

OIL

By Manouchehr Takin

This review mainly covers the year 2003 for which the annual demand and supply data are provided in tables and figures. However, the analysis is also extended into the year 2004 and some of the data and illustrations cover the period up to May that year. Regular readers of *Mining Annual Review* will have seen the older data and analyses in the previous issues of *MAR*. Obviously, due to the revision and updating of some of the data, the reader might notice differences in some of the details for the previous years.

The oil-price profile for the period June 2002 to May 2004 as shown in Figure 1 is a useful pictorial summary of the developments in the international oil market during that period. It shows that the year 2003 is characterised by a very steep rise in the price of oil that had started in November 2002 and continued into 2003 reaching almost US\$35 per barrel in late February 2003. The trend was then abruptly reversed into a much steeper fall and reached below US\$25/bbl on March 21. The price then followed a gradual downward trend, though with some fluctuations, from late March until end April 2003, when the price reached a minimum below US\$23/bbl. Since then the price of oil has followed a fluctuating and generally rising trend until late spring 2004 when this review was written. The maximum price was US\$39/bbl on May 24, 2004.

The global oil supply/demand pattern, but equally important, political events and especially those in Iraq, have been behind the unusual oil price developments. However, before continuing this analysis, it is useful to remember a main feature of the international oil market, namely that production and consumption of oil are not evenly distributed around the world. Consequently, large volumes of oil have to be transported over long distances from the main production areas (such as the Middle East) to the major consumption areas (such as the US, Europe and the Far East).

These issues are discussed in more detail below.

Demand for oil

Oil demand data for the past four years are listed in Table 1. These data firstly remind us that three main regions in the world are most prominent, namely North America (with average oil demand of 24.6 Mbb/d in 2003), Asia Pacific (22 Mbb/d) and Europe (16 Mbb/d), totalling nearly 63 Mbb/d out of a total world oil demand in 2003 of nearly 79 Mbb/d.

More importantly, however, the lower part of Table 1 and the illustrations in Figure 2 highlight the annual variations in world oil demand. They show that the rate of growth in oil demand had been decreasing in the past few years. The annual increment in demand was 1.9 Mbb/d in 1999, but it decreased to 0.8 in 2000 and 0.6 in 2001 and was only 0.2 Mbb/d in 2002. However, in 2003 this trend was reversed and world oil demand grew by 1.7 Mbb/d. It is interesting to note that it took some time before the collected statistics confirmed the reversal of the trend in oil demand. Many institutions have made upward revisions to their estimates for world oil demand several times since the latter part of 2003. Some recent estimates even put the 2003 increment at 1.8 Mbb/d and it is possible that the International Energy Agency (IEA) in Paris will again revise upwards its estimate of 1.7 Mbb/d reported in the May 12 issue of its publication, Oil Market Report.

The major contributors to the oil demand revival in 2003 were first, the Asia Pacific region (mainly China) and next, North America, with annual increases of 0.9 Mbb/d and 0.4 Mbb/d respectively, as given in the bottom part of Table 1. The increases in oil demand reflected the economic growth in those regions. The Chinese economy's requirements had to be met by large volumes of imports, contributing to the high prices of oil and other commodities in the international markets. In addition, the US began to come out of a period of relative recession and its economic recovery was more pronounced in the second half of 2003.

The actual volumetric increase of oil demand was much smaller (about 0.1 Mbb/d) in Europe, the Middle East and in the Former Soviet Union (FSU). Oil demand remained flat in Africa and decreased by 0.1 Mbb/d in Latin America.

On a percentage basis, total world oil demand increased by 2.2% in 2003, compared with an increase of only 0.3% in 2002. Examining the regions, the greatest percentage increase in 2003 was in the Asia Pacific (4.3%), followed by the FSU (2.9%), the Middle East (2%) and Europe (0.6%). Africa showed no increase in demand and Latin America experienced an actual decrease of 2.1%.

