

Security Code

Tokyo 5020

Supplementary Information

March 28, 2013



The Future of Energy, Resources and Materials

JX Holdings, Inc.

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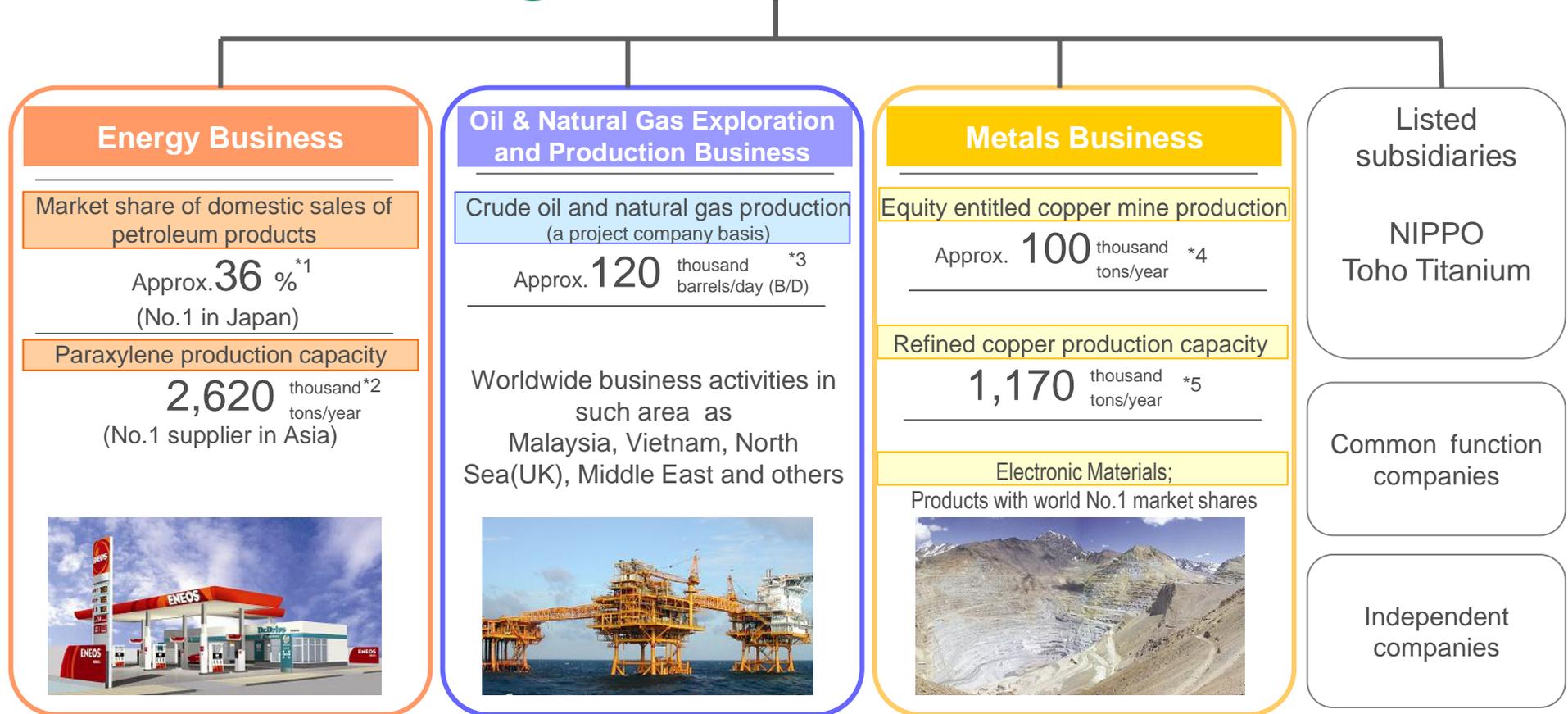
N-Chlo Process

58

Businesses Summary of JX Group



JX Holdings, Inc.



Energy Business

Market share of domestic sales of petroleum products

Approx. **36** %^{*1}
(No.1 in Japan)

Paraxylene production capacity

2,620 thousand^{*2}
tons/year
(No.1 supplier in Asia)



Oil & Natural Gas Exploration and Production Business

Crude oil and natural gas production
(a project company basis)

Approx. **120** thousand^{*3}
barrels/day (B/D)

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



Metals Business

Equity entitled copper mine production

Approx. **100** thousand^{*4}
tons/year

Refined copper production capacity

1,170 thousand^{*5}
tons/year

Electronic Materials;
Products with world No.1 market shares



Listed subsidiaries

NIPPO
Toho Titanium

Common function companies

Independent companies

*1 FY 2011 actual

*2 As of Mar. 2013

*3 Crude Oil Equivalent (Estimated average daily production from Jan. to Dec. 2012)

*4 Equity entitled copper production contained in copper concentrate (Estimated production from Jan. to Dec. 2012)

*5 Pan Pacific Copper(66.0% equity stake) ; 610 thousand tons/year + LS-Nikko Copper(39.9% equity stake) ;560 thousand tons/year (As of Mar. 2013)

Enhance Overseas Business (Paraxylene)



Main use of PX



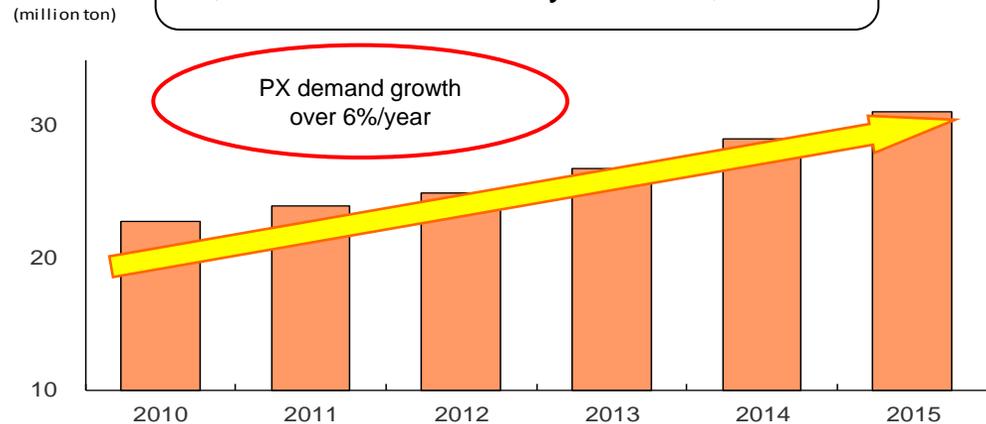
Polyester fiber



PET bottles

Forecast of PX Demand in Asia

Group current supply capacity of PX
2,620 thousand tons / year = **No.1 in Asia**



Source: Company data

Outline of PX joint venture project with SK Group of South Korea

Location : Ulsan, Korea

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

Production Start : 2014 (scheduled)

Investment : approx. 80 billion JPY

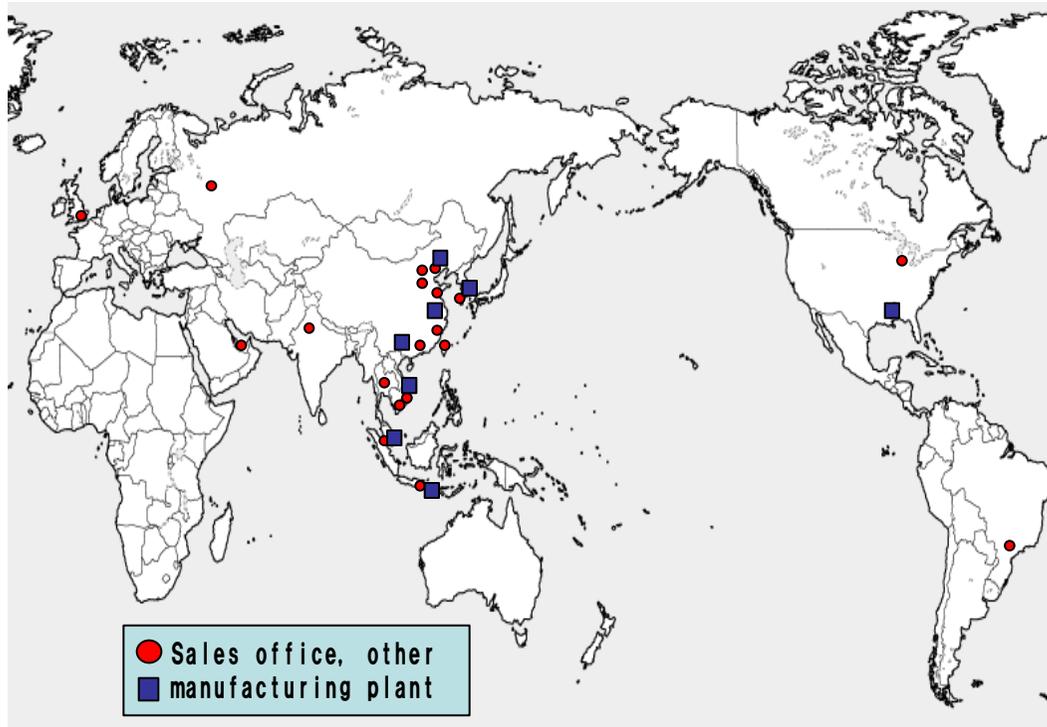
Ownership :

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

Enhance Overseas Business (Lubricants)



✓ Location of Overseas Lubricants Business (as of Dec. 2012)



➤ Mainly Asia, Total 13 countries, 23 offices/plants

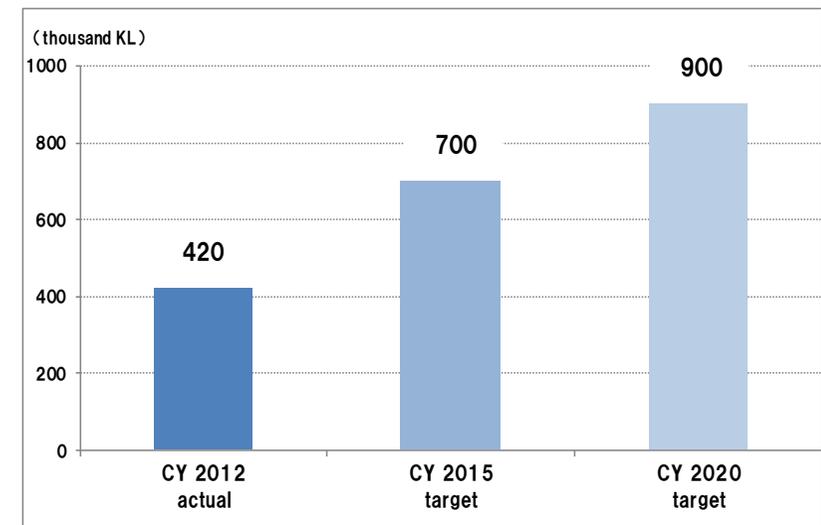
Sales office, other	15
Manufacturing plant	3
Sales / manufacturing base	5



✓ Expansion of Overseas Lubricants Business

- Established lubricants marketing company in Dubai. (Jul. 2011)
- Lubricants manufacturing plant started its operation in Indonesia. (Apr. 2012)
- Determined the establishment of lubricants manufacturing and marketing company in Vietnam. (scheduled to start production in 2014)
- Started joint venture business for lubricants base oil with SK Group of South Korea. (Oct. 2012)

✓ Medium Term Target of Overseas Lubricants Sales



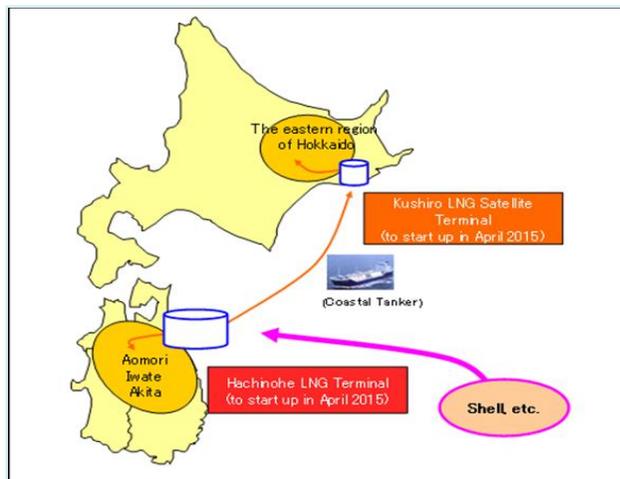
Action for Energy Conversion Company (LNG Business)



✓ Hachinohe LNG Terminal Project

- Promoting construction of Hachinohe LNG Import Terminal and Kushiro LNG Satellite Terminal.

- 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

【2013】	Hachinohe (Satellite Terminal)
Operation start	Mar. 2007
Tank capacity (thousand KL)	4.5 x1 tank



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

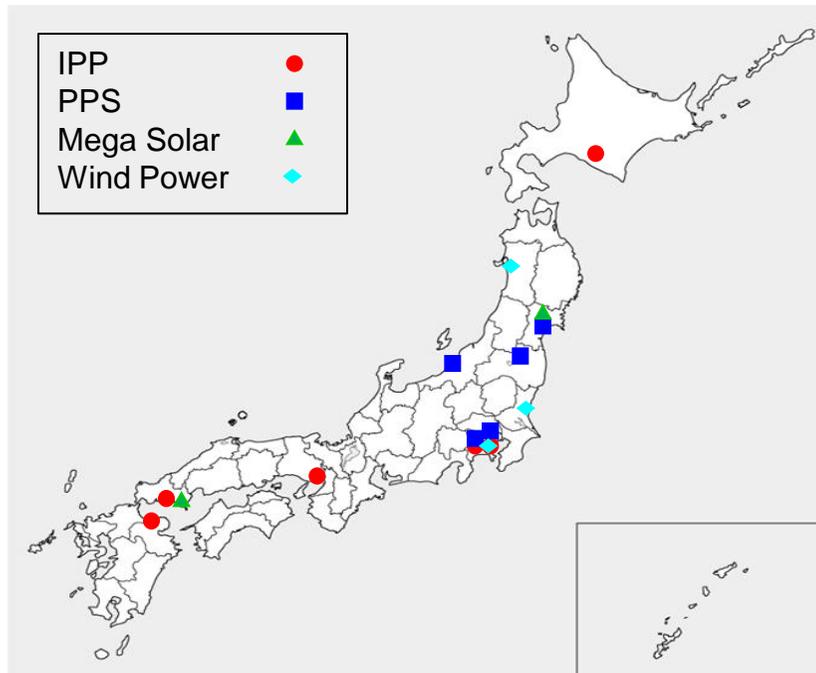
Mizushima LNG Import Terminal

	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 (Electricity Business, Fuel Cell)



✓ Location of Electricity Business (As of Feb. 2013)



✓ Expansion of Electricity Business

- Started IPP Business in Osaka , Negishi , Marihu and other refineries. (1998~2004)
- Entered PPS Business.(2003)
- Started receiving electricity from Kawasaki Natural Gas Power Generation Co., Ltd, joint venture with Tokyo Gas Co., Ltd.(2008)
- Started operation of Mega Solar in Sendai Refinery, Kudamatsu Terminal.(Feb. 2013, Mar. 2013)
- Started operation of Wind Power in Akita Oil Terminal, Kashima Refinery.(2003, 2005)
- Ohgishima Wind Power Station started operation.(2010)



✓ Fuel Cell

- Launched Solid Oxide Fuel Cell(SOFC) system for residential use which is smaller and has higher electrical efficiency compared to conventional one. (Oct. 2011)
- Increasing sales volume by high attention to new energy after the earthquake.

✓ Power Generating Capacity of each Business

IPP	6 stations	840 thousand kW
PPS	5 stations	525 thousand kW
Mega Solar	2 stations	3 thousand kW
Wind Power	3 stations	5 thousand kW
Total (equity bases)		1,373 thousand kW

Action for Energy Conversion Company (Coal Business)



✓ Our Coal business

1. Main Upstream Businesses

- Own 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)
- Acquisition of the interest and dealership of Sukunka /Suska coal deposits, through an investment to Xstrata Coal British Columbia, and started metallurgical coal joint venture with Xstrata Coal. (Mar. 2012)

2. Sales

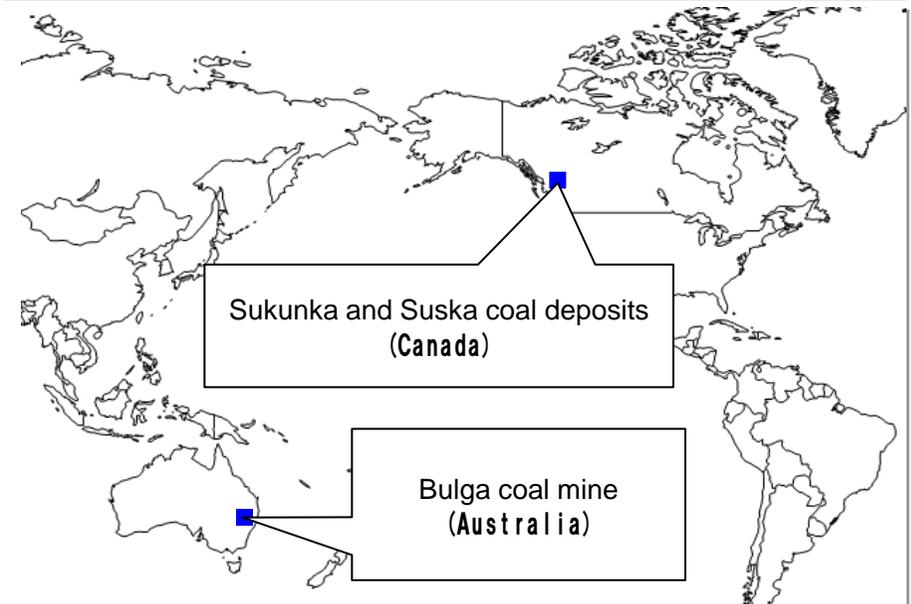
- Mainly supplying Bulga coal to customers. (Approx. 9 million tons/year)

3. Coal Transshipment Station

- Coal Transshipment Station was constructed on the site of former Kudamastu 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)
Status	Production	Development under consideration



Action for Energy Conversion Company (Hydrogen Business)



✓ Demonstration Test at Service Station (SS) that has Gasoline and Hydrogen Filling Machine

Action for the future hydrogen supply infrastructure

- Carry out the hydrogen supply in SS sites by 13 private enterprises (the energy industry, automotive industry) and government office jointly.
- Examine hydrogen supply infrastructure maintenance and construction of the business model at ENEOS service station network in all over the country.



