Supplementary Information

May 10, 2010

The Future of Energy, Resources and Materials

JX Holdings, Inc.

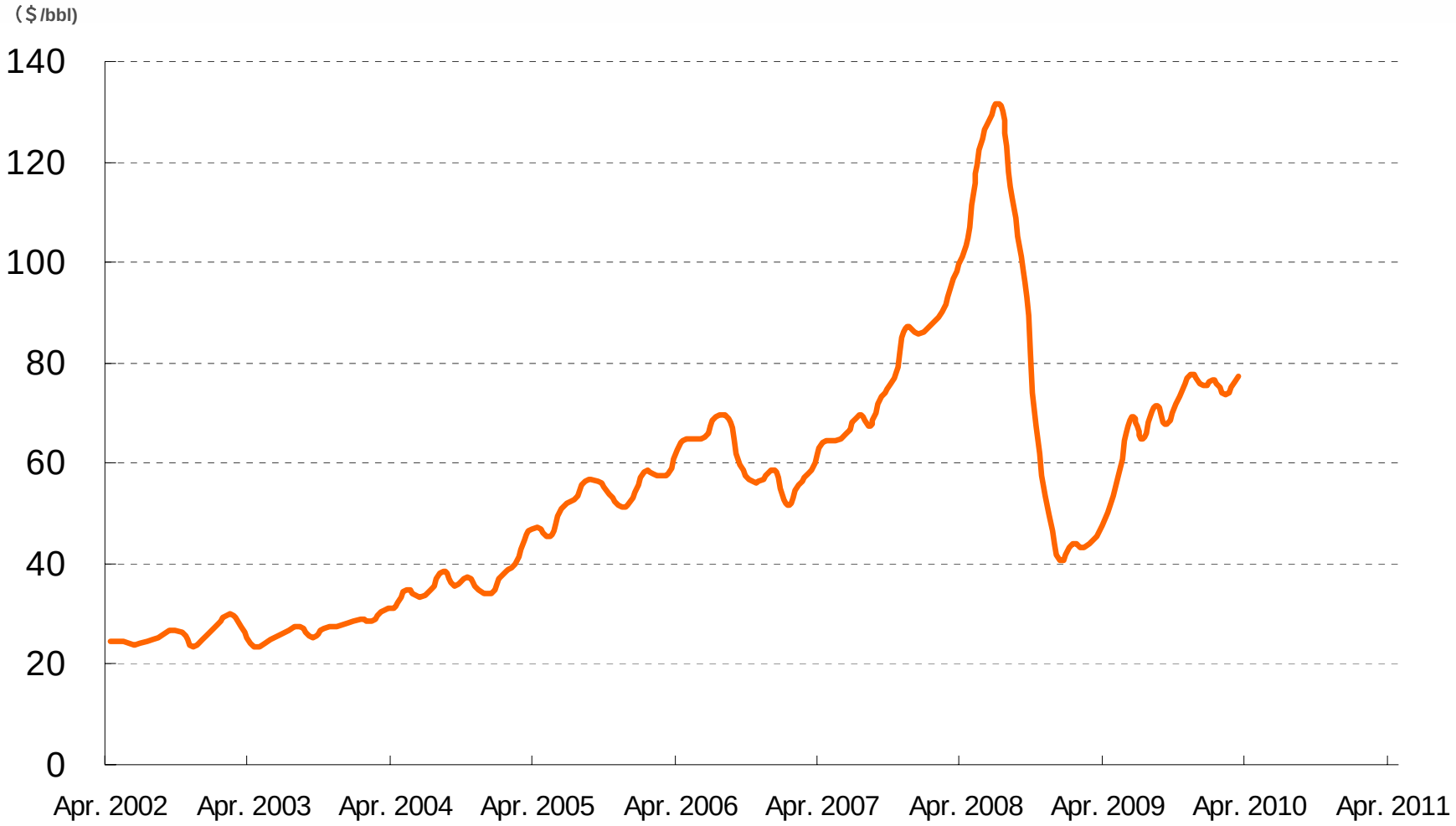
Contents

Refining & Marketing

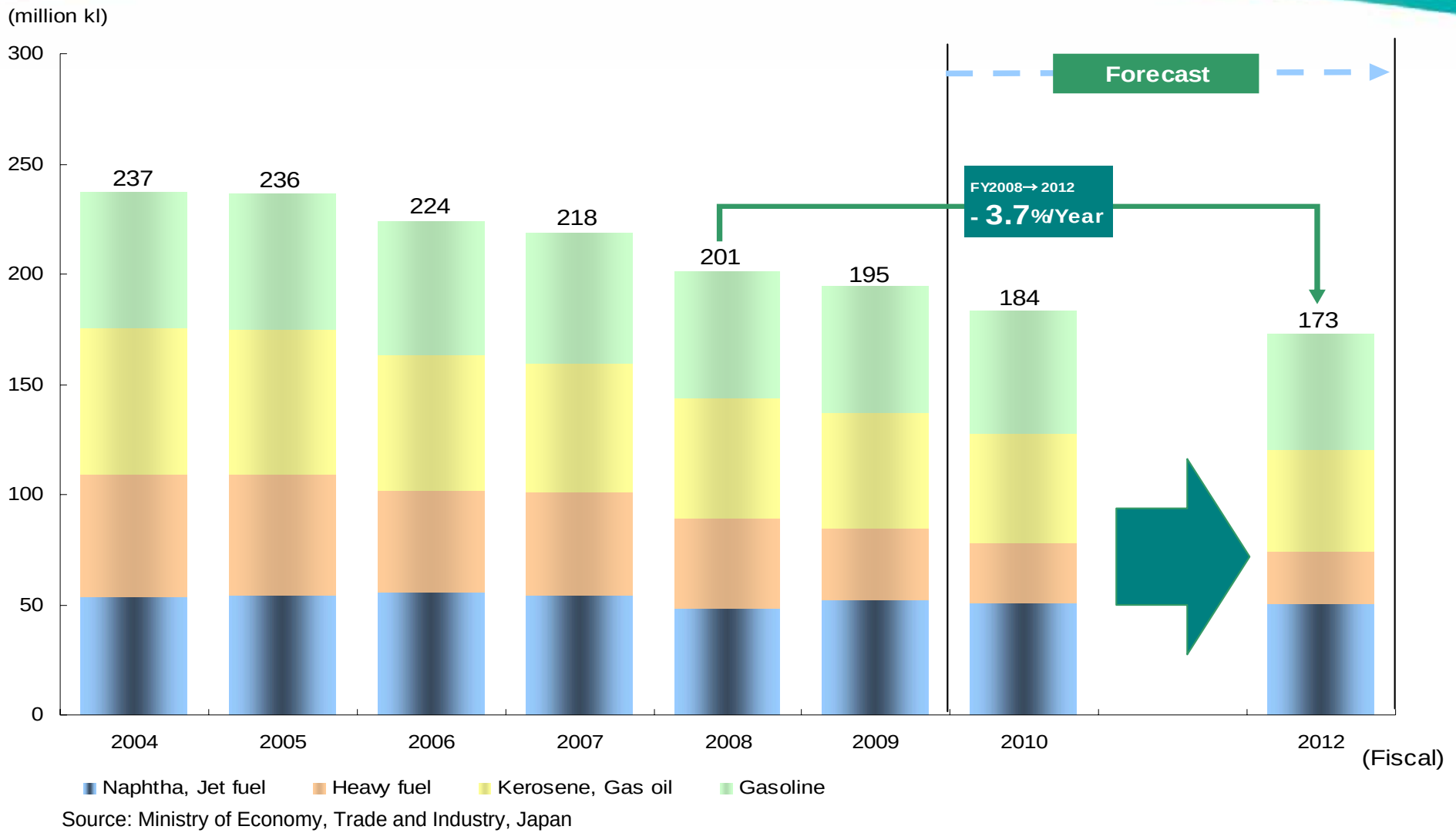
E&P of Oil & Natural Gas

Metals

Historical Dubai Crude Oil Price



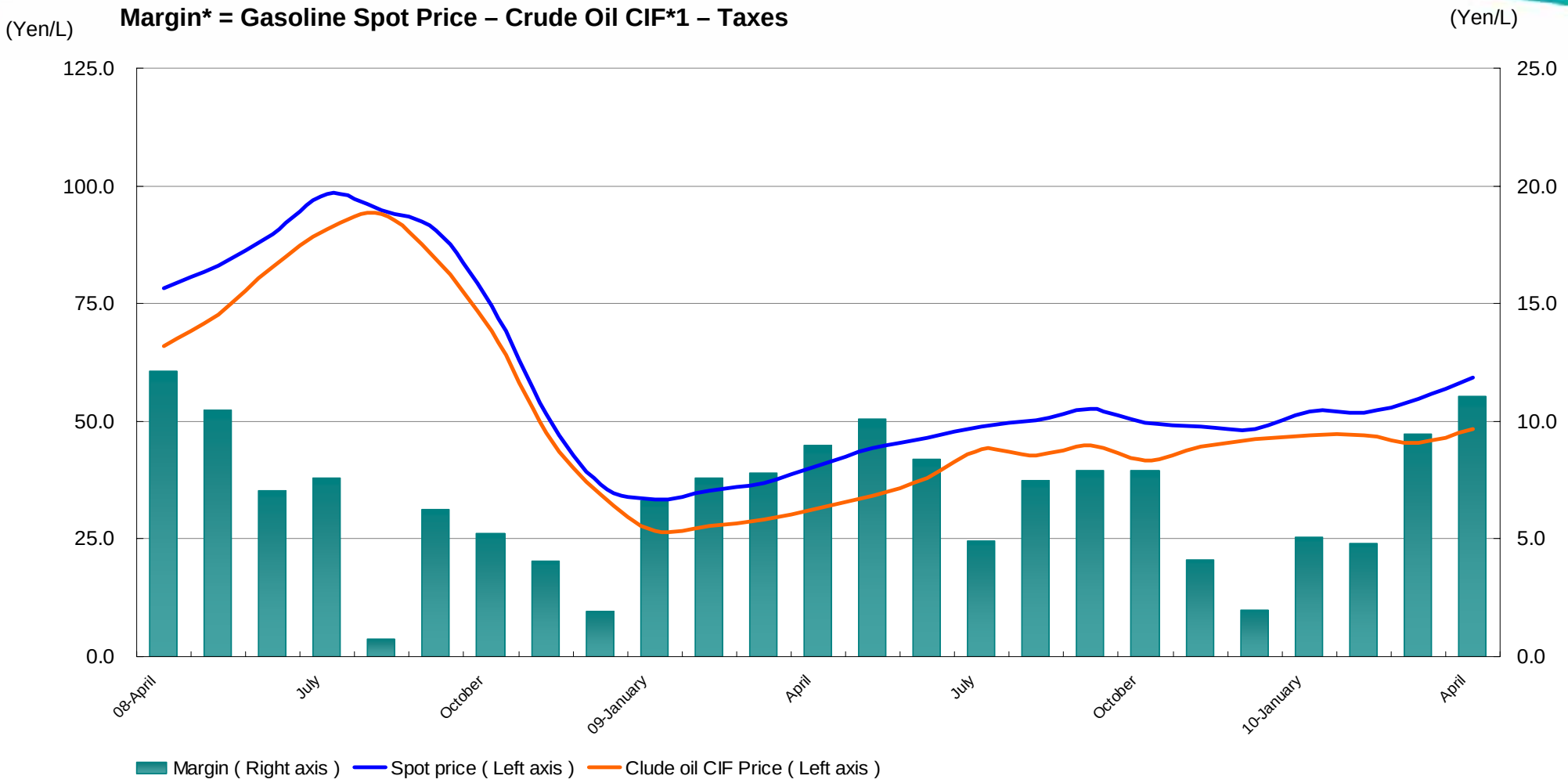
Demand for Petroleum Products (Japan)



