

Restructuring of the Japanese Downstream Oil Market and Implications for the World Market

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In recent years the face of the Japanese Oil Industry has undergone a number of severe changes as a result of the changing economic environment, an aging population, saturated downstream oil market, and greater environmental consideration. The following will give a brief overview of the Japanese Oil Market past and present and subsequently identify what implications this may hold for world oil markets.

Background on the Deregulation/Restructuring of the Japanese Oil Sector

For many years the Japanese government through a number of “industry based laws” regulated the oil market. By use of these laws, the Government was able to employ “administrative guidance” that allowed it to when necessary place limits on market entry/competition in addition to restrictions on energy industries operation and investment portfolios.

The main impetus for this policy of government intervention was the recognition that “energy security” was a matter of national importance, necessary for the continuous development of economic prosperity and far too important to be left to the devices of market mechanisms.

However, by the mid 1980’s, a new trend towards deregulation and liberalization begun in the Japanese oil market. In 1987, a five-year program was instigated, which resulted in regulations pertaining to company-specific gasoline production quotas and crude oil refinery throughputs being removed year by year in a step-by-step approach. Also, the Provisional Law on the Importation of Petroleum Products, which restricted the importation of gasoline, kerosene and diesel imports was abolished in 1996 freeing up the importation of petroleum products. Subsequently, restrictions on petroleum product exports, and the construction and operation of self-service stations were also lifted. As a result of this, a “free market” system was achieved in which government intervention was limited to emergencies (such as oil supply disruption). The last major regulation upon which most of the regulation within the Japanese oil market had been based – the Petroleum Industry Law – was finally repealed in early 2002 (Table 1).

Table 1 Summary of the Deregulation of the Petroleum Industry in Japan

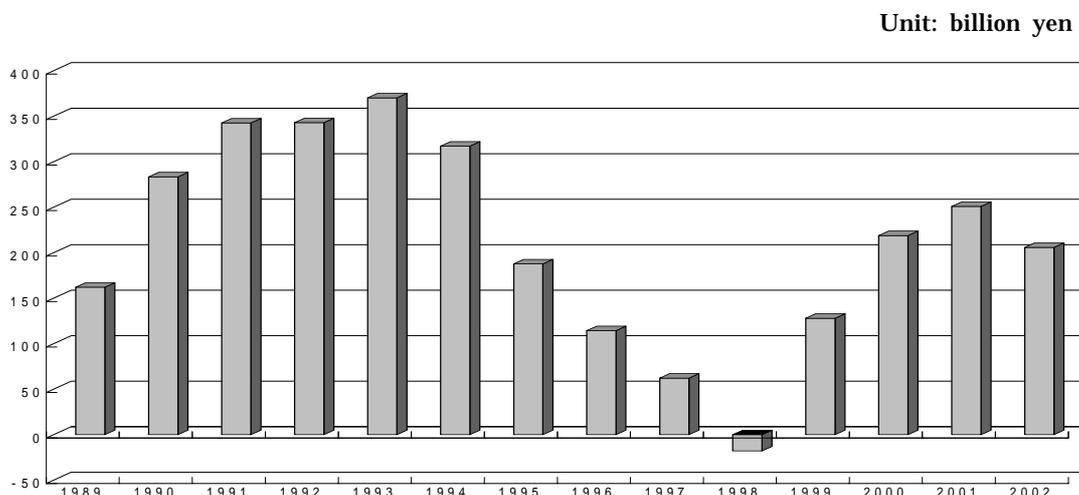
Timing	Sector	Matters
Jan.1986	Import	Enforcement of "the Law Concerning Provisional Measures for Importation of Specified"
May.1987	Retail	Lifting a ban of C-Store in SS (Fire Regulation)
July.1987	Refining	Automatic Approval of Building Upgraded Facilities*
Mar.1989	Refining	Abolition of Guidance on Gasoline Production Quota*
Sep.1989	Refining	Abolition of Guidance on Heating Kerosene Stock prior to Winter
Mar.1990	Retail	Abolition of Guidance on Brand Switch of SS and on Construction of SS (Scrap & Build rule)
June.1991	Refining	Flexible Approval of Building Topper
Mar.1992	Refining	Abolition of Guidance on Topper Throughput
Mar.1996	Import	Repeal of the Law Concerning Provisional Measures for Importation of Specified (Liberalization of Product's Import with the Obligation of Stockpiling and Quality Assurance)
	Retail	Revision of "Gasoline Sales and Distribution Law" to "Law on the Quality Control of Gasoline and Other fuels"
Oct.1996	Retail	Abolition of Restriction of New SS in Designated Excessive Competition areas
July.1997	Export	Automatic Approval of Refined Products' Export (Actual Liberalization of Export)
Dec.1997	Retail	Abolition of Supply Certification for Gasoline Dealers by Branded Whole Distributors
Mar.1998	Retail	Lifting a ban of Self-Service SS with a Supervisor (Fire Regulation)
June.1998	Refining	Automatic Approval of Entering Refining Business and of Building Refinery Capacity
Dec. 2001	-	Repeal of Petroleum Industry Law
Jan.2002	-	Enforcement of New Petroleum Reserve Law

