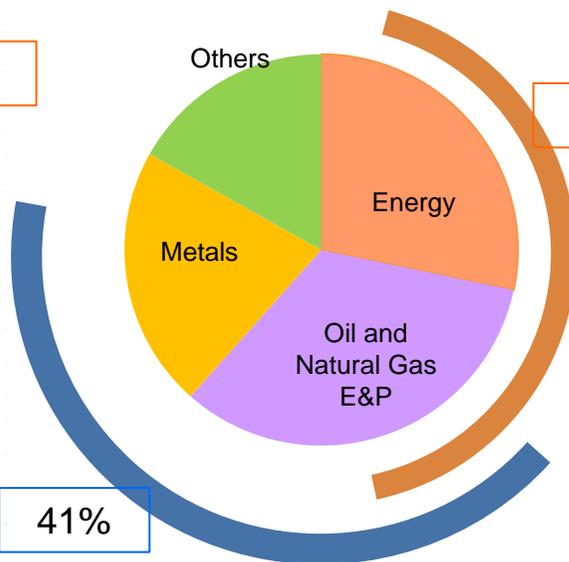
FY2012



65%

40%

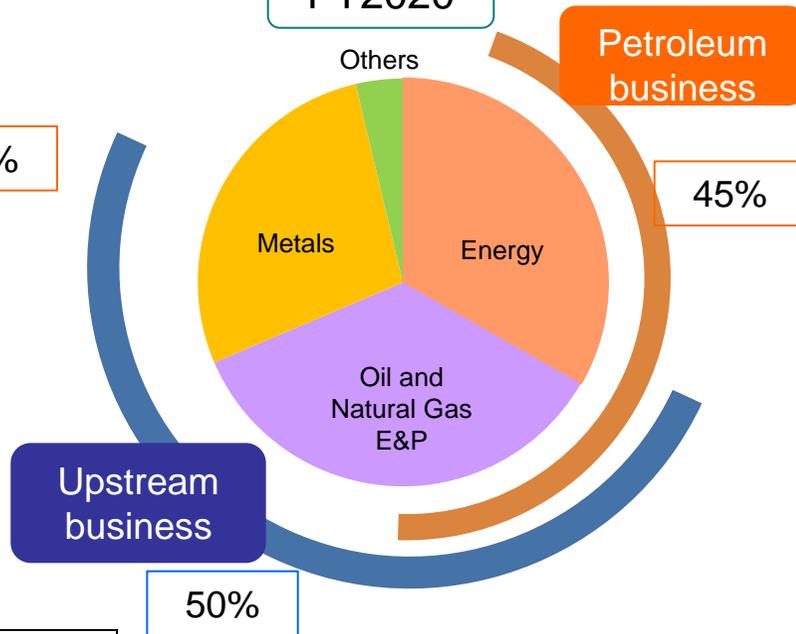
FY2014



42%

41%

FY2020



Petroleum business

45%

Upstream business

50%

(Upstream Business)  
Energy: Coal  
E&P: All  
Metals: Resources Development

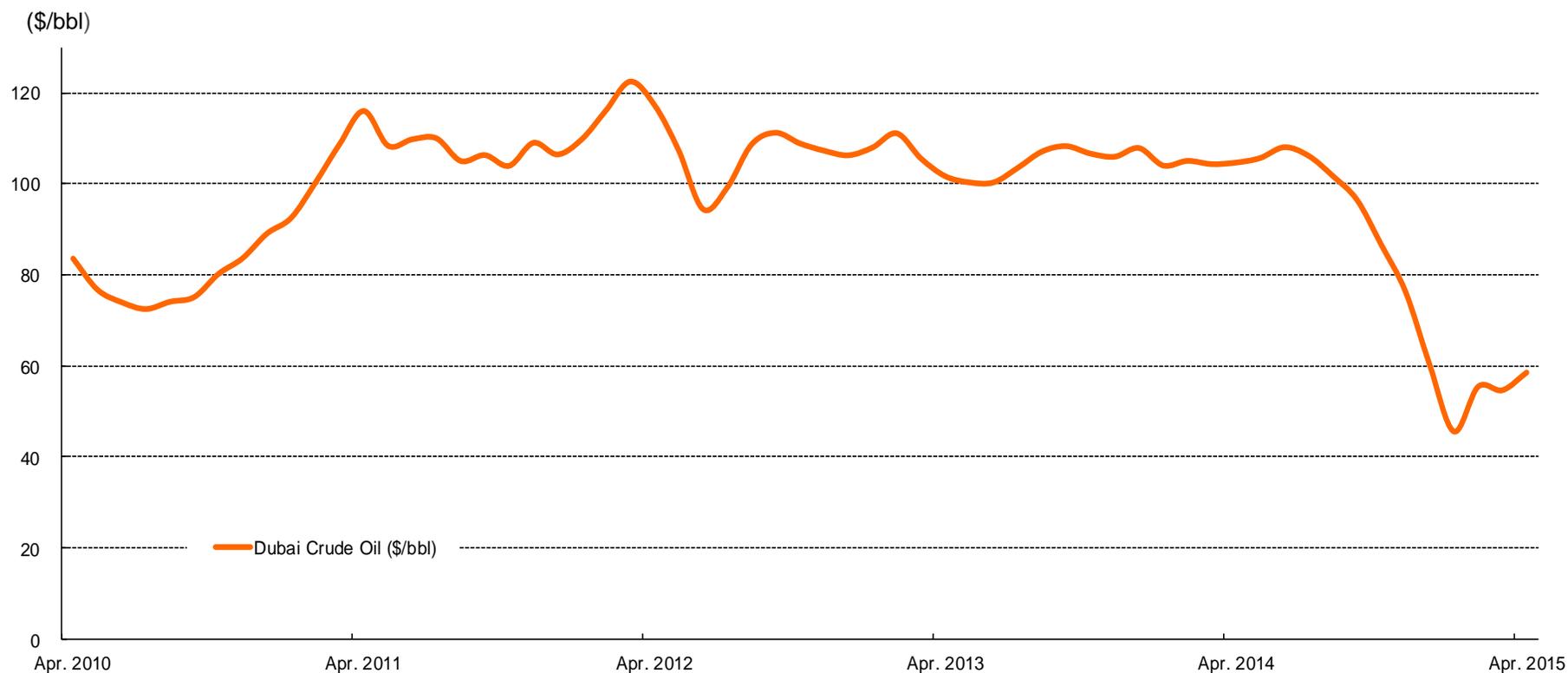
(Non-petroleum business)  
Energy: Electric Power Generation, Gas, Coal, Photovoltaic  
Power Generation, Fuel Cell, Specialty & Performance Chemicals  
E&P: LNG Project (Malaysia, Indonesia, Papua New Guinea)  
Metals: All



# Historical Dubai Crude Oil Price

(\$/bbl)

Average Price	FY2010	FY2011	FY2012	FY2013					FY2014				
				1Q	2Q	3Q	4Q	FY	1Q	2Q	3Q	4Q	FY
Dubai Crude Oil	84	110	107	101	106	107	104	105	106	101	74	52	83

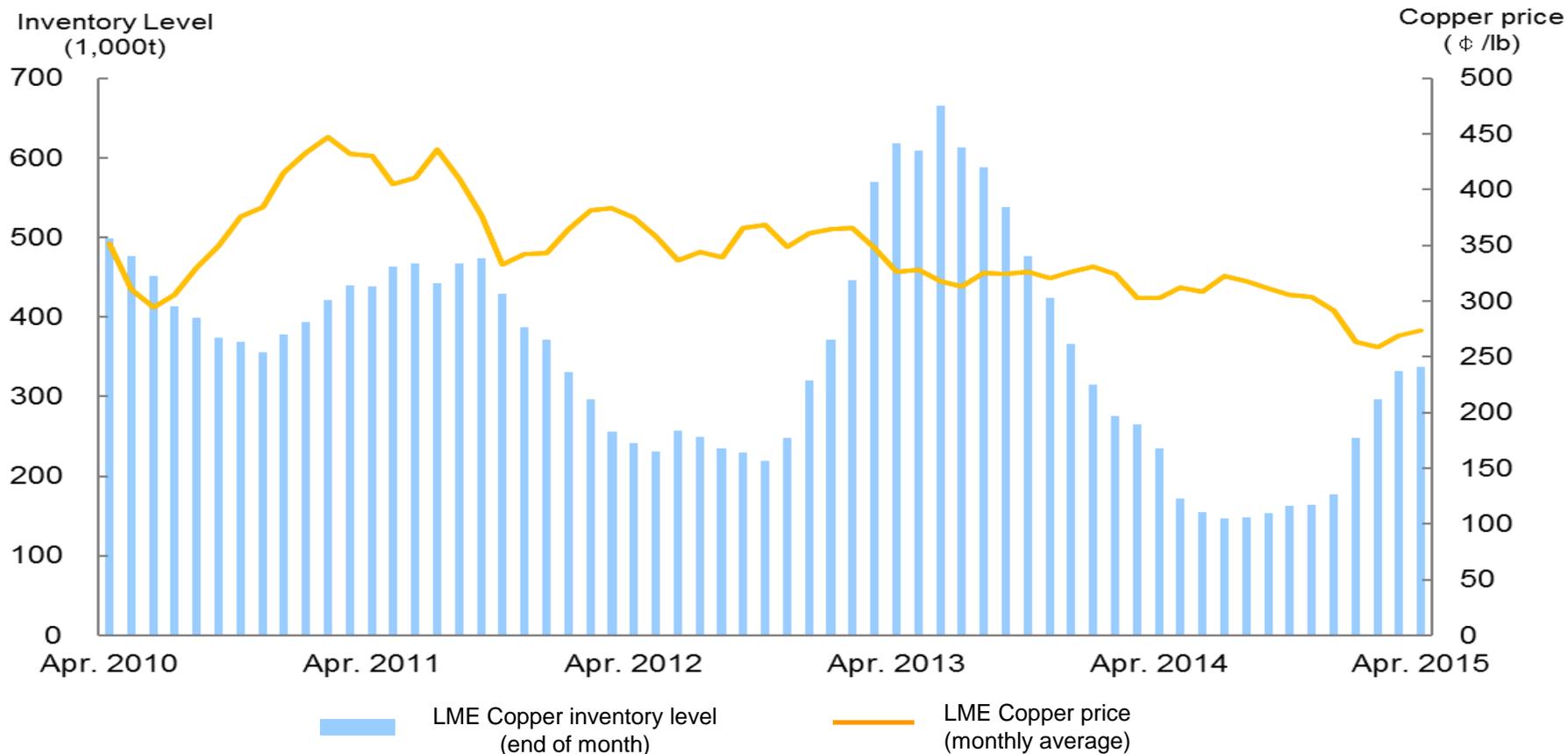




# Historical Copper Price and Inventory Level

(¢/lb)

Average Price	FY2010	FY2011	FY2012	FY2013					FY2014				
				1Q	2Q	3Q	4Q	FY	1Q	2Q	3Q	4Q	FY
Copper	369	385	356	324	321	324	319	322	308	317	300	264	297



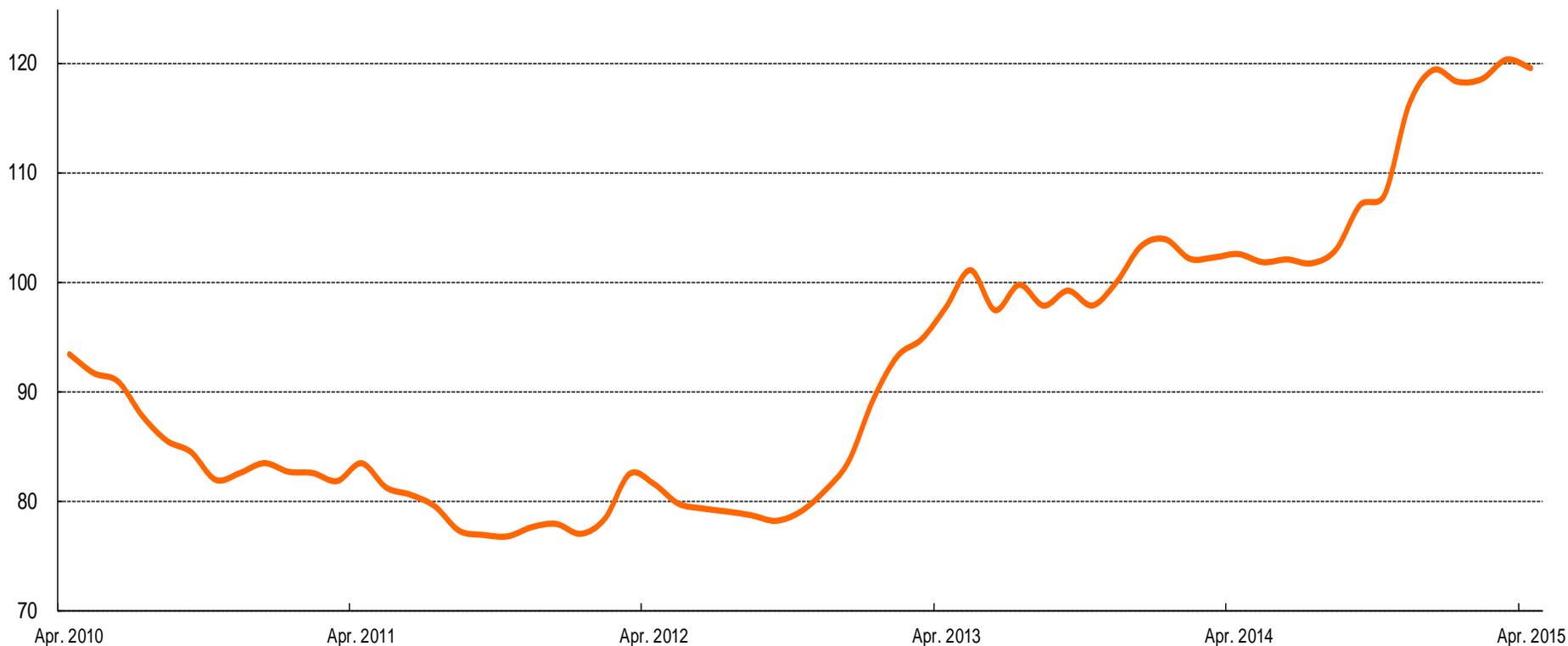


# Historical Exchange Rate

(Yen/\$)

Average Price	FY2010	FY2011	FY2012	FY2013					FY2014				
				1Q	2Q	3Q	4Q	FY	1Q	2Q	3Q	4Q	FY
Exchange Rate	86	79	83	99	99	100	103	100	102	104	115	119	110

(Yen/\$)



A thick, teal-colored curved line that starts on the left, rises to a peak in the middle, and then descends towards the right.

# Strategies of Energy Business

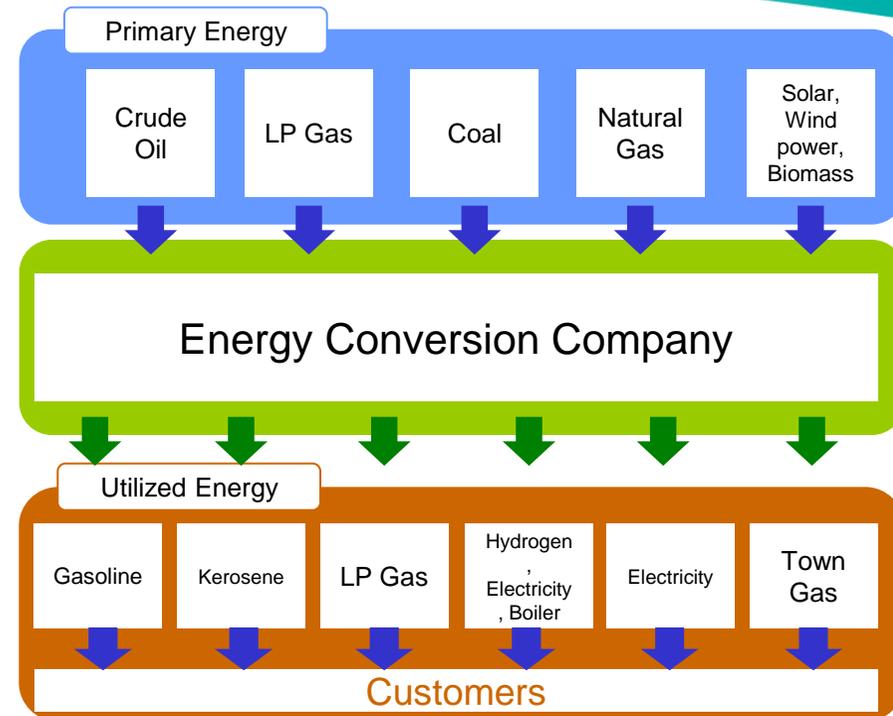
# Strategy and Action Plan

## Petroleum Refining & Marketing/Energy Conversion

Business Environment	Domestic petroleum demand decline and competition with import products continue
Basic Strategy	<b>Strengthening profitability of refining &amp; marketing</b>
	<ul style="list-style-type: none"> <li>➤ Strengthening global competitiveness of refineries             <ul style="list-style-type: none"> <li>• Safe and Stable operation</li> <li>• Cost reduction (Energy saving, Utilizing for bottom oil)</li> <li>• Conversion to chemical factory</li> </ul> </li> <li>➤ Establishing strong supply chain             <ul style="list-style-type: none"> <li>• Building strong sales network</li> <li>• Improving brand value (Introduce new Dr. Drive brand, Card strategy, etc.)</li> </ul> </li> </ul>

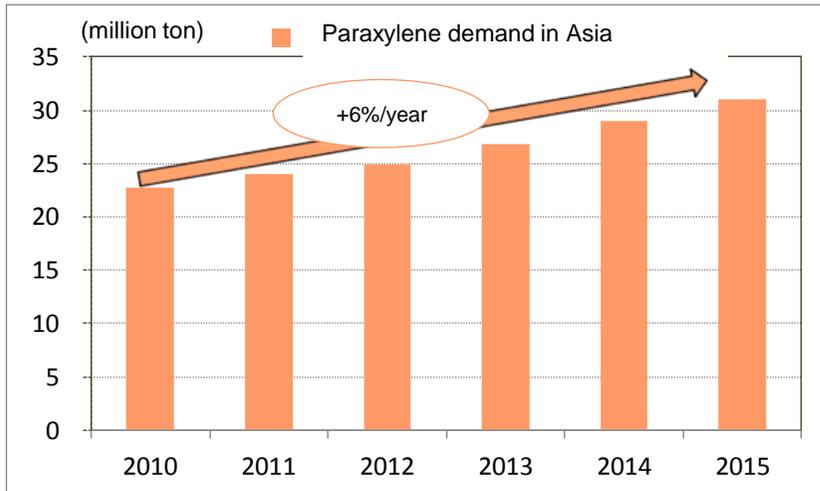
Business Environment	Reformation of energy policy by Japanese government progress
Basic Strategy	<b>Enhancing business as an energy conversion company</b>

- Electricity : Business expansion corresponding to electric system reformation by Japanese government
- Gas : Construction of LNG terminal (Hachinohe & Kushiro) starting operation from Apr. 2015 (Enhancing providing base, Acquiring new demand )
- Coal : Development of coking coal in Canada , Increasing domestic sales
- Solar, Fuel Cell : Mega solar project, fuel cell business (Challenge for realizing a society with independent and distributed energy system)
- Hydrogen : Bring forward demonstration test of providing infrastructure

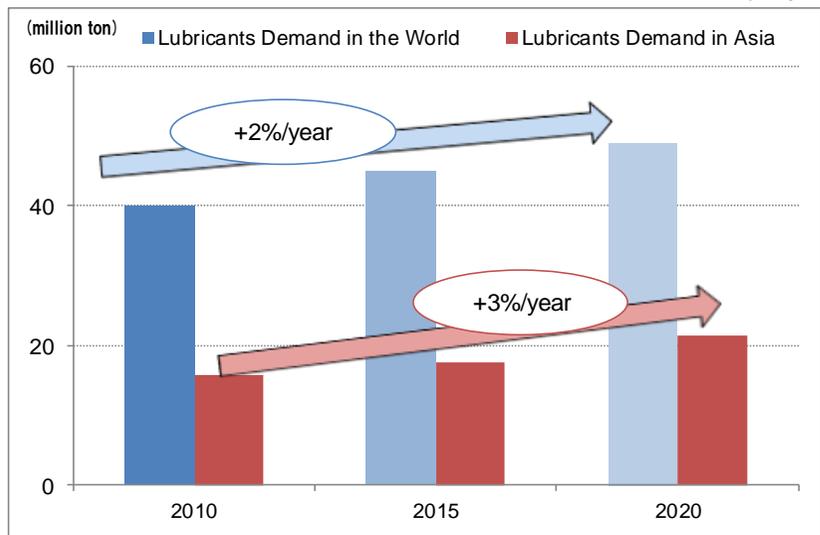


# Strategy and Action Plan

## Basic Chemicals/Lubricants/Specialty & Performance Chemicals



Source : company data



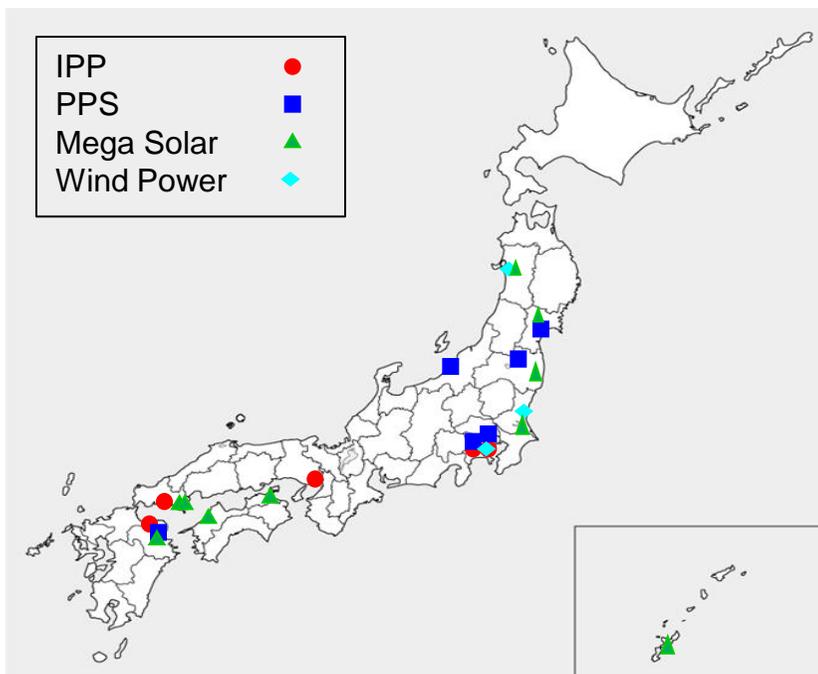
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Source : company data

Business Environment	Energy and materials market continues to expand centering in Asia
Basic Strategy	<b>Establishing presence in overseas market</b>
<ul style="list-style-type: none"> <li>➤ Basic Chemicals           <ul style="list-style-type: none"> <li>• Paraxylene project in Korea (Starting operation in 2014) (Providing capacity of JX Group : 2,620 → 3,120 thousand ton)</li> <li>• Corresponding to business environmental change in olefins and aromatics</li> </ul> </li> <li>➤ Lubricants           <ul style="list-style-type: none"> <li>• Enhancing business with base oil project in Korea</li> <li>• Strengthening production and marketing network overseas</li> </ul> </li> </ul>	
Business Environment	Demand of high value-added products increases in emerging countries
Basic Strategy	<b>Acquiring demand of high value-added products based on original technology</b>
<ul style="list-style-type: none"> <li>➤ Specialty and Performance Chemicals( Introduction of Company system from Apr. 2014)           <ul style="list-style-type: none"> <li>• Expanding overseas production network</li> <li>• Increasing sales volume of cell incubation and others</li> </ul> </li> </ul>	

# Action for Energy Conversion Company (Electricity Business)

## ✓ Location of Electricity Business (As of Apr. 2015)



## ✓ Expansion of Electricity Business

### PPS

- Started receiving electricity from Kawasaki Natural Gas Power Generation Co., Ltd, joint venture with Tokyo Gas Co., Ltd.(2008)
- Scheduled to establish the Solvent De-Asphalting equipment and the power generation facilities in the Kashima Refinery.(FY2015)
- Decided an entry to home electricity retail business.(FY2016)
- Scheduled to establish the power generation facilities in the Mizushima Refinery.(FY2018)

### Mega Solar

Started Operation		Startup Plan	
Sendai	Feb. 2013	Hitachi	Oct. 2015
Kudamatsu	Mar. 2013	Oga	Nov. 2015
Kasumigaura	Nov. 2013	Asaka	Mar. 2016
Iwaki	Jul. 2014	Hiroshima	Mar. 2016
2nd Kudamatsu	Sep. 2014		
Akita	Oct. 2014		
Masaki	Feb. 2015		
Takamatsu	Feb. 2015		
Oita	Mar. 2015		
Uruma	Mar. 2015		

## ✓ Power Generating Capacity of each Business

IPP	5 stations	740 thousand kW*
PPS	6 stations	555 thousand kW
Mega Solar	10 stations	28 thousand kW
Wind Power	3 stations	5 thousand kW
Total (equity basis)		1,328 thousand kW

\* Contract base

### Wind Power

- Started operation of Wind Power at the Akita Oil Terminal and the Kashima Refinery.(2003, 2005)
- Started operation of Ohgishima Wind Power Station.(2010)

# Action for Energy Conversion Company (LNG Business)

## ✓ Hachinohe LNG Terminal Project

- Construction of LNG Terminal (Hachinohe & Kushiro) starting operation from Apr. 2015
  - Taking in the demand of city gas and industrial use in the region of northern Tohoku and eastern Hokkaido.
  - Supplying natural gas to general electric utility.  
(For Hachinohe Thermal Power Plant of the Tohoku Electric Power Co., Inc.)