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✓ Outline of the Demonstration Test

- ENEOS Service Station (Total 2 stations)
Placed in Kanagawa Pref. and Aichi Pref.
- Period (Scheduled)
April.2013 ~ Mar.2016
- Contents of the Demonstration Test
 - Short time filling of high pressure hydrogen
 - Operation of hydrogen filling duties in parallel with gasoline and diesel fuel sale

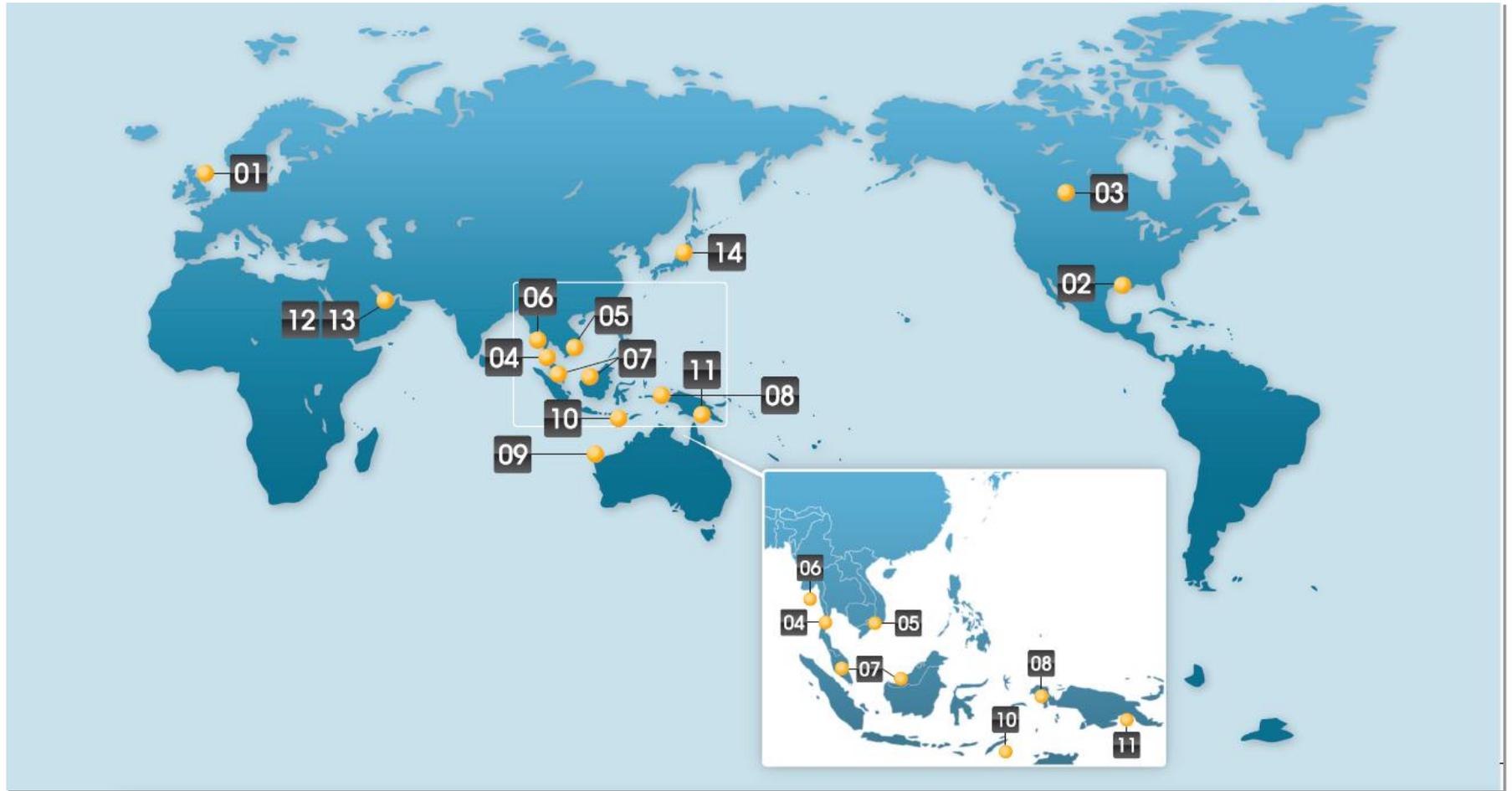


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Oil and Natural Gas E&P Business

Business Area

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 (Gulf) Ltd.	●		●
03 Canada	Japan Canada Oil Company / Mocal Energy	●		
04 Thailand	JX Nippon Oil & Gas Exploration Corp.			●
05 Vietnam	Japan Vietnam Petroleum Company Nippon Oil Exploration (Cuu Long) Ltd. / JX Nippon Oil & Gas Exploration Corp.	●	●	●
06 Myanmar	Nippon Oil Exploration (Myanmar) Ltd. JX Nippon Oil & Gas 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 (Onshore Sarawak) Ltd. JX Nippon Oil & Gas Exploration (Deepwater Sabah) Ltd.	●	●	●
08 Indonesia	Nippon Oil Exploration (Berau) Ltd.	●	●	●
09 Australia	JX Nippon Oil & Gas Exploration (Australia) Pty Ltd.	●	●	●
10 East Timor	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.	●		●



Outline of Oil and Natural Gas E&P Projects

	Project Name/Company	Sales Volume(Jan.-Sep. 2012) (1,000BOED) *1		Reserves *2 (million BOE)	Reserves *3 (million BOE)	Reference pages	
		Oil	Gas				
1	[North Sea, U.K.] JX Nippon Exploration and Production (U.K.) Limited	7	5	2	47	20	36~37
2	[Gulf of Mexico(U.S.A.)] JX Nippon Oil Exploration U.S.A. Limited	4	3	1	25	27	38~39
3	[Canada] Japan Canada Oil Company Limited	14	14	0	251	253	40
5	[Vietnam] Japan Vietnam Petroleum Company, Limited	7	5	2			42~43
6	[Myanmar] Nippon Oil Exploration (Myanmar) Limited	9	1	8			44~45
7	[Malaysia] JX Nippon Oil & Gas Exploration (Malaysia) Limited	21	4	17			46~47
	JX Nippon Oil & Gas Exploration (Sarawak) Limited	19	2	17			
8	[Indonesia] Nippon Oil Exploration (Berau) Limited	20	1	19			<Sub Total>
9	[Australia] JX Nippon Oil & Gas Exploration (Australia) Pty Ltd., other	1	1	0	<Sub Total>	<Sub Total>	49
11	[Papua New Guinea] Merlin Southern Highlands Petroleum Co., Ltd.	5	5	0			99
12,13,14	[United Arab Emirates, Qatar and others] *4 Abudhabi Oil Co., Ltd., United Petroleum Development Co., Ltd. and others	12	12	0	69	69	52~53
Total		119	53	66	749	775	

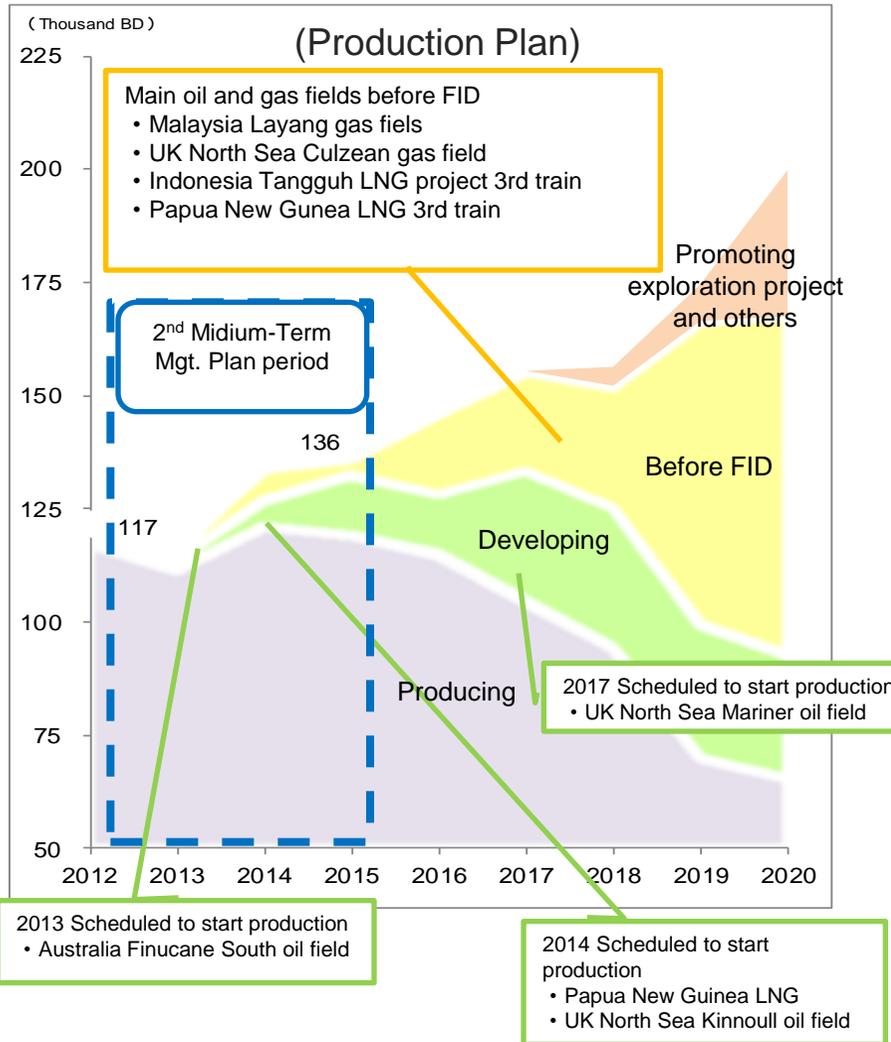
*1 Project company basis.

*2 Proved reserves and probable reserves as of end of Dec. 2011, including reserves from projects currently under development.

*3 Proved reserves and probable reserves as of end of Dec. 2010, including reserves from projects currently under development.

*4 JX Group's equity basis

Maintain and Expand Production Volume over the Medium/Long term



(Latest Results)

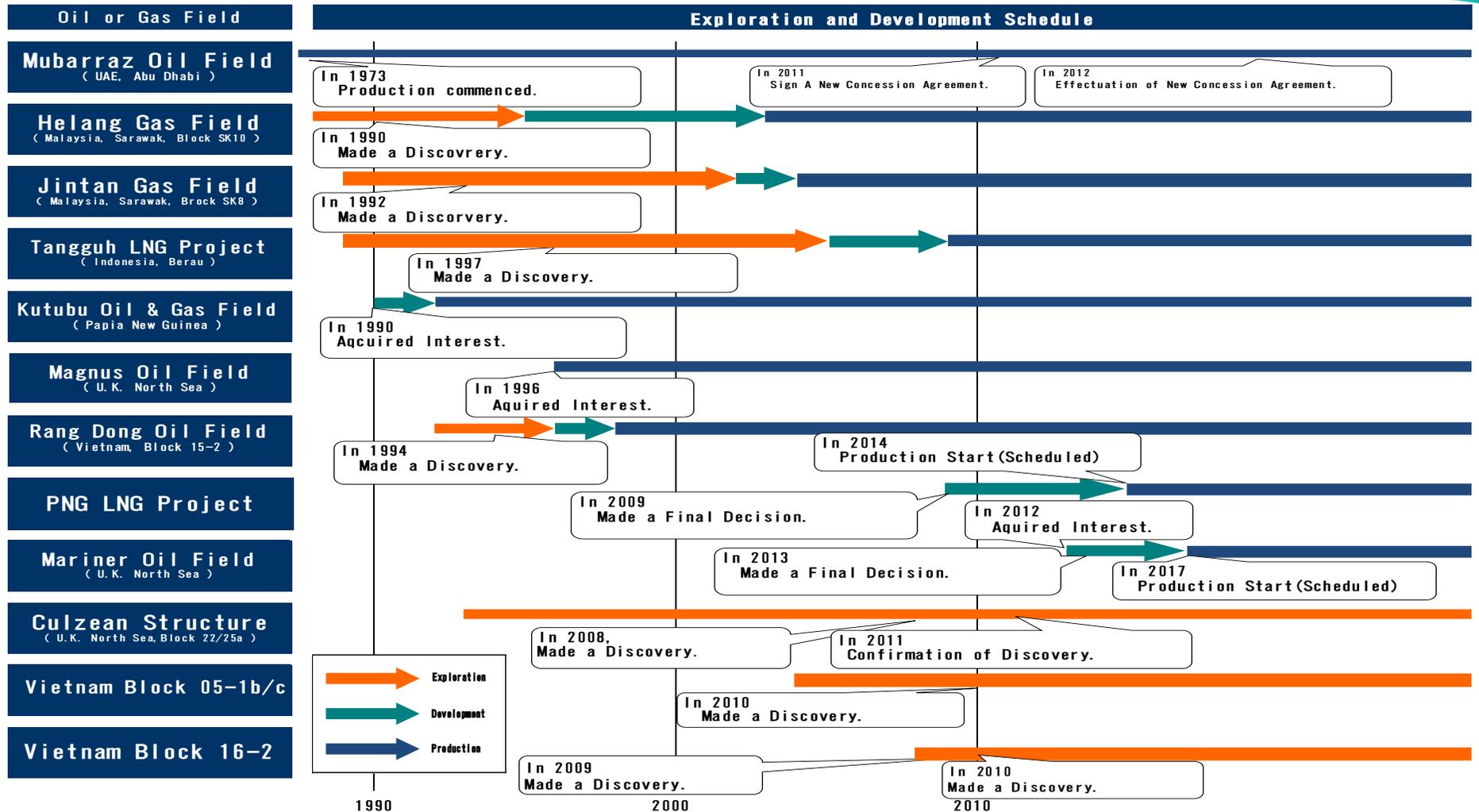
	Country (Block)	Type	Acquisition of rights	Discovery of oil and gas strata	Extent of strata confirmed	Success of flow test	Renewed rights to oil fields in production
Jan. 2011	Vietnam (16-2)	Natural Gas		●			
Feb. 2011	UAE	Crude oil	●				●
	Vietnam (05-1b/c)	Crude oil/ Natural gas		●			
Mar. 2011	U.K.(Culzean)	Natural gas			●		
Apr. 2011	Australia(WA-290-P)	Natural gas		●			
	Papua New Guinea(PPL219)	Crude oil		●			
May 2011	Qatar (Block A)	Natural gas	●				
	Australia(WA-191-P)	Crude oil		●			
Jan. 2012	Malaysia (Deepwater Block R)	Crude oil	●				
Sep. 2012	Myanmar(M-11)	Natural gas	●				
Oct. 2012	Australia(WA435-P, WA437-P)	Natural gas	●				
Oct. 2012	U.K.	Crude oil/ Natural gas	●				
Dec. 2012	U.K. (Mariner)	Crude oil	●				

Jan. 2012 Decision of development made

Feb. 2013 Decision of development made



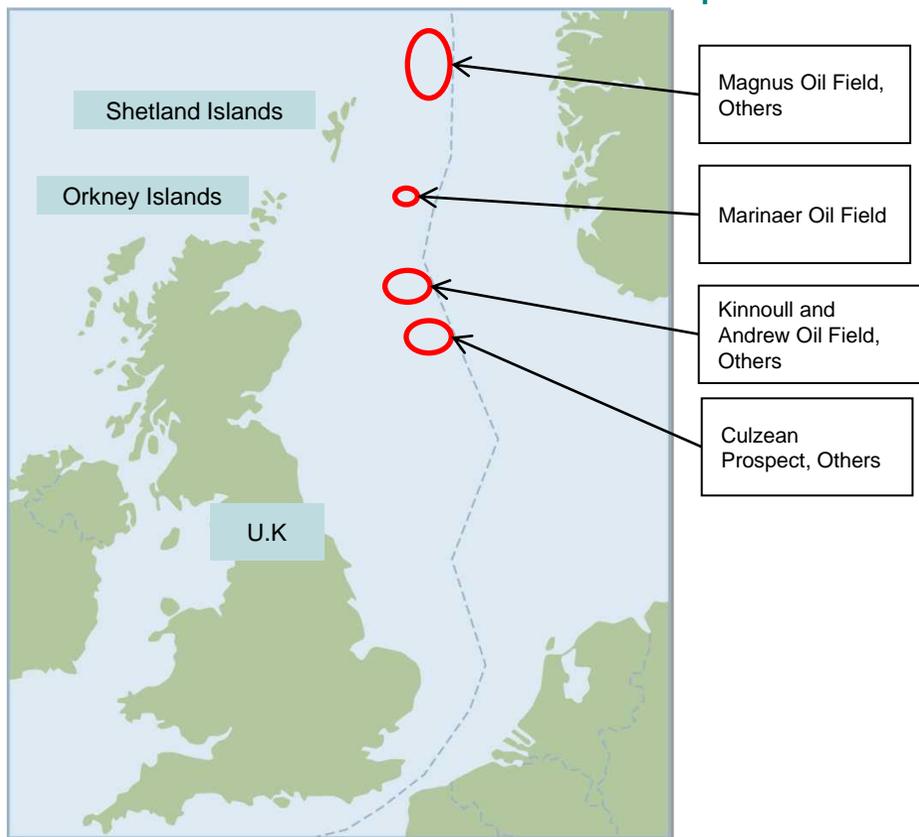
Production Schedule of Principal E&P Projects