* According to Program of Deregulation by Petroleum Council of METI in June 1987.

Source: Ministry of Economy, Trade and Industry

Since the middle of the 1990's when the government decided to liberalize oil product importing the price of petroleum products on the domestic market (especially gasoline) has followed a downward trend. This in conjunction with a continuous degradation in refining margins on the back of excess refining capacity in the Asian oil market and deregulation of the downstream petroleum sector during the late 1990's led to rapid loss in profitability for the major oil companies operating in Japan. For example in 1998, the total ordinary income for the Petroleum Industry in Japan was an estimated 18 billion yen loss (Figure 1).

Figure 1 Financial Results for the Japanese Oil Industry (Ordinary Income)



Source: Japanese Oil Statistics (Sekiyu Shiryou), 2003 version.

Note: The data in this and the following Figures is based on the Japanese Fiscal Year, thus 2002 refers to the fiscal year ending March 2003.

This in turn precipitated rapid consolidation of the major Japanese oil companies. For example, in April 1999 Nippon Oil and Mitsubishi Oil merged forming the Nippon Mitsubishi Oil Corporation¹. In addition in 2000, Exxon Mobil consolidated its refining, retail, and management operations in Japan in an effort to improve the companies overall financial efficiency through the amalgamation of its Esso, Mobil and Tonen General branded subsidiaries². Other types of consolidation were also undertaken in the form of strategic alliances and business tie-ups in certain sectors (mainly transportation/terminal business and refining). The result of this consolidation is especially noticeable within the refining sector where there has been considerable rationalization in both the number of and the capacity of refineries throughout Japan. Refining capacity in Japan peaked in 1998 at 5.38 million b/d (at 40 refineries); however, in the years thereafter, in an effort to streamline operations, increase average utilization ratios and to maximize economic returns, the number of operating refineries has been reduced and/or the refining capacity of refineries reduced; thus by the end the 2003 financial year – March 2004 – this capacity had fallen to a total of 4.79 million b/d at 30 refining locations (Table 2, Table 3).

¹ In 2002 the name was changed to Nippon Oil Company which is the name used at present.

² However, the new Exxon Mobil Company retained the service stations operating under each of these brand names.

