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The debate over Non-OPEC oil

Somewhere in the next ten years non-OPEC will reach its maximum production level. That is now the consensus of oil companies and research institutes alike amongst which Hess, Total, PFC Energy and the International Energy Agency. No longer can the oil industry sustain increasing non-OPEC production. The iron grip of depletion in major producing countries such as Mexico, the North Sea and Russia is starting to take a heavy toll, causing declining or just stable production levels. Discoveries have been dwindling for decades in nearly all non-OPEC countries, few large new prospects exist and cost inflation as well as governmental production and export taxes in several countries make it impossible for companies to produce oil from many of the more costly fields that have not yet been developed.

There are some small uncertainties as to the timing of the onset of the non-OPEC plateau. The International Energy Agency, for example, thinks the plateau will start around 2012 at a level of 53 million barrels per day from a current level of 50 million barrels per day. Hess expects the plateau to start before 2010. At the other side of the spectrum, ExxonMobil thinks the onset of the plateau lies between 2015-2020. Unfortunately, oil companies do not state their assumptions behind these scenarios, making it impossible to ascertain where the difference comes from.

Personally I think 2009 will mark the onset of the non-OPEC production plateau due to a number of new factors in the oil market. Amongst these is the change of Russian production into a plateau around 10 million barrels per day and possibly even into a declining state of production, a secondary peak and subsequential decline in the production of Australia near 700,000 barrels per day in 2009, the long awaited plateau of Chinese oil production at 3.8 million barrels per day and the continuation of the decline in the United States after a short lived upward production spike in 2009/2010. As these developments unfold they will lead to the start of real oil shortages, further escalation of oil prices and a general recognition of the daunting challenge that the long decline slope after peak oil poses to us.

Unfolding because by 2009/2010 it will become evident that OPEC is unable and/or unwilling, for good reasons, to come to the rescue of the west and the east as the need for additional oil deliveries turns into a desperate outcry. While some additional oil flows are to be expected from OPEC, these will be insufficient for satisfying demand growth. According to the International Energy Agency, OPEC needs to increase production by 6 million barrels per day between now and 2012. On top of that another 3 million barrels per day is needed in 2015 to fulfill world demand growth as non-OPEC production levels off according to the IEA. Perhaps half of this hoped for production increase will come to fruition.

Rembrandt Koppelaar

President ASPO Netherlands

Definitions

Crude Oil, petroleum found in liquid and semi liquid form, includes deepsea and lease condensates

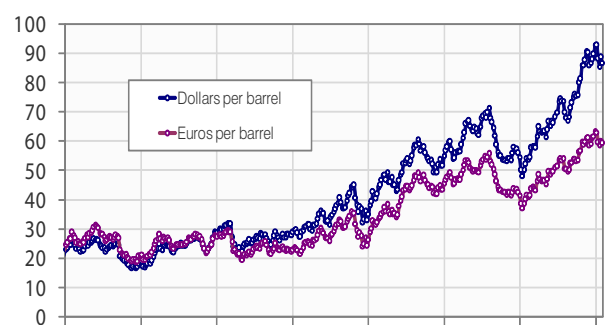
Liquids, all forms of liquid fuels including conventional, heavy, and extra heavy oil, oil shale, oil sands, natural gas liquids, lease condensates, gas-to-liquids, coal-to-liquids and biofuels

One Barrel of oil is equivalent with 159 litres

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Chart 1: Oil Price Weighed Average of Blends

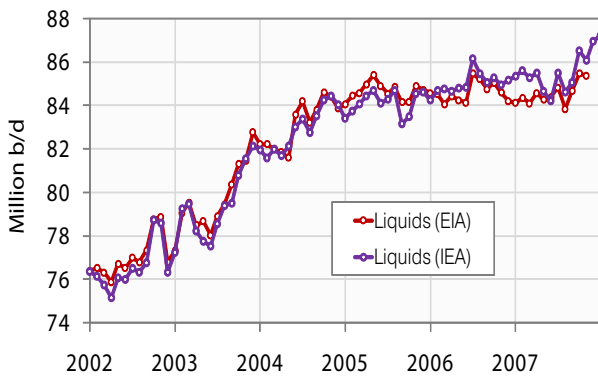


Source: Energy Information Administration

World liquids production status

In December world production of total liquids increased by 745,000 barrels per day from October according to the latest figures of the International Energy Agency (IEA). Resulting in total world liquids production of 87.20 million b/d, which is the all time maximum liquids production.

For the third consecutive month world production has increased significantly. The IEA figures result in an average global production in 2007 of 85.26 million b/d, more than the average 2006 production of 85.00 million b/d and the average 2005 production of 84.10 million b/d. The EIA in their International Petroleum Monthly puts the average global 2007 production up to November at 84.53 million b/d, slightly lower than the average 2006 production of 84.60 million b/d and the average 2005 production of 84.63 million b/d.

Chart 2: World Liquids Production Jan. 2002 - January 2008


Source: Energy Information Administration, International Energy Agency

World crude oil production status

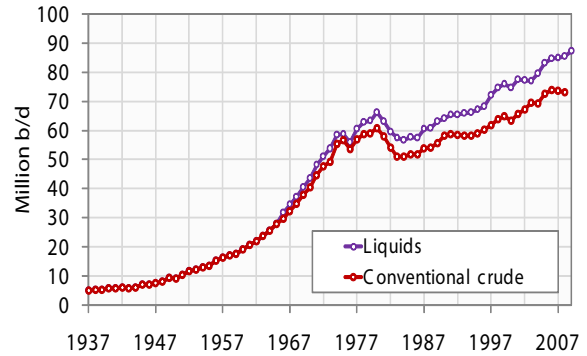
Latest available figures from the Energy Information Administration (EIA) show that crude oil production including lease condensates decreased by 202,000 b/d from October to November. Total production in November was estimated at 73.17 million b/d, which is 518,000 b/d lower than the all time high crude oil production of 74.30 million b/d reached in May 2005.

Chart 3: World Crude Oil Production Jan. 2002 - November 2007

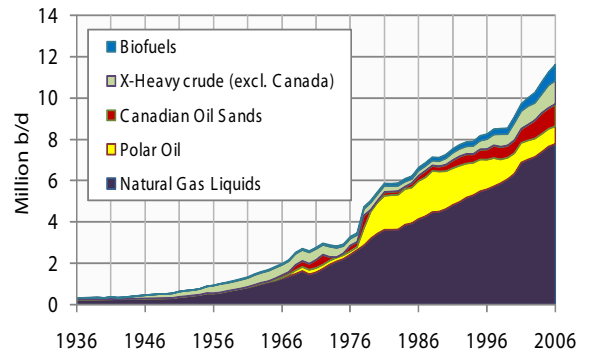

Source: Energy Information Administration

World conventional crude versus liquids production ratio

Approximately 87% of world liquids production in 2006 came from conventional crude oil including lease condensates. The remaining share of 13% was produced by other unconventional sources. In absolute amounts unconventional production has increased steadily, from 4 million b/d at the end of the 1970's, to approximately 11 mb/d in 2006 excluding lease condensates.

Chart 4: World Crude and Liquids production 1936 - Jan. 2008


Source: Energy Information Administration, IHS Energy, International Energy Agency

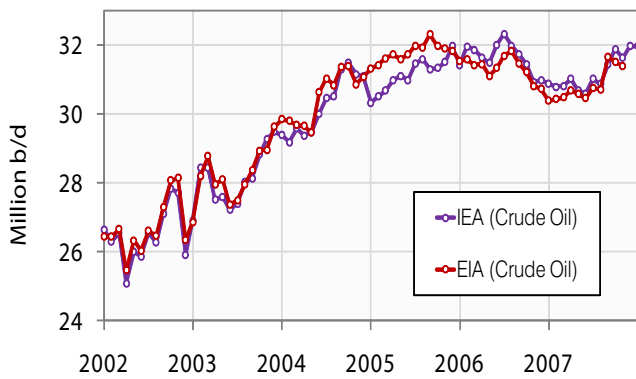
Chart 5: World Unconventional Production 1936 - 2006


Source: Energy Information Administration, IHS Energy, International Energy Agency, Canadian Association of Petroleum Producers

OPEC production status

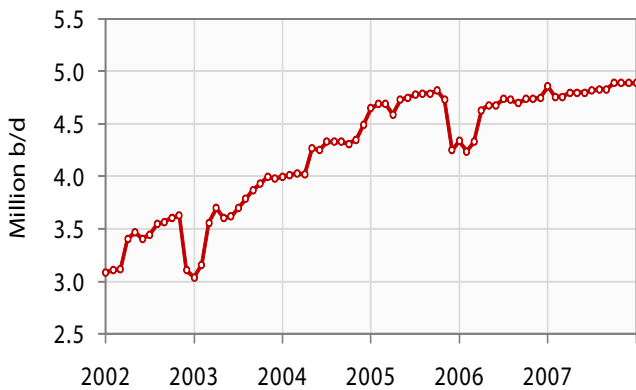
Total crude oil production including lease condensates of the OPEC cartel remained at a level of 32.00 million b/d, from December to January, according to the latest available estimates of the IEA. Natural Gas Liquids production remained stable at 4.89 million b/d, from November to December, according to the IEA. The average total liquids production in 2007 was 35.95 million b/d, which is 240,000 b/d higher than average 2006 production of 35.71 million b/d.

Chart 6: OPEC Crude Oil Production Jan. 2002 - January 2008



Source: Energy Information Administration & International Energy Agency

Chart 7: OPEC Natural Gas Liquids Prod. Jan. 2002 - Jan. 2008



Source: International Energy Agency

Non-OPEC production status

Total crude oil production including lease condensates of non-OPEC decreased by 48,000 b/d to a level of 41.55 million b/d, from October to November, according to the latest available estimates of the EIA. The former production level of October was revised upwards by 305,000 b/d. The average total crude oil production in 2007 up to November has been 41.66 million b/d, which is 20,000 b/d higher than average 2006 production of 41.46 million b/d.

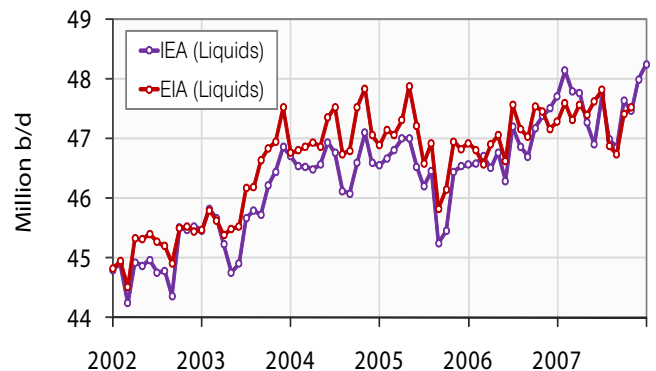
Total liquids production of non-OPEC increased by 250,000 b/d to a level of 50.35 million b/d, from December to January, according to the latest figures of the IEA. The average total liquids production in 2007 was 49.48 million b/d, which is 190,000 b/d higher than average 2006 production of 49.29 million b/d.

Chart 8: Non-OPEC Crude Oil Production Jan. 2002 - Nov. 2007



Source: Energy Information Administration

Chart 9: Non-OPEC Liquids Production Jan. 2002 - Dec. 2007



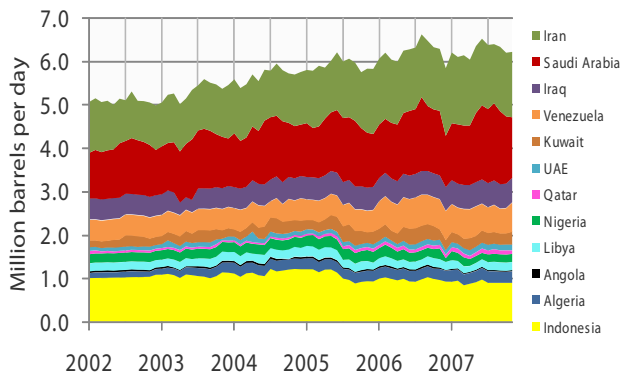
Source: International Energy Agency & Energy Information Administration

OPEC liquids demand developments

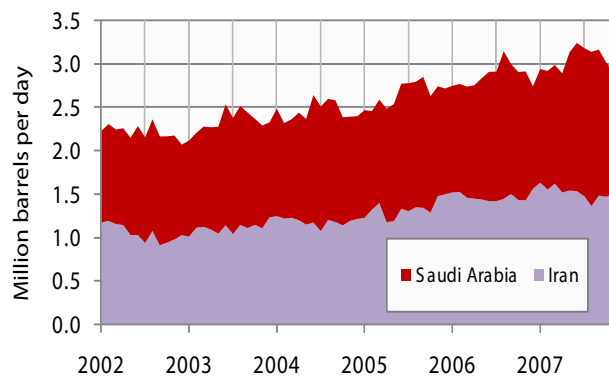
Liquids consumption within OPEC in the last few years has been on an accelerating trend. In 2002 OPEC-11 (excluding Iraq) consumed 4.63 million b/d according to the JODI database. Since then, demand has increased by 1.1 million b/d to 5.69 million b/d in 2006. The increase was mainly caused by higher consumption in Iran and Saudi Arabia, which increased by 234,000 and 418,000 b/d between respectively 2002 and 2006.