Major Asset Acquisition in the UK North Sea

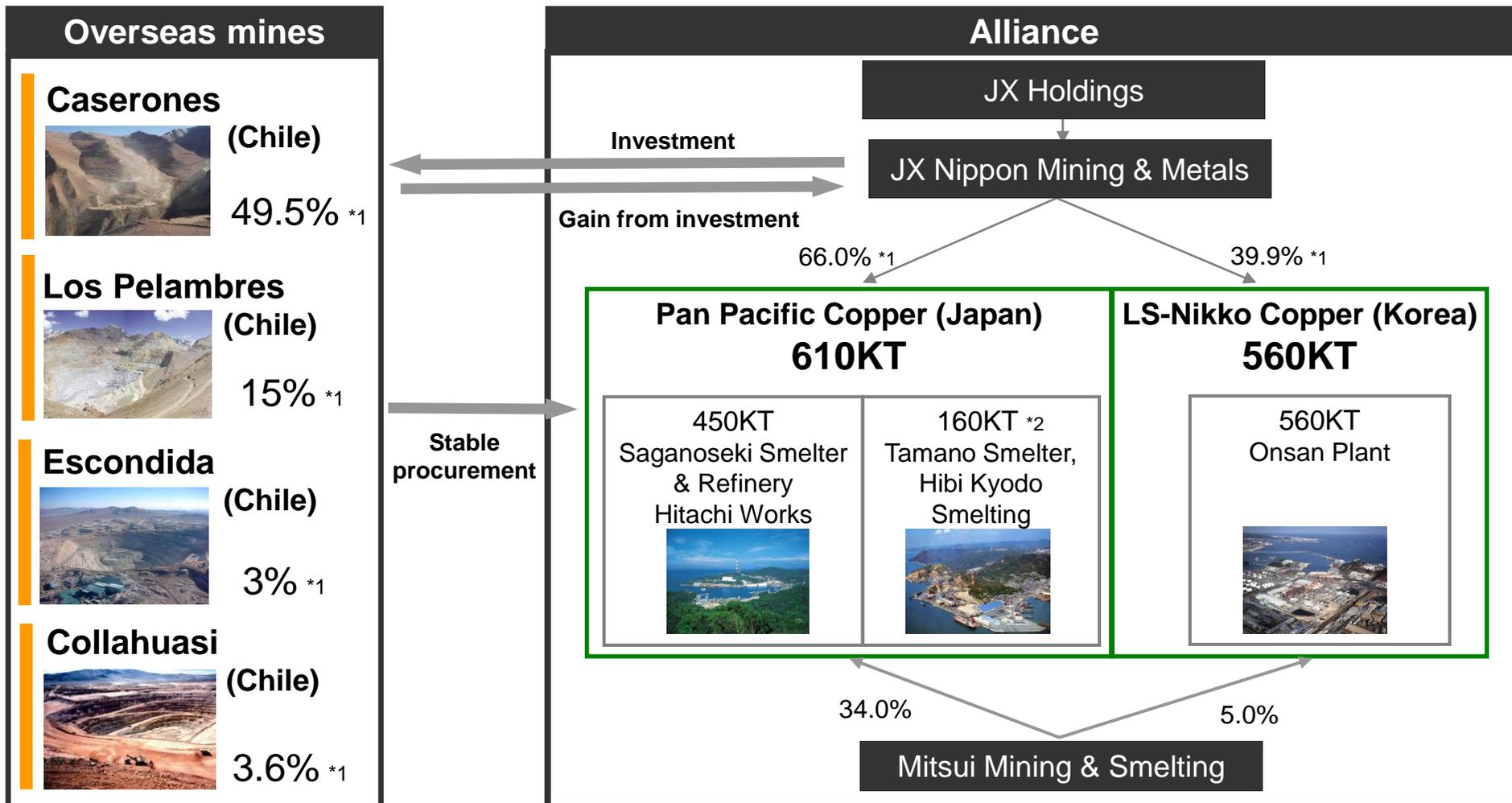
✓ The main features of this acquisition



	Kinnoull Oil Field	Culzean Prospect	Mariner Oil Field
Blocks	16/23a, 16/24a	22/25e	9/11a
Partners (Interest)	BP 77.06% (Operator)	Maersk 49.99% (Operator)	Statoil 65.11% (Operator)
	JXNEPUK (*) 22.94% Existing 6.27% Additional 16.67%	JXNEPUK (*) 34.01% Existing 17.06% Additional 16.95%	JXNEPUK (*) 28.89% Existing — Additional 28.89%
		BP 16.00%	Cairn 6.00%
Project Status	Under Development (Production to be commenced in 2014)	Under Exploration	Under Development (Field Development Plan approved in Feb 2013)

* JX Nippon Exploration and Production (U.K.) Limited

Copper Business



*1. Shares held by JX Nippon Mining & Metals

*2. Total Capacity is 260KT. PPC has 63.51% equity.

Overseas Copper Mine Development ①

Caserones Copper Mine (Chile)



Acquisition date May 2006

Acquisition price \$137 million

Initial investment \$ 3.00 billion

In July 2011, Project finance(\$1.1billion) and Long-term lone(\$0.3billion) are concluded.

Ownership

Pan Pacific Copper (PPC)* 75%

* Jointly established by JX Nippon Mining & Metals (66%) and Mitsui Mining & Smelting (34%)

Mitsui & Co., Ltd. 25%

Mine life

From 2013 to 2040 (28 years)

SX-EW From 1Q. CY2013

Copper Concentrate From 4Q. CY2013

Total Production (28years)

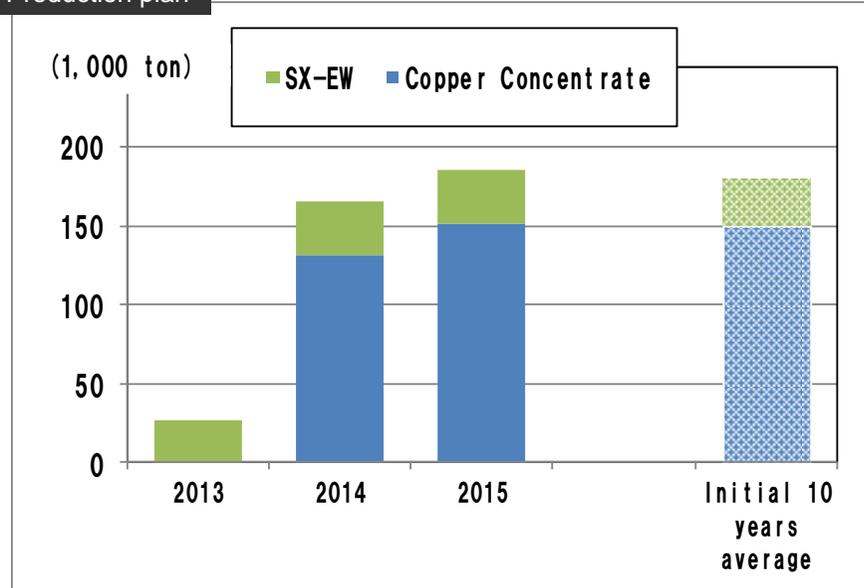
Copper : 3,550kt From Copper Concentrate 3,140kt

From SX-EW Process 410kt

Molybdenum : 87kt (3kt / year)



Production plan





Ownership

NGEx Resources Inc. (Canada) : 60%
 Pan Pacific Copper (PPC) : 40%

*PPC is Jointly established by JX Nippon Mining(66%) and Mistui Mining & Smelting(34%)

PPC acquired the exploration rights in Sep.2012 from JOGMEC (Japan Oil, Gas and Metals National Corporation)

Exploration results

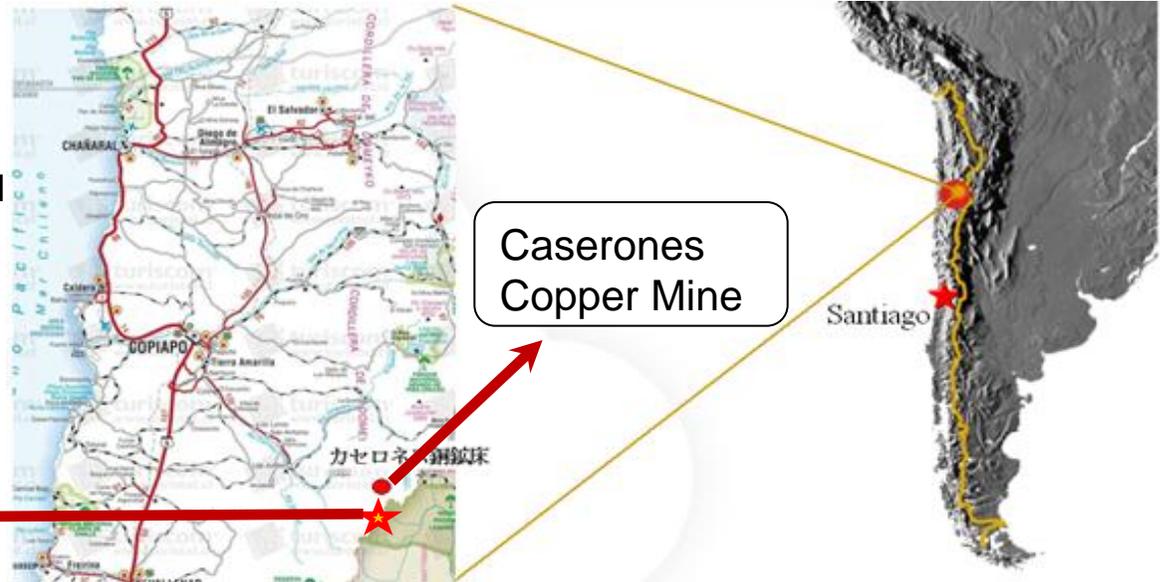
Drilled exploring holes at Los Helados between 2004 and PPC's acquisition and confirmed existence of copper-gold deposit.

Main exploring areas

Los Helados (Chile, 20km south of the Caserones deoposit)
 Filo del Sol (Argentina)

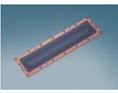
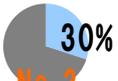
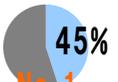
Frontera Area

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



Electronic Materials



Main IT-related products	Global market share	Primary applications	End-use applications				
			PCs	Mobile phones / Smart phones	Digital, Avs	Telecom infra	Auto mobiles
 Treated rolled copper foil	 75% No. 1	Flexible printed circuit boards	○	⊙	⊙		
 Semiconductor targets	 60% No. 1	CPUs, memory chips, etc.	⊙	○	⊙	○	○
 ITO targets for FPDs *1	 30% No. 1	Transparent electrodes	⊙	○	⊙		
 HD media targets	 30% No. 2	HDD (Hard disk drives), etc.	⊙	○			
 Phosphor bronze	 20% No. 1	Connectors	⊙	○	○		○
 Corson alloy (C7025)	 45% No. 1	Lead frames, Connectors	⊙	○	○		○
 Titanium copper alloy	 70% No. 1	High-class connectors, etc.	○	⊙	○		
 In-P compound semiconductors	 50% No. 1	Optical communication devices High-speed IC			○	⊙	○

*1 Flat Panel Display

Electronic Materials (Kakegawa Works)

Expansion of Automotive Related Business

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



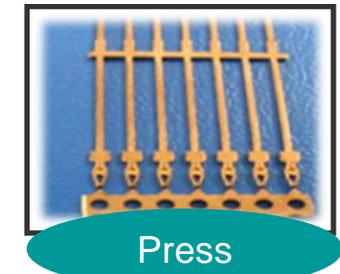
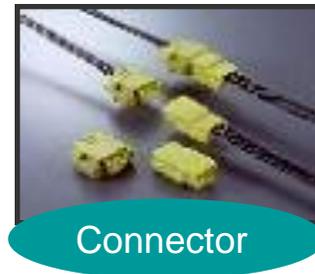
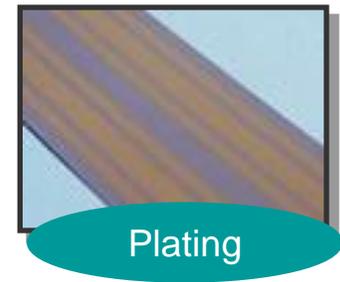
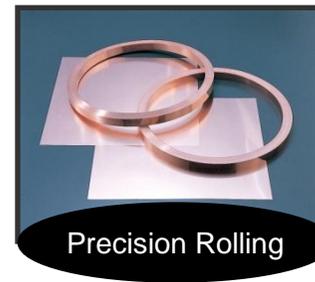
Construction of Integrated Plant of Connector (Kakegawa Works)

- Decided to construct a new plant in Kakegawa with integrated production system (press, plating, assembly) for connector (Feb.2011)
- Completion of new plant called Kakegawa Works (Feb.2012)

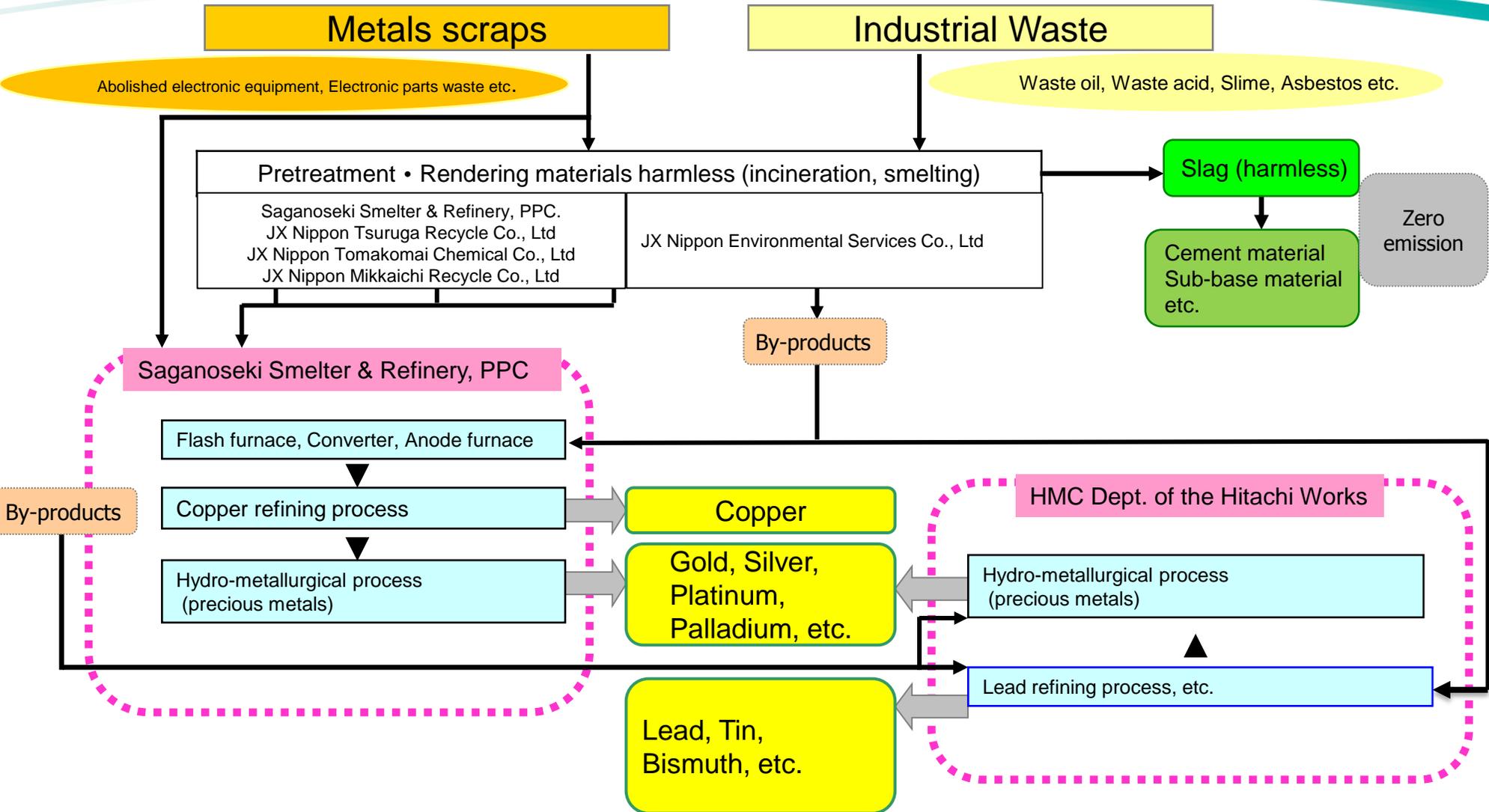


Integrated Production System of Connector and Precision Materials

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



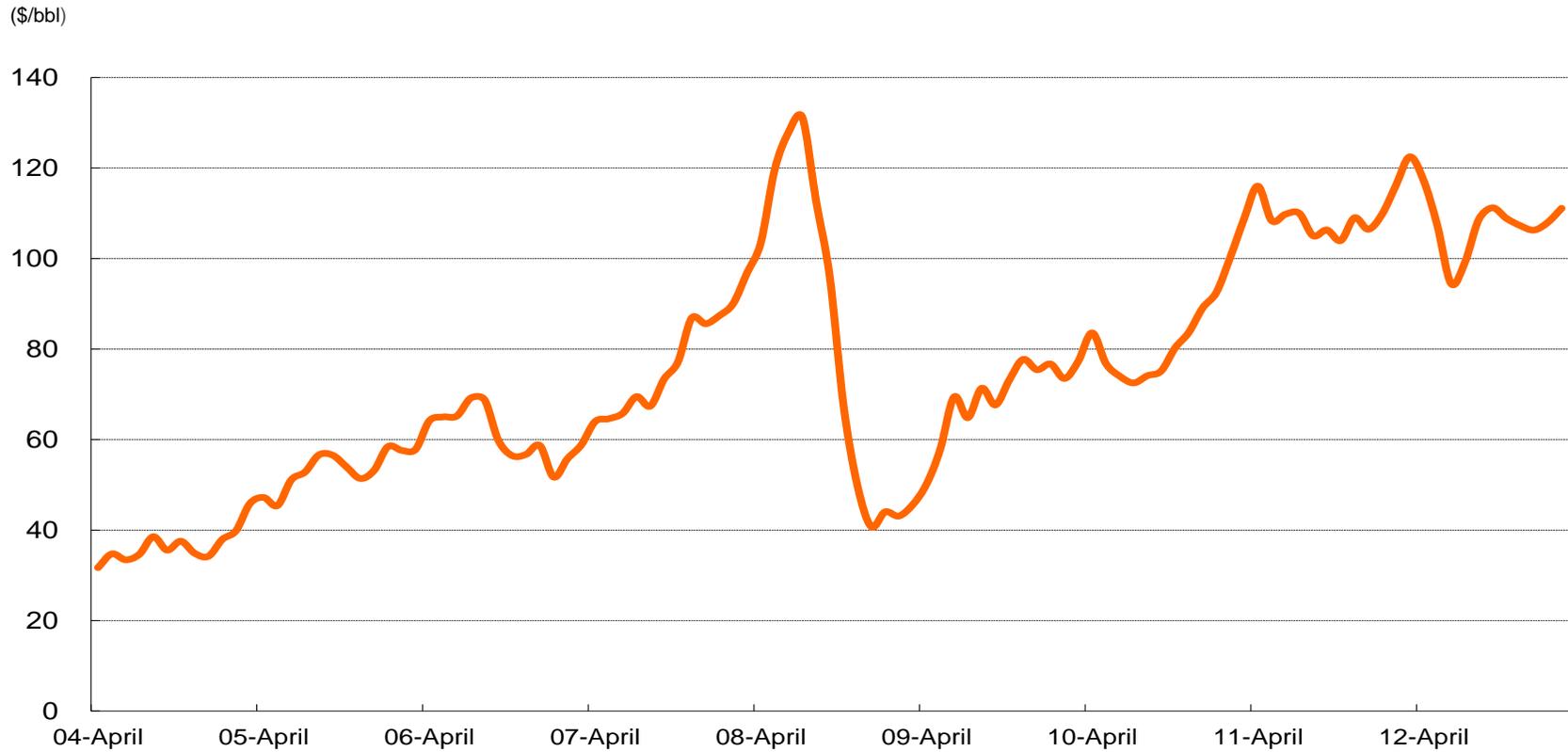
Recycling and Environmental Services Business