Source: Ministry of Economy, Trade and Industry, Japan

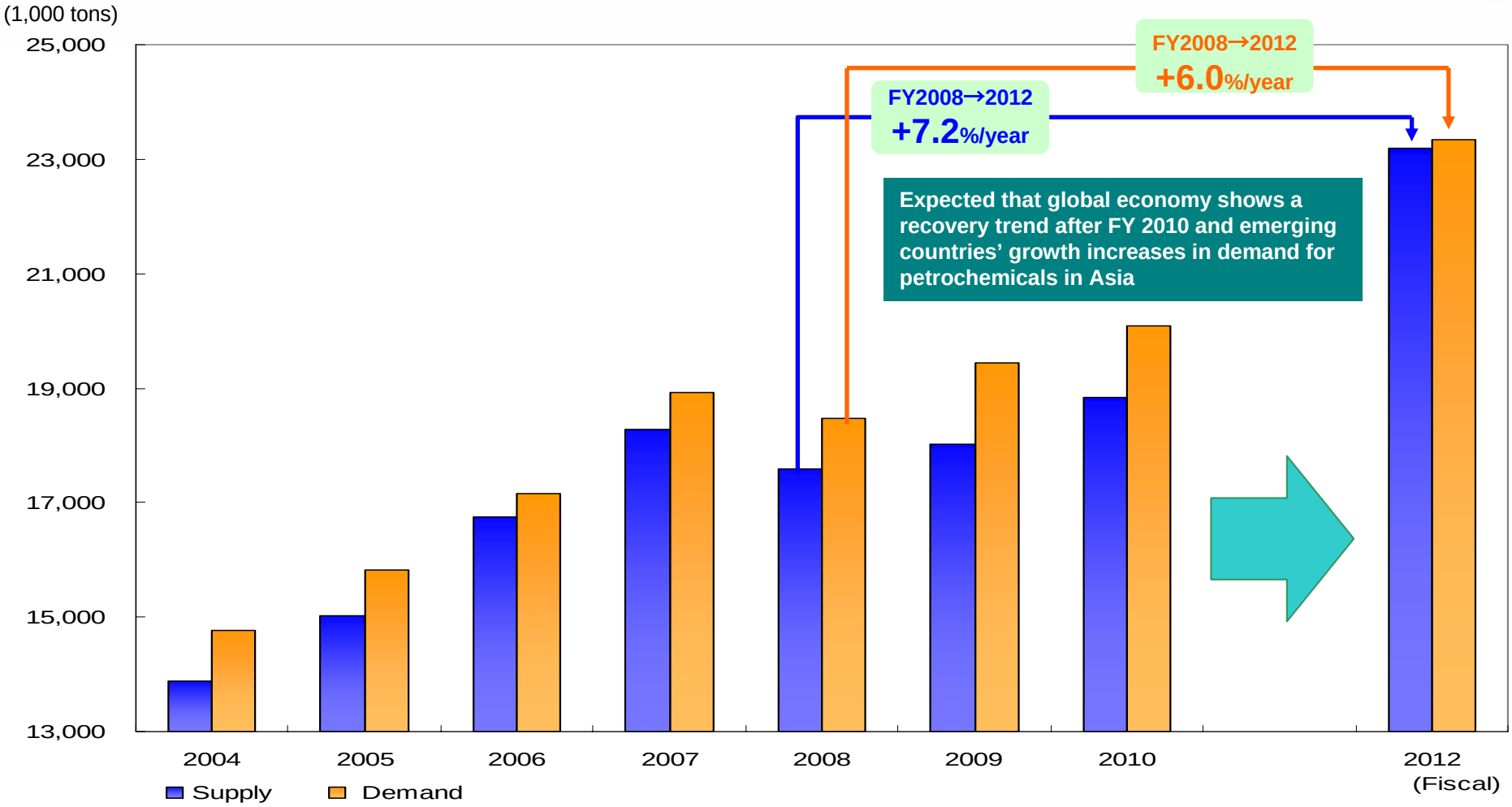
Domestic Market Gasoline Margin*

Margin* = Gasoline Spot Price – Crude Oil CIF*1 – Taxes



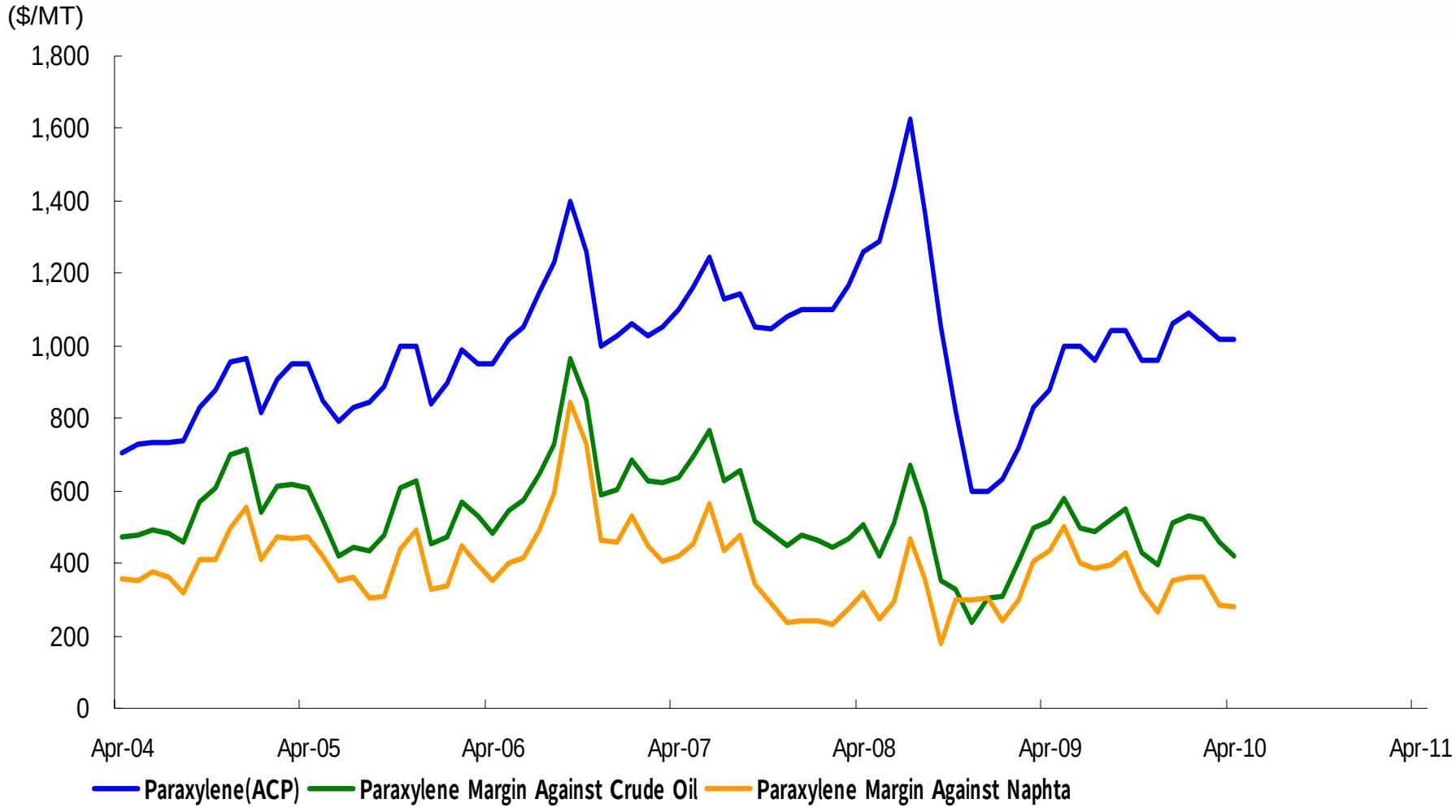
Note*1: All Japan CIF including petroleum tax and Interest.
Source*1: Trade statistics (Ministry of Finance, Japan) and Company data

Demand for Petrochemicals in Asia (Paraxylene)

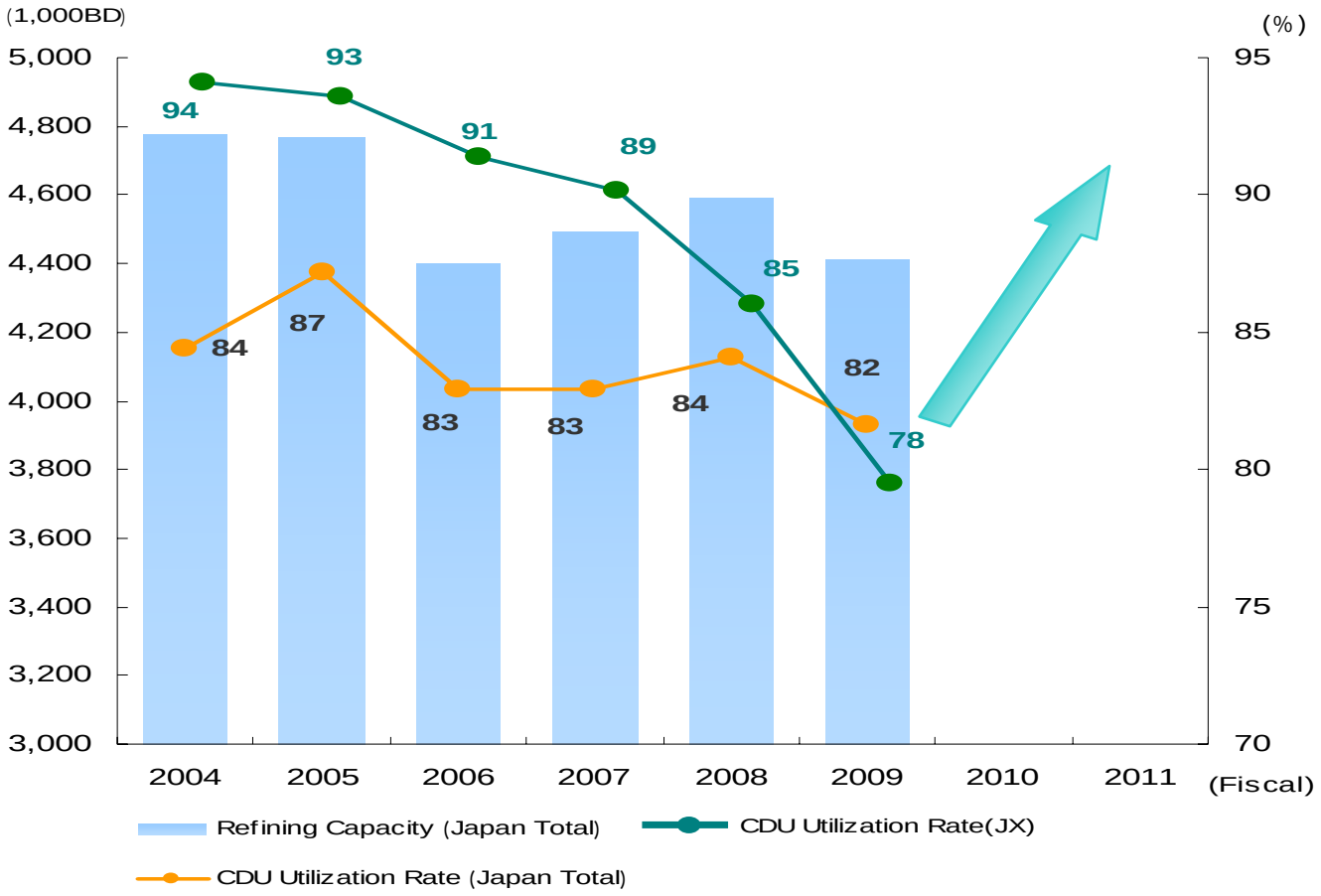


Source: Company Data

Paraxylene Price and Margin
(Against Crude Oil, Against Naphtha)



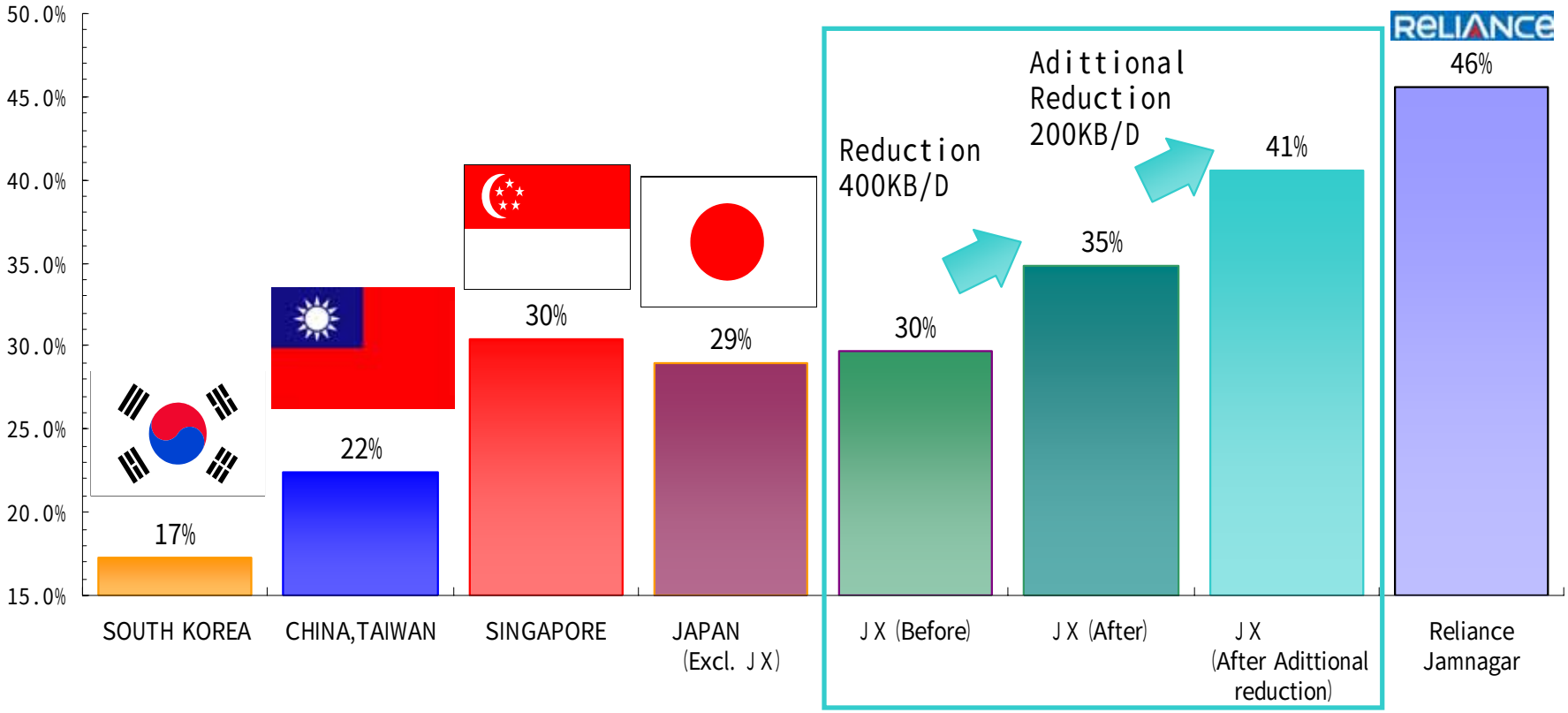
Historical CDU*[1] Utilization Rate*[2] and Refining Capacity*[3]



Note*1: Crude Distillation Unit
Note*2: Utilization rate of CDU excluding the impact of periodic repair.
Note*3: Refining Capacity (JX) excluding Condensate splitter of Mizushima and Kashima.

