The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

Libya and World Oil Exports

Posted by Luis de Sousa on February 21, 2011 - 1:47pm

This is a repost of an article that ran on The Oil Drum: Europe about two years ago. Today's events warrant another look at Libya's role in world oil production, past and future.

Libya is a relatively new country, having declared independence in 1951. For the last 39 years, the country has been ruled by a single man, Colonel Muammar al-Gaddafi. Over the years, the identity of this leader and his exquisite sense of style have mingled with the identity of the country itself.

Libya joined OPEC right after its creation, and played a pivotal role in the 1973 oil crisis. For the next three decades, Libya endured tense (and sometimes belligerent) relations with western countries. In recent years, as international oil prices have been rising, Libya has been able to re-institute itself as a reliable partner to the West, taking full advantage of the wealth promised by its still considerable oil resources.

Some History

From time immemorial, the territory that is now Libya has been part of one empire or another--whichever empire had control of the southern Mediterranean at the time. The Umayyad Caliphate reached the area in the VII century. This resulted in the conversion of much of the population to the Islamic religion and culture.

The territory entered the XX century under the rule of the Ottoman Empire, but was invaded by Italy in 1911. A resistance war ensued that would last until the end of World War II. Libya became a de facto colony of Italy during that time.

At the end of World War II, Italy renounced its claims over Libya in the peace treaty it signed with the Allies. The territory was briefly ruled jointly by the UK (with the provinces of Tripolitania and Cyrenaica) and France (with Fezzan).

In 1949, Cyrenaica became an independent emirate ruled by Emir Idris Sanusi (a resistance leader between the two World Wars). Nevertheless, in the same year the United Nations ruled in favour of a united country covering all the three provinces. In 1950, a national assembly gathered at Tripoli and designated Emir Idris Sanusi as the king of the state to be. The following year, a Constitution was established and King Idris declared the independence of the United Kingdom of Libya. Parliamentary elections were held in 1952.

Soon after the new Kingdom was created, first the UK and then the USA obtained rights to build military bases in Libya. In 1956, the first concessions on oil exploration were granted to foreign companies, and in 1959 the first successful drilling was reported. Libya became an oil exporter in 1961 with the completion of a 167 Km pipeline. This started a spectacular production rise that would surpass 3 Mb/d in 1969.

Overnight, Libya went from being one of the poorest nations in the World to one of the richest, when measured based on average GDP per capita. But equity was lacking, and popular resentment grew as oil exports grew. In 1969, a small group of young military officers staged a successful *coup d'état* and deposed King Idris. Their leader, Colonel Muammar al-Gaddafi, became the country's ruler at the age of 28.

Figure 1 – Colonel Gaddafi soon after taking power.

Gaddafi intended to build an *ad hoc* socialist state and promote Arab unity. Banks were nationalized in 1969. The following year, the oil industry was nationalized, all the foreign troops left the country, and a new Constitution established. Plans were made for Libya to merge with Egypt, Sudan and Tunisia, but none of this actually transpired. Between 1969 and 1972, Libya's oil production fell 1 Mb/d. In 1973, Libya played an active role in the oil embargo to the USA, and production dropped even further to 1.5 Mb/d.

Libya's performance during the embargo, its support for Arab unity, and its opposition to western interests in Islamic states made it a pariah to the western world. Libya even supported revolutionary organizations that do not restrain terrorist actions--something the western world could not accept. During the 1970s, Gaddafi successfully dealt with several attempts to undermine his regime, coming from both inside and outside the country.

In 1982 the USA imposed a unilateral embargo against Libya, and in 1984 the first serious assassination attempt on Gaddafi took place. Two years later, the USA bombed Tripoli and Benghazi, most likely with the objective of eliminating Gaddafi. One of his sons died in the attack. In 1987, a French airliner was destroyed over the Sahara. The next year, Pan Am flight 103 exploded over the Scottish town of Lockerbie; Gaddafi's regime is implicated on both actions. Oil production declined to just over 1 Mb/d.

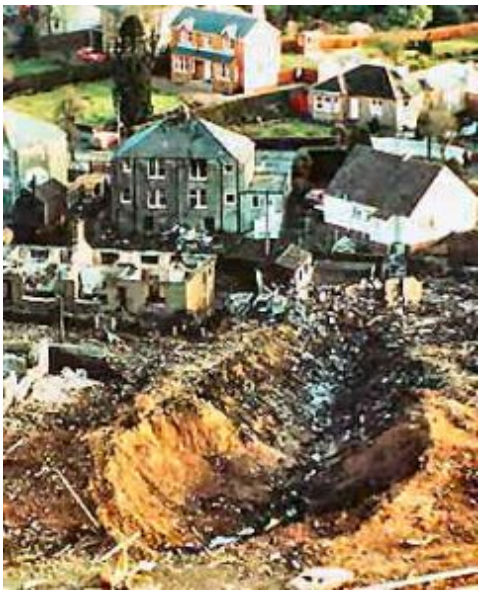


Figure 2 – Crash site of Pan Am flight 103. The bombing killed a total of 270 people inside the aircraft and on the ground.

As consequence of the regime's involvement in the Lockerbie affair, the United Nations imposed a set of sanctions against Libya in 1992. The country was asked, among other things, to hand over perpetrators for trial and to compensate victims' families. Gaddafi did not comply with any of these requests, relegating the country to international isolation. Nonetheless, oil production grew to 1.4 Mb/d and remained there until the turn of the century.

In 1999, Libya handed over the requested perpetrators. By the end of 2003, the remaining UN requirements had been fulfilled. In 2003, the country also announced its intention to decommission its programs of weapons of mass destruction. Since 2003, Libya has collaborated with several international organizations to accomplish that goal. In 2004, the UN lifted all sanctions against Libya. With these changes, cooperation with international oil companies began strengthening again.