Production of crude oil

Data on crude oil production are presented in the two parts of Table 2 for the period 2000-03. The top part gives the production for the more significant non-OPEC regions or countries, listed in a decreasing order of production volume. Details are not given for the FSU and Eastern European region, but the production volumes from its more prominent countries in 2003 were: Russia (8.22 Mbb/d), Kazakhstan (887,000 bbl/d), Azerbaijan (303,000 bbl/d), Turkmenistan (200,000 bbl/d), Uzbekistan (150,000 bbl/d) and Romania (116,000 bbl/d). The other major producers were the US (5.7 Mbb/d), China and Mexico (3.4 Mbb/d), Norway (3 Mbb/d), Canada (2.2 Mbb/d), the UK (2.1 Mbb/d) and Brazil (1.5 Mbb/d).

Changes in crude oil production in 2003 are shown in the last column of Table 2. The largest change was an increase of about 900,000 bbl/d in FSU & E Europe, where more than 800,000 bbl/d of this increase occurred in Russia alone (from 7.4 Mbb/d in 2002 to 8.2 Mbb/d in 2003). However, it is important to note the pattern of changes in the production of the different countries in the past few years. Some are given here. The performance of Brazil has been very impressive. The same could be said about Angola, Equatorial Guinea and other West African countries. Mexico has had healthy gains. China's production has increased marginally and Canada's production has been improving. On the other hand, US production has continued a slow decline. The UK and Norway appear to have passed their peak and have begun to decline, and production in Oman, Egypt, Argentina, Colombia, Australia and Gabon has been declining in recent years.

These changes were brought about mostly by operational reasons. Field activities have increased or decreased due to the changes in domestic or foreign investments (partly due to cash flow availability, itself related to the price of oil), changes in the countries' regulatory regimes or taxation policies or opening up to foreign investors, the application of new technologies or delays in their implementation. Some countries, such as the UK, Norway, Oman and Egypt, appear to have experienced the impact of the limited size of their resource base. However, it is still possible that changing the regulatory and taxation regime could encourage new investment, and/or the application of new technologies could result in a revival of their oil production or at least a slowing down of the decline.

Crude oil production in OPEC countries is given separately at the bottom of Table 2, indicating a total production increase of nearly 2 Mbb/d in 2003. The greatest increase was by Saudi Arabia (1.6 Mbb/d), the UAE (0.35 Mbb/d), Iran (0.30 Mbb/d), Kuwait (0.28 Mbb/d) and Algeria (0.20 Mbb/d). However, production decreased in some other OPEC countries, ie, Iraq (-0.74 Mbb/d), Venezuela (-0.27 Mbb/d) and Indonesia (-0.1 Mbb/d). Unlike the production changes in non-OPEC countries, the changes in OPEC production were mostly due to the policies decided by the Organisation in response to the changing conditions in the global oil market. Some of these conditions are discussed below.

The oil market in 2003

The average annual demand and supply data for 2003 were given above and compared with the previous years. However, for a better understanding of the oil market in 2003, it is necessary to examine more closely the pattern of supply-demand during the year, as well as some other factors (technical, economic, policy and most importantly, political) that have been influencing the market in that year. In fact it is more instructive to commence the examination of the market from the second half of 2002.

Referring back to Figure 1, the price of oil began to decline in late summer/early autumn 2002. This was partly due to the growing overproduction¹ by OPEC. As shown in Table 3 and Figure 3, for a number of years the Organisation had been setting voluntary production ceilings for itself in order to balance world supply and demand for oil, though on many occasions the Organisation had been actually producing above those ceilings. But, the decline in the oil price in late summer/early autumn 2002 made OPEC improve its production discipline. This was most notable in November and December 2002.

However, the start of the oil workers' strike in Venezuela in December 2002 resulted in reduced oil production and exports from that country. The reduced supplies soon affected US oil imports from Venezuela and had an immediate impact on the US market, a market that is only one week of tanker steaming from Venezuela. The price of oil rose quickly in the US and also in the other parts of the world. In order to ameliorate the situation, OPEC decided to raise its production ceiling by 1.3 Mbb/d from the beginning of January 2003.

