

The Outlook for Oil Demand, Supply and Trade in the Asia-Pacific Region to 2005

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The Asia-Pacific region has some of the world's fastest-growing economies. The International Monetary Fund recently estimated the real 1995 economic growth rate for the world at 3.7 percent and Asia's performance (9.3 percent) at more than double the global rate.¹ Although the GDP (gross domestic product) elasticity of energy demand varies from country to country and is not necessarily equal to 1, the increase in energy consumption² is significantly driven by economic growth, among other things. Because of this, the economically fast-growing Asia-Pacific region also serves as the "engine of growth" for global energy demand. During the past decade, primary commercial energy consumption³ in the region increased at an average annual rate of 4.6 percent, nearly three times as fast as the annual growth rate of world primary commercial energy consumption, which was 1.6 percent on average. From 1984 to 1994, the share of the Asia-Pacific region in the world's total primary commercial energy increased from 19.2 percent to 25.7 percent.

During the past decade, nuclear power and gas consumption registered the highest annual growth rates averaging 8.2 and 7.4 percent, respectively, in the Asia-Pacific region, followed by oil at 4.7 percent. In comparison, the consumption of coal grew at an average rate of 3.9 percent per annum about the same as hydroelectricity consumption growth. The region as a whole relies on fossil fuels, especially coal and oil for its commercial energy needs. Nevertheless, the relative shares of different fuels have been changing. From 1984 to 1994, the shares of coal and hydroelectricity in Asia-Pacific primary commercial energy consumption declined from 48.5 and 2.1 percent, respectively, to 45.1 and 1.9 percent, while the shares of gas and nuclear power increased from 7 and 3.4 percent, respectively, in 1984 to 9.1 and 4.7 percent in 1994. The share of oil increased slightly during the period. The combined share of coal and oil in Asia-Pacific primary commercial energy consumption was 88 percent in 1984, and in 1994 these two energy sources still accounted for 84 percent.

When compared with global energy consumption patterns, the Asia-Pacific region is similar in its oil share but is substantially more dependent on coal than on gas. While the combined share of coal and oil in primary commercial energy consumption is 84 percent for the Asia-Pacific region it is about 67 percent for the world. Natural gas is underutilized in Asia and the Pacific, accounting for only 9 percent of primary commercial energy consumption, compared with 23 percent for the world. However, the use of natural gas continues to grow rapidly in the region, and its share in total primary commercial energy consumption varies from country to country. China has the lowest share of gas use at around 2 percent of primary commercial energy consumption while the respective shares are as high as 40 and 35 percent for Malaysia and Indonesia. In the Philippines, commercial use

of natural gas has not yet materialized. However, development of gas fields is encouraged, and foreign investment is being sought by the government of the Philippines.

The energy demand structure for the Asia-Pacific region is heavily affected by the presence of China. In China, coal plays a dominant role in the country's primary energy consumption. The share of coal in total primary energy consumption in China has never fallen below 70 percent during the past four decades. However, after rapidly declining between the 1950s and the late 1970s the share of coal in China's total primary consumption has actually increased since 1990. In 1994, coal accounted for 76.6 percent of total primary commercial energy consumption in China, with the remaining shares comprising oil (19.2 percent), natural gas (2.0 percent), hydroelectricity (1.8 percent), and nuclear power (0.4 percent). China started to produce electricity from nuclear power in 1993. In 1994, 13.9 billion kilowatt hours of electricity were generated by the nuclear power sector, seven times more than what it produced in 1993. Nuclear power accounted for 1.5 percent of China's total electricity generation in 1994.

Excluding China, oil would account for 51 percent of primary commercial energy consumption in the Asia-Pacific region, followed by coal at 28 percent, natural gas at 12 percent, nuclear power at 7 percent, and hydroelectricity at 2 percent.