Historical Dubai Crude Oil Price



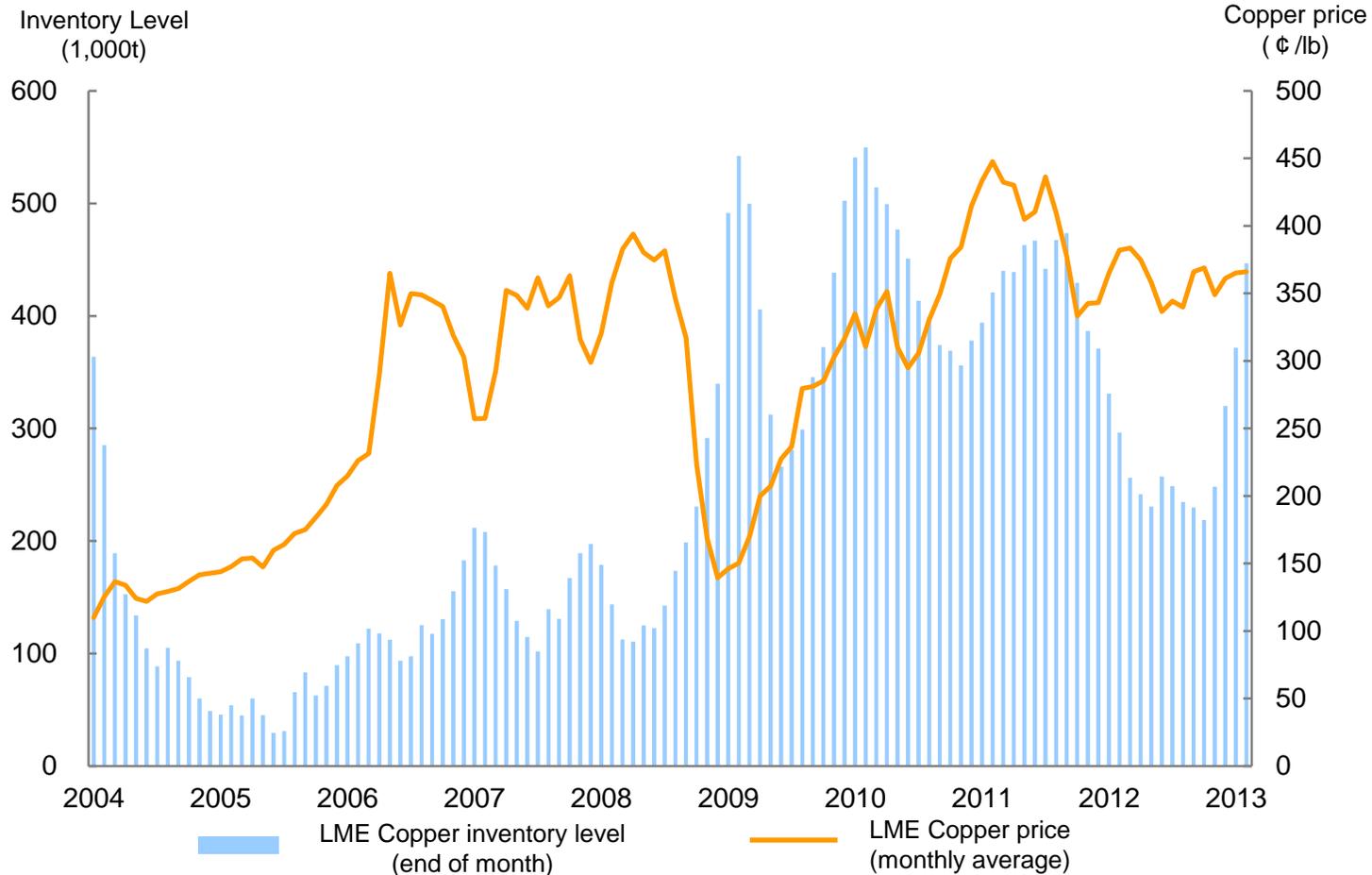
Average Price	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12 (\$/bbl)		
									1Q	2Q	3Q
Dubai Crude Oil	37	54	61	77	82	70	84	110	106	106	107



Historical Copper Price and Inventory Level



Average Price	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12		
									1Q	2Q	3Q
Copper	136	186	316	344	266	277	369	385	357	350	350

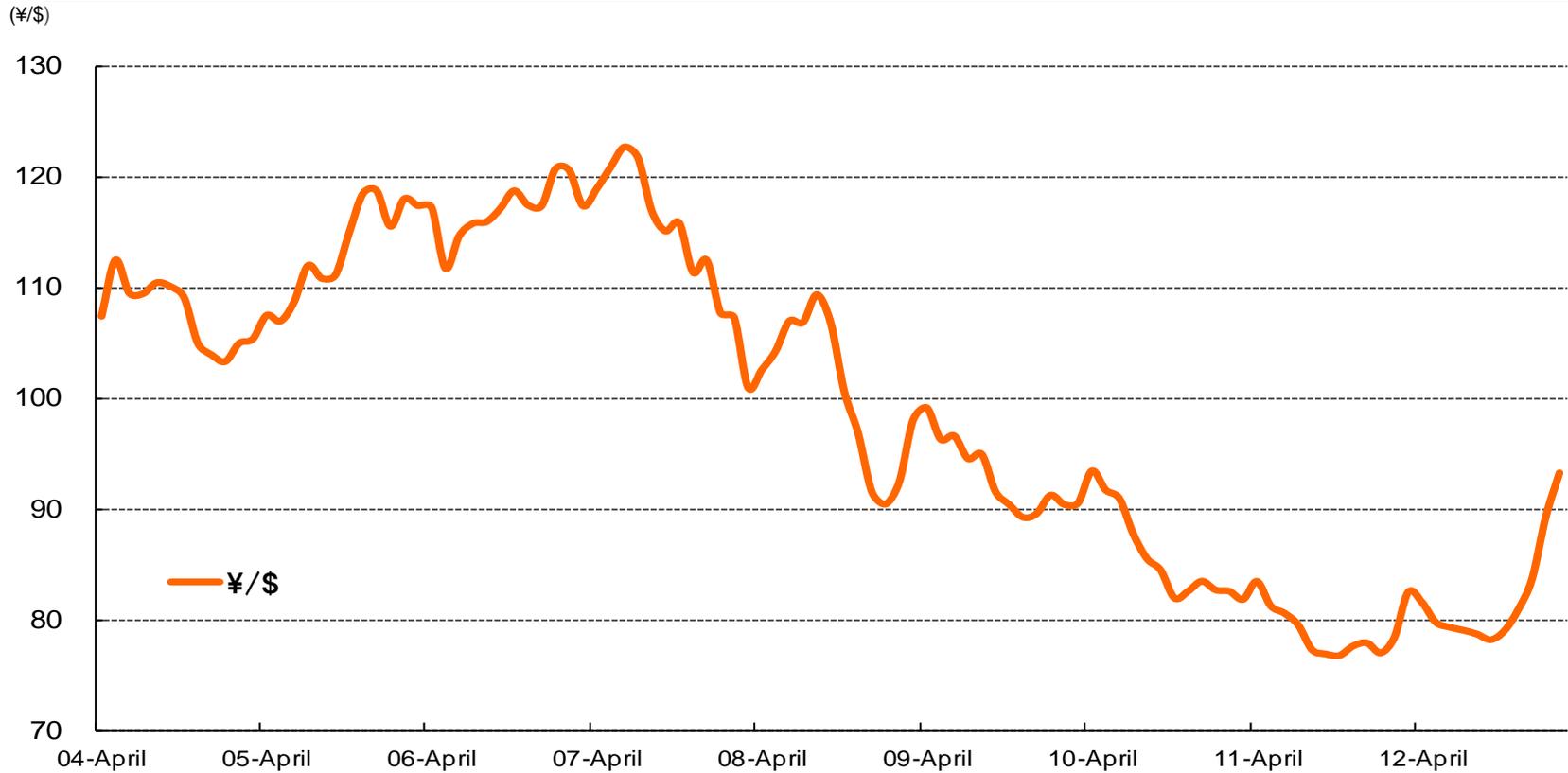


Historical Exchange Rate

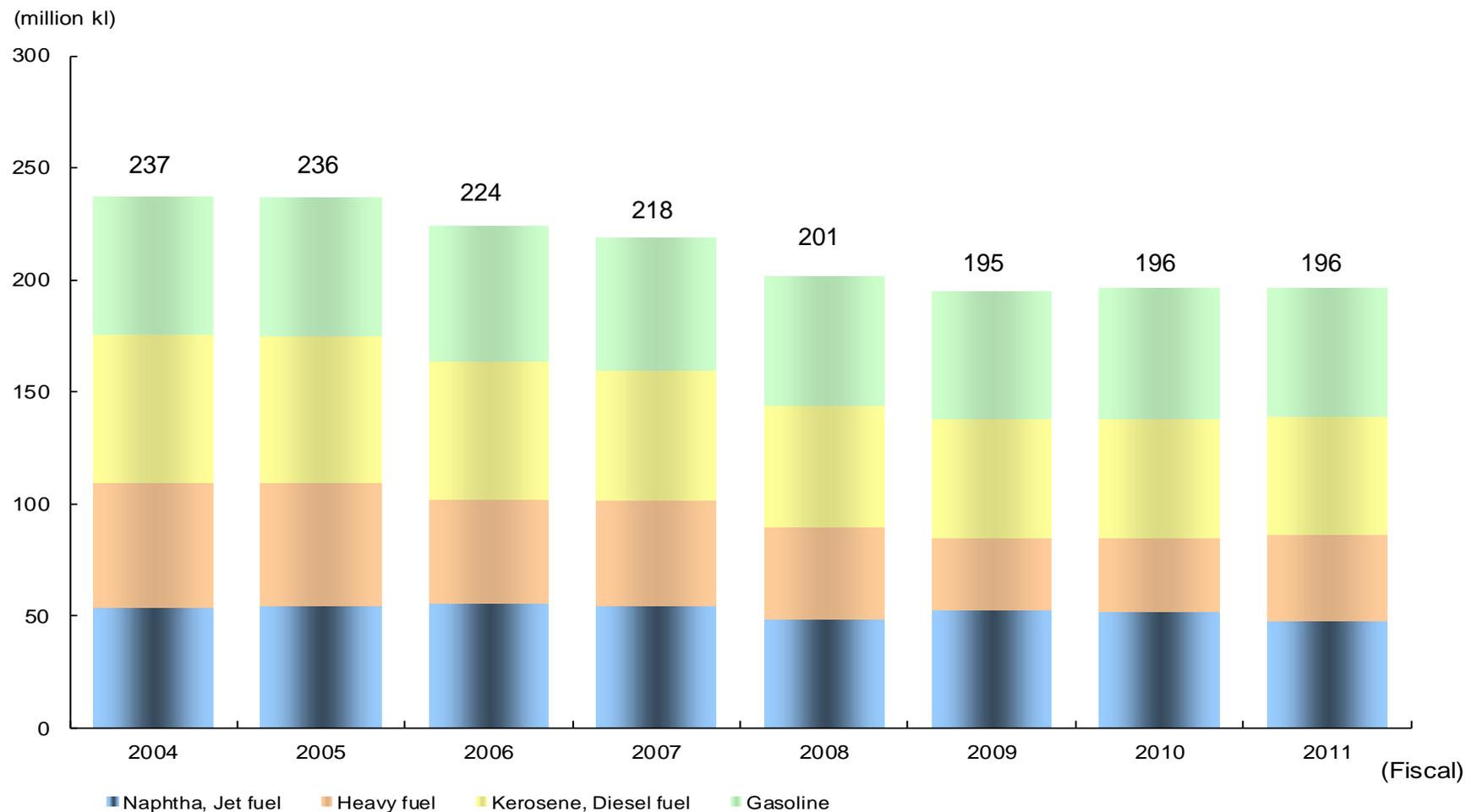


Average Price	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12		
									1Q	2Q	3Q
Exchange Rate	108	113	117	114	101	93	86	79	80	79	81

(¥/\$)



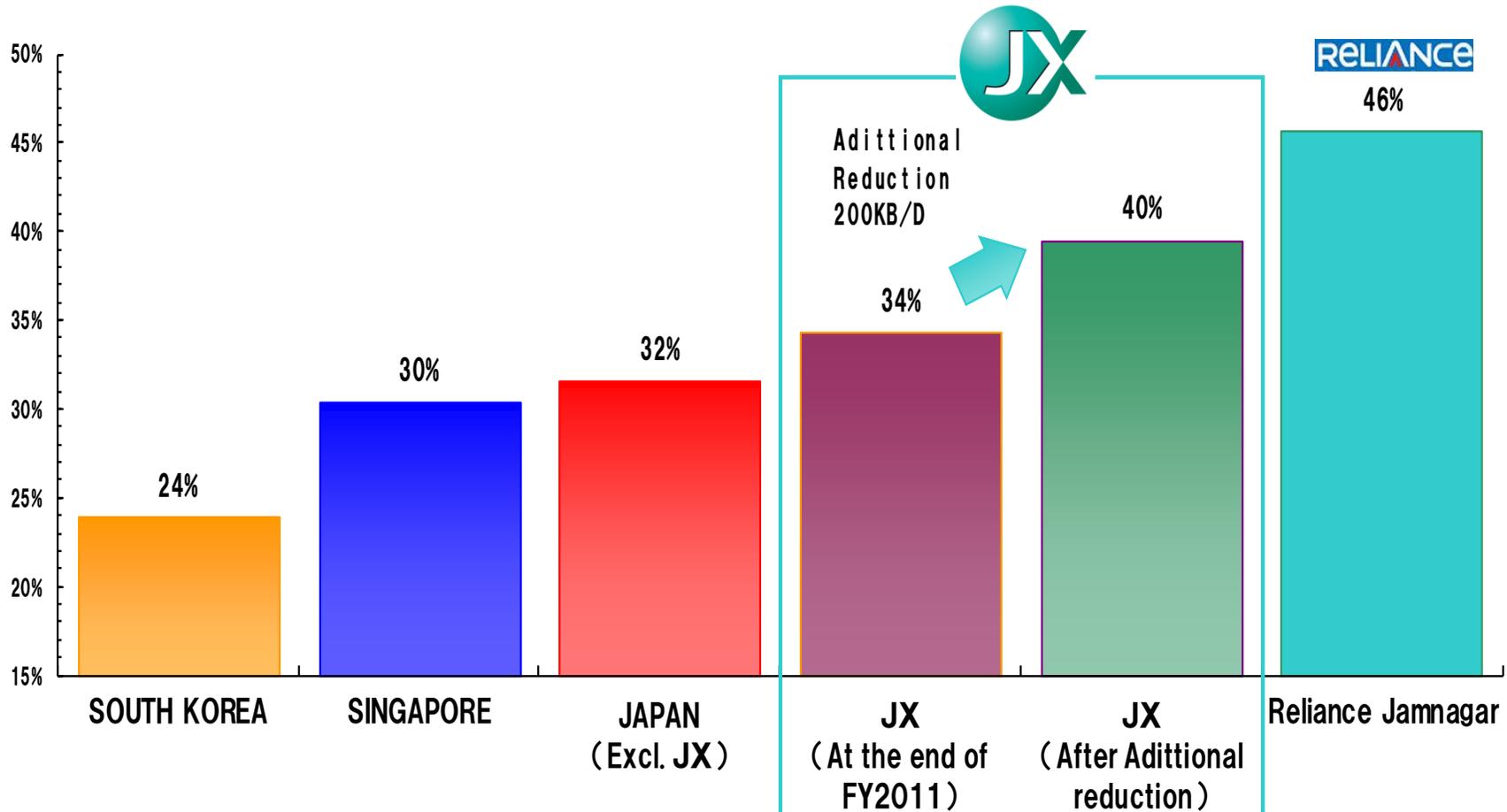
Demand for Petroleum Products (Japan)



Note: Excluding Crude Oil for electric power plants.