The strike in Venezuela deepened in the early months of 2003 and there was also some disruption in Nigerian production due to security problems in some onshore areas. Consequently, OPEC again raised its ceiling by 1.5 Mbb/d from February 2003, though OPEC's actual production was greater than the raised ceilings as shown in Figure 3. Nevertheless, the oil price rise continued; Brent was nearly US\$35/bbl in late February 2003 (Figure 1). An important reason was the anticipation of military action in Iraq and the fear of a prolonged war and the disruption of oil supplies from Iraq and the Persian Gulf region in general.

However, the perception in the market soon changed. Even before the entry of the armed forces into Iraq, it was realised that military victory would be swift, with minimum disruption of oil supplies from Iraq and none from the other countries in the region. Consequently, the oil price fell rapidly and was below US\$25/bbl on March 21. It then rose and fell but generally followed a fluctuating and downward trend and reached a minimum of less than US\$23/bbl by end April. The US\$13/bbl fall (from US\$35 to US\$23) was mostly due to the disappearance of the 'war premium' that had existed in the previous months, but it was also caused by other factors, such as the seasonal weakening of oil demand, the increasing supplies following the improvement of the situation in Venezuela and Nigeria, and equally important, the overproduction by OPEC – this was more than 2 Mbb/d in April 2003 (Figure 3). Unfortunately, the short and successful war in Iraq was not followed by a smooth transfer to peace and return to normal civilian conditions in Iraq. The breakdown of administration and discipline and the lack of security within Iraq resulted in extensive looting of public buildings and

¹ It should be remembered that the production ceiling by OPEC is for the ten members of the organisation, excluding Iraq. As noted in previous issues of MAR, OPEC ministers had decided in the mid-1990s to exclude Iraq from production quotas. This was based on humanitarian considerations. Many years Iraq had been out of the market due to various oil sanction regimes and its people had been suffering from the loss of oil revenues. Thus the country was allowed to export the maximum that was physically possible under the UN Oil for Food programme. This decision is still valid. Therefore the OPEC production ceilings discussed here refer to the ten members of the organisation excluding Iraq.

severe damages to oil installations around the country. Consequently, oil production almost came to a halt and was not sufficient even for Iraq's domestic requirements. It took about a year before the country's oil production could reach near the pre-war level as shown in Figure 4.

The delay in the resumption of Iraq's oil production and exports was contrary to the market expectations and was a main reason for the tightening oil market conditions. In response, OPEC ministers decided to increase their oil production ceiling by another 900,000 bbl/d from the beginning of June 2003. Their actual production was, however, more than 0.5 Mbb/d above their ceiling as shown in Figure 3.

In late summer 2003, a decline in the oil price led to the decision by OPEC countries to lower their production ceiling by 900,000 bbl/d from November. However, as shown in Figures 1, the price of oil soon resumed its upward, though fluctuating, trend. In practice, OPEC countries did not observe their November ceiling and their production remained about 1.5 Mbb/d above that ceiling (see Figure 3), yet the rise in oil price continued for the rest of 2003 and into 2004.

Another significant point about the oil market in 2003 has been the low volume of crude and product inventories around the world, but most notably in the US. Crude oil stocks reached their minimum operational levels and on a few occasions were actually below that level, particularly in the second half of 2003. As noted above, this was due in part to the economic recovery and rising oil demand in the US, China and in the other parts of the world, and in part to the OPEC policy of limiting its members' oil production.

The low level of stocks was particularly significant with the approach of the northern hemisphere winter and the seasonal increase in oil demand. It was feared that the stocks were not sufficient to meet an unexpected disruption of oil supplies anywhere in the world. In addition, the above uncertainties and the rising prices encouraged the entry of large non-commercial funds into the oil market. With lacklustre conditions in the stock market, fund managers had entered the commodities market, including oil. The entry of these speculators further accentuated the tightness of the oil market in late 2003 and into 2004.