Oil Demand Outlook

For 1994, the high growth rate of oil demand in Japan outweighed both the slowdown of oil consumption growth in China and the declining absolute consumption in Indonesia.⁴ As a result, regional demand (including direct use of crude oil) rose to 16.3 million barrels per day (b/d), 5.7 percent higher than the consumption level of 15.5 million b/d in 1993. Japan's total oil consumption increased by 5.3 percent in 1994. This growth rate, the highest since 1988, was largely due to the jump in crude burning as well as higher demand for the main refined products in Japan. During the past decade, regional oil consumption growth has been heavily influenced by the growth in Japan, with the two moving generally in the same direction.

In 1995, total oil demand in Japan is estimated to have declined by about 1 percent. Consumption growth in China, though higher than in 1994, continued to be moderate. As a result, the growth of total regional oil consumption in 1995 is estimated at 4.3 percent. The expected increase in 1995 of 700 thousand b/d is lower than it was in both 1994 (890 thousand b/d) and 1993 (780 thousand b/d). The regional consumption is expected to increase by 4.5 percent over the period 1995-1997.

Individual countries have shown varied performance in oil demand during the short run. Following is a brief assessment of the petroleum product demand situation in some of the largest oil consuming countries in the Asia-Pacific region for the period 1994-1997.

Japan

Japan is the largest oil consumer in Asia and the Pacific, accounting for about one-third of the region's total oil consumption in 1994. Of Japan's 5.5 million b/d of oil consumption in 1994, 435 thousand b/d was crude oil and natural gas liquids (NGL) that were directly burned for power

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¹ See footnotes at end of text.

generation and used for the petrochemical industry. Compared with 1993, the direct burning of crude and NGL in 1994 was 25 percent higher. Also in 1994, fuel oil consumption increased by 8.9 percent. The effects of the drought and hot summer of 1994 were the major reasons for drastically increased burning of crude and use of fuel oil for power generation. In 1995, both crude burning and fuel oil consumption declined. Total oil use in Japan is also estimated to have decreased by 1 percent in 1995. However, the average annual growth rate is expected to increase to 1.7 percent during the period 1995-1997, raising total demand to 5.9 million b/d in 1997.

China

China continued to demonstrate a unique consumption pattern for the period 1994-1995. The real growth rate of oil consumption in 1994 as well as 1993 is still subject to controversy. According to the recently published *China Statistical Yearbook 1995*, 1994 oil consumption is estimated to be 1.9 percent lower than consumption in 1993, while coal consumption was up 13.2 percent. We believe, however, that these data reflect a misunderstanding of the market situation during the period 1993-1995. After carefully examining all relevant factors, we estimate that petroleum product consumption in 1994 was 2.91 million b/d in 1994, up 4.5 percent from 2.79 million b/d in 1993. Consumption in 1994 was inclusive of 110 thousand b/d of crude oil that were directly used in various industries. Led by LPG, naphtha and diesel, total petroleum product consumption is estimated to have increased to 3.07 million b/d in 1995. During the period 1995-1997, the average demand growth rate could reach 6.2 percent per annum. Diesel, gasoline, and fuel oil are three of the largest refined products consumed in China, though the official count of "four refined products" is limited to gasoline, kerosene, diesel, and lube oils.

Korea

South Korea surpassed India in 1991 to become the third largest petroleum product consumer in the Asia-Pacific region. In 1994, total petroleum product consumption in South Korea reached 1.71 million b/d. Consumption is estimated to have jumped 14.8 percent in 1995 to 1.97 million b/d and another 5.3 percent per annum on average during the period 1995-1997. While some believe that the rapidly expanding refining capacity in South Korea will have a significant impact on the product balance for the region, much of the additional capacity is likely to be absorbed by the domestic market. In 1994, fuel oil accounted for 26.3 percent of total petroleum product consumption in the country, followed by gasoil (23.5 percent), naphtha (19.7 percent), and others. Gasoline constituted only 8.2 percent of the refined product market, compared with 17.2 percent in Japan and 25.5 percent in China.⁵

India

India has maintained a healthy growth of refined product consumption in recent years. Total petroleum product consumption reached 1.36 million b/d in 1994, 8.1 percent higher than 1993 consumption of 1.26 million b/d. Diesel accounted for 42 percent of India's total product consumption in 1994, perhaps the highest share in the Asia-Pacific region. In comparison, gasoline accounted for only 7.5 percent of

overall product consumption in 1994. India's product consumption is expected to have increased to 1.47 million b/d in 1995 and 1.69 million b/d in 1997.