Table 2: Refinery capacity reduction and closures in Japan over the past few years

	Company	Refineries	Reduced Capacity	Status
Mar.1999	Nippon Oil	Niigata	26,000B/D	Closed
	Showa-Shell	Niigata	40,000B/D	Closed
Sep.1999	Nippon-Mitsubishi	Kawasaki	75,000B/D	Closed
Apr.2000	Idemitsu	Hyogo	60,000B/D	Reduced
		Chiba	20,000B/D	Reduced
Mar.2001	Showa-Shell	Yokkaichi	50,000B/D	Reduced
Apr.2001	Cosmo	Sakai	30,000B/D	Reduced
		Sakaide	20,000B/D	Reduced
	Nippon Oil Corporation	Wakayama Kainan	50,000B/D	Closed
		Mizushima	30,000B/D	Reduced
Jun.2001	Japan Energy	Negishi	25,000B/D	Reduced
		Muroran	16,000B/D	Reduced
Apr.2002	Nippon Oil Corporation	Chita	100,000B/D	Closed
		Funagawa	1,000B/D	Closed
Apr.2002	Nippon Oil Corporation	Negishi	20,000B/D	Reduced
		Osaka	10,000B/D	Reduced
Apr.2003	Idemitsu	Hyogo	80,000B/D	Closed
Apr.2005	Idemitsu	Okinawa	110,000B/D	Closed (Planned)

Source: Japanese Oil Statistics (Sekiyu Shiryou), 2003 version.

Table 3: Historical changes in Japanese refining capacity

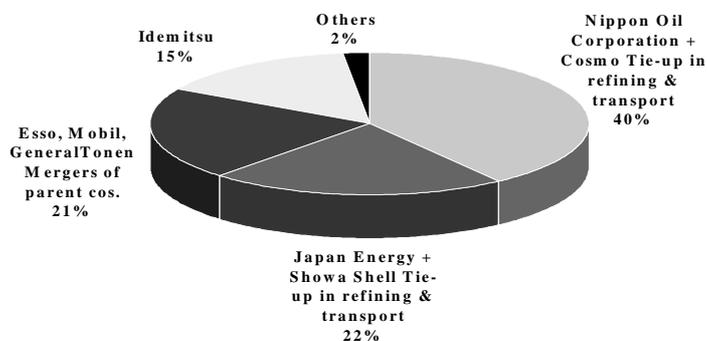
Fiscal Year	Capacity (B/D) (End of FY)	Utilization Ratio (Average) (%)	Number of Toppers	Number of Refineries
1985	4,972,410	62.3	68	46
1994	5,096,498	82.8	53	40
1995	5,221,200	79.3	53	40
1996	5,269,610	79.1	53	40
1997	5,353,068	81.2	53	40
1998	5,378,731	77.7	53	40
1999	5,374,610	77	51	39
2000	5,273,610	79.1	49	37
2001	4,967,610	81	47	35
2002	4,967,610	81.4	46	33
2003	4,896,610	-	45	30

Source: Japanese Oil Statistics (Sekiyu Shiryou), 2003 version.

The major Japanese companies refining share and strategic alliances as at the year 2002 is shown below³ (Figure 2).

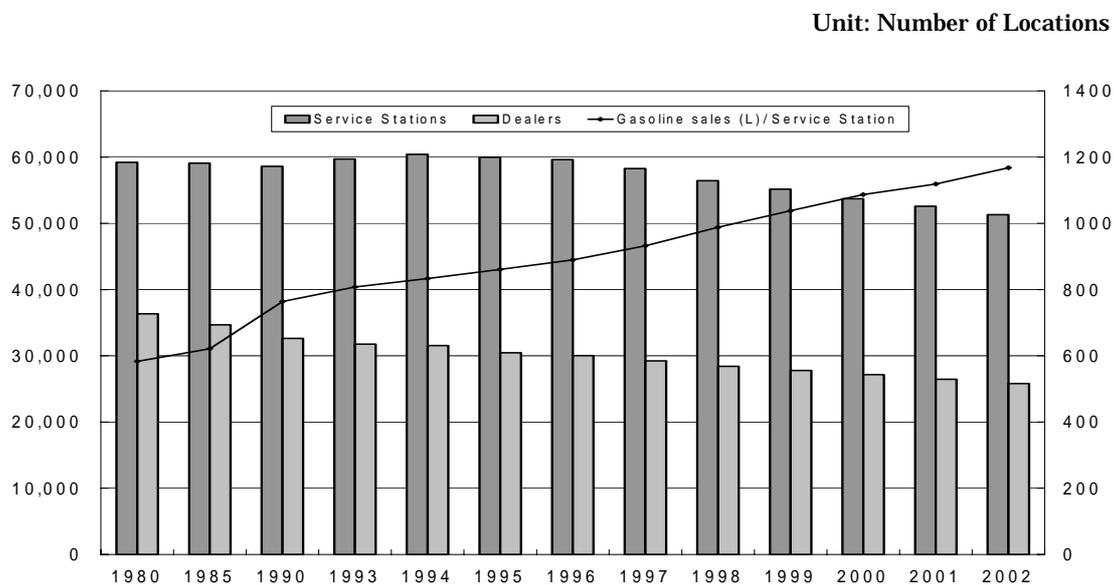
³ In December 2002, Nippon Oil Corporation (NOC) concluded an oil refining alliance with Idemitsu accompanying Idemitsu's decision to stop operations at its Hyogo Refinery.

