



## OPEC quotas and crude oil production

Posted by [Luis de Sousa](#) on January 31, 2011 - 11:20am

*This is a guest post by [Jean Laherrère](#), a long-time friend of and contributor to TheOilDrum.*

It is hard to obtain reliable graphs and quotas on OPEC oil production and to know how these quotas are ascertained. The few graphs that I found are incomplete and inaccurate. [OPEC's website](#) reports the oil production allocations (quotas or ceilings) from April 82 to Nov 2007. OPEC's 2009 annual report extends the data up to December 2009 but only with the total (24.845 Mb/d); there's no detail since January 2009. [Energy Intelligence](#) provided this missing breakdown by country as targeted since 2009. Quotas are agreed upon by each member during OPEC's meetings, but the detail of the compromise is not given, only the results.

Thus I decided to plot OPEC's quotas, comparing them with production. The outcome is interesting.

Quota estimations started in 1982 and are now called production allocations or ceilings. The basis for estimating allocation quotas is given by Rafael Sandrea [\[1\]](#):

### Proposed Formula for Allocations

In 1986, OPEC conducted an in-depth analysis of their system of allocating quotas with the view to set up a durable formula, equitable to all members. They defined eight criteria that fall into two categories: oil related and socio-economic. The factors considered were:

- Reserves
- Production capacity
- Historical production share
- Domestic oil consumption
- Production costs
- Population
- Dependence on oil exports
- External debt

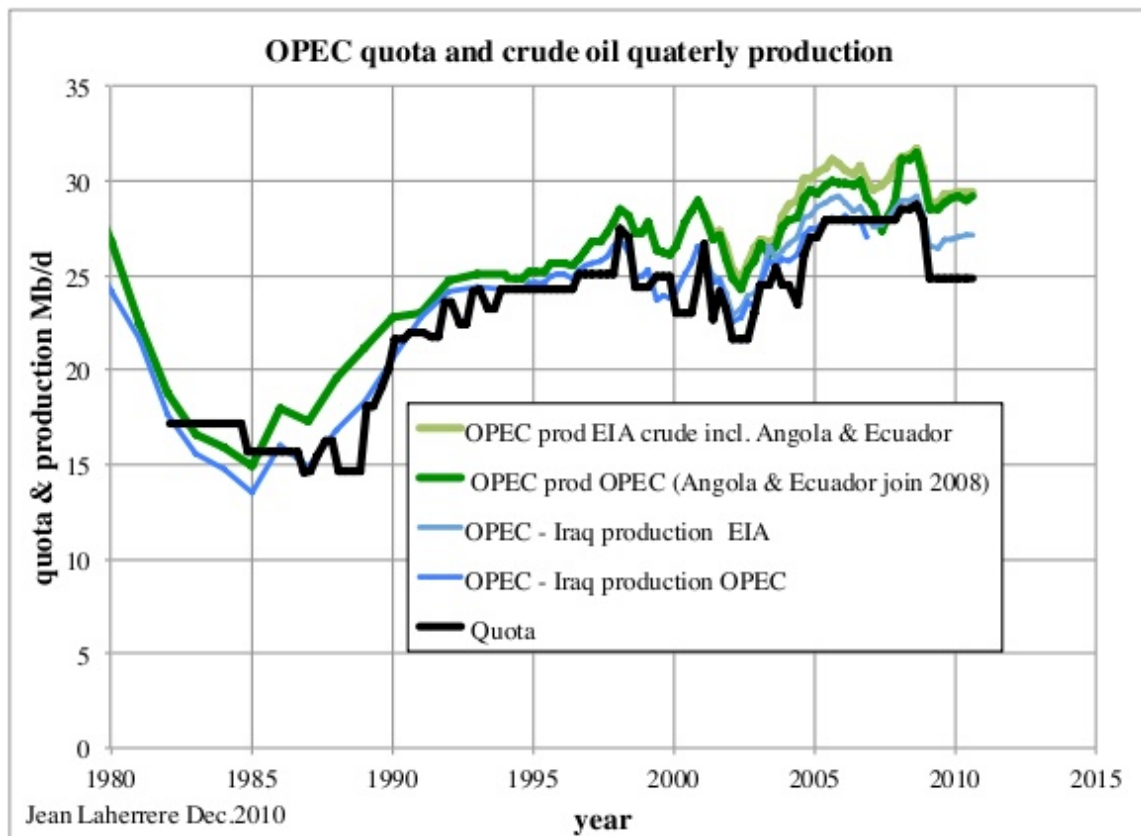
A previous paper by Alsalem *et al.* [\[2\]](#) indicates the main factors: proven reserves, productive capacity, GDP and domestic investment needs. The conclusion on the mismatch between quotas and productions during the March 1982 to June 1990 period was that “Venezuela seems to be the only member to violate the production agreement even though apparently fair quotas were assigned”.

The comparison between OPEC's quotas and crude oil production is disturbed by the variation of the number of members. OPEC started in 1960 with 5 members: Iran, Iraq, Kuwait, Saudi

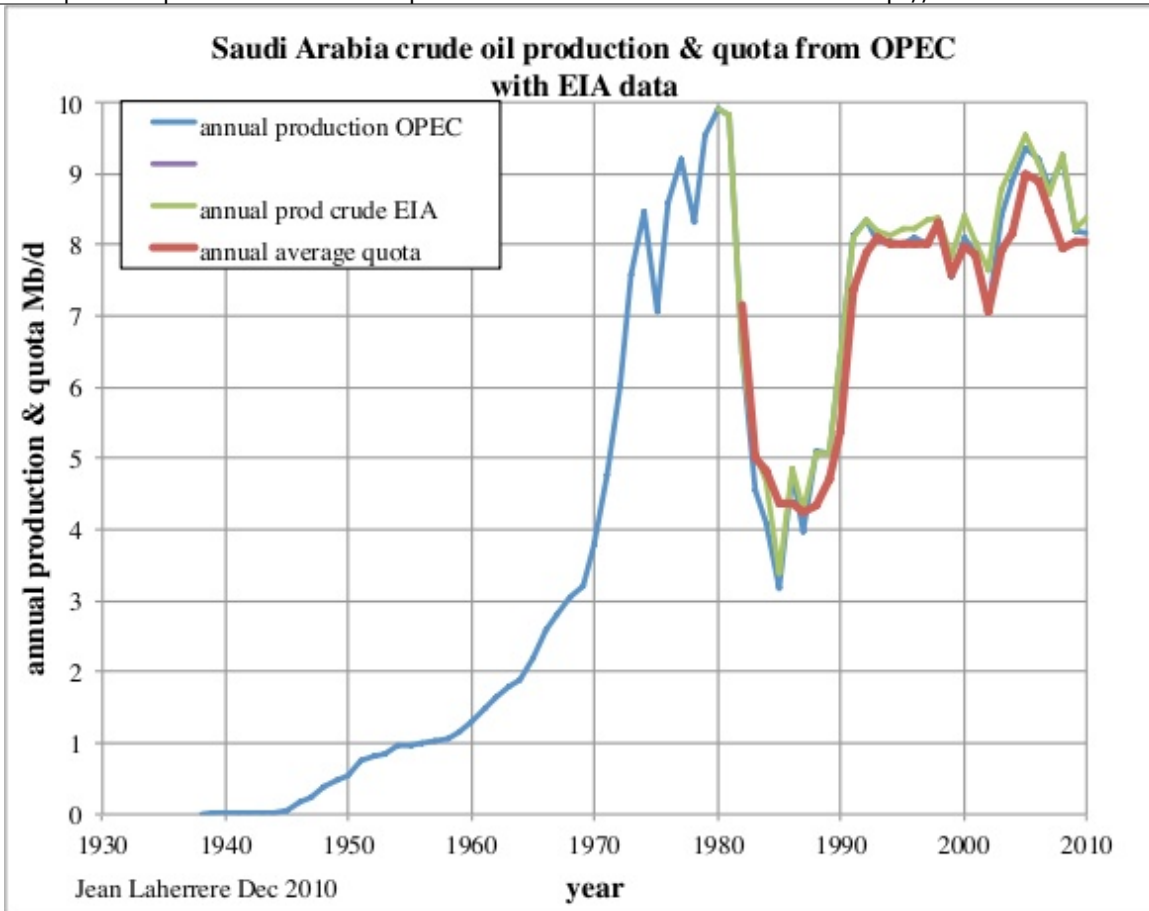
Arabia, and Venezuela. The other members joined progressively: Qatar in 1961, Indonesia in 1962 (suspended in 2009), Libya also in 1962, The UAE in 1967, Algeria in 1969, Ecuador in 1971 (suspended between December 1992 and October 2007), Angola in 2007, and Gabon from 1975 to 1994. Iraq's quota was suspended briefly in 1988 and permanently since 1999.