Market conditions till May 2004

The price of oil has continued its upward trend from 2003 until late spring 2004 when this review was written. The highest price for Brent at the time of writing was US\$39/bbl (May 24). The high price is more unexpected at this time of the year since usually there should be a seasonal downward pressure on the price of oil. World oil demand decreases by 2-3 Mbb/d from the peak winter period to the spring. Several factors have been contributing to the high prices as they did in the second half of 2003.

Demand has remained strong. World oil demand is estimated to grow by 2 Mbb/d in 2004; this would be the highest for the past 16 years. The Chinese economy and oil demand have been growing rapidly. The OECD countries, especially the US, have continued their economic recovery, thus increasing the demand for oil. In addition, the US gasoline (petrol) market has been tight. The level of gasoline inventories is low because of the very stringent quality specifications for gasoline introduced in some of the states in 2004, and also because of the limited capacity of those US refineries that could produce gasoline with those specifications. Secondly, because of the high price of crude oil since the early months of the year, US refiners had produced only the quantity of gasoline sufficient to meet the market's current requirements. They had not produced gasoline for storage in preparation for the higher gasoline demand in the summer driving season. Consequently, the level of gasoline inventories remains low. This is critical at this time of the year approaching the driving season. These conditions have been causing a rise in the price of gasoline in the US and consequently upward pressure on the price of crude oil.

In addition, large non-commercial funds have continued taking long positions in oil and other commodities. Furthermore, for several months since early 2004, OPEC ministers continued their statements about reducing their overproduction. Fearing the seasonal weakening of the oil market in the spring, they also announced a further lowering of their production ceiling from April 2004 (Figure 1). Although OPEC's actual production has been much greater, its statements have contributed to the market perception of tight supply-demand conditions.

On top of all these factors, deteriorating security in Iraq and the bombing and shooting incidents in Saudi Arabia have increased the fear of serious disruption and reduction of oil supplies from the Middle East. These fears further accentuate the perceptions of a tight market and contribute to the high prices.

The exact contribution of each of the above factors to the high price of oil is difficult to determine. Yet estimates or 'guess estimates' are made. For example, the role of non-commercial funds and the fear of supply disruption could have contributed from a few dollars to about US\$10/bbl to the rise in the price of oil.

Oil market outlook

The strong demand for oil will most probably continue for the rest of the year and, as noted above, average world oil demand in 2004 could be 2 Mbb/d greater than 2003. On the other hand, production in non-OPEC areas could be about 1 Mbb/d greater than 2003. Thus, in order to achieve an oil supply-demand balance, the world market needs an average of about 1 Mbb/d more oil from OPEC compared with 2003. The state of the oil market is therefore dependent on the supply policy of OPEC and the actual behaviour of its individual members during the rest of 2004.

Figure 4 shows that Iraq's production so far this year (averaging 2.2 Mbb/d to April) has been greater than 2003 (average 1.3 Mbb/d). Thus, so far this year, the total OPEC production has been greater than the previous year. The performance of Iraqi production in the coming months will be critical and any increase in its volume will be welcome news for reducing the current upward pressure on price in the world oil market. However, events in recent months have caused some temporary disruptions. The average production in May has probably been about 1.8 Mbb/d, ie, less than the level in March and April. Political stability and security will be vital for the continuation and growth of Iraq's oil production.

As for the rest of the OPEC countries, Figure 3 shows that they had produced at about 26 Mbb/d over the period until April 2004. This is more or less the same rate as in 2003. Obviously, they should produce more oil during the rest of this year, in particular in late summer and autumn in order to meet the seasonal increase in demand. The extra oil would be more critical if Iraqi production does not recover.

OPEC ministers held an extra ordinary meeting in Beirut on June 3, 2004. They announced that they will raise the production ceiling by 2 Mbb/d, to 25.5 Mbb/d from July 1, and by a further 0.5 Mbb/d, to 26 Mbb/d from August 1, 2004. Immediately after the Beirut announcement, the market remained indifferent. This was partly because the expectations were for a greater increase. However, the oil price declined later. This was partly because the market realised that, in practice, more oil will be supplied by OPEC in the coming weeks. It was also partly due to the news of higher crude and gasoline inventory levels in the US.