Figure 2: Refining Share and Strategic Alliances of the Major Japanese Oil Companies



There has also been considerable transformation within the retail sector, with the number of stations operating throughout Japan gradually declining over recent years. The number of service stations operating peaked in 1994 at 60,421 locations nationwide, but from this point has been in a downward trend and by March 2003 had fallen to 51,294 locations⁴ (Figure 3).

Figure 3: Number of Service Stations Operating in Japan (1980 – 2002)

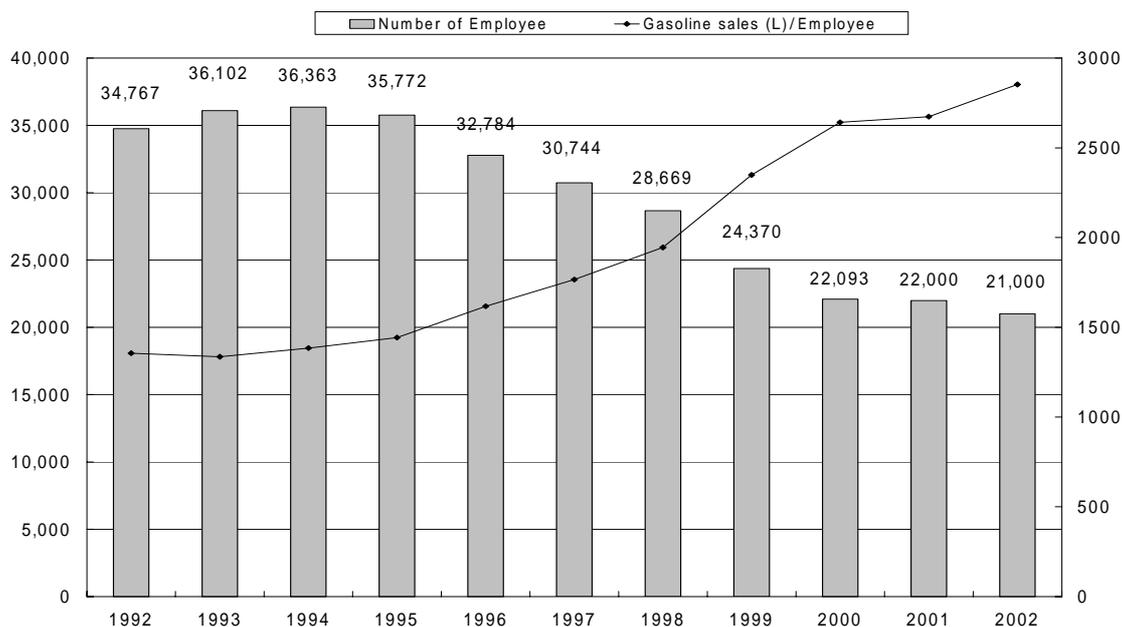


Source: The Oil Information Center

⁴ However, it is interesting to note that the number of “self-service” stations has been on the increase in the past few years. After the government repealed the law preventing the operation of “self-service” stations in June 1998, the number of these service stations in operation has increased steadily from a mere 85 locations at the end of 1998 to 3,306 locations at the end of 2003.