In its annual reports, OPEC publishes the annual and cumulative crude oil production figures of its members, but not the other liquids; in particular, condensate is excluded from the quotas. Monthly OPEC bulletins report crude oil production up to November 2010. In contrast, the USDOE/EIA reports for each country - the crude oil and condensate production - are reported since 1980 because in the US, condensate at well head is not distinguished from crude oil production as for OPEC members. ([table 42](#)).

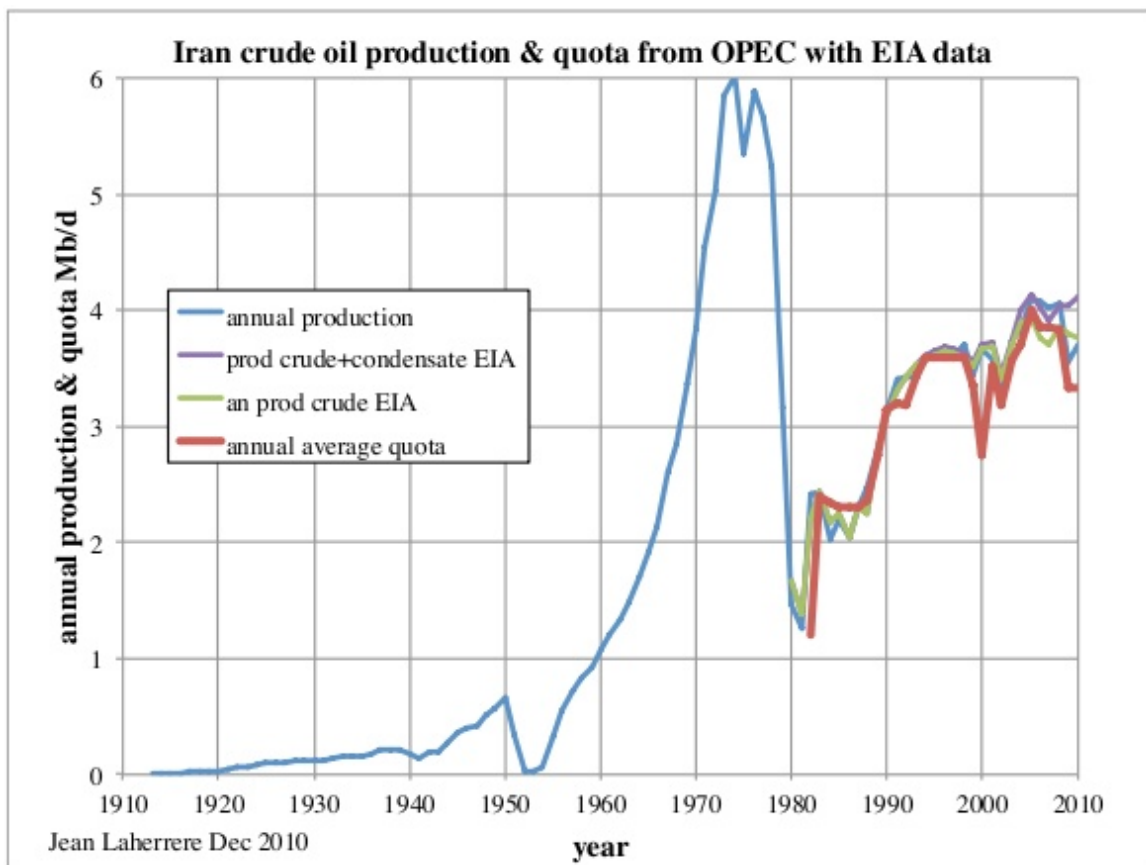
With the number of members varying, a graph of OPEC's overall production is not the best data to review. It would be more interesting to show a graph with each OPEC member ranked by peak production.



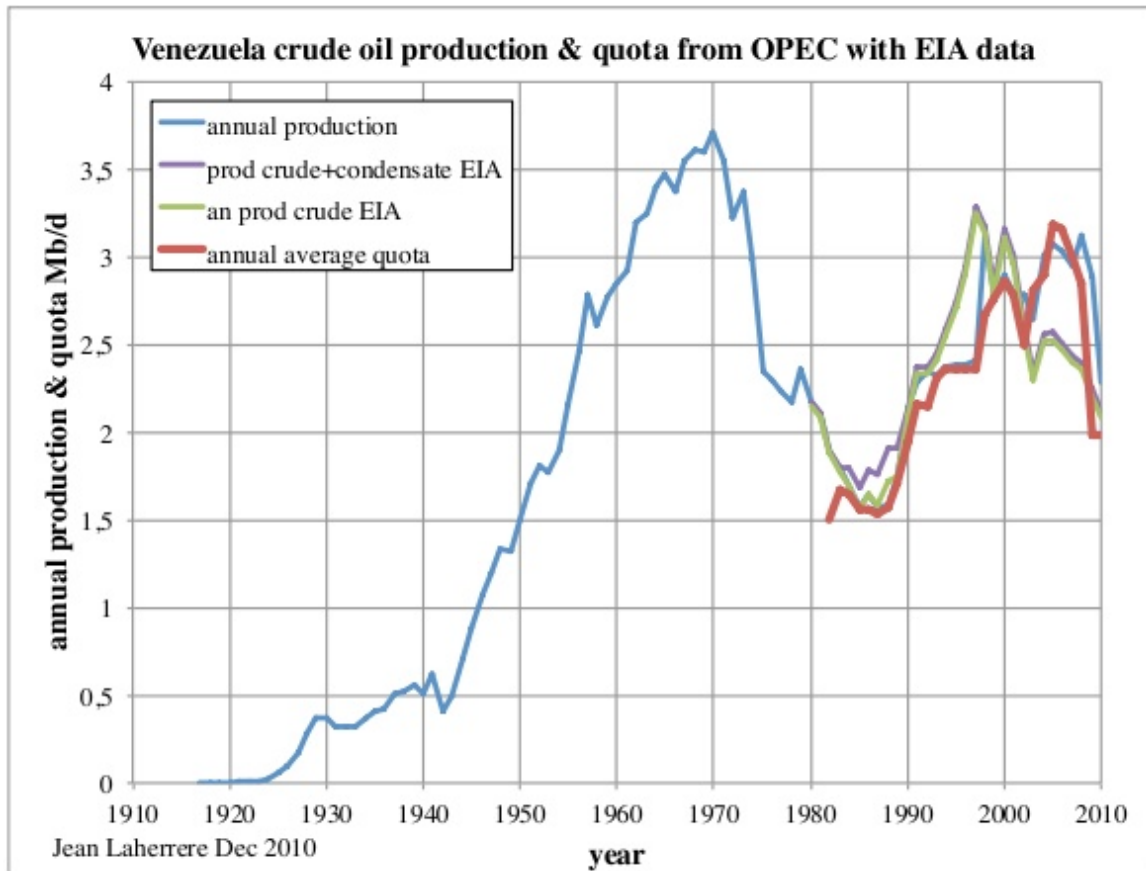
The largest producer, Saudi Arabia, has played the role of swing producer, responding to price with large output variations. Its production follows the quota fairly well, overproducing slightly since 2002:



