

Leaders Panel-The 33rd JCCP International Symposium

Challenges facing the Japanese Oil Industry

-what we have done & what we are going to do-

January 21 2015

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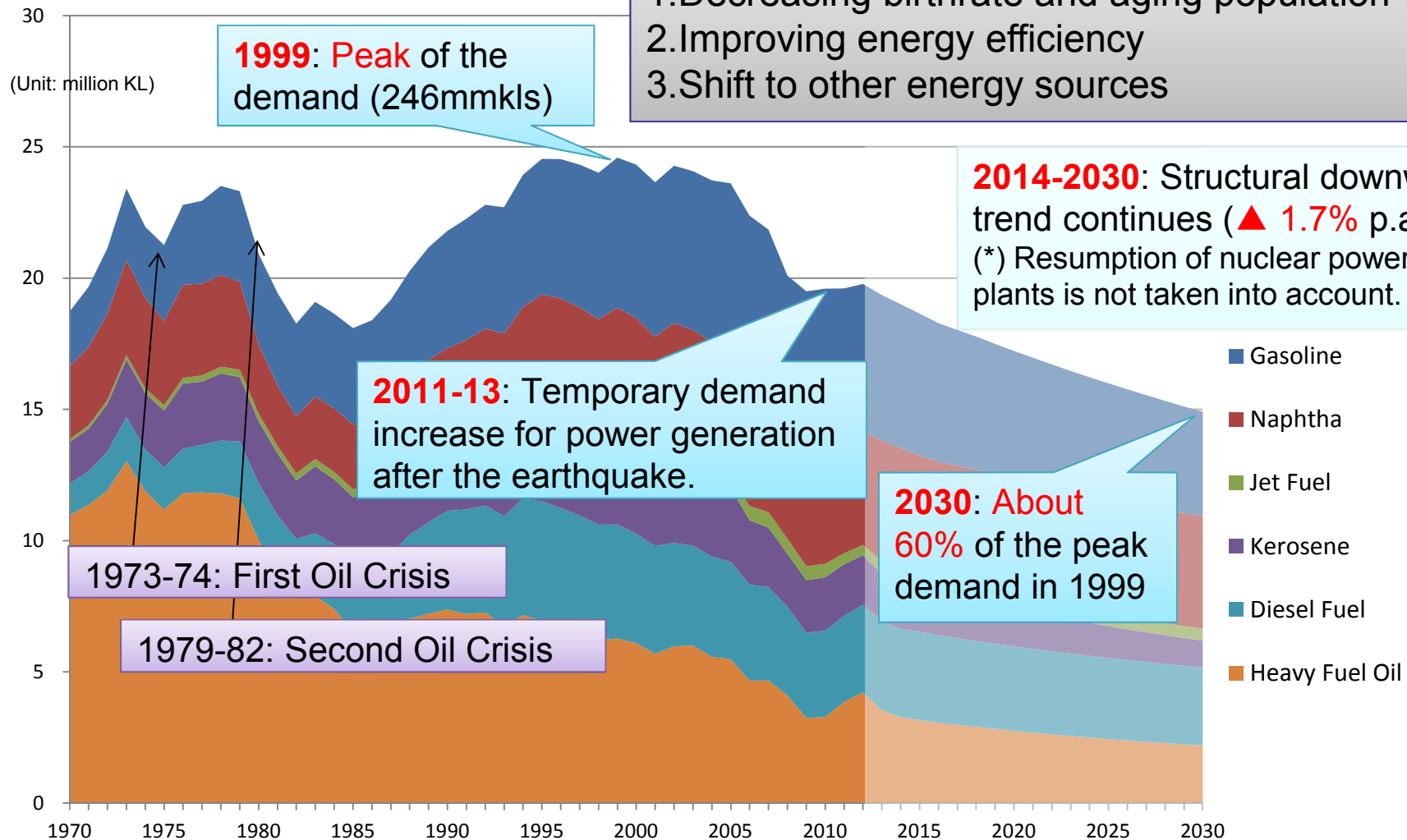


The Future of Energy, Resources and Materials
JX Nippon Oil & Energy Corporation

1. Declining Oil Demand in Japan



Domestic Fuel Demand Trend(1970-2030)