Indonesia

It is unusual to see a drop in oil consumption in Indonesia, but it happened in 1994. Overall petroleum consumption decreased by 0.7 percent to 759 thousand b/d in 1994 from 764 thousand b/d in 1993, mainly caused by decreases of 27.7 percent in fuel oil consumption and 4.3 percent in gasoil consumption. Other products all exhibited positive consumption growth. A further examination of the 1994 consumption pattern reveals that the decline of fuel oil and gasoil consumption was due to fuel diversification in the electricity sector – away from oil and toward other fuels, especially natural gas.⁶ In 1995, it is likely that fuel oil consumption will have remained at the same level as in 1994. Nevertheless, demand for all other products is expected to have increased, raising overall consumption by 5.7 percent to around 800 thousand b/d in 1995. During the period 1995-1997, the growth rate is forecast to average 5.7 percent, raising overall product consumption to 896 thousand b/d in 1997.

Australia

Petroleum product demand growth in Australia averaged only 2.3 percent per annum during the period 1990-1994. However, total consumption was up 4.4 percent in 1994, reaching 708 thousand b/d. Gasoline accounted for 43.3 percent of overall petroleum product consumption in 1994, followed by gasoil at 27 percent, kerosene and jet fuel (kero/jet) at 10.2 percent, and LPG at 9.4 percent. Jet fuel constitutes the majority of the kero/jet pool. For LPG, while the demand is large, the country produces even more and remains a net exporter of it. Fuel oil accounts for less than 5 percent of the demand barrel in Australia, and so do other products, which include lubricants, asphalt, solvents, petroleum coke, waxes, and others. In 1995, the demand for fuel oil and other products declined, while that for gasoline, LPG, gasoil, and kero/jet continued to increase, raising the total consumption by 2.3 percent to 724 thousand b/d. During the period 1995-1997, the growth of petroleum product demand in Australia is forecast to be modest, averaging only 1.6 percent per annum.

Taiwan

For a number of reasons, the growth rate of petroleum demand in Taiwan has accelerated in the past two years, increasing by 8.3 percent in 1993 and 8.1 percent in 1994. The leaders in growth were naphtha (17.1 percent) and kero/jet (13.3 percent) for 1993, gasoil (18.1 percent), gasoline (13.9 percent), and naphtha (11.7 percent) for 1994. In 1994, petroleum product demand in Taiwan reached 704 thousand b/d. Fuel oil has the largest share in Taiwan's petroleum product demand, accounting for 30.9 percent of the total, followed by naphtha at 19.1 percent, gasoline at 18.1 percent, and gasoil at 14.9 percent. The strong growth of naphtha and gasoil will have continued to push up overall consumption to 746 thousand b/d in 1995, up 6.7 percent from the previous year. Owing mainly to the unique consumption pattern of the high fuel oil share in Taiwan, overall consumption growth is expected to slow down as demand for fuel oil grows slowly

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during the next couple of years. The average annual growth rate is forecast to be 2.6 percent during the period 1995-1997.

Thailand

In terms of oil consumption, Thailand and South Korea are perhaps the world's fastest growing countries in the early 1990s. During the period 1990-1994, overall petroleum product consumption in Thailand grew at an average annual rate of 11.8 percent, increasing from 402 thousand b/d in 1990 to 628 thousand b/d in 1994. Nearly every type of petroleum product had a double-digit consumption growth rate in 1993 and 1994. Gasoil accounts for 41 percent of total petroleum product consumption followed by fuel oil at 24 percent and gasoline at 15 percent. Led by the strong performance of gasoil, gasoline, and LPG, total product consumption is expected to have increased by another 11.8 percent in 1995, reaching 702 thousand b/d. Consumption will increase rapidly in every category, especially gasoil, gasoline, and LPG, during the next couple of years. The annual growth rate is forecast to average 12.2 percent during the period 1995-1997, raising overall consumption to 884 thousand b/d. By 1997, Thailand is expected to surpass Taiwan and Australia in overall oil consumption.