By late 2007, Gaddafi travelled to Lisbon to represent Libya at the II EU-Africa Summit. He immediately caught the attention of journalists by taking an active part in the Summit's proceedings and showing great agility in dealing with other heads of state. At the close of the Summit, Gaddafi proposed that Libya host the next Summit, which will take place in 2010.

The country's oil production has steadily increased since sanctions were lifted, now approaching 1.9 Mb/d. In the first part of September 2008, Libya received an official visit from US secretary of state Condoleezza Rice, a moment that seems to have sealed the country's full reintegration with the international community.

Figure 3 – Condoleezza Rice and Muammar Gaddafi in Tripoli. Photo by Mahmud Turkia, AFP / Getty Images.

For a deeper insight into Libya's History:

Libya at Country Studies by the Federal Research Division of the Library of Congress of the USA.

Background Note at the U.S. Department of State Bureau of Near Eastern Affairs.

Historic timeline at the LookLex / Encyclopaedia .

Production

Libya is now a mature oil-producing region with most of its oil fields discoveries occurring during the 1960s. Slowly, discoveries have become smaller, with little oil being found after 1990. In ASPO's newsletter 34 *[pdf!]*, published in 2003, Colin Campbell showed discovery the following way:

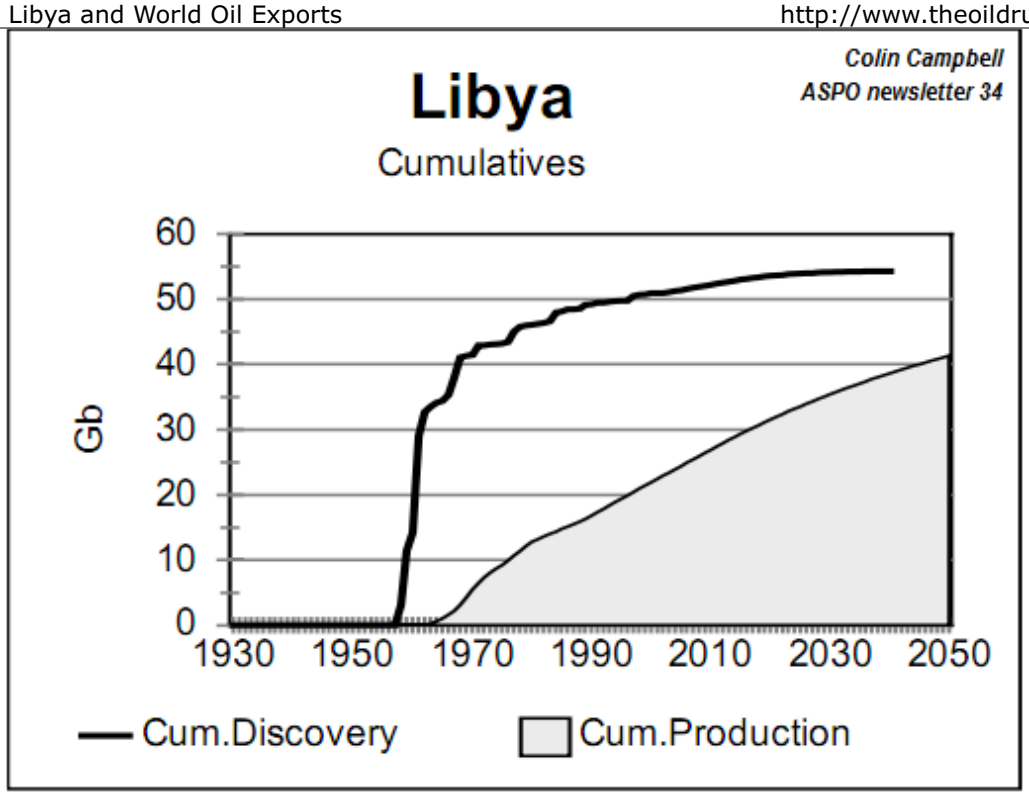


Figure 4 – Libya Cumulative Oil Discovery.

Discovery by then summed up to 52 Gb, of which 23 Gb had already been extracted. During the previous years discovery had averaged 0.1 Gb per annum, leading Campbell to point to an ultimate discovery of 55 Gb.