Accelerating demand growth in Saudi-Arabia recently slowed down a bit due to seasonal demand variations. Liquids consumption in the country increased to a high of 1.78 million b/d in August of 2007 to decrease in the months that followed. The latest figures show consumption at 1.39 million b/d in November 2007. A similar decline as in previous years which bottoms out in December.

In Iran consumption increased by 60,000 b/d to 1.52 million b/d in 2007 excluding December, compared to 1.46 million b/d in the same time period in 2006.

Chart 10: OPEC-12 Liquids Demand January 2002 - Nov. 2007


Source: JODI Database

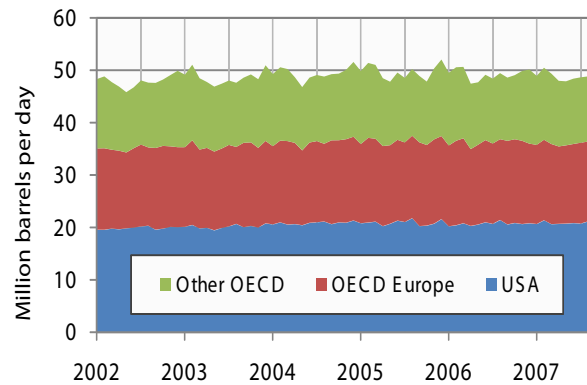
Chart 11: Iran & S. Arabia Liquids Demand Jan. 2002 - Nov. 2007


Source: JODI Database

Non-OPEC liquids demand developments

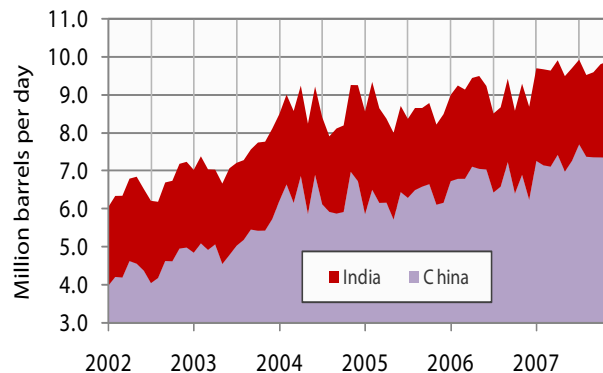
OECD liquids demand in recent years has started to decline according to the latest Energy Information Administration figures. In 2005 the OECD group of countries consumed on average of 49.66 million b/d, which declined to 49.31 million b/d in 2006. Of the total OECD decline in consumption, 115,000 b/d came from the US and 251,000 b/d from other OECD countries. While consumption in OECD Europe increased by 12,000 b/d in 2006.

In the first eight months of 2007, OECD consumption declined further by 511,000 b/d to an average of 49.03 million b/d. This decline was mainly caused by a consumption decline of 441,000 b/d in OECD Europe and less importantly a decline of 126,000 b/d in other OECD countries except the United States. In the United States demand growth rebounded, leading to an average increase in consumption of 57,000 b/d in the first nine months of 2007.

Chart 12: OECD Liquids Demand Jan. 2002 - June 2007


Source: Energy Information Administration

Consumption growth in China has remained robust despite higher oil prices. According to the JODI database China consumed on average 6.27 million b/d in 2005, growing to 6.78 million b/d in 2006 and 7.31 million b/d in 2007 from January up to November. Consumption in India is growing at a less robust pattern according to JODI figures. The country consumed on average 2.31 million b/d in 2005, which declined slightly to 2.29 million b/d in 2006 but grew again in 2007 from January up to November to an average of 2.42 million b/d.

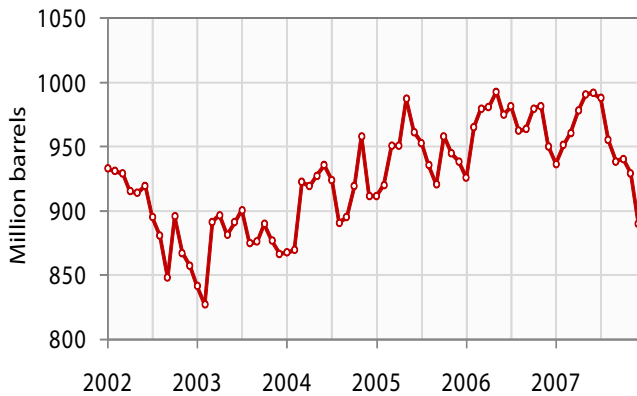
Chart 13: India & China Liquids Demand Jan. 2002 - Nov. 2007


Source: JODI Database

Crude oil and oil product stocks status

Industrial Inventories of Crude Oil in the OECD declined in recent months to a level of 890 million barrels in December according to IEA statistics. Preliminary IEA figures show a stock increase in January of 22 million barrels.

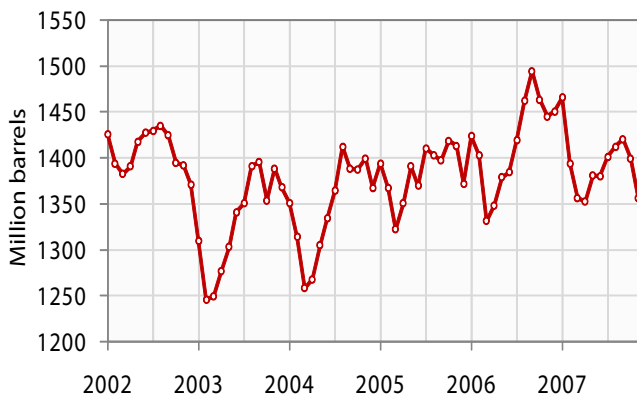
Chart 14: OECD Crude Oil Stocks January 2002 - Dec. 2007



Source: International Energy Agency

Total Product Stocks in the OECD were 1356 million barrels in November. Quite a bit lower than last years level in November of 1413 million barrels and also lower than the five year average of 1374 million barrels.

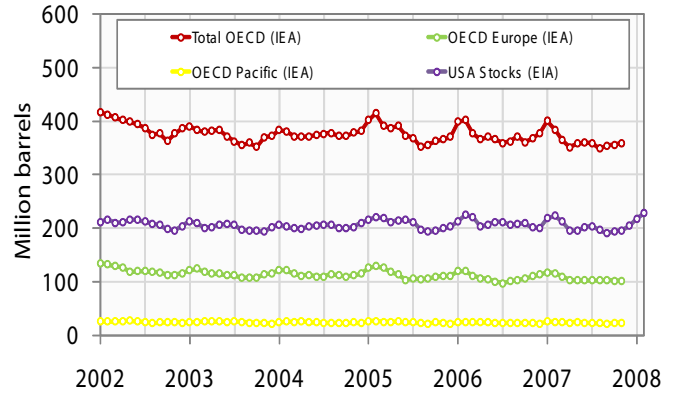
Chart 15: OECD Product Stocks January 2002 - October 2007



Source: International Energy Agency

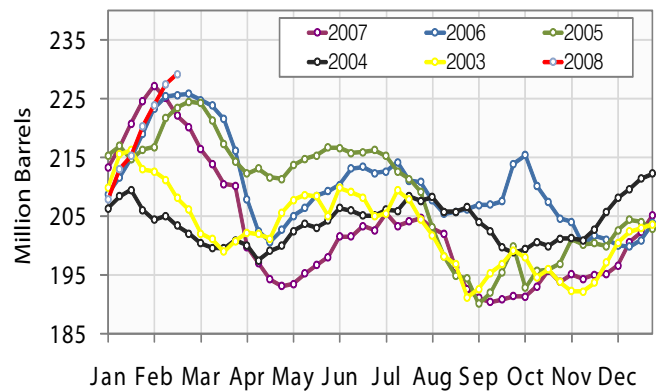
Gasoline stocks in the OECD increased slightly to level of 359 million barrels from October to November. More recent data from the EIA shows that gasoline stocks in the USA increased to 228 million barrels in January and the first two weeks of February from 205 million barrels in November and 196 million barrels in November last year.

Chart 16: OECD Motor Gasoline Stocks Jan. 2002 - Feb. 2008



Source: International Energy Agency & Energy Information Administration

Chart 17: USA Motor Gasoline Stocks January 2002 - Feb. 2008



Source: Energy Information Administration

World Crude Oil Export Status

The series was derived by subtracting the consumption of oil products, refinery fuel and direct crude oil sales from liquids production in producer countries. Data comes from the Joint Oil Data Initiative (JODI) for demand and the International Energy Agency (IEA) and Energy Information Agency (EIA) for supply. Biofuels are not included in consumption data but are included in production data. Because biofuels are not identified in the production data it is not possible to separate this flow. Given that net energy biofuel production has increased by approximately 50,000 to 100,000 b/d annually in recent years, the series is slightly optimistic.

This method gives a crude approximation of the export market because it assumes that all producers refine their own oil products to satisfy internal market needs. In reality not all oil producers have their own refineries to meet internal product demand. Therefore, more crude will be exported to foreign countries where it is refined into usable products. These usable products are then imported back to the country where the crude oil came from. To derive precise export statistics one would need to combine four components for each individual oil producing country: 1) crude oil export flows, 2) crude oil import flows, 3) total product export flows, 4) total product import flows. Statistics that show only crude oil exports or total product imports on an aggregate basis only reveal one component of the equation, and cannot be taken at face value.

Unfortunately, data on all four components is not readily available for countries outside the OECD. At the moment the statistics shown are purely based on the method of subtracting the consumption of oil products, refinery fuel and direct crude oil sales from liquids production in producer countries, unless otherwise noted.

From 2005 to 2006, worldwide liquids production increased by nearly 1 million b/d from 84.1 million b/d in 2005 to 85 million b/d in 2006 according to the IEA. Our exports database, which uses the methodology outlined above, shows that annual worldwide exports were 43.6 million b/d, 46.4 million b/d, 47.0 million b/d and 46.81 million b/d in 2003, 2004, 2005 and 2006 respectively. From January up to November of 2007 an average of 46.58 million b/d was exported.

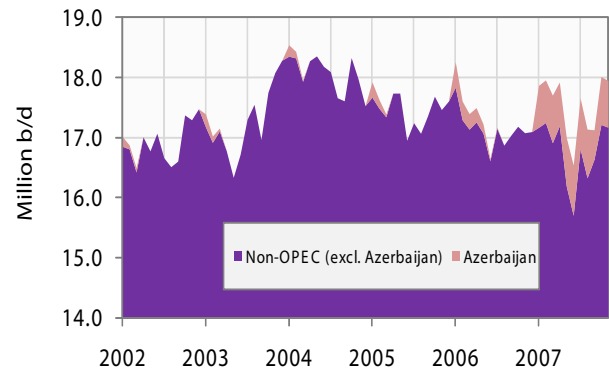
Chart 18: World Liquids Exports Estimate Jan. 2002 - Nov. 2007



Source: derived from the IEA, EIA and JODI Database

Non-OPEC export increased recently after a downward trend for several years. In 2003 exports were estimated at 17.3 million b/d, increasing to 18 million b/d in 2004 and subsequently declining to 17.5 million b/d in 2005 and 17.3 million b/d in 2006. In 2007 from January up to November non-OPEC exports increased to an average of 17.55 million b/d, mainly thanks to an increase in Azerbaijani production.