Source: Petroleum Association of Japan and Company data

Equipment Ratio of Secondary Unit*Against CDU



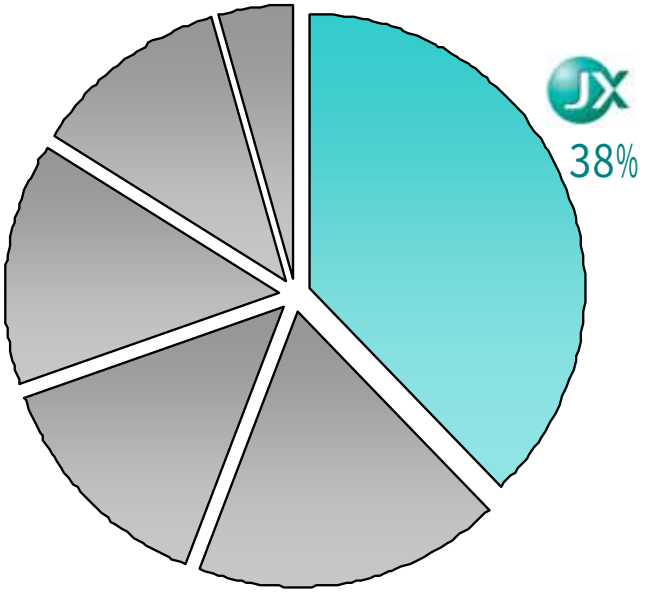
Note*: Catalytic cracking unit, Catalytic hydrocracking unit, Thermal operation unit, Solvent De-asphalting unit, Independent power producer unit
Source: Oil & Gas journal, Petroleum Association of Japan and Company data

Sales Volume of FY 2009 & Forecast of FY 2010

	FY 2009			Forecast of FY 2010	Changes
	NIPPON OIL	JAPAN ENERGY	JX Nippon Oil & Enegy Corporation		
	million KL	million KL	million KL	million KL	(%)
Gasoline	14.29	5.72	20.01	18.99	-5.1%
Premium	(2.11)	(0.84)	(2.95)	(2.86)	-3.1%
Regular	(12.08)	(4.88)	(16.96)	(16.02)	-5.5%
Naphtha	1.81	2.27	4.08	5.03	23.3%
JET	1.28	0.29	1.57	1.56	-0.6%
Kerosene	6.00	1.99	7.99	7.18	-10.1%
Diesel Fuel	8.20	3.87	12.07	11.15	-7.6%
Heavy Fuel Oil A	5.01	1.82	6.83	6.08	-11.0%
Heavy Fuel Oil C	5.13	1.18	6.31	5.01	-20.6%
For Electric Power	(2.63)	(0.59)	(3.22)	(2.35)	-27.0%
For General Use	(2.50)	(0.59)	(3.09)	(2.66)	-13.9%
Total-Domestic Fuel	41.72	17.14	58.86	55.00	-6.6%
Crude Oil	1.13	0.00	1.13	0.97	-14.2%
Lublicants & Specialities	2.21	0.71	2.92	3.47	18.8%
Petrochemicals	4.08	1.74	5.82	6.33	8.8%
Exported Fuel	6.94	3.34	10.28	11.73	14.1%
LPG	1.83	0.18	2.01	1.93	-4.0%
Coal	4.37	0.06	4.43	4.97	12.2%
Total-Excluding Barter Trade & Others	62.28	23.17	85.45	84.40	-1.2%
Barter Trade & Others	18.46	6.30	24.76	19.15	-22.7%
Total	80.74	29.47	110.21	103.55	-6.0%

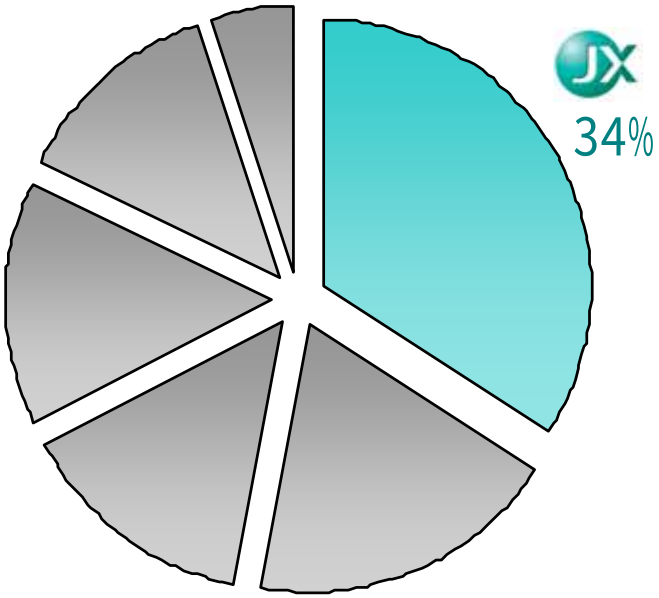
JX Group's Share of Sales in Japan

Share of Sales: Four Light Oil Products*
FY 2009 Basis Approx. 38%
Domestic Demand 126 million KL
JX 47 million KL



Note*: Total of Gasoline, Kerosene, Diesel Fuel, Heavy Fuel Oil A

Share of Sales: Total-Domestic Fuel
FY 2009 Basis Approx. 34%
Domestic Demand 195 million KL
JX 66 million KL



Source: Petroleum Association of Japan and Company data

Number of Service Stations (Fixed-Type)

	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
Nippon Oil	12,669	11,987	11,694	11,333	11,059	10,807	10,368	9,919	9,974	
Japan Energy	4,646	4,476	4,296	4,150	4,023	3,833	3,708	3,555	3,344	
JX Group										12,687
EMGK *1	7,898	7,597	7,278	6,904	6,701	6,464	6,044	5,635	5,064	4,761
Idemitsu Kosan	6,114	5,896	5,624	5,508	5,358	5,249	5,059	4,913	4,598	4,338
Showa Shell Sekiyu	5,642	5,402	5,153	4,968	4,808	4,689	4,560	4,481	4,256	4,102
Cosmo Oil	5,600	5,373	5,152	4,926	4,709	4,552	4,359	4,188	3,913	3,768
Others *2	1,916	1,733	1,642	1,593	1,500	1,439	1,388	1,383	687	683
Oil Companies	44,485 (85.6%)	42,464 (83.4%)	40,839 (82.3%)	39,382 (80.4%)	38,158 (79.5%)	37,033 (78.8%)	35,486 (78.9%)	34,074 (79.2%)	31,836 (77.1%)	30,339 (77.1%)
Private Brands and Others	7,472 (14.4%)	8,436 *3 (16.6%)	8,761 *3 (17.7%)	9,618 *3 (19.6%)	9,842 *3 (20.5%)	9,967 *3 (21.2%)	9,514 *3 (21.1%)	8,926 *3 (20.8%)	9,464 *3 (22.9%)	9,020 *3 (22.9%)
Total	51,957	50,900 *3	49,600 *3	49,000 *3	48,000 *3	47,000 *3	45,000 *3	43,000 *3	41,300 *3	39,359 *3

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

*2. Figures are total of Kyushu Oil, Taiyo Petroleum, and Mitsui Oil & Gas. (until FY07)

*3. Estimated by JX Holdings.

Number of Company-Owned Service Stations, Number of Self-Service Facilities, Number of Doctor Drive Service Stations

<Number of Company-Owned Service Stations>

	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
Nippon Oil	2,945	2,857	2,746	2,607	2,518	2,436	2,309	2,175	2,081	2,893
Japan Energy	1,328	1,284	1,229	1,207	1,172	1,154	1,143	1,106	1,059	

<Number of Self-Service Stations>

	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
Nippon Oil	54	142	342	520	651	794	1,055	1,230	1,517	2,378
Japan Energy	19	164	322	385	440	534	606	667	729	
Total for Japan *1	422	1,353	2,522	3,423	3,493	4,257	5,203	6,009	6,565	6,906

Note*1: This figure includes only self-service retail outlets that are affiliated to oil wholesale companies.

Source: Oil information center, The Daily Nenryo yushi

<Number of Doctor Drive Stations>

	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
Nippon Oil	390	1,283	1,610	1,871	1,963	2,505	2,403	2,287	2,130	2,081

JX Group Refineries

Refining Capacity in Japan (As of April, 2010)

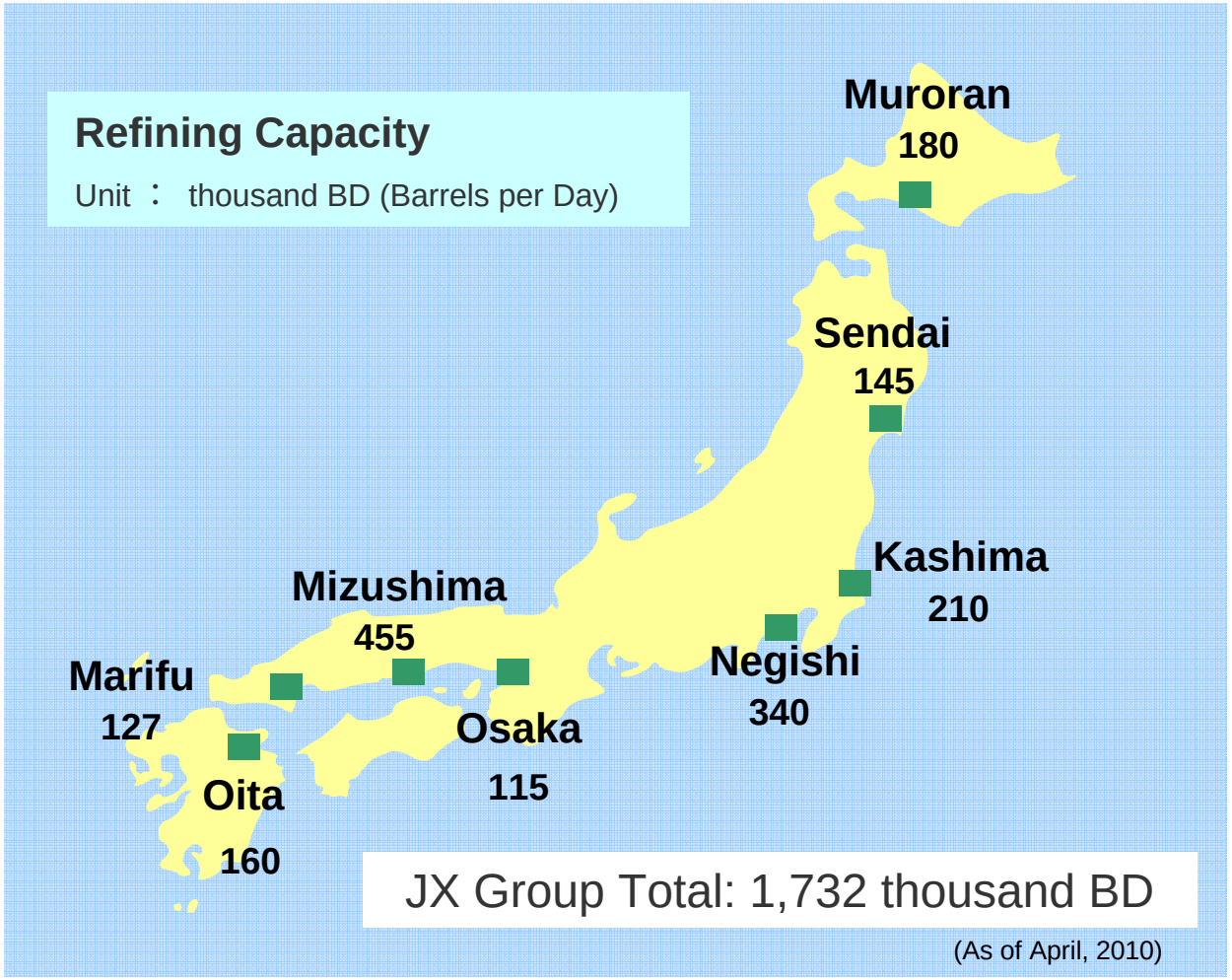
Corporate Group	Number of Refineries	Refining Capacity
JX Group	8	thousand BD 1,732 *1
Exxon Mobil Group	4	836
Idemitsu Kosan	4	640
Cosmo Oil	4	555
Showa Shell Sekiyu	4	655 *2
Others	3	224
Total	27	4,642

Note*1:Condensate splitter of Mizushima and Kashima are excepted.
Note*2:Showa Shell Sekiyu's refining capacity and number of refineries includes Fuji Sekiyu.