This decrease in service station numbers in conjunction with corporate restructuring of the companies themselves has also led to a gradual decline in the number of employees within the oil industry, which over the same timeframe 1994-2002 has almost halved to approximately 21,000 as at the end of March 2002 (Figure 4).

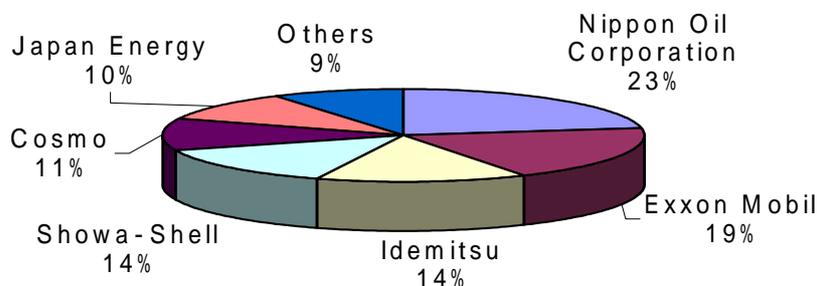
Figure 4: Number of Employee in the Japanese Oil Industry (1992 – 2002)



Source: Japanese Oil Statistics (Sekiyu Shiryou), 2003 version.

Approximately 90% of the retail sales of petroleum products in Japan are carried out by six main companies, those of; Nippon Oil Corporation, Idemitsu, Cosmos, Exxon-Mobil, Showa-Shell and Japan Energy. In 2003, the total volume of petroleum products sold on the domestic market amounted to 249 million kl, with the above six companies prospective share of gasoline sales within the domestic market shown below (Figure 5).

Figure 5: Major Companies Share of Gasoline Sales (2003 Fiscal Year)