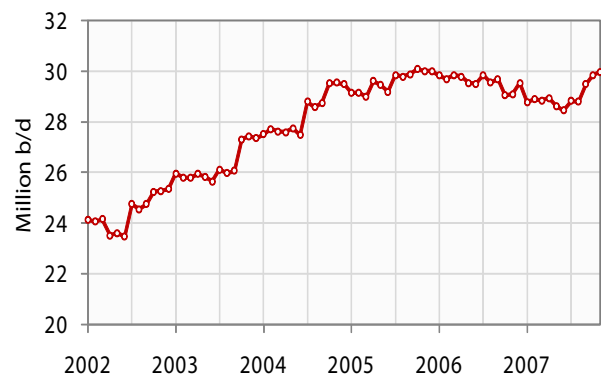
Chart 19: Non-OPEC Liquids Exports January 2002 - Nov. 2007



Source: derived from the IEA, EIA and JODI Database

In 2003 exports from OPEC (including Iraq) were 26.3 million b/d, increasing to 28.3 million b/d in 2004, to 29.6 million b/d in 2005 and 29.7 million b/d in 2006. From January up to August in 2007 OPEC exports declined further to a level of 28.79 million b/d, rebounding in September to November to a level of 29.98 million b/d.

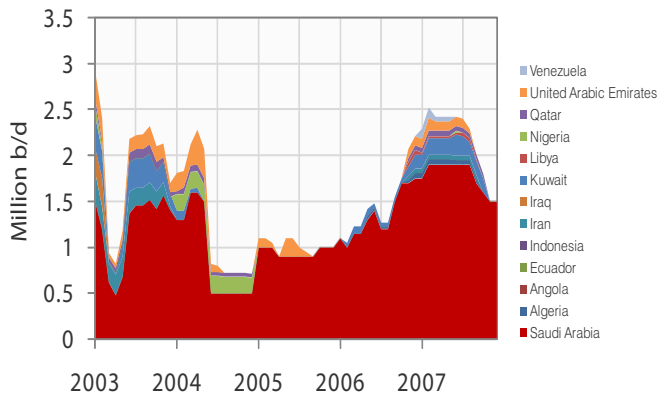
Chart 20: OPEC Liquids Exports January 2002 - November 2007



Source: derived from the IEA, EIA and JODI Database

Total crude oil spare capacity decreased to 1.5 million b/d in december 2007 according to the Energy Information Administration. Following from the increase in production in OPEC in recent months making Saudi Arabia again the sole country with spare capacity. Latest figures of the International Energy Agency show that spare capacity declined from December to January to an effective level of 2.2 million b/d.

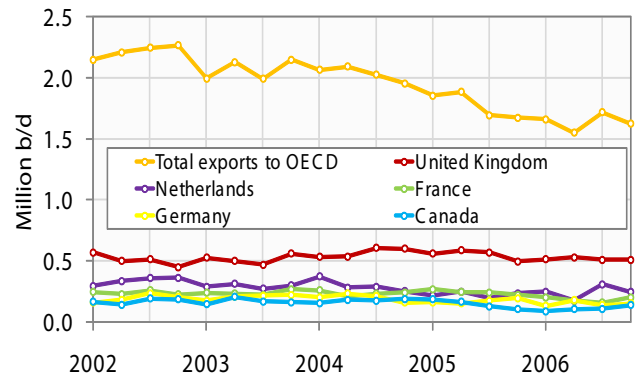
Chart 21: OPEC Spare Capacity January 2003 - December 2007



Source: Energy Information Administration

Data on actual flows from the IEA shows that crude oil exports from Saudi Arabia to the OECD declined by 140,000 b/d from 2005 to 2006.

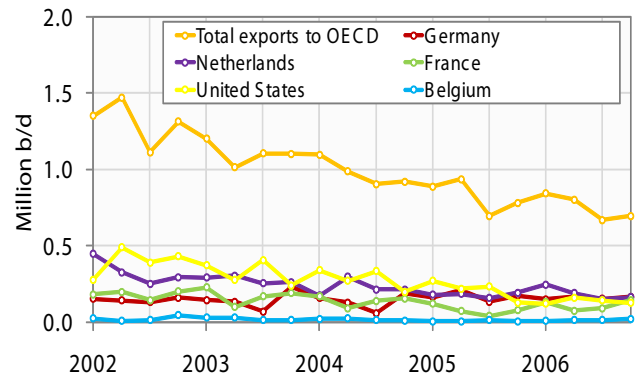
Chart 23: Saudi Arabia Crude Oil Exports 2002 - 2006



Source: International Energy Agency

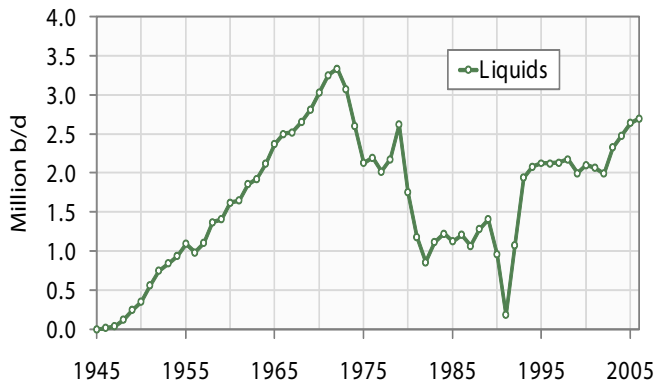
Data on actual flows from the IEA shows that crude oil exports from Mexico to the OECD declined by 50,000 b/d from 2005 to 2006.

Chart 24: Mexico Crude Oil Exports 2002 - 2006



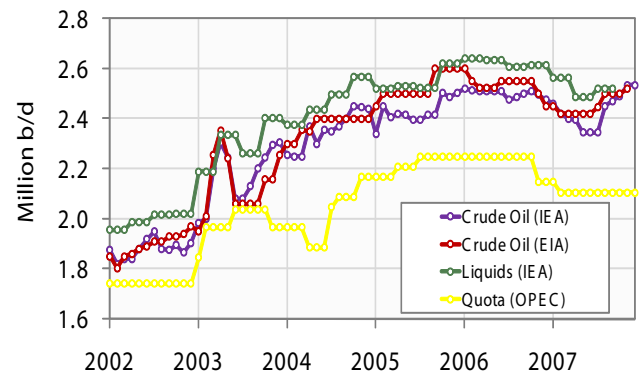
Source: International Energy Agency

Chart 25: Kuwait Production 1945 - 2006



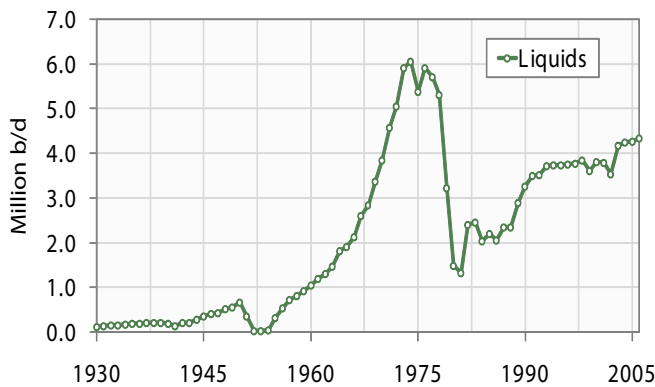
Source: ASPO Ireland & BP Statistical Review

Chart 26: Kuwait Production January 2002 - December 2007



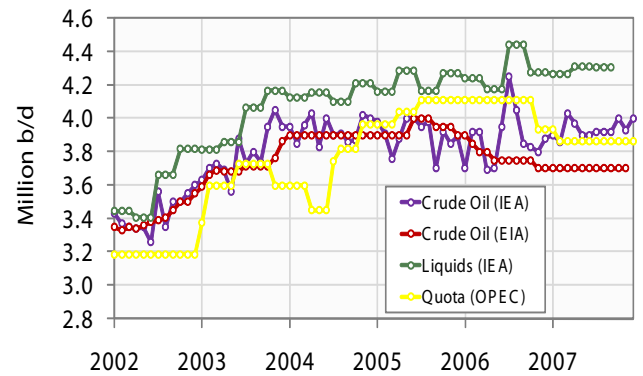
Source: Energy Information Administration & International Energy Agency

Chart 27: Iran Production 1930 - 2006



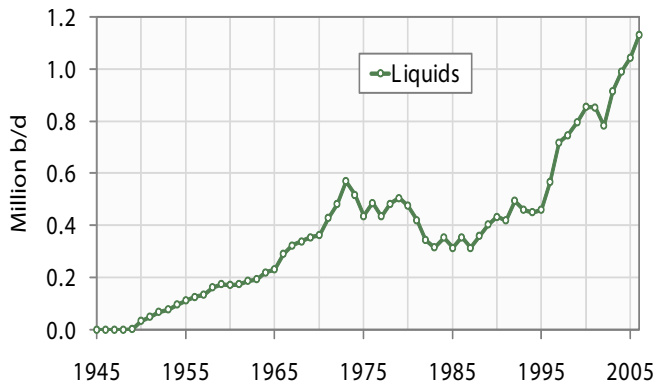
Source: ASPO Ireland & BP Statistical Review

Chart 28: Iran Production January 2002 - December 2007



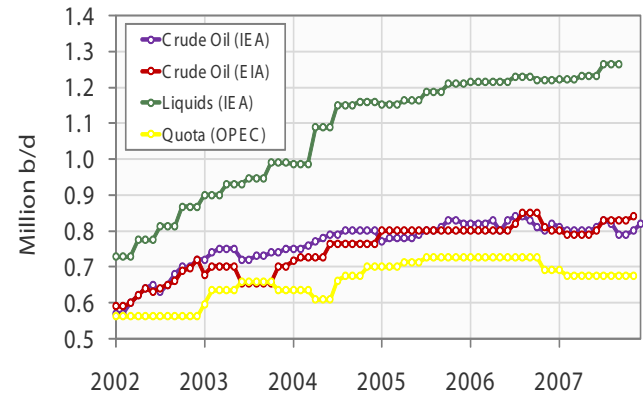
Source: Energy Information Administration & International Energy Agency

Chart 29: Qatar Production 1945 - 2006



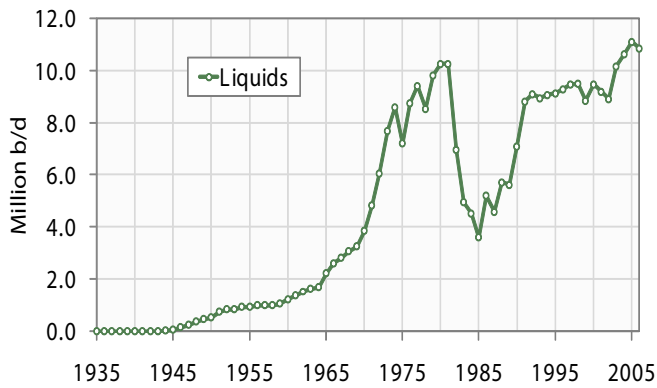
Source: ASPO Ireland & BP Statistical Review

Chart 30: Qatar Production January 2002 - December 2007



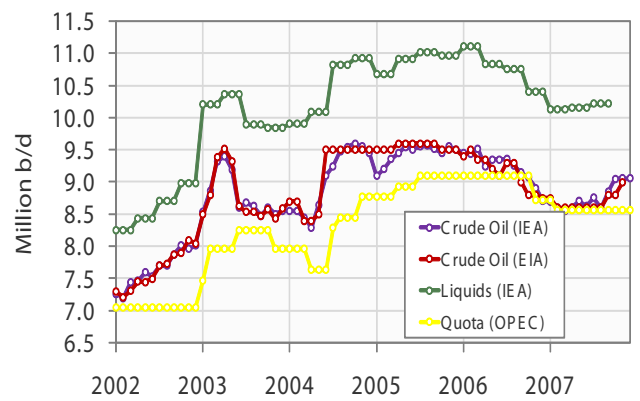
Source: Energy Information Administration & International Energy Agency

Chart 31: Saudi Arabia Production 1935 - 2006



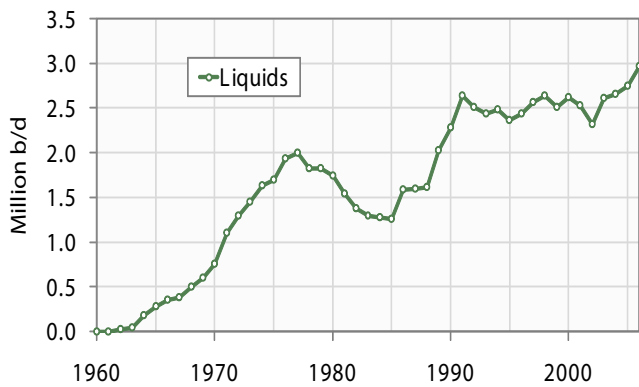
Source: ASPO Ireland & BP Statistical Review