After Reduction

Corporate Group	Number of Refineries	Refining Capacity
JX Group	7	thousand BD 1,392

Source: Petroleum Association of Japan and Company data

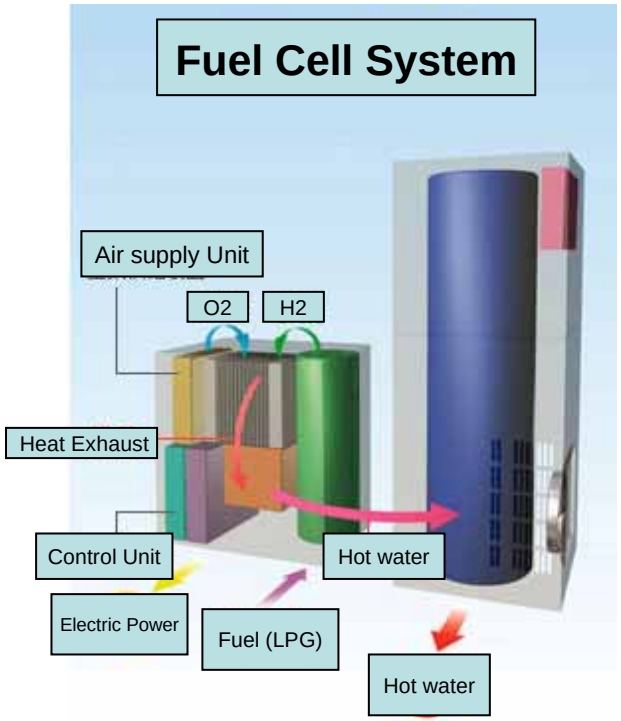


New Energy (Residential-Use Fuel Cell)

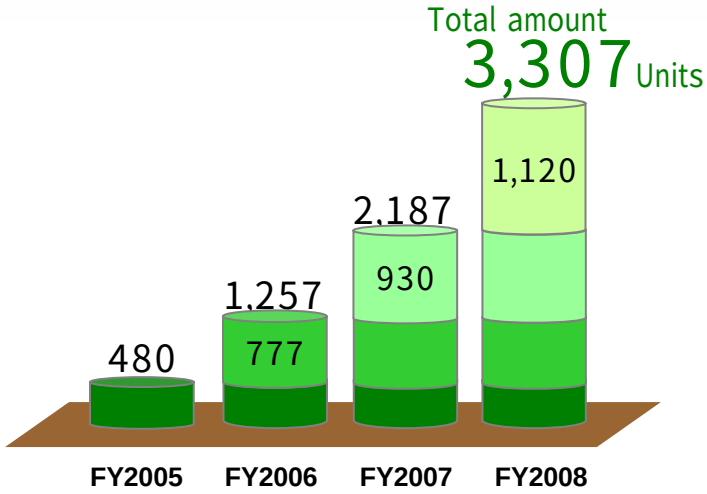
家庭用燃料電池 ENE・FARM エネファーム

GOOD DESIGN

(Residential-Use Fuel Cell System :ENE FARM)



Large-Scale Demonstration Project of Residential-Use Fuel cell



<System maker basis>

System Maker	Fuel cell unit number
ENEOS CELLTECH*	1,253
Toshiba fuel cell system	748
EBARA	710
Panasonic	520
TOYOTA	76
Total	3,307

Note*:Joint Company by Nippon Oil and SANYO Electric.

<Business Units basis>

Business Unit	Fuel cell unit number
Nippon Oil	1,368
Tokyo Gas	796
Other LNG companies	557
Other Oil companies	447
Other Gas companies	139
Total	3,307

Source:New Energy Foundation Home Page

JX Group's Reserve Standards

JX Group's criteria for evaluating reserves conforms to the SPE 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) and announced in March 2007.

SPE Standards is aiming to become global standards that embody current technological innovation and economic realities, SPE Standards reflect the opinions of a large number of companies. They incorporate surveys on defining and categorizing reserves from every oil firm and country worldwide, as well as input solicited from outside sources.

JX Group's reported reserves are in line with reserves as defined by the SPE 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.

Outline of Principal E&P of Oil and Natural Gas Projects

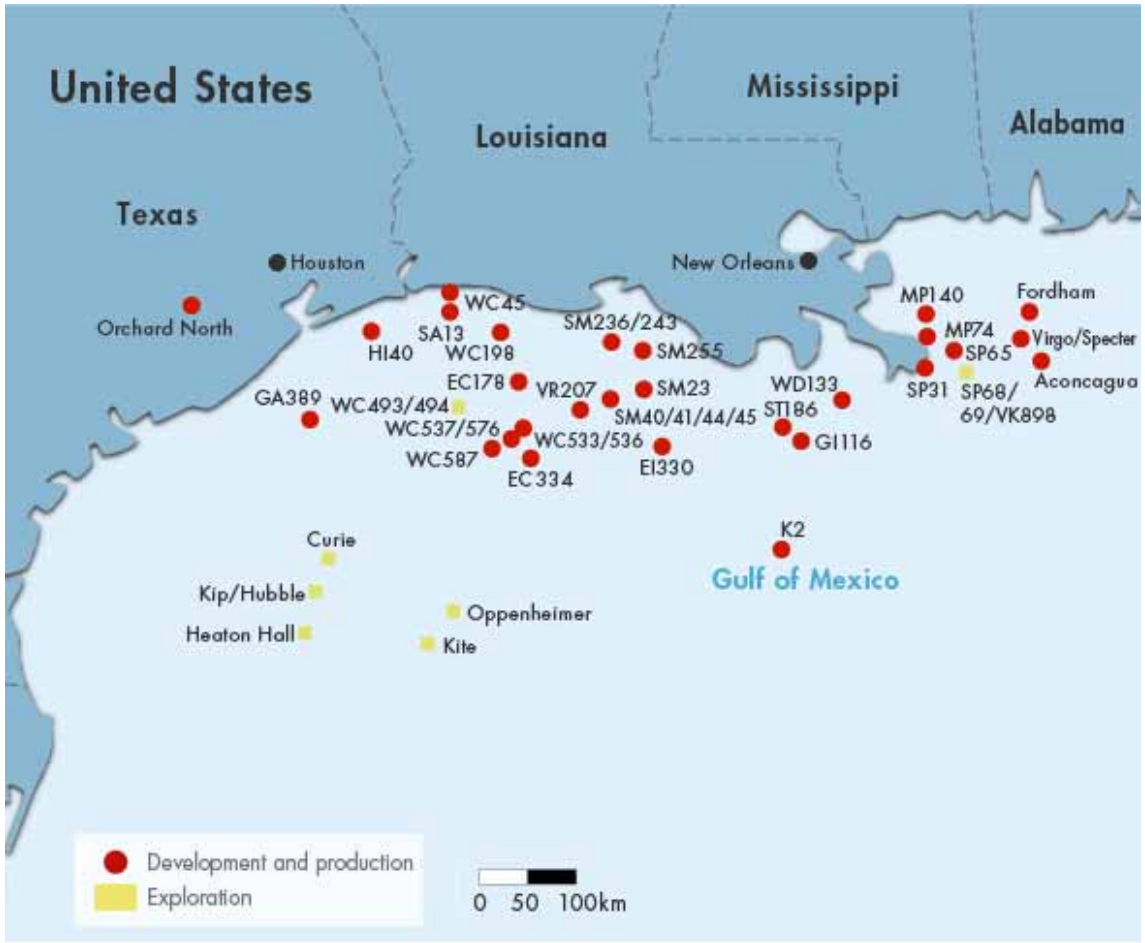
Project Name/Company	2009CY Sales Volume (1,000BOED)	Reserves (1 million BOE) *1
(U.S.A.)		
Gulf Of Mexico(U.S.A.)		
Nippon Oil Exploration U.S.A. Limited	11	48
(Canada)		
Canada		
Japan Canada Oil Company Limited	14	268
(U.K.)		
North Sea, U.K.		
Nippon Oil Exploration and Production U.K. Limited	13	27
(South East Asia.)		
Vietnam		
Japan Vietnam Petroleum Co. Ltd.	14	
Myanmar		
Nippon Oil Exploration (Myanmar) Ltd.	9	
Malaysia		
Nippon Oil Exploration (Malaysia) Ltd.	24	
Nippon Oil Exploration (Sarawak) Ltd.	37	
Indonesia		<South East Asia Total>
Nippon Oil Exploration (Berau) Ltd.	—	309
(Oceania)		
Papua New Guinea		
Japan Papua New Guinea Petroleum Company Ltd.	7	
Southern Highlands Petroleum Co., Ltd.	1	
Australia		<Oceania Total>
Nippon Oil Exploration (Australia) Pty Ltd.	2	17
(The middle east and others)		
United Arab Emirates, Qatal and Others	*2	
Abudhabi Oil Co., Ltd., United Petroleum Development Co., Ltd. And Others	13	25
合計	143	694

*1 Proved reserves and probable reserves as of Dec.'08. Including reserves from projects currently under development

*2 JX Group Equity Basis

Principal Individual E&P Project Overview ①

Gulf Of Mexico



’09 Jan-Dec Sales Volume

10,900 boed
(oil: 3,700 b/d, gas: 43mmcf/d)

Project Company

Nippon Oil Exploration U.S.A. Ltd. (NOEX USA) (100%)
(%) ＝ JX Group Shareholding

Range Of Interests in Individual Fields

6.1%-100%

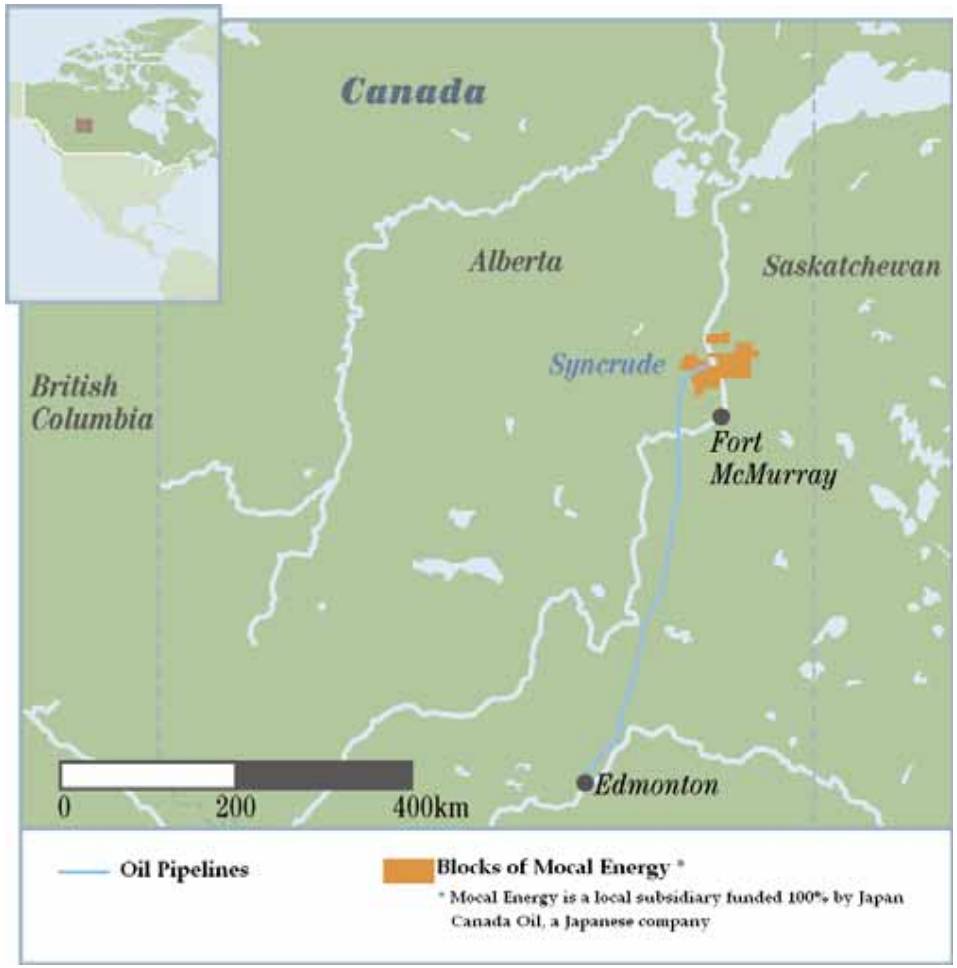
Operators

NOEX USA, Anadarko, ConocoPhillips, others

In 1990, NOEX USA 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, NOEX USA 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 ②

Canada



'09 Jan - Dec Sales Volume
14,000b/d

Project Company
Japan Canada Oil Co., Ltd. (100%)
(%) = JX Group Shareholding

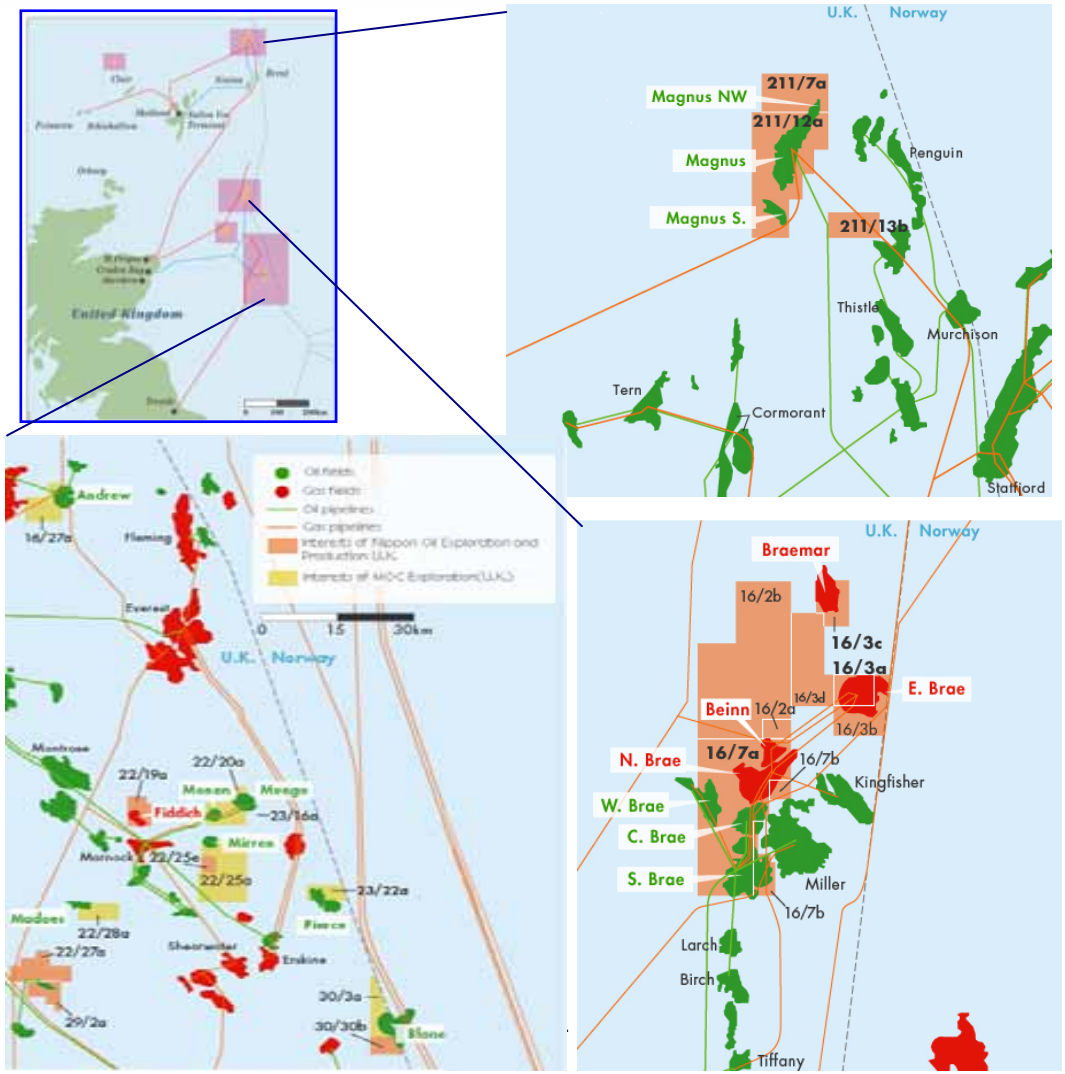
Interest in Individual Fields
5%

Operator
Syncrude Canada

- **In 1992, NOEX acquired a 5% stake in the Syncrude project from PetroCanada. Subsequently, this stake was transferred to Mocal Energy Limited (a wholly owned subsidiary of NOEX).**