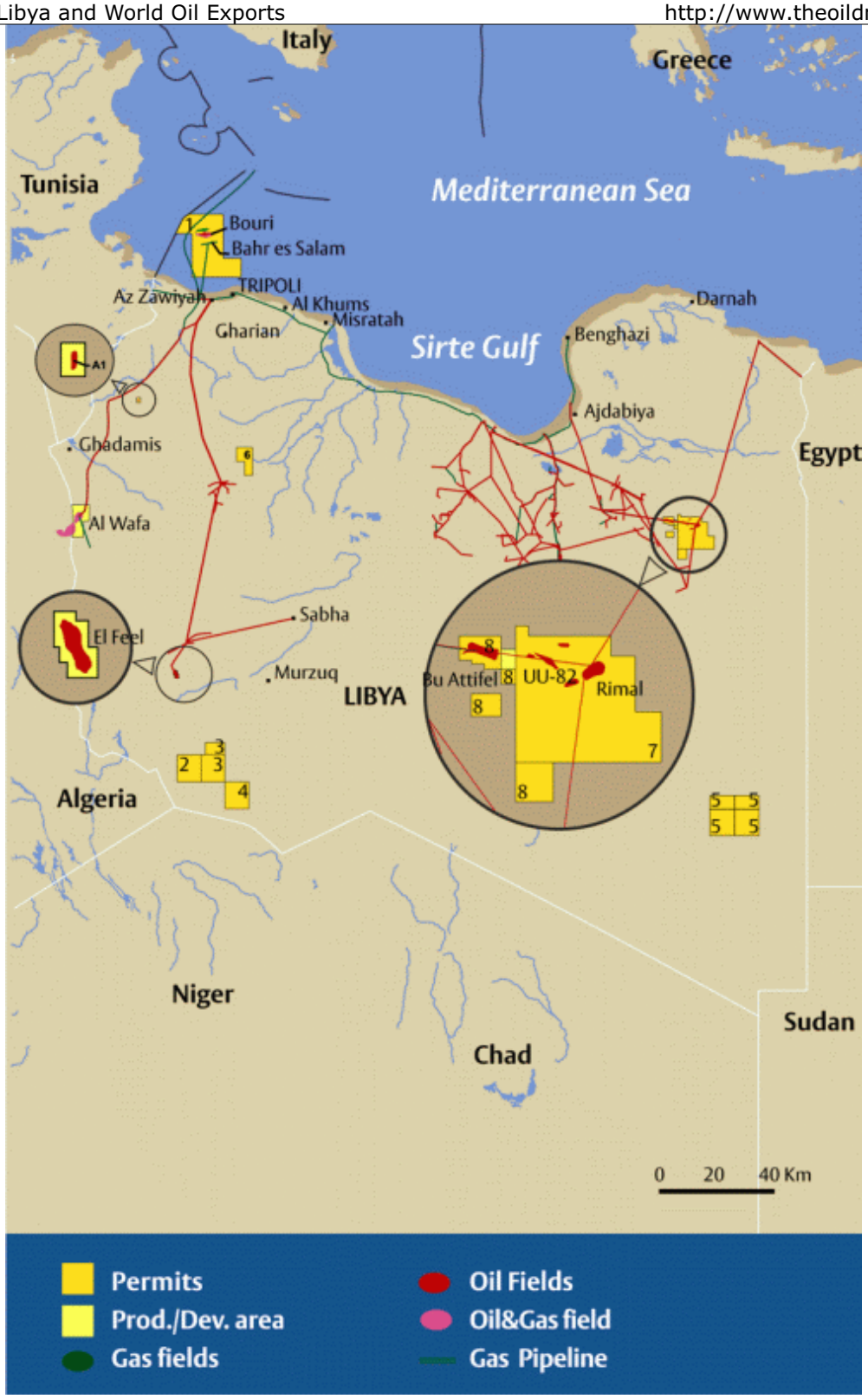


Figure 5 – Libya's oil fields. Source: ENI, click for full version.

In ASPO's IV International Conference, held in 2005, Jean Laherrère showed *[pdf!]* an assessment of Libya, noting that different databases were presenting different scenarios. While IHS data trended to an ultimate of 60 Gb, Wood Mackenzie was showing 40 Gb. The creaming curve also demonstrated the unreliability of OPEC's data.

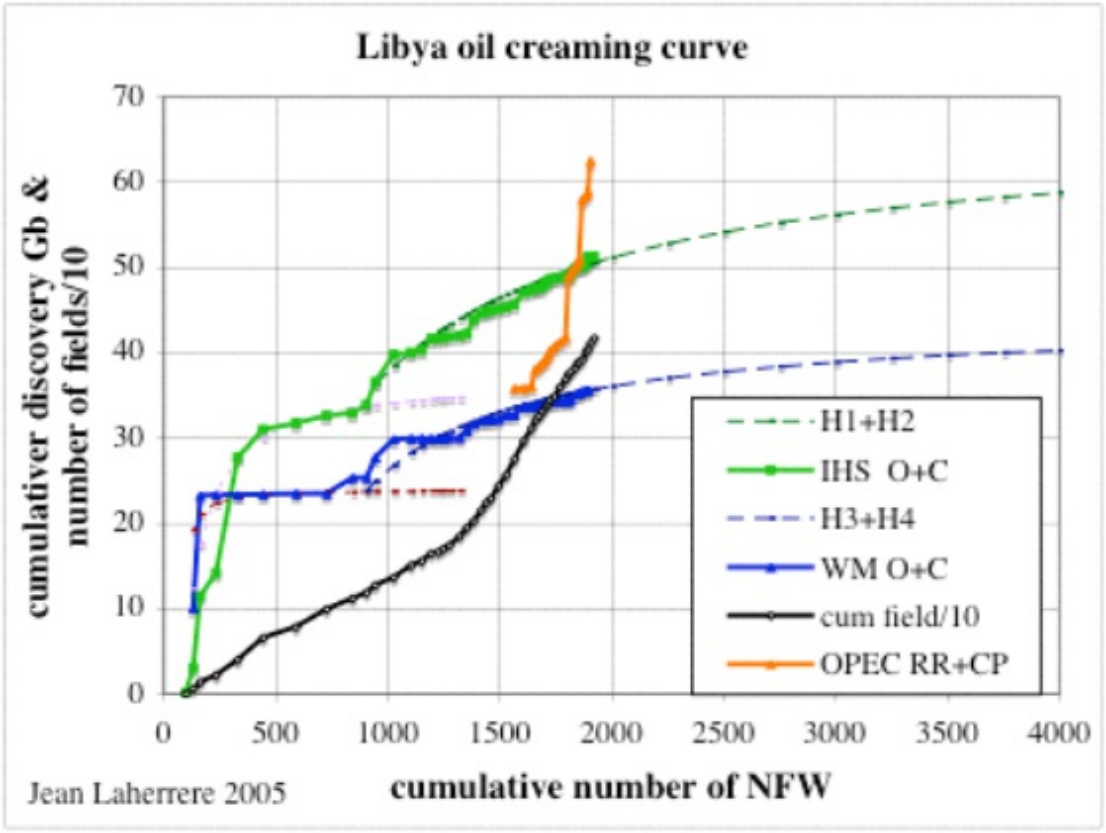
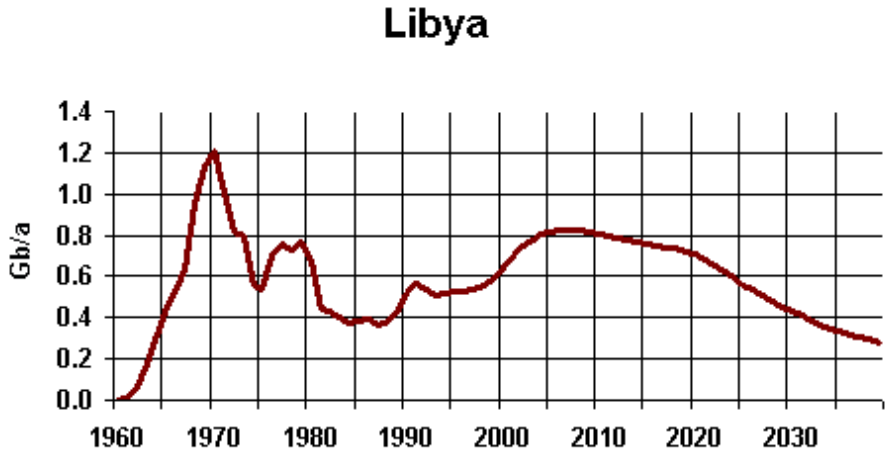