### 【LNG supply system of JX】

#### Hachinohe and Kushiro LNG terminals

	Hachinohe (Import Terminal)	Kushiro (Satellite Terminal)
Operation start	Apr. 2015	
Tank capacity (thousand KL)	140x2 tanks	10x1 tank

#### Mizushima LNG Import Terminal

	Tank No.1	Tank No.2
Operation start	Apr. 2006	Apr. 2011
Tank capacity (thousand KL)	160	160
Ownership	JX Nippon Oil & Energy	50%
	The Chugoku Electric Power Co., Inc.	50%



# Action for Energy Conversion Company (Coal Business)

## ✓ Our Coal business

### 1. Main Upstream Businesses

- Acquired the interest of Bulga mine in Australia, through an investment to Oakbridge joint venture. (Sep. 1990)
- Started production and sales of Bulga coal. (Mar. 1991)
- Acquired of the interest and dealership of Sukunka /Suska coal deposits, through an investment to Xstrata Coal British Columbia, and started coking coal joint venture with Xstrata Coal. (Mar. 2012)
- Started to develop new mining areas in the Bulga Coal Mine in Australia. (Dec. 2014)

### 2. Sales

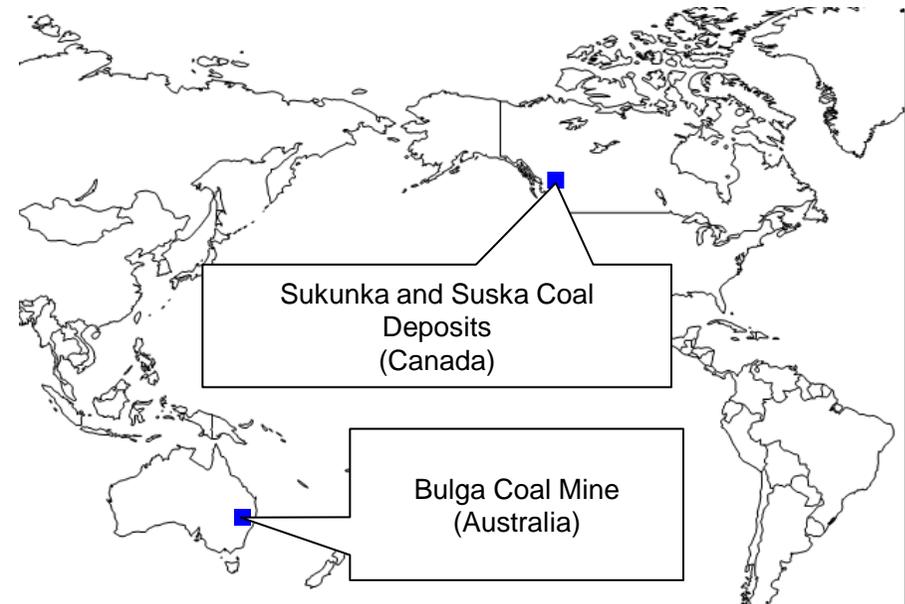
- Mainly supplying Bulga coal to customers. (Approx. 9 million tons/year)

### 3. Coal Transshipment Station

- Coal Transshipment Station was constructed on the site of former Kudamatsu Refinery, and started its operation. (May 2001)

## ✓ Our Interest of Coal Mine/Deposits

	Bulga Coal Mine	Sukunka and Suska Coal Deposits
Location	New South Wales, Australia	British Columbia, Canada
Interest	13.3%	25.0%
Reserves/ Resouces	Recoverable reserves more than 300 million tons	Resouces Sukunka Deposit Approx. 240million tons Suska Deposit Approx. 240million tons
Production capacity	Approx. 11million tons/year	Apporox. 9.5 million tons/year (scheduled)



# Action for Energy Conversion Company (Hydrogen Business)

## ✓ Hydrogen supply system until 2015

- With hydrogen and fuel cell strategy road map gathered by METI, it announced the security of around 100 places of hydrogen supply places around four major urban areas before 2015.
- JX group will try to construct around 40 places equivalent to 40%.

## ✓ Construction situation of hydrogen station of JX group

(As of Apr.2015, 20places in metropolitan area, 4 places in Aichi area and Kitakyushu area.)

### 【Metropolitan area】

- 1 Dr. Drive Self Takeishi inter
- 2 Dr. Drive Self Kasukabe-Chuou
- 3 Dr. Drive Owada
- 4 Dr. Drive Self Sayama-Negishi
- 5 Suginami-ku
- 6 Hachioji city
- 7 Asahi-ku, Yokohama city
- 8 Dr.Drive Kamiida
- 9 Dr.Drive Ebina-Chuou

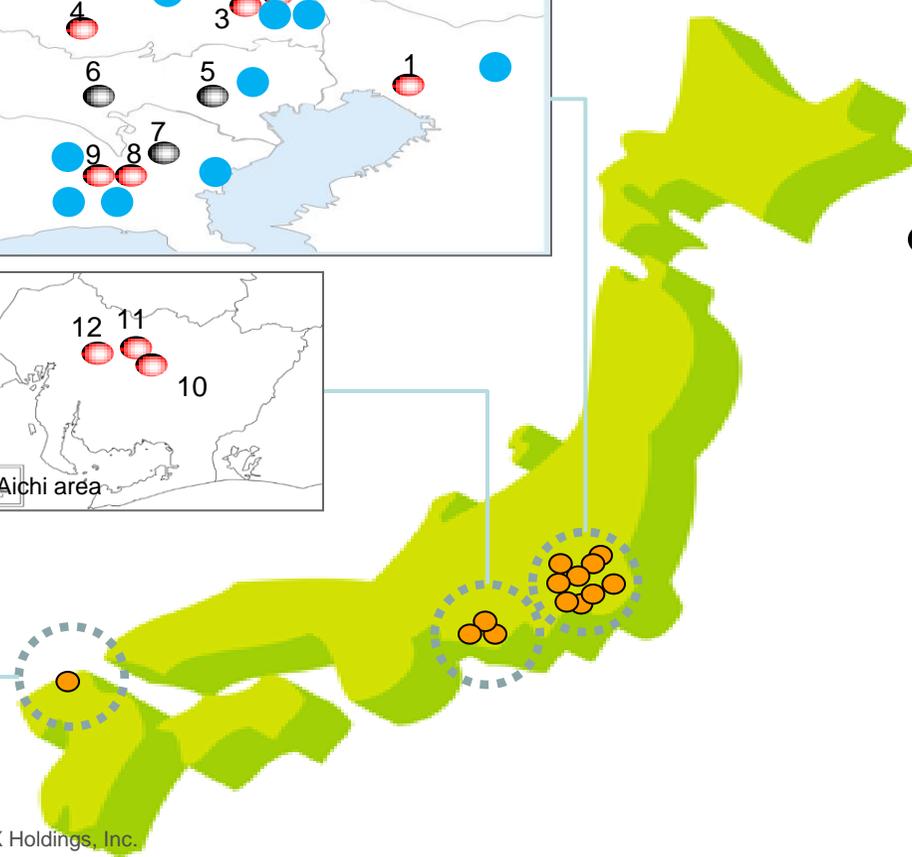
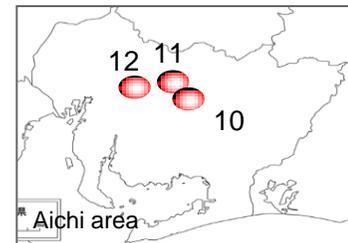
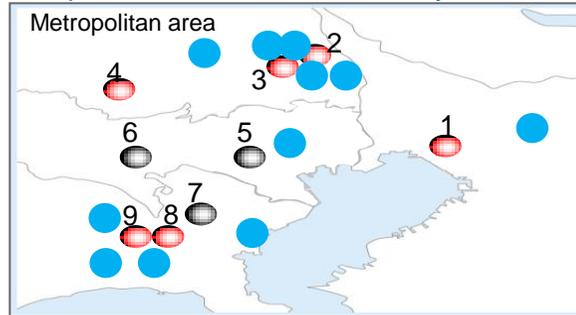
### 【Aichi area】

- 10 Dr.Drive Okazaki-Hane
- 11 Dr.Drive Self Miyoshigaoka
- 12 Dr.Drive Kaminokura

### 【Kitakyushu area】

- 13 Dr.Drive Yahata-Higashida\*1

\*1 Under open time adjustment



● : Built-in type



● : Independent type



● : Portable type\*2

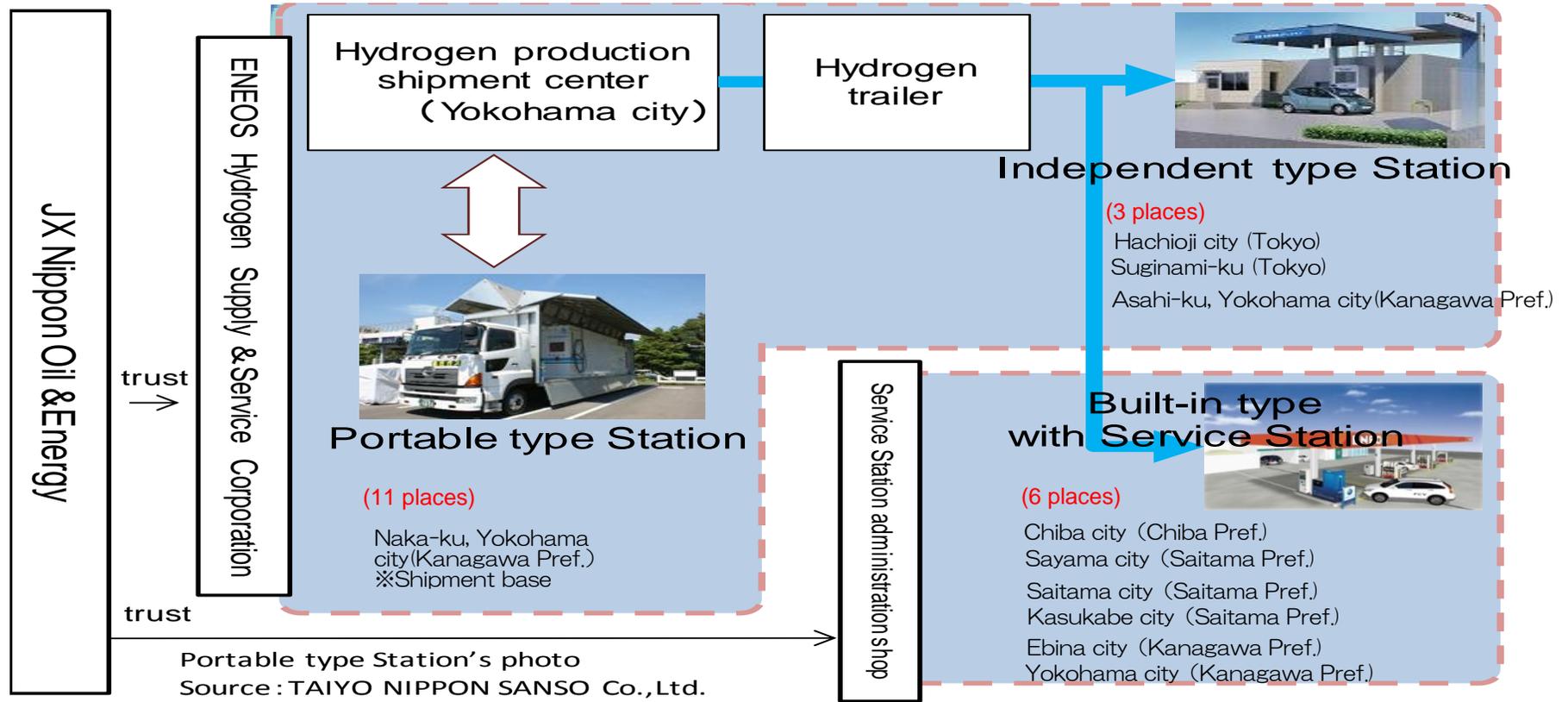


\*2 Under base adjustment

# Action for Energy Conversion Company (Hydrogen Business)

## ✓ Current situation of hydrogen supply infrastructure construction in metropolitan area.

- ENEOS Hydrogen Supply & Service Corporation, established in Oct 2014, plays a central part in constructing the effective hydrogen supply system in 20 places of metropolitan area at the beginning of the fuel cell-powered car.



## ✓ Establishment of Hydrogen business promotion department (Apr 1, 2015)

- Hydrogen business promotion department, aiming at constructing hydrogen business promotion infrastructure.

# Enhance Overseas Businesses (Paraxylene)

## Main use of Paraxylene



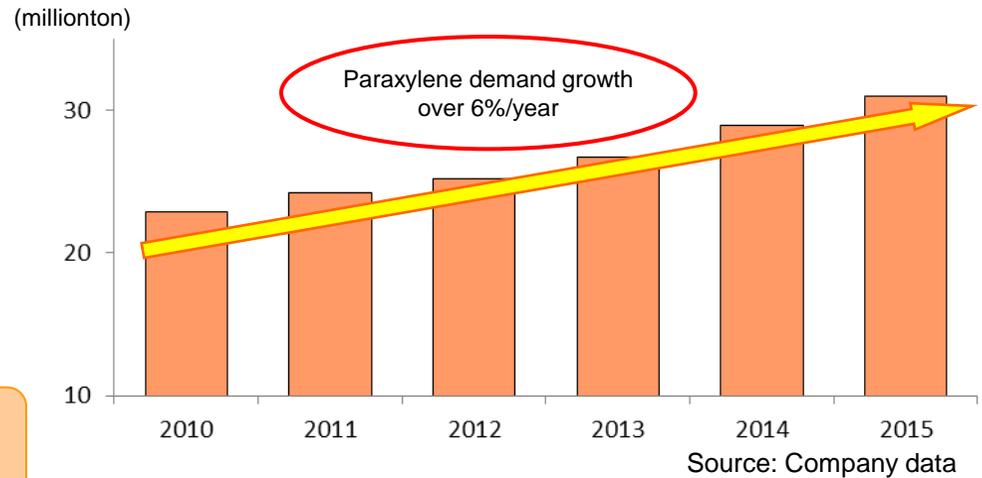
Polyester fiber



PET bottles

## Outlook for Paraxylene Demand in Asia

Group's current supply capacity of Paraxylene  
3,120 thousand tons /year = **No.1 in Asia**



## Outline of a paraxylene joint venture project with SK Group of South Korea

Location : Ulsan, Korea

Capacity : 1,000 thousand tons / year One of the world's largest capacities

Production Start : June 2014

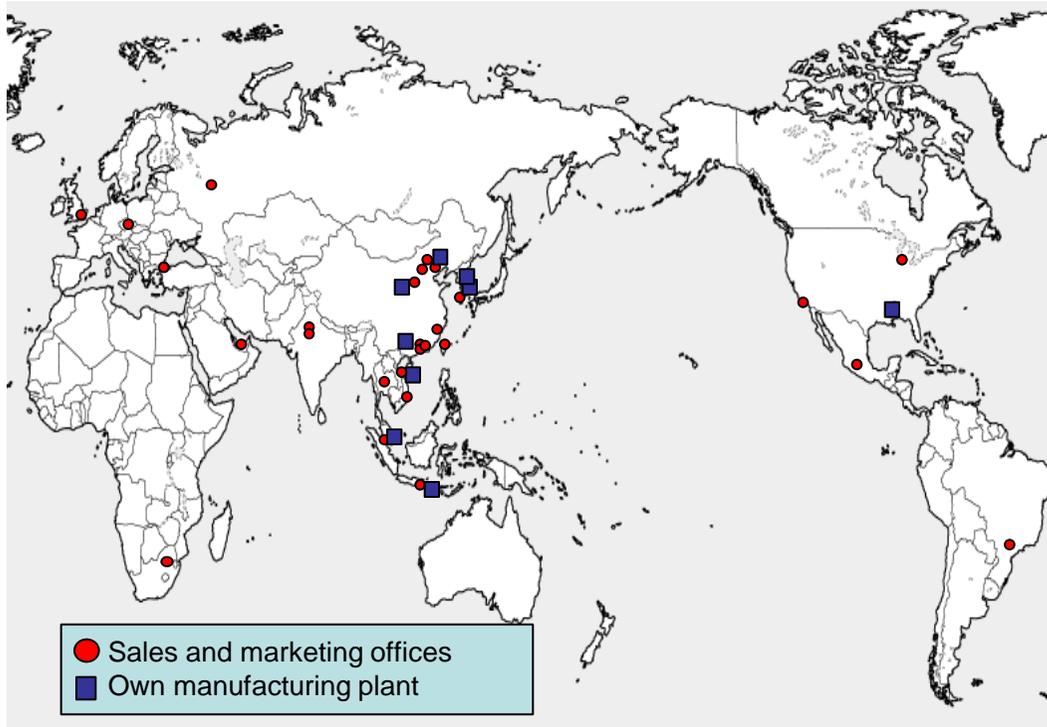
Investment : approx. 80 billions of yen

Ownership :

JX Nippon Oil & Energy	50% -1 share
SK Global Chemical	50% +1 share

# Enhance Overseas Businesses (Lubricants)

## ✓ Location of Overseas Lubricants Business (As of Apr. 2015)



- Expanding overseas business, especially in Asia.
 

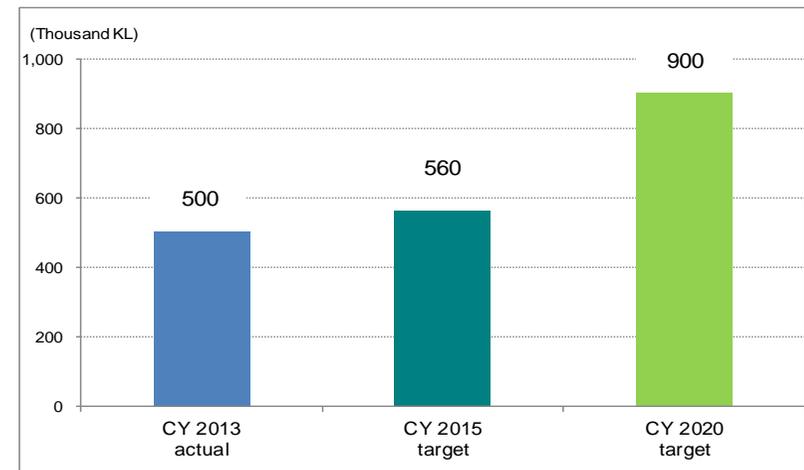
Sales and marketing offices	27
Manufacturing plant	47
(Own manufacturing plant:9, Contractors:38)	



## ✓ Expansion of Overseas Lubricants Business

- Established a lubricants marketing company in Dubai. (Jul. 2011)
- Lubricants manufacturing plant started its operation in Indonesia. (Apr. 2012)
- Lubricants manufacturing plant started its operation in Vietnam. (Feb. 2014)
- Started joint venture business for lubricants base oil with SK Group of South Korea. (Oct. 2012)
- Established a marketing office in Johannesburg. (Apr. 2014)
- Established a lubricants marketing company in India. (Oct. 2014)
- Established a lubricants marketing company in Mexico. (Jan. 2015)

## ✓ Medium-Term Target of Overseas Lubricants Sales





# Strategies of Oil and Natural Gas E&P Business

# Strategy and Action Plan

## Expanding Reserves and Production Volume Mainly through Exploration



### Business Environment

- Crude oil and natural gas demand increases firmly centered on emerging countries.
- Resources and energy prices remain temporarily stagnant but stay high in mid-and-long term.
- Competition for natural resources escalates.
- Development technologies become more challenging.

### Basic Strategy 1

### Expanding reserves and production volume mainly through exploration

Toward production volume of 200 thousand BD in 2020

➤ Shifting developing projects to production and projects before FID to developing

(Started production)

- Papua New Guinea LNG project

(On developing)

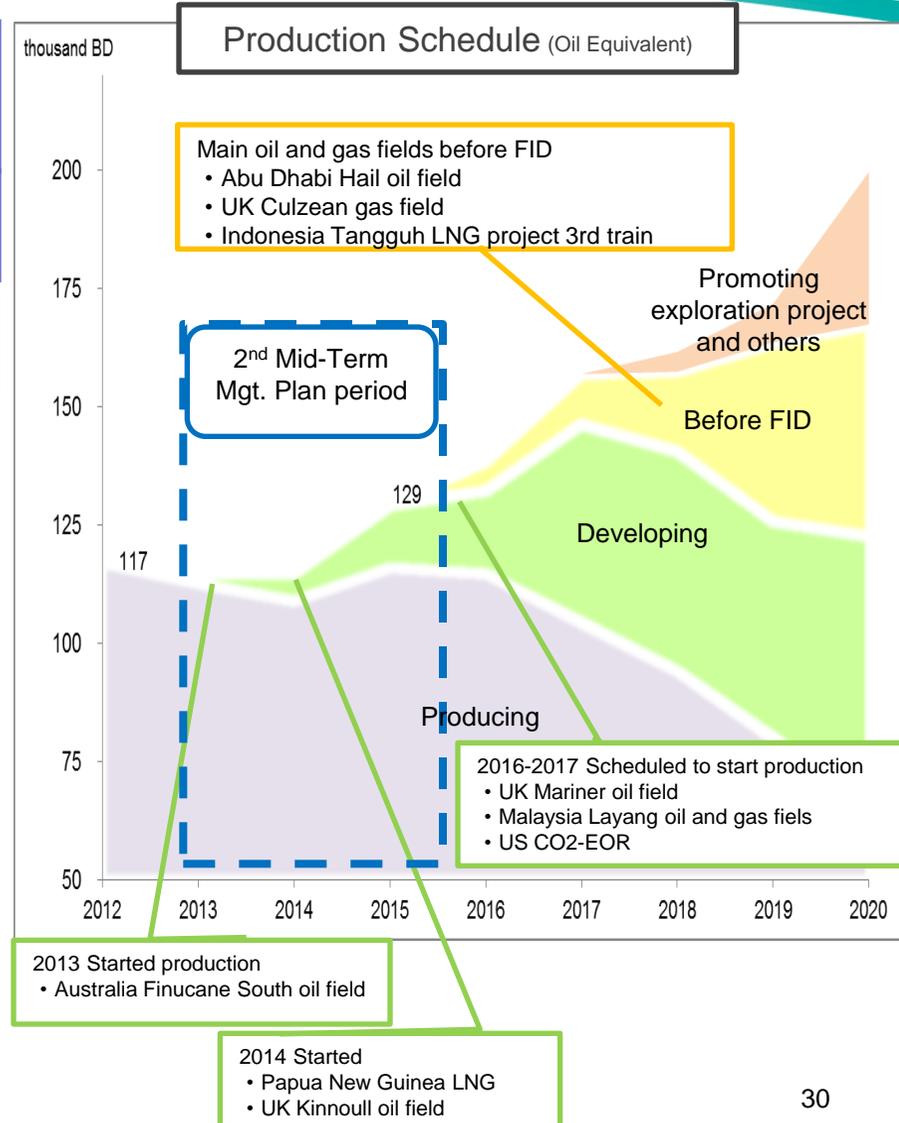
- UK Mariner oil field

(Before FID)

- UK Culzean gas field
- Indonesia Tangguh LNG project 3<sup>rd</sup> train

➤ Promoting large exploration operator projects (Investing 90billion yen in 3years)