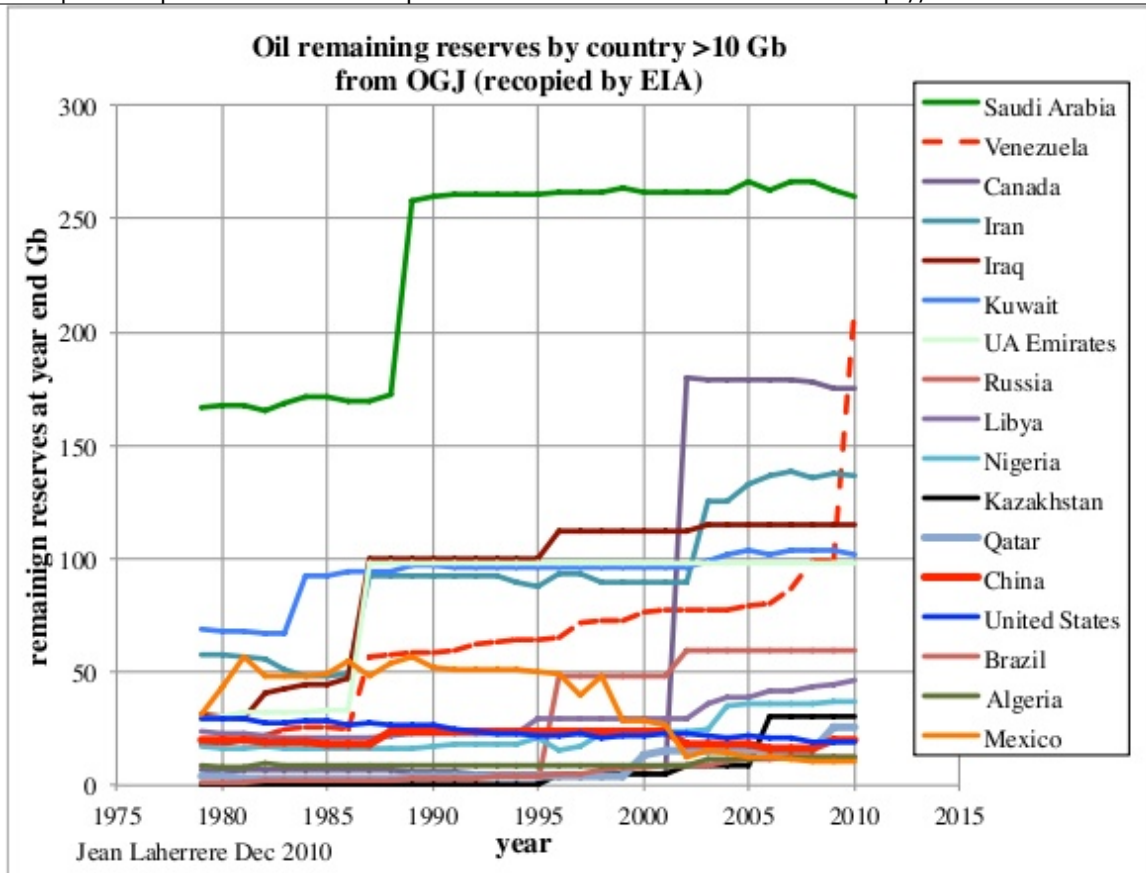
Iran's production has followed its quota except during the last two years!



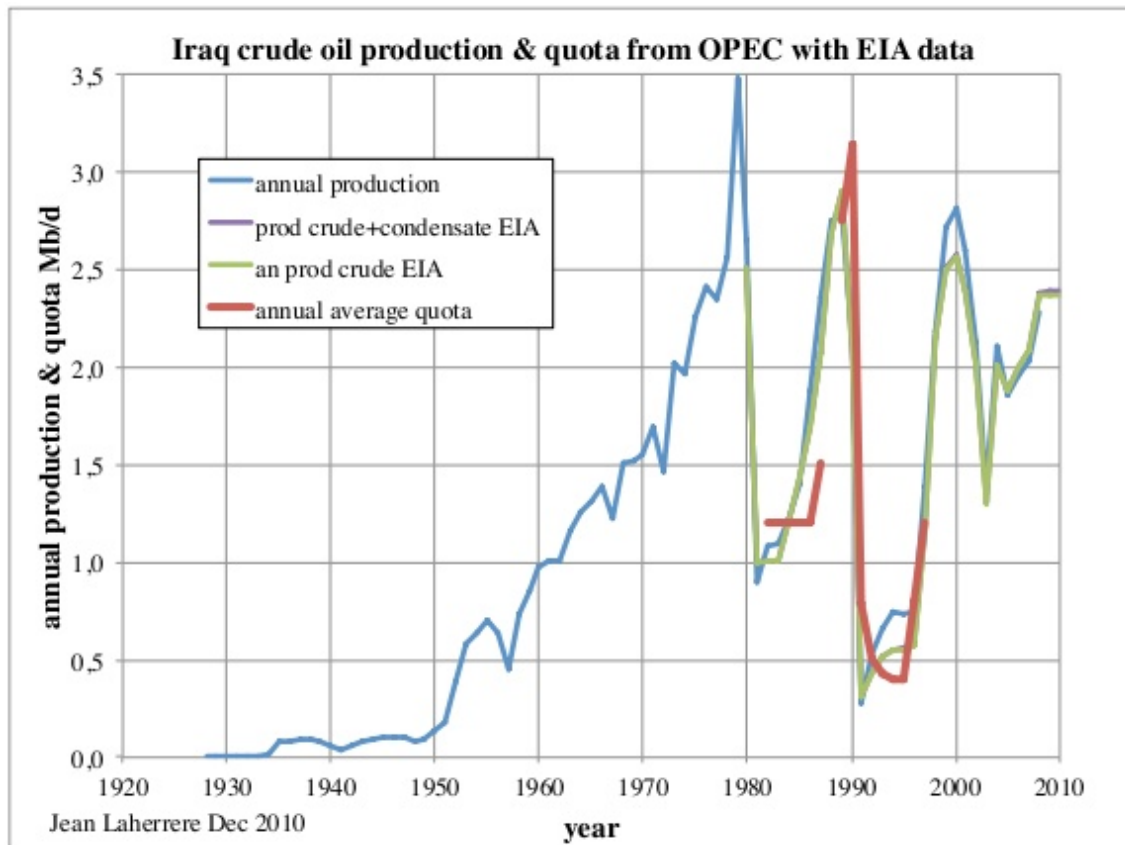
Venezuela had been overproducing until 2001, but with the collapse of production after Chavez's row with PDVSA and consequent nationalisation, production data became unreliable with a large discrepancy between OPEC data and EIA data! The Oil & Gas Journal (OGJ), in its Worldwide Look at Reserves [3], has increased Venezuela's reserves at the end 2010 from 99.38 Gb to 211.2 Gb, including the extra-heavy oil, like it made for Canada!