One could conclude that OPEC will increase its production to further levels above the new ceiling. Thus higher volumes of oil will be supplied to the world market in the coming months, although almost all of this extra oil will be from the Persian Gulf producers, notably Saudi Arabia.

Some observers are concerned that the increased oil supplies would not affect the price since the extra oil will be mostly medium or heavy sour crude and this is not the ideal crude oil for the US refiners, who need to produce gasoline with increasingly stringent specifications. However, in practice this mismatch will be less important than is feared. Although the tight US gasoline market is one of the factors contributing to the high price of crude in the international market, nevertheless there will be a downward pressure on the price of oil when the Middle East producers actually increase their oil exports; reports indicate that more and more oil tankers are steaming from the Persian Gulf towards the Far East, Northwest Europe and across the Atlantic to North America.

The world oil industry and the international oil-trading system are well versed in matching crude types and the refineries in different parts of the world. The global network finds the optimum combination of the supplies of various crude

types from different locations with the consumption centres in various geographic areas and with the different refineries around the world. Middle East crude could go to a different part of the world and a different crude oil might find its way to the US. The result will be greater supplies to the international market and a calming down of the market conditions. The oil price will decline from the US\$40/bbl range to closer to the US\$30-US\$35/bbl range.

There is also concern that if market sentiment changes, speculative funds (the 'occasional' customers of paper oil) who have been in the oil market in large volumes in recent months, will soon leave the oil market and this could lead to a collapse of the price of oil. This fear is not fully justified since in the present market conditions there are sufficient 'perennial' customers who would need the oil for their ongoing operations.

Lastly, it has to be acknowledged that the international oil market has been nervous due to terrorist threats and the political events in the Middle East. However, barring any deterioration in that region or some unforeseen circumstances, any disruption of production and exports would be for a limited volume of oil and it would be on a temporary basis. Moreover, if OPEC actually increases its output, the level of oil inventories around the world will rise and the impact of such disruptions will be further reduced.

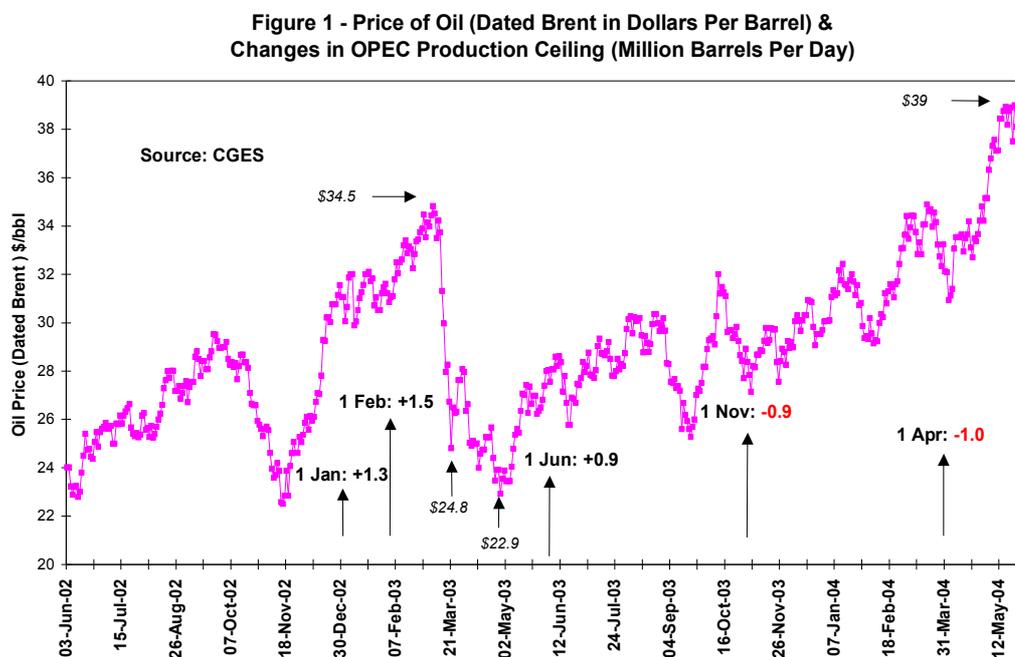


Table 1 - Oil demand (million barrels per day)