- Malaysia : Deepwater Block R offshore Sabah
- Qatar : Block A



# Strategy and Action Plan

## Focusing on Core Business Area and Technology/Restructuring Business Portfolio

### Basic Strategy 2

#### Establishing superiority by focusing core business area and technology

Aiming to secure independence and increase access to business chance by allocating management resources to core and core candidate countries and accumulating technology through operator projects

#### Core Area

- Core countries: Malaysia, Vietnam, UK
  - Continuing exploration, development and resource acquisition utilizing knowledge and relationship with national petroleum companies etc.
- Core candidates : UAE/Qatar, Myanmar, Australia
  - To be developed as core countries acquiring business chance aiming for operatorship and strengthening business base

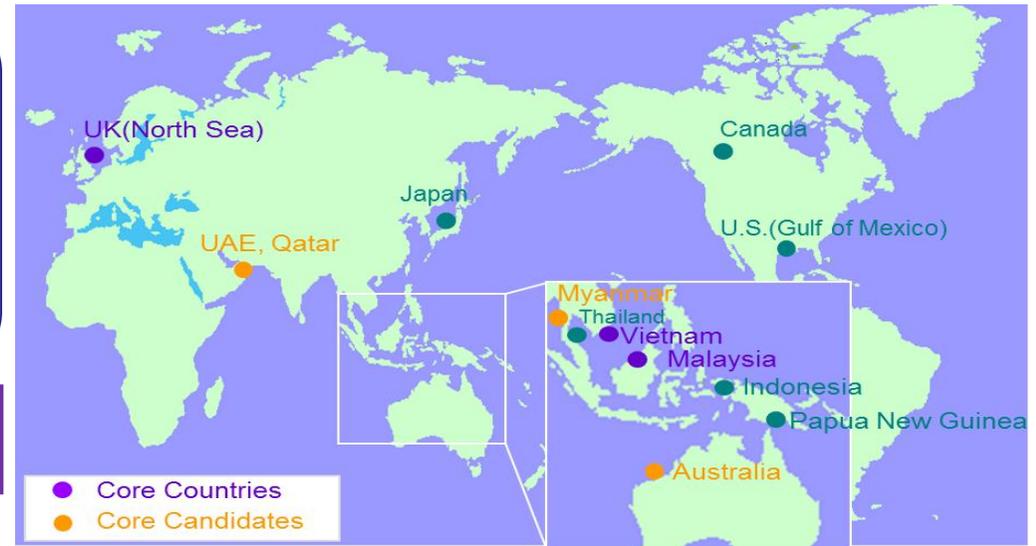
#### Core Technology

- Deepwater
  - Malaysia Deepwater Block R offshore Sabah
  - UK West of Shetland offshore
- Enhanced Oil Recovery
  - Vietnam Rang Dong Oil Field HCG-EOR
  - US CO2-EOR
- Tight Oil, Tight Gas, Heavy Oil
  - UK Mariner oil field

### Basic Strategy 3

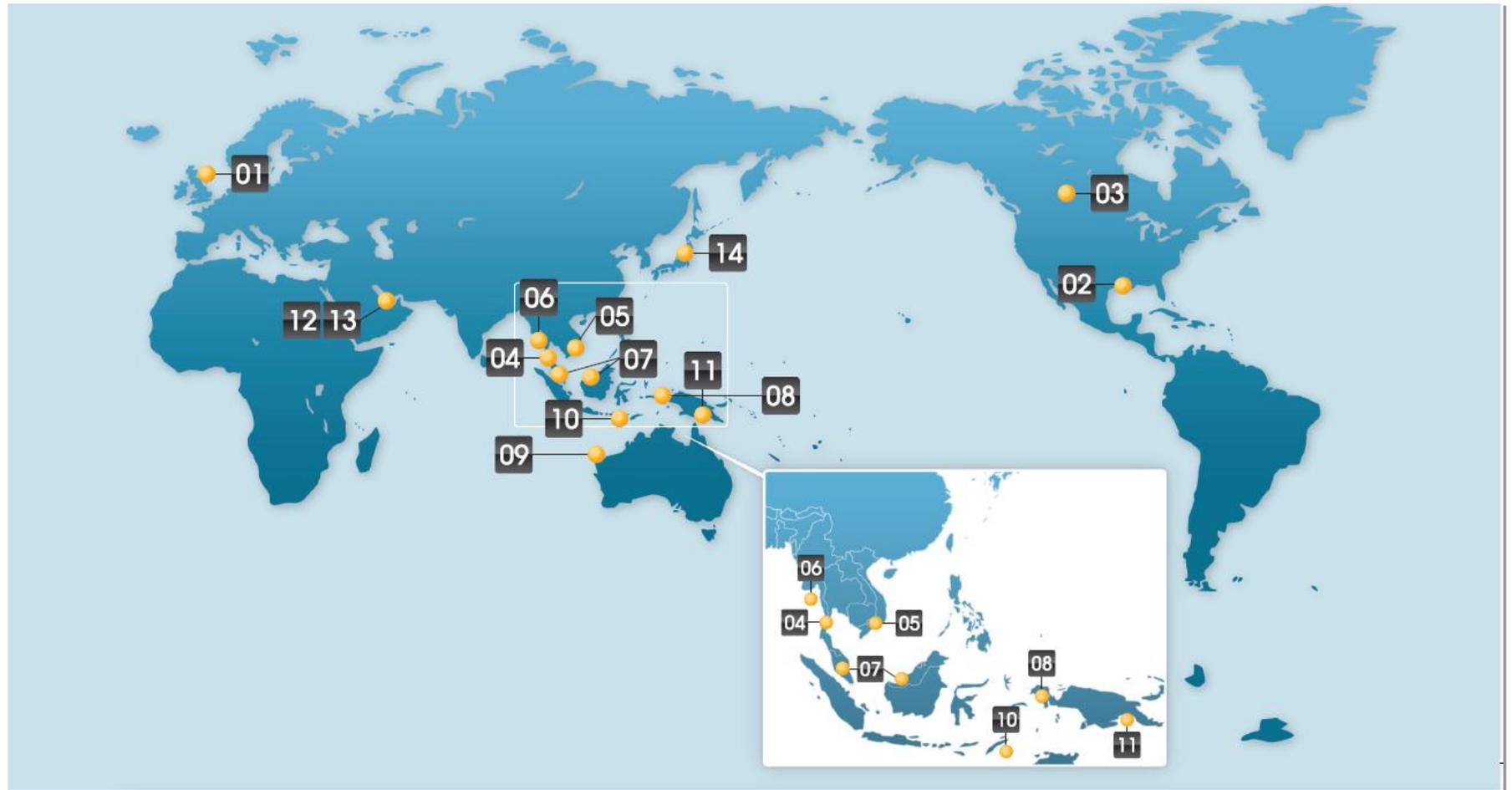
#### Restructuring business portfolio responding to business environmental change

Rearranging asset portfolio timely





# Business Area





# Business Activities

	▼ Project Company	In Production ●	Under Development ●	Under Exploration ●
01	The North Sea	JX Nippon Exploration and Production (U.K.) Ltd.	●	● ●
02	The U.S. Gulf of Mexico	JX Nippon Oil Exploration (U.S.A.) Ltd. JX Nippon Oil Exploration (EOR) Ltd. / Petra Nova Parish Holdings LLC	●	●
03	Canada	Japan Canada Oil Company / Mocal Energy	●	
04	Thailand	JX Nippon Oil & Gas Exploration Corp.		●
05	Vietnam	Japan Vietnam Petroleum Co., Ltd. JX Nippon Oil & Gas Exploration Corp.	●	● ●
06	Myanmar	Nippon Oil Exploration (Myanmar) Ltd.	●	● ●
07	Malaysia	JX Nippon Oil & Gas Exploration (Malaysia) Ltd. JX Nippon Oil & Gas Exploration (Sarawak) Ltd. JX Nippon Oil & Gas Exploration (Peninsular Malaysia) Ltd. JX Nippon Oil & Gas Exploration (Deepwater Sabah) Ltd. JX Nippon Oil & Gas Exploration (Offshore Malaysia) Sdn. Bhd.	●	● ● ● ● ●
08	Indonesia	Nippon Oil Exploration (Berau) Ltd.	●	●
09	Australia	JX Nippon Oil & Gas Exploration (Australia) Pty Ltd.	●	●
10	JPDA *	Japan Energy E&P JPDA Pty Ltd.		●
11	Papua New Guinea	Merlin Petroleum Company / Southern Highlands Petroleum Co., Ltd. Nippon Oil Exploration (Niugini) Ltd. / Murray Petroleum Co., Ltd. Nippon Papua New Guinea LNG LLC	●	● ● ●
12 13	U A E · Qatar	Abu Dhabi Oil Co., Ltd. United Petroleum Development Co., Ltd. JX Nippon Oil & Gas Exploration (Qatar) Ltd.	●	● ● ●
14	Japan	JX Nippon Oil & Gas Exploration Corp.	●	● ●

\* Joint Petroleum Development Area between Australia and East Timor



# Outline of Oil and Natural Gas E&P Projects

	Project Name/Company	Sales Volume(Jan.-Dec. 2014) (1,000BOED)			Reserves(million BOE) *1 *2			Reference pages
		* 1	Oil	Gas	As of the end of 2014	As of the end of 2013	As of the end of 2012	
1	(North Sea, U.K.) JX Nippon Exploration and Production (U.K). Limited	9	8	1	193	184	126	62 ~ 64
2	(Gulf of Mexico(U.S.A.)) JX Nippon Oil Exploration U.S.A. Limited	3	2	1	17	16	23	66 ~ 67
3	(Canada) Japan Canada Oil Company Limited	13	13	0	283	260	253	68
5	(Vietnam and other) Japan Vietnam Petroleum Company, Limited, other	7	6	1				70 ~ 71
6	(Myanmar) Nippon Oil Exploration (Myanmar) Limited	8	1	7				72
7	(Malaysia) JX Nippon Oil & Gas Exploration (Malaysia) Limited JX Nippon Oil & Gas Exploration (Sarawak) Limited	20 13	3 1	17 12				73 ~ 76
8	(Indonesia) Nippon Oil Exploration (Berau) Limited	18	0	18	<Sub Total> 213	<Sub Total> 196	<Sub Total> 233	77
9	(Australia and other) JX Nippon Oil & Gas Exploration (Australia) Pty Ltd., other	2	2	0				78 ~ 80
11	(Papua New Guinea) Merlin· Southern Highlands Petroleum Co., Ltd.	9	6	3	<Sub Total> 92	<Sub Total> 95	<Sub Total> 99	81 ~ 82
12,13	(United Arab Emirates, Qatar and others) * 3 Abudhabi Oil Co., Ltd., United Petroleum Development Co., Ltd. and others	13	12	1	48	57	66	83 ~ 84
Total		115	54	61	846	808	800	

\*1 Project company basis.

\*2 Proved reserves and probable reserves , including reserves from projects currently under development.  
(Please refer P85 about our reserve standard.)

\*3 JX Group's equity basis

# Maintain and Expand Production Volume over the Medium/Long Term



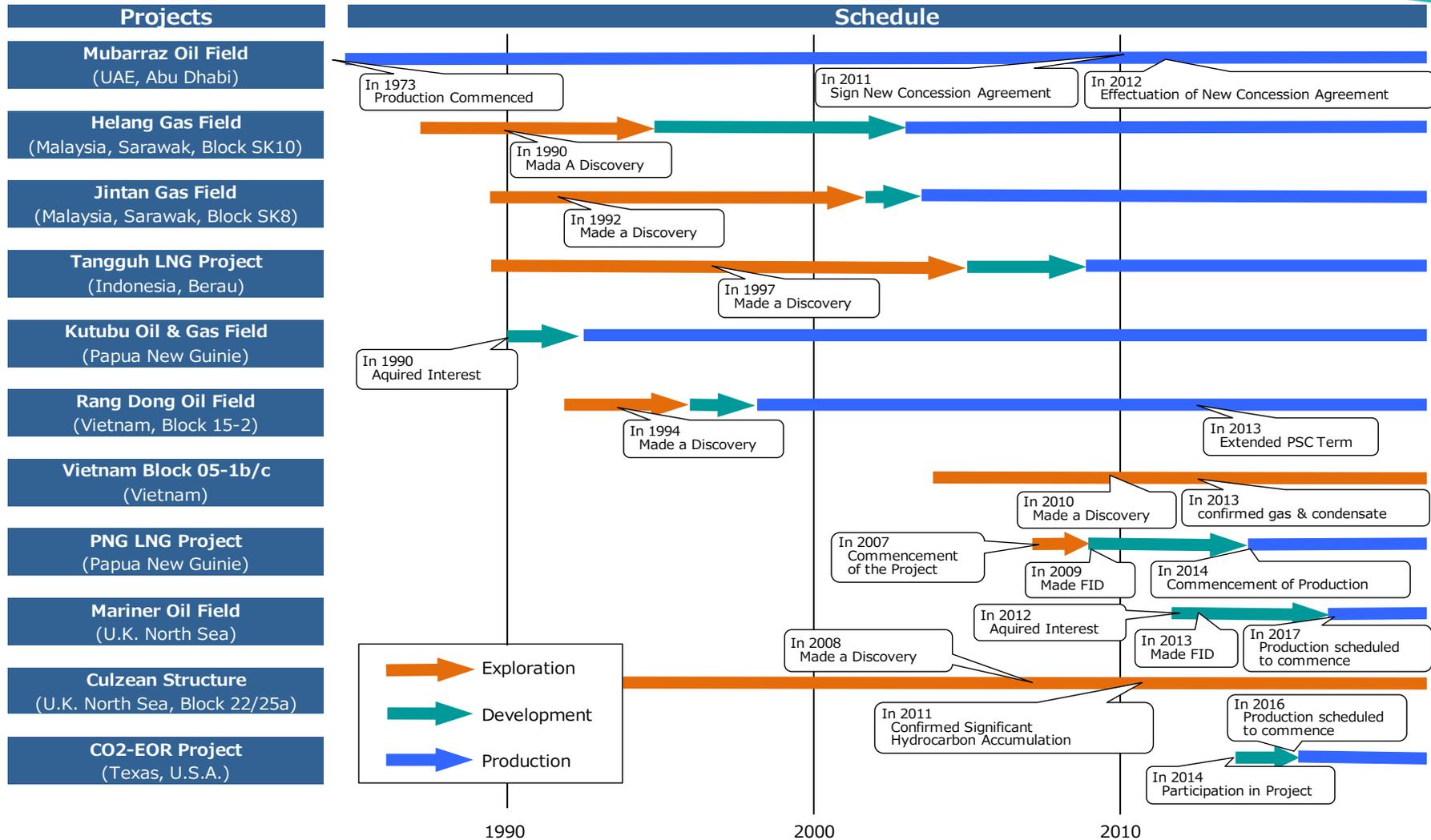
## Latest Results

	Country(Block)	Type	Acquisition of Working Interest	Discovery of oil & gas strata	Final Investment Decision	Renewal of Contract	Commencement of Production
May. 2013	Australia (Finucane South Oil Field)	Crude Oil					●
Jun. 2013	Australia(WA-320-P) (WA-155-P2)	Natural Gas	●				
Jun. 2013	Vietnam(05-1b/c)	Oil / Gas		●			
Jul. 2013	Australia(WA-49-R)	Natural Gas		●			
Sep. 2013	Malaysia(Deepwater 2F)	Natural Gas	●				
Nov. 2013	Vietnam(15-2)	Crude Oil					
Dec. 2013	Malaysia(Deepwater 3F)	Crude Oil	●				
May. 2014	Malaysia ( Layang Oil/Gas Field)	Oil / Gas	Participation in the Project		●		
Apr. 2014	PNG LNG Project	Natural Gas					●
Jul. 2014	USA ( CO2-EOR )	Crude Oil	●				
Aug. 2014	Australia(WA-435/437-P)	Oil / Gas		●			
Aug. 2014	Vietnam(05-1b/c)	Oil / Gas		●			
Dec. 2014	UK(Acquisition of Oil Fields)	Oil / Gas	●				
Dec. 2014	UK(Kinnoull Oil Field)	Oil / Gas					●
Mar. 2015	UK (22/16, 17b)	Crude Oil		●			
Apr. 2015	Malaysia(Deepwater R)	Crude Oil		●			

2020~2025  
Production scheduled to Commence in 2016



# Production Schedule of Principal E&P Projects

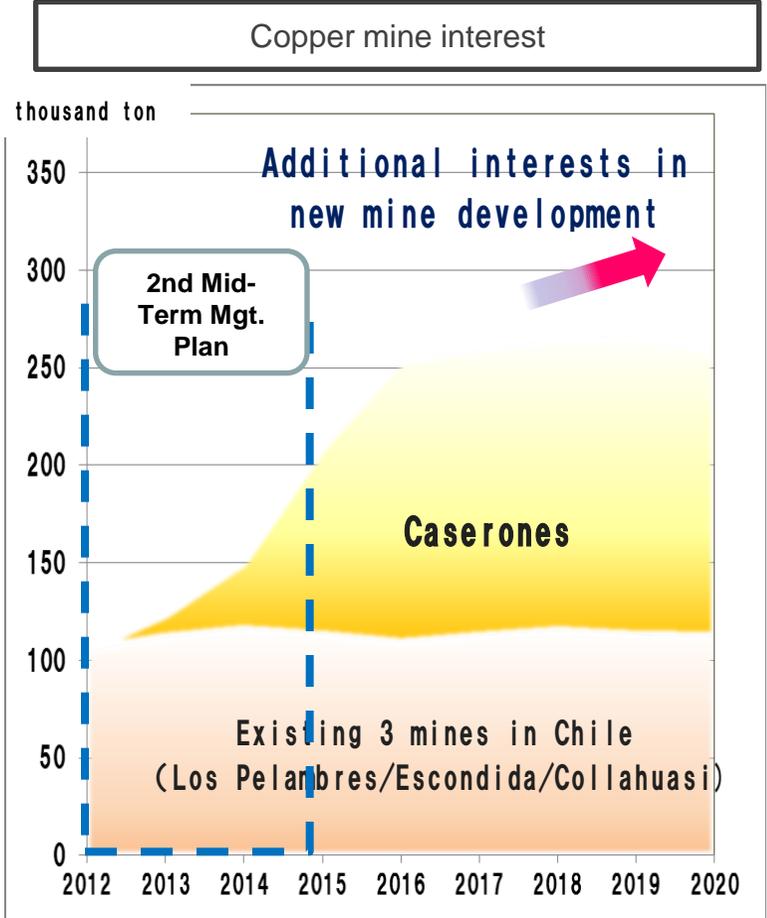




# Strategies of Metals Business

# Strategy and Action Plan Resource Development

<b>Business Environment</b>	<ul style="list-style-type: none"> <li>Copper demand increases centered on Asia.</li> <li>Copper price stays at high level in mid-and-long term</li> </ul>																																																																																					
<b>Basic Strategy</b>	<b>Establishing highly profitable structure by enhancing copper mine interest</b>																																																																																					
<ul style="list-style-type: none"> <li>Increasing copper mine interest                     <ul style="list-style-type: none"> <li>Caserones : Jan. 2014 - Start production of copper concentrate</li> <li>Reconsidering Quechua (Peru) development</li> <li>Promoting exploring Frontera(Chile)</li> </ul> </li> </ul>																																																																																						
<table border="1"> <thead> <tr> <th></th> <th>2006</th> <th>07</th> <th>08</th> <th>09</th> <th>10</th> <th>11</th> <th>12</th> <th>13</th> <th>14</th> <th>15</th> <th>16</th> </tr> </thead> <tbody> <tr> <td>Caserones</td> <td>●</td> <td></td> <td>●</td> <td></td> <td>●</td> <td></td> <td></td> <td></td> <td>→</td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="2">Acquired interest</td> <td colspan="2">Started FS</td> <td colspan="2">FID</td> <td colspan="2">Start production</td> <td colspan="3">Until 2040</td> </tr> <tr> <td>Quechua</td> <td>●</td> <td></td> <td>●</td> <td></td> <td></td> <td>→</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="2">Acquired interest</td> <td colspan="2">Started FS</td> <td colspan="2">Finished FS</td> <td colspan="5">(Considering development)</td> </tr> <tr> <td>Frontera</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>●</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="7"></td> <td colspan="5">Acquired interest → (Additional exploring)</td> </tr> </tbody> </table>			2006	07	08	09	10	11	12	13	14	15	16	Caserones	●		●		●				→				Acquired interest		Started FS		FID		Start production		Until 2040			Quechua	●		●			→							Acquired interest		Started FS		Finished FS		(Considering development)					Frontera							●													Acquired interest → (Additional exploring)				
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								Acquired interest → (Additional exploring)																																																																														
<b>Business Environment</b>	Capital intensification and oligopolization of resource developers proceeds more challenging technology and funds for mine development																																																																																					
<b>Basic Strategy</b>	<b>Acquiring mining interest utilizing original technology</b>																																																																																					
<ul style="list-style-type: none"> <li>Developing next-generation smelting technology                     <ul style="list-style-type: none"> <li>Nikko Chloride Process (N-Chlo Process): Continuing study for commercialization of achievement at pilot plant in Australia</li> <li>Bio mining : Agreed commercial application of the technology at CODELCO's Radomiro Tomic copper mine in Chile (Aug. 2014)</li> </ul> </li> </ul>																																																																																						



# Strategy and Action Plan

## Smelting & Refining/Electronic Materials/Recycling & Environmental Services



### Smelting & Refining

**Business Environment** Drastic improvement of TC/RC is hardly expected though mine development proceeds.

**Basic Strategy** **Establishing business structure that has world top-class cost competitiveness**

- Safe and stable operation
- Improving smelting margin
  - Improving production efficiency using copper concentrate from Caserones.
  - Using high margin materials.
  - Starting 2 operation of 2<sup>nd</sup> copper concentrate and sulfuric acid carriers.

### Electronic Materials

**Business Environment** Electronic materials demand increases in cutting-edge IT, automobile, medical fields etc.

**Basic Strategy** **Securing world's top share in each product market**

- Realizing early monetization of integrated connector production business (2013.4, Kakegawa Works started operation) and cathode materials business for lithium-ion batteries
- Improving profitability by developing new fields and materials
  - Ultra-thin electro-deposited copper foil, High-functional precision rolled products, Sputtering target for OLED, Sputtering targets for next generation LSIs, Materials for ray sensor

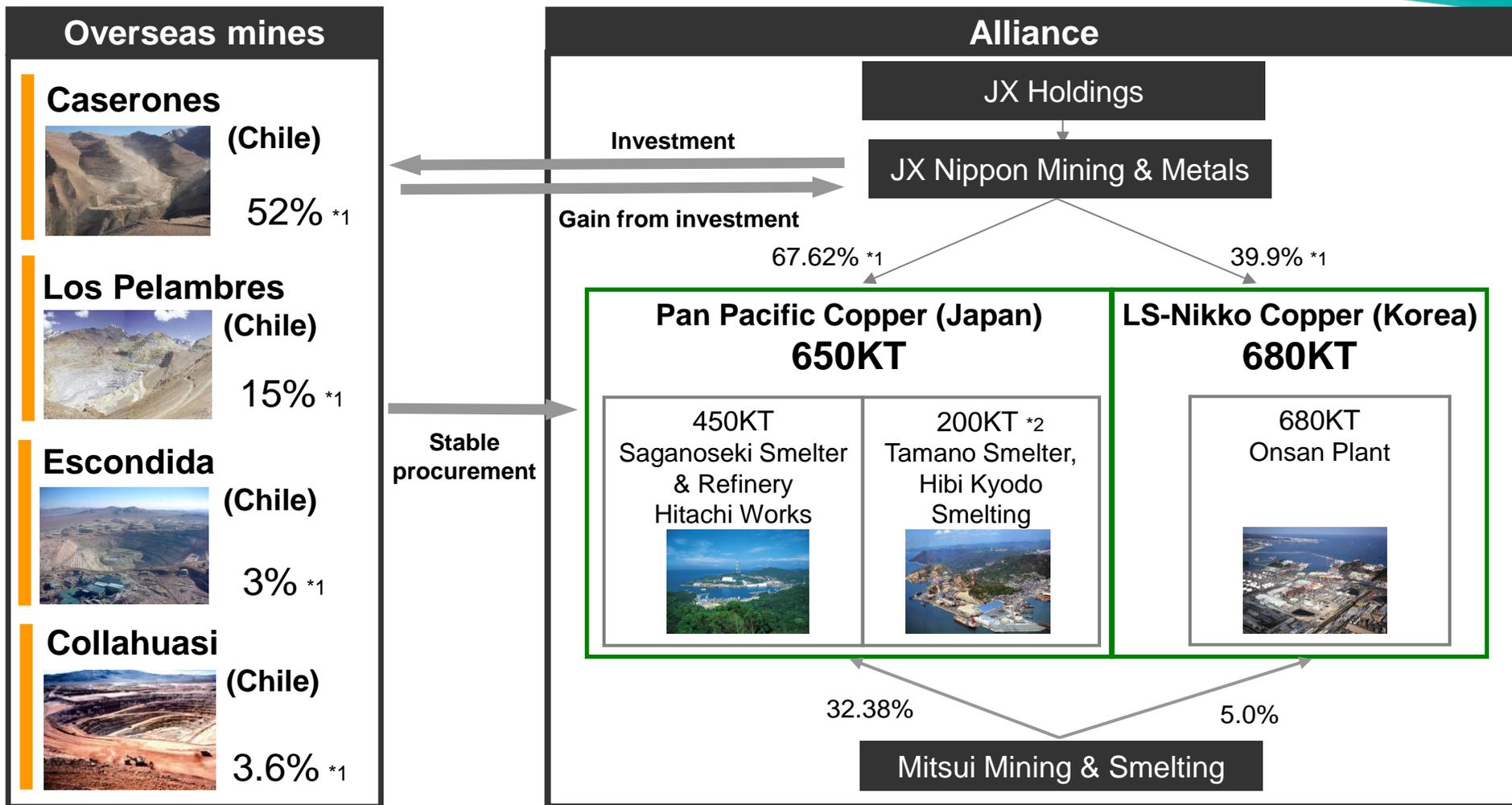
### Recycling & Environmental Services

**Business Environment** Demand for related materials and resource recycling expands in line with growing concerns for eco social needs

**Basic Strategy** **Building international resource recycling business with environmental-friendly zero emission system**

- Enhancing collecting ability of recycled materials overseas : Development to US market
- Enhancing new business : Recycling lithium-ion batteries. Detoxication of materials containing low-concentrated PCB
- Consolidating production site metal by metal and cost reduction

# Copper Business



\*1. Shares indirectly owned by JX Nippon Mining & Metals

\*2. Allocated to PPC. Total Capacity is 290KT.