Figure 6 – Libya Oil Creaming Curve from IHS and Wood Mackenzie data.

At the end of 2007, the amount of oil produced by Libya had already surpassed 27 Gb. Considering that production had been in a plateau of around 1.4 Mb/d since 1990 and started increasing after 2003, the lower figure of 40 Gb seems unlikely.

Several production forecasts are available for Libya. Richard Duncan and Walter Youngquist projected a peak of about 2.3 Mb/d occurring about now, after which a slow decline would ensue, accelerating after 2020.



Duncan & Youngquist 1998

Figure 7 – Libya Oil Production forecast by Richard Duncan and Walter Youngquist in 1998.

In ASPO's newsletter 34 Colin Campbell projected a production plateau of around 1.4 Mb/d, lasting until 2010, when a gentle decline would set in. For an ultimate recovery of 55 Gb that may seem a rather conservative projection, but at the time the openness showed by the OECD towards Libya in the following years was likely difficult to foresee. (In 2003, the country was still on the US's list of terrorist-supporting states.) In 2007 production reached 1.85 Mb/d.

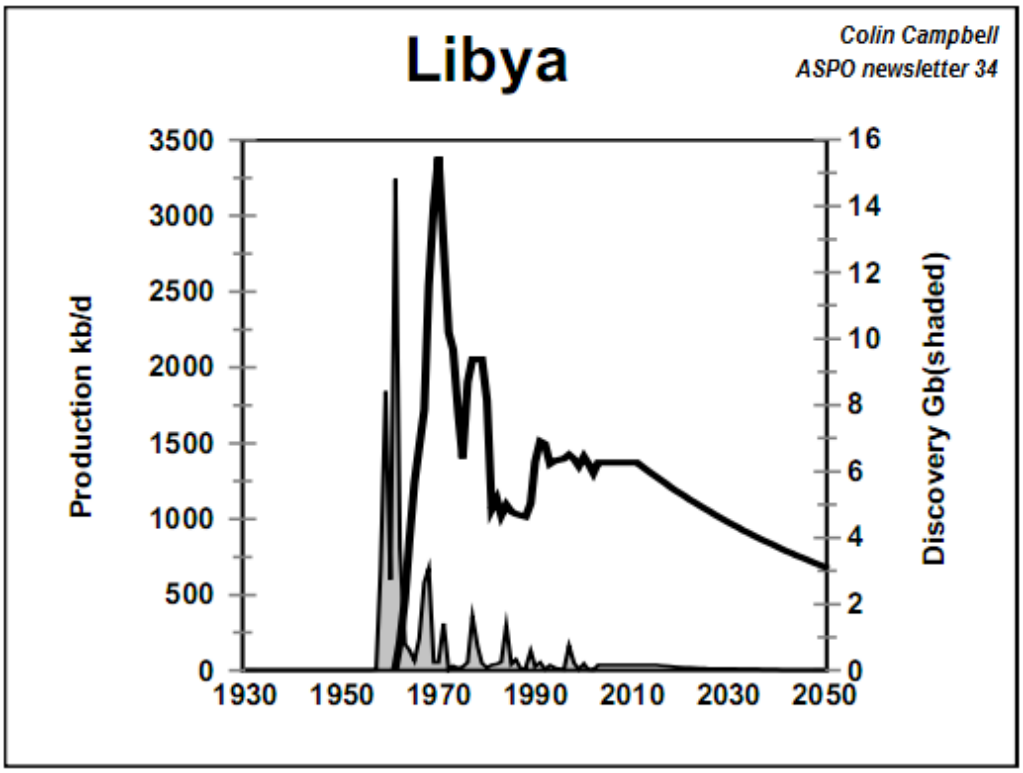


Figure 8 – Libya Oil Production forecast by Colin Campbell in 2003.

Jean Laherrère's projection is more reflective of the new reality that emerged after 2003. Two logistic curves give shape to the different ultimates given by IHS and Wood Mackenzie, one peaking by 2010 at 2.2 Mb/d, the other by 2020 at 3 Mb/d.