Chart 32: Saudi Arabia Production Jan. 2002 - December 2007



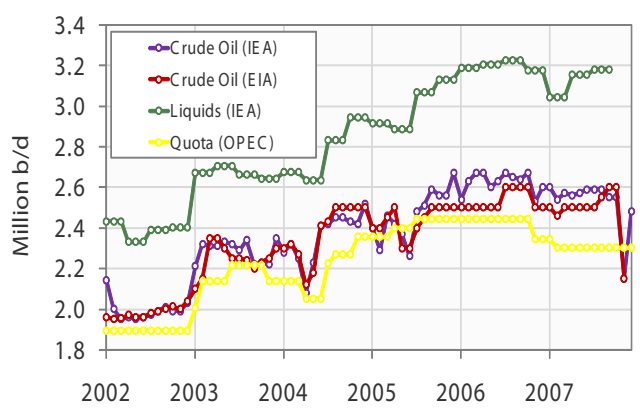
Source: Energy Information Administration & International Energy Agency

Chart 33: UAE Production 1960 - 2006



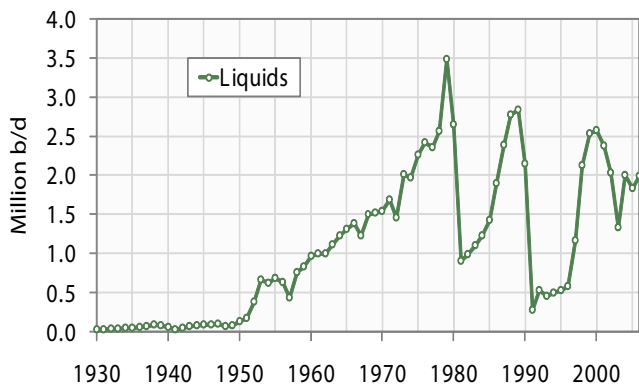
Source: ASPO Ireland & BP Statistical Review

Chart 34: UAE Production January 2002 - December 2007



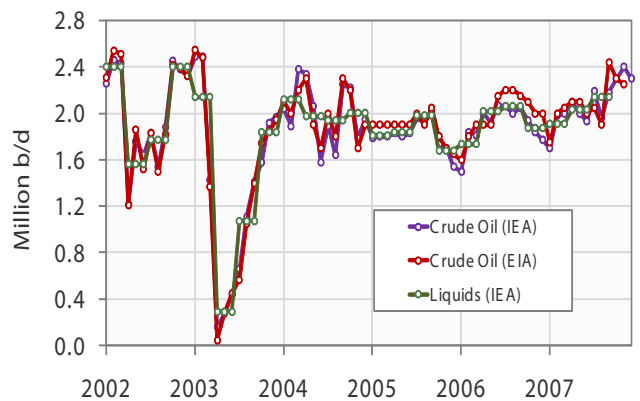
Source: Energy Information Administration & International Energy Agency

Chart 35: Iraq Production 1930 - 2006

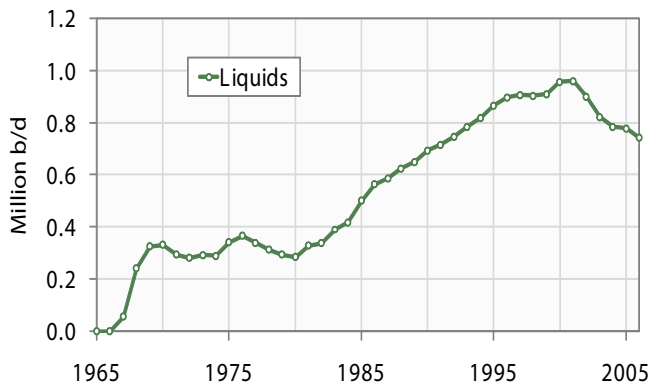


Source: ASPO Ireland & BP Statistical Review

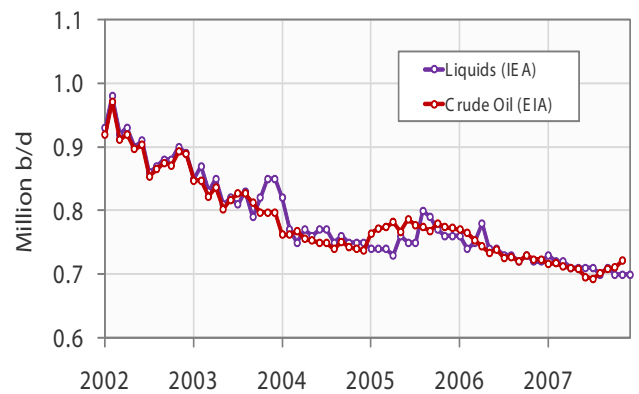
Chart 36: Iraq Production January 2002 - December 2007



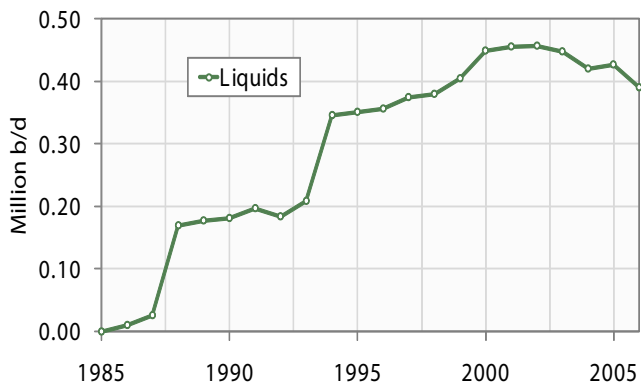
Source: Energy Information Administration & International Energy Agency

Chart 37: Oman Production 1965 - 2006


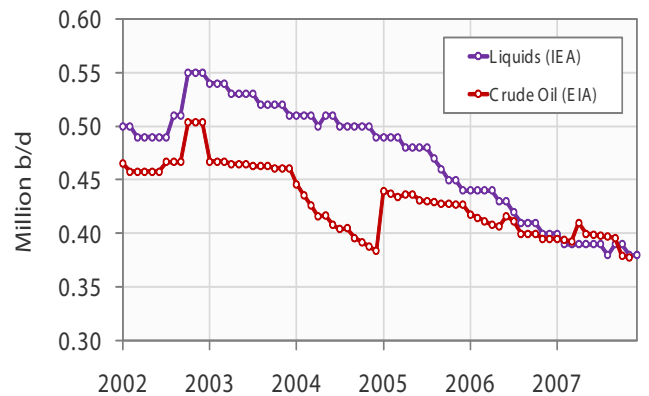
Source: Energy Information Administration & International Energy Agency

Chart 38: Oman Production January 2002 - December 2007


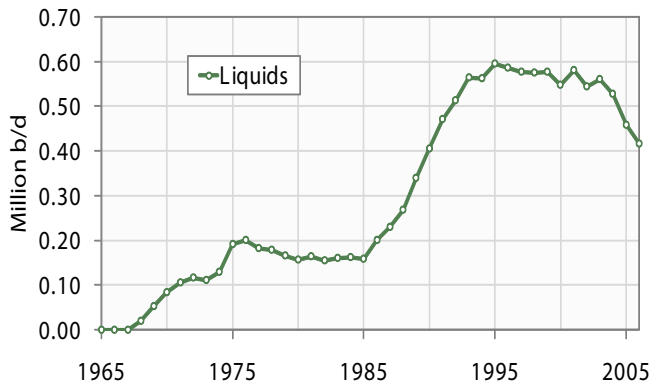
Source: Energy Information Administration & International Energy Agency

Chart 39: Yemen Production 1985 - 2006


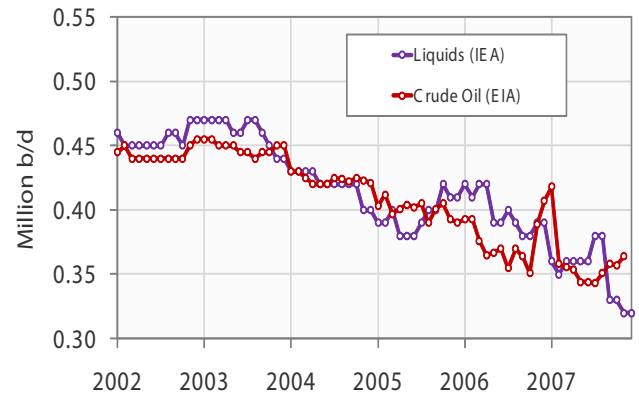
Source: Energy Information Administration & International Energy Agency

Chart 40: Yemen Production January 2002 - December 2007


Source: Energy Information Administration & International Energy Agency

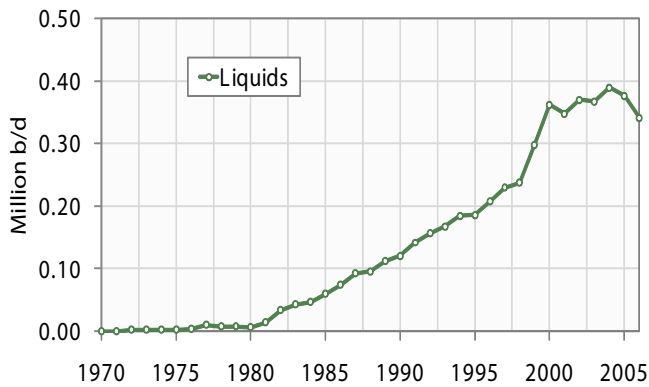
Chart 41: Syria Production 1965 - 2006


Source: Energy Information Administration & International Energy Agency

Chart 42: Syria Production January 2002 - December 2007


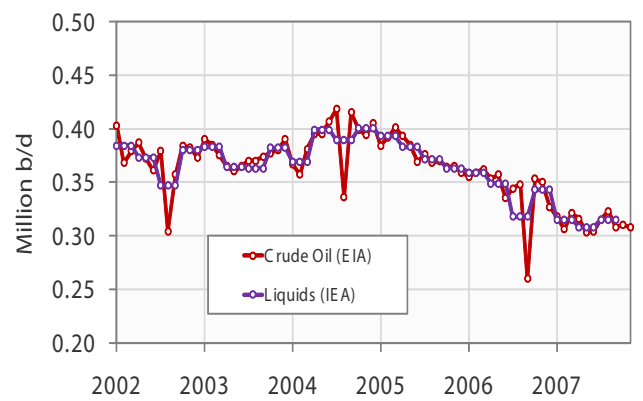
Source: Energy Information Administration & International Energy Agency

Chart 43: Denmark Production 1970 - 2006



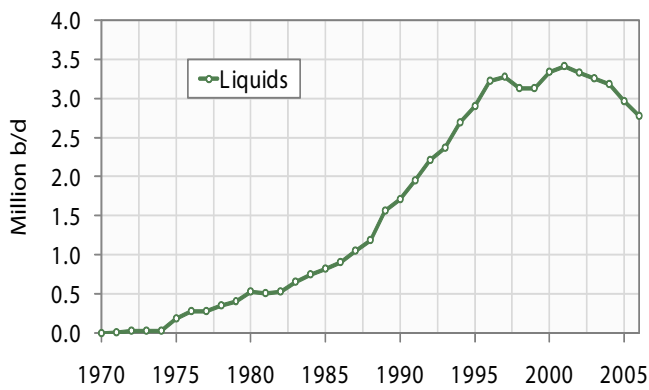
Source: ASPO Ireland & BP Statistical Review

Chart 44: Denmark Production January 2002 - November 2007



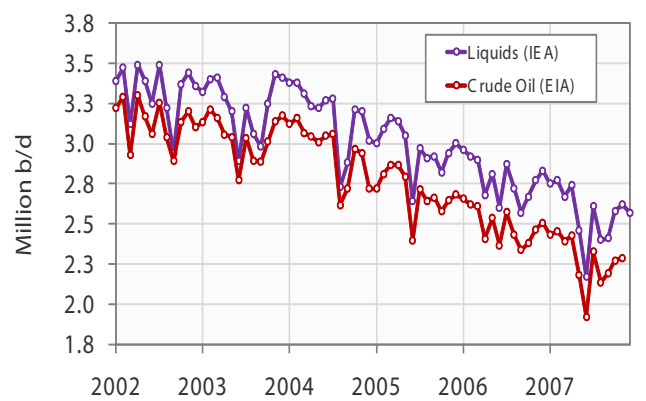
Source: Energy Information Administration & International Energy Agency