Major Reasons behind the Structural Decline

1. Decreasing birthrate and aging population
2. Improving energy efficiency
3. Shift to other energy sources

Source: METI data

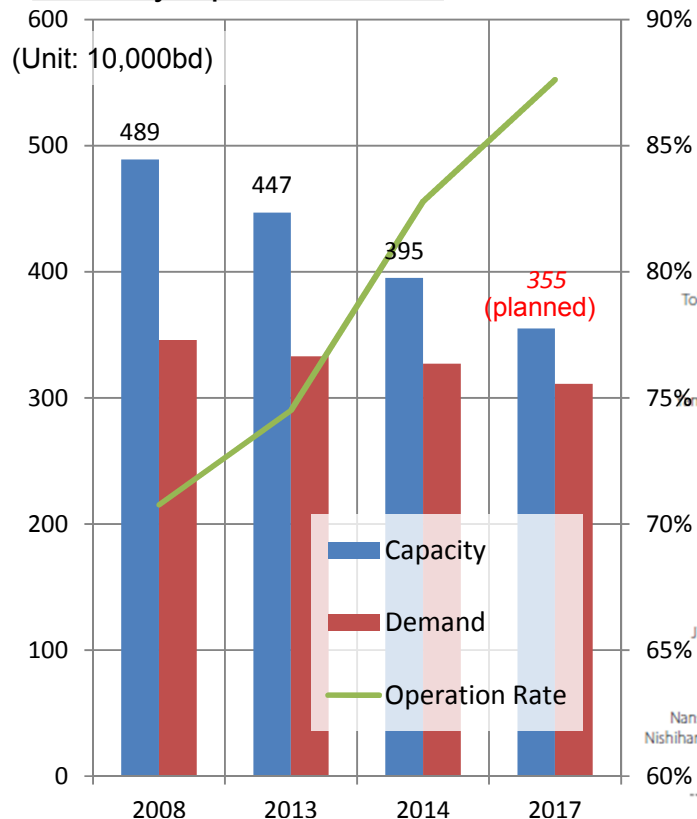
2. Curtailment of the Refining Capacity



- ✓ The relevant law was enacted in Mar 2009
- ✓ The Objective: Enhancing cracking ratio
- ✓ Progress of the capacity curtailment
 - 1st phase: Sep.2009 - Mar.2014 CDU:Δ1,000KBD
 - 2nd phase: Aug.2014 - Mar.2017 CDU:Δ400KBD (planned)

Normalization of the S&D balance as a result

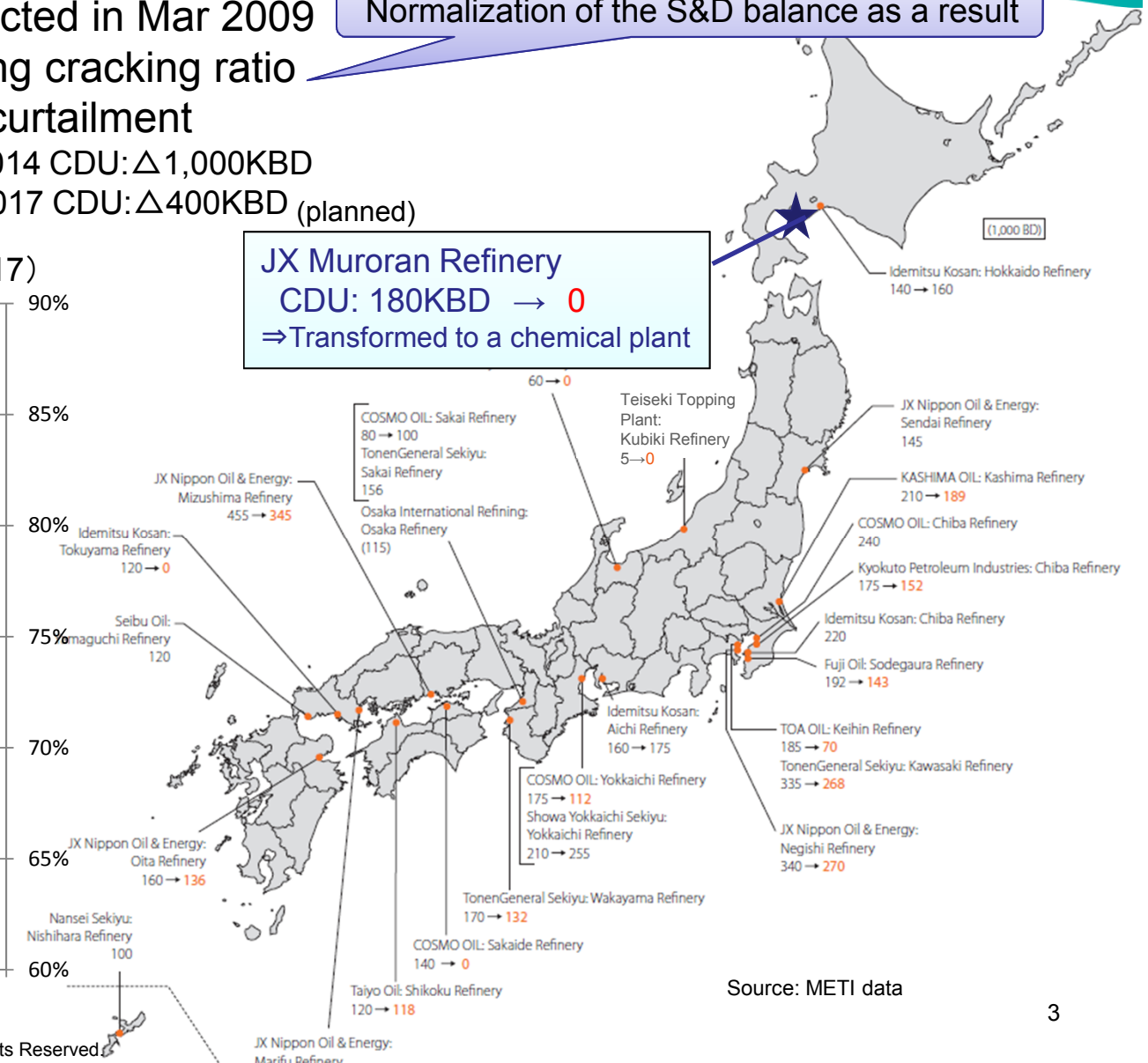
Refinery Operation Rate (2008-2017)