Singapore

Singapore's overall demand⁷ is affected by the demand for fuel oil, gasoil, and jet fuel which in turn reflects events in regional and international markets. The country had unusually high growth rates in petroleum product demand during the past two years, up 15 and 10.4 percent, respectively, in 1993 and 1994. The increases were largely caused by higher demand for fuel oil, gasoil and kero/jet. In 1994, the consumption growth rates were 11.9 percent for fuel oil, 10.5 percent for gasoil and 11.5 percent for kero/jet. Fuel oil accounts for about 63 percent of total petroleum product demand in Singapore, followed by gasoil at 12 percent, and kero/jet at 10 percent. Gasoil and LPG, which are consumed exclusively in the domestic markets, account for only 3 and 2 percent, respectively, of overall product consumption. In 1995, Singapore's oil consumption is expected to have been 519 thousand b/d, a drop of 2.4 percent from 531 thousand b/d in 1994, due mainly to the drop in fuel oil demand and a slowdown of gasoil and kero/jet consumption growth. Over the next two to three years, demand for fuel oil is expected to go up again, and that for naphtha is likely to increase dramatically. The average annual growth rate of petroleum product consumption is forecast to be 5.2 percent during the period 1995-1997.

Malaysia

Malaysia's double-digit growth in oil consumption persisted for several years but came to a complete halt in 1994. Despite a growth of 12.3 percent for LPG, 6.4 percent for gasoline, and 4.7 percent for kero/jet, overall petroleum product consumption in Malaysia stood at 318 thousand b/d in 1994, the same as in 1993. The major reason for this non-growth in total consumption was the dramatic reduction of fuel oil consumption by 39 percent, reflecting the Malaysian government's continuous efforts to carry out fuel switching in the power sector. In the meantime, the demand for gasoil,

which accounts for about 36 percent of total product consumption, did not increase in 1994. As the decrease of fuel oil consumption slowed down, overall petroleum product consumption started to increase again in 1995, and it is expected to have reached 330 thousand b/d, up 3.8 percent. During the following years, the strong growth of LPG, kero/jet, and gasoil consumption will outweigh the continuing reduction of fuel oil consumption and raise overall consumption by an average of 5.2 percent a year during the period 1995-1997.

Philippines

In 1994, petroleum product consumption in the Philippines was 305 thousand b/d, up 3.5 percent from the 1993 consumption level. The largest use of refined products in the country is gasoil, accounting for nearly 40 percent of total consumption. The transportation sector accounts for more than half of the gasoil use, followed by the industrial sector and the power sector. Owing to the effects of the struggling Philippine economy, demand for refined products is expected to have increased only slightly in 1995, up 0.5 percent from the 1994 consumption level. For the next two to three years, the growth rate of oil consumption is forecast to go up, averaging 4.2 percent a year during the period 1995-1997.

Other Asia-Pacific Countries

Among other countries, Pakistan's petroleum product consumption reached 249 thousand b/d in 1994 and is likely to have increased to 275 thousand b/d in 1995. At 115 thousand b/d, Vietnam's oil consumption was up 9.7 percent from the previous year, and is expected to have increased to 125 thousand b/d in 1995. New Zealand's consumption reached 109 thousand b/d in 1994, but is expected to have increased to only 110 thousand b/d in 1995. For the rest of the Asia-Pacific region, oil consumption in all of these countries amounted to more than 440 thousand b/d and will continue to increase in the future.

Looking at the longer term, our most recent forecast of oil demand to the year 2005 is robust for the Asia-Pacific region. Regional oil demand is projected to grow to 20.9 million b/d in 2000 and 25 million b/d by 2005. This translates into an average 4.2 percent annual growth rate in oil demand over the remainder of the decade and 3.6 percent for the period 2000-2005, averaging 3.9 percent for the entire forecast period 1995-2005.