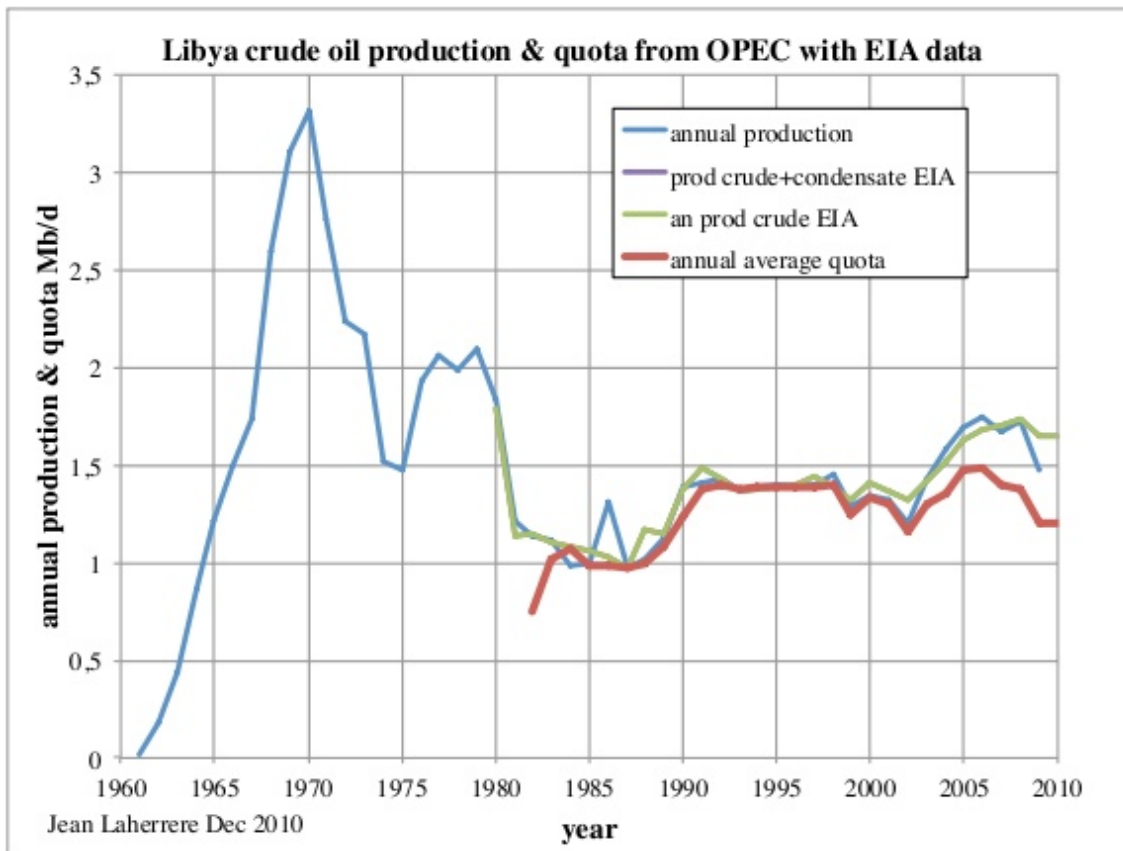
The remaining reserves (also called proven reserves, estimated before the end of the year with an enquiry carried out by the OGJ and later recopied by the EIA) is plotted here from 1979 to 2010 for countries with more than 10 Gb. Venezuela's political oil reserves increase, but production decreases!



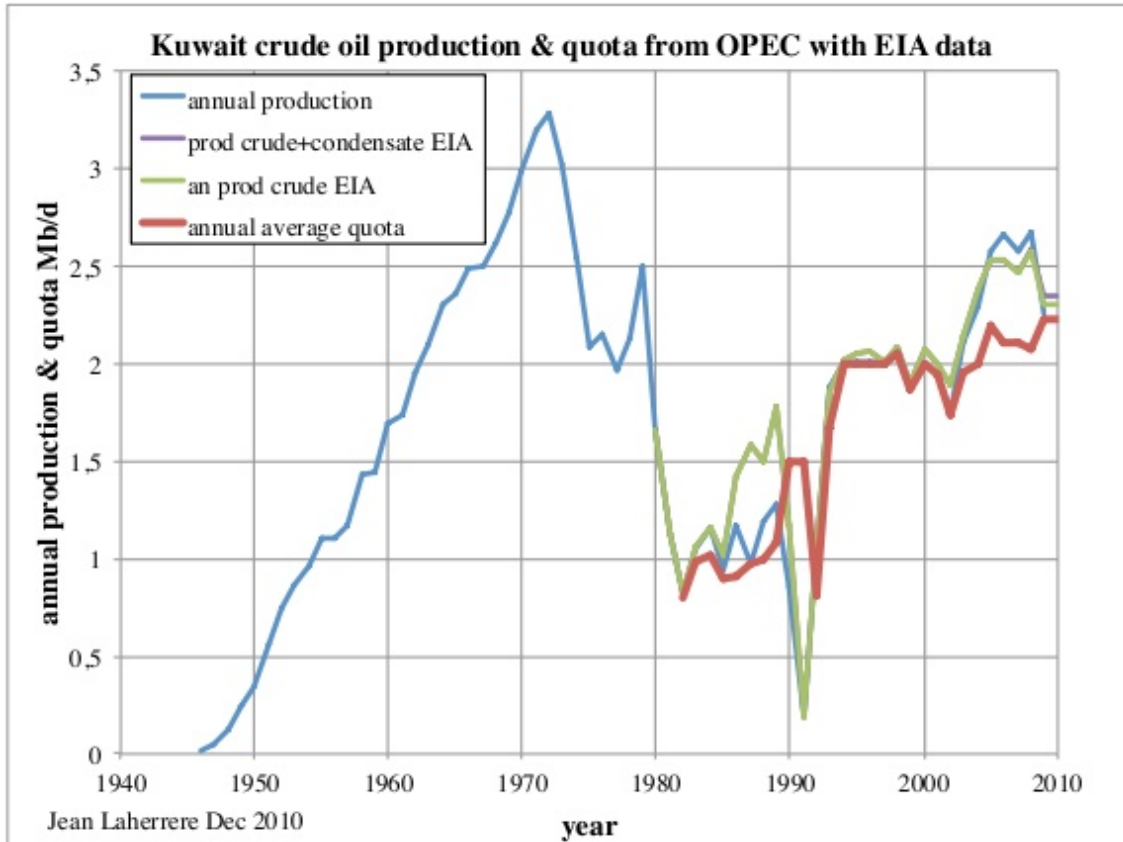
Iraq's quota has been suspended since April 1998.



Libya has been overproducing lately.