Source: Petroleum Association of Japan and Company data

Equipment Ratio of Secondary Unit* against CDU



* Catalytic cracking unit, Catalytic hydrocracking unit, Thermal operation unit, Solvent De-asphalting unit, Independent power producer unit
 Source: Oil & Gas journal, Petroleum Association of Japan and Company data

JX Group's Market Share and Demand in Japan

Historical CDU^{*1} Utilization Rate



Domestic Market Share

	FY11 3Q (%)	FY12 3Q (%)
a) Gasoline	33.7	33.7
b) Kerosene	40.9	40.3
c) Diesel Fuel	37.2	37.7
d) Fuel Oil A	44.3	44.7
a+b+c+d	36.7	36.8
Total Domestic Fuel ^{*2}	35.3	36.2

Domestic Demand

	FY11 3Q (1,000 KL)	FY12 3Q (1,000 KL)	Changes vs. FY11 (%)
a) Gasoline	43,309	43,194	99.7
b) Kerosene	10,630	10,922	102.7
c) Diesel Fuel	24,625	25,155	102.2
d) Fuel Oil A	9,975	9,583	96.1
a+b+c+d	88,539	88,855	100.4
Total Domestic Fuel ^{*2}	140,660	144,440	102.7

CDU^{*1} Utilization Rate (Excluding the impact of periodic repair and earthquake)

	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12 3Q
	('04/4-'05/3)	('05/4-'06/3)	('06/4-'07/3)	('07/4-'08/3)	('08/4-'09/3)	('09/4-'10/3)	('10/4-'11/3)	('11/4-'12/3)	('12/4-'12/12)
JX Group ^{*3}	94%	93%	91%	89%	85%	78%	86%	88%	87%

* 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 / period)

	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12 3Q
JX Group	14,640	14,076	13,474	13,318	12,687	12,149	11,730	11,516
EMG *1	5,837	5,426	4,911	4,489	4,199	3,979	3,773	3,609 ^{*5}
Idemitsu Kosan	5,249	5,059	4,808	4,598	4,338	4,148	3,997	3,944 ^{*5}
Showa Shell Sekiyu	4,689	4,560	4,417	4,256	4,102	3,922	3,760	3,633
Cosmo Oil	4,552	4,359	4,188	3,913	3,768	3,609	3,498	3,357
Others *2	2,066	2,006	1,935	1,257	1,245	1,194	1,160	1,156
Oil Companies	37,033 (79.8%)	35,486 (79.4%)	33,733 (78.4%)	31,831 (77.4%)	30,339 (76.8%)	29,001 (76.7%)	27,918 (76.7%)	27,215 (76.7%)
Private Brands and Others *3	9,367 (20.2%)	9,214 (20.6%)	9,267 (21.6%)	9,269 (22.6%)	9,161 (23.2%)	8,799 (23.3%)	8,482 (23.3%)	8,285 (23.3%)
Total *3	46,400	44,700	43,000	41,100	39,500	37,800	36,400	35,500

<Number of Company-Owned Service Stations>

	FY09	FY10	FY11	FY12 3Q
JX Group	2,893	2,701	2,573	2,507

<Number of Self-Service Stations>

	FY09	FY10	FY11	FY12 3Q
JX Group	2,378	2,385	2,423	2,515
Total for Japan *4	6,906	6,935	7,001	

Notes: *1. Figures are total of Esso, Mobil and Tonen General Sekiyu.

*2. Figures are total of Kyushu Oil, Taiyo Petroleum, Mitsui Oil & Gas and Kygnus Sekiyu (until FY 2007). After FY 2008, Figures are total of Taiyo, Mitsui and Kygnus.

*3. Estimated by JX Holdings.

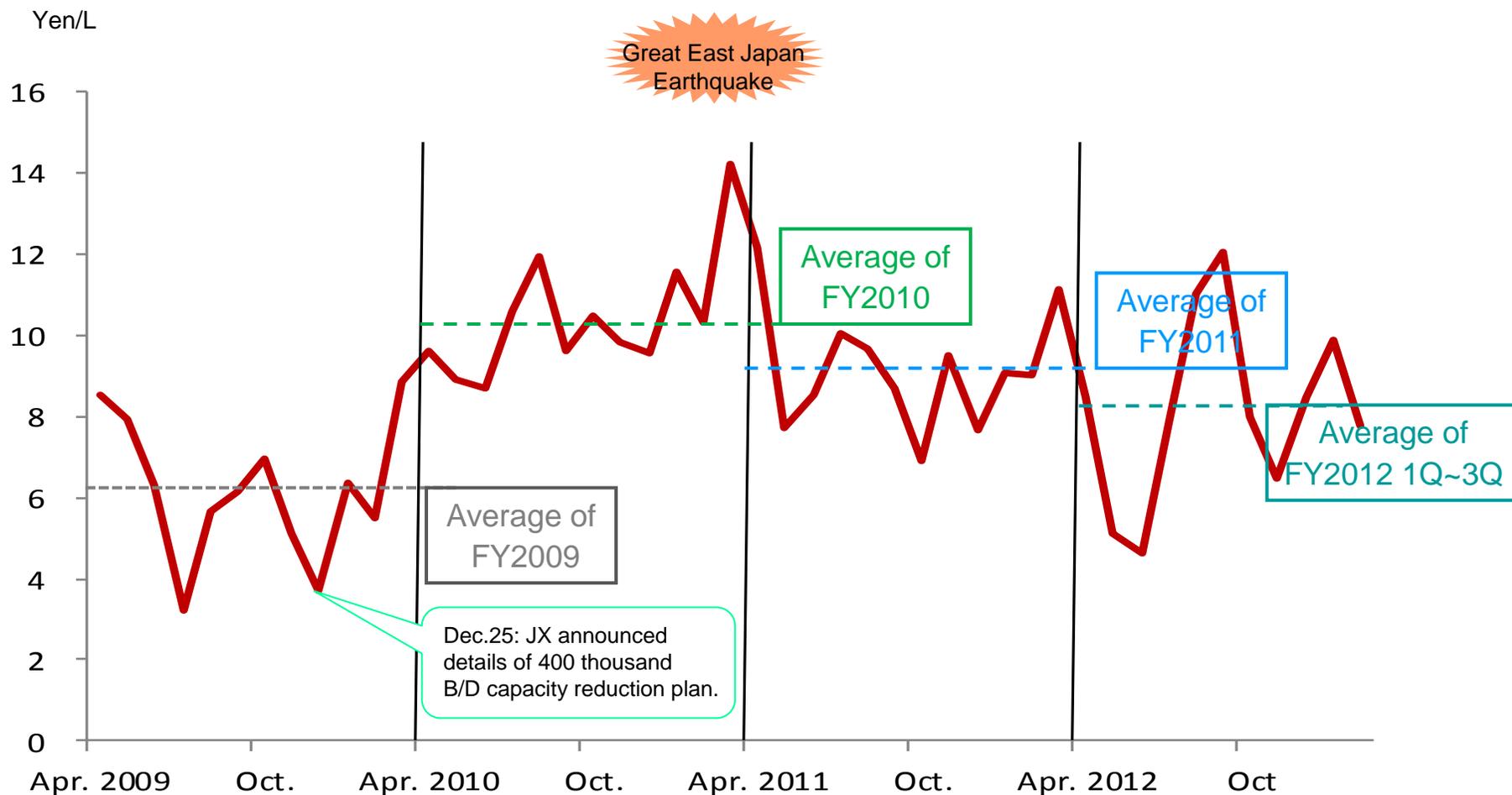
*4. Figures include only self-service retail outlets that are affiliated to oil companies.

*5. Data of EMG and Idemitsu Kosan are as of the end of Sep. 2012.

Sales Volume of FY 2011 3Q, FY2012 3Q

	FY2011 3Q	FY2012 3Q	Changes vs. FY 2011
	million KL	million KL	
Gasoline	14.59	14.55	-0.3%
Premium	1.95	1.85	-5.2%
Regular	12.56	12.62	0.5%
Naphtha	2.53	2.84	12.2%
JET	1.02	1.15	13.0%
Kerosene	4.03	4.08	1.2%
Diesel Fuel	9.14	9.49	3.8%
Fuel Oil A	4.42	4.29	-2.9%
Heavy Fuel Oil C	6.07	7.65	25.9%
For Electric Power	3.95	5.66	43.3%
For General Use	2.13	1.98	-7.0%
Total Domestic Fuel	41.81	44.04	5.3%
Crude Oil	2.86	3.78	32.2%
Lubricants & Specialities	2.44	2.38	-2.2%
Petrochemicals (million ton)	4.01	4.10	2.2%
Exported Fuel	6.66	7.51	12.8%
LPG (million ton)	0.21	0.21	1.4%
Coal (million ton)	4.18	4.61	10.5%
Total Excluding Barter Trade & Others	62.17	66.65	7.2%
Barter Trade & Others	15.80	14.26	-9.8%
Total	77.97	80.91	3.8%

Margins of Gasoline, Kerosene, Diesel Fuel and Fuel Oil A



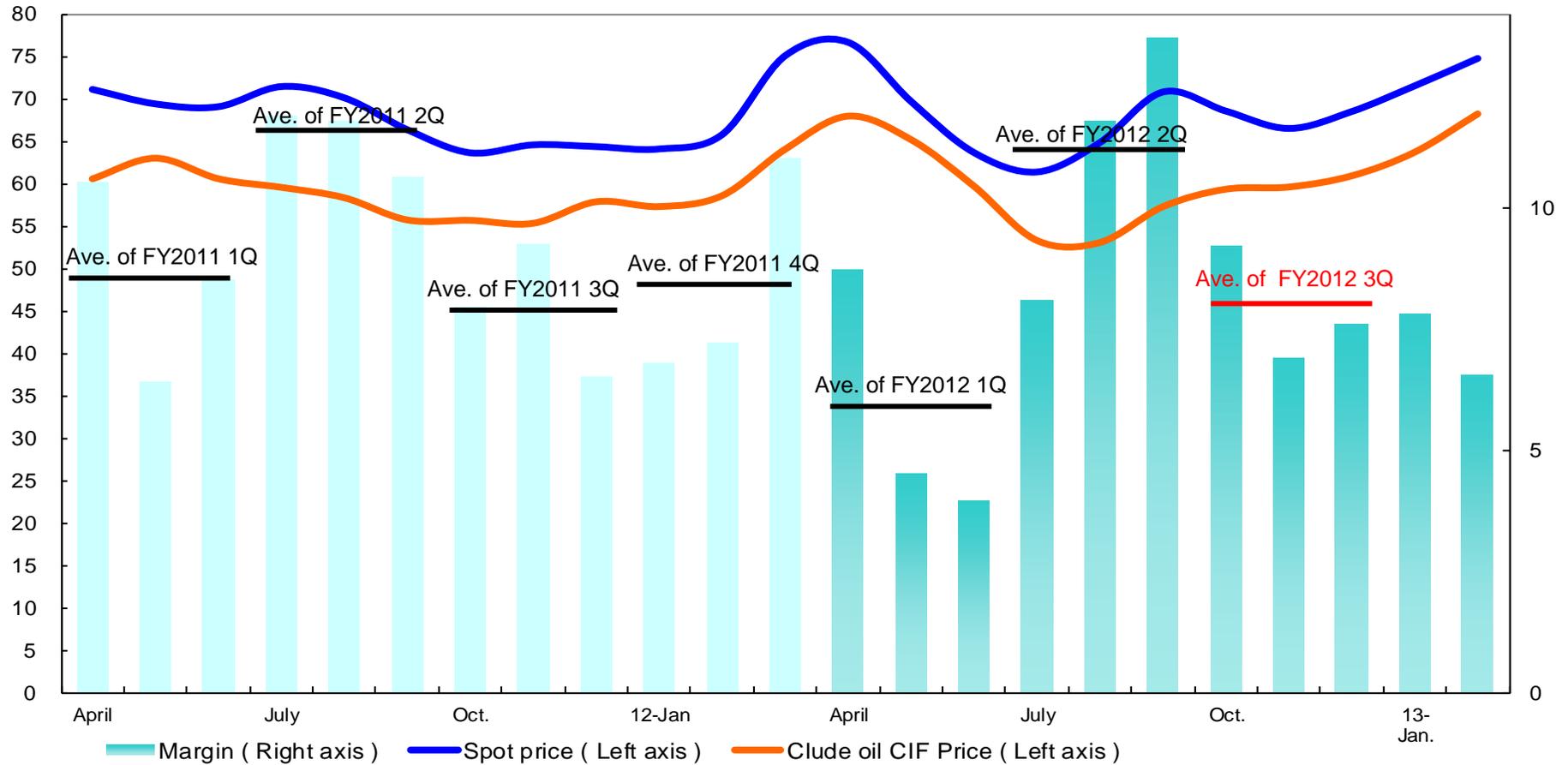
*Margin=Spot Price – All Japan Crude Oil CIF(including petroleum tax and interest)

Source : Trade statistics (Ministry of Finance, Japan)

Domestic Market Margin* (Gasoline)



(Yen/L)



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

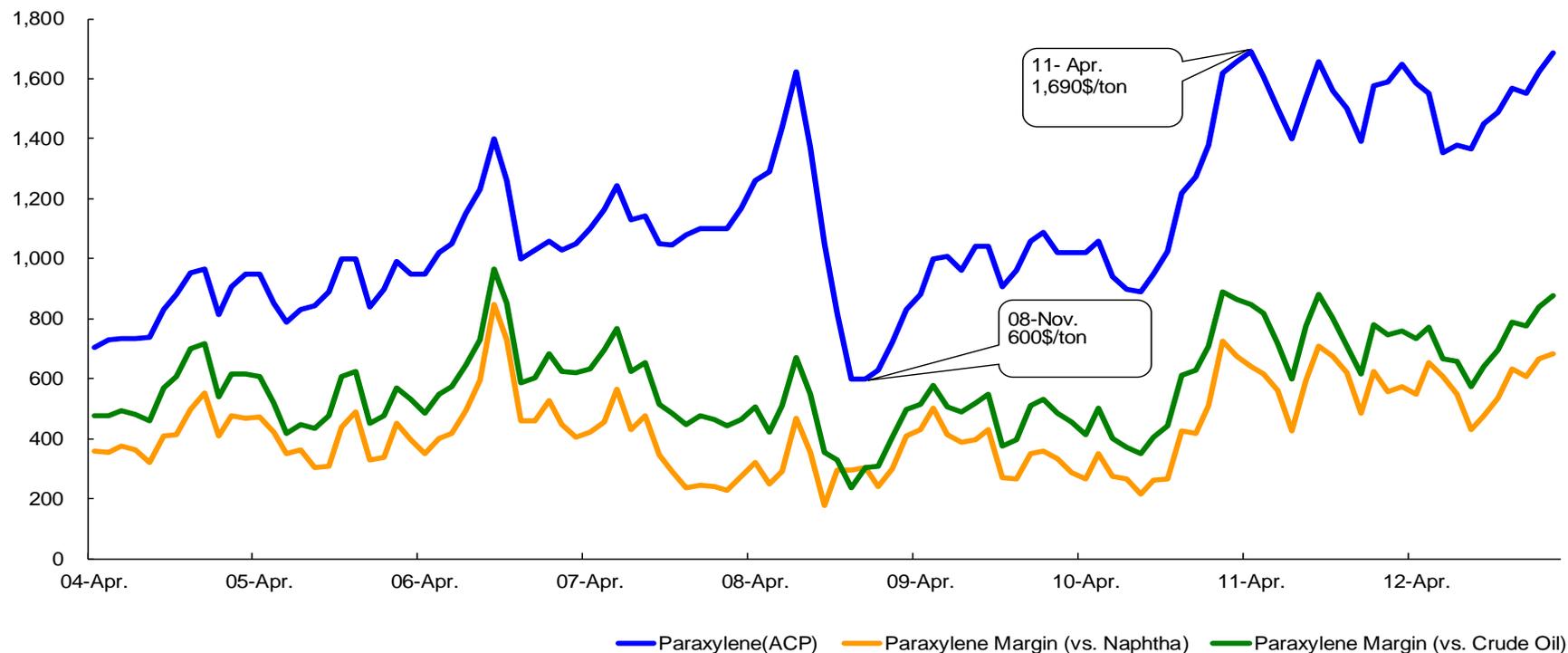
Source : Trade statistics (Ministry of Finance, Japan)

Paraxylene Price and Margin (vs. Crude Oil, vs. Naphtha)

(\$/ton)

Average Price	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12		
									1Q	2Q	3Q
Asian Contract Price	829	903	1,103	1,119	1,020	999	1,162	1,555	1,497	1,398	1,536
Margin (vs. Crude Oil)	563	514	660	556	425	493	550	754	723	625	754
Margin (vs. Naphtha)	416	389	511	351	309	369	388	585	604	486	592