Chart 45: Norway Production 1970 - 2006



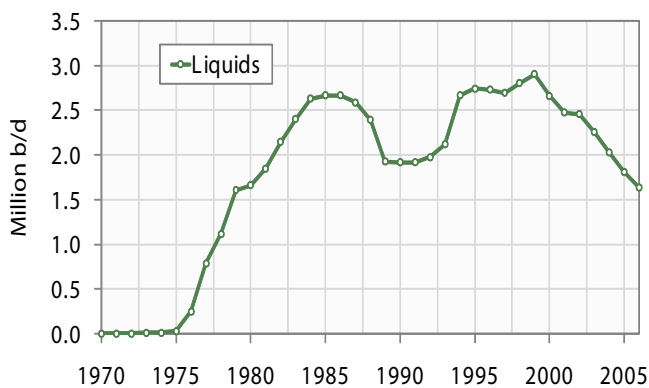
Source: ASPO Ireland & BP Statistical Review

Chart 46: Norway Production January 2002 - December 2007



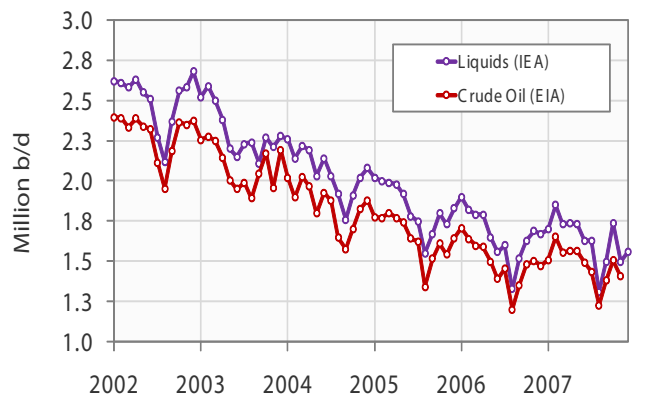
Source: Energy Information Administration & International Energy Agency

Chart 47: United Kingdom Production 1970 - 2006



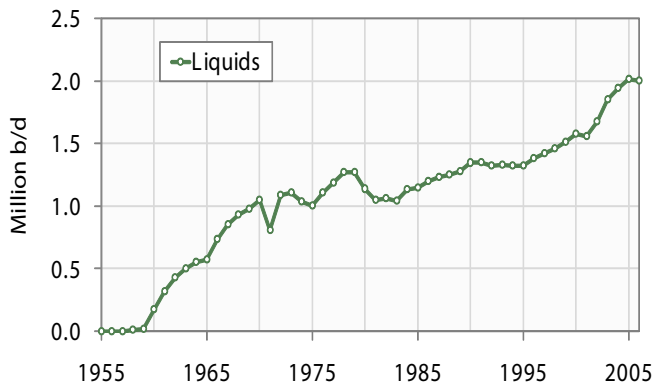
Source: ASPO Ireland & BP Statistical Review

Chart 48: United Kingdom Production Jan. 2002 - Dec. 2007



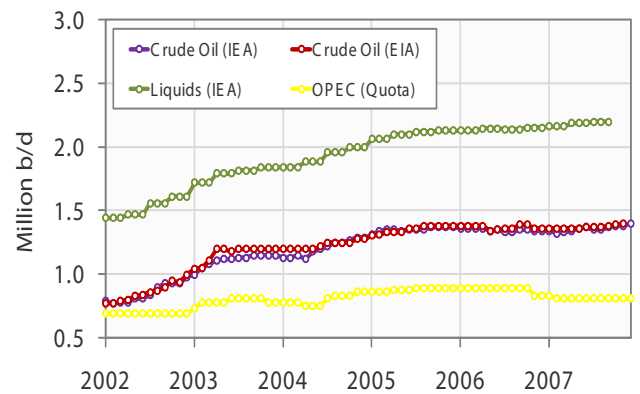
Source: Energy Information Administration & International Energy Agency

Chart 49: Algeria Production 1955 - 2006



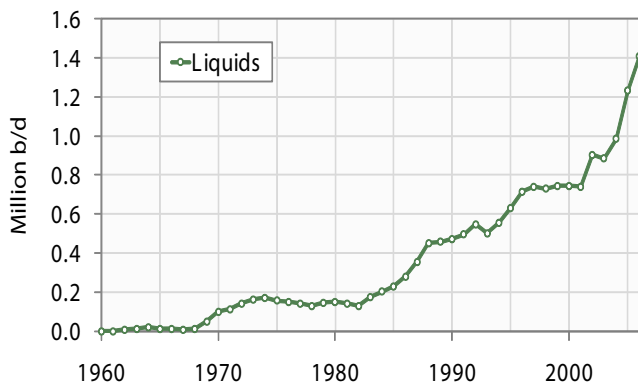
Source: ASPO Ireland & BP Statistical Review

Chart 50: Algeria Production January 2002 - December 2007



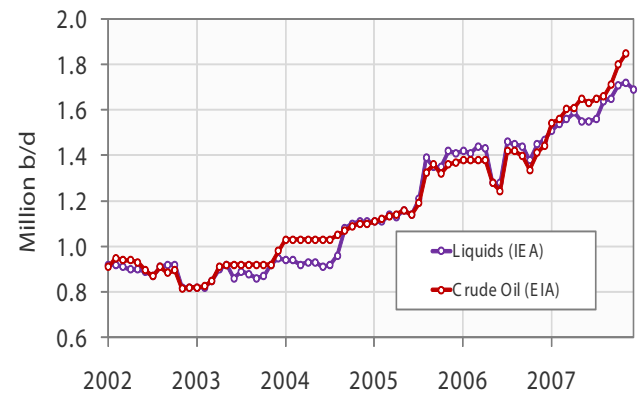
Source: Energy Information Administration & International Energy Agency

Chart 51: Angola Production 1960 - 2006



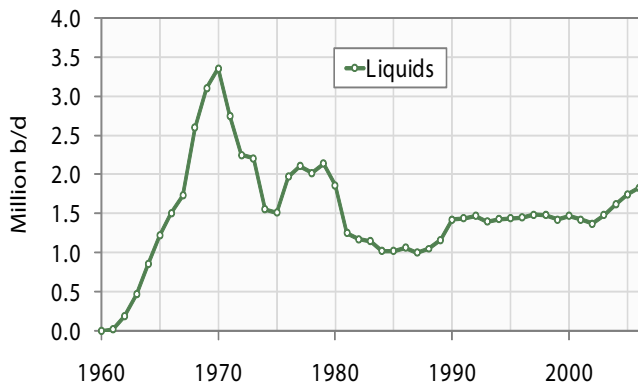
Source: ASPO Ireland & BP Statistical Review

Chart 52: Angola Production January 2002 - December 2007



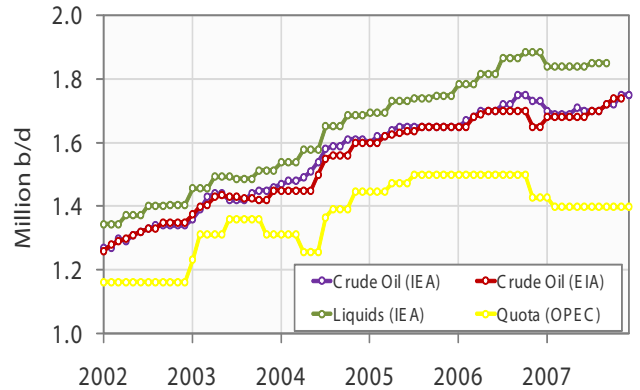
Source: Energy Information Administration & International Energy Agency

Chart 53: Libya Production 1970 - 2006



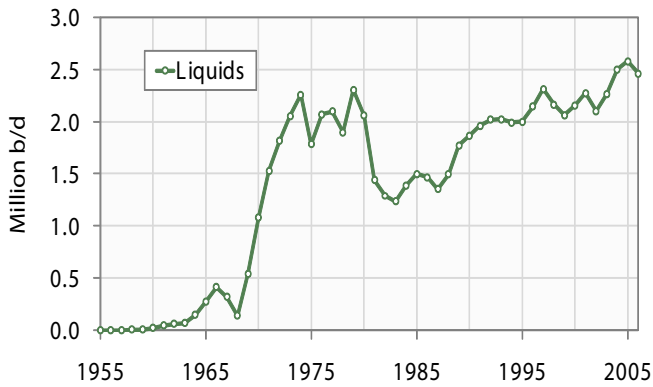
Source: ASPO Ireland & BP Statistical Review

Chart 54: Libya Production January 2002 - December 2007



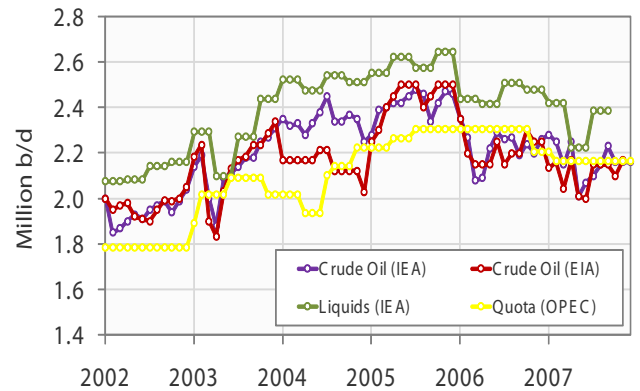
Source: Energy Information Administration & International Energy Agency

Chart 55: Nigeria Production 1955 - 2006



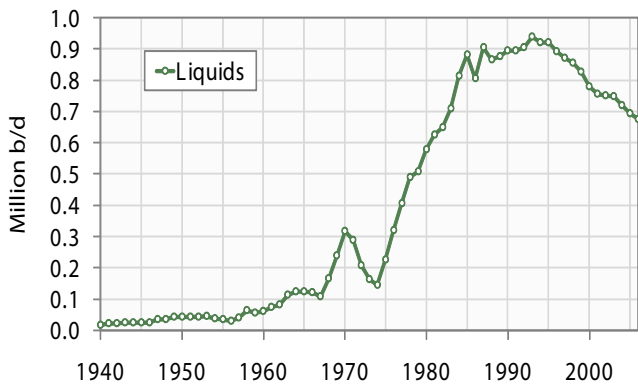
Source: ASPO Ireland & BP Statistical Review

Chart 56: Nigeria Production January 2002 - December 2007



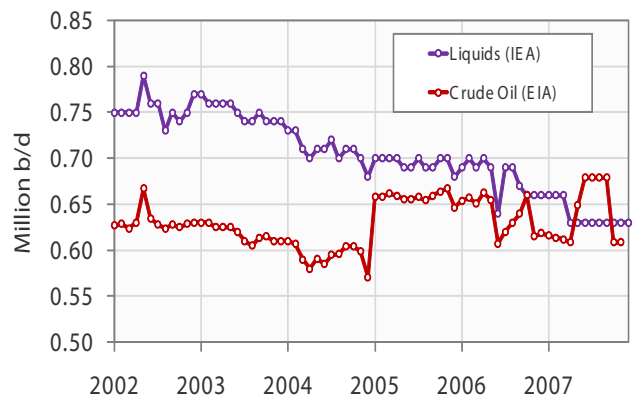
Source: Energy Information Administration & International Energy Agency

Chart 57: Egypt Production 1940 - 2006



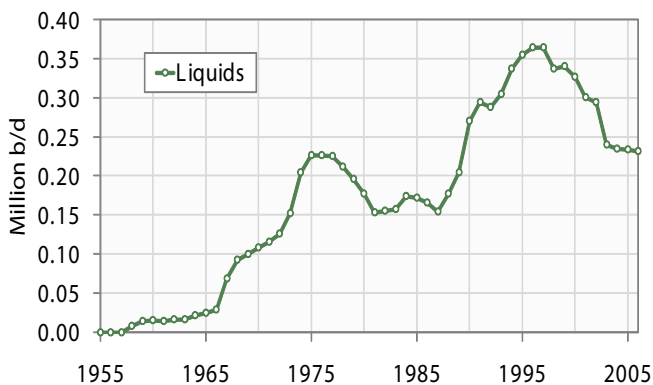
Source: ASPO Ireland & BP Statistical Review

Chart 58: Egypt Production January 2002 - December 2007



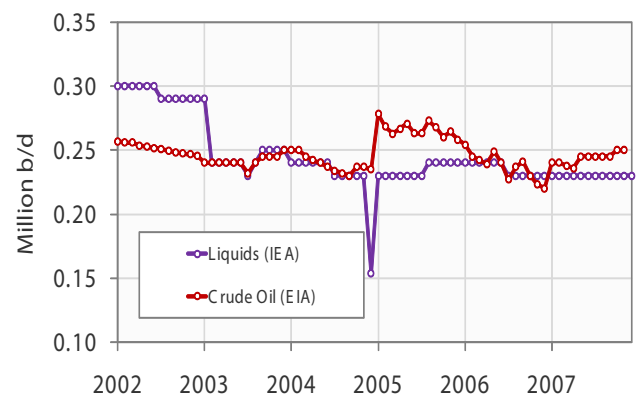
Source: Energy Information Administration & International Energy Agency