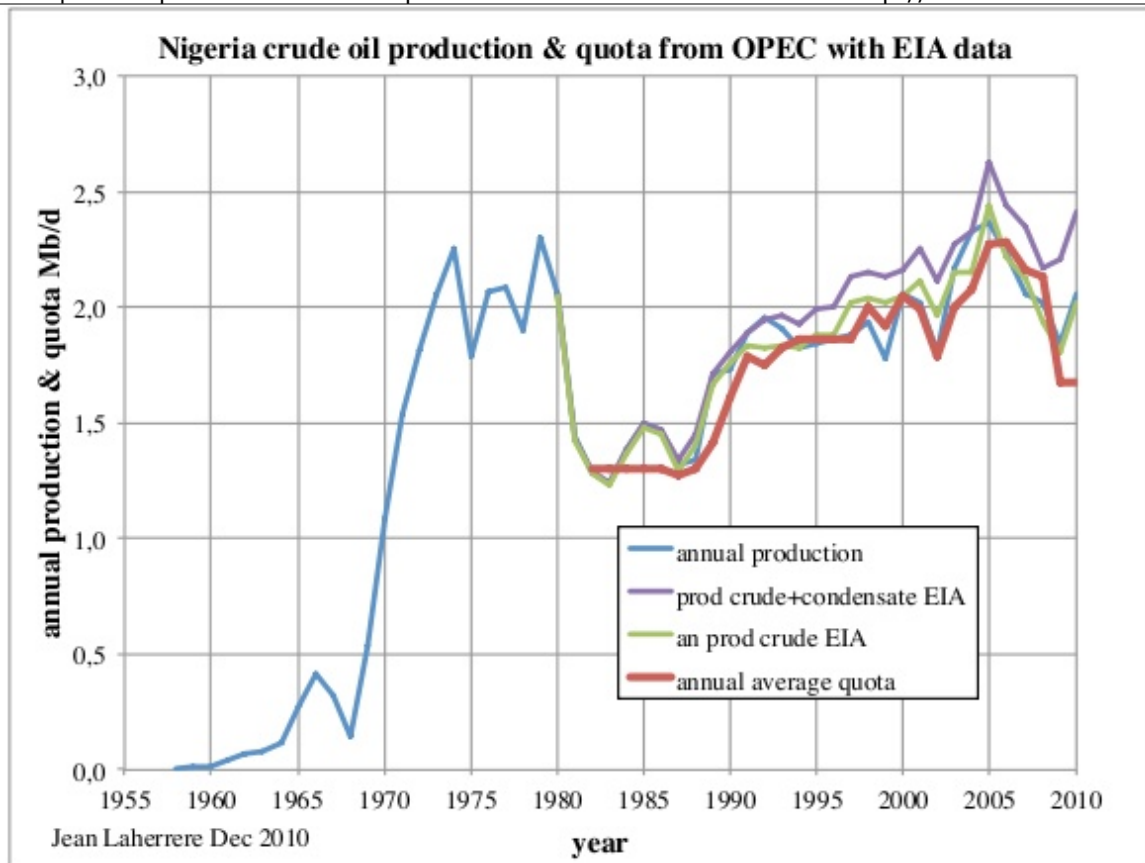


Kuwait has been overproducing since 2003.

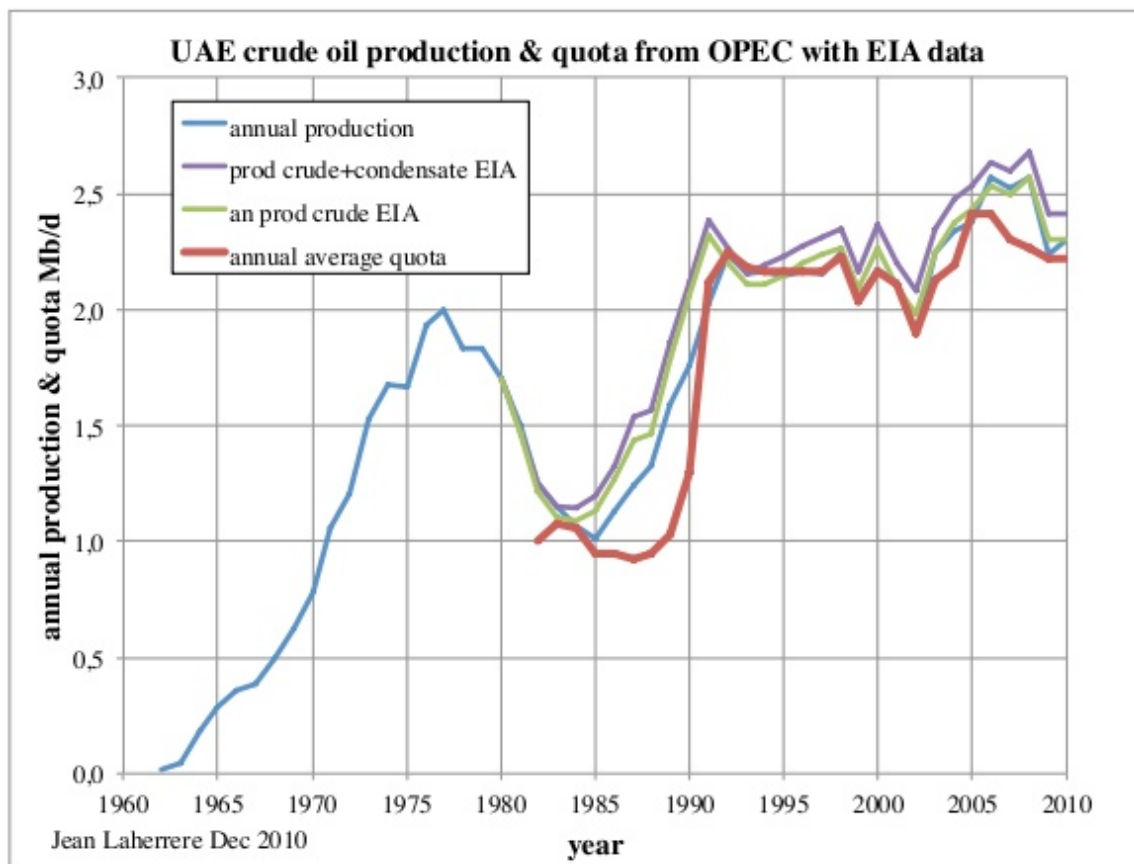


Nigeria was underproducing in 2007, but not anymore.