# Overseas Copper Mine Development ①

## Caserones Copper Mine (Chile)



**Acquisition date** May 2006

**Acquisition price** \$137 million

**Initial investment** \$ 4.20 billion

In July 2011, project finance(\$1.1billion) and long-term loan(\$0.3billion) were concluded.

**Ownership** (As of Mar. 2015)

**Pan Pacific Copper (PPC)\* 77.37%**

- Jointly established by JX Nippon Mining & Metals (67.62%) and Mitsui Mining & Smelting (32.38%)

**Mitsui & Co., Ltd. 22.63%**

**Mine life** From 2013 to 2040 (28 years )

**Total production (28years)**

Copper : 3,550kt From Copper Concentrate 3,140kt

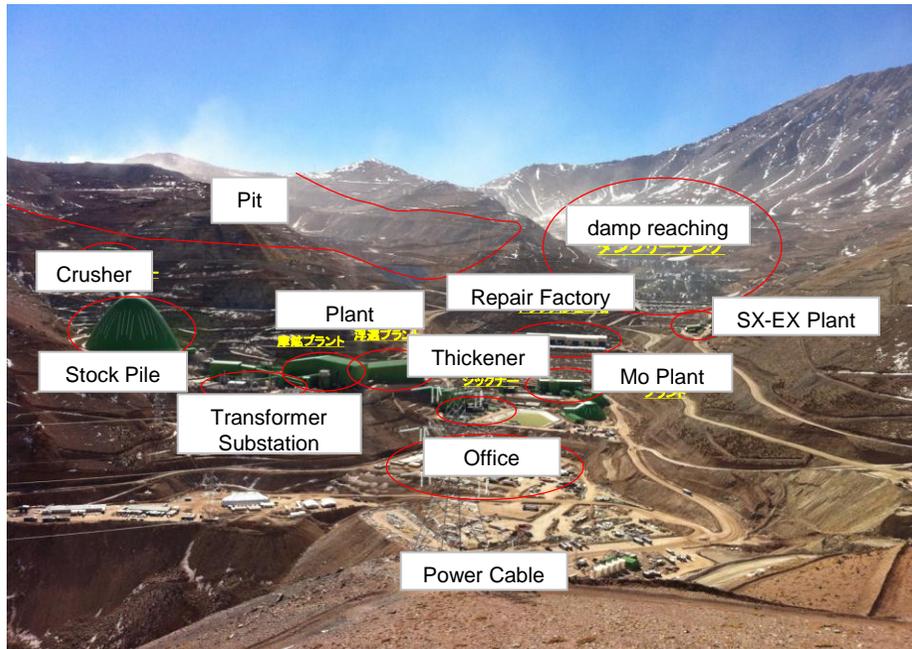
From SX-EW Process 410kt

Molybdenum : 87kt

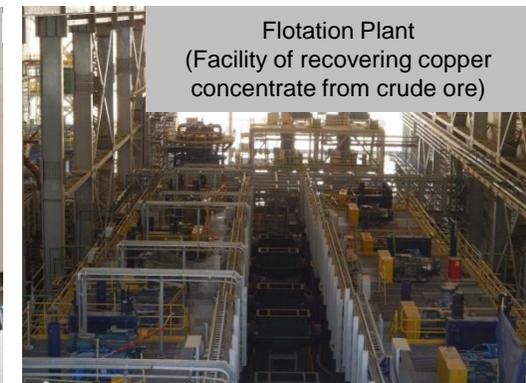
**Production plan**

In Mar. 2013, started to SX-EW Copper Cathode Production

In May. 2014, started to Copper Concentrate Production



		first 10 years	average (28years)	total (28years)
Copper	Copper Concentrate	150 kt/year	110 kt/year	3140 kt
	SX-EW Process	30 kt/year	10 kt/year	410 kt
	total	180 kt/year	120 kt/year	3550 kt
Molybdenum		3 kt/year	3 kt/year	87 kt



### Ownership

NGEx Resources Inc. (Canada) : 60%

Pan Pacific Copper (PPC) : 40%

\*PPC is Jointly established by JX Nippon Mining(67.62%) and Mitsui Mining & Smelting(32.38%)

September 2012, PPC acquired 40% exploration rights from JOGMEC (Japan Oil, Gas and Metals National Corporation)

### Exploration results for Los Helados

Existence of copper-gold deposit had been confirmed at the time of PPC's acquisition in 2012 through exploratory drilling since 2004.

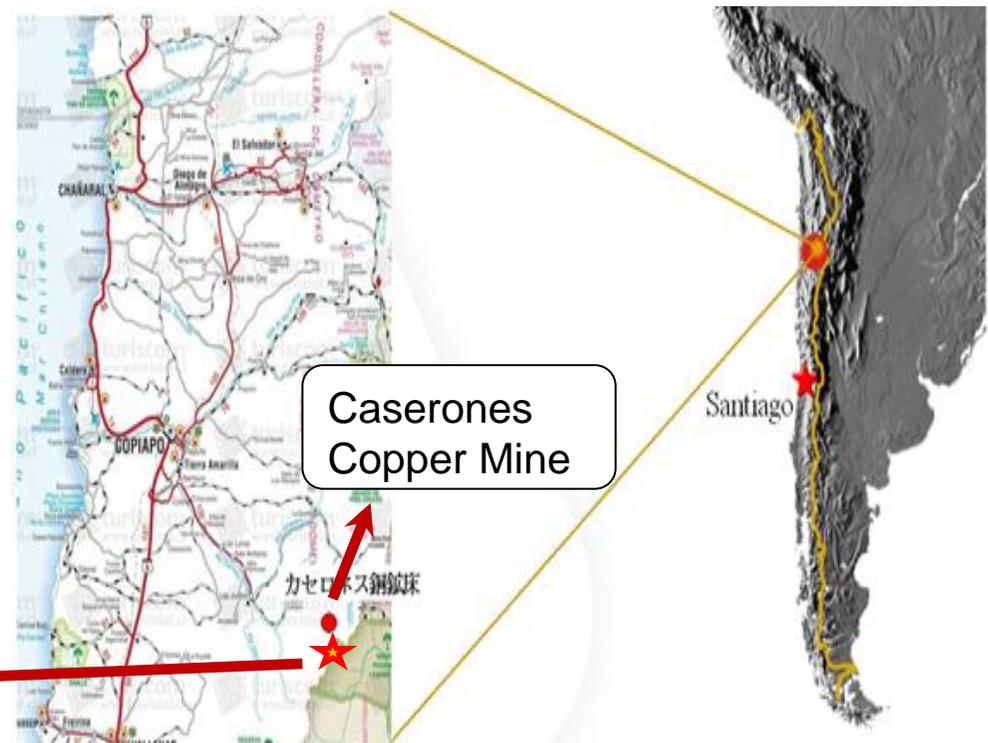
Exploratory works continued after 2012 and preliminary engineering study and economical evaluation have been completed.

Frontera Area Dimension : 24,000ha  
Altitude : 4,400-4,900m

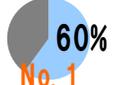
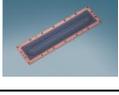
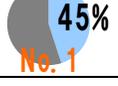
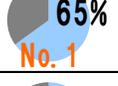
### Main deposits

Los Helados (Chile, 20km south of the Caserones Copper Mine )

\*Filo del Sol (Argentina) October 2014, PPC agreed to transfer all of its exploration rights to NGEx



# Electronic Materials

Main products	Global market share	Primary applications	End-use applications				
			PCs	Mobile phones / Smart phones	Digital, Avs	Telecom infra/ Data canter	Auto mobiles
 Treated rolled copper foil	 70% No. 1	Flexible printed circuit boards	○	◎	◎		○
 Semiconductor targets	 60% No. 1	CPUs, memory chips, etc.	◎	◎	◎	○	○
 ITO targets for FPDs *	 30% No. 1	Transparent electrodes	◎	◎	◎		○
 HD media targets	 55% No. 1	HDD (Hard disk drives), etc.	◎		○	○	
 Phosphor bronze	 20% No. 1	Connectors	○	◎	○		○
 Corson alloy (C7025)	 45% No. 1	Lead frames, Connectors	◎	○	○	○	○
 Titanium copper alloy	 65% No. 1	High-class connectors, etc.	○	◎	○		○
 In-P compound semiconductors	 50% No. 1	Optical communication devices High-speed IC			○	◎	○

\* Flat Panel Displays

# Electronic Materials (JX Metals Precision Technology Co., Ltd. Kakegawa Works)

## ✓ Expansion of Automotive Related Business

- Eco-friendly car market which is applying full of environmental technology has a high potential of growth in near future.
- Demand for connectors used in electric components of eco- friendly car is expected to expand further.



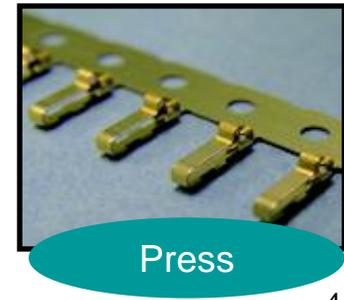
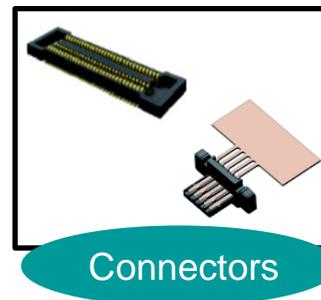
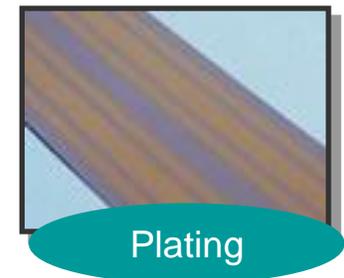
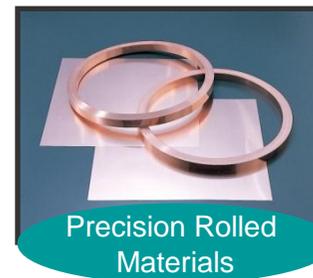
## ✓ OEM Construction of Integrated Plant of Connector (Kakegawa Works)

- Decided to construct a new plant in Kakegawa with integrated production system (press, plating and assembly) for connector (Feb. 2011).
- Started operation (Apr. 2013) .

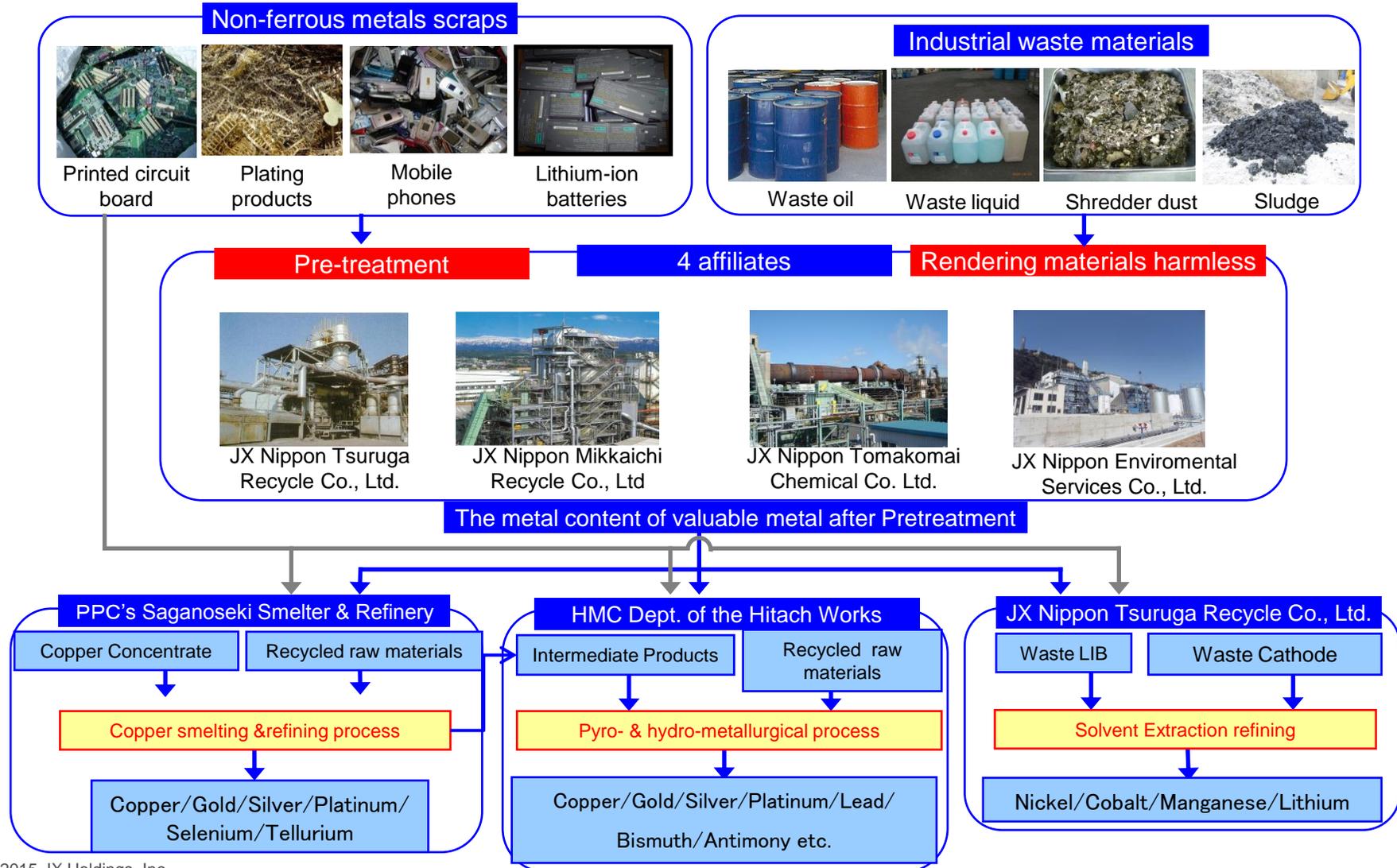


## ✓ Integrated Production System of Connector and Precision Materials

Process \ Use・Product	Press	Plating	Assembly
Connector for Automobile etc.	Kakegawa Works		
Connector for IT etc.	Nasu Works	Esashi Works Tatebayashi Works	Nasu Works



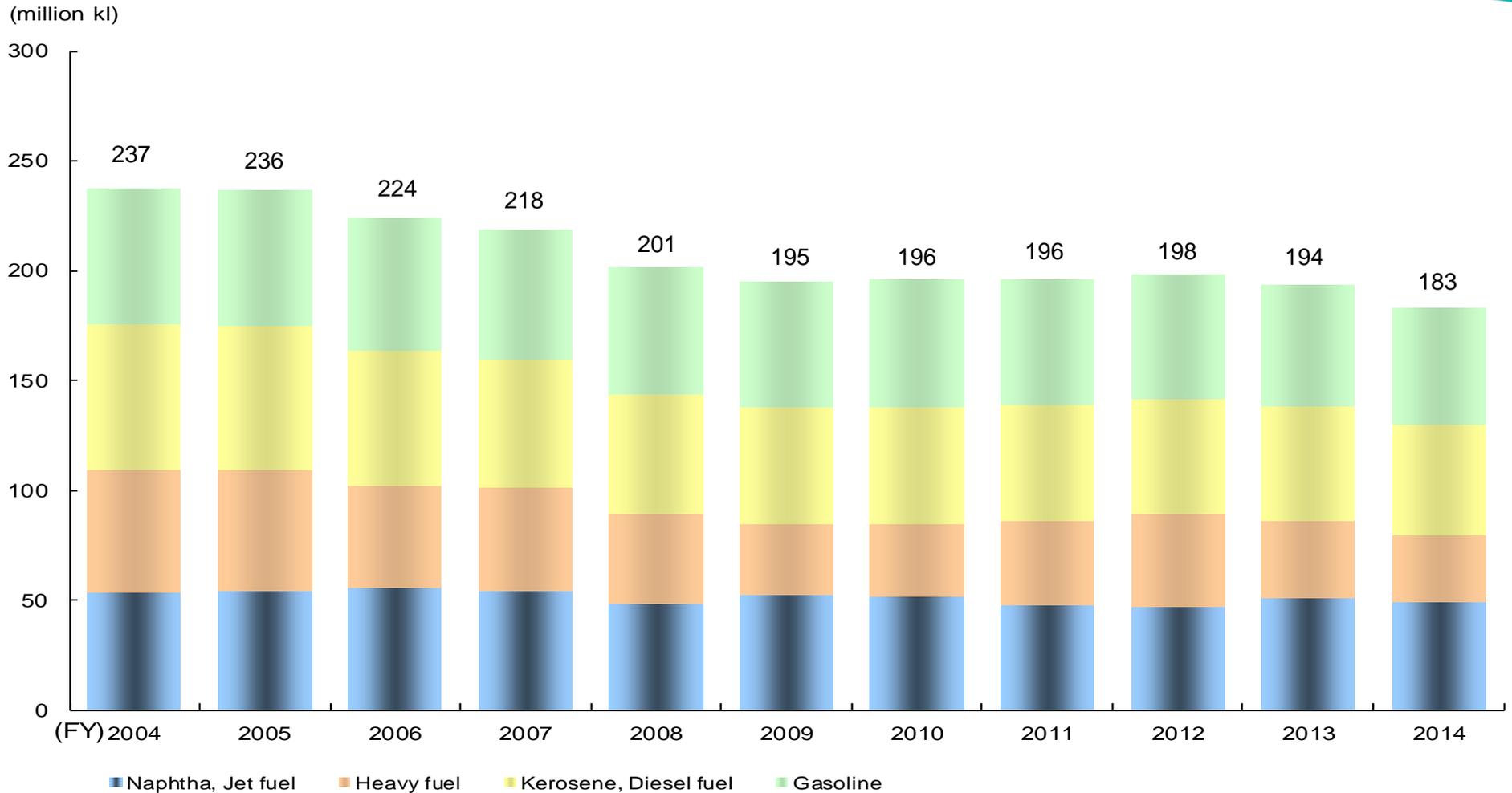
# Recycling and Environmental Services



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# Business Environment and Data - Energy Business -

# Demand for Petroleum Products ( Japan )



Note: Excluding Crude Oil for electric power plants.

Source: Petroleum Association of Japan and Company data

# Capacity Reduction Plan, Integration Synergies, Enhanced Efficiency of Refineries



## ✓ Capacity Reduction Plan

(JX)

Dec.2008. Apr. 2014. \*  
1,790 ⇒ 1,210 thousand BD

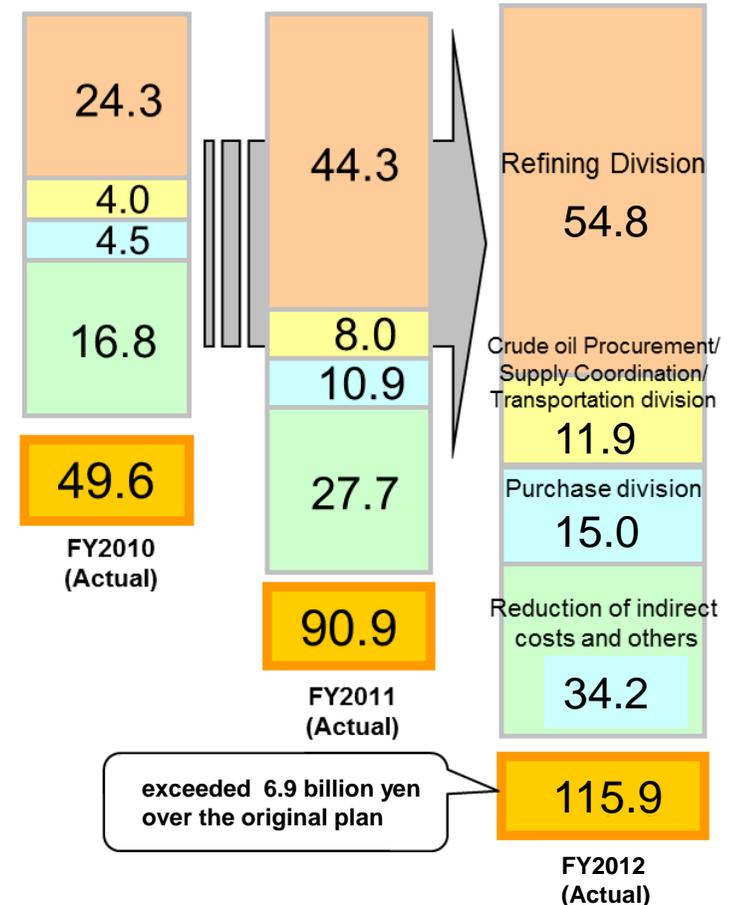
(Japan)

Dec.2008. Apr. 2014. \*  
4,830 ⇒ 3,730 thousand BD

	Refinery	Due Date	Reduction Capacity	Completion
STEP1	Toyama	March, 2009	(60) thousand B/D	✓
	Kashima	May, 2010	(21)	✓
	Oita	May, 2010	(24)	✓
	Mizushima	June, 2010	(110)	✓
	Osaka	October, 2010	(115) Convert to exportation refinery	✓
	Negishi	October, 2010	(70)	✓
Subtotal			(400)	
STEP 2	Muroran	March, 2014	(180)	✓
Total			(580)	

Corresponded to Sophistication of Energy Supply Structure Act

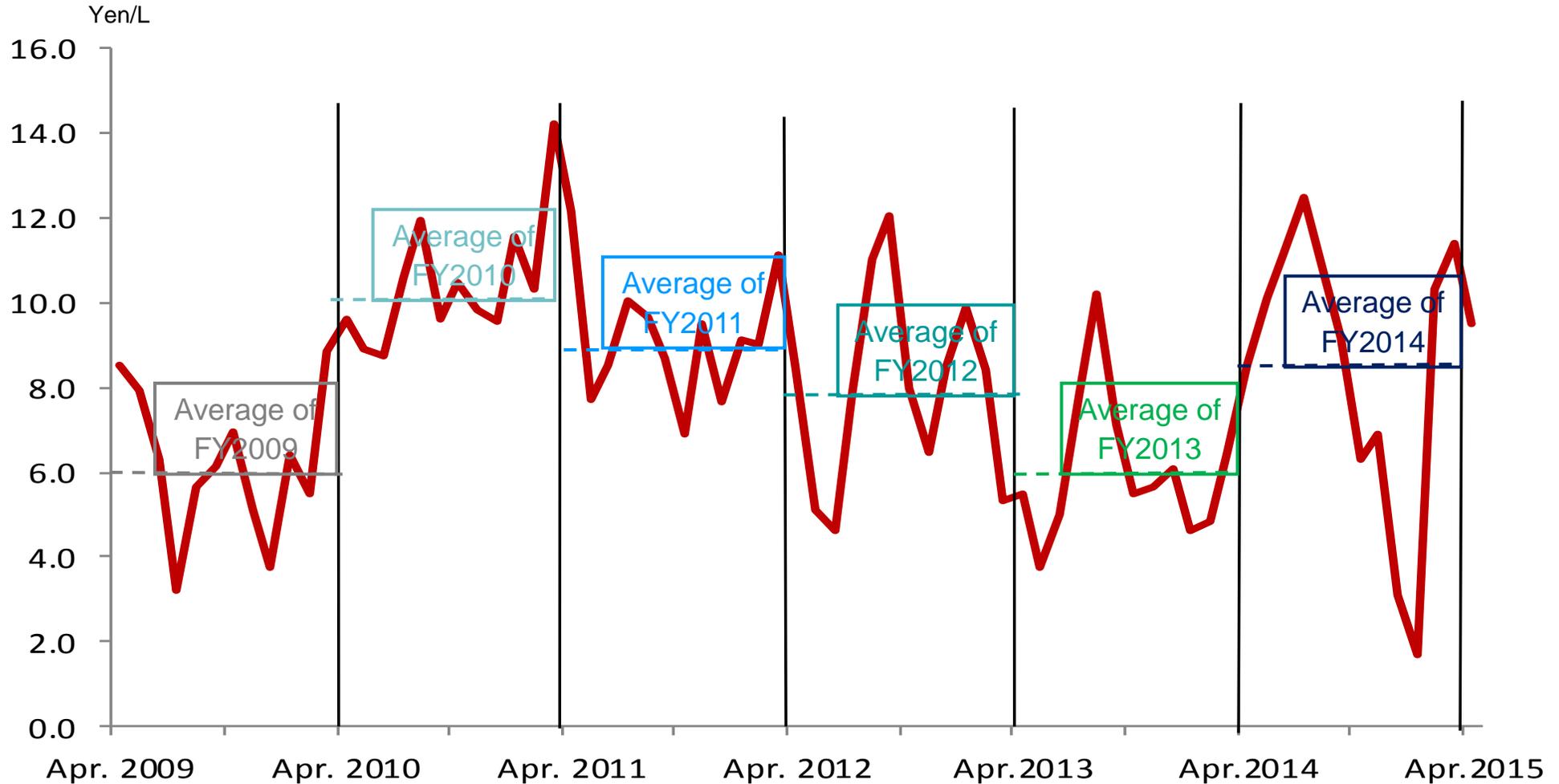
## ✓ Integration Synergies and Enhanced Efficiency of Refineries



(billion yen; Accumulated effect vs. FY2009)

\* Excludes Osaka International Refining Company, Limited, and the Mizushima refinery and Kashima refinery condensate splitters.