	Actual Demand				% increase 2003 vs 2002
	2000	2001	2002	2003	
North America	24.1	24.0	24.2	24.6	1.7
Asia Pacific	20.6	20.8	21.1	22.0	4.3
Europe	15.8	16.0	15.9	16.0	0.6
Middle East	4.7	4.9	5.1	5.2	2.0
Latin America	4.9	4.9	4.8	4.7	-2.1
FSU	3.7	3.7	3.5	3.6	2.9
Africa	2.5	2.5	2.6	2.6	0.0
Total World	76.2	76.8	77.0	78.7	2.2
<i>% increase for the world</i>	<i>1.1</i>	<i>0.8</i>	<i>0.3</i>	<i>2.2</i>	
<i>Comparison with global oil supply:</i>					
<i>Total Oil Supply</i>	<i>76.7</i>	<i>76.9</i>	<i>76.6</i>	<i>79.4</i>	
	Incremental Demand				
North America	0.3	-0.1	0.2	0.4	
Asia Pacific	0.2	0.2	0.3	0.9	
Europe	-0.1	0.2	-0.1	0.1	
Middle East	0.2	0.2	0.2	0.1	
Latin America	0.0	0.0	-0.1	-0.1	
FSU	0.1	0.0	-0.2	0.1	
Africa	0.1	0.0	0.1	0.0	
Total World	0.8	0.6	0.2	1.7	
Source: International Energy Agency					