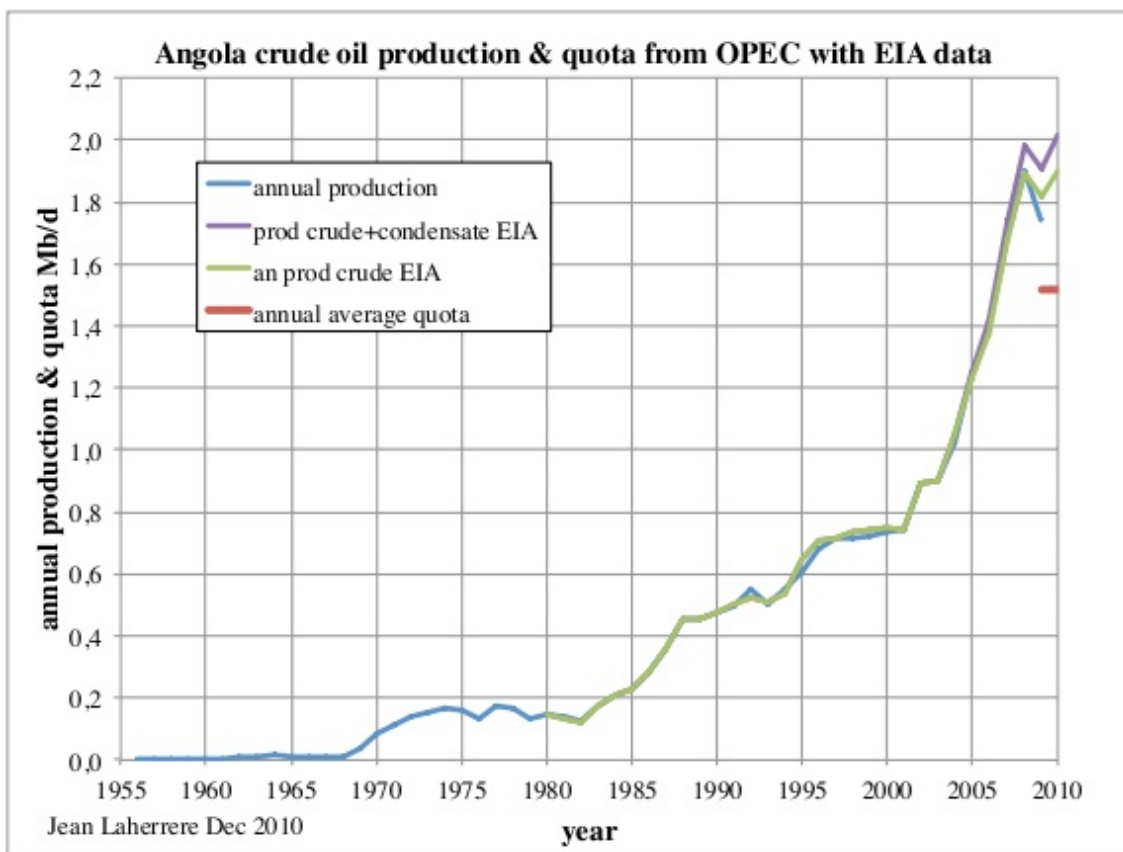




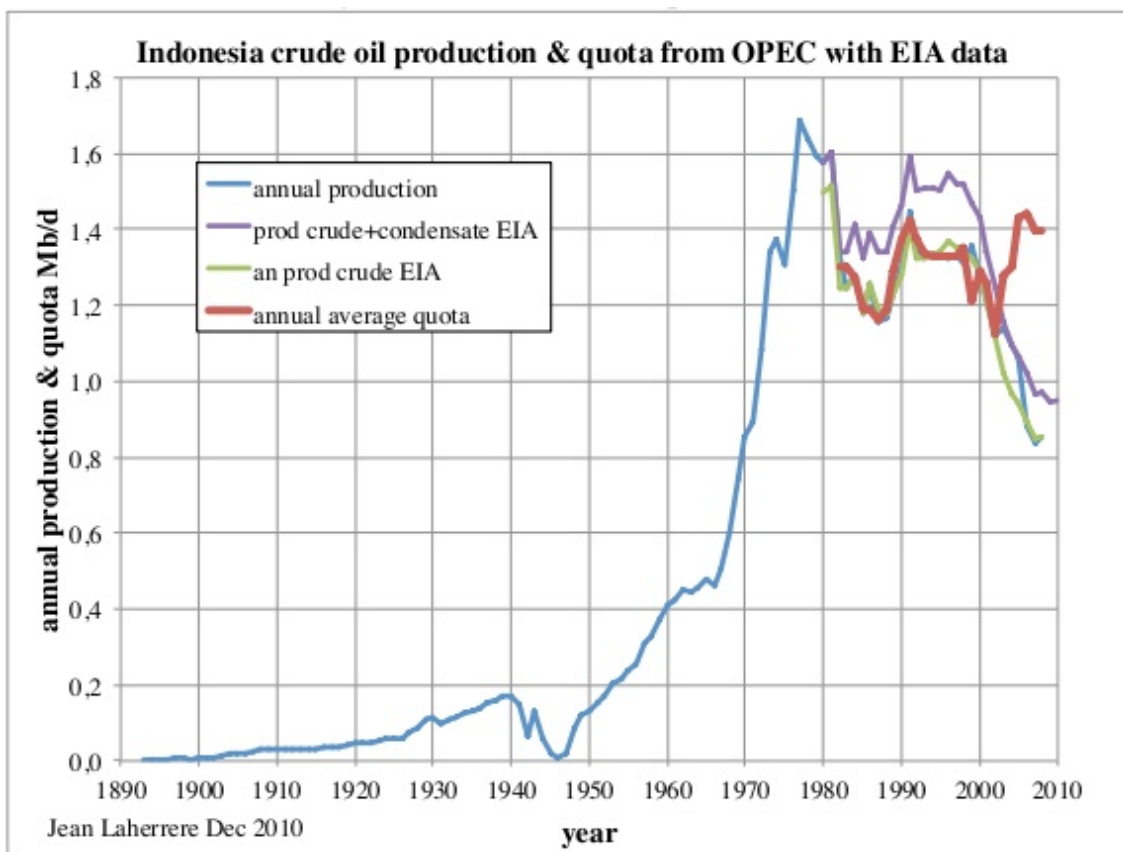
The UAE has also been overproducing since 2006.



It is strange for Angola, having gone through a large oil production increase since 2001 and joining

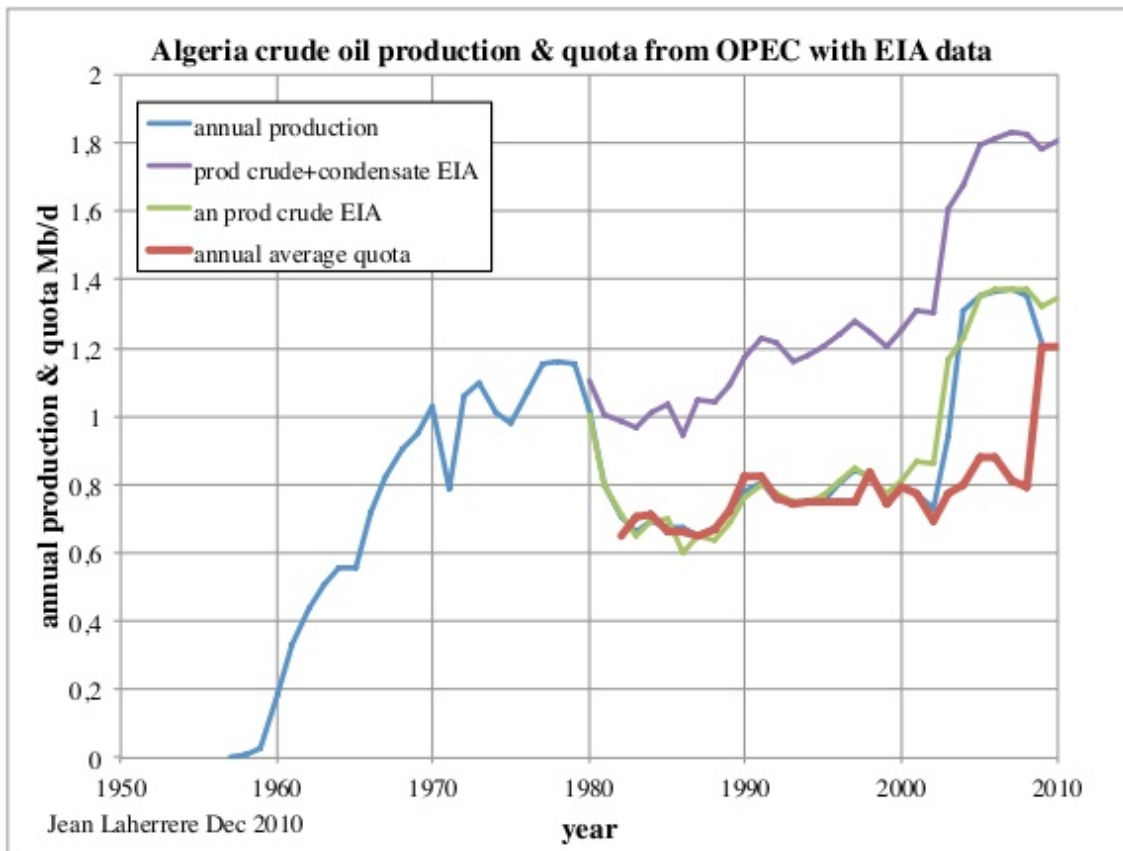


Indonesia left OPEC in 2008, unable to reach its quota.