Over the next 10 years, high average annual growth rates of oil consumption are expected to be seen in Vietnam (7.5 percent), Pakistan (6.6 percent), Thailand (6.5 percent), Malaysia (6 percent), India (5.7 percent), China (5.6 percent), and Indonesia (5.5 percent). Within the petroleum product categories, diesel will grow fastest at a 4.8 percent per annum rate during 1995-2005, followed by gasoline also at 4.8 percent, kero/jet at 4.5 percent, and LPG at 4 percent. During the same period, fuel oil demand – including direct use of crude oil – is expected to grow at 1.7 percent annually. For the region as a whole, oil demand is forecast to grow by 7.9 million b/d over the next 10 years. Under this circumstance, oil supply remains an important issue for the future.

Outlook for Regional Oil Supply and Export Availability

The major oil producers in the Asia-Pacific region are China, Indonesia, Malaysia, India, and Australia. These five

countries account for over 90 percent of total proven oil reserves and annual production in the region. Minor but important producers include Brunei, Vietnam, and Papua New Guinea (PNG). Currently, China, Indonesia, Malaysia, Australia, Brunei, Vietnam and PNG all export crude oil. While exporting crude, Australia and China are net oil importers. Regional crude oil production in 1994 amounted to just under 7 million b/d, and is expected to have risen to slightly over 7 million b/d in 1995. Of the region's total 1994 crude oil production, 4.77 million b/d were used to supply the oil producers' own local demand, and only 2.21 million b/d were exported. About 15 percent of the exported crude was destined for outside the region mostly to the United States. The remainder was exported to other countries within the Asia-Pacific region. The regional crude oil production increase will be moderate but steady over the next few years, reaching just under 7.2 million b/d in 1997. Crude production additions during the period 1995-1997 are expected to mainly come from India, China, and Australia, whereas production in Indonesia and Malaysia is declining. By the end of this decade, regional crude output will peak at around 7.2 million b/d, and is forecast to decline after that year, to approximately 6.9 million b/d in 2005.

Rapidly rising local demand within the oil-producing countries will result in a decline in crude export availability.⁸ Available crude exports from the region are projected to fall from 2.2 million b/d in 1994 to 1.8 million b/d in 1997, to 1.5 million b/d in 2000, and to around 650 thousand b/d by the year 2005, while total regional output stays at the same level. At the level of 650 thousand b/d, the crude export ability in 2005 will be 70 percent lower than the 1994 level.

Dramatic changes will likely occur among the seven traditional exporters of crude oil over the next 10 years. A further discussion of each of these countries is useful to understand the pattern of regional crude exports for the period 1995-2000.

China

China became a net overall oil importer in 1993. China's exports of crude oil peaked in 1985 at 601 thousand b/d and subsequently declined to 389 thousand b/d in 1993. China started to import crude oil in 1988, and imports quickly increased from 17 thousand b/d that year to 313 thousand b/d in 1993. In 1994, China produced a total of 2.92 million b/d of crude oil, exported 370 thousand b/d, and imported 247 thousand b/d. Production is likely to have reached just under 3 million b/d in 1995, and is forecast to rise slowly to 3.1 million b/d in 1997, 3.2 million b/d in 2000, and 3.3 million b/d in 2005. The production of the Daqing field is likely to be maintained at over 1 million b/d up to the end of the decade, but it will decline gradually beyond 2000. Production of the Shengli fields will be stabilized. Most of the expected incremental production is, therefore, likely to come from West China, the offshore area (by 2000), and other fields. Owing to rising demand by domestic refineries for crudes, crude export availability is forecast to decline to 310 thousand b/d in 1997, 200 thousand b/d in 2000, and only 20 thousand b/d by 2005.

Indonesia

We expect that Indonesia will become a net oil importer during the first half of the next decade. In 1994, Indonesia

produced a total of 1.6 million b/d of crude oil (including NGL) and exported 888 thousand b/d of crude oil making it the largest exporter in the Asia-Pacific region. Currently, Minas crude accounts for about one-quarter of Indonesia's crude production, but output from the field is likely to decline. Overall crude production is forecast to decline to 1.4 million b/d in 1997, 1.2 million b/d in 2000, and 1.1 million b/d in 2005. By the same token, the crude export availability from Indonesia is expected to decrease to 600 thousand b/d in 1997, 400 thousand b/d in 2000, and 240 thousand b/d in 2005.