# Margins\* of Gasoline, Kerosene, Diesel Fuel and Fuel Oil A



\* Margin = Spot Price – All Japan Crude Oil CIF (including petroleum tax and interest)

# JX Group's Market Share and Demand in Japan, Historical CDU<sup>\*1</sup> Utilization Rate

## Domestic Market Share

	FY2011 (%)	FY2012 (%)	FY2013 (%)	FY2014 (%)
a) Gasoline	33.5	33.9	34.1	33.4
b) Kerosene	40.3	40.0	41.5	37.2
c) Diesel Fuel	37.1	37.9	38.7	36.4
d) Fuel Oil A	43.6	44.6	44.3	39.8
a+b+c+d	36.7	37.1	37.6	35.5
Total Domestic Fuel <sup>*2</sup>	35.9	36.4	36.9	35.0

## Domestic Demand

	FY2011 (1,000KL)	FY2012 (1,000KL)	FY2013 (1,000KL)	FY2014 (1,000KL)	Changes vs. FY2013 (%)
a) Gasoline	57,209	56,207	55,477	52,975	95.5
b) Kerosene	19,623	18,884	17,911	16,662	93.0
c) Diesel Fuel	32,872	33,391	34,089	33,583	98.5
d) Fuel Oil A	14,680	13,759	13,438	12,360	92.0
a+b+c+d	124,383	122,241	120,914	115,581	95.6
Total Domestic Fuel <sup>*2</sup>	196,044	197,770	193,596	182,951	94.5

## <sup>\*1</sup> CDU Utilization Rate (Excluding the impact of periodic repair and earthquake)

	FY2011	FY2012	FY2013	FY2014
JX Group <sup>*3</sup>	88%	88%	89%	91%

\*1 Crude Distillation Unit

\*2 Excluding crude oil for electric power plants

\*3 Excluding condensate splitters of Mizushima and Kashima

Source: Petroleum Association of Japan and Company data

# Number of Service Stations (Fixed-Type)

(As of the end of fiscal years)

	FY2011	FY2012	FY2013	FY2014
JX Group	11,730	11,283	11,017	10,783
EMG <sup>*1</sup>	3,773	3,475	3,379	3,481
Idemitsu Kosan	3,997	3,861	3,786	3,725
Showa Shell Sekiyu	3,760	3,555	3,442	3,317
Cosmo Oil	3,498	3,325	3,228	3,133
Others <sup>*2</sup>	1,160	1,130	1,096	836
Oil Companies	27,918 (75.7%)	26,629 (74.8%)	25,948 (74.6%)	25,275 (74.6%)
Private Brands and Others <sup>*3</sup>	8,982 (24.3%)	8,971 (25.2%)	8,852 (25.4%)	8,625 (25.4%)
Total <sup>*3</sup>	36,900	35,600	34,800	33,900

**Notes:**

\*1. Figures are total of Esso, Mobil and Tonen General Sekiyu until FY2013.

Only FY2014, figures are total of Esso, Mobil, Tonen General Sekiyu and Mitsui Oil & Gas.

\*2. Figures are total of Taiyo Petroleum, Kygnus Sekiyu and Mitsui Oil & Gas until FY2013.

Only FY2014, figures are total of Taiyo Petroleum and Kygnus Sekiyu.

\*3. Estimated by JX Holdings.

\*4. Figures include only self-service retail outlets that are affiliated to oil companies.

## <Number of Company-Owned Service Stations>

	FY2011	FY2012	FY2013	FY2014
JX Group	2,573	2,487	2,433	2,404

## <Number of Self-Service Stations>

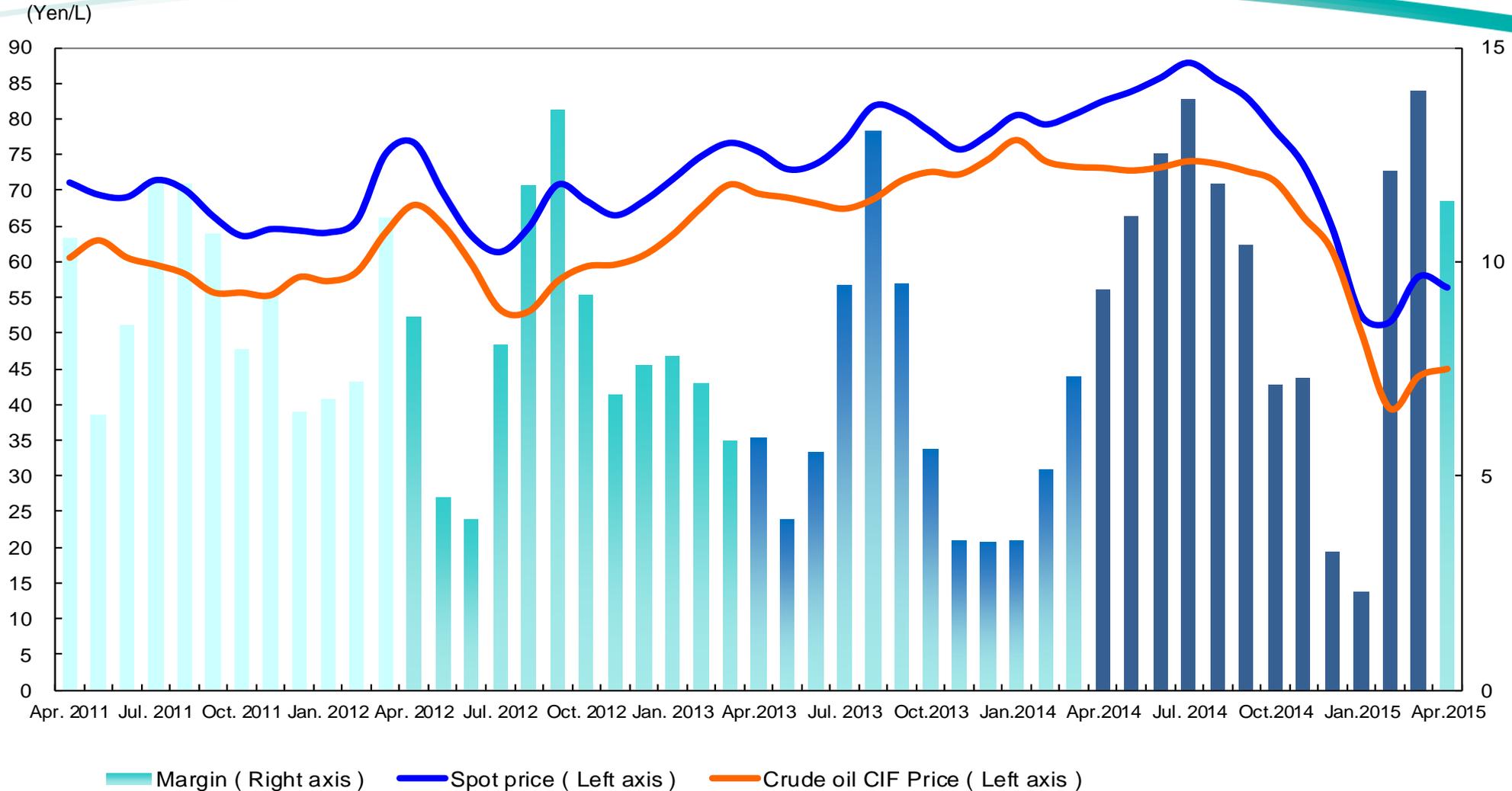
	FY2011	FY2012	FY2013	FY2014
JX Group	2,423	2,535	2,654	2,752
Total for Japan <sup>*4</sup>	7,001	7,172	7,415	7,622

## Sales Volume by Product

	FY2011	FY2012	FY2013	FY2014	Changes vs. FY 2013
	ten thousand KL	ten thousand KL	ten thousand KL	ten thousand KL	
Gasoline	1,919	1,904	1,889	1,767	-6.5%
Premium	253	239	229	206	-10.0%
Regular	1,654	1,654	1,650	1,551	-6.0%
Naphtha	366	393	419	386	-7.9%
JET	144	156	164	167	1.8%
Kerosene	748	711	696	579	-16.8%
Diesel Fuel	1,216	1,264	1,318	1,224	-7.1%
Fuel Oil A	640	614	595	492	-17.3%
Heavy Fuel Oil C	912	1,039	856	708	-17.3%
For Electric Power	617	777	627	501	-20.1%
For General Use	295	262	228	207	-9.2%
<b>Total Domestic Fuel</b>	<b>5,945</b>	<b>6,082</b>	<b>5,936</b>	<b>5,323</b>	<b>-10.3%</b>
Crude Oil	430	509	438	271	-38.1%
Lubricants & Specialities	334	317	307	311	1.3%
Petrochemicals (ten thousand ton)	552	558	629	602	-4.3%
Exported Fuel	880	1,019	1,119	912	-18.5%
LPG (ten thousand ton)	32	28	34	32	-5.9%
Coal (ten thousand ton)	533	564	691	689	-0.3%
<b>Total Excluding Barter Trade &amp; Others</b>	<b>8,706</b>	<b>9,076</b>	<b>9,153</b>	<b>8,140</b>	<b>-11.1%</b>
Barter Trade & Others	2,081	1,931	1,909	2,046	7.2%
<b>Total</b>	<b>10,787</b>	<b>11,008</b>	<b>11,062</b>	<b>10,186</b>	<b>-7.9%</b>



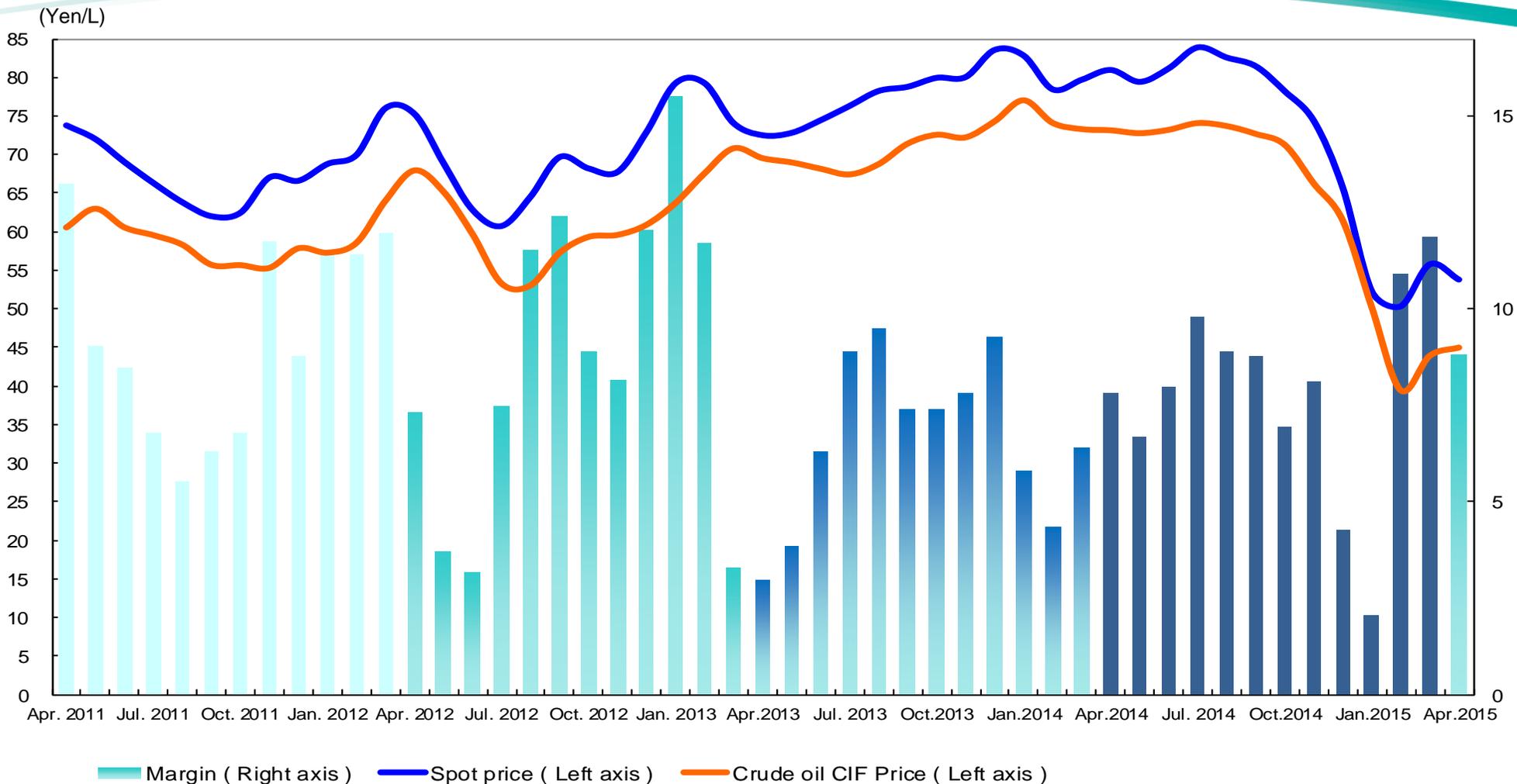
# Domestic Market Margin\* (Gasoline)



\* Margin = Spot Price – All Japan Crude Oil CIF (including petroleum tax and interest)    Source : Trade statistics (Ministry of Finance, Japan)



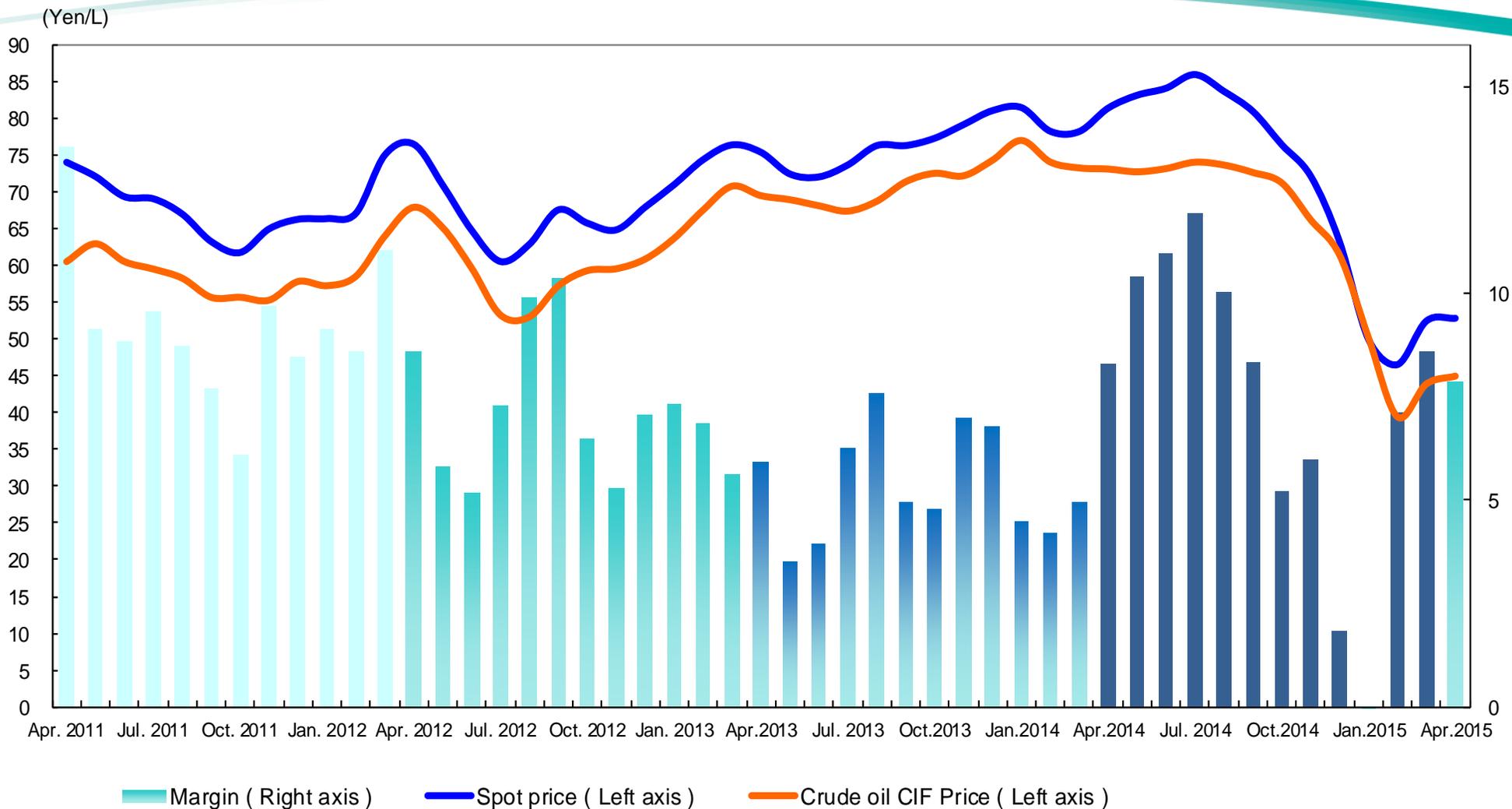
# Domestic Market Margin\* (Kerosene)



\* Margin = Spot Price – All Japan Crude Oil CIF (including petroleum tax and interest)    Source : Trade statistics (Ministry of Finance, Japan)



# Domestic Market Margin\* (Diesel Fuel)

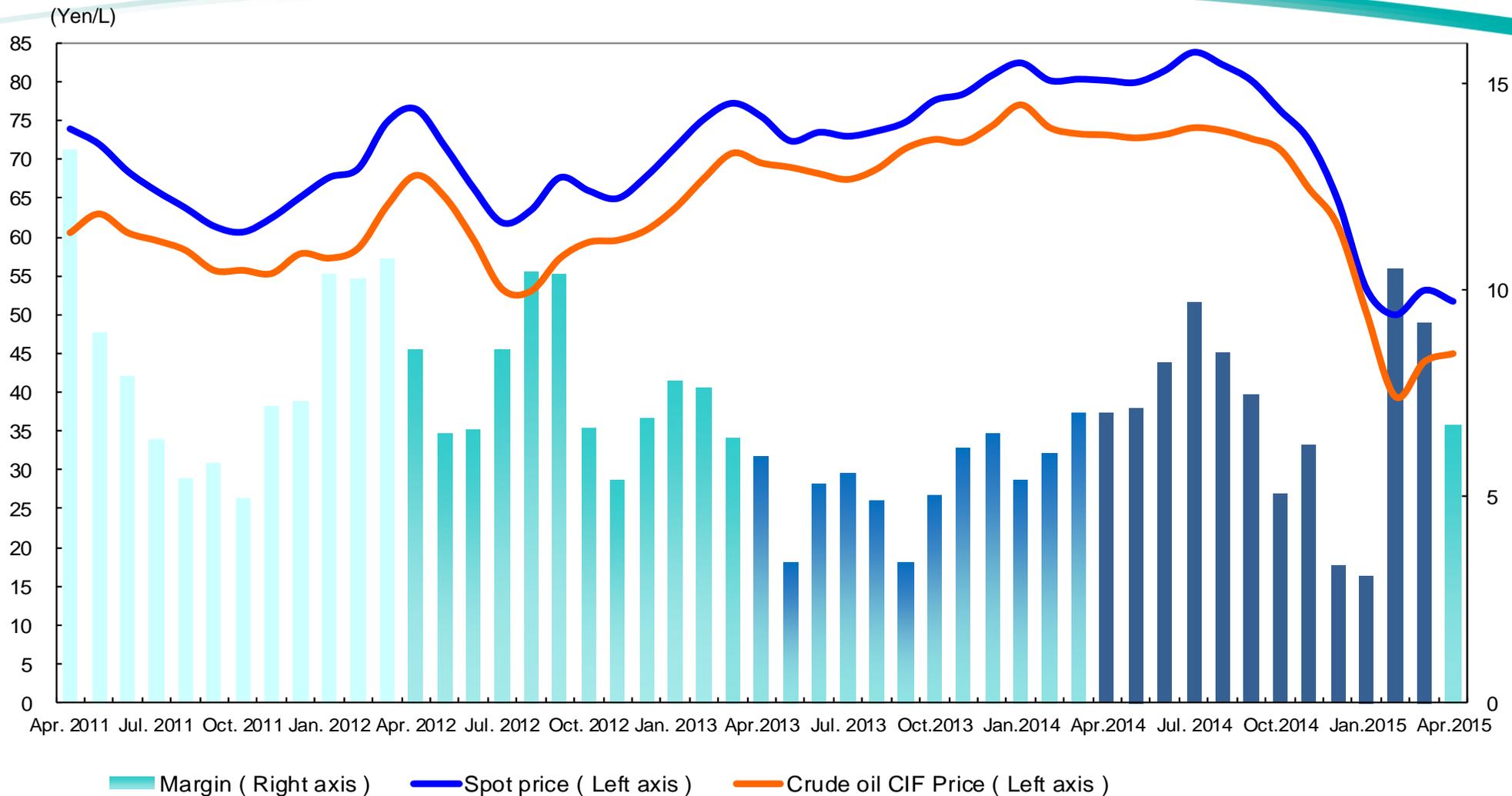


\* Margin = Spot Price – All Japan Crude Oil CIF (including petroleum tax and interest)

Source : Trade statistics (Ministry of Finance, Japan)