Chart 59: Gabon Production 1955 - 2006



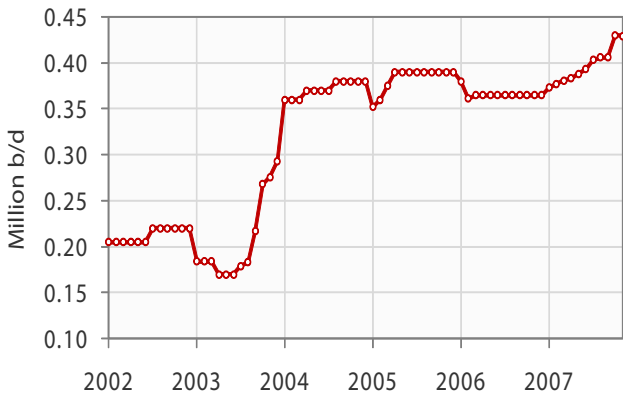
Source: ASPO Ireland & BP Statistical Review

Chart 60: Gabon Production January 2002 - December 2007



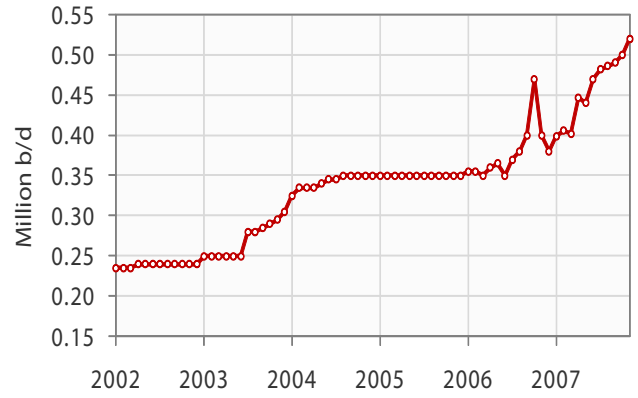
Source: Energy Information Administration & International Energy Agency

Chart 61: Equatorial Guinea Production Jan. 2002 - Nov. 2007



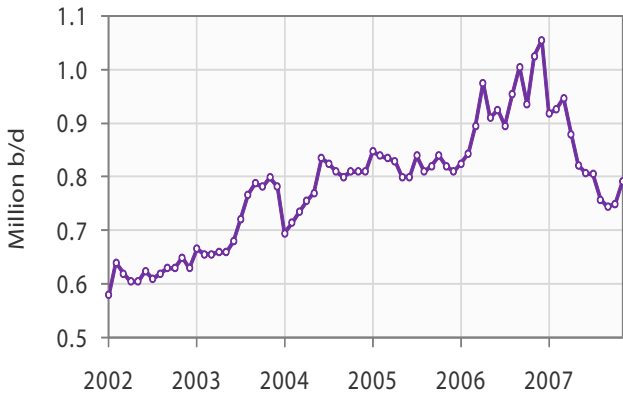
Source: Energy Information Administration

Chart 62: Sudan Production Jan. 2002 - November 2007



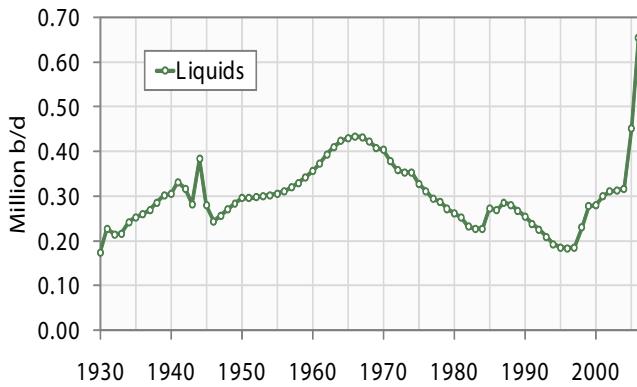
Source: Energy Information Administration

Chart 63: Other Africa Production Jan. 2002 - November 2007



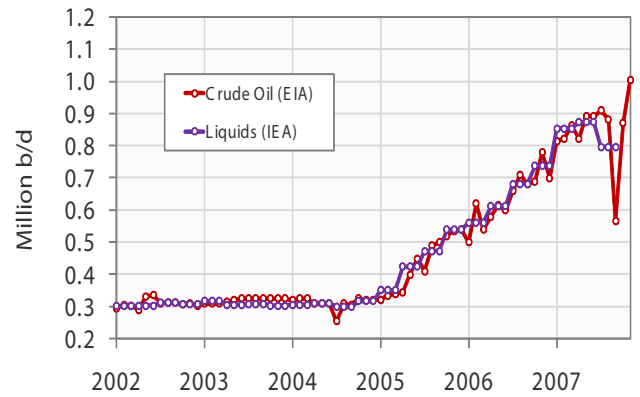
Source: Energy Information Administration & International Energy Agency

Chart 64: Azerbaijan Production 1930 - 2006



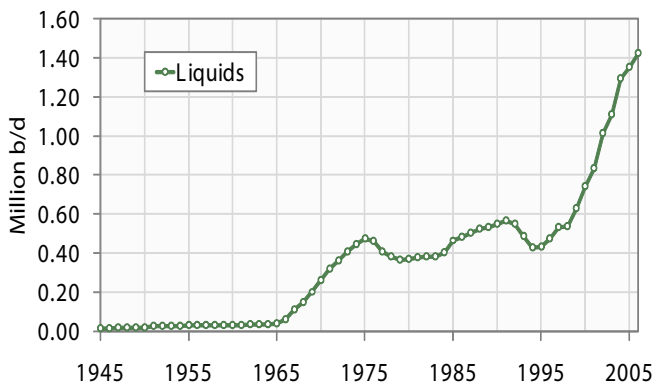
Source: ASPO Ireland & BP Statistical Review

Chart 65: Azerbaijan Production January 2002 - Nov. 2007



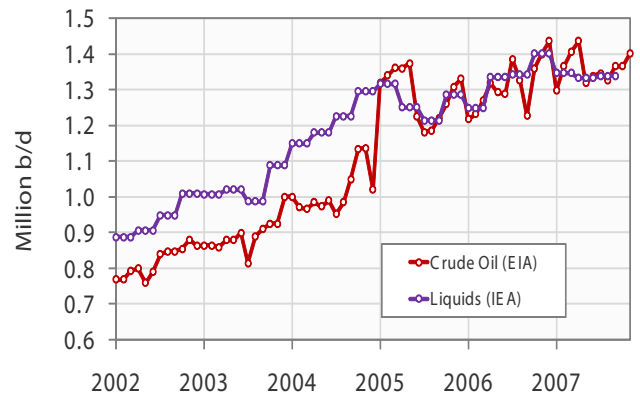
Source: Energy Information Administration & International Energy Agency

Chart 66: Kazakhstan Production 1940 - 2006



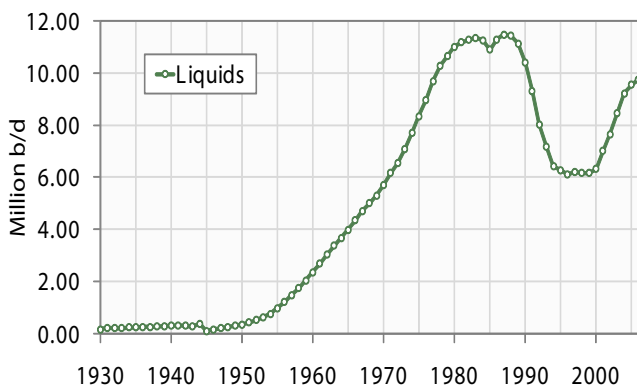
Source: ASPO Ireland & BP Statistical Review

Chart 67: Kazakhstan Production January 2002 - Dec. 2007



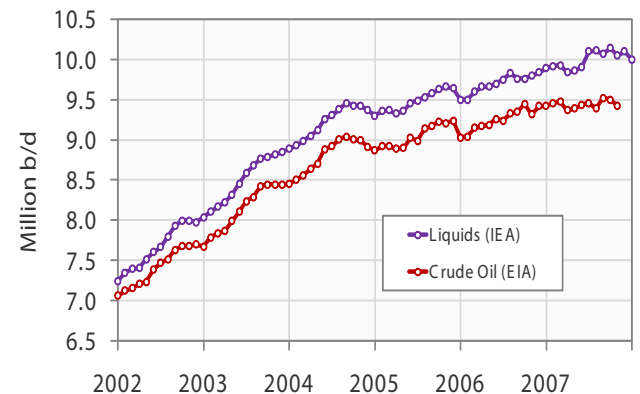
Source: Energy Information Administration & International Energy Agency

Chart 68: Russia Production 1955 - 2006



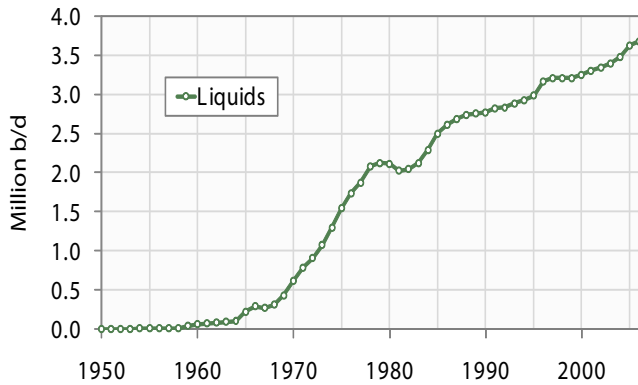
Source: ASPO Ireland & BP Statistical Review

Chart 69: Russia Production January 2002 - December 2007



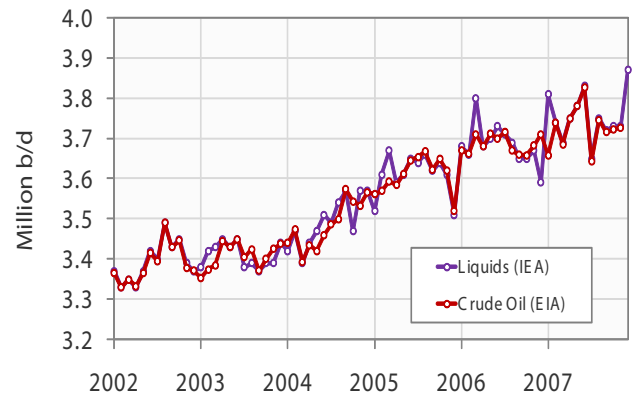
Source: Energy Information Administration & International Energy Agency

Chart 70: China Production 1950 - 2006



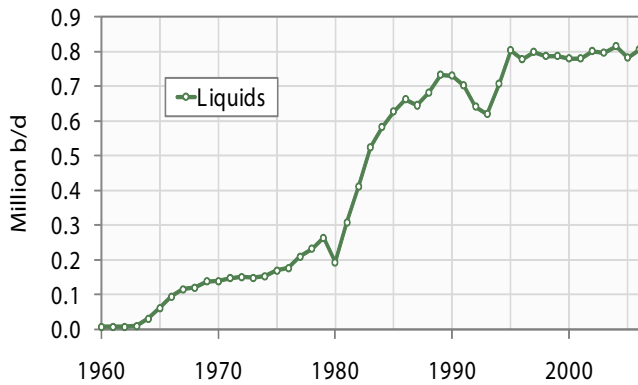
Source: ASPO Ireland & BP Statistical Review

Chart 71: China Production January 2002 - December 2007



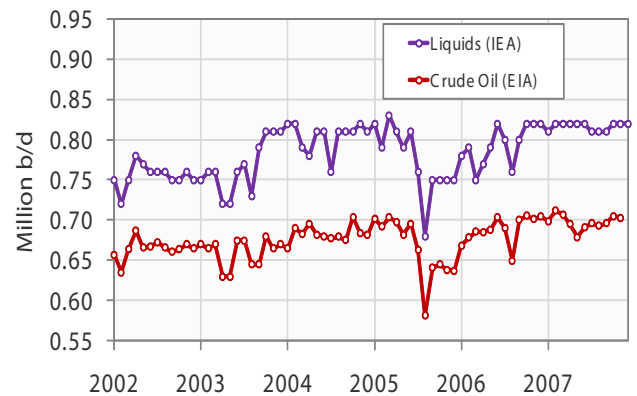
Source: Energy Information Administration & International Energy Agency