Malaysia

Tapis crude accounted for half of Malaysia's crude and condensate production of 660 thousand b/d in 1994. However, the output of Tapis crude is likely to decline over the next 10 years. Overall production is expected to decline to 530 thousand b/d in 2000 and 440 thousand b/d in 2005. Currently more than two-thirds of Malaysia's crude is exported. The combination of declining crude production and gradually increasing domestic needs for these crudes will lead to a declining export availability from Malaysia, from 420 thousand b/d in 1994 to 170 thousand b/d in 2000 and approximately 50 thousand b/d in 2005.

Australia

Australia's crude production jumped nearly 9 percent in 1994 to reach about 540 thousand b/d. The country managed to export one-quarter of its 1994 production, and compensated for the deficit of crude by importing more from the Middle East. Forecasting Australian crude production in the future is risky because exploration activities are strong in this country. Over the next five years, the downturn of Australia's crude/condensate production in the early 1990s is set to be reversed - owing mainly to the addition of new crudes from the Timor Gap⁹, light crude from Cossack, and condensate from the Northwest Shelf. Crude and condensate production is expected to increase to 590 thousand b/d in 1997 and 710 thousand b/d in 2000. Australia's crude/condensate export availability is also expected to increase to 185 thousand b/d in 1997 and 300 thousand b/d in 2000. However, after 2000, production is forecast to decrease dramatically, down to approximately 340 thousand b/d in 2005 - unless additional discoveries are made. While a certain amount of crude oil may still be exported from Australia by 2005, the country needs to import more for its domestic refineries.

Vietnam

Prior to 1994, Bach Ho was the sole producing field in Vietnam. In 1994, the majority of the country's 142 thousand b/d of crude output was still from Bach Ho, though partial production started in Dai Hung by the end of the year. Total production in 1994 was up 15.7 percent from the 1993 production level. Nearly all of this crude was exported. In 1995, the Rong field also joined the ranks of Bach Ho and Dai Hung to produce oil. Some other fields will come on stream in 1997, as will the Rang Dong field in 2000. Over the next year or two, the overall production level is likely to be affected by reduced estimates of reserves and production from the Dai Hung field. By 2000, Vietnamese crude production is likely to increase to 200 thousand b/d, and stay

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at that level until 2005. During the period 1995-2005, production at Bach Ho is expected to decline, but it will be compensated by production additions from Rang Dong, Dai Hung, and other fields. Vietnam's crude export availability, reaching 200 thousand b/d by 2000, is likely to be reduced in the middle of the next decade following the possible construction of two refineries in the country.

Brunei

Brunei's crude production has been stable for years, and little change is expected over the next five to ten years, unless the government changes its policy of controlling oil production for conservation purposes. Crude production in 1994 was 162 thousand b/d, all exported. Although annual crude production is likely to be maintained at the current level, domestic demand for oil will continue to account for a tiny fraction (less than 10 percent) through 2005.

Papua New Guinea

Papua New Guinea (PNG) produced 120 thousand b/d of crude oil from the country's only oil field, Kutubu. Output is declining, and 1994 production represented a decline of 5.3 percent over 1993. Kutubu production is expected to decline further to 75 thousand b/d in 2000 and 60 thousand b/d in 2005. Currently all PNG crude is exported. If the proposed refineries are built, crude export availability could be reduced by more than half by 2005.

In sum, by 2000 exporters will include Indonesia, Australia, China, Malaysia, Brunei, Vietnam and PNG. By 2005, many of these countries are expected to continue to export oil – but a drastically reduced amount. Some oil may also be exported from Myanmar.

As a result of these changes, exports of low-sulfur waxy crudes by the Asia-Pacific countries will decline significantly. Among Asia-Pacific crude types, light sweet crudes will be harder to find than heavy sweet crudes after 2000. The regional slate will also depend more heavily on sour crudes from the Middle East. The changing crude availability will have a major impact on refining investments, since environmental regulations will call for lower-sulfur fuel oil.