Source: METI data

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JX Muroran Refinery
 CDU: 180KBD → 0
 ⇒ Transformed to a chemical plant



Source: METI data

3. Measures to Strengthen the Competitive Edge

Challenges facing the Japanese oil industry

- 1) Declining Oil Demand since 2000
- 2) Deregulation of the Oil Industry in 1996



PET bottles produced from PX

1) Shift to Petrochemicals



Osaka Ref.-JX/Petro China JV

2) Oil Products Export



Tunnels connecting the two refineries

3) Enhanced Efficiency of Refinery Operation



Predecessors of JX

4) Corporate Integration

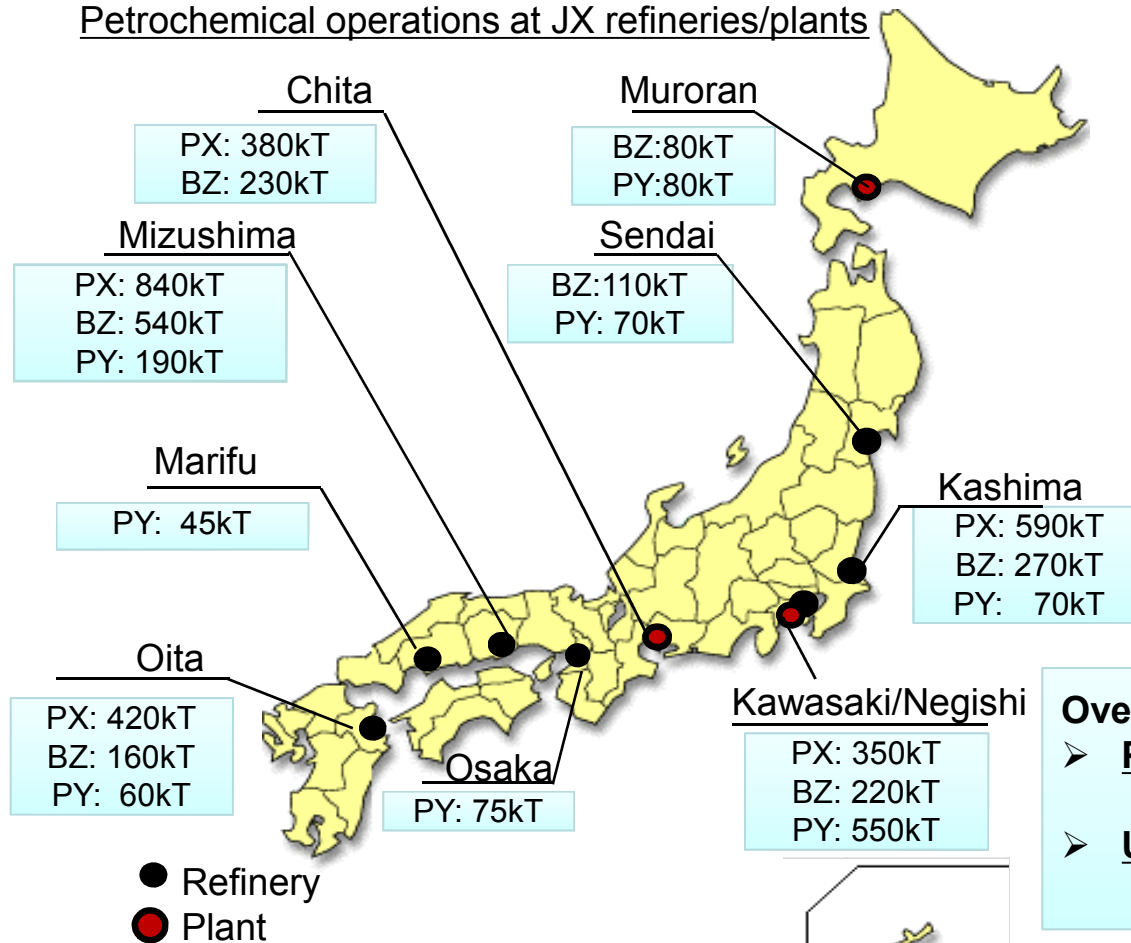
3. Measures to Strengthen the Competitive Edge