# Domestic Market Margin\* (Fuel Oil A)



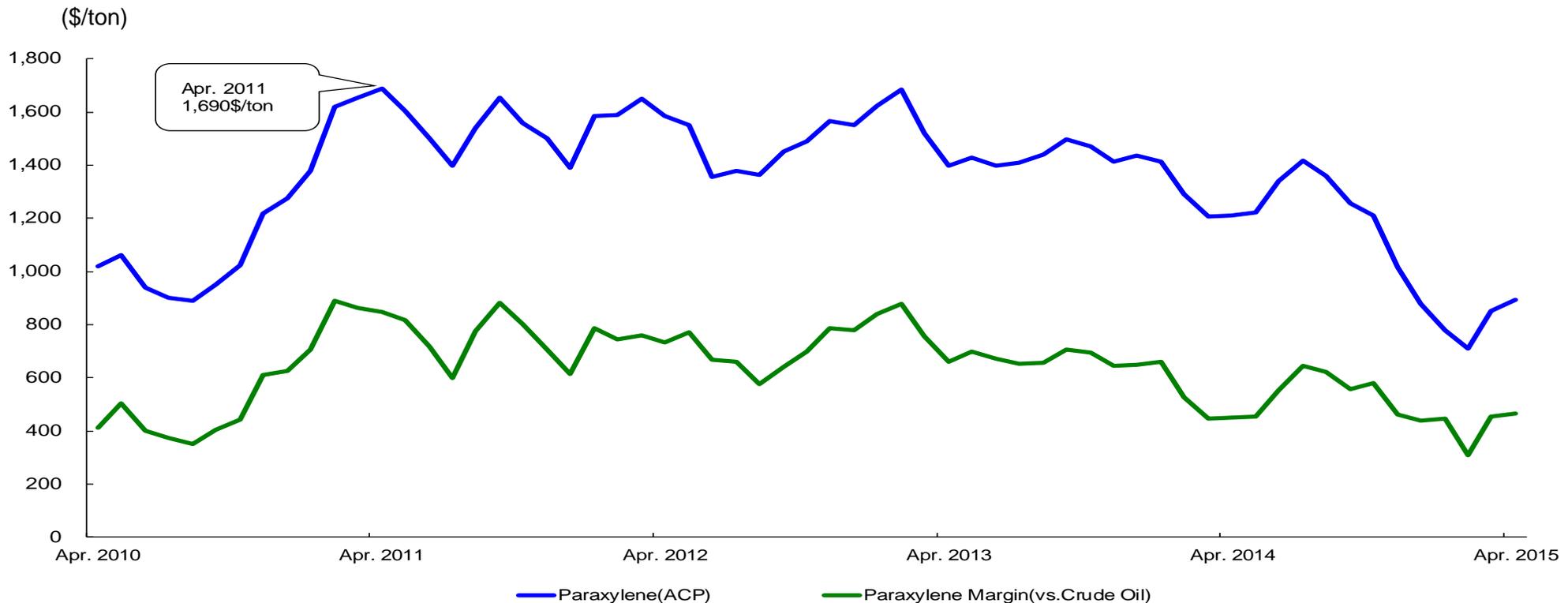
\* Margin = Spot Price – All Japan Crude Oil CIF (including petroleum tax and interest)

Source : Trade statistics (Ministry of Finance, Japan)



# Paraxylene Price and Margin (vs. Crude Oil)

Average Price	FY2010	FY2011	FY2012	FY2013					FY2014				
				1Q	2Q	3Q	4Q	FY	1Q	2Q	3Q	4Q	FY
Asian Contract Price	1,162	1,555	1,510	1,409	1,449	1,440	1,304	1,401	1,259	1,345	1,035	779	1,104
Margin (vs. Crude Oil)	550	754	732	676	673	663	544	639	487	608	494	399	497

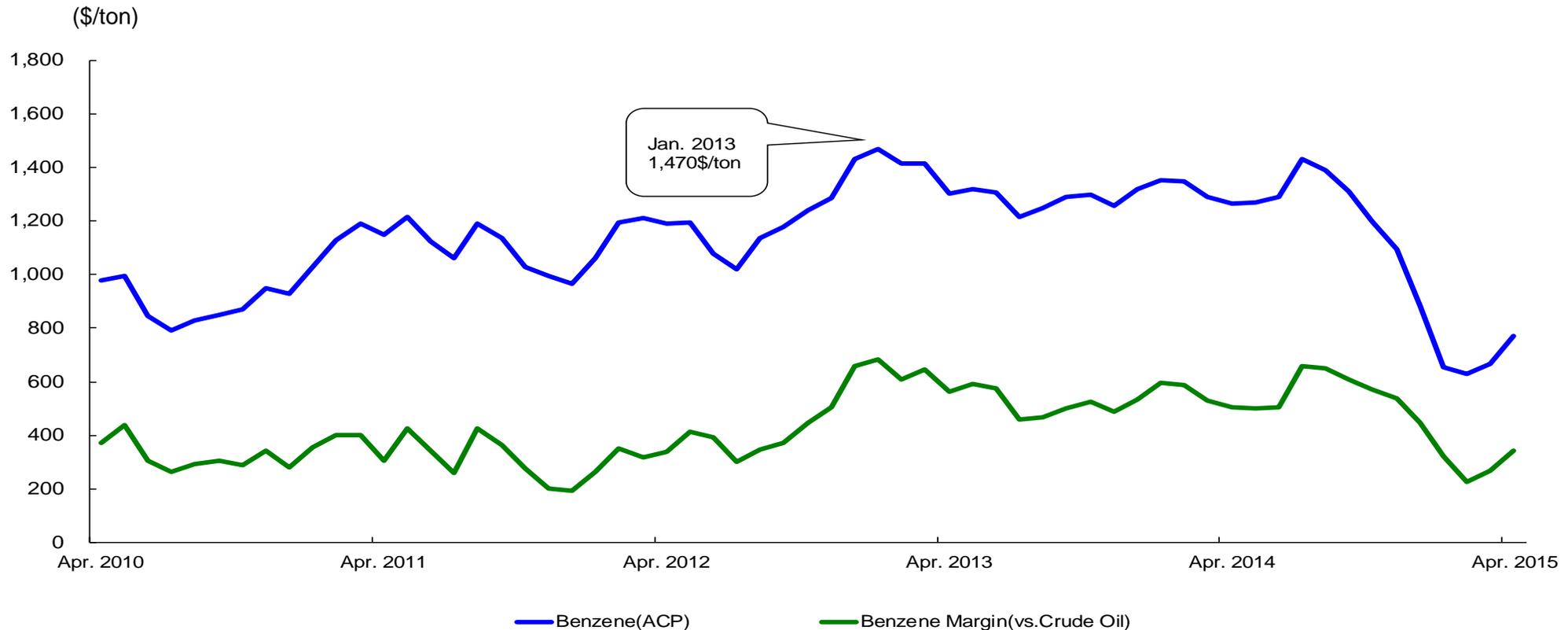


\* In case of ACP undecided, average price of spot market is adopted.



# Benzene Price and Margin (vs. Crude Oil)

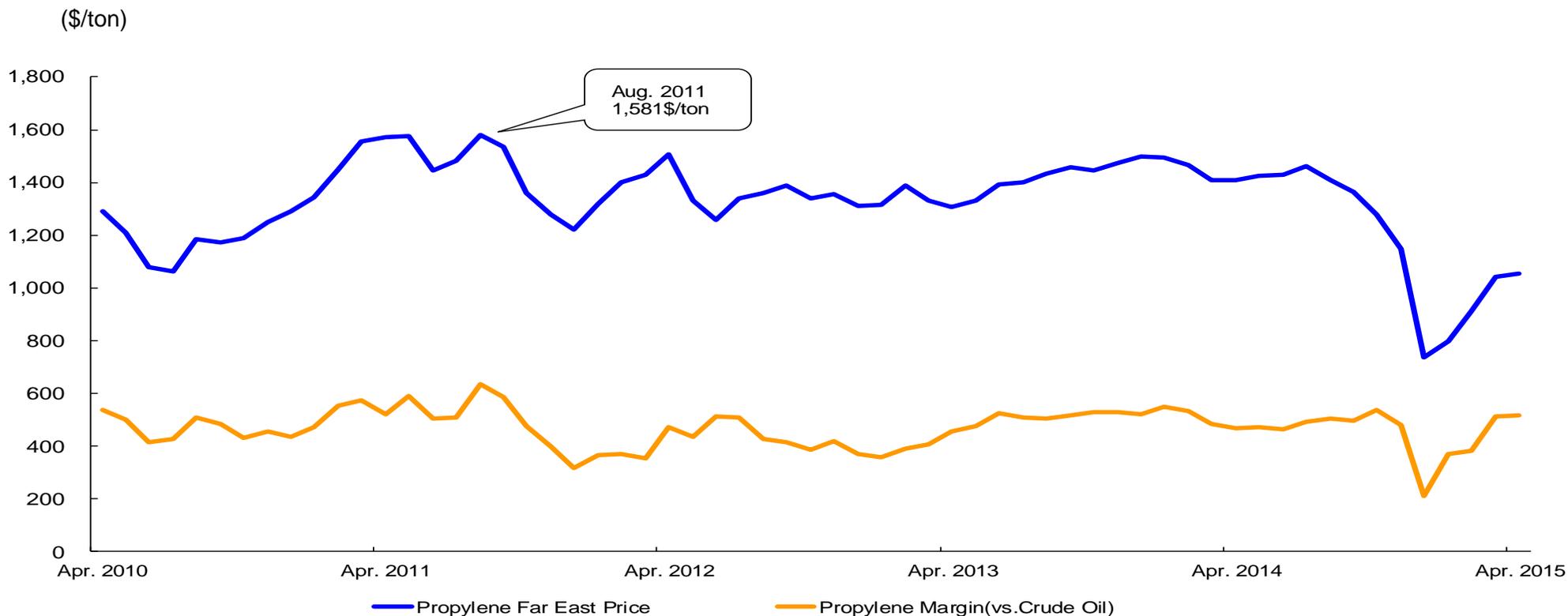
Average Price	FY2010	FY2011	FY2012	FY2013					FY2014				
				1Q	2Q	3Q	4Q	FY	1Q	2Q	3Q	4Q	FY
Asian Contract Price	948	1,111	1,255	1,309	1,252	1,293	1,331	1,296	1,274	1,377	1,060	650	1,090
Margin (vs. Crude Oil)	336	310	476	576	475	516	571	535	503	639	519	271	483





# Propylene Price and Margin (vs. Naphtha)

Average Price	FY2010	FY2011	FY2012	FY2013					FY2014				
				1Q	2Q	3Q	4Q	FY	1Q	2Q	3Q	4Q	FY
Far East Spot Price	1,258	1,383	1,353	1,344	1,430	1,473	1,457	1,426	1,420	1,412	1,056	918	1,201
Margin (vs. Naphtha)	484	362	426	486	510	527	522	511	468	498	409	424	450



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Business Environment  
- Oil and Natural Gas E&P Business -



## Next Page

Oil and Natural Gas E&P Business

# Principal Individual E&P Project Overview (U.K.①)



# Principal Individual E&P Project Overview ( U.K. ② )

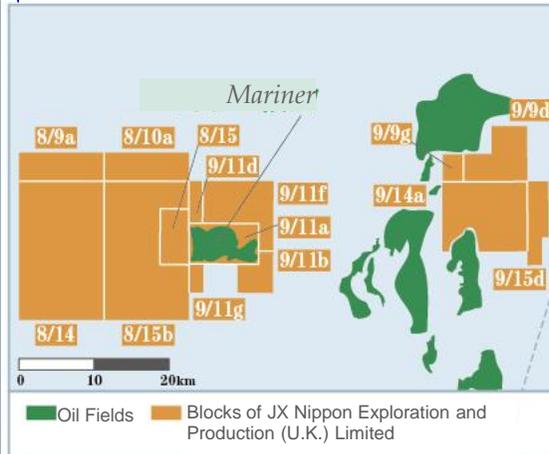
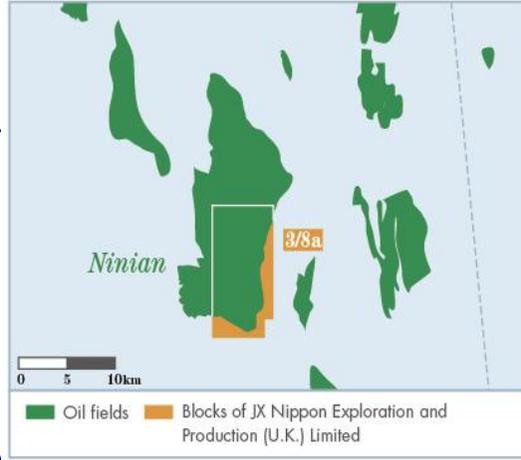
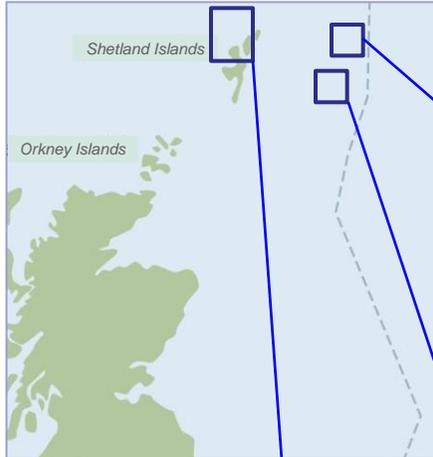


## U.K. North Sea ②

Development

Production

Exploration



	Mariner Field	Ninian Field	Exploration Areas
Company Holding the Acreages	JX Nippon Exploration and Production (U.K.) Ltd.		
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration (100%)		
Project Status	Development	Production	Exploration
Interest	28.89%	12.94%	17.5%~55%
Partners	Statoil (65.11%) Dyas (6.00%)	CNR(87.06%)	OMV, GDF and others
Operators	Statoil	CNR	JXNEPUK, OMV, GDF and others

### Development

#### Mining Area during Development : Mariner Oil Field

- In December 2012, acquired the explorational interest of Mariner Oil Field from ENI.
- In February 2013, decided to develop.  
In 2017 Production scheduled to commence.

### Exploration

#### Mining Area during Exploration West of Shetlands Area

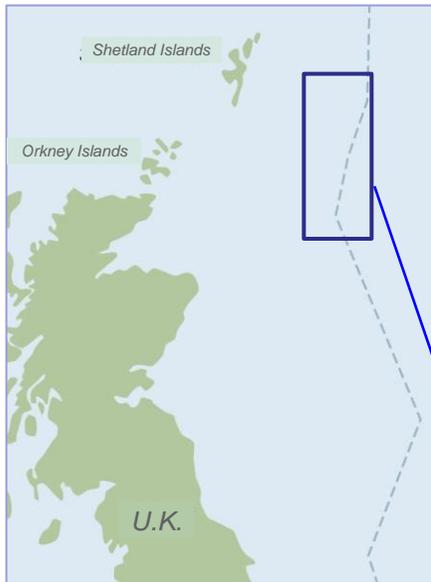
- In October 2012, new blocks are acquired by 27<sup>th</sup> round of governmental open tender.

# Principal Individual E&P Project Overview ( U.K. ③ )

## U.K. North Sea ③

Exploration

New blocks are acquired in 2014 by 28<sup>th</sup> round of governmental open tender .



	North Sea Central Area	North Sea Northern Area
	16/22c	8/9a, 8/10a, 8/14, 8/15b, 9/11f, 9/11g
Company Holding the Acreages	JX Nippon Exploration and Production (U.K.) Ltd.	
Shareholders (Holding Percentages)	JX Nippon Oil & Gas Exploration (100%)	JX Nippon Oil & Gas Exploration (100%)
Project Status	Exploration	
Interest	30.00%	28.89%
Partners	BP (70.00%)	Statoil (65.11%)
		Dyas (6.00%)
Operator	BP	Statoil

These areas are next to the Andrew oil field and developed Mariner oil field which are our main asset, in the case when oil and gas field were found, we expect developing cost reduction by using facilities in these oil fields.



## Next Page

Oil and Natural Gas E&P Business

# Principal Individual E&P Project Overview (U.S.①)

# Principal Individual E&P Project Overview (U.S.①)

## Gulf of Mexico

### Production



We hold assets in the Gulf of Mexico in the United States, which range from the continental shelf (less than 200meters in depth) to deep water area (more than 200 meter in depth).

	K2 (offshore)	Orchard North (onshore)	MP140,ST179, WC265/266 (offshore)
Company holding the Acreage	JX Nippon Oil Exploration(U.S.A.) Ltd.		
Shareholders(Holding Percentages)	JX Holdings (U.S.A.) Inc.(100%)		
Project Status	Production	Production	Production
Interest	11.6%	50.0%	35.0%~62.5%
Partners	Anadarko(41.8%) ENI(13.4%) ConocoPhillips(12.4%) MCX(11.6%) EcoPetro(9.2%)	Hilcorp (50.0%)	Fieldwood Dynamic Ranger Tarpon
Operator	Anadarko	Hilcorp	Fieldwood, Others
Sales Volumes(Jan.~Dec. 2014)	2,900 boed (Oil 1,900b/d, Gas 6.2mmcf/d)		

### Production

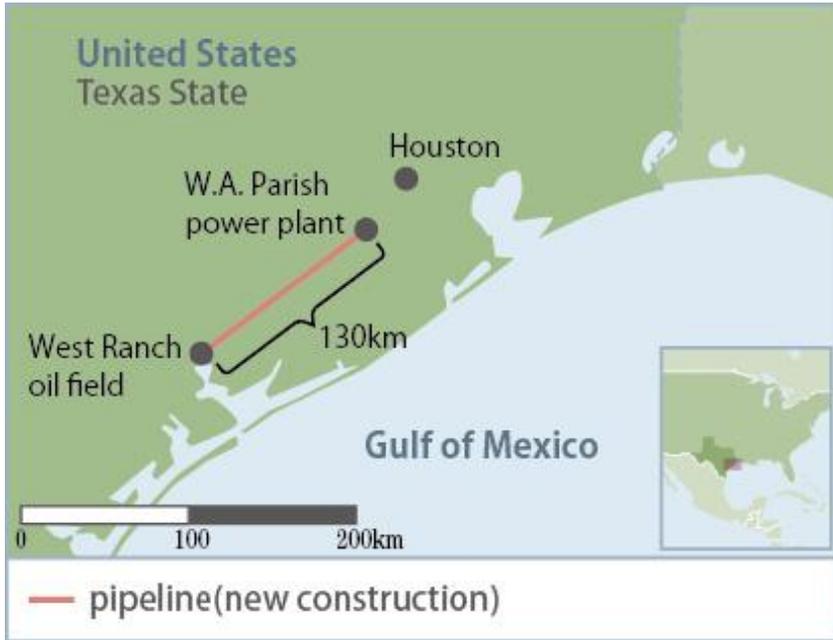
#### Mining Area during the productionK2, Orchard North, MP140, ST179, WC265/266

- In 1990, began exploration, development, and production operations at an onshore field in Texas and offshore blocks in both deep as well as shallow waters in the Gulf of Mexico.
- In addition to continuing such existing operations as those in the Orchard North Gas Field, Aconcagua Gas Field, and Virgo Gas Field, purchased interests in certain producing assets in the Gulf of Mexico from Devon in 2005 and from Anadarko in 2007.

# Principal Individual E&P Project Overview (U.S.②)

Texas

Development



Constructing carbon capture system that captures 90% of carbon dioxide (CO<sub>2</sub>) in the processed flue gas from an existing unit at the WA Parish power plant, and by pressing captured carbon dioxide in West Ranch oil field, trying to increase crude oil production.

EOR is expected to boost oil production at the field from around 500barrels per day to approximately 12,000 barrels per day (average for project terms).

	CO <sub>2</sub> -EOR Project
Operating Company of JX NOEX	JX Nippon Oil Exploration (EOR) Ltd.
Shareholders (Holding Percentages)	JX Nippon Oil Exploration (U.S.A.) Ltd. (100%)
Project Status	Development
Interest	50.0%
Project Company	Petra Nova Parish Holdings LLC *

\* A company half-funded by JX Nippon Oil Exploration (EOR) Ltd. and NRG Energy Inc. Group

Development

## CO<sub>2</sub>-EOR Project

- In July 2014, participated in CO<sub>2</sub>-EOR business.
- In 4<sup>th</sup> quarter of 2016, scheduled to start production.



# Principal Individual E&P Project Overview (Canada)

Canada

Production

Development



	Syncrude Project
Company Holding the Acreages	Japan Canada Oil/Mocal Energy
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration (100%)
Project Status	Development / Production
Interest	5.0%
Partners	Canadian Oil Sands (36.7%) Imperial Oil Resources (25.0%) Suncor Energy (12.0%) Sinopec (9.0%) Nexen (7.2%) Murphy Oil Company (5.0%)
Operator	Syncrude Canada
Sales Volume(Jan.-Dec. 2014)	12,900boed (oil 12,900b/d)

We are a partner in the Syncrude Project that produces synthetic crude oil from oil sand, the sand containing bitumen, huge deposits of which are found in Canada.

Production

- In 1978, Started Shipment of Synthetic Crude Oil.
- In 1992, acquired a working interest from PetroCanada.

## Next Page

Oil and Natural Gas E&P Business

# Principal Individual E&P Project Overview (Vietnam ①)

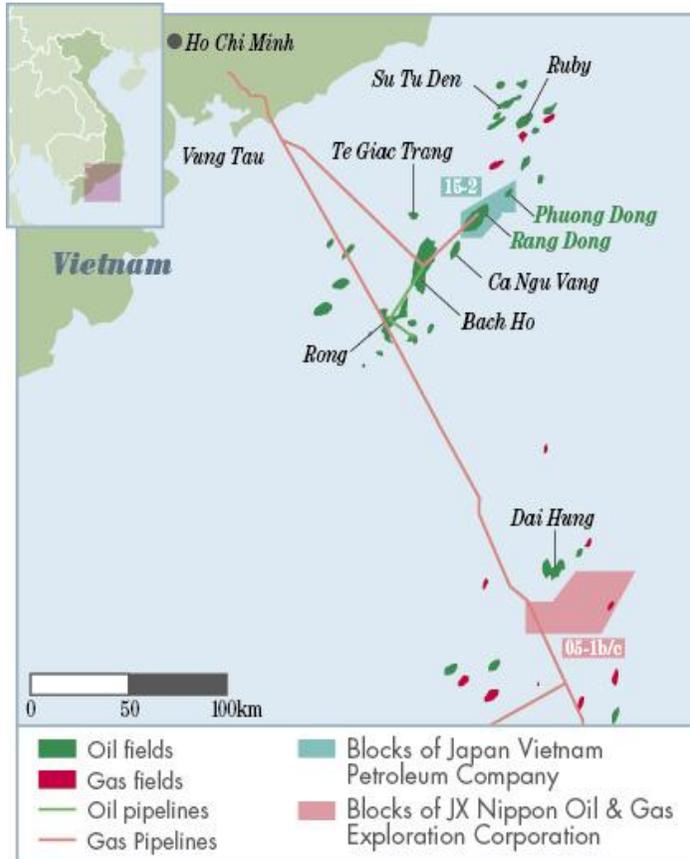
# Principal Individual E&P Project Overview (Vietnam ①)

Vietnam

Production

Development

Exploration



	Block 15-2		Block 05-1b/c
	Rang Dong Oil Field	Phuong Dong Oil Field	
Company Holding the Acreages	Japan Vietnam Petroleum Company		JX Nippon Oil & Gas Exploration
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration (97.1%) Mitsubishi Corporation (2.9%)		-
Project Status	Exploration/Development/Production		Exploration
Interest	46.5%	64.5%	35.0%
Partners	PVEP (17.5%) Perenco (36.0%)	PVEP (35.5%)	Idemitsu Kosan (35.0%) INPEX (30.0%)
Operator	Japan Vietnam Petroleum Company		Idemitsu Kosan
Sales Volume (Jan.-Dec. 2014)	7,600 boed (oil 6,300b/d, gas 7.9mmcf/d)		-

## Principal Individual E&P Project Overview (Vietnam ②)

### Block 15-2 ( Rang Dong, Phuong Dong Oil Fields)

Production

Development

Exploration

Since the acquisition in 1992, the project has been one of our key operations. JVPC, our subsidiary, act as operator in the block. The Rang Dong Oil Field and The Phuong Dong Oil Field feature an unconventional fractured granite basement rock reservoir that is unique in the world. Our fracture evaluation technology is highly valued and receiving worldwide recognition. As part of our corporate activities, we have been promoting social welfare activities in Vietnam to improve the lives of the people of Vietnam, furthermore, we have been implementing a CDM project aimed at reducing greenhouse gas emissions.