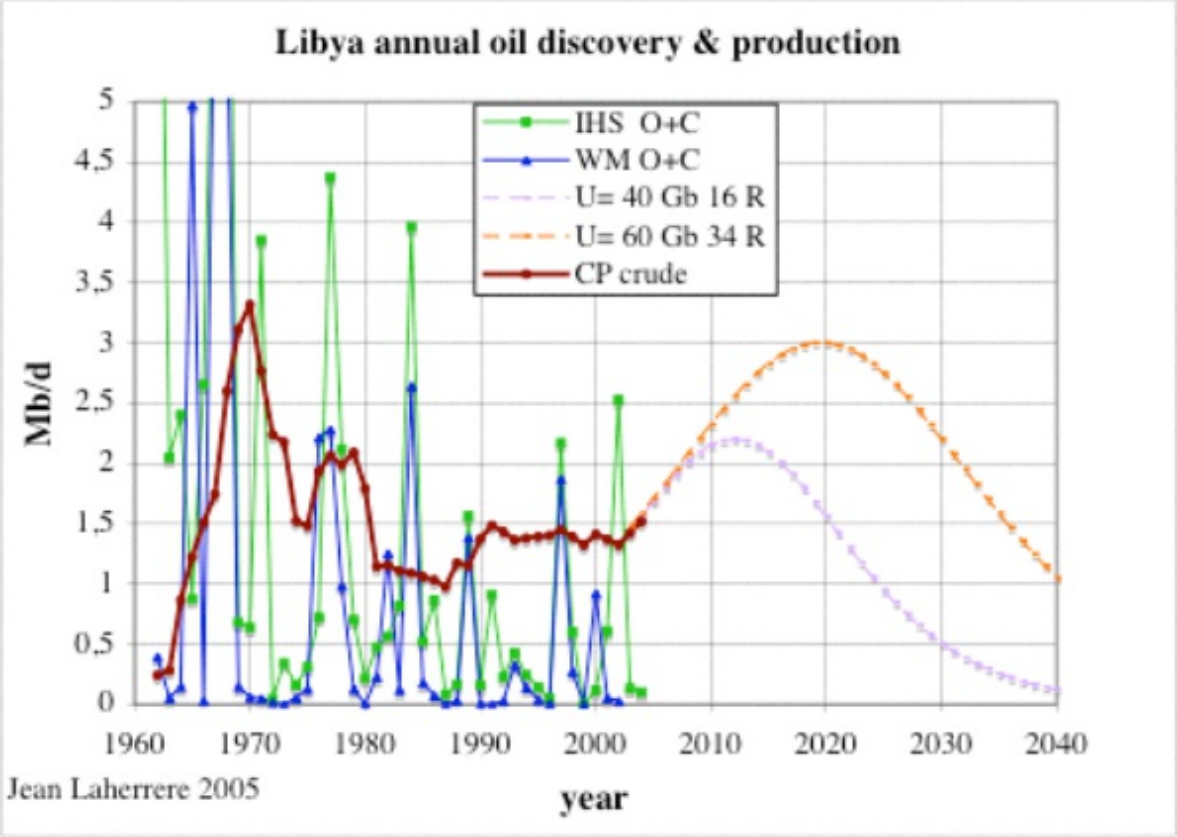


Figure 9 – Libya Oil Production forecast by Jean Laherrère in 2005.

While 40 Gb now looks like too small a figure for Libya's ultimate, a production peak of 3 Mb/d would probably represent too much of a departure from Ghadaffi's long lasting conservationist policy towards oil. In that sense, Duncan and Youngquist's forecast seems to be the one better reflecting Libya's strategy, even if probably presenting a production peak too soon.

In light of the information gathered here, an alternative projection is proposed, trying to both reflect the country's policy and the favourable developments in latter years regarding foreign relations. The 55 Gb ultimate is adopted, meaning that Libya is passing its mid point of depletion in 2008. Production is allowed to rise slowly towards a peak of around 2.2 Mb/d a decade from now after which a gentle decline sets in (with cumulative production reaching 35 Gb by then). To describe this profile a logistic curve is used (if for nothing else, for historical reasons). The model proposed shows Libya continuing to produce over 1.6 Mb/d in 2030.

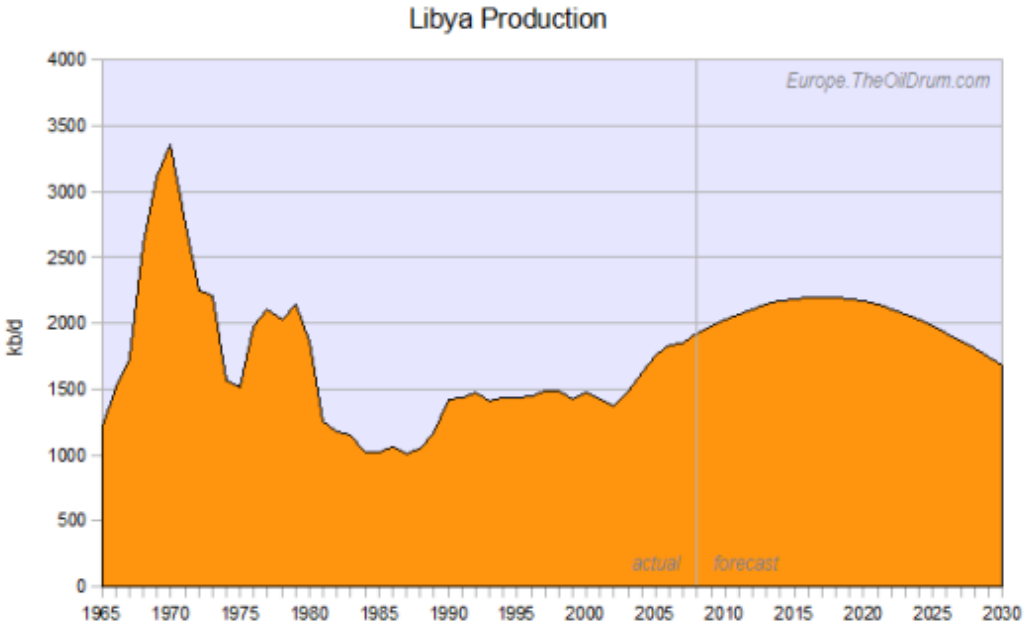


Figure 10 – Libya Oil Production forecast. Click to enlarge.