Principal Individual E&P Project Overview ③

U.K. North Sea



'09 Jan - Dec Sales Volume
12,600BOED
(oil: 8,500b/d, gas: 25mmcf/d)

Project Company
Nippon Oil Exploration and Production U.K. Ltd. (NOEP UK) (100%)
(%) = JX Group Shareholding

Range of Interests in Individual Fields
2.1% to 45%

Operators
NOEP UK, BP, Shell, Marathon, others

● **MOEX**
In 1994, MOEX acquired a working interest in blocks, including those in the Andrew Oil Field, the Mungo/Monan Oil Fields, the Pierce Oil Field, the Mirren/Madoes Oil Fields, and the Blane Oil Field. It is currently expanding its exploration, development, and production operations.

● **NOEP UK**
In 1996, NOEP UK acquired an interest in the Magnus Oil Field, in 2002, it acquired interests in the Brae Gas Fields and the Fiddich Oil Field, and in 2004, it acquired an interest in the West Don oil field.
Exploration, development and production activities are progressing.

Principal Individual E&P Project Overview ④

UK North Sea

<NOEX Operator Area>

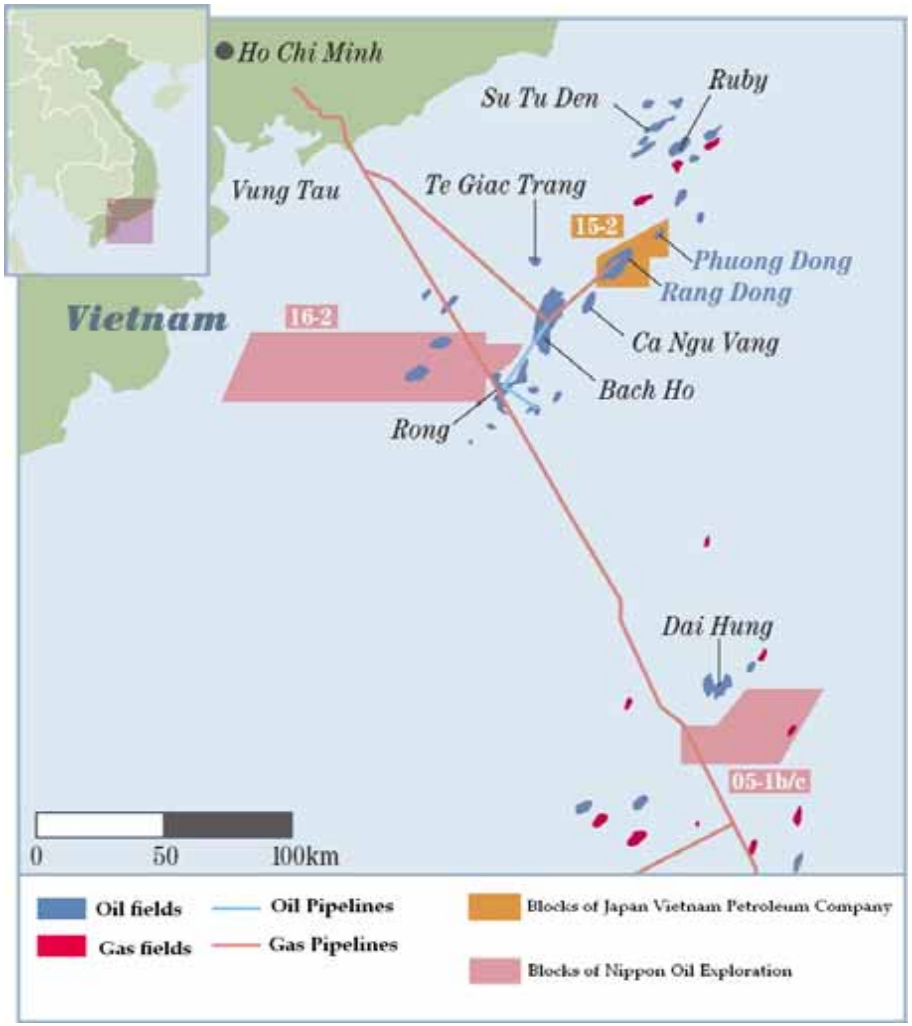
Nippon Oil Exploration and Production U.K. Ltd acquired 4 exploration blocks in 2007 and 1 exploration block in 2009 as an operator through a competitive tender process were held by the British Government.

Range of Interests in Individual Fields
33.3% to 45%

acquired blocks in 2007-
15/23c,15/24a,15/28a,15/29e
acquired blocks in 2009-15/30b

Principal Individual E&P Project Overview ⑤

Vietnam



'09Jan - Dec Sales Volume
13,800BOED
(oil: 9,900b/d, gas: 23mmcf/d)

Project Company
Japan Vietnam Petroleum Co., Ltd. (JVPC)
(97.1%)
(%) = JX Group Shareholding

Interest in Individual Fields
Rang Dong : 46.5%
Phuong Dong : 64.5%

Operator
JVPC

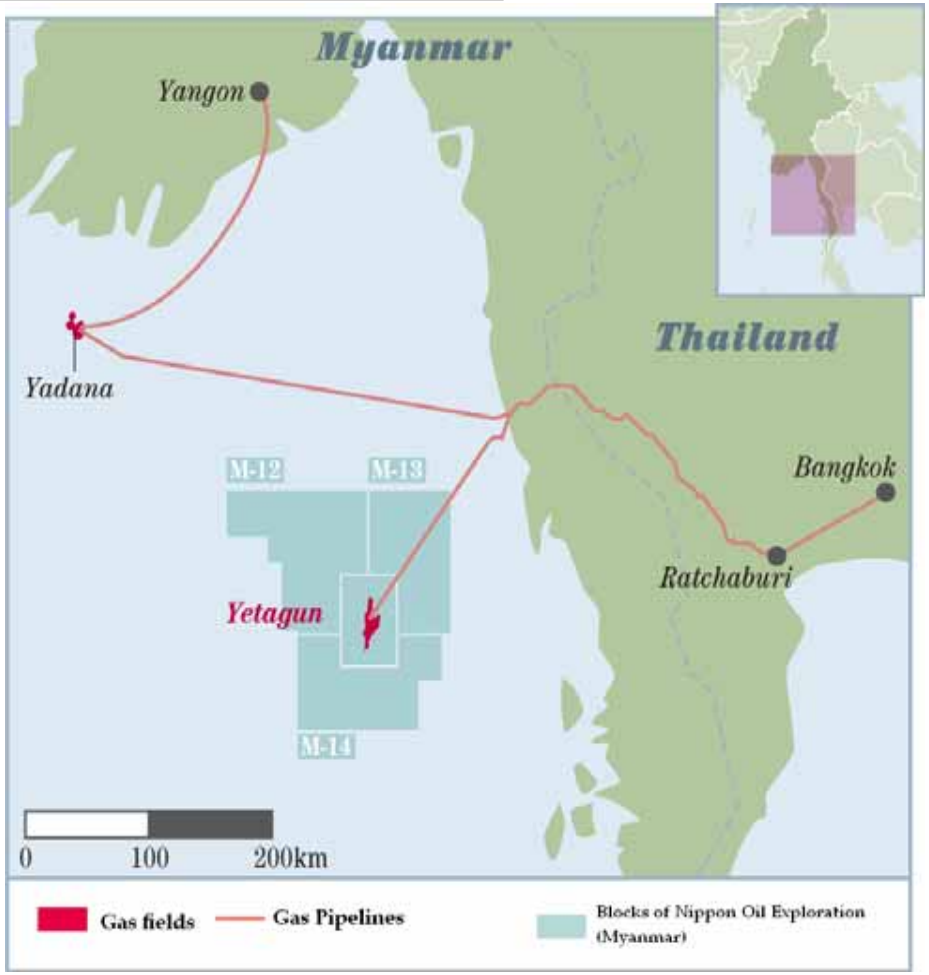
- **In 1992, JVPC acquired a working interest in block 15-2 offshore Vietnam.**
- **In 1994, JVPC discovered the Rang Dong Oil Field within block 15-2, and it began production in that field from 1998.**
- **In 2006, the Rang Dong Oil Field associated gas recovery and utilization project was approved as a Clean Development Mechanism (CDM) system under the Kyoto Protocol.**

Production Sharing Contract for 16-2 exploration block off the southern coast of Vietnam signed with PetroVietnam in November 2007.

- **In February 2008, 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 Field.**

Principal Individual E&P Project Overview ⑥

Myanmar



'09 Jan - Dec Sales Volume
8,800BOED
(oil: 800b/d, gas: 48mmcf/d)

Project Company
Nippon Oil Exploration (Myanmar), Limited
(NOEX Myanmar) (50%)
(%) = JX Group Shareholding

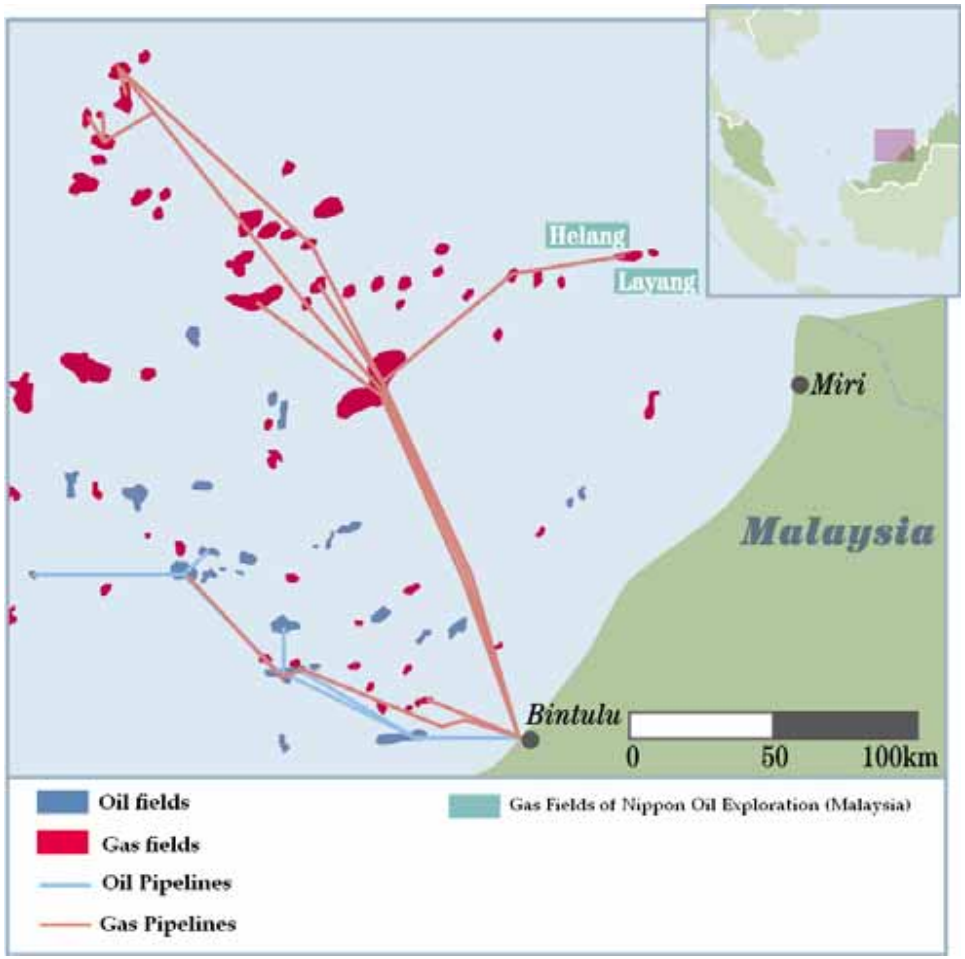
Interest in Individual Fields
19.3%

Operator
PETRONAS Carigali

- **In 1991, NOEX Myanmar acquired a working interest in blocks M-13/14 offshore Myanmar. The following year, it 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.**