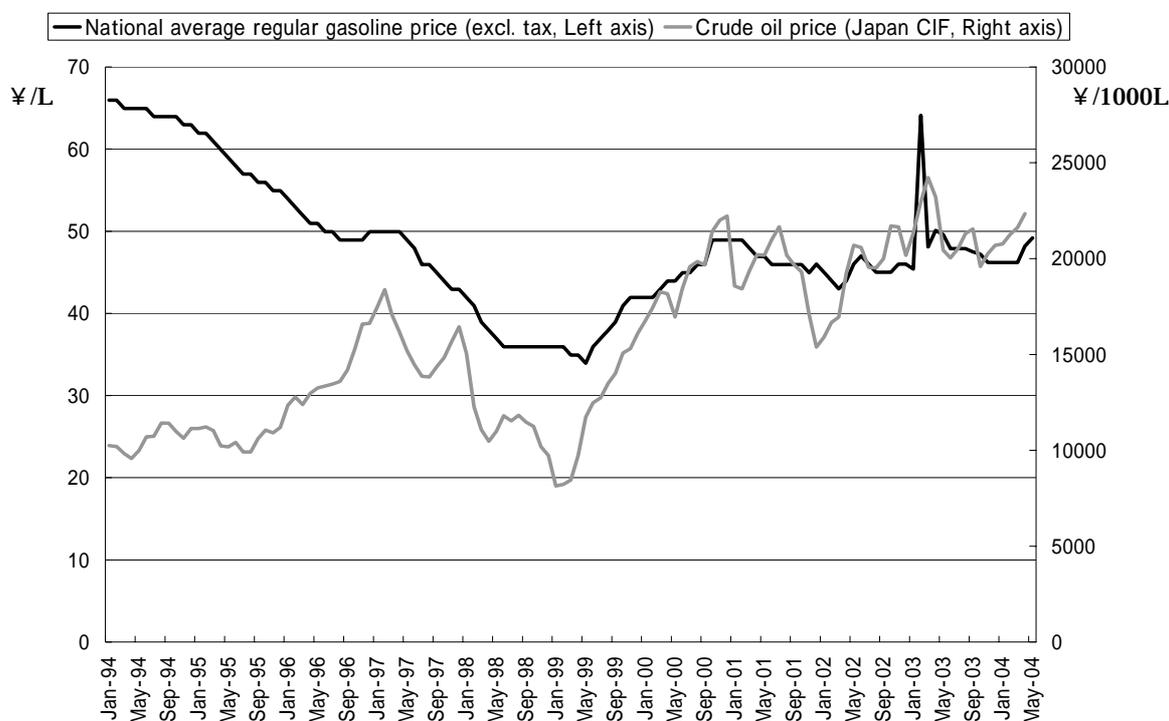


Source: Nernyou Yushi Newspaper, May 10, 2004

However, another factor that has started to become more prominent in recent years, predominantly as a result of mounting concern for the urban air environment /air pollution and the health of urban residents is a worldwide shift towards “environmentally friendly” petroleum products and, the strengthening of oil product specifications. To this end Japan has embarked on an “oil product quality agenda” similar to the system being implemented in the European Union, which has added extra pressure on Japan’s downstream sector, mainly as the upgrading and installation of desulphurization systems in refineries requires a significant amount of investment that these companies will need to fund themselves⁵. To be economically viable the cost of these sulphur removal systems must be recovered, ultimately with this cost being passed on to the consumer in the form of “higher” gasoline prices. However, given the current environment of intense competition within the retail market the passing on this cost to the consumer may in actuality prove to be very difficult. For example, for most of 2004 the price of crude oil on international markets has been at record highs and correspondingly the prices of refined products have skyrocketed; however, the price of regular gasoline in the Japanese domestic market has not risen at all (Figure 6).

⁵ The major oil companies operating within Japan (Nippon Oil Corp., Idemitsu, Cosmo, Showa-Shell, Japan-Energy) expect that to bring the sulphur content of gasoline below 10 ppm with cost an estimated 70.9 billion yen (\$US 630 million). Other estimates expect the costs of upgrading to total around 200 billion yen (\$US 1.77 billion). New “Sulphur-Free” fuel < 10 ppm is expected to be available at service stations from January of 2005.

Figure 6: Comparison of the historical trend in Crude Oil and Regular Gasoline Prices



Source: The Oil Information Center and the Energy Data and Modeling Center, IEEJ

Japan's "oil product quality agenda" will follow the following schedule; from 1997 through to 2007-8, the sulphur content of diesel is to go from the current regulation of < (less than) 500ppm to no greater than 10ppm (currently most diesel sold is <50ppm with some being sold that is <10ppm). Similarly the sulphur content of gasoline is to be brought down to <10ppm by 2008 (currently most gasoline sold has a sulphur content less than 50ppm).

In summary, within the Japanese downstream petroleum sector cost has become the all-inclusive factor, in addition to the establishment of more efficient and effective supply systems. With these systems primarily aimed to reduce unit cost production and surplus refinery capacity (increase the average utilization ratio), while optimizing the supply system (including strategic alliances), and maintaining a more focused approach to environmental measures/investment (while also ensuring that petroleum products meet the new environmental regulations).

Implications for World Energy Markets

Restructuring of Japan's downstream oil market has had various implications

for worlds energy markets. The first point to note is the size of the Japanese market – the second largest in the world by demand – offers substantial outlet opportunities for the major suppliers in the world oil market. However, it must also be noted that the Japanese oil market is a mature one in which the future projected demand has almost flattened out (Table 4).