1) Shift to Petrochemicals

- ✓ Aromatics production from MOGAS components
- ✓ Upgrading FCC propylene to polymer grade

Petrochemical operations at JX refineries/plants



JX's Production Capacity (MMTA)

Paraxylene(PX)	: 3.1
Benzene(BZ)	: 1.9
Propylene(PY)	: 1.2*

All Japan:
5.0

(* Including Refinery Grade 0.3)

Global PX Capacity (MMTA)

1	SINOPEC	4.2
2	Exxon Mobil	3.4
3	JX	3.1
4	BP	3.0
5	SK	2.6

Source: IHS data

Overseas Operations

- **P.C.Aromatics** (Malaysia/Kerteh)
PX: 500kT, BZ:190kT * Entitlement 10%
- **Ulsan Aromatics** (South Korea/Ulsan)
PX: 1,000kT, BZ:550kT * Entitlement 50%

HS-FCC (High Severity-FCC)



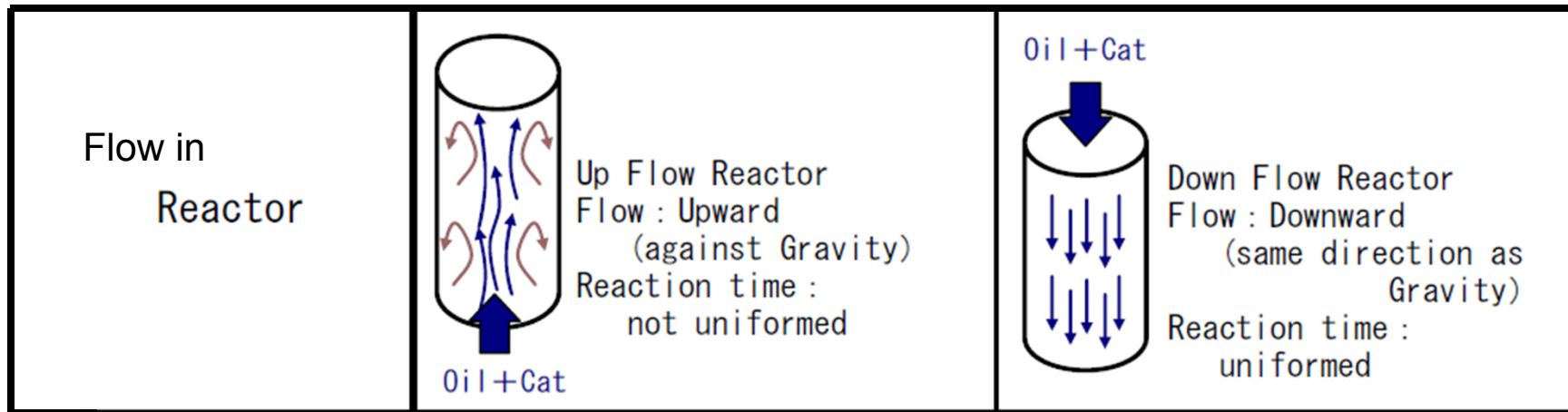
Our proprietary technology for gaining higher Propylene yield



Pilot Plant at Mizushima Ref.

Conventional FCC process v.s. HS-FCC process

		Conventional FCC	HS-FCC
Reaction temperature(°C)		500	600
Reaction time(sec)		2~3	0.5
Yield(wt%)	Propylene	5	20
	Gasoline	50 (90octane)	35 (100octane)