Chart 72: India Production 1960 - 2006



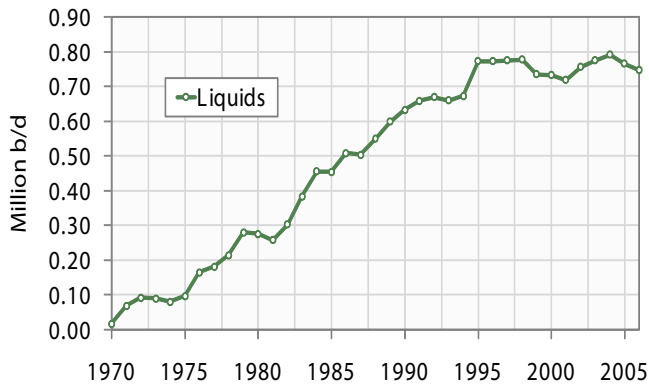
Source: ASPO Ireland & BP Statistical Review

Chart 73: India Production January 2002 - December 2007



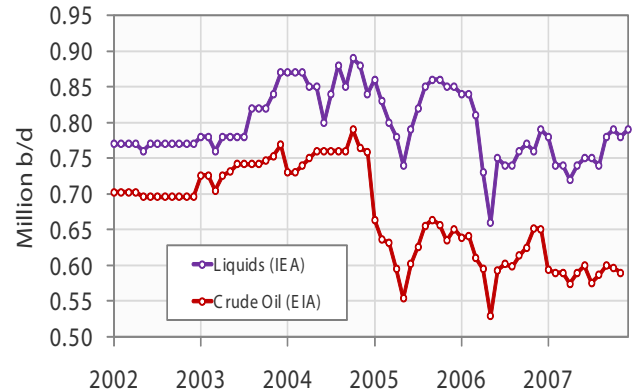
Source: Energy Information Administration & International Energy Agency

Chart 74: Malaysia Production 1955 - 2006



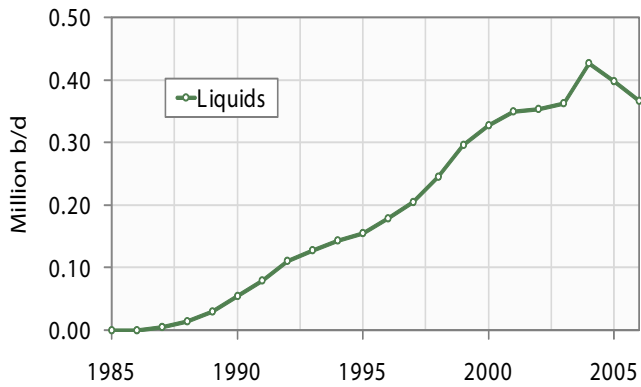
Source: ASPO Ireland & BP Statistical Review

Chart 75: Malaysia Production January 2002 - December 2007



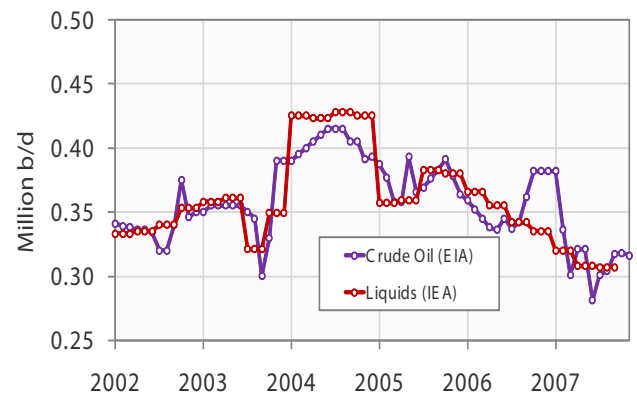
Source: Energy Information Administration & International Energy Agency

Chart 75: Vietnam Production 1955 - 2006



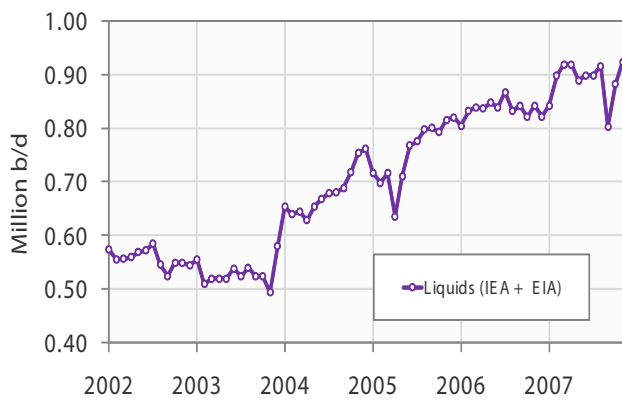
Source: ASPO Ireland & BP Statistical Review

Chart 76: Vietnam Production January 2002 - November 2007



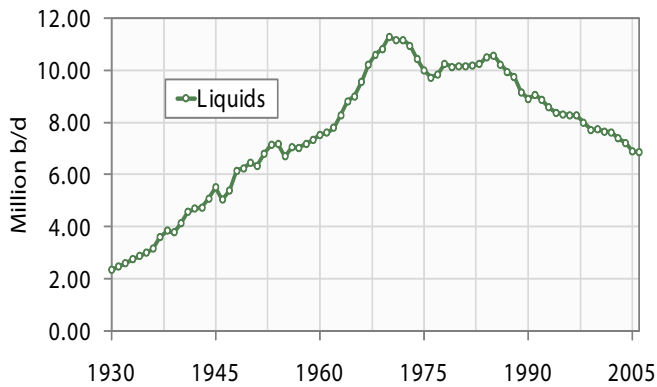
Source: Energy Information Administration & International Energy Agency

Chart 77: Other Asia Production Jan. 2002 - November 2007



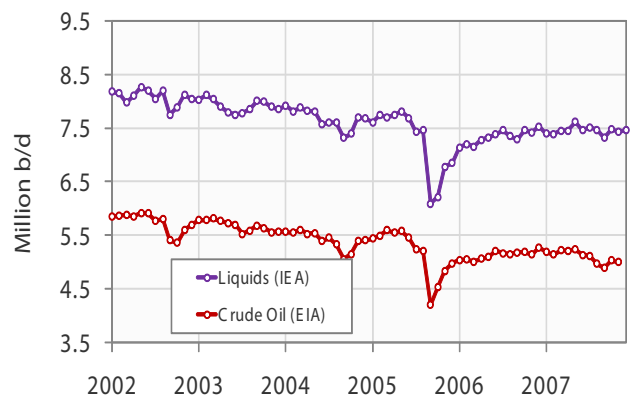
Source: Energy Information Administration & International Energy Agency

Chart 78: United States Production 1930 - 2006



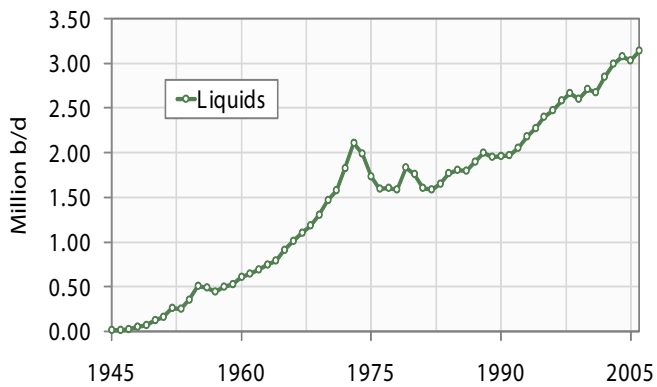
Source: ASPO Ireland & BP Statistical Review

Chart 79: United States Production January 2002 - Dec. 2007



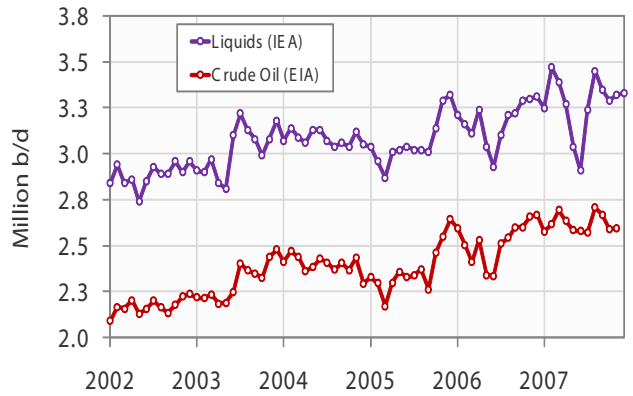
Source: Energy Information Administration & International Energy Agency

Chart 80: Canada Production 1945 - 2006



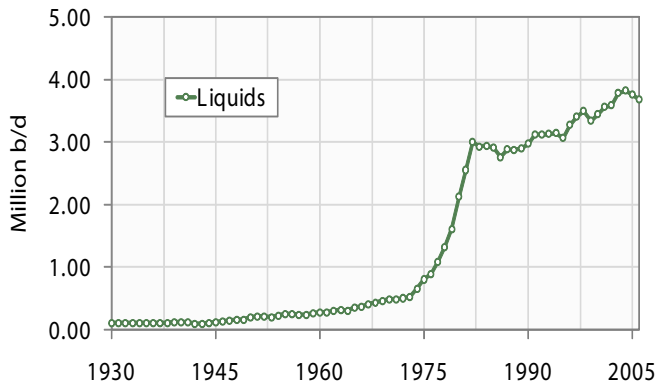
Source: ASPO Ireland & BP Statistical Review

Chart 81: Canada Production January 2002 - December 2007



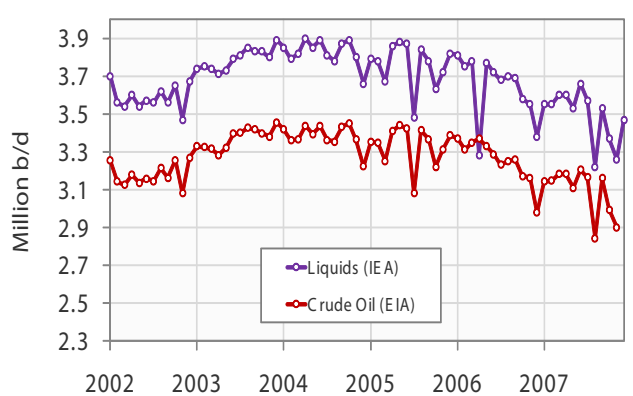
Source: Energy Information Administration & International Energy Agency

Chart 82: Mexico Production 1930 - 2006



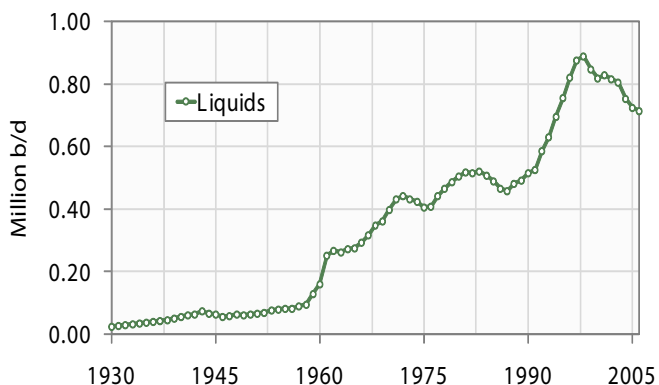
Source: ASPO Ireland & BP Statistical Review

Chart 83: Mexico Production January 2002 - December 2007



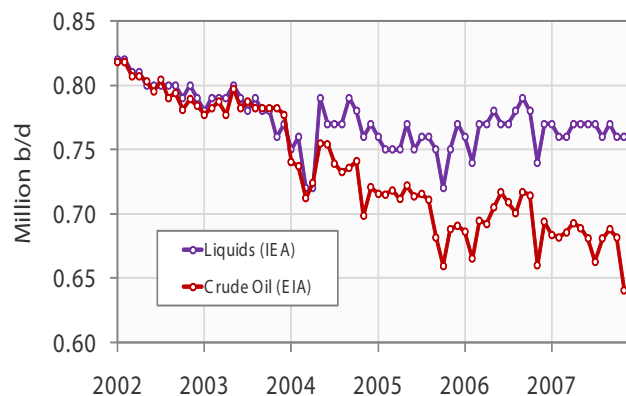
Source: Energy Information Administration & International Energy Agency