Principal Individual E&P Project Overview ⑦

Malaysia



'09 Jan - Dec Sales Volume
23,700BOED
(oil: 3,900b/d, gas: 119mmcf/d)

Project Company
Nippon Oil Exploration (Malaysia), Limited (NOMA) (78.7%)
(%) = JX Group Shareholding

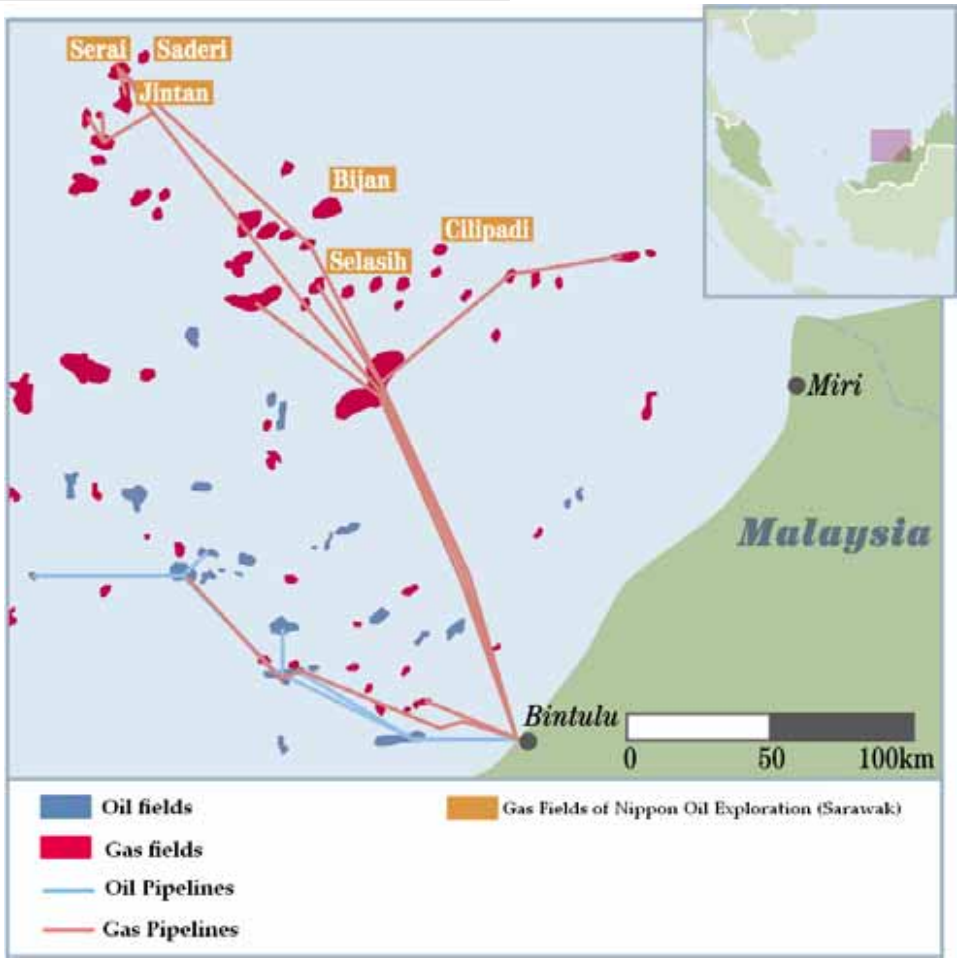
Range of Interest in Individual Fields
75%

Operator
NOMA

- **In 1987, NOMA acquired a working interest in Block SK-10 offshore Sarawak, Malaysia.**
- **In 1990, NOMA discovered the Helang Gas Field, where production commenced in 2003.**
- **In 1991, NOMA discovered the Layang Gas Field.**

Principal Individual E&P Project Overview ⑧

Sarawak



'09 Jan - Dec Sales Volume
36,800BOED
(oil: 3,500b/d, gas: 200mmcf/d)

Project Company
Nippon Oil Exploration (Sarawak), Limited
(NOSA)
(76.5%)
(%) = JX Group Shareholding

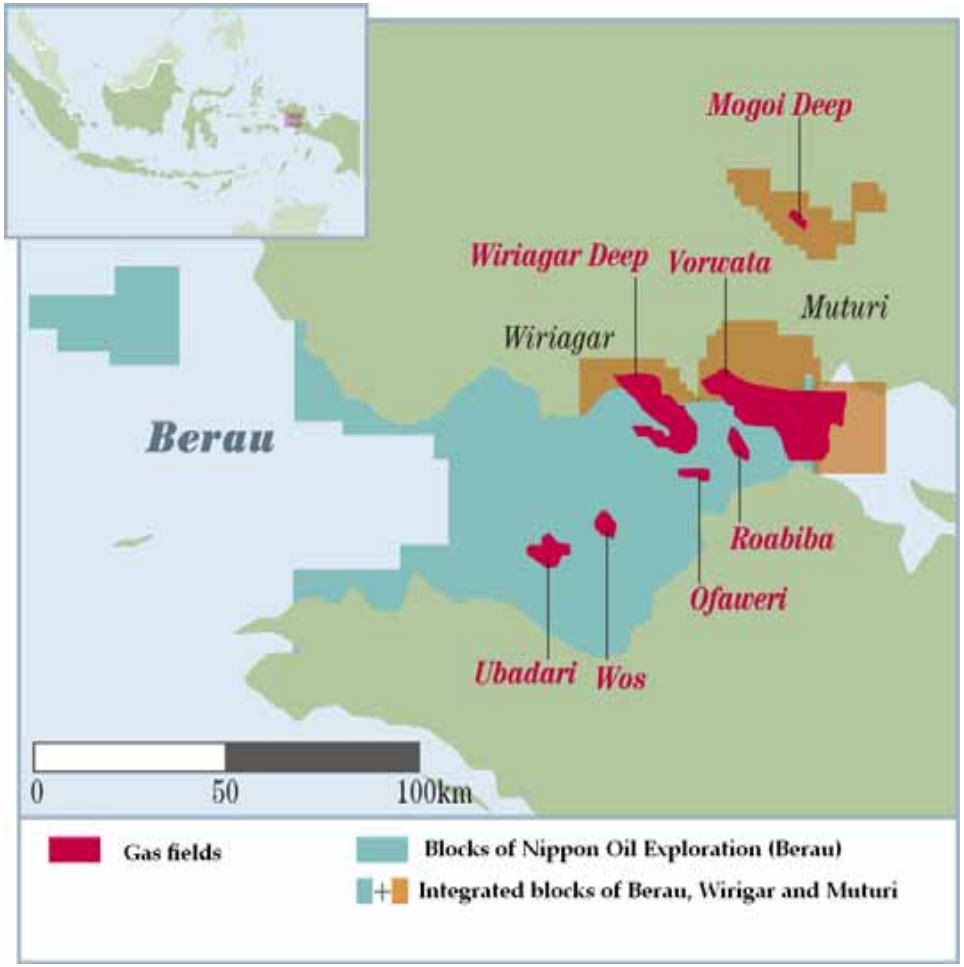
Interest in Individual Fields
37.5%

Operator
Shell

- **In 1991, NOSA acquired a working interest in Block SK-8 offshore Sarawak, Malaysia.**
- **From 1992 through 1994, the Jintan and Serai Gas Fields were discovered in that block, and production there commenced in 2004.**
- **In 2008, the Saderi Gas field commenced production.**

Principal Individual E&P Project Overview ⑨

Indonesia



Project Company
Nippon Oil Exploration (Berau), Limited (NOEX(Berau)) (51%)
(%) = JX Group Shareholding

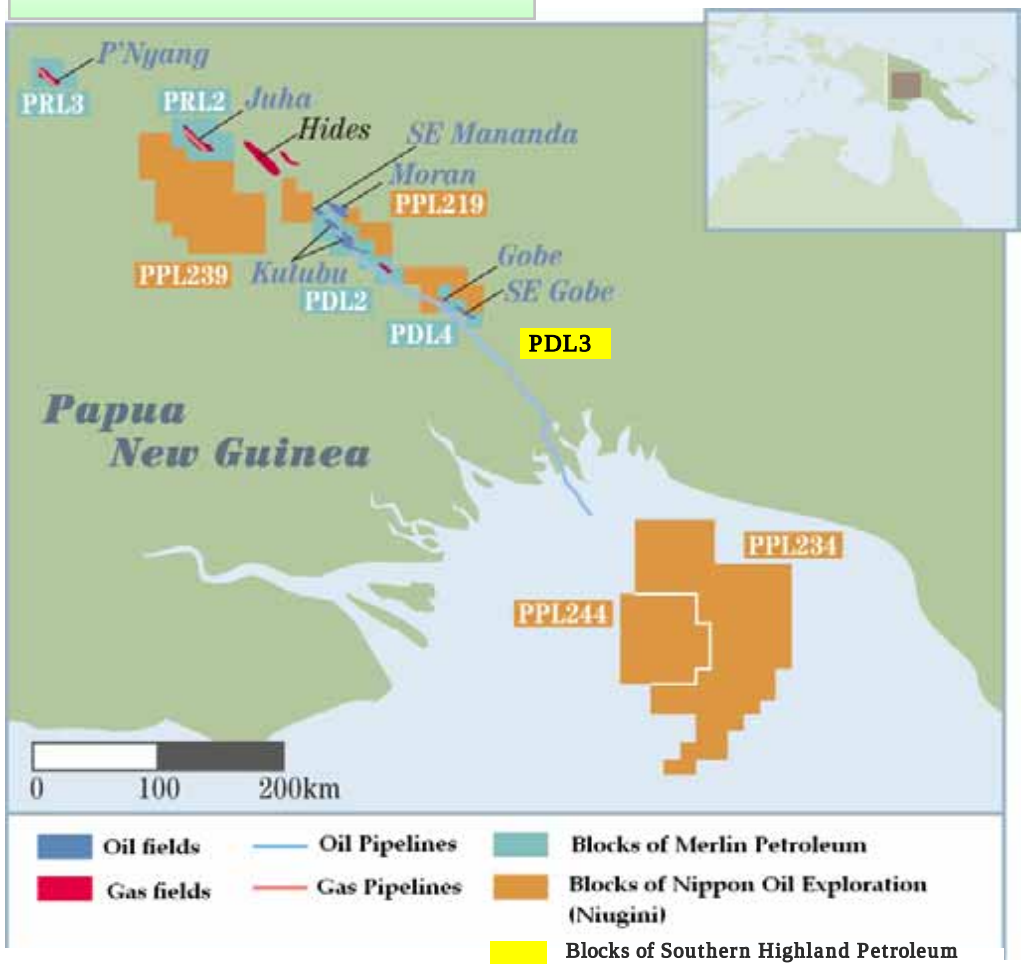
Interest in Individual Fields
12.2% (after unitization)

Operator
BP

- **From 1990, using three test wells natural gas was discovered in the area. Subsequently, the Vorwata Gas Field, Wiriagar Deep Gas Field, and other gas structures were discovered.**
- **From 2003, those with interests in the Berau, Wiriagar, and Muturi blocks agreed to become partners in unitizing the blocks and undertake development work cooperatively.**
- **Production commenced in June 2009, and the first cargo of LNG has lifted in July 2009.**

Principal Individual E&P Project Overview ⑩

Papua New Guinea



'09 Jan - Dec Sales Volume
8,000b/d

Project Company
Japan Papua New Guinea Petroleum Co., Ltd. (36.4%)
Nippon Oil Exploration (PNG) Pty. Ltd. (100%)
Nippon Oil Exploration (Niugini) Pty. Ltd. (100%)
Southern Highland Petroleum Co. Ltd.(80%)
(%) = JX Group Shareholding

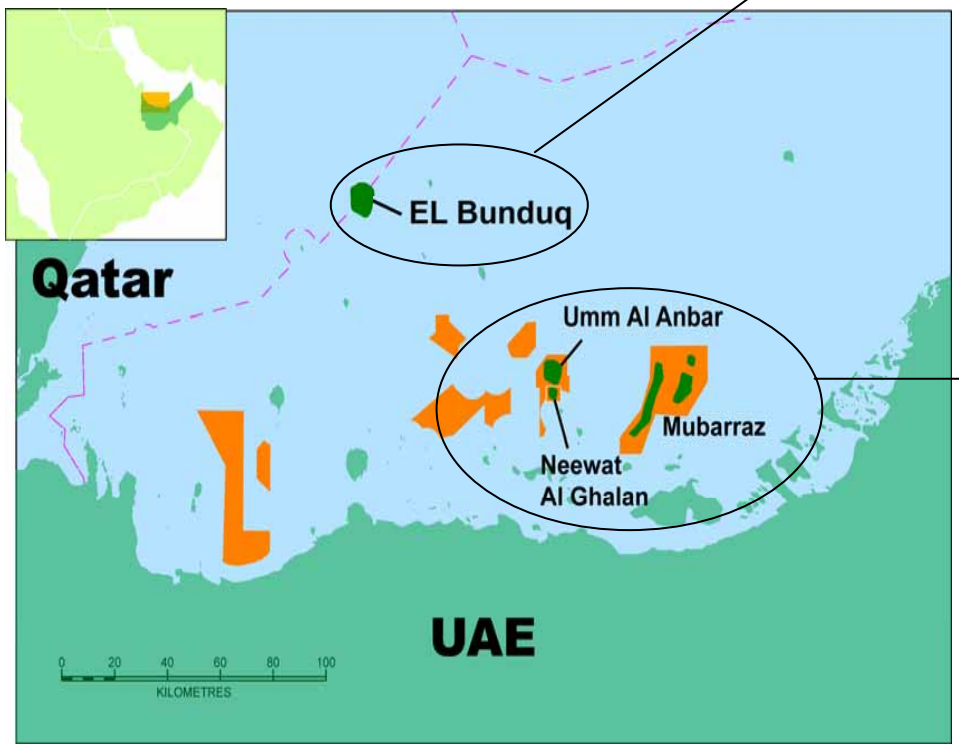
Range of Interests in Individual Fields
8.3 to 73.5%