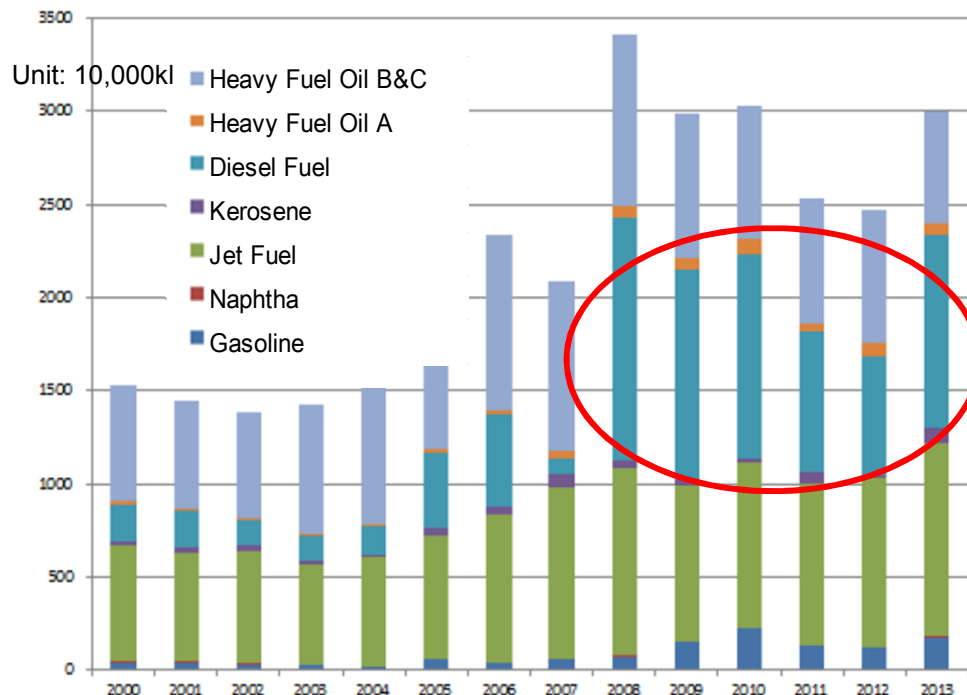
3.Measures to Strengthen the Competitive Edge



2) Oil Products Export

- ✓ Main mission of the oil industry: stable supply to the domestic market
- ✓ Poor export facilities: less competitive to the Koreans on the offshore trading market
- ✓ The export volume has been gradually increasing:
 - utilizing surplus capacity
 - optimizing S&D balance

Oil Products Export(FY2000-2013)



Source: METI data

JV with Petro China



JV Company	:Osaka International Refining Co.
Established	:October 2010
Shareholders	:JX 51%, Petro China 49%
Function	:Export oriented
Refining Capacity	:115kBPSD

3. Measures to Strengthen the Competitive Edge



3) Enhanced Efficiency of Refinery Operation

Major reasons behind weakness of the refineries

1. Stringent regulations on safety & environment
2. Higher personnel cost
3. **“Aged” and “small” size →manageable**
4. Insufficient cracking capacity ratio

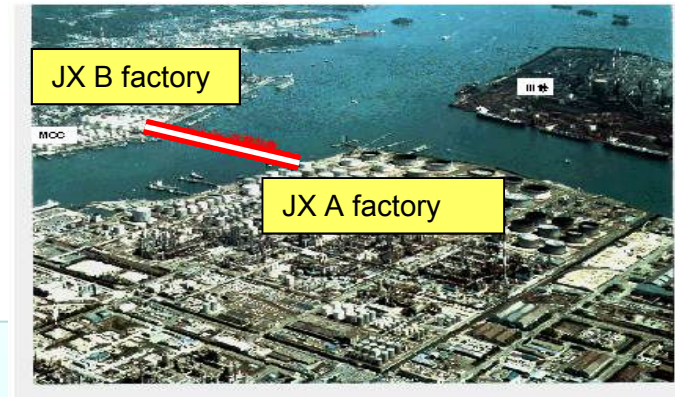
How to cope with the “aged”

- ✓ Refinery Age ≠ Mechanical Availability(MA)
- ✓ Mechanical Availability(MA) > Maintenance Index(MI)
- ✓ Safety consciousness and technical capability of refinery staff / operators

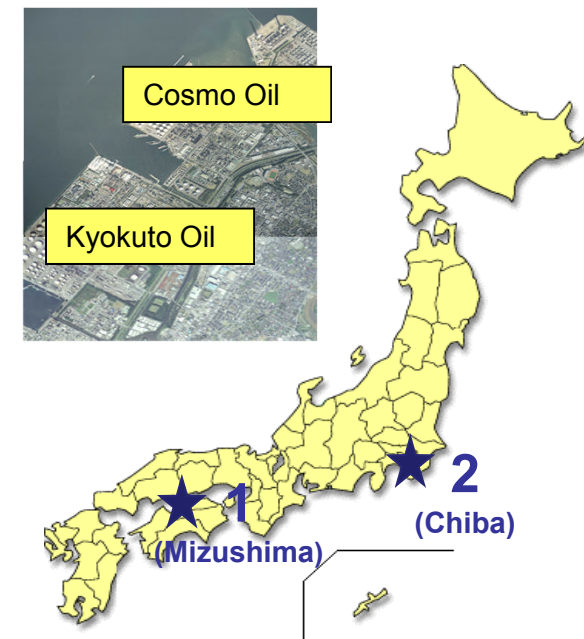
How to cope with the “small size”

- ✓ Integration of adjacent refineries
 - ★1 Mizushima : Nippon Oil & Japan Energy refineries
Started from 2003 → JX
 - ★2 Chiba : Cosmo Oil & Kyokuto Oil refineries
Starting from 2015 under a JV co.