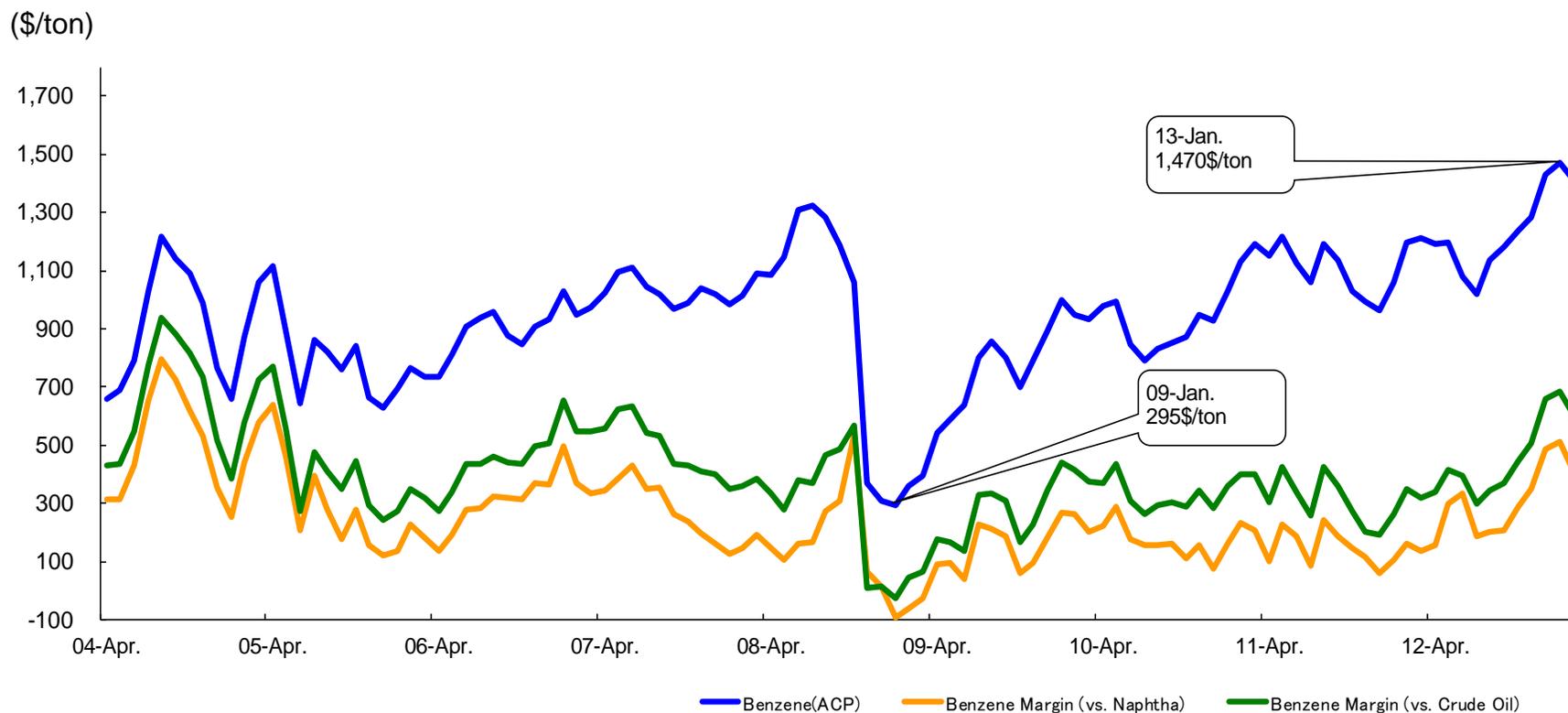
(\$/ton)



Note: In case of ACP undecided, average price of spot market is adopted.

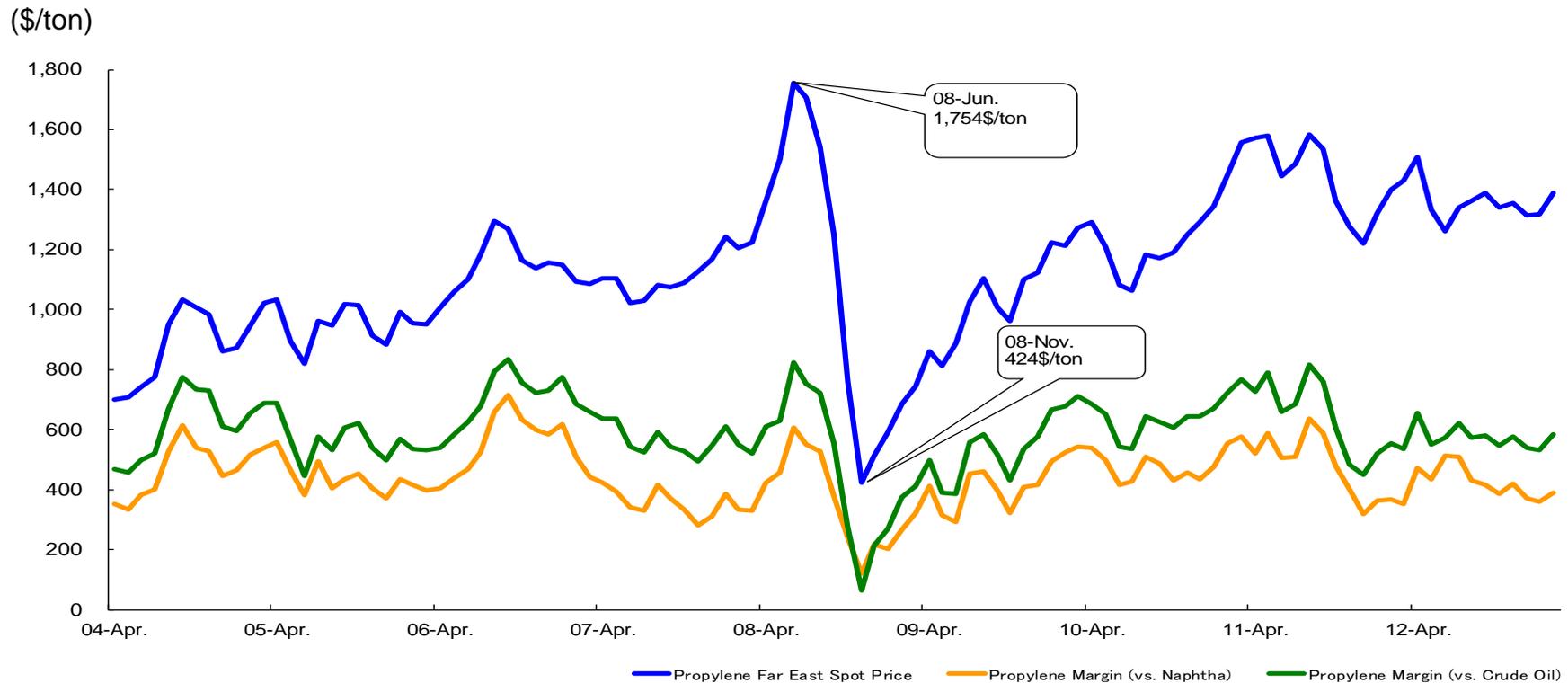
Benzene Price and Margin (vs. Crude Oil, vs. Naphtha)

Average Price	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12 (\$/ton)		
									1Q	2Q	3Q
Asian Contract Price	914	786	907	1,034	844	791	948	1,111	1,155	1,112	1,318
Margin (vs. Crude Oil)	648	397	464	471	249	285	336	310	382	338	537
Margin (vs. Naphtha)	501	271	315	265	133	161	174	146	262	200	374



Propylene Price and Margin (vs. Crude Oil, vs. Naphtha)

Average Price	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12 (\$/ton)		
									1Q	2Q	3Q
Far East Spot Price	883	948	1,138	1,123	1,070	1,050	1,258	1,433	1,367	1,364	1,336
Margin (vs. Crude Oil)	617	559	695	563	475	544	646	633	594	590	554
Margin (vs. Naphtha)	470	434	550	354	359	420	484	469	474	452	392





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Oil and Natural Gas E&P Business

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

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

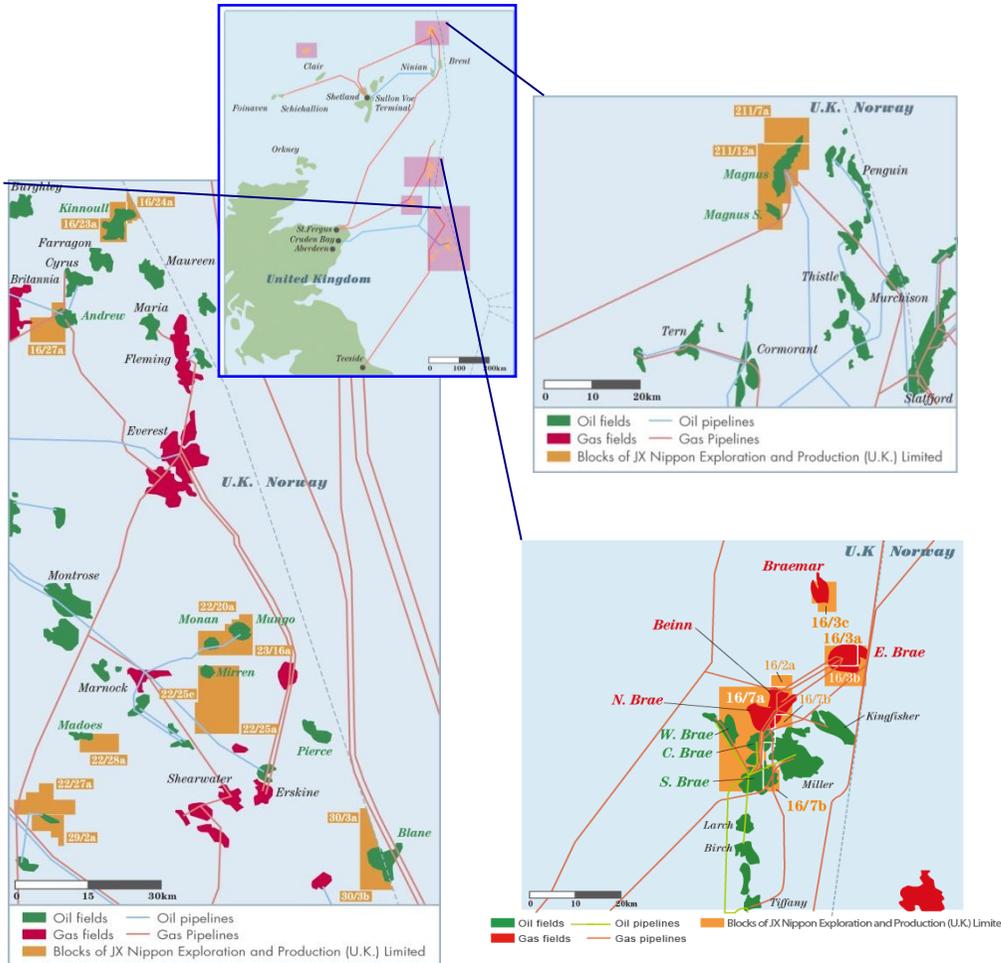


U.K. North Sea ①

Production

Development

Exploration



	Magnus, Brae, Andrew, Blane and other fields
Company Holding the Acreages	JX Nippon Exploration and Production (U.K.) Ltd.
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration (100%)
Project Status	Exploration / Development / Production
Interest	2.1%~85.0%
Partners	BP, Shell, Marathon, Others
Sales Volume(Jan.-Sep. 2012)	6,500boed (oil 5,100b/d, gas 8.5mmcf/d)

UK (North Sea) is one of core countries with many opportunities to acquire exploration, development and production assets and the infrastructure related to them. We have over 10 fields currently producing oil and gas as well as several projects underway where development is envisaged to commence within the next few years. We are striving to acquire new acreages through open bid rounds as well as pursuing farm in and other opportunities.

Production

Mining Area during the production
Andrew, Mungo / Monan, Mirren / Madoes, Blane
Magnus Oil Fields , Brae Gas Field etc

● From 1994 to 2002, acquired a working interest in individual blocks.

Development

Mining Area during Development : Kinnoull Oil Field

● In August 2012, Acquired interest in Kinnoull Field which is under development, by exchanging interest in Pierce Field.

Exploration

Mining Area during Exploration
22/25a (Culzean Prospect) etc

● In March 2011, confirmed the presence of a significant hydrocarbon accumulation.

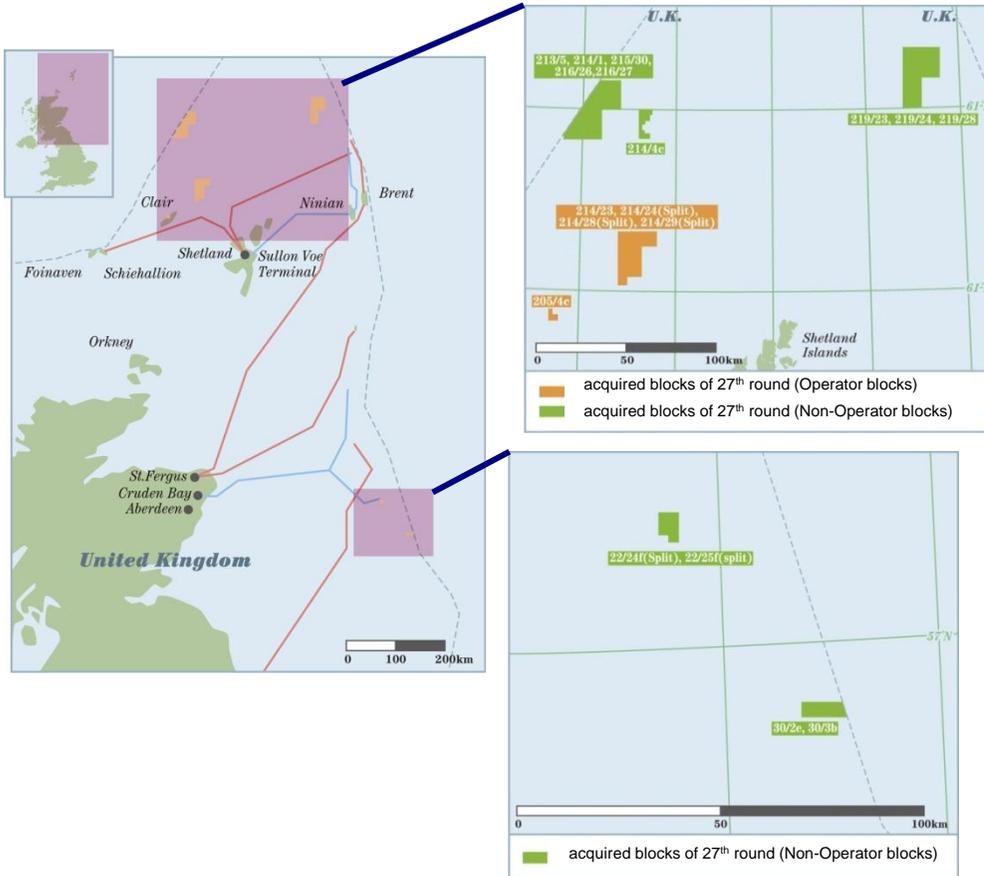
Principal Individual E&P Project Overview (U.K. ②)



U.K. North Sea ②

Exploration

New blocks are acquired in 2012 by 27th round of governmental open tender .



Project Company

JX Nippon Exploration and Production (U.K.) Ltd (100%)

(%) = JX Group Shareholding

Operator blocks

West of Shetlands Area

205/4c

214/23, 214/24, 214/28, 214/29

Non-Operator blocks

North Sea Northern Area

219/23, 219/24, 219/28

North Sea Central Area

22/24f, 22/25f

30/2e, 30/3b

West of Shetlands Area

213/5, 214/1, 214/4c, 215/30, 216/26, 216/27

Operators

GDF Suez, OMV, Maersk

Principal Individual E&P Project Overview (Gulf of Mexico ①)



Gulf of Mexico

Production

Exploration



	Orchard North, K2 and other fields	Davy Jones
Company Holding the Acreages	JX Nippon Oil Exploration (U.S.A.) Ltd.	JX Nippon Oil Exploration (Gulf) Ltd.
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration (100%)	JX Nippon Oil Exploration (U.S.A.) Ltd.
Project Status	Production	Exploration
Interest	11.6%~62.5%	12.00%
Partners	Anadarko Apache McMoRan Others	McMoRan Oil & Gas LLC(63.36%) Energy XXI GOM, LLC(15.84%) Moncrief Offshore LLC(8.80%)
Operator	Anadarko, Hilcorp Energy, Others	McMoRan
Sales Volume(Jan.-Sep. 2012)	3,800boed (oil 2,500 b/d, gas 7.8mmcf/d)	-

Principal Individual E&P Project Overview (Gulf of Mexico ②)



Orchard North, K2 and other fields

Production

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

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).

- 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.
- In September 2010, sold some assets of shallow water and deep water areas.

Davy Jones

Exploration

- In August 2009, commenced Exploration.
- In January 2010, discovered natural gas.
- In February 2011, confirmed the spread of hydrocarbon on Davy Jones Prospect.
- In March 2012, confirmed natural gas flow.

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.-Sep. 2012)	14,100boed (oil 14,100b/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.

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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 16-2	Block 05-1b/c
	Rang Dong Oil Field	Phuong Dong Oil Field		
Company Holding the Acreages	Japan Vietnam Petroleum Company		Nippon Oil Exploration (Cuu Long)	JX Nippon Oil & Gas Exploration (100%)
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration (97.1%) Mitsubishi Corporation (2.9%)		JX Nippon Oil & Gas Exploration (29.5%) JOGMEC (70.5%)	-
Project Status	Exploration/Development/Production		Exploration	Exploration
Interest	46.5%	64.5%	40.0%	35.0%
Partners	PVEP (17.5%) Conoco Phillips (36.0%)	PVEP (35.5%)	PVEP (45.0%) VSP (15.0%)	Idemitsu Oil & Gas (35.0%) INPEX (30.0%)
Operator	Japan Vietnam Petroleum Company		PVEP	Idemitsu Oil & Gas
Sales Volume(Jan.-Sep. 2012)	7,500 boed (oil 5,800b/d, gas 10.0mmcf/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](#).

Block 16-2

Exploration

- In November 2007, acquired a working interest in [block 16-2](#) offshore Vietnam.
- In November 2009, excavated test well No.1, and discovered gas and condensate.
- In August 2010, excavated test well No.2, and discovered gas and condensate.
- In April 2011, excavated appraisal well No1.

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.