Operator
Oil Search, Exxon Mobil

- **In 1990, Japan Papua New Guinea Petroleum acquired exploration rights in Papua New Guinea from Merlin. And, acquired original exploration rights. Subsequently, exploration, development, and production activities have been undertaken in the Kutubu, Moran, Gobe, and SE Gobe oil fields.**
- **In December 2008, Merlin, Japan Papua New Guinea Petroleum's 100% subsidiary, acquired the PNG LNG Project equity and oil field equity that AGL Energy owned.**
- **In January 2009, Nippon Oil Exploration (Niugini) acquired the four exploration licenses (both onshore and offshore) from Oil Search Limited.**
- **In December 2009, PNG LNG Project was made a final decision to proceed with the development.**

Principal Individual E&P Project Overview ⑪

UAE, Qatar



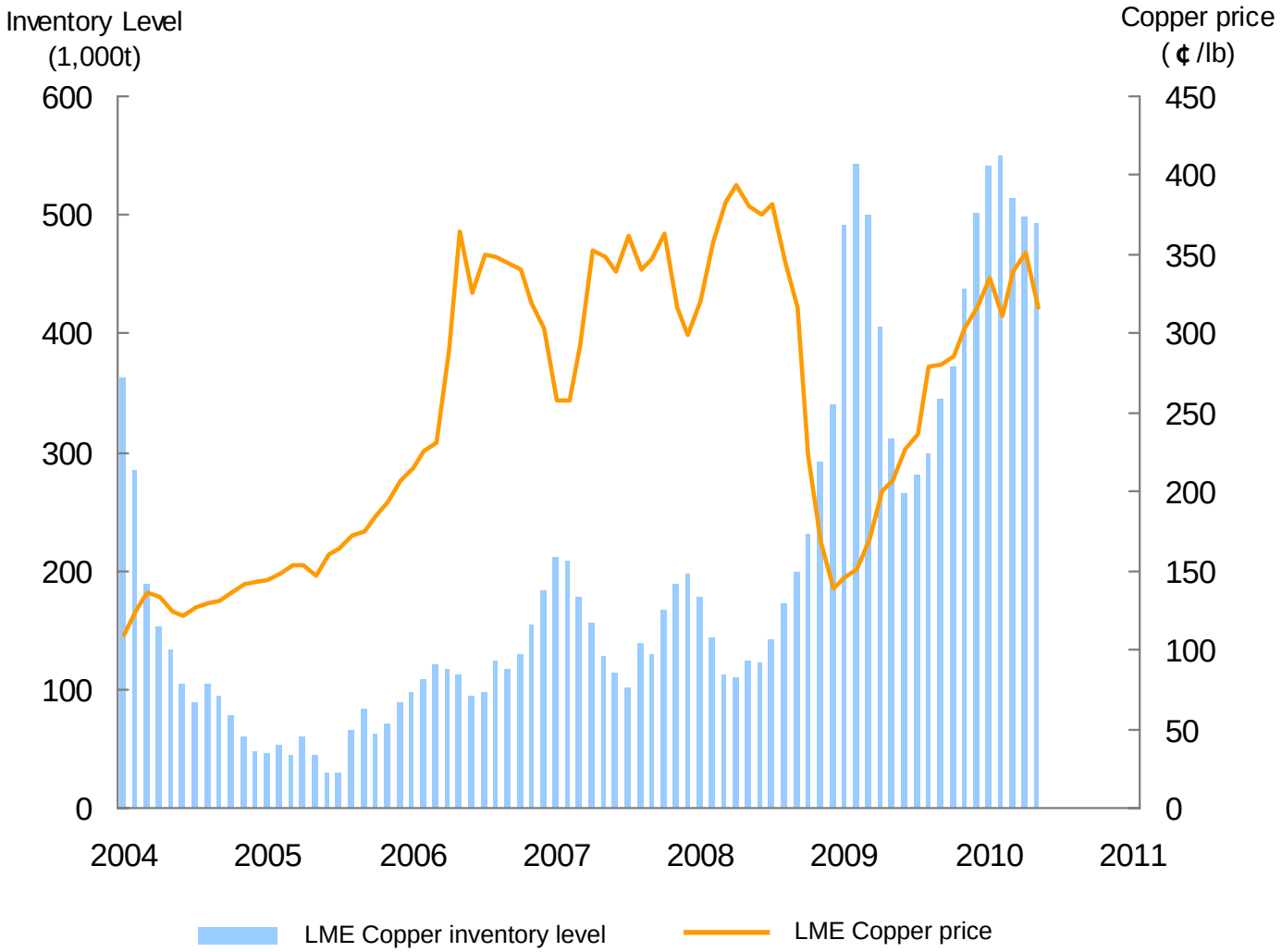
Project Company
United Petroleum Development Co., Ltd (45%)
(%) = JX Group Shareholding
Interest in Individual Fields
97%
Operator
Bunduq Co., Ltd

- **In 1970, United petroleum Development acquired a working interest of El Bunduque Oil Field.**
- **In 1983, oil production was resumed by a secondary recovery scheme using water injection.**
- **In March 2010, Japan Energy Development acquired additional 10% stock of United Petroleum Development Co., Ltd.**

Project Company
Abu Dhabi Oil Co., Ltd (31.5%)
(%) = JX Group Shareholding
Interest in Individual Fields
100%
Operator
Abu Dhabi Oil Co., Ltd

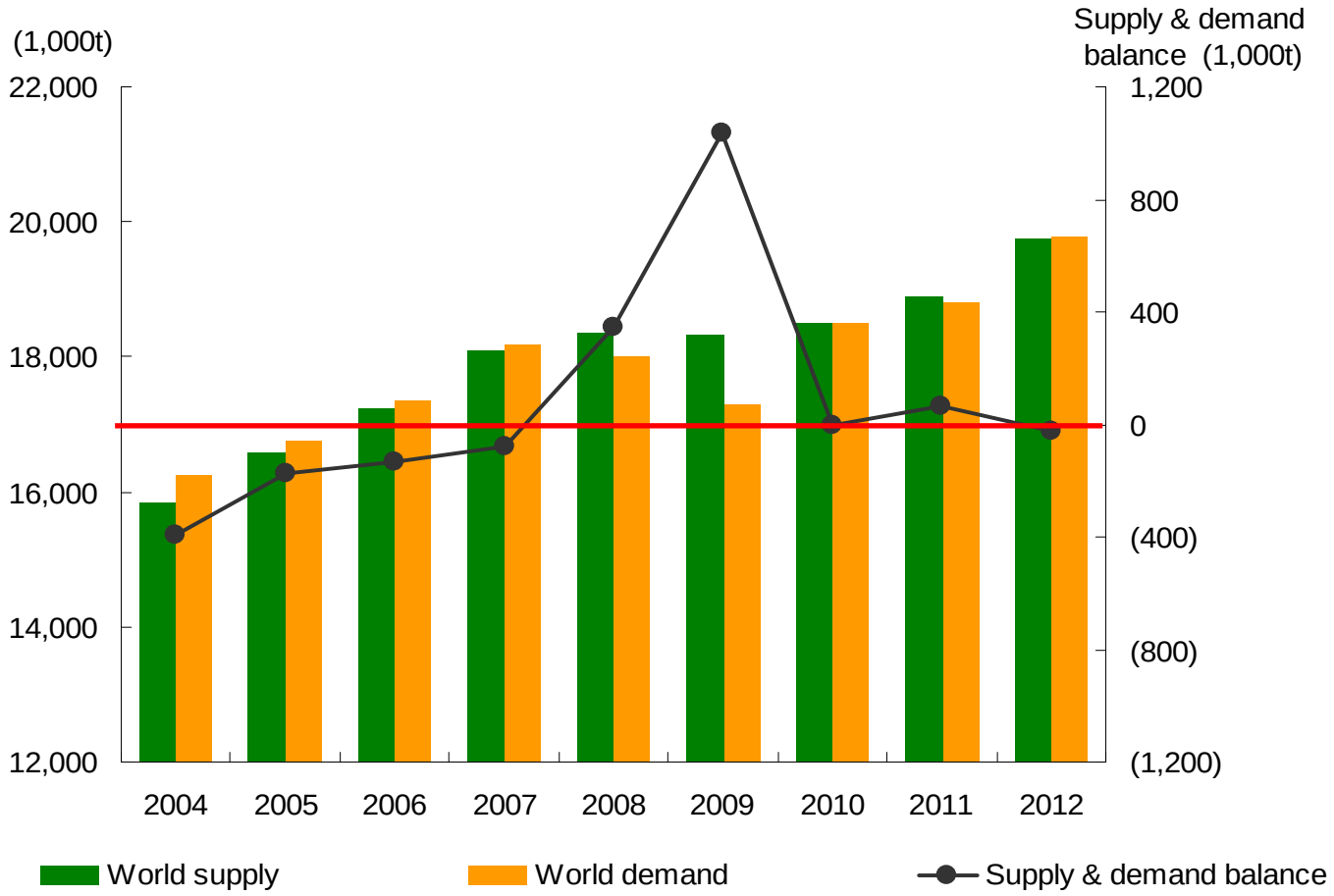
- **In 1967, Nippon Mining (re-organized and renamed as Japan Energy), Maruzen Oil and Daikyo Oil (the latter two are merged and renamed Cosmo Oil) acquired working interest in block of Mubarraz.**
- **In 1973, oil production commenced in Mubarraz Oil Field.**
- **In 1989, oil production commenced in Umm Al Anbar Oil Field.**
- **In 1995, oil production commenced in Neewat Al Ghalan Oil Field.**

Copper Price and Inventory Level



Source: LME

World Copper Cathodes Supply & Demand



Copper Smelting & Refining

Overseas mine

Los Pelambres (Chile)

15% *2

Escondida (Chile)

2% *2 *3

Collahuasi (Chile)

3.6% *2

Investment

Gain from investment

Stable procurement

Alliance

2nd in the world (1st in Asia) copper cathode production capacity *1 (Group total; 1,170KT)

JX Holdings

Nippon Mining & Metals

66.0% *2

39.9% *2

Pan Pacific Copper (Japan) 610KT

450KT
Saganoseki Smelter & Refinery
Hitachi Works

160KT
Hibi Kyodo Smelting Tamano Smelter

LS-Nikko Copper (Korea) 560KT

560KT
Onsan Refinery

34.0%

5.0%

Mitsui Mining & Smelting

Notes: *1 Source: Brook Hunt. *2 Shares held by Nippon Mining & Metals
*3 It will be 3% after acquiring the ownership interest from International Financial Corporation
*4 Total Capacity is 260KT. PPC has 63.51% equity.

Metals

Overseas Copper Mine Development

Caserones Copper Mine (Chile)

Full-Fledged Development forward 2013

Acquisition date May. 2006

Acquisition price $137 million

Mine life From 2013 to 2040 (28 years)

SX-EW From Jan.2013
Copper Concentrate From Sep.2013

Production life

		Initial 5 years	28 years average	28 years total
Copper	Copper content in copper concentrate	150kt/y	110kt/y	3,140kt/y
	Refined copper produced thorough SXEW process	30kt/y	10kt/y	410kt/y
	Total	180kt/y	120kt/y	3,550kt/y
Molybdenum		3kt/y	3kt/y	87kt/y

Initial investment $ 2.00 billion (Estimated)

Ownership Pan Pacific Copper (PPC) *1 75%
Mitsui & Co., Ltd. 25%

Quechua Copper Deposit (Peru)

Feasibility study stage Until Jan. 2011

Acquisition date Mar. 2008

Acquisition price $40 million

Mine life

From 2013 to 2030 (17 years)

Production plan

Copper content in copper concentrate 76kt/y

Total production through mine life : 1.3 million tons

Initial investment $ 0.85 billion (Estimated)

Ownership Pan Pacific Copper (PPC) *1 100%

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

Nikko-Chloride Process (N-Chlo Process)

N-Chlo Process

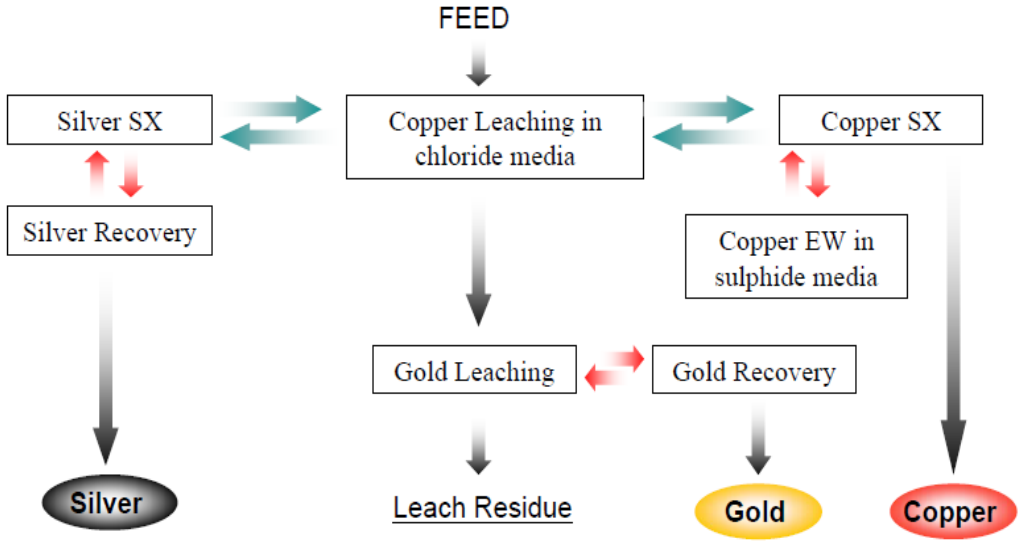
The N-Chlo Process is a new hydro-metallurgical process that we have uniquely developed.