Consumption

After World War II, Libya experienced incredible population growth. The population grew from 1 million in 1950 to 5 million in 2000, and presently tops 6 million. This represents a six fold increase in less than sixty years. The UN forecasts this growth (that has followed a nearly linear trend) to continue until 2020 before slowing down. In 2025, the country is expected to reach 8 million people, and by 2030 will have close to 8.5 million people.

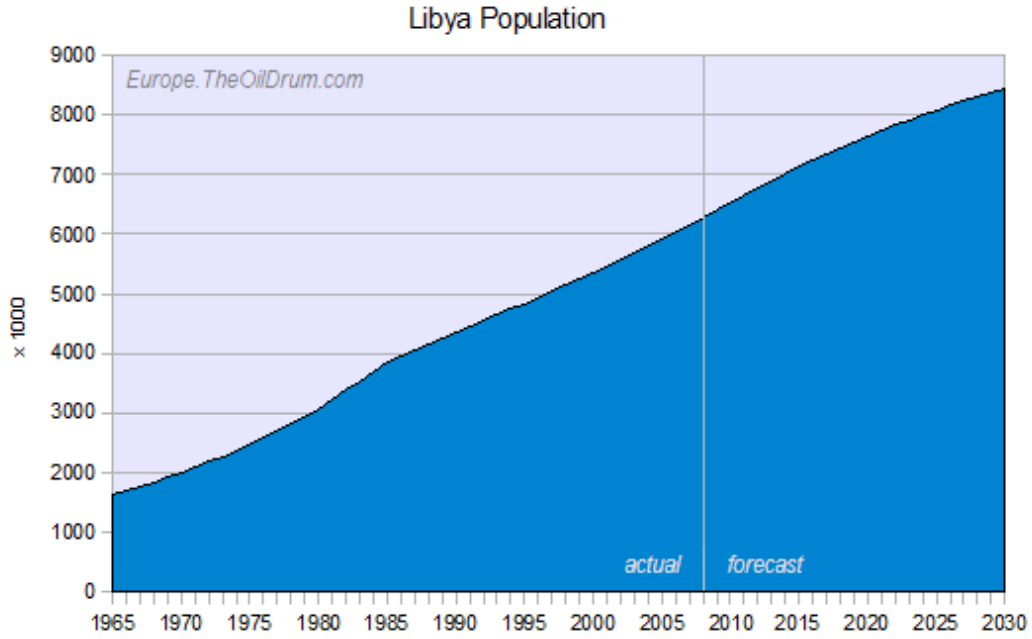


Figure 11 – Libya Population forecast, according to UN's forecast.

In spite of political turmoil and difficult foreign relations, Libya has shown a stable path of oil consumption, growing from 5.5 b/cap/a in 1965 to over 17 b/cap/a in 2007. During times of low oil prices this trend slows down or stalls, just to return to the previous pace some years later. During the price crash of 1998, consumption per capita receded, picking up again with the first hikes after 2000. Since 2003, oil consumption per capita has steadily risen around 2.5% per annum.

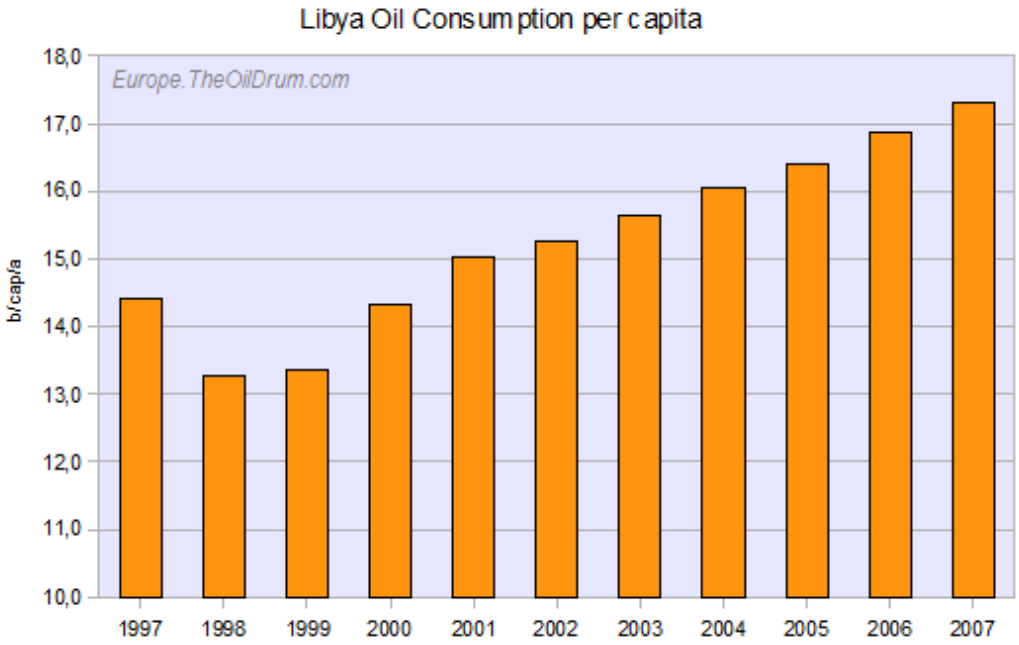


Figure 12 – Past Libya Oil Consumption per capita.