Rising Import Dependence for the Asia-Pacific Region

Asian crude production is unable to satisfy existing regional oil demand, and the gap between supply and demand will continue to widen. The result will be a major increase in oil import dependence.¹⁰

The Asia-Pacific region has a huge refining capacity. The 1995 distillation capacity in the region is about 16 million b/d, which represents a substantial increase over the 1990 capacity of 12.6 million b/d. The countries that have over 1 million b/d of crude distillation capacity are Japan (4.8 million b/d), China (3.7 million b/d), South Korea, (1.7 million b/d), India (1.1 million b/d), and Singapore (1.1 million b/d).

In light of rising oil demand, many countries in the region have major plans to expand their refining capacity and upgrading capabilities. However, the plans vary from country to country. For the region as a whole, additions of about 1.8 million b/d by 1997 are firmly planned, with an additional 1.3 million b/d of likely capacity by 2000. During

the period 2000-2005, a possible 4 million b/d of new capacity could be added to the region, but many uncertainties exist. Associated with current plans are 1.3 million b/d of planned cracking capacities (FCC/RCC, hydrocracking, visbreaking, and coking) by 2000, of which about 60 percent of the additions will be completed by 1997. The huge and expanding refining capacity in the Asia-Pacific region implies that crude oil will account for most of the oil import dependence, and dependence on the Middle East to supply the region's crude needs will be inescapable.

In 1994, the net oil import requirements of the Asia-Pacific region amounted to 9.3 million b/d, about 57 percent of the region's petroleum product consumption. Based on our forecasts and projections, the region's overall oil import dependence is expected to rise from 57 percent in 1994 to 62 percent in 1997, and 65 percent in 2000, and by 2005 to 72 percent.

Currently, the Mideast accounts for approximately 76 percent of the region's total crude oil imports (including intraregional crude imports within the region).¹¹ The dependence on Middle East crude will go up to 79 percent in 1997 and 84 percent in 2000. By 2005, 92 percent of all crude imports of the region is expected to come from the Middle East, unless alternative sources of petroleum supply can be found. This sharply contrasts with the United States, where Latin America, Canada, and the North Sea will remain key exporters for the U.S. market, in addition to the Middle East.

Conclusions

Oil consumption growth in the Asia-Pacific region will continue to be robust over the next decade and beyond. Regional crude oil supply will lag far behind the overall oil needs in the region, and most of the balance can be filled only by Mideast oil. During the two decades since the first Mideast oil crisis, although much has changed within Asia and the Pacific, the region is still dependent on the Persian Gulf for oil. This dependence will grow to unprecedented levels in a few years, simply because China, Indonesia, and Malaysia will ultimately join the ranks in search of large volumes of imported oil.

The refining system in Asia has been consistently changed, upgraded, and expanded to catch up with the region's growing demand for oil in general and for lighter, cleaner, and higher-quality products in particular. As overall demand is growing steadily, surplus refining capacity in the region will wax and wane. Some countries will ultimately become product exporters, but the region as a whole will remain a net product importer for the foreseeable future.

In summary, the Asia-Pacific region faces a precarious situation in terms of future oil demand and supply. However, one of the biggest characteristics of the region's oil market is that the Asian secret is out. The competition for trading crude oil and products will become fiercer, as the region's oil market has embarked on a course of globalization. The impact of these changes will be significant for all potential oil investors and traders in the region.

Footnotes

¹ Throughout this article, all 1995 numbers are estimated unless otherwise specified.

² While the concepts of "demand" and "consumption" are different in economic theory, they are used interchangeably to refer

to the quantity of energy demanded, unless otherwise specified.

³ Primary commercial energy comprises coal, oil, gas, nuclear power, and hydroelectricity.

⁴ China's total oil consumption still grew in 1994, but the growth rate was considerably lower than in 1993. Indonesia's decline of oil consumption in 1994 was mainly caused by a sharp decrease of fuel oil use. The oil demand status of China and Indonesia will be further discussed.