Table 4: Comparison of Forecasts of the Final Energy Demand for Japan (2010 and 2020)

Units: Million Ton of oil equivalent (TOE) and CO₂: Million Ton of Carbon Equivalent

	Actual 2000 FY		IEEJ									METI (2002 forecast)						
			2010 FY						2020 FY			2010 FY						
			Low GDP		Reference		Enhanced		Low GDP		Reference	Enhanced	Reference	Policy				
	%	%	%	%	%	%	%	%	%	%	%	%						
Oil	289	52	264	49	279	48	266	47	246	45	266	45	243	43	258	45	251	45
Coal	100	18	99	18	108	19	102	18	100	18	111	19	100	18	126	22	105	19
Natural Gas	73	13	76	14	86	15	87	15	80	15	93	16	94	17	76	13	77	14
Nuclear	69	12	75	14	75	13	75	13	87	16	87	15	87	15	86	15	86	16
Hydro, Geothermal New Energy	20	4	20	4	20	4	20	4	20	4	20	3	20	4	19	3	19	3
	6	1	8	1	8	1	17	3	9	2	9	2	21	4	9	2	18	3
Total Primary Supply	559		542		576		567		542		586		565		575		557	
CO ₂ Emissions	316		301		325		310		291		323		295		307		287	
Compared with 1990 (=287)	10		5		13		8		2		12		3		7		0	
	% Up		% Up		% Up		% Up		% Up		% Up		% Up		% Up		% Up	
Industrial Sector	185	49	165	46	180	47	179	47	166	46	183	47	181	48	173	46	171	46
Res. & Co. Sector	100	27	108	30	113	30	112	30	111	31	119	31	118	31	116	31	111	30
Transportation	91	24	87	24	90	23	89	23	80	22	85	22	79	21	88	23	87	24
Total Final Demand	376		360		383		380		358		388		378		378		370	

Note: Enhanced refers to scenarios in which measures to reduce CO₂ emissions are “enhanced”.

Source: IEEJ’s Long-Term Energy Outlook for Japan, November 2002.

Being a net energy importer, Japanese energy companies are predominately buyers on the international energy stage, so the question arises as to what impact their future actions and strategies will have on these markets. Likewise, traditionally Japanese buyers have respected supply security and have given top priority to stable procurement of oil. Even today, given Japan’s dependence on oil imports remains unchanged, stable procurement still remains a top priority and as a result Japanese oil companies have historically paid comparatively high prices to attain this⁶. However, for Japanese oil companies to survive in the current environment of intense competition, there are mounting demands for more

⁶ Termed the “Asian Premium”, this refers to the fact that crude sold within the Asian oil market has a comparatively higher procurement cost (historically \$1-1.5 per barrel of crude), as compared with similarly graded crude’s that are sold in the European or American oil markets.

competitive procurement, which in turn should lead to more competitive and rational energy prices.

Aside from oil procurement, in an effort to strengthen their corporate position and improve their sources of financial revenue, Japanese energy firms – which are predominantly active in the downstream sectors – are making moves to launch into midstream (transportation) and upstream (exploration/production) operations. This has been the case particularly in the natural gas/LNG sectors⁷, with a number of oil, gas, and electricity companies actively investing to overseas upstream operations⁸.

It will also be interesting to see what strategy the Japanese undertake to maintain energy security not just for themselves, but for the whole Asian region, especially given that China has overtaken Japan to become the second largest oil consumer in the world⁹. With oil demand set to soar throughout the Asian region over the next several decades, the initiatives/action taken by Japanese oil companies and the government now will have a profound effect on the shape of things to come.

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⁷ Reflecting both the dominant position of LNG in the domestic energy sector and the strong future demand increase expected within this sector.

⁸ Examples include, Japanese trading firms Mitsubishi, Mitsui, Itochu etc participating in the Sakhalin natural gas projects; Nippon Oil Corporation investing in a Malaysian LNG project; Osaka Gas – being the first Japanese utility – to invest into the upstream natural gas sector of the North West Shelf project in Australia; Tokyo Gas and Tokyo Electric Company in March 2002, announced that they are to invest in the Bayu-Undan project (in the Timor Sea between East Timor and Australia).

⁹ According to the International Energy Agency (IEA)