FIGURE 2 - Incremental Demand in the Main Geographic Regions

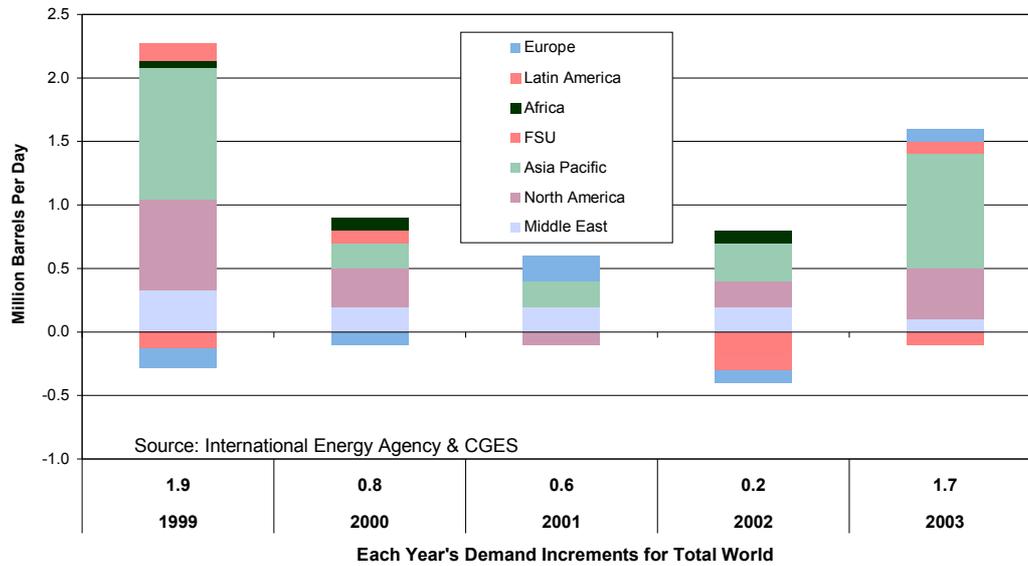


Figure 3 - OPEC 10 (excluding Iraq) Crude Oil Production Compared With Ceiling

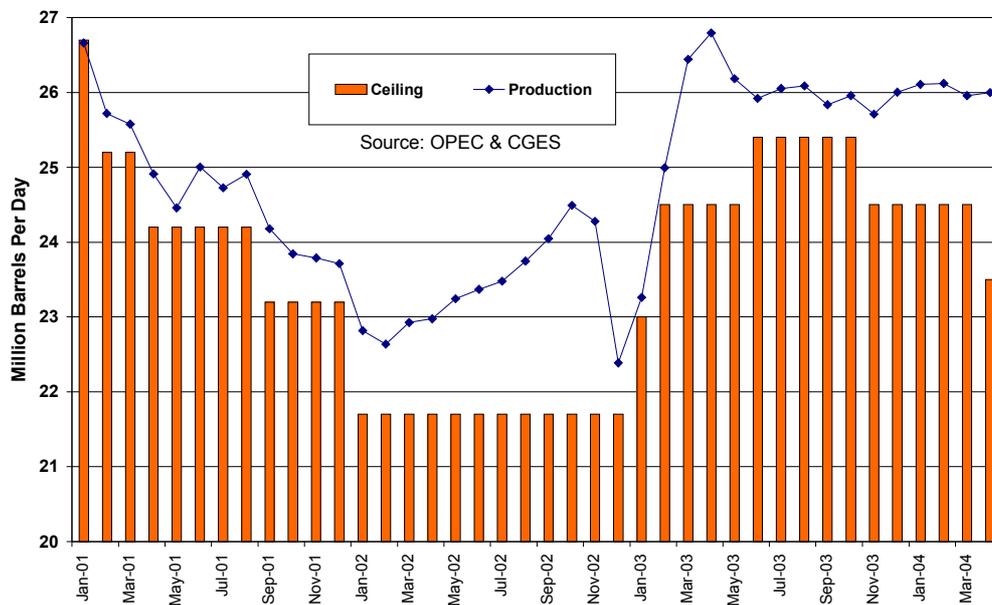


Figure 4 - Iraq's Monthly Oil Production

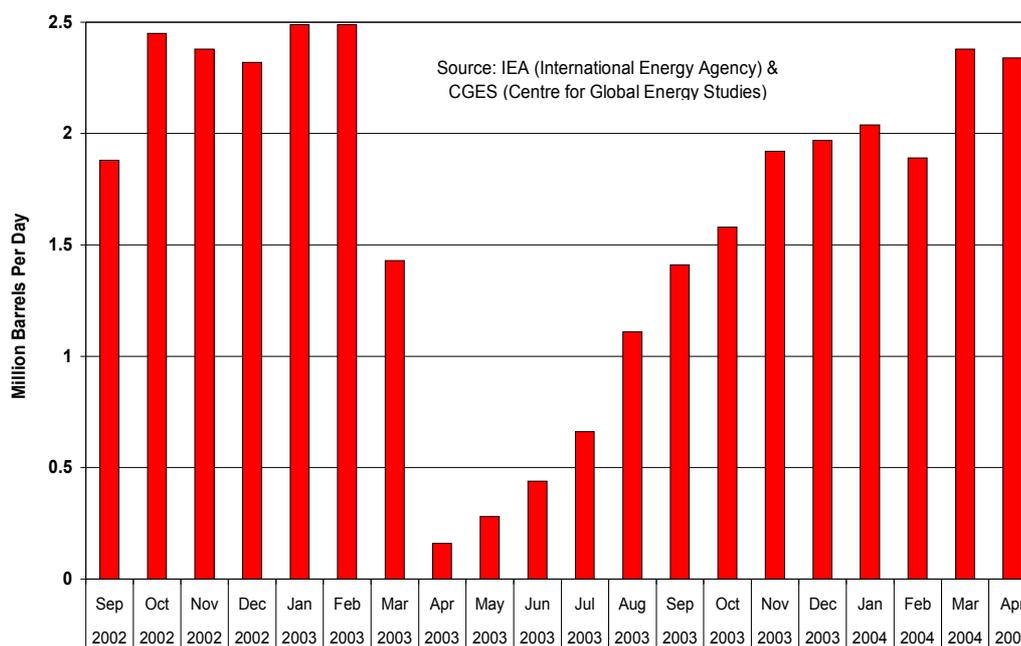


Table 2 (over two pages)