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

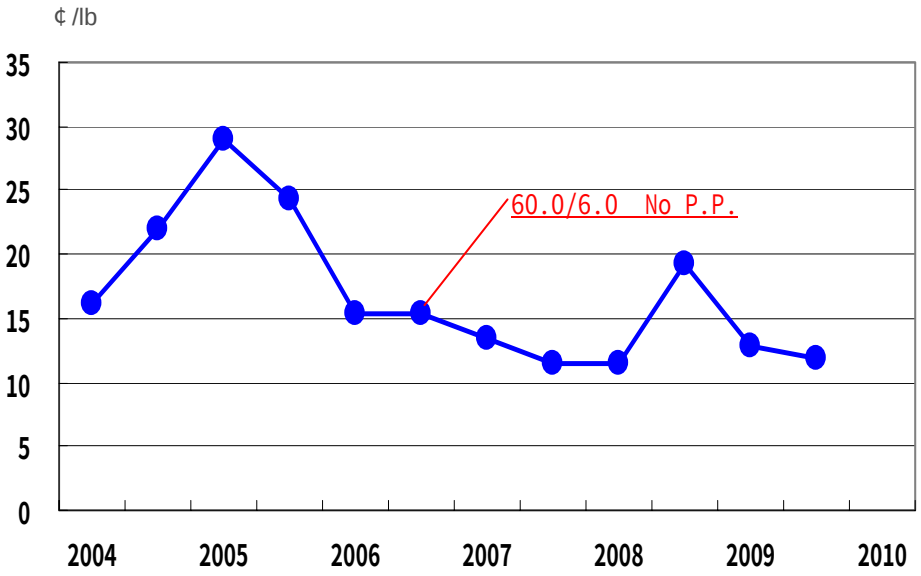
This process does not generate sulfur oxides (SOX), and it is possible to substantially reduce energy consumption and Co2 emissions, compared with pyro-metallurgical smelting which is the most commonly used method in the copper smelting industry .

We constructed a pilot plant in Australia and have been conducting demonstration test since latter half of 2009.

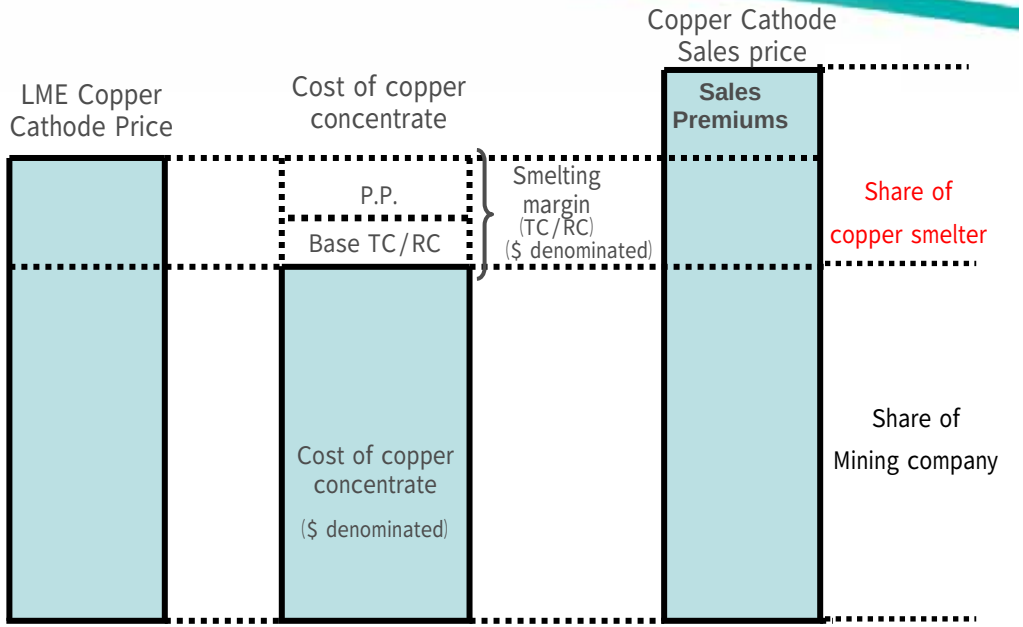
Structure of N-Chlo Process



Trends of TC/RC & Earnings Structure of Copper Smelter



＊Source：Company data



・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 margin.

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

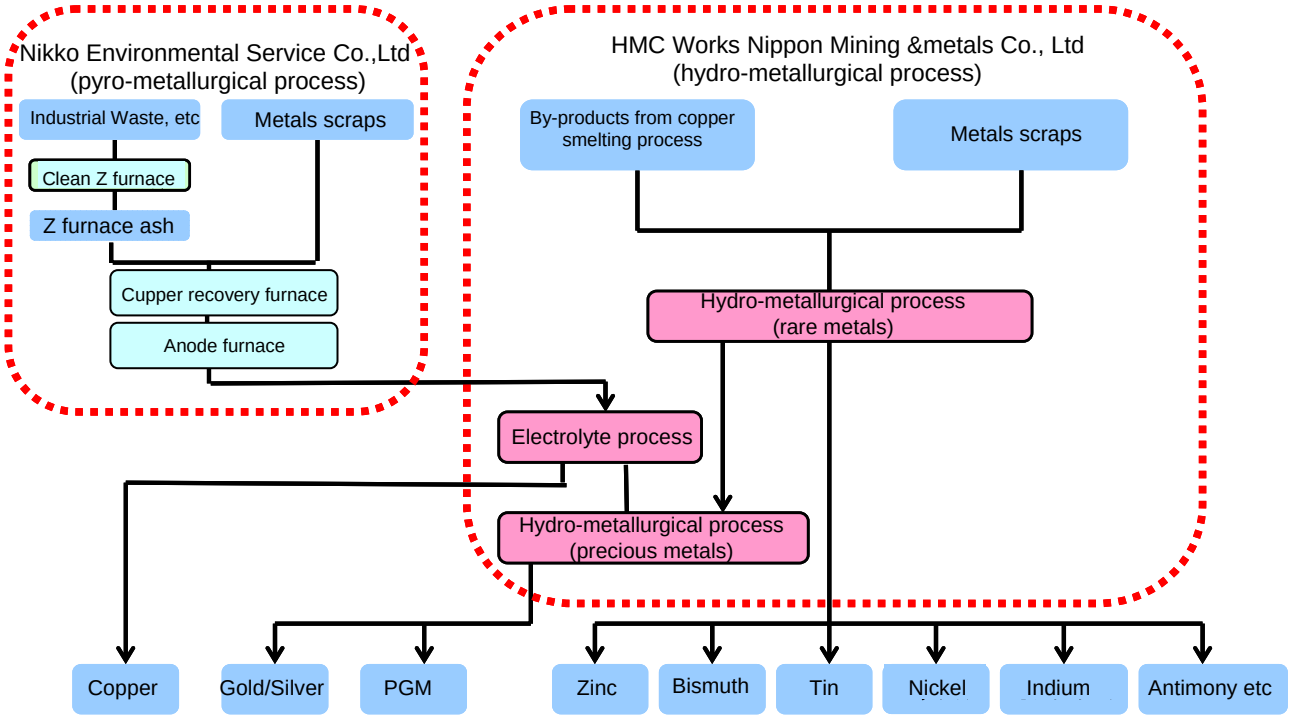
・P.P. (Price participation)：
The system under which mines and smelters share margins when LME copper price exceeds benchmark price

・Sales price：
LME price plus sales premiums, which is established by reference to various factors including importation costs, import tariffs, and others

Metal's Recycling

Metal's Recycling Complex in Hitachi

- Recovering 16 kinds of metals efficiently by hydrometallurgical process
- An original zero emission process that combines with pyrometallurgical process of Nikko Environmental Services Co., Ltd at adjacent site.
- Favorable location adjacent to the metropolitan area – the biggest urban mine in Japan
- Processing by-products from Saganoseki smelter.
- The role as a raw material (indium, nickel, etc) supplier to Electronic material business

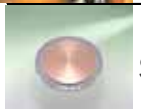


Recovering Ability

Copper 6,000 t/y	Bismuth 500 t/y
Gold 500 kg/y	Tin 500 t/y
Silver 50 t/y	Nickel 500 t/y
Platinum 200 kg/y	Indium 12 t/y
Zinc 700 t/y	Antimony 150 t/y

Metals

Electronic Materials

Main IT-related products	Global market share	Primary applications	End-use applications					
			PCs	Mobile phones	FPDs *1	Digital AVs	Telecom infra.	Auto mobiles
 Treated rolled copper foil	75% No.1	Flexible printed circuit boards	○	◎ *3		◎		
 Electro-deposited copper foil	12% No.3	Rigid printed circuit boards	◎	○		◎		○
 Semiconductor targets	60% No.1	CPUs, memory chips, etc.	◎	○	○	◎	○	○
 ITO targets for FPDs *1	45% No.1	Transparent electrodes	◎	○	◎	○		
 HD media targets	30% No.2	HDD (Hard disk drives), etc.	◎	○				
 Phosphor bronze	19% No.1 *2	Connectors	◎	○		○		○
 Corson alloy (C7025)	40% No.1	Lead frames, Connectors	◎	○		○		○
 Titanium copper alloy	60% No.1	High-class connectors, etc.	○	◎	○	○		

Notes: *1 Flat panel displays *2 Share in Asia market *3 ◎ means main end-use applications

Polysilicon for Photovoltaic Power Generation

Increasing global demand for photovoltaic power generation as an action against global warming

Supply high-quality, low-cost polysilicon for photovoltaic power generation

Overview of the joint venture

Company name:

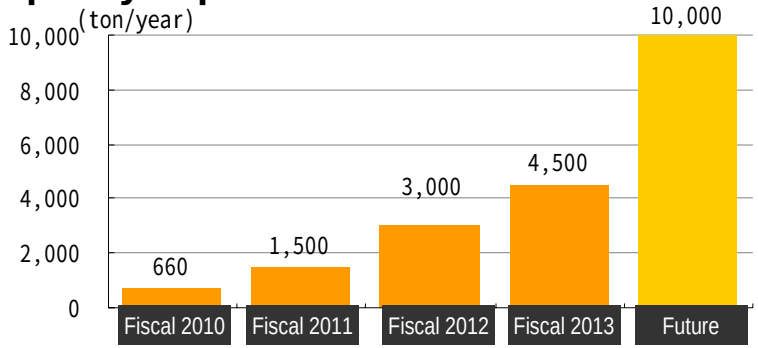
Japan Solar Silicon Co.,Ltd. (JSS)

Ownership:

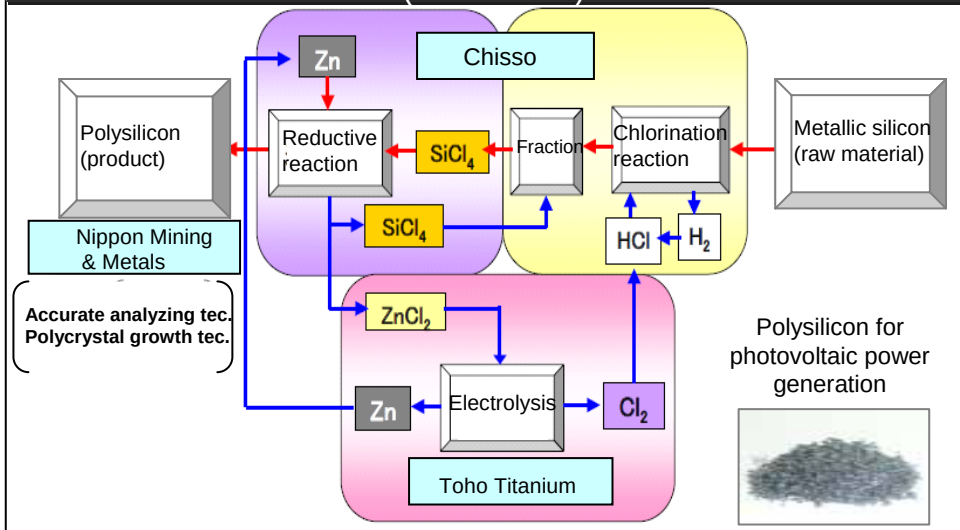
Chisso Corp.	50%
Nippon Mining Holdings Group	50%
-Nippon Mining & Metals Co., Ltd.	30%
-Toho Titanium Co., Ltd.	20%

Investments: ¥30 bn (4,500 ton/year basis)

Capacity expansion schedule :



Characteristics of the zinc-reduction process (JSS method)



Polysilicon for photovoltaic power generation

・Concentration of technology that Nikko Mining Co, Toho Titanium Co and Chisso Co.
・High response efficiency and low cost

	JSS Method	Siemens Method
Purity	8-9N	11N
Capex (1,000t-Si/y)	¥ 7～10 bn/	¥ 13-16 bn/
Electric power consumption for unit production	40KWh/kg-Si	110KWh/kg-Si

Source: Company data