Consumption per capita is forecast to continue to rise at 2% per annum until production peaks. By then this trend will start slowing down due to depletion concerns, falling to 1% per annum by 2030. This projection takes consumption per capita to over 25 b/cap/a in 2030, still below many of the rich exporting countries, but equalling US consumption today.

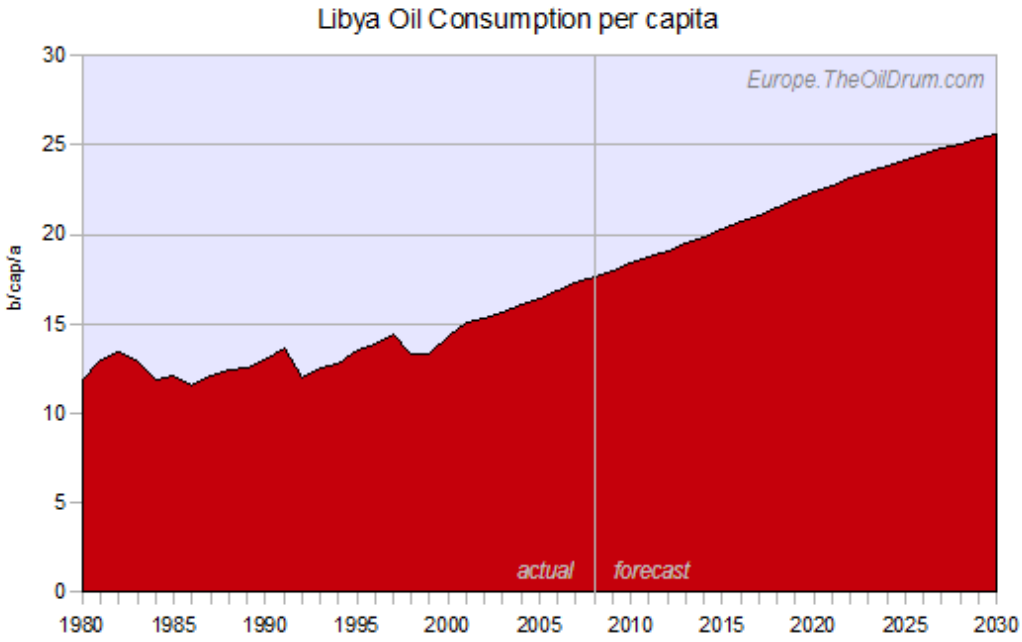


Figure 13 – Libya Oil Consumption per capita forecast.

Using this consumption per capita model and UN's population growth projections, the country's oil consumption is set to increase two-fold during the next two decades. While consumption growth will visibly slow down, it should top 0.6 Mb/d soon after 2030.

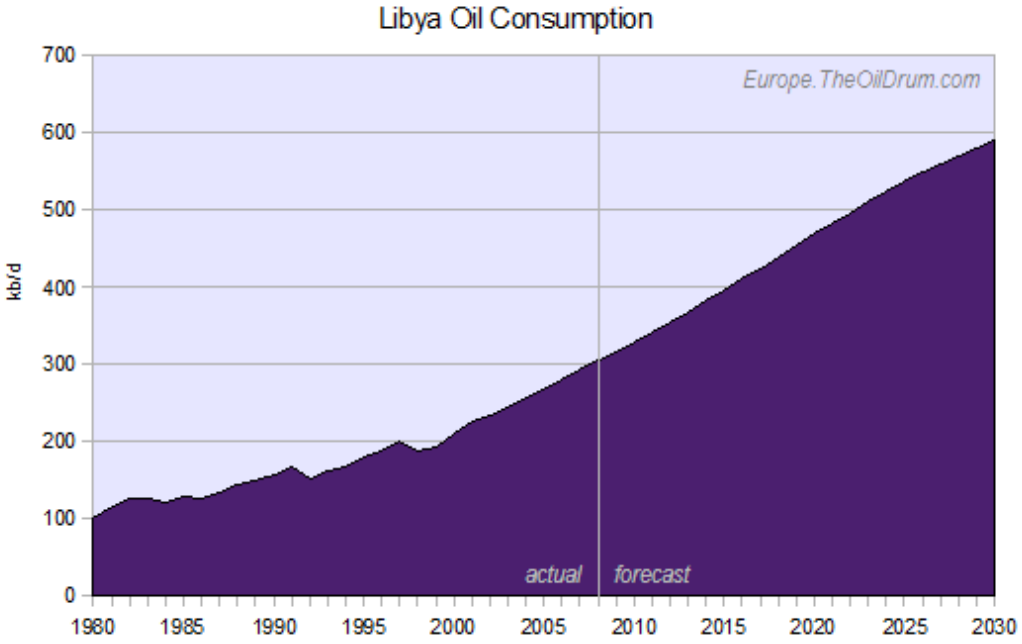


Figure 14 – Libya Oil Consumption forecast.

The country's maturity both as an oil producer and as an integrated member of the international community assures a minimum degree of accuracy of the projection made here. Historical data

does show, however, that a marked and prolonged fall in international prices (for example, imposed by recession) could change the picture markedly. Being a member of OPEC, production quotas could be lowered, and as seen from past data, low oil prices usually have a visible impact on consumption.

The Macroscopic View

Even with the increased consumption projected here, Libya remains as an important oil exporter for the period considered.