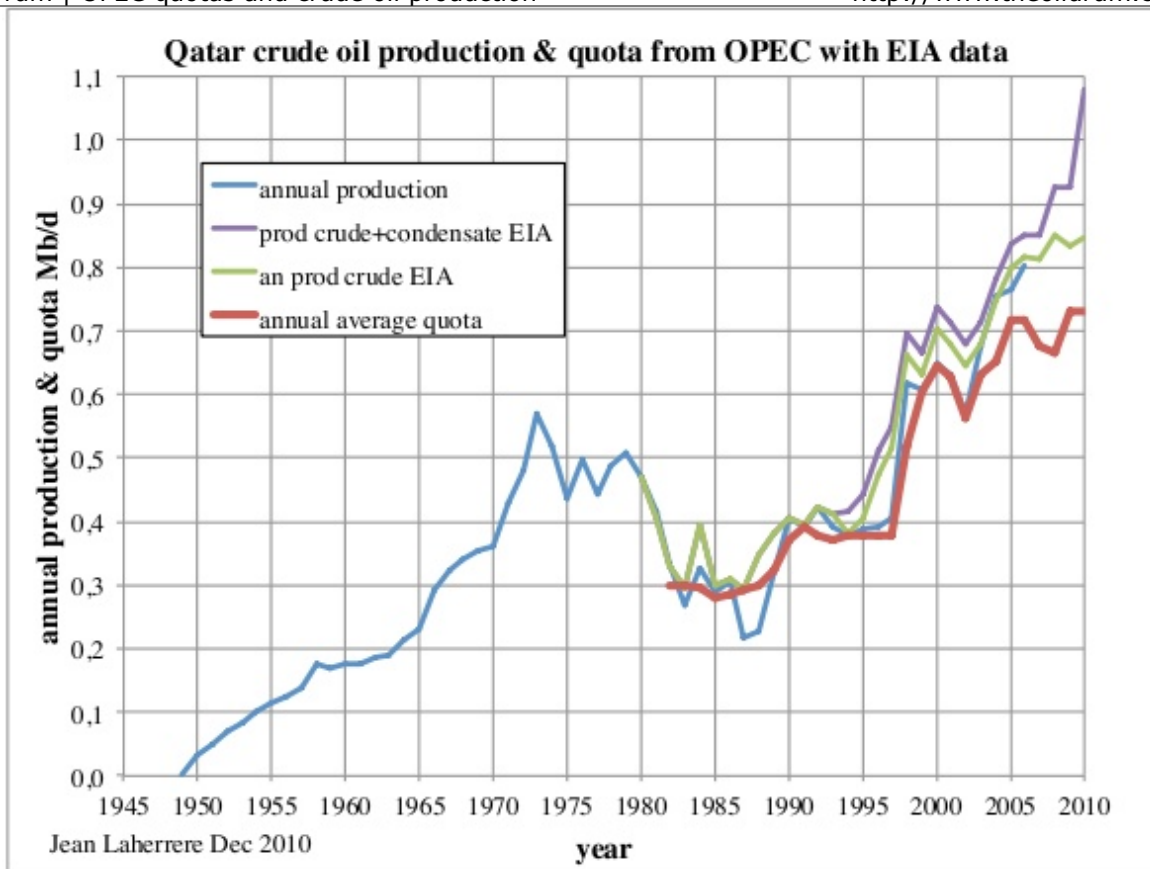




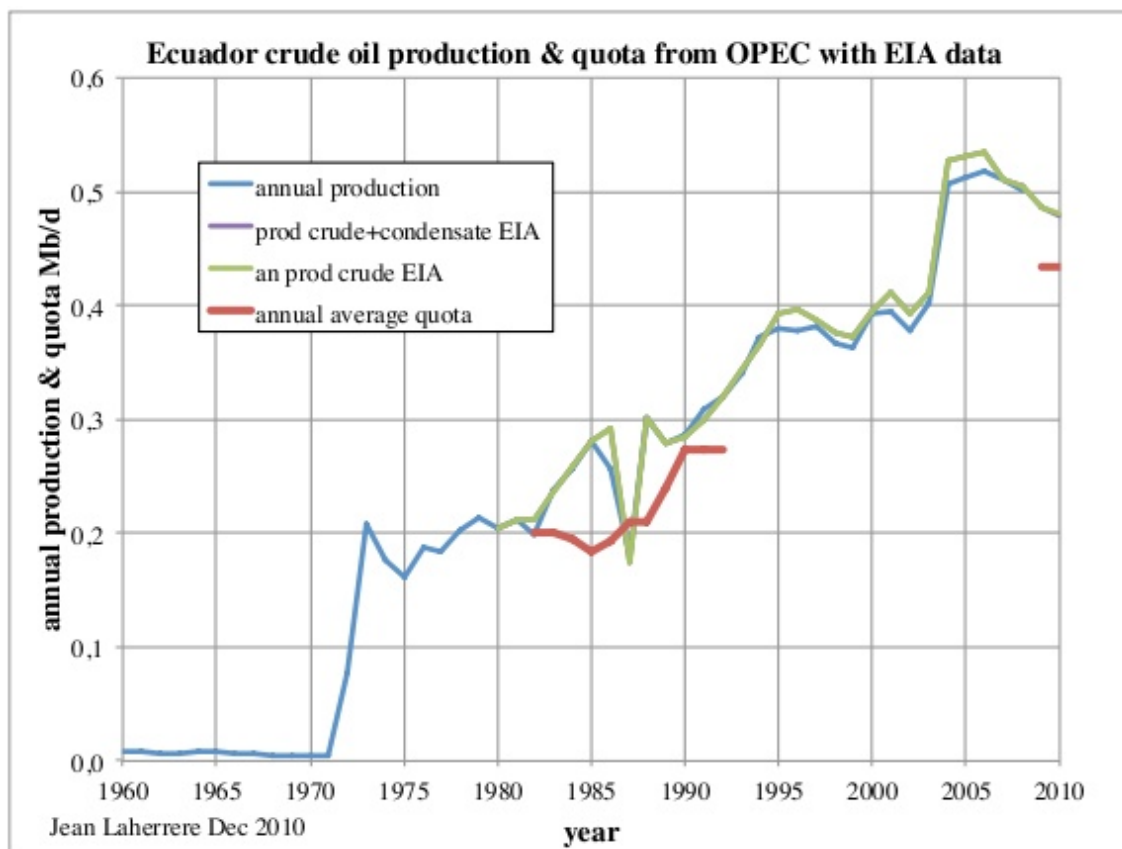
Algeria overproduced from 2003 to 2008. In fact, Algeria produces a large volume of condensates, stripping Hassi R'Mel field's rich natural gas and re-injecting. Algeria's target was increased in 2009 to diminish this overproduction.



Qatar is overproducing.