★1 An Integration in Mizushima



★2 An Integration in Chiba

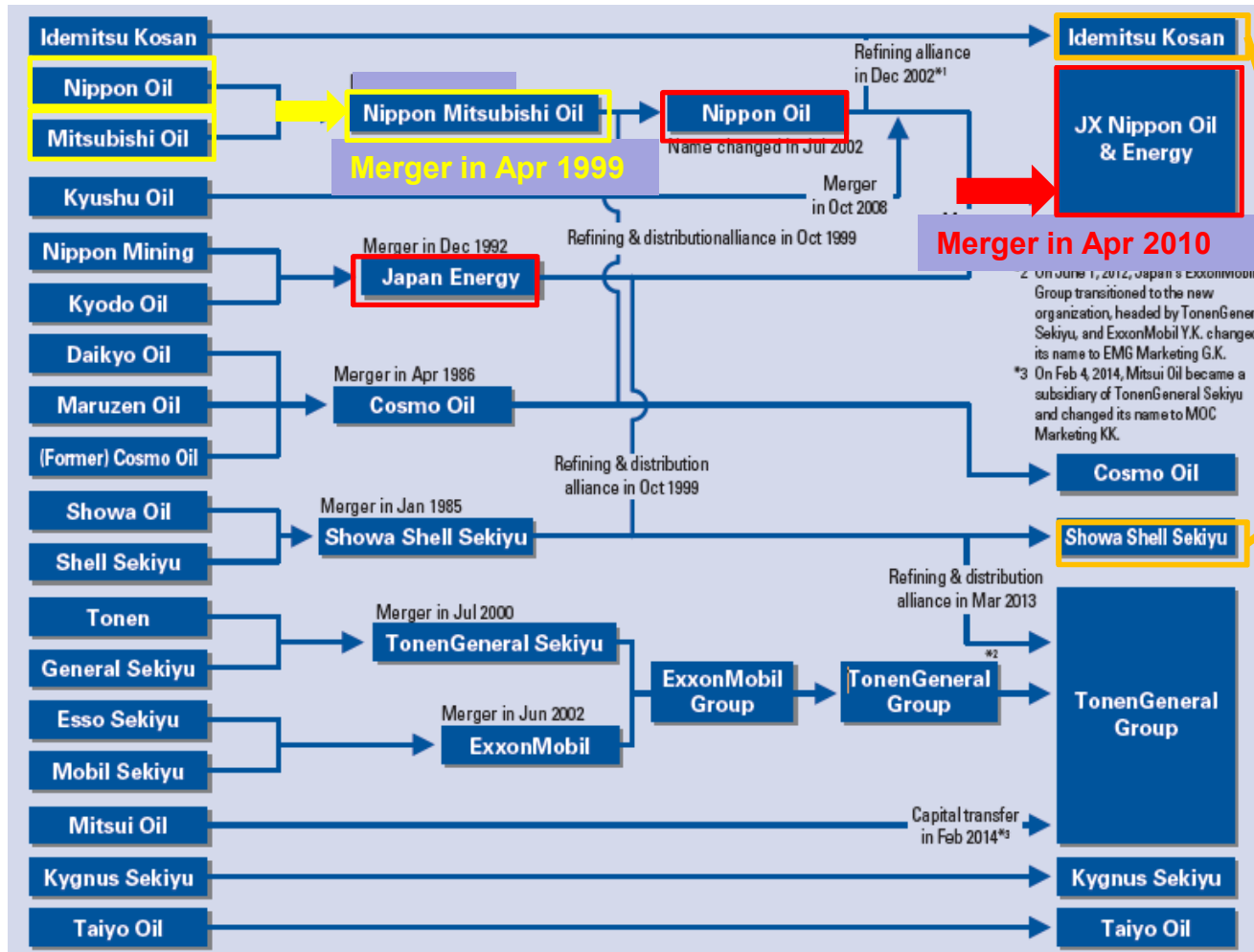


3. Measures to Strengthen the Competitive Edge

4) Corporate Integration



Reorganization of Oil Companies in Japan



Sources for synergy effect under corporate integration

- ✓ Expansion in scale
- ✓ Elimination of overlapping
- ✓ Mutual complementation

Integration in 2015(?)