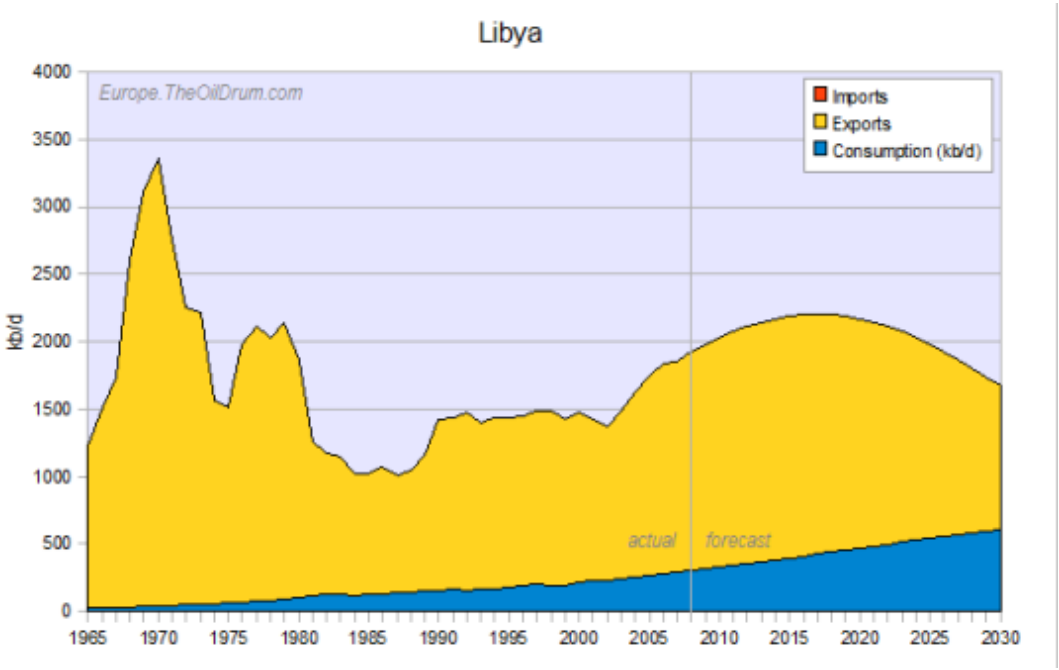


Figure 15 – Libya Oil Exports forecast. Click to enlarge.

There is much irony in Libya's history as an oil producer. If Colonel Gaddafi hadn't reached power, the country probably would have extracted most of its oil during times of cheap energy (as happened in most of Europe). While the country was forced into isolation for decades, Libya now reaches the XXI century with half of its oil reserves to extract and healthy foreign relations, looking set for what maybe the country's Golden Age.

With one more country assessed, World Oil Exports (WOE) remain little changed. 2005 continues to be the peak date, now with nearly 39 Mb/d of oil traded internationally. The fast decline in the second decade of this century continues to be present, falling from over 36 Mb/d in 2011 to under 26 Mb/d by 2020.

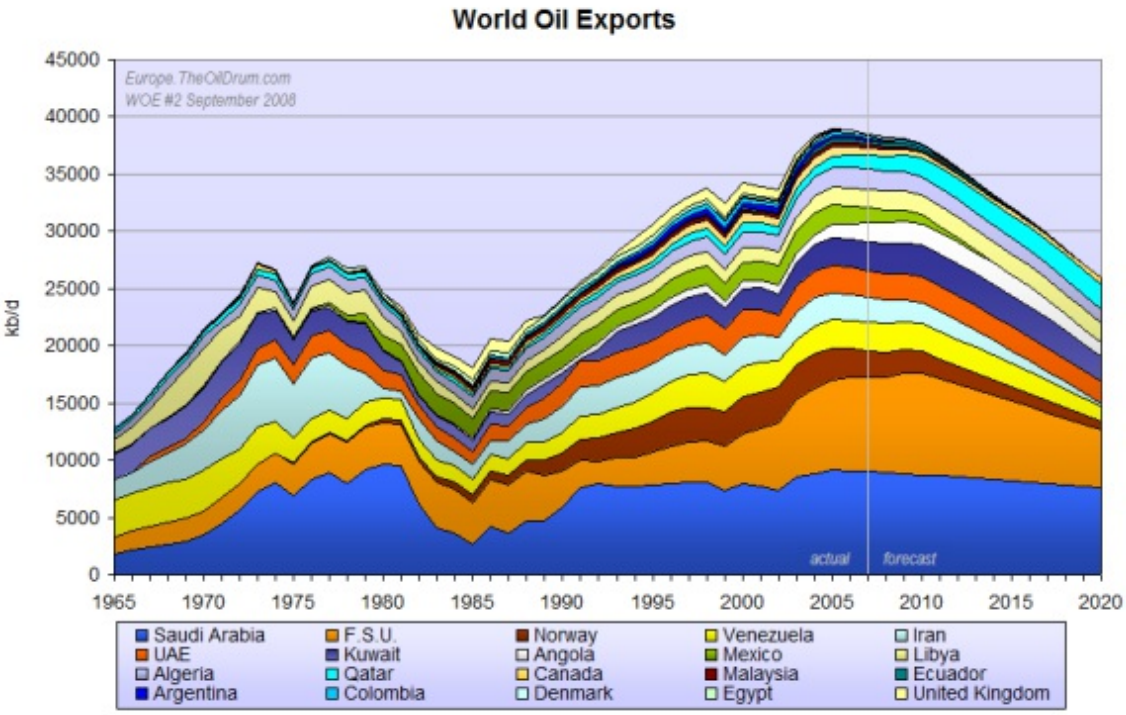


Figure 16 – World Oil Exports as of September 2008. Click to enlarge.

Previous analyses of WOE:

[WOE [01] Angola]

[WOE [00] Introduction]