- In 1992, JVPC acquired a working interest in block 15-2
- In 1994, JVPC discovered the [Rang Dong Oil Field](#) within block 15-2, and it began production in that field from 1998.
- In February 2008 and April 2011, Rang Dong CDM Project received CER (Certified Emission Reductions) issuance approval under the Kyoto Protocol.
- In July 2008, Rang Dong Oil Field achieved a cumulative production volume of 150 million barrels.
- In August 2008, JVPC began production in the [Phuong Dong Oil Field](#).
- In November 2013, determined on term extension of the Rang Dong Oil Field (5 years).
- In July 2014, block 15-2 achieved a cumulative production volume of 200 million barrels.
- In October 2014, JVPC began HCG-EOR project.

### Block 05-1b/c

Exploration

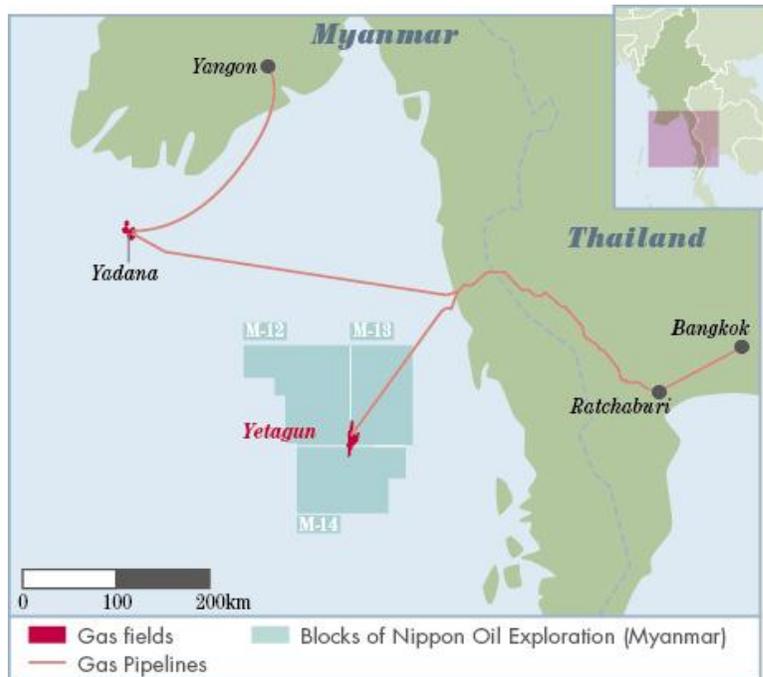
- In October 2004, acquired a working interest in [block 05-1b/c](#) offshore Vietnam.
- In February 2007, excavated test well No.1.
- In August 2010, excavated test well No.2, and discovered gas and oil.
- In August 2012, excavated appraisal well No.1.
- In June 2013, confirmed gas and condensate.
- In August 2014, discovered gas and condensate.

# Principal Individual E&P Project Overview (Myanmar)

Myanmar

Production

Exploration



We have been participating in the Yetagun project in Myanmar since exploration stage. After the appraisal activities and the construction of the production and shipping facilities, the project is now at a stable production stage.

	Bolock M-12, 13, 14
Company Holding the Acreages	Nippon Oil Exploration (Myanmar)
Shareholders (Holding Percentages)	JX Nippon Oil & Gas Exploration (40.0%) Mitsubishi Corporation (10.0%) Government of Japan (50.0%)
Project Status	Exploration / Development / Production
Interest	19.3%
Partners	Petronas Carigali (40.9%) MOGE(20.5%) PTTEP International (19.3%)
Operator	Petronas Carigali
Sales Volume (Jan.-Dec. 2014)	8,000boed (oil 600b/d, gas 44.3mmcf/d)

- In 1991, NOEX Myanmar acquired a working interest in [blocks M-13/14](#) offshore Myanmar.
- The following year, acquired a working interest in [block M-12](#) and discovered the Yetagun Gas Field in that block.
- In 2000, production at the Yetagun Gas Field commenced, with the produced gas supplied to the Ratchaburi power plants in Thailand.
- In December 2013, sold 10% of Nippon Oil Exploration (Myanmar)'s stock to Mitsubishi Corporation.
- In September 2014, excavated test well No.1.
- In October 2014, began production in the Yetagun North Gas Field.

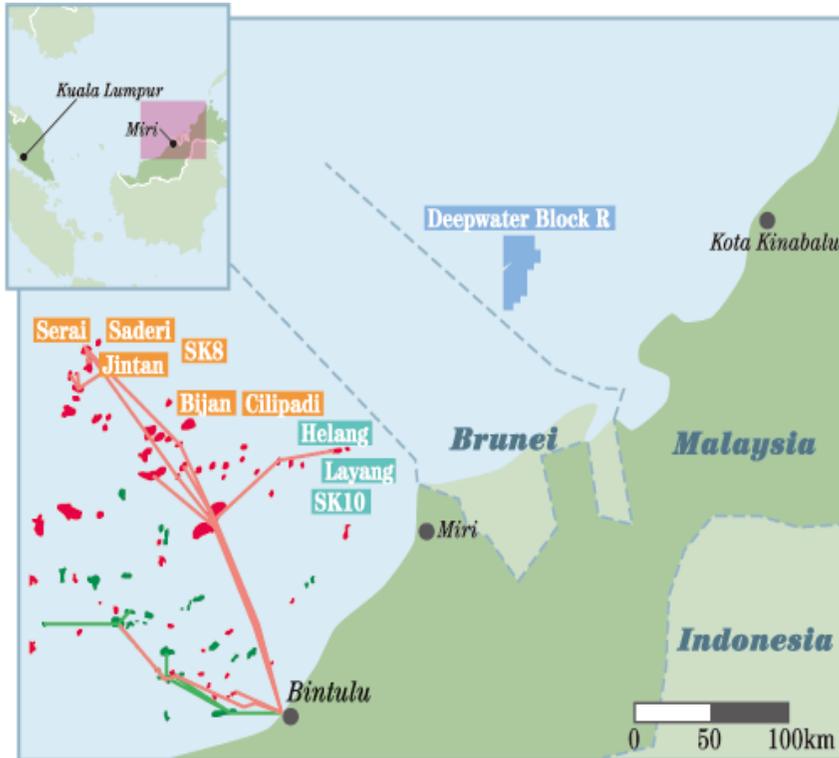
# Principal Individual E&P Project Overview (Malaysia ①)

Malaysia

Production

Development

Exploration



- Oil fields
- Gas fields
- Oil pipelines
- Gas Pipelines
- JX Nippon Oil & Gas Exploration (Malaysia)
- JX Nippon Oil & Gas Exploration (Sarawak)
- JX Nippon Oil & Gas Exploration (Deepwater Sabah)

	SK10 (Herang Gas Field, Others)	SK8 (Jintan, Cilipadi Gas Field, Others)
Company holding the Acreage	JX Nippon Oil & Gas Exploration (Malaysia)	JX Nippon Oil & Gas Exploration (Sarawak)
Shareholders (Holding Percentages)	JX Nippon Oil & Gas Exploration (78.7%) Inpex (15.0%) Mitsubishi Corporation (6.3%)	JX Nippon Oil & Gas Exploration (76.5%) Inpex (15.0%) Mitsubishi Corporation (8.5%)
Project Status	Exploration/Development/Production	Development/Production
Interest	75.0%	37.5%
Partnaers	Petronas Carigali (25.0%)	Shell Oil and Gas Malaysia (37.5%) Petronas Carigali (25.0%)
Operator	JX Nippon Oil & Gas Exploration (Malaysia)	Shell Oil and Gas Malaysia
Sales Volume (Jan.-Dec. 2014)	19,800boed (Oil 3,000b/d, Gas 100.6mmcf/d)	13,400boed (Oil 1,400b/d, Gas 71.9mmcf/d)

# Principal Individual E&P Project Overview (Malaysia ②)

## Block SK10 (Helang Gas Field and others)

Since the acquisition of Block SK10 in 1987, the project has been one of our key operations. We act as the operator in the block. The natural gas from the block is exported in the form of liquefied natural gas (LNG) to various countries including Japan.

Production

Development

Exploration

### Mining Area during the production SK10 (Helang Gas Field)

- In 1987, acquired a working interest in Block SK10 offshore Sarawak, Malaysia.
- In 1990, discovered the Helang Gas Field, where production commenced in 2003.
- In 1991, discovered the Layang Oil and Gas Field.
- In 2014, decided to develop the Layang Oil and Gas Field.

## Block SK8 (Jintan, Cilipadi Gas Fields and others)

Production

Development

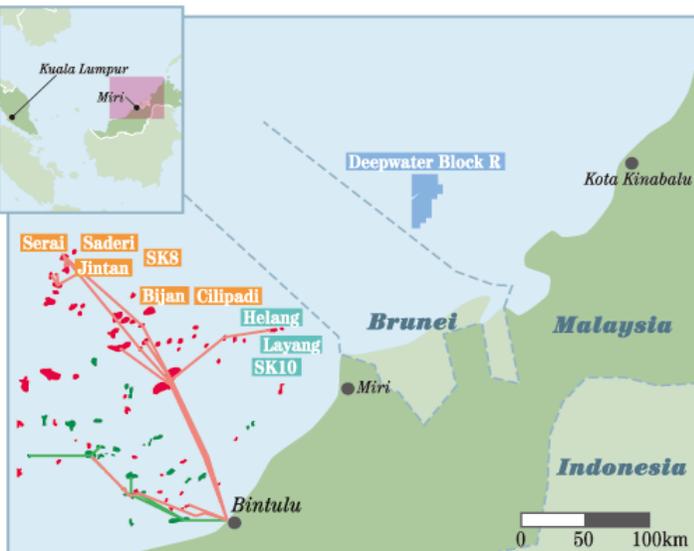
### Mining Area during the production SK8 (Jintan, Saderi, Cilipadi Gas Fields)

- In 1991, acquired a working interest in Block SK8 .
- From 1992 through 1994, the Jintan and other 6 gas fields were discovered in that block, and production of Jintan and Serai were commenced in 2004.
- In 2008, the Saderi Gas Field commenced production.
- In 2011, the Cilipadi Gas Field commenced production.

# Principal Individual E&P Project Overview (Malaysia ③)

Malaysia

Exploration



- Oil fields
- Gas fields
- Oil pipelines
- Gas Pipelines
- JX Nippon Oil & Gas Exploration (Malaysia)
- JX Nippon Oil & Gas Exploration (Sarawak)
- JX Nippon Oil & Gas Exploration (Deepwater Sabah)

	PM308A	Deepwater Block R
Company holding the Acreage	JX Nippon Oil & Gas Exploration (Peninsular Malaysia)	JX Nippon Oil & Gas Exploration (Deepwater Sabah)
Shareholders (Holding Percentages)	JX Nippon Oil & Gas Exploration (32.3%) JOGMEC (67.7%)	JX Nippon Oil & Gas Exploration (100%)
Project Status	Exploration	Exploration
Interest	40.0%	27.5%
Partners	Lundin Malaysia(35.0%) Petronas Carigali(25.0%)	Inpex Offshore South Sabah(27.5%) Petronas Carigali(25.0%) Santos Sabah BlockR(20.0%)
Operator	Lundin Malaysia	JX Nippon Oil & Gas Exploration (Deepwater Sabah)

	Deepwater Block 2F	Deepwater Block 3F
Company holding the Acreage	JX Nippon Oil & Gas Exploration (Offshore Malaysia)	JX Nippon Oil & Gas Exploration (Offshore Malaysia)
Shareholders (Holding Percentages)	JX Nippon Oil & Gas Exploration (100%)	JX Nippon Oil & Gas Exploration (100%)
Project Status	Exploration	Exploration
Interest	40.0%	40.0%
Partners	Petronas Carigali (40.0%) GDF Suez E&P Malaysia (20.0%)	Petronas Carigali (40.0%) GDF Suez E&P Malaysia (20.0%)
Operator	JX Nippon Oil & Gas Exploration (Offshore Malaysia)	Petronas Carigali



# Principal Individual E&P Project Overview (Malaysia ④)

## Block PM308A

### Exploration

- In April 2008, acquired a working interest in [Block PM308A](#) offshore peninsular Malaysia.

## Deepwater Block 2F

### Exploration

- In September 2013, acquired a working interest in [Deepwater Block 2F](#) deep sea, offshore Sarawak, Malaysia.

## Deepwater Block R

### Exploration

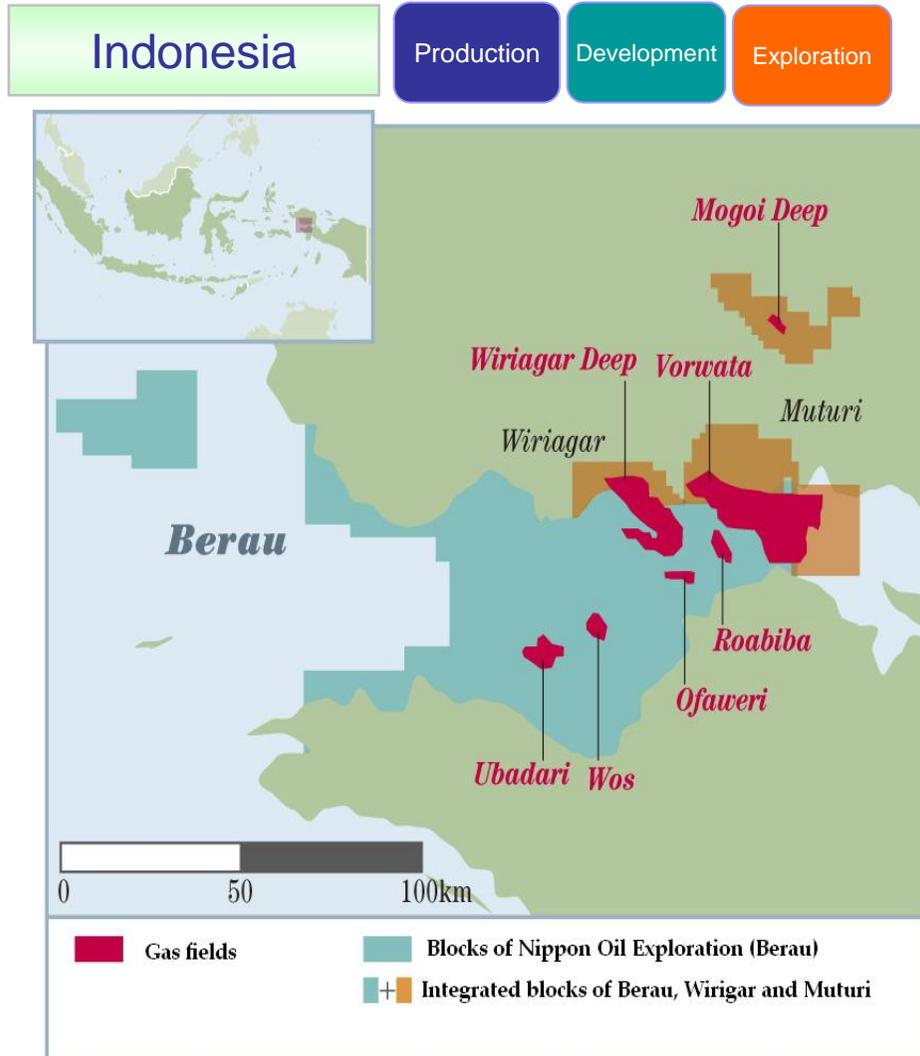
- In January 2012, acquired a working interest in [Deepwater Block R](#) deep sea, offshore Sabah, Malaysia.
- In April 2015, discovered oil.

## Deepwater Block 3F

### Exploration

- In December 2013, acquired a working interest in [Deepwater Block 3F](#) deep sea, offshore Sarawak, Malaysia.

# Principal Individual E&P Project Overview (Indonesia)



	Tangguh LNG Project	
Company Holding the Acreages	Nippon Oil Exploration (Berau)	
Shareholders (Holding Percentages)	JX Nippon Oil & Gas Exploration (51.0%) JOGMEC (49.0%)	
Project Status	Exploration/Development/Production	
Interest	12.2%(After Unitization)	
Partners	BP(37.2%) MI Berau(16.3%) CNOOC(13.9%)	KG Berau / KG Wiriagar (10.0%) LNG Japan (7.3%) Talisman (3.1%)
Operator	BP	
Sales Volumes (Jan.~Dec. 2014)	17,700boed (oil 500b/d, gas 103.2mmcf/d)	

This is the second LNG project we have participated in, following the LNG Tiga project in Malaysia, and we are working to attain long-term and stable LNG production and revenue.

**Production** Project during the production :  
Tangguh LNG Project

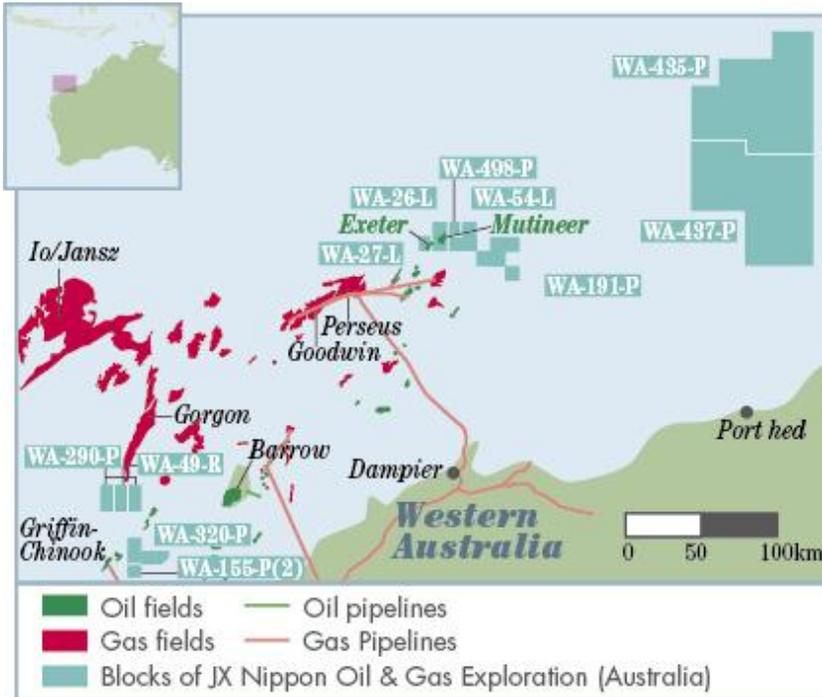
- From 1990, excavated three test wells, natural gas was discovered in the area. Subsequently, discovered natural gas in the Vorwata Gas Field, Wiriagar Deep structure, and other gas field.
- From December 2002, those with interests in the Berau, Wiriagar, and Muturi blocks agreed to become partners in unitizing the blocks and undertake development work cooperatively.
- LNG production commenced in June 2009, and the first cargo was shipped in July 2009.

# Principal Individual E&P Project Overview (Australia①)

Australia

Production

Exploration



	Mutineer/Exeter Oil Field	Finucane South Oil Field Block WA-191-P
Company Holding the Acreages	JX Nippon Oil & Gas Exploration (Australia) Pty Ltd	
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration(100%)	
Project Status	Production	Exploration/Production
Interest	25.0%	25.0%
Partners	Santos (37.5%) Kufpec (37.5%)	Santos (37.4977%) Kufpec (37.5023%)
Operator	Santos	Santos
Sales Volumes (Jan. ~ Dec. 2014)	1,800 boed(Oil 1,800b/d)	

We are producing high-quality low-sulfur crude oil from Mutineer / Exeter oil fields. Revenue from the sales of the crude oil is used for new exploration activities within Australia and in May 2014, newly started production from Finucane South Oil Field.

Production

Exploration

- In May 1997, acquired a working interest in Block WA-191-P (present Block WA-26/27-L)
- From 1997 to 2002, discovered Mutineer and Exeter Oil Fields
- In March 2005, oil production commenced in Mutineer and Exeter Oil Fields
- In May 2011, discovered oil in Finucane sSouth structure.
- In May 2013, oil production commenced in Finucane South Oil Fields.

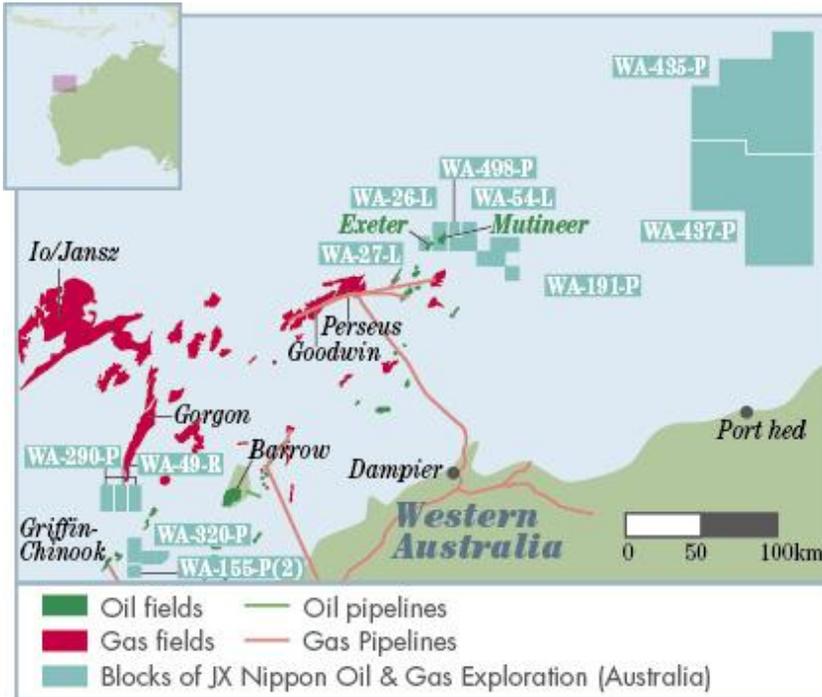


# Principal Individual E&P Project Overview (Australia②)

Australia

Production

Exploration



	WA-290-P WA-49-R	WA-435-P WA-437-P	WA-320-P
Company Holding the Acreages	JX Nippon Oil & Gas Exploration (Australia) Pty Ltd		
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration (100%)		
Project Status	Exploration	Exploration	Exploration
Interest	15.0%	20.0%	10.0%
Partners	Apache (30.25%) Santos (24.75%) OMV(20.00%) Tap(10.00%)	Apache (40.0%) Finder (20.0%) Carnarvon (20.0%)	Apache (40.665%) OMV (39.557%) Tap (9.778%)
Operator	Apache	Apache	Apache

	WA-155-P(2)	WA-498-P
Company Holding the Acreages	JX Nippon Oil & Gas Exploration (Australia) Pty Ltd	
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration (100%)	
Project Status	Exploration	Exploration
Interest	7.0%	25.0%
Partners	Apache (40.665%) OMV(27.11%) Inpex(18.67%) Tap(6.555%)	Santos (75.0%)
Operator	Apache	Santos



# Principal Individual E&P Project Overview (Australia③)

## Block WA-290-P,Block WA-49-R

### Exploration

- In April 2011, excavated test well "Zola-1", and discovered Gas
- In July 2013, excavated appraisable well "Bianchi-1", and discovered Gas

## Block WA-320-P,Block WA-155-P(2)

### Exploration

- In June 2013, acquired working interests in Block WA-320-P and Block WA-155-P

## Block WA-435-P,Block WA-437-P

### Exploration

- In October 2012, acquired working interests in Block WA-435-P and Block WA-437-P
- In August 2014, discovered oil in Block WA-435-P

## WA-498-P

### Exploration

- In April 2014, acquired working interests in WA-498-P.