SOURCE: FAJ

4. New Business Development



1) The Areas where Japanese Oil companies explore new opportunities

- (1) Power & Gas Business on the domestic market
- (2) Refining & Marketing Business in Southeast Asia
- (3) Renewable Energy Business like PV and wind power in and out of the country

2) Strategy of JX for New Business Development

- (1) To explore opportunities in energy related areas (oil, coal, gas&power)
- (2) To utilize core competence built up through existing operation
- (3) To develop sizable business to make up for shrinking domestic operation



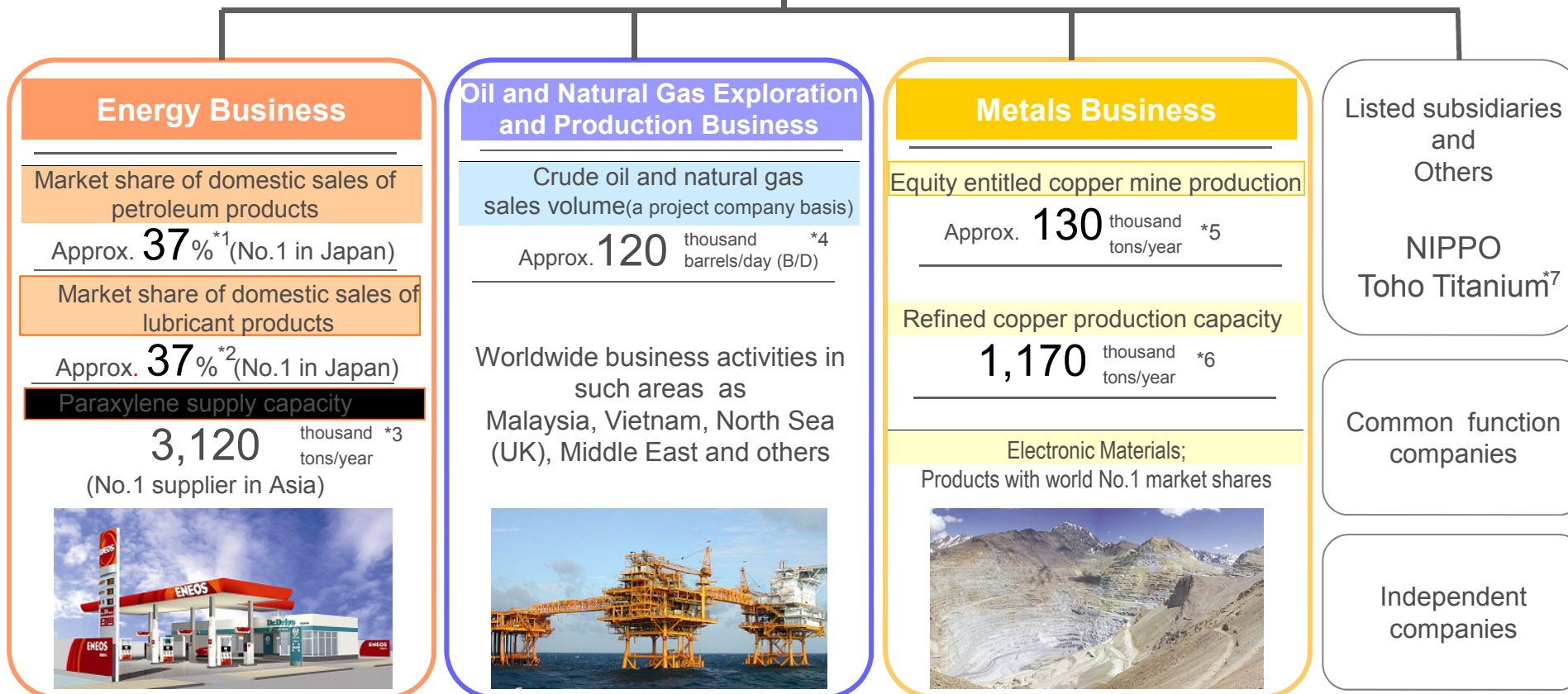
Thank you for your attention!



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Summary of JX Group Operations


JX JX Holdings, Inc.



*1 FY2013 actual *2 FY2013 actual *3 As of Jun. 2014
 *4 Crude oil equivalent (average daily production from Jan. to Mar. 2014 actual)
 *5 Equity entitled copper production contained in copper concentrate (CY2013 actual)
 *6 Pan Pacific Copper (66.0% equity stake) ; 610 thousand tons/year + LS-Nikko Copper (39.9% equity stake) ;560 thousand tons/year (As of Jun. 2014)
 *7 Profit and loss of Toho Titanium is included in the Metals Business.