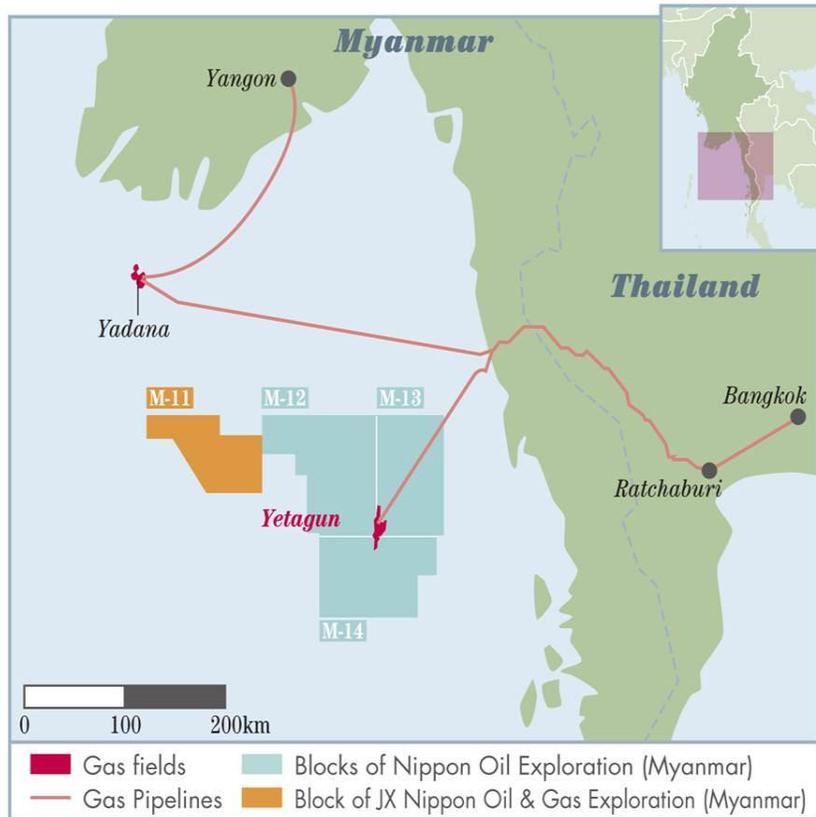
Principal Individual E&P Project Overview (Myanmar ①)

Myanmar

Production

Development

Exploration



	M-12, 13, 14	M-11
Company Holding the Acreages	Nippon Oil Exploration (Myanmar)	JX Nippon Oil & Gas Exploration (Myanmar)
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration (50%) Government of Japan (50%)	JX Nippon Oil & Gas Exploration (100%)
Project Status	Exploration / Development / Production	Exploration
Interest	19.3%	15.0%
Partners	Petronas Carigali (40.9%) MOGE(20.5%) PTTEP International (19.3%)	PTTEP International (45.0%) TOTAL (40.0%)
Operator	Petronas Carigali	PTTEP International
Sales Volume(Jan.-Sep. 2012)	8,700boed (oil 800b/d, gas 47.4mmcf/d)	-

Principal Individual E&P Project Overview (Myanmar ②)

Block M-12,13,14

Production

Development

Exploration

We have been participating in the Yatagun 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.

- 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 2012, Made the Final Investment Decision on the Yetagun North Gas Field.
Development of the gas field are underway to commence of production in August 2014.

Block M-11

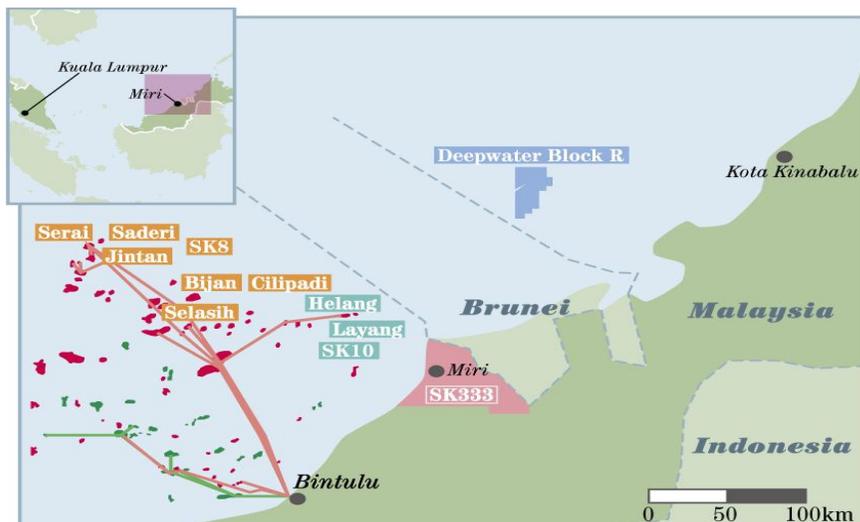
Exploration

- In September 2012, acquired a working interest in [blocks M-11](#), offshore Myanmar.
(Waiting for the approval of the Myanmar government)
- In January 2013, acquired the approval of the Myanmar government.
- In 2013, Scheduled to excavate test well.

Principal Individual E&P Project Overview (Malaysia ①)



Malaysia Production Development Exploration



- Oil Fields
- Gas Fields
- Oil Pipelines
- Gas Pipelines
- Gas Fields of JX Nippon Oil & Gas Exploration (Malaysia)
- Gas Fields of JX Nippon Oil & Gas Exploration (Sarawak)
- Block of JX Nippon Oil & Gas Exploration (Onshore Sarawak)
- Block of JX Nippon Oil & Gas Exploration (Deepwater Sabah)



	SK10 (Helang Gas Field, Others)	SK8 (Serai, Jintan Gas Field, Others)
Company Holding the Acreages	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	Exploration / Development / Production
Interest	75.0%	37.5%
Partners	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.-Sep. 2012)	21,100boed (oil 3,800b/d, gas 103.9mmcf/d)	19,300boed (oil 1,900b/d, gas 104.4mmcf/d)

	PM308A	SK333	Deepwater Block R
Company Holding the Acreages	JX Nippon Oil & Gas Exploration (Peninsular Malaysia)	JX Nippon Oil & Gas Exploration (Onshore Sarawak)	JX Nippon Oil & Gas Exploration (Deepwater Sabah)
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration (45.3%) JOGMEC (54.7%)	JX Nippon Oil & Gas Exploration (55.6%) JOGMEC (44.4%)	JX Nippon Oil & Gas Exploration (100%)
Project Status	Exploration	Exploration	Exploration
Interest	40.0%	75.0%	37.5%
Partners	Lundin Malaysia (35.0%) Petronas Carigali (25.0%)	Petronas Carigali (25.0%)	INPEX Offshore South West Sabah, Ltd.(37.5%) Petronas Carigali (25.0%)
Operator	Lundin Malaysia	JX Nippon Oil & Gas Exploration (Onshore Sarawak)	JX Nippon Oil & Gas Exploration (Deepwater Sabah)



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

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 Gas Field.

Block SK8 (Serai, Jintan Gas Fields and others)

Production

Mining Area during the production SK8 (Serai, Jintan, Saderi 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.

Block SK333

Exploration

- In December 2007, acquired a working interest in **Block SK333** onshore Sarawak, Malaysia.

Block PM308A

Exploration

- In April 2008, acquired a working interest in **Block PM308A** offshore peninsular Malaysia.

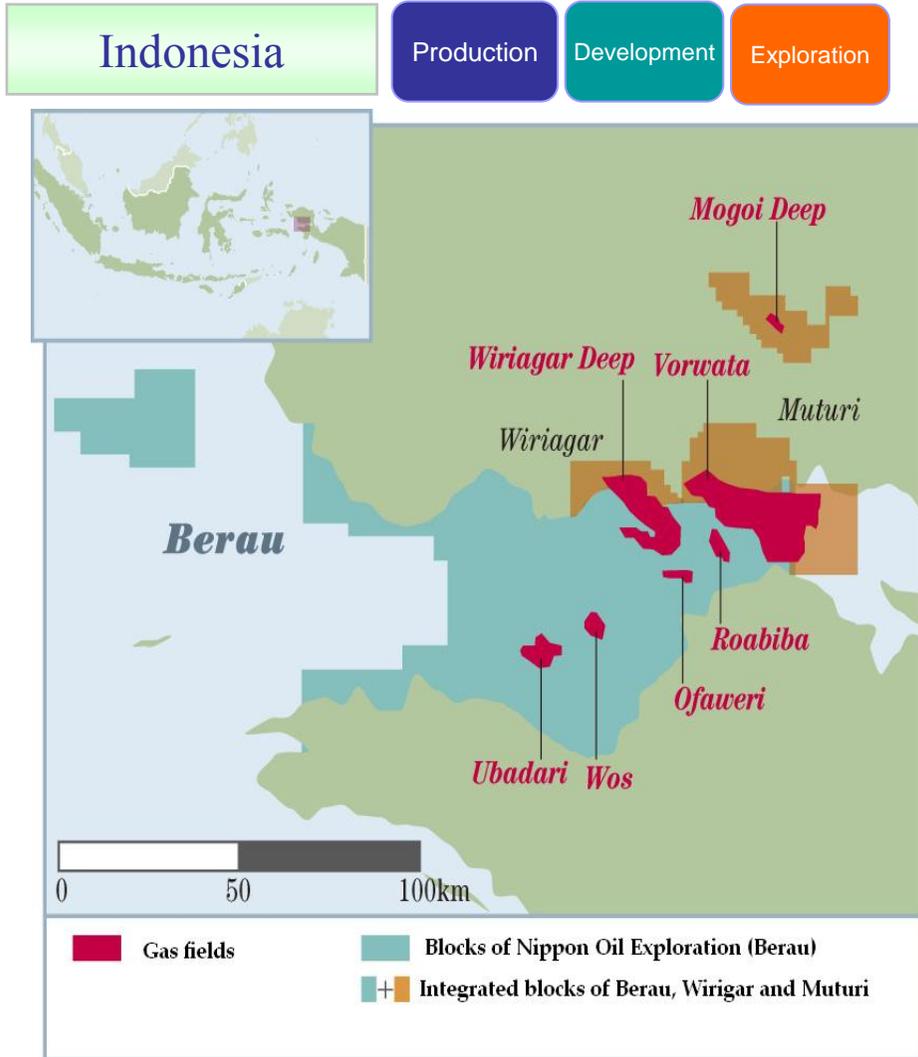
Deepwater Block R

Exploration

- In January 2012, acquired a working interest in **Deepwater Block R** deep sea, offshore Sabah, Malaysia.



Principal Individual E&P Project Overview (Indonesia)



Production
Development
Exploration

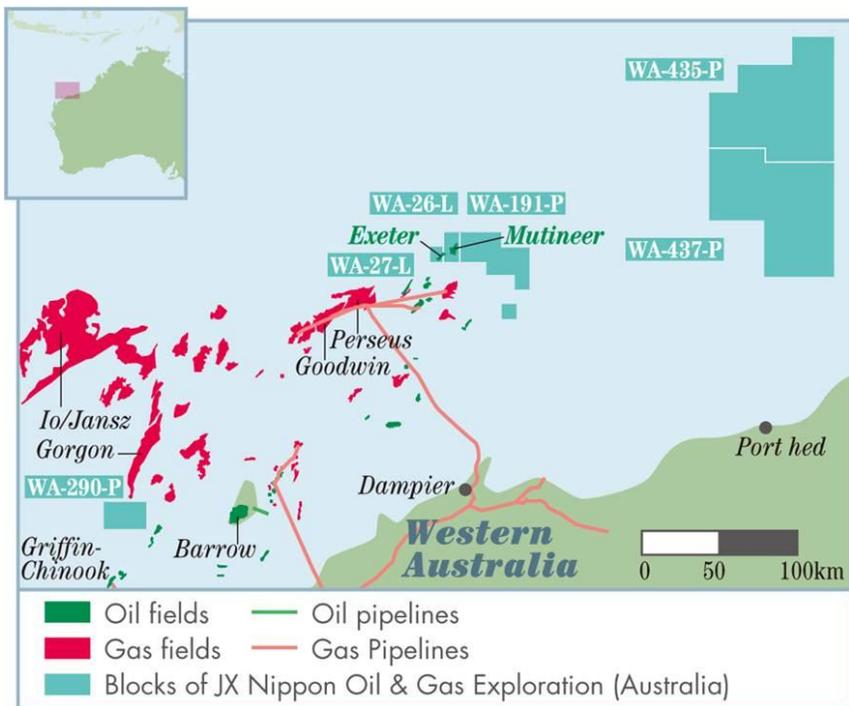
	Tangguh LNG Project	
Company Holding the Acreages	Nippon Oil Exploration (Berau)	KG Berau
Shareholders(Holding Percentages)	JX Nippon Oil & Gas Exploration (51.0%) JOGMEC (49.0%)	JX Nippon Oil & Gas Exploration(14.2%) JOGMEC (49.2%) Others
Project Status	Exploration/Development/Production	
Interest	13.4% (Nippon Oil Exploration(Berau) 12.2%, KG Berau 1.2%)	
Partners	BP(37.2%) CNOOC(13.9%) LNG Japan (7.3%)	MI Berau(16.3%) KG Berau / KG Wiriagar (10.0%) Talisman (3.1%)
Operator	BP	
Sales Volume(Jan.-Sep. 2012)	19,700boed (oil 600b/d, gas 114.3mmcf/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 (Australia)



	Mutineer/Exeter Oil Field	Finucane South Oil Field	Block WA-290-P Block WA-49-R	Block WA-435-P Block WA-437-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	Development	Exploration	Exploration
Interest	25.0%	25.0%	15.0%	20.0%
Partners	Santos (33.4%) Kufpec (33.4%) Woodside (8.2%)	Santos (37.5%) Kufpec (37.5%)	Apache (30.25%) Santos (37.5%) OMV (20.00%) Tap (10.00%)	Apache (40.0%) Finder (20.0%) Carnarvon (20.0%)
Operator	Santos	Santos	Apache	Apache
Sales Volume(Jan.-Sep. 2012)	1,300boed (oil 1,300b/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.

Production

- In 1997, acquired a working interest in [Block WA-191-P](#), and discovered Mutineer and Exeter Oil Fields. Production of Mutineer and Exeter Oil Fields are commenced in 2005.

Development

- In May 2011, discovered oil in the Finucane South prospect in [Block WA-191-P](#).
- In Jan 2012, Made the Final Investment Decision on the [Finucane South Field](#).

Exploration

- In April 2011, excavated test well “Zola-1”, and discovered Gas in [Block WA-290-P](#)
 - In October 2012, acquired working interests in [Block WA-435-P](#) and [Block WA-437-P](#).
- In 2013, Scheduled to excavate test well .

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

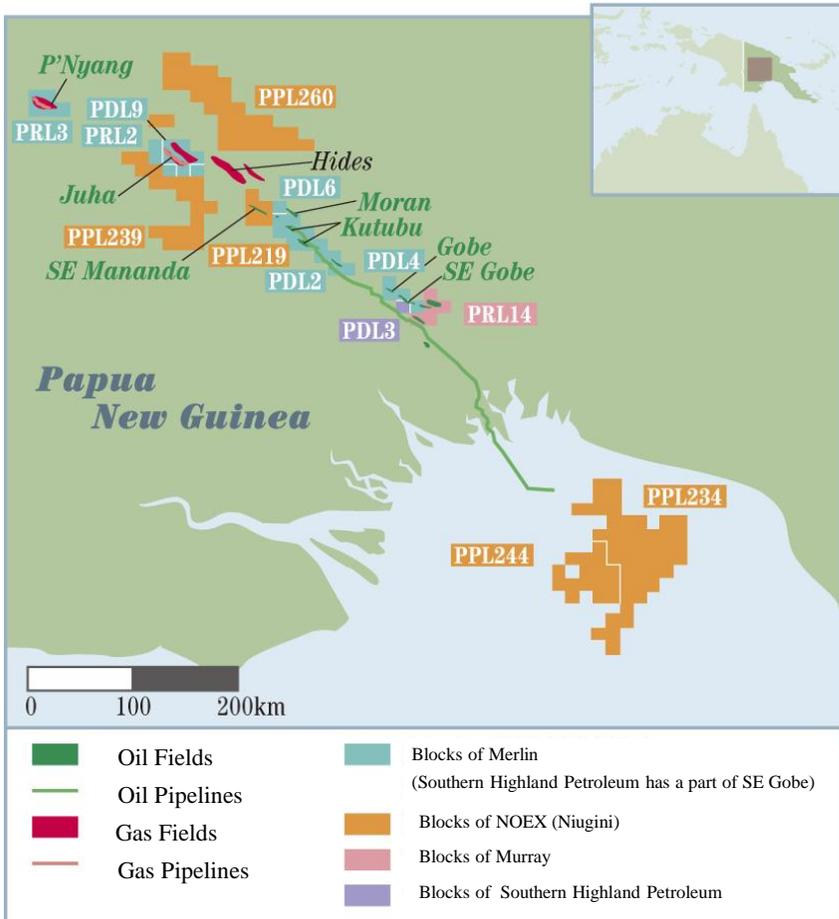


Papua New Guinea

Production

Development

Exploration



	Kutubu, Moran, Gobe oil fields, Others	PNG LNG Project
Company Holding the Acreages	Merlin Petroleum Company (79%) Nippon Oil Exploration (Niugini) Pty LTD (30.4%) Southern Highland Petroleum (80%) Murray Petroleum (29.4%)	Nippon Papua New Guinea LNG LLC (79%)
Project Status	Exploration / Development / Production	Development
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.-Sep. 2012)	5,000boed (oil 5,000b/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

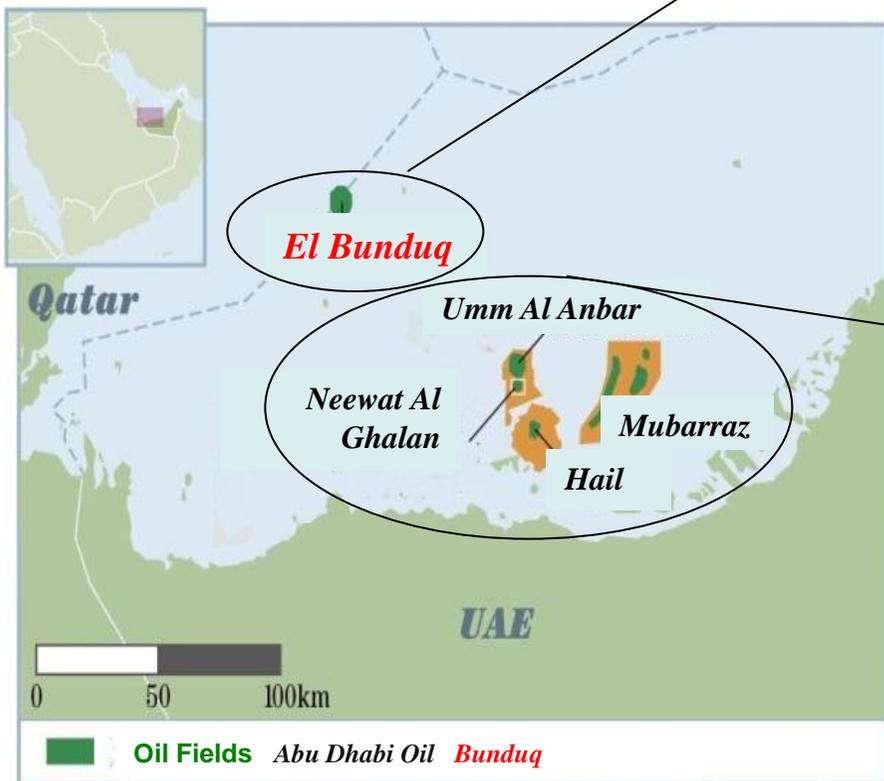
Development

[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 . Development of the project are underway to commence of production in 2014.