Crude oil production ('000 bbl/d)

Some Non-OPEC Countries	2000	2001	2002	2003	2003-2002
FSU & E Europe	7,896	8,422	9,180	10,085	904
US	5,822	5,801	5,746	5,725	-21
China	3,236	3,301	3,406	3,415	9
Mexico	3,012	3,127	3,177	3,365	188
Norway	3,205	3,237	3,035	3,035	0
Canada	2,035	2,052	2,213	2,220	7
UK	2,514	2,331	2,306	2,095	-211
Brazil	1,128	1,303	1,495	1,535	40
Angola	741	696	894	875	-19
Oman	933	964	904	822	-82
Malaysia	692	744	770	800	30
Egypt	812	760	751	750	-1
Argentina	751	774	738	720	-18
India	650	644	662	665	3
Colombia	687	604	579	540	-39
Australia	700	633	623	530	-93
Syria	523	518	508	528	20
Ecuador	393	407	393	410	18
Denmark	363	349	371	368	-3
Yemen	354	350	350	350	0
Vietnam	304	305	331	333	2
Congo	265	268	254	240	-14

Mining Annual Review 2004

Gabon	327	301	248	240	-8
Equatorial Guinea	168	135	200	240	40
Sudan	187	200	200	200	0
Brunei	<u>177</u>	<u>180</u>	<u>188</u>	<u>190</u>	<u>2</u>
Sum of the above	37,87 5	38,40 6	39,52 1	40,27 6	755
Total Non-OPEC Countries	39,13 4	39,71 3	40,96 5	41,65 1	687
Total World	67,23 4	66,74 7	65,42 6	68,08 7	2,660

OPEC Countries

Saudi Arabia	8,310	7,978	7,119	8,730	1,611
Iran	3,682	3,696	3,430	3,730	300
UAE	2,231	2,154	1,874	2,226	352
Kuwait	2,080	1,998	1,869	2,150	281
Nigeria	2,034	2,083	1,945	2,120	175
Venezuela	3,028	2,685	2,285	2,015	-270
Libya	1,414	1,365	1,316	1,400	84
Algeria	809	836	850	1,050	200
Indonesia	1,267	1,214	1,116	1,020	-96
Qatar	688	672	644	720	76
<i>Iraq</i>	<u>2,567</u>	<u>2,355</u>	<u>2,014</u>	<u>1,275</u>	<u>-739</u>
Total OPEC	28,10 0	27,03 4	24,46 2	26,43 6	1,974

Totals may not add up due to independent rounding.

Source: Oil and Gas Journal.

Table 3 - Crude Oil Production Ceilings for OPEC 10* (Mbb/d)

	Ceiling	Change
April 1999	22.98	
March 2000	24.69	1.7
July 2000	25.4	0.7
October 2000	26.2	0.8
November 2000	26.7	0.5
Change: Jan 00-Jan 01		3.7
February 2001	25.2	-1.5
April 2001	24.2	-1.0
September 2001	23.2	-1.0
January 2002	21.7	-1.5
Change: Jan 01-Jan 02		-5.0
(No change in 2002)		
January 2003	23	1.3
February 2003	24.5	1.5
June 2003	25.4	0.9
November 2003	24.5	-0.9
Change: Jan 03-Jan 04		2.8
April 2004	23.5	-1.0
Change: Jan 04-May 04		-1.0
**"OPEC 10": OPEC excluding Iraq.		
Source: OPEC & CGES.		