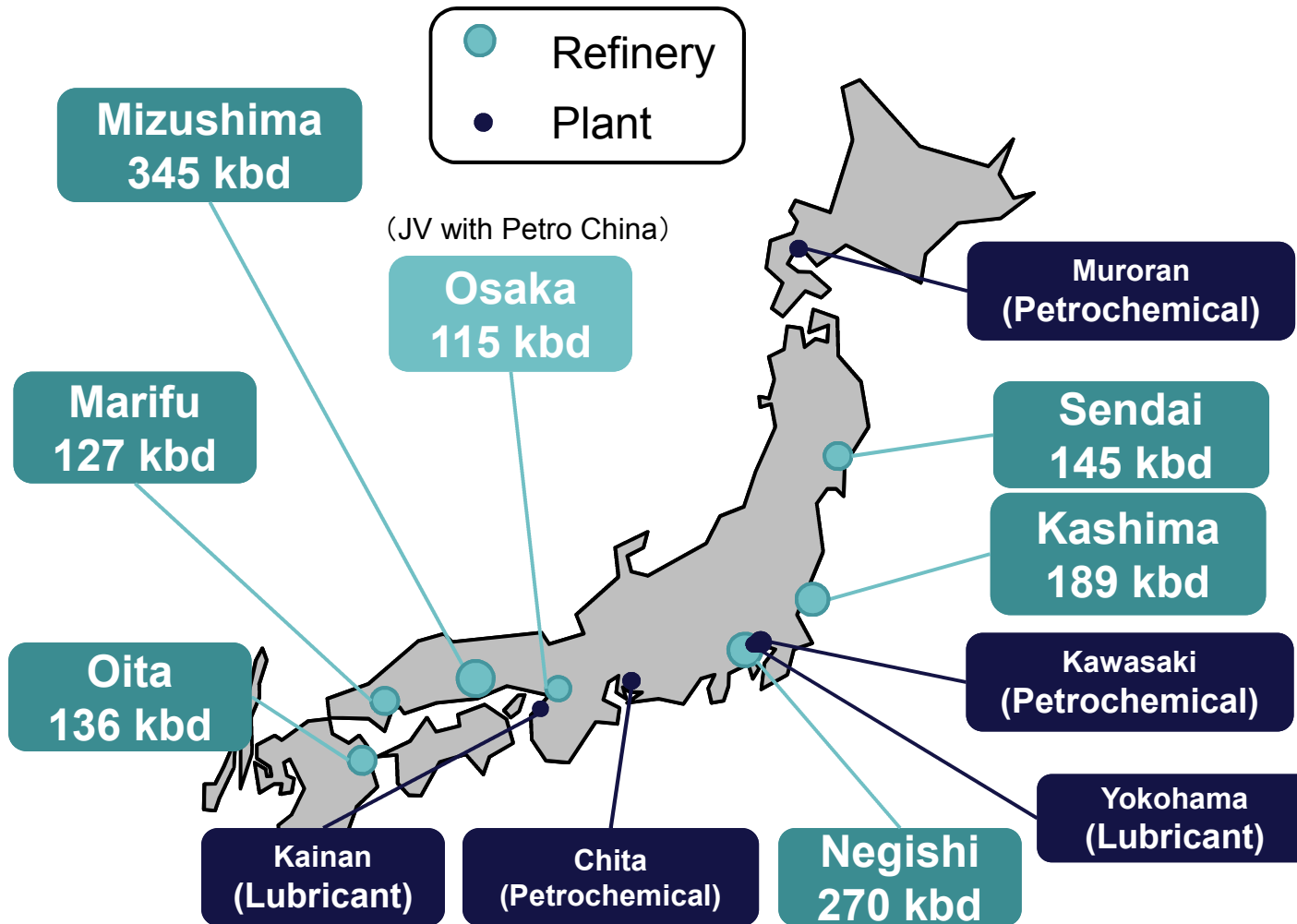


Corporate profile

CDU Capacity	:	1,424	KBD / 2013FY
Net Sales	:	121	billion US\$ / 2013FY
Operating income	:	2	billion US\$ / 2013FY
ENEOS Gas Stations	:	11,000	in Japan 
Domestic Fuel Oil Sales	:	71	million kiloliters
Market share	:	37	% in Japan

JX Refineries and Lubricant / Petrochemical plants

JX Nippon Oil & Energy has 7 refineries and 5 plants in Japan.



About the speaker

Michio Ikeda is Executive Vice President of JX Nippon Oil & Energy Corporation in Japan. He began to work for Mitsubishi Oil Company in 1974. In the first 24 years of his career with the company, he was mainly engaged in crude oil acquisition, petroleum products trading, and overseas project development. In 1998, he was assigned to corporate planning, where he was chiefly involved in two mergers, or one with Nippon Oil in 1999, and the other with Japan Energy in 2010. The outcome of the two mergers is JX Nippon Oil and Energy Corporation, a leading refiner-marketer and an integrated energy supplier in Japan. He was named as Senior Vice President in 2010, and as Executive Vice President in 2012. He has been sitting on the board of the company since 2007.