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



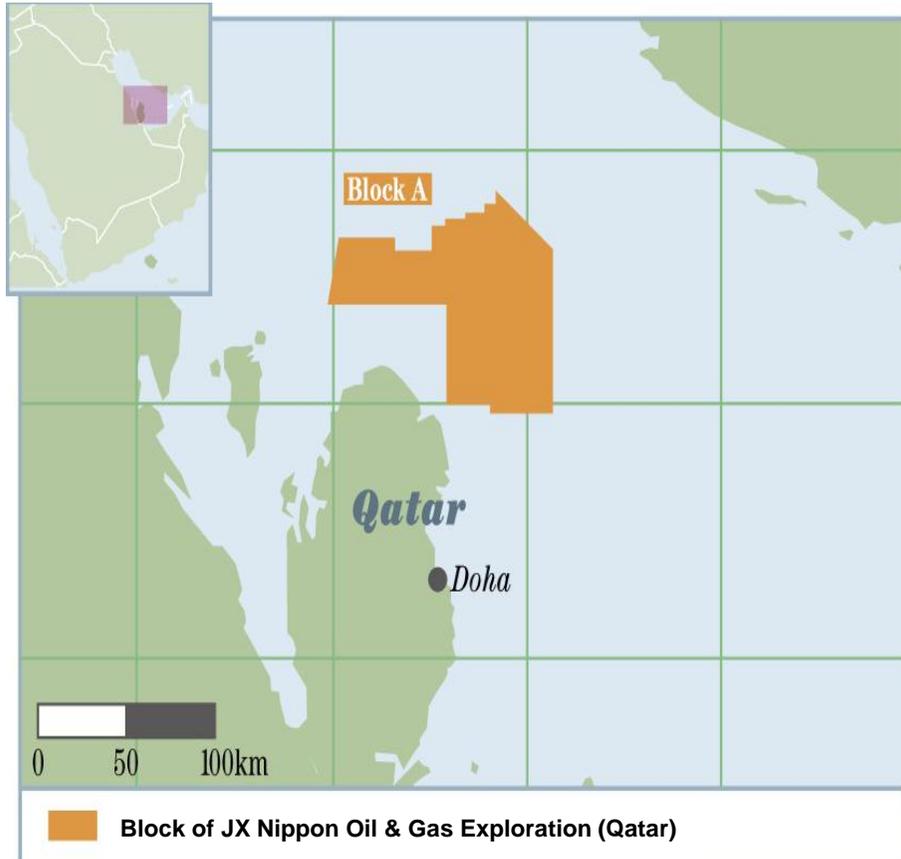
Company Holding the Acreages	United Petroleum Development (Bunduq Company Limited)
Partners	JX Nippon Oil & Gas Exploration (45.0%) Cosmo Oil Co., Ltd. (45.0%) Mitsui Oil Exploration Co., Ltd (10.0%)
Project Status	Exploration / Development / Production
Interest	97.0%
Partners	BP (3%)
Operator	Bunduq Company Limited
<ul style="list-style-type: none"> ● In 1970, United petroleum Development acquired a working interest of El Bunduque Oil Field. ● In 1975, oil production commenced in El Bunduq oil field. ● In 1983, oil production was resumed by a secondary recovery scheme using water injection. ● In 2006, El Bunduque achieved a cumulative production volume of 200 million barrels. 	

Company Holding the Acreages	Abu Dhabi Oil
Partners	JX Nippon Oil & Gas Exploration (31.5%) Cosmo Oil Co., Ltd.(63.0%) Tokyo Electric Power Co., Inc.(1.8%) Chubu Electric Power Co., Inc.(1.8%) Kansai Electric Power Co., Inc.(1.8%)
Project Status	Exploration / Development / Production
Interest	100.0%
Operator	Abu Dhabi Oil
<ul style="list-style-type: none"> ● In 1967, acquired a working interest in block of Mubarraz. ● In 1973, oil production commenced in Mubarraz Oil Field. ● In 1989, oil production commenced in Umm Al Anbar Oil Field. ● In 1995, oil production commenced in Neewat Al Ghalan Oil Field. ● In2009, 3 fields achieved cumulative production volume of 300 million barrels. ● In 2011, Sign a New Concession Agreement. ● In 2012, Effectuation of New Concession Agreement. 	

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

Qatar

Exploration



Project Company

JX Nippon Oil & Gas Exploration (Qatar) Limited (100%)
(%) = JX Group Shareholding

Interest in Individual Fields

100%

Operator

JX Nippon Oil & Gas Exploration (Qatar) Limited

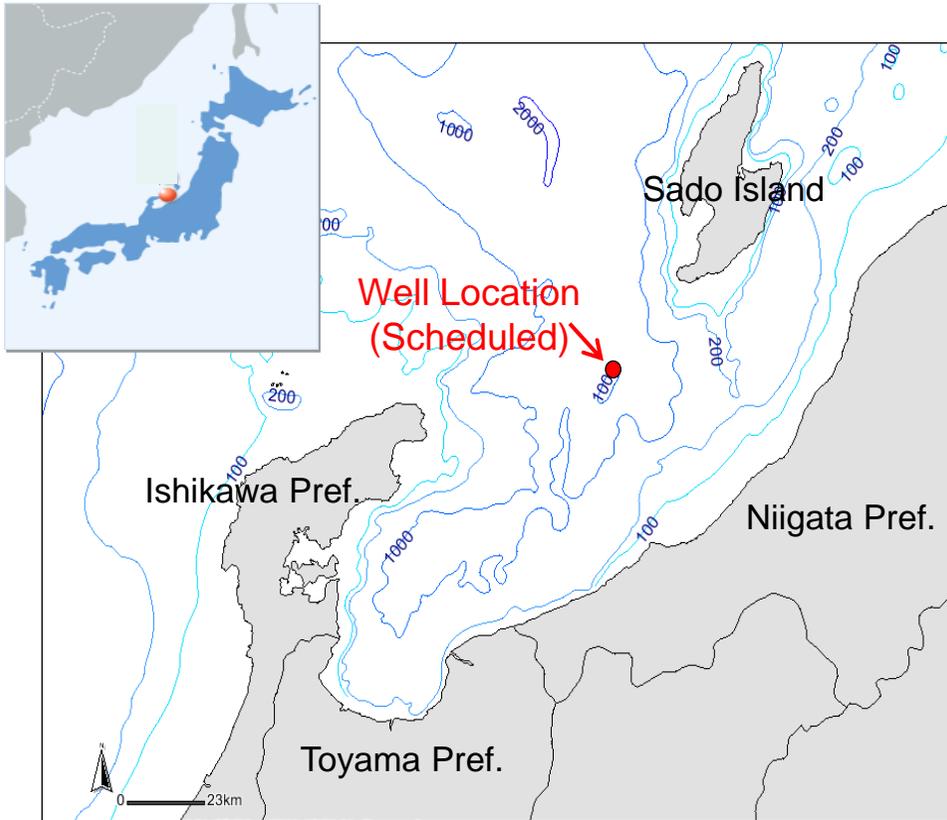
Exploration

- 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.

Principal Individual E&P Project Overview (Japan)

Japan (Offshore Niigata Pref.)

Exploration



Project Company

JX Nippon Oil & Gas Exploration (100%)
(%) = JX Group Shareholding

Interest in Individual Fields

100%

Operator

JX Nippon Oil & Gas Exploration

Exploration

- In December 2011
Signed contract with METI's Agency for Natural Resources and Energy, for oil and gas research.
- In April 2013
Scheduled to drill "METI Kisoshisui" well



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.

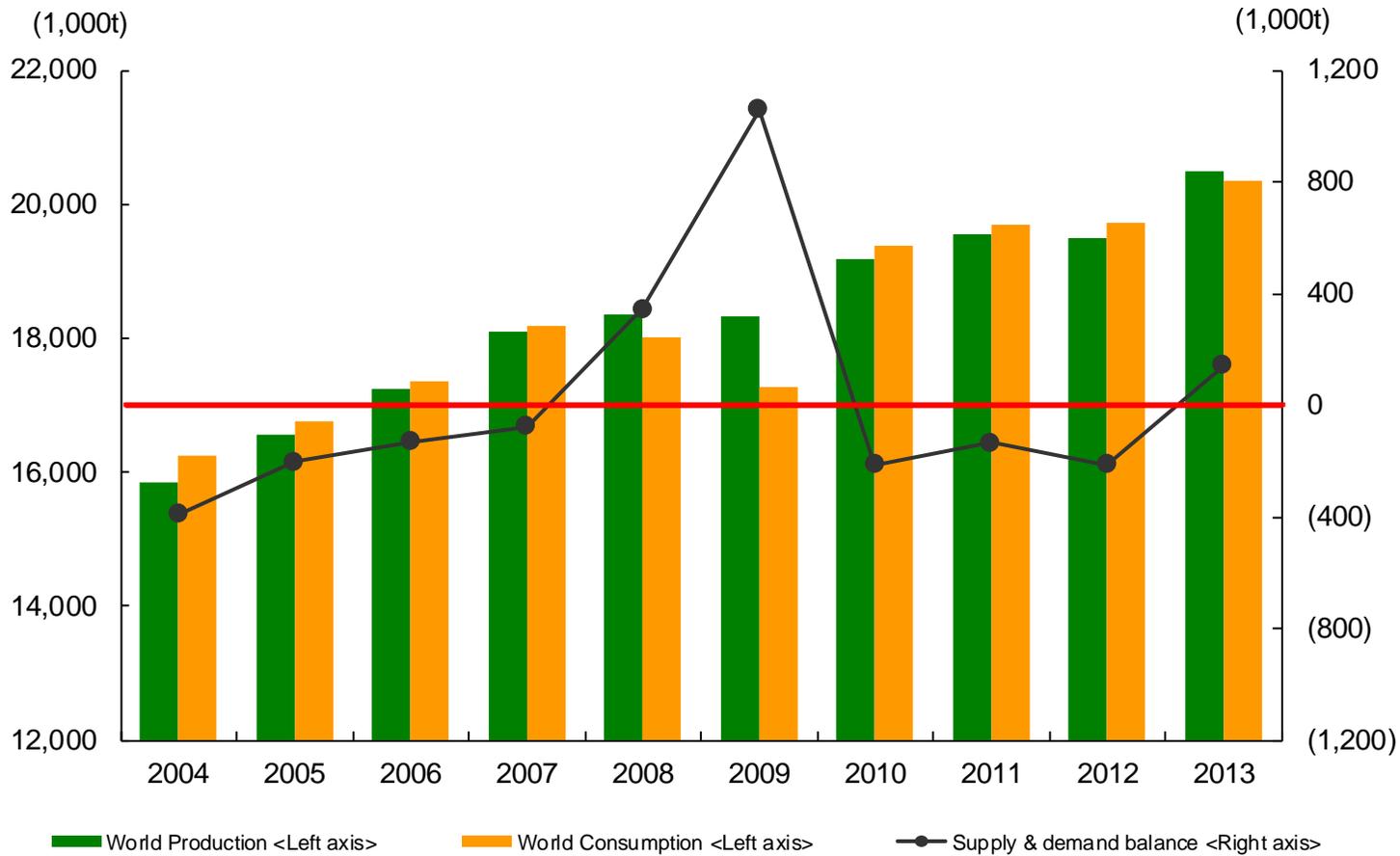
Definition of Proved Reserves:

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.

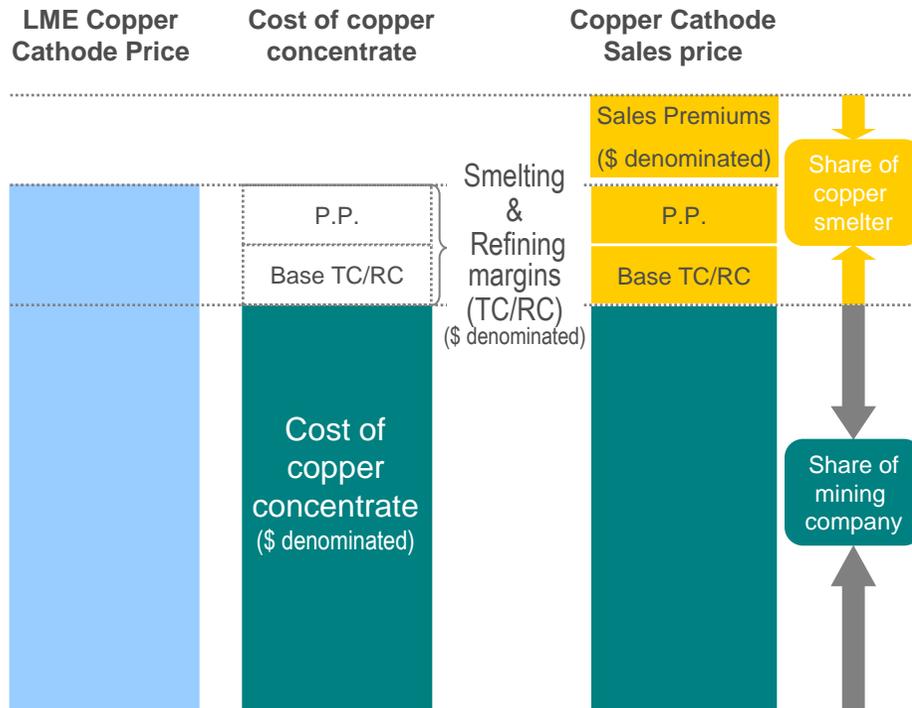
World Copper Cathodes Supply & Demand



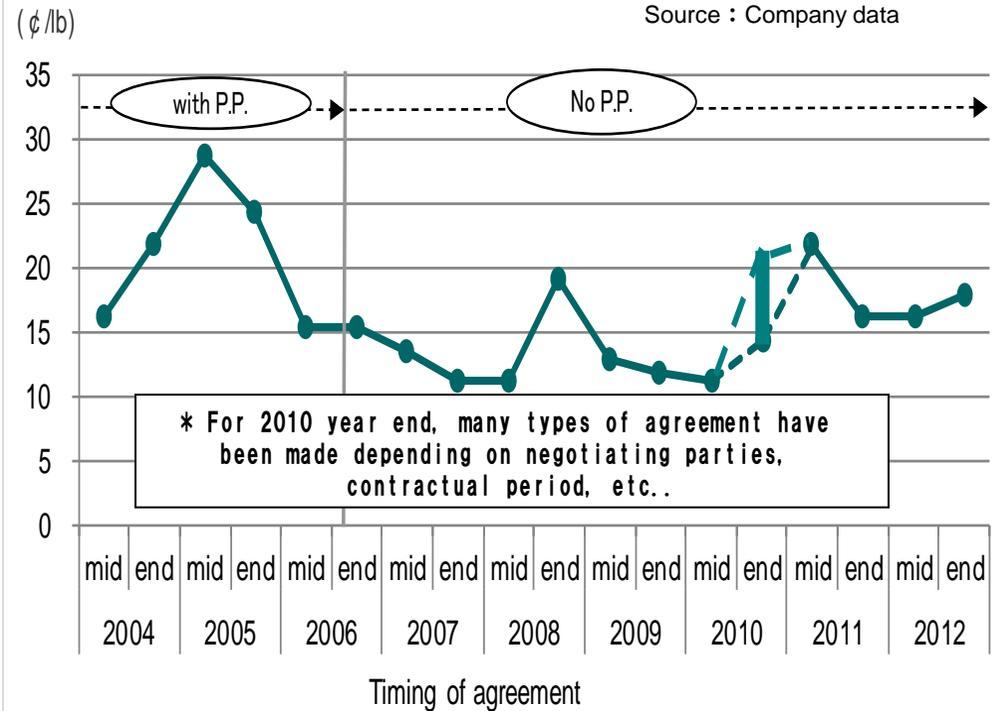


Earnings Structure of Copper Smelter & Refinery / Trends of Base TC/RC

Earnings Structure of Copper Smelter & Refinery



Trends of Base TC/RC



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 & refining margins.

TC (Treatment charge) + RC (Refining charge) : Consisting of “Base TC/RC” and “P.P.”

P.P. (Price participation) : The system under which mines and smelters share margins when LME copper price exceeds benchmark price.

Sales price : LME price plus sales premiums, which is established by reference to various factors including importation costs, import tariffs, 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 have been conducting demonstration test since latter half of 2009, and we got a good result about copper and gold recovery. We are considering to adopt the result of pilot plant to gold concentrate.

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



Structure of N-Chlo Process