⁵ In both cases, the direct burning of crude oil is excluded from total petroleum product consumption when the share of gasoline is calculated for Japan and China here.

⁶ For further discussion, see "Update of the Indonesian Oil Sector: Declining Demand in 1994, Future Imbalances, and Deregulation Outlook," by W. Prawiraatmadja and F. Fesharaki, Energy Advisory No. 158, 27 July 1995, Program on Resources, East-West Center, Honolulu, Hawaii.

⁷ International bunker fuel oil and bunker gasoil consumed in Singapore are included in total demand.

⁸ The crude export availability is defined as the gross exports of crude oil from a producing country, and it is the difference between domestic crude production and the demand of domestic refineries for these crudes.

⁹ Part of the Timor Gap is jointly developed by Australia and Indonesia.

¹⁰ Import dependence is defined as the share of net oil import requirements (total petroleum product consumption minus regional crude production) in the region's total petroleum product consumption.

¹¹ If the intraregional imports were excluded, the Middle East accounted for over 90 percent of the Asia-Pacific region's actual imports of oil (crude and products combined) in 1994.

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ammonia. We recently purchased an interest in an import/export terminal in Yuzhny by the Black Sea, and plan to increase the company's trade of ammonia and fertilizers with both Ukraine and Russia.

Participation in Slovalco

In 1986, Norsk Hydro and the Slovakian aluminum producer ZSNP signed a know-how agreement that required Norsk Hydro to contribute electrolysis technology. In 1993, based on the agreement, Hydro Aluminum and ZSNP formed a joint venture, in which Norsk Hydro was responsible for the replacement of ineffective and polluting production units. In addition, Norsk Hydro would also provide management assistance during the period of production testing as well as in the plant's general operation. The agreement also involves an accord with the Slovakian authorities to develop an extensive plan for environmental improvements in the aluminum production process.

Today, Norsk Hydro owns a 10 percent interest in Slovalco, and is responsible for managing the company's sales and marketing operations. In addition, Norsk Hydro is responsible for marketing Slovalco's export tonnage. This project has been extremely positive, and is an example of cooperation that can be copied in other places.

Fertilizer Production in Rostock

In early 1991, Norsk Hydro acquired 100 percent of the Rostock fertilizer plant in former East Germany. The plant's technical standard was good, but a major turnaround was required to make the plant a world-class performer. Since the takeover, fertilizer production has more than doubled to 1.6 million tons per year, while the number of employees has been reduced from roughly 900 to 320. With the introduction of efficient production and marketing, the Rostock plant is now very competitive.

This illustrates some of the pains - and the eventual rewards - of such a restructuring process. As prices of energy and salaries rise to West European levels, the securing of long-term and cost-efficient production will imply major restructuring.

Norsk Hydro is presently working on several other projects in both the FSU and CEE. Our main aim is to participate in the production, distribution and marketing of aluminum and fertilizers, as well as participate in the production of oil and gas.

Recommendations and Conclusions

The FSU and CEE have a tremendous potential for economic development. The gradual transition to an economy with productivity at the OECD level will surely bring with it pain, as has already been observed. Nonetheless, the long-term benefits for the countries and the population at large are obvious.

From a business point of view, a successful transition will require: compensation; state-of-the-art technology and know-how; and large investments.

International companies can meet each requirement. But to attract such companies, the overall conditions for the international investor must be acceptable. This means, among other things: fair sharing of the economic surplus between the host government and the investor and reliable and stable legal framework and taxation.

To attract high-quality, long-term investors, i.e., those companies which intend to stay in the country and be an integrated part of the economy, it is important to have a high degree of transparency. By this, I mean transparent and fair rules and regulations for the industry. If this is not the case, unjust discrimination and corruption may result. This will attract people or companies which are mostly interested in making a quick profit without long term considerations.

Norsk Hydro is prepared to meet the challenges in the countries in economic transition. Let us hope that the progress in market liberalization in the region will continue, and that it proves to be of the utmost benefit for the countries involved. We believe this will require strong participation by international companies and we are, therefore, pursuing a number of business opportunities within our core business areas.

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