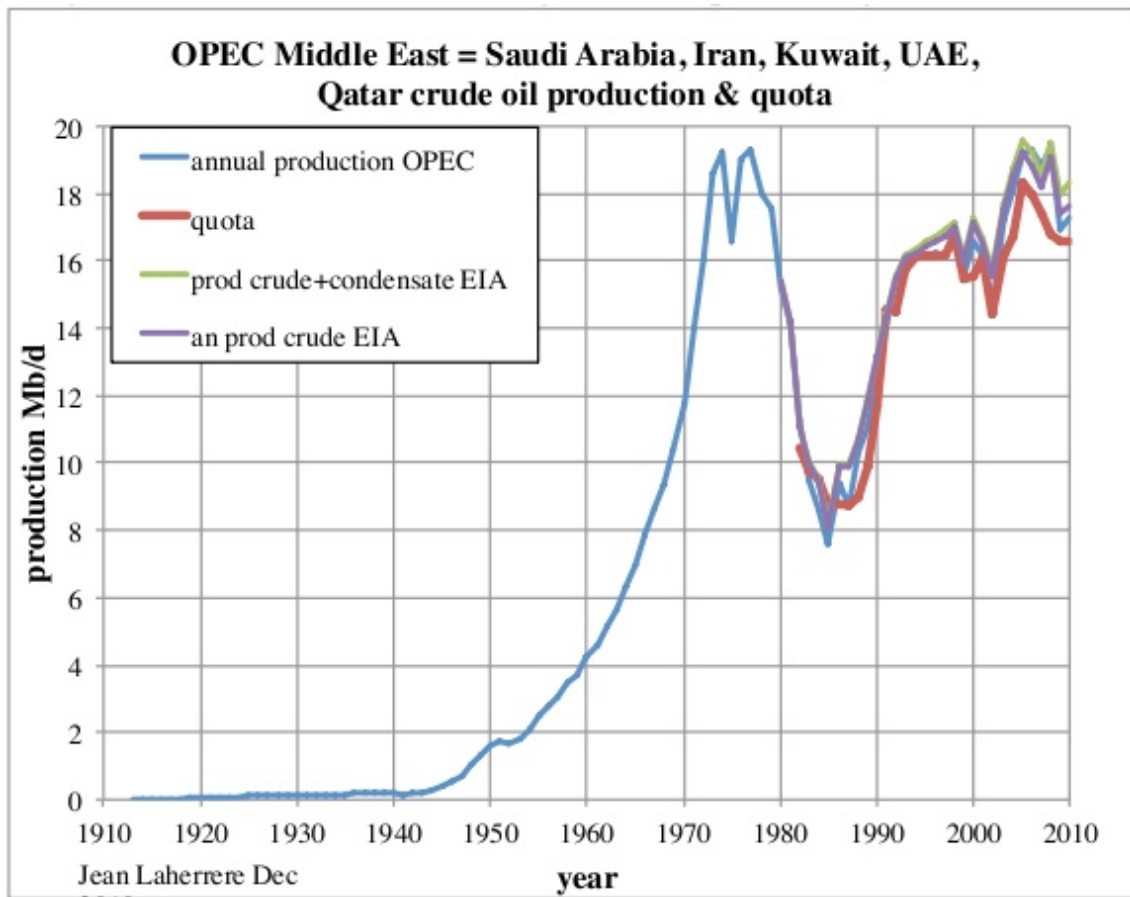


Ecuador rejoined OPEC in 2009 and overproduces!



The OPEC Middle East countries, excluding Iraq, have clearly overproduced their ceilings,

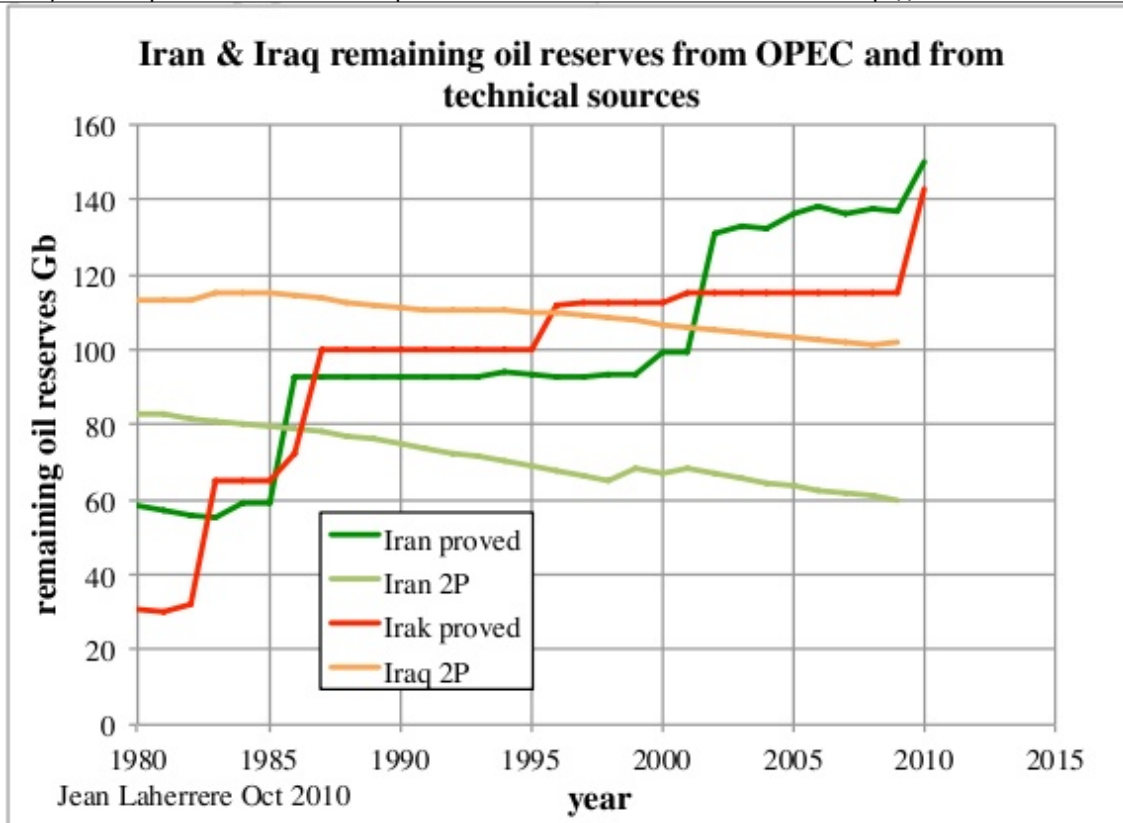
showing that quotas do not matter much as long as the oil price is high.



## Conclusion

Quotas are still the rule in OPEC and haven't changed since January 2009. It is difficult to find out how these ceilings are ascertained.

It is well known now that OPEC increased their so-called proven reserves by 300 Gb from 1986 to 1989 (which Sadad al-Husseini called speculative resources in 2007) because of a fight for quotas in a low price environment. Despite that, quotas are now agreed upon in OPEC meetings without any reference to reserves; the recent October increase of Iraq's reserves followed by Iran's reserves increase indicates that OPEC members are still keen to stay at the same rank. It is not surprising to find that the technical remaining reserves are quite different. In its last estimate of proven reserves (on 6 December 2010), the OGJ did not accept Iran's and Iraq's updated values, waiting for further discussions!



As long as quotas prevail, OPEC's members will cheat on reporting reserves and even on reporting oil production.

## References

- [1] Rafael Sandrea, [OPEC's Next Challenge – Rethinking their Quota System](#), *Oil & Gas Journal*, Volume 101.29, July 28, 2003.
- [2] Ahmad Saleh Alsalem, Subhash C. Sharma and Marvin D. Troutt, [Fairness Measures and Importance Weights for Allocating Quotas to OPEC Member Countries](#), *The Energy Journal*, vol. 18, issue 2, pages 1-22, 1997.
- [3] [Worldwide Look at Reserves](#), *Oil & Gas Journal*, 6th of December, 2010.

A list of all of Jean's posts can be accessed [here](#).



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