Chart 84: Argentina Production 1930 - 2006



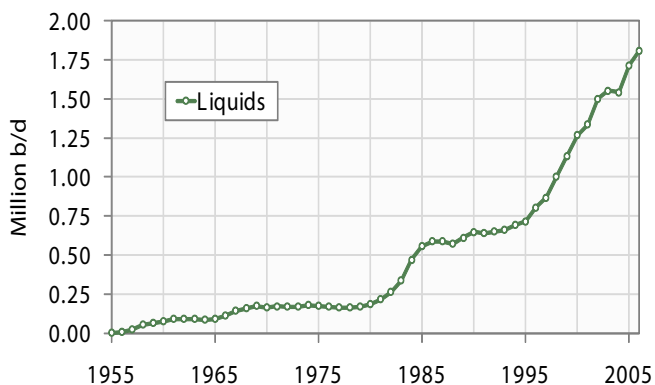
Source: ASPO Ireland & BP Statistical Review

Chart 85: Argentina Production January 2002 - December 2007



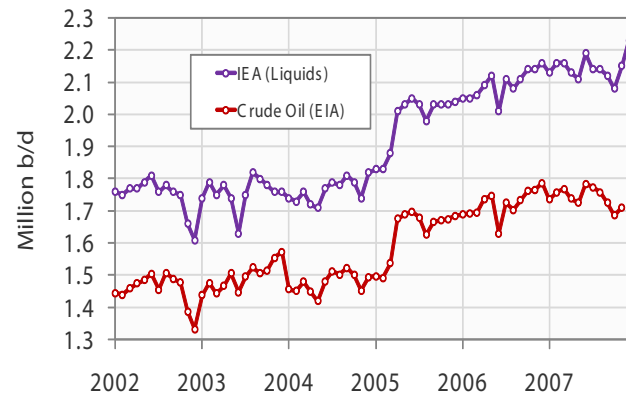
Source: Energy Information Administration & International Energy Agency

Chart 86: Brazil Production 1955 - 2006



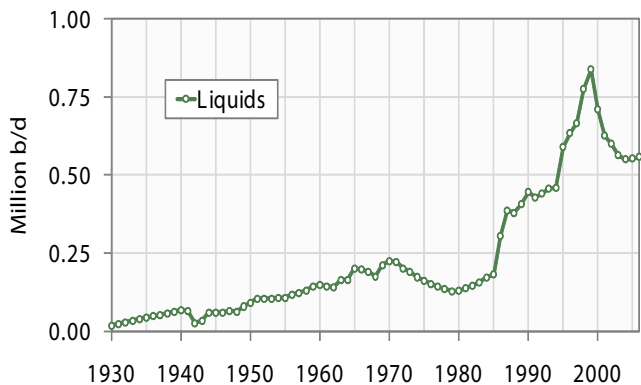
Source: ASPO Ireland & BP Statistical Review

Chart 87: Brazil Production January 2002 - December 2007



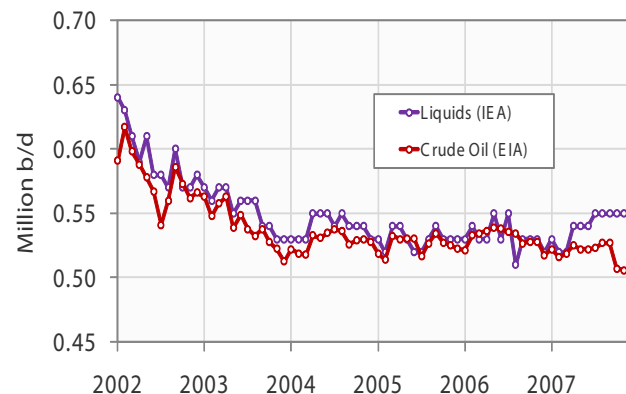
Source: Energy Information Administration & International Energy Agency

Chart 88: Colombia Production 1930 - 2006



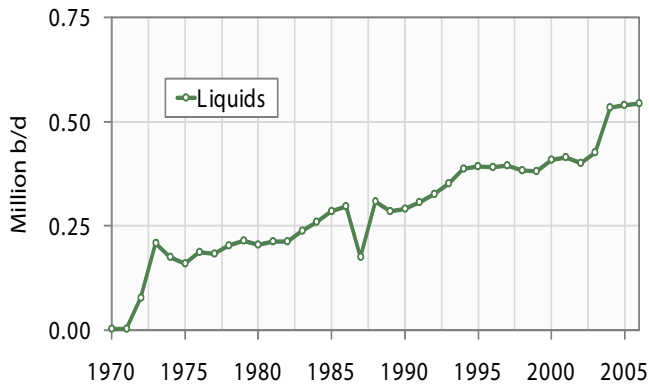
Source: ASPO Ireland & BP Statistical Review

Chart 89: Colombia Production January 2002 - December 2007



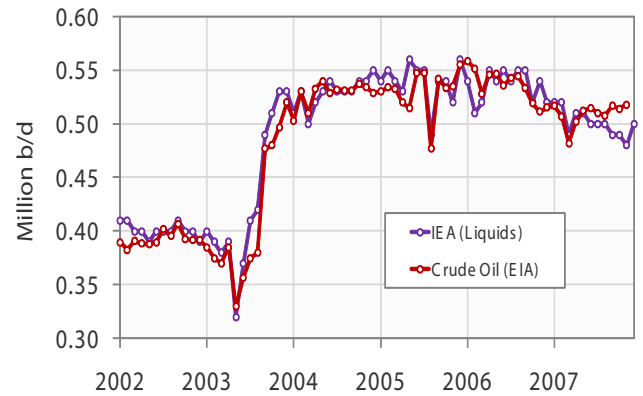
Source: Energy Information Administration & International Energy Agency

Chart 90: Ecuador Production 1970 - 2006



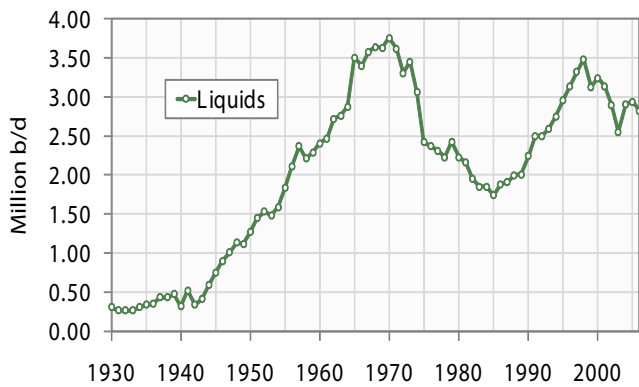
Source: ASPO Ireland & BP Statistical Review

Chart 91: Ecuador Production January 2002 - December 2007



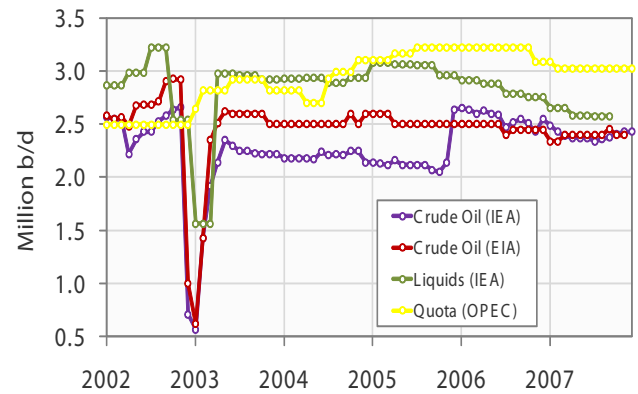
Source: Energy Information Administration & International Energy Agency

Chart 92: Venezuela Production 1930 - 2006



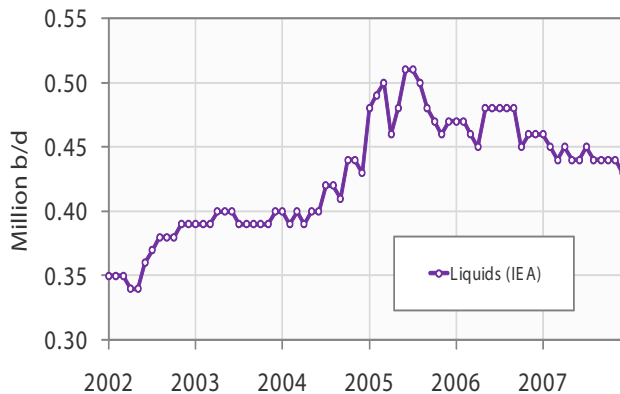
Source: ASPO Ireland & BP Statistical Review

Chart 93: Venezuela Production Jan. 2002 - December 2007



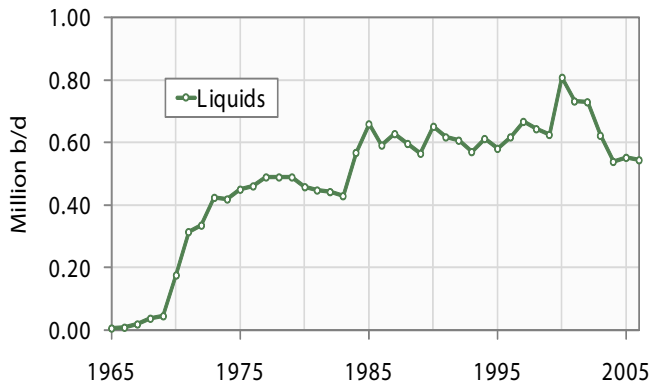
Source: Energy Information Administration & International Energy Agency

Chart 94: Other S. America Production Jan. 2002 - Nov. 2007



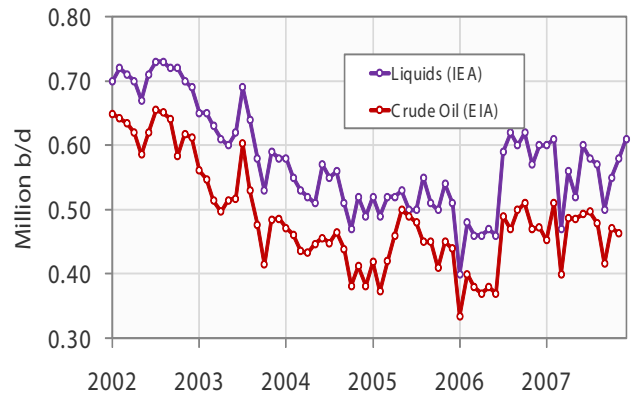
Source: International Energy Agency

Chart 95: Australia Production 1970 - 2006



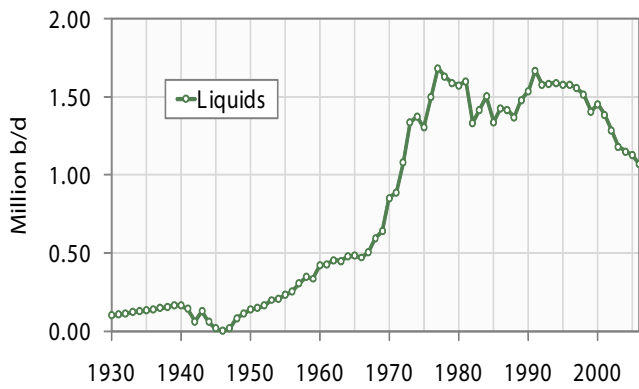
Source: ASPO Ireland & BP Statistical Review

Chart 96: Australia Production January 2002 - December 2007



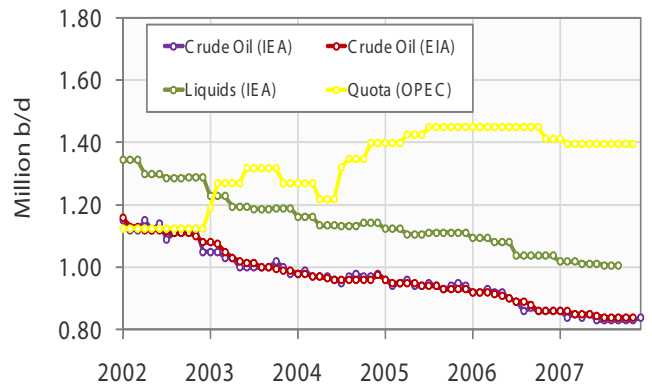
Source: Energy Information Administration & International Energy Agency

Chart 97: Indonesia Production 1930 - 2006



Source: ASPO Ireland & BP Statistical Review

Chart 98: Indonesia Production January 2002 - December 2007



Source: Energy Information Administration & International Energy Agency