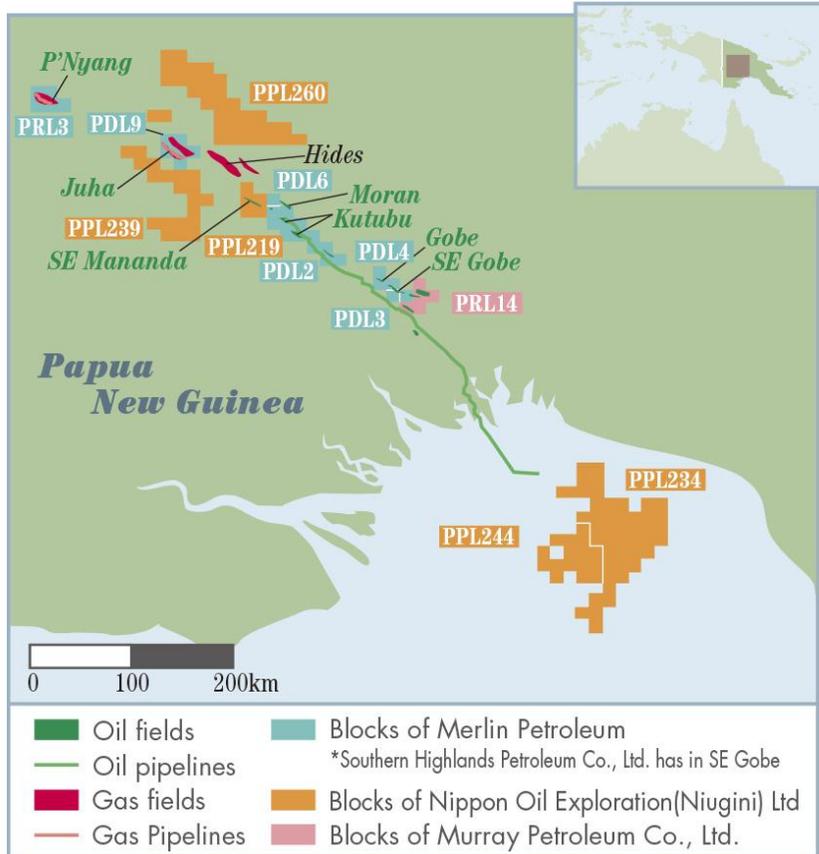
# Principal Individual E&P Project Overview (Papua New Guinea ①)

## Papua New Guinea

Production

Development

Exploration



	Kutubu, Moran, Gobe oil fields, Others	PNG LNG Project
Company Holding the Acreages	Merlin Petroleum Company (79.0%) Nippon Oil Exploration (Niugini) Pty LTD (33.3%) Southern Highland Petroleum (80.0%) Murray Petroleum (29.6%)	Nippon Papua New Guinea LNG LLC (79.0%)
Project Status	Exploration / Development / Production	Production
Interest	8.6%~73.5%	4.68%
Partners	Oil Search ExxonMobil Santos Talisman Others	ExxonMobil (33.20%) Oil Search (29.00%) Santos (13.53%) PNG Government, Landowners (19.58%)
Operator	Oil Search, ExxonMobil, Others	ExxonMobil
Sales Volume (Jan.-Dec. 2014)	9,600 boed (oil 6,100b/d, gas 20.7mmcf/d)	



# Principal Individual E&P Project Overview (Papua New Guinea ②)

## Kutubu, Moran, Gobe oil fields and others

### Production

- In 1990, Japan Papua New Guinea Petroleum acquired Merlin and acquired original exploration rights of Merlin in Papua New Guinea. Subsequently, development, and production activities have been undertaken in the [Kutubu, Moran, Gobe, SE Gobe, and SE Mananda oil fields](#).
- In 2008, acquired additional equity of oil field from AGL Energy.

### Exploration

- In April 2011, excavated test well "Mananda-5" in [Block PPL219](#), and discovered oil.

## PNG LNG Project

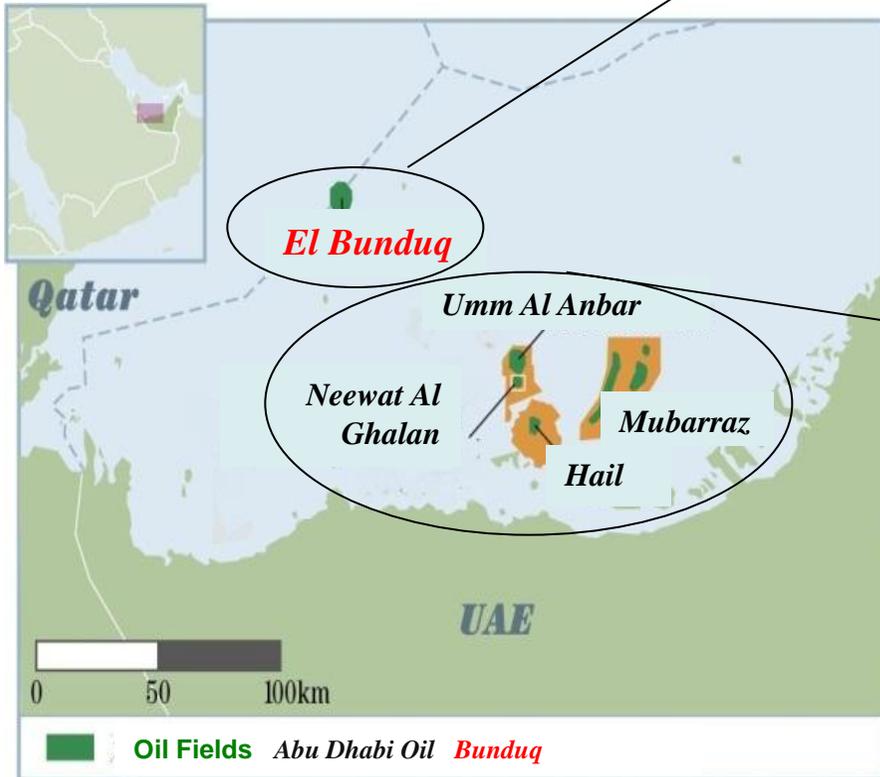
### Development

#### Project during the development PNG LNG Project

We have been involved in PNG LNG Project since the beginning of the project. In December 2009, we made a Final Investment Decision on the Project, and the development work is in progress with the goal of starting shipments in 2014. PNG LNG Project has the full support of the PNG government, and we expect it to contribute to our revenues in the future.

- In December 2008, acquired the PNG LNG Project equity that AGL Energy owned.
- In December 2009, PNG LNG Project was made a final investment decision to proceed with the development.
- In May 2014, PNG LNG Project ships first LNG cargo.

# Principal Individual E&P Project Overview (UAE, Qatar ①)

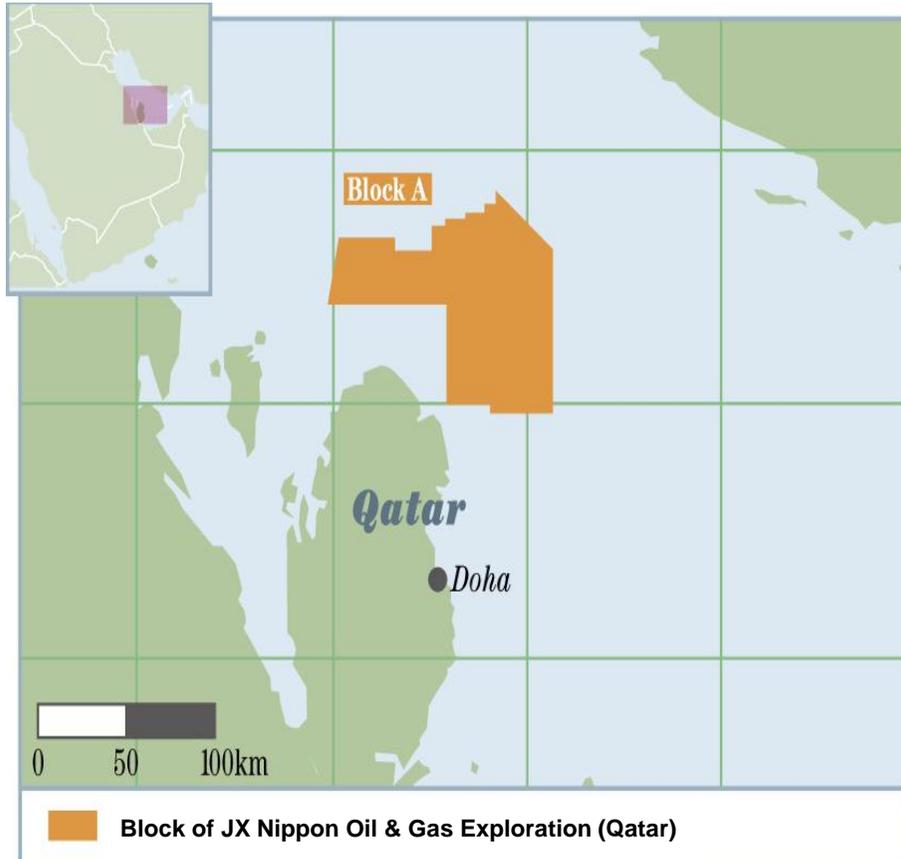


	El Bunduq
Company Holding the Acreages	United Petroleum Development (Bunduq Company Limited)
Partners	JX Nippon Oil & Gas Exploration (45.0%) Cosmo Energy Exploration & Production Co., Ltd. (45.0%) Mitsui Oil Exploration Co., Ltd.(10.0%)
Project Status	Exploration / Development / Production
Interest	97.0%
Partners	BP (3%)
Operator	Bunduq Company Limited
	<ul style="list-style-type: none"> <li>● In 1970, United petroleum Development acquired a working interest of El Bunduque Oil Field.</li> <li>● In 1975, oil production commenced in <a href="#">El Bunduq oil field</a>.</li> <li>● In 1983, oil production was resumed by a secondary recovery scheme using water injection.</li> <li>● In 2006, El Bunduque achieved a cumulative production volume of 200 million barrels.</li> </ul>
	Mubarraz, Umm Al-Anbar, Neewat Al-Ghalan
Company Holding the Acreages	Abu Dhabi Oil
Partners	JX Nippon Oil & Gas Exploration (32.1%) Cosmo Abu Dhabi Energy Exploration & Production Co., Ltd.(64.2%) Chubu Electric Power Co., Inc.(1.9%) Kansai Electric Power Co., Inc.(1.9%)
Project Status	Exploration / Development / Production
Interest	100.0%
Operator	Abu Dhabi Oil
	<ul style="list-style-type: none"> <li>● In 1967, acquired a working interest in block of Mubarraz.</li> <li>● In 1973, oil production commenced in <a href="#">Mubarraz Oil Field</a>.</li> <li>● In 1989, oil production commenced in <a href="#">Umm Al Anbar Oil Field</a>.</li> <li>● In 1995, oil production commenced in <a href="#">Neewat Al Ghalan Oil Field</a>.</li> <li>● In2009, 3 fields achieved cumulative production volume of 300 million barrels.</li> <li>● In 2011, Sign a New Concession Agreement.</li> <li>● In 2012, Effectuation of New Concession Agreement.</li> </ul>

# Principal Individual E&P Project Overview (UAE, Qatar ②)

Qatar

Exploration



## Project Company

JX Nippon Oil & Gas Exploration (Qatar) Limited (51%)  
(%) = JX Group Shareholding

## Interest in Individual Fields

100%

## Operator

JX Nippon Oil & Gas Exploration (Qatar) Limited

## Exploration

- In May 2011, acquired a working interest in [Block A](#) (Pre-Khuff), offshore Qatar .
- In March 2012, established interest in Block A (Pre-Khuff), offshore Qatar officially came into effect.
- In August 2014, began excavating test well No1.



# JX Group's Reserve Standards

JX Group's criteria for evaluating reserves conforms to the PRMS (Petroleum Resources management System) Standards, drafted by the SPE (Society of Petroleum Engineers), WPC (World Petroleum Congress), AAPG (American Association of Petroleum Geologists), and SPEE (Society of Petroleum Evaluation Engineers).

JX Group's reported reserves are in line with reserves as defined by the PRMS Standards. The degree of certainty of the reserve values is categorized, in order, as either Proved, Probable, or Possible. Following trends common at other industry firms, JX Group's has used Proven and Probable reserves to arrive at its total reserves.

## **Definition of Proved Reserves:**

Reserves judged to have a high level of certainty from analysis of geoscience and production/petroleum engineering data, based on economic conditions, operational methods and laws and regulations assumed by JX Group in light of discovered reservoirs—there is at least a 90% probability that actual recovered volume will equal or exceed estimates of oil and natural gas deposits reasonably evaluated as commercially recoverable.

## **Definition of Probable Reserves:**

There is at least a 50% probability that additional oil and natural gas reserves will equal or exceed actual recovered volume of the total of estimated proved and probable reserves. While these additional reserves are evaluated in the same manner as proved reserves, the probability of recoverability of probable reserves is lower than proved reserves, but higher than possible reserves.

A thick teal curved line that starts on the left, rises to a peak, and then descends towards the right.

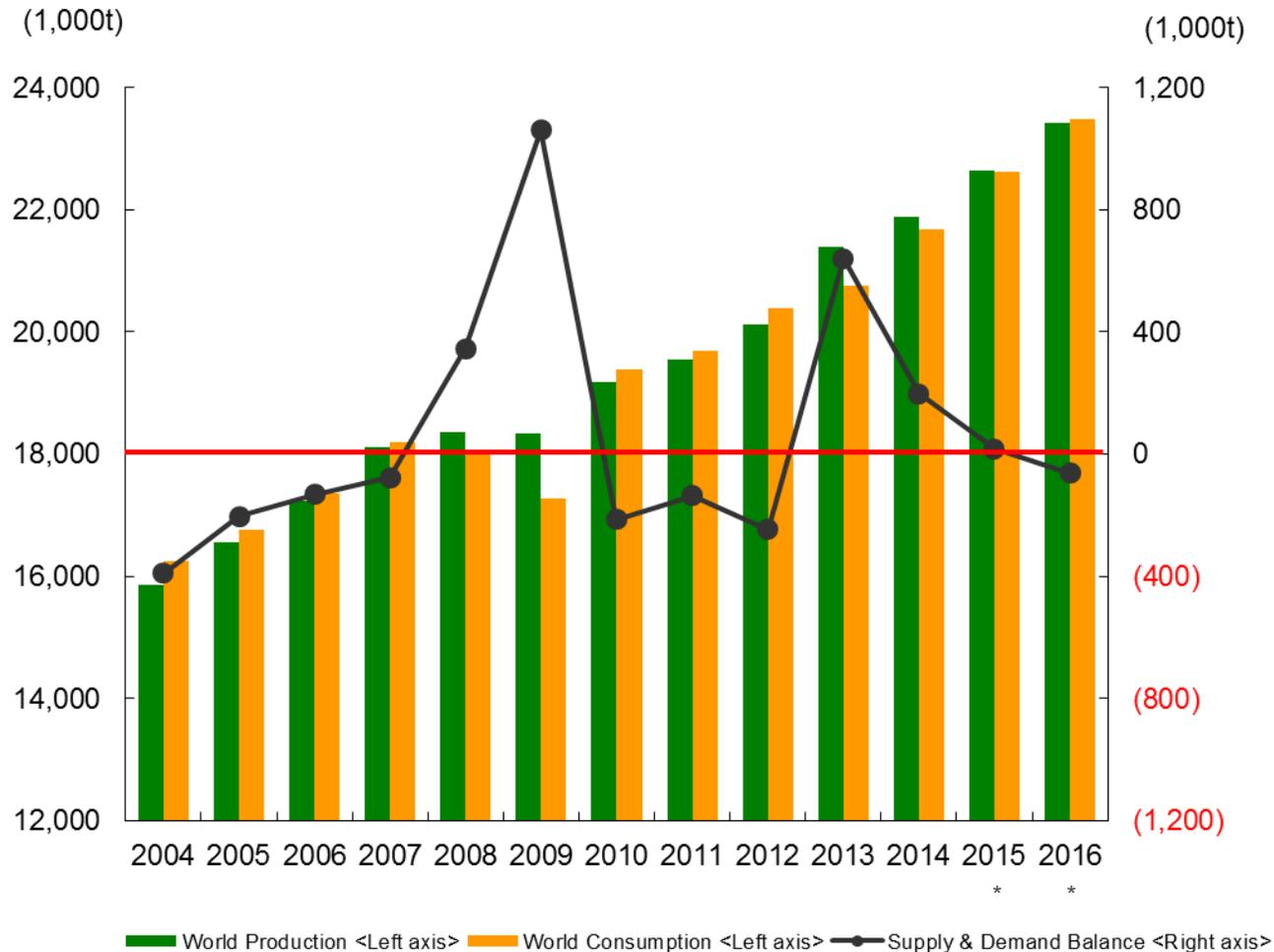
Business Environment and Data  
- Metals Business -

# Copper Production of JX Group's Mines

		CY2010	CY2011	CY2012	CY2013	CY2014
(Thousand ton)		Actual	Actual	Actual	Actual	Actual
Caserones	Copper concentrate*	-	-	-	-	19
	SX-EW cathode	-	-	-	16	27
	Total	-	-	-	16	46
Los Pelambres	Copper concentrate*	385	412	404	405	391
Collahuasi	Copper concentrate*	465	417	236	401	430
	SX-EW copper cathode	39	36	37	28	25
	Total	504	453	273	429	455
Escondida	Copper concentrate*	762	517	740	859	830
	SX-EW copper cathode	300	283	310	305	302
	Total	1,062	801	1,050	1,164	1,132

\* Payable copper contained in concentrate

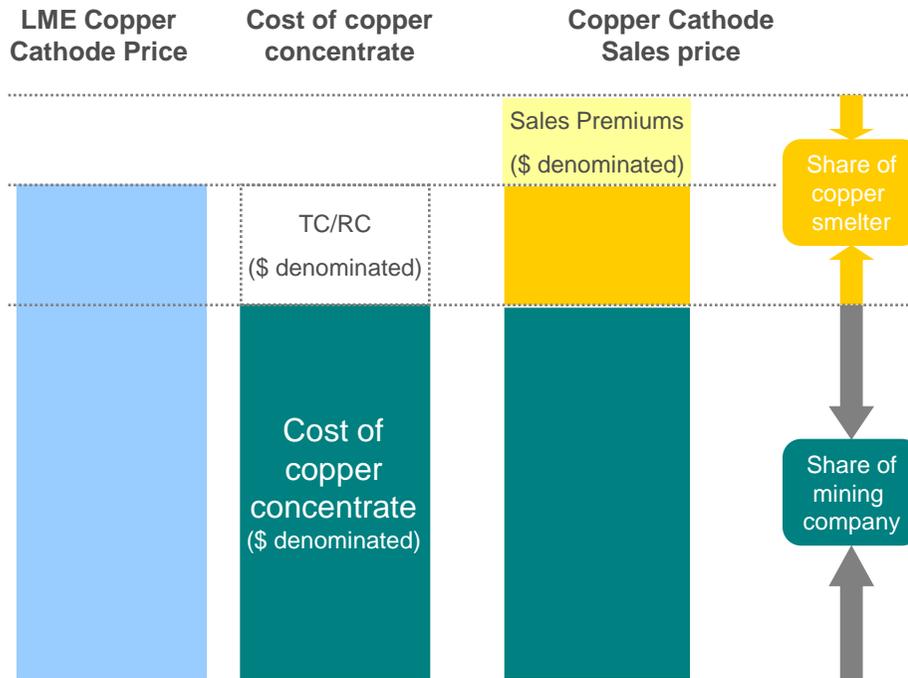
# World's Copper Cathodes Supply & Demand



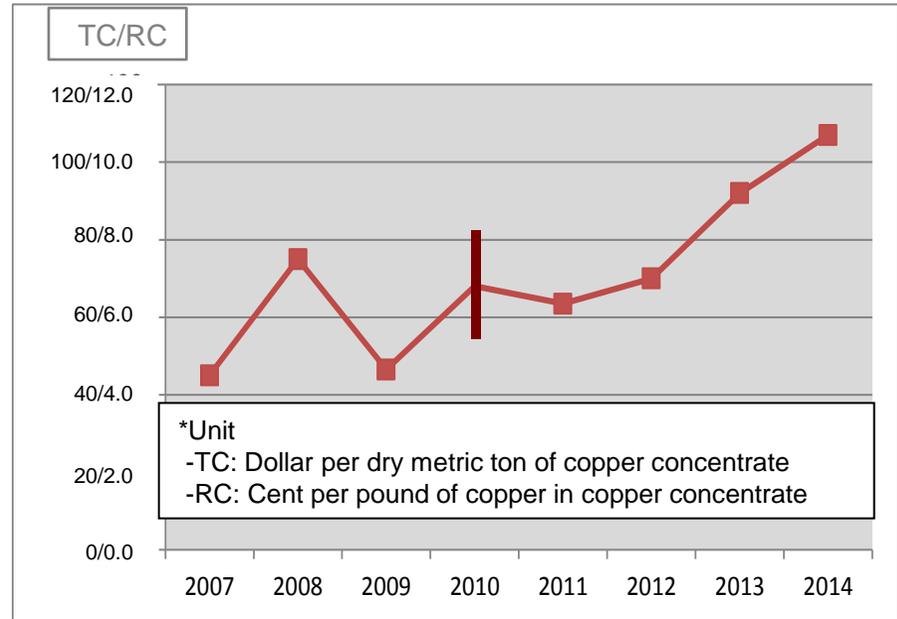
\*Forecasts by JX.

# Earnings Structure of Copper Smelting and Refining Business

## Earnings Structure of Copper Smelter & Refinery



## Trends of Base TC/RC (negotiation each year-end)



\* For 2010 year-end, several types of agreement have been made depending on negotiating parties, contractual period, etc..

### Cost of copper concentrate :

The price of copper concentrate, which custom smelters pay to mining companies, is LME copper cathode price less TC/RC, which is smelting and refining margins. TC/RC under long-term contracts is normally determined through annual negotiation between copper smelters and mining companies.

### Copper cathode sales price :

Actual sales price of copper cathode produced by copper smelters is LME price plus sales premium, which is established by reference to various factors including importation costs, qualities and others.

# N-Chlo Process

## N-Chlo Process

The N-Chlo Process is a new hydro-metallurgical process that we have uniquely developed.

The process enables the effective recovery of not only copper from low-grade copper concentrate, but also such precious metals as gold and silver .

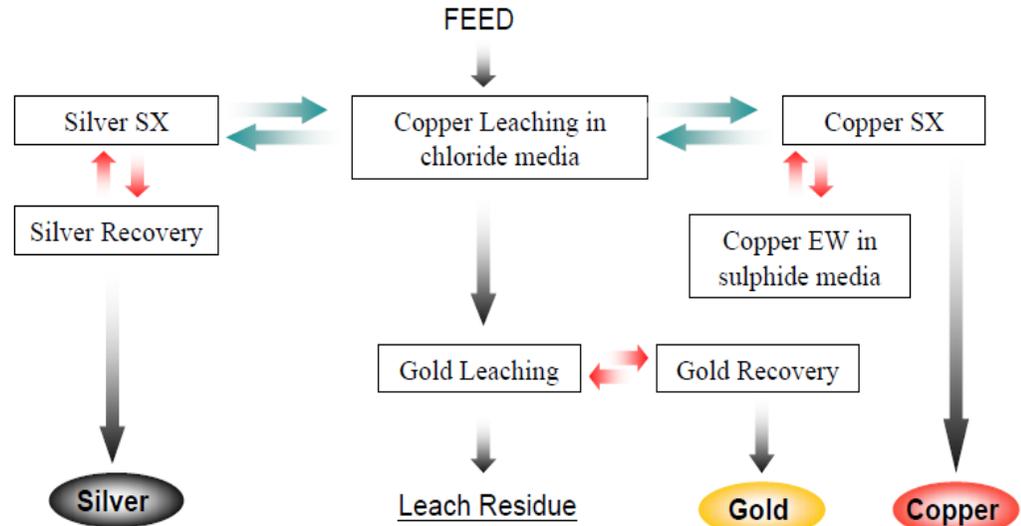
We constructed a pilot plant in Australia and had completed demonstration test FY2013, and we got a good result about copper and gold recovery.

We advance an effort to commercialize the process while searching the mines to apply the process.

Pilot plant in Perth, Australia (About 100t/year Cu recovery)



## Structure of N-Chlo Process



# Biomining



## Biomining

Biomining is a hydro-metallurgical method of extracting copper from copper ores in acidic condition accelerating the extraction by utilizing activity of microorganisms.

Low-grade primary copper sulfide ores have not been used enough as resources without economical recovery process. Biomining technology is mainly applicable to such ores and has great potential in future.

BioSigma S.A. was established in 2002 and started collaborative study of Biomining technology between JX Mining & Metals(33%) and CODELCO (67%).

Taking favorable results of the industrial test conducted at CODELCO's Radmido Tomic mine with low-grade primary copper sulfide ores, launch of commercial application of the technology to the mine was announced in August, 2014.

## Method of Biomining

【Type of Ore】	【Economical Process of Copper Recovery】	
Oxide Ore	Hydro-metallurgical Process (SX-EW) Leaching by sulfuric acid ~ Solvent extraction ~ Electrowinning	Pyro-metallurgical Process (Smelter & Refinery) Smelting ~ Electrorefining
Secondary Sulfide Ore		
Primary Sulfide Ore	Hydro-metallurgical Process (SX-EW) + Biomining technology Leaching by sulfuric acid (added microorganisms) ~ Solvent extraction ~ Electrowinning	
(Low-grade)		

