

Important graphs on «US, Canada & Mexico oil & gas net import »

-3 papers

Most of the following graphs come from 3 papers

-“Forecasts for US oil and gas production” March

<https://aspofrance.files.wordpress.com/2018/03/lahall19march.pdf>

-“Forecasts for Canada oil and gas production” May

<https://aspofrance.files.wordpress.com/2018/05/canada2018.pdf>

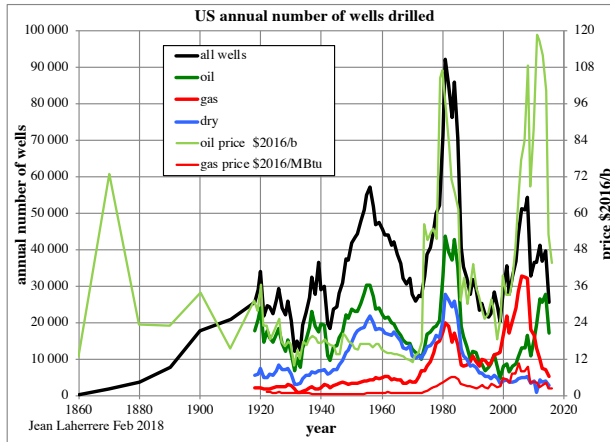
-“US, Canada & Mexico oil & gas production, consumption & net import” May

<https://aspofrance.files.wordpress.com/2018/05/uscame2018.pdf>

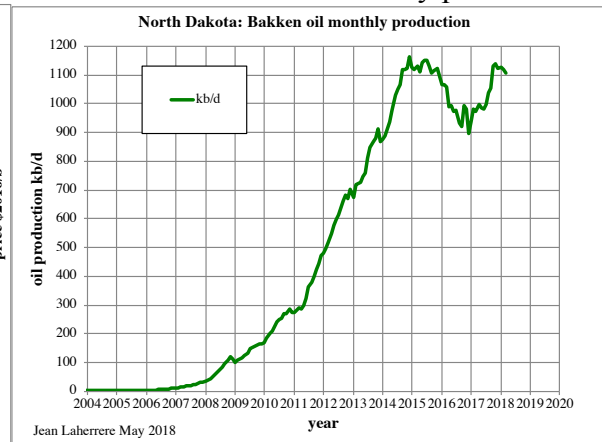
-main assumptions

-several symmetrical curves in the USL48 because a large number of producers (not the case in Alaska)

US annual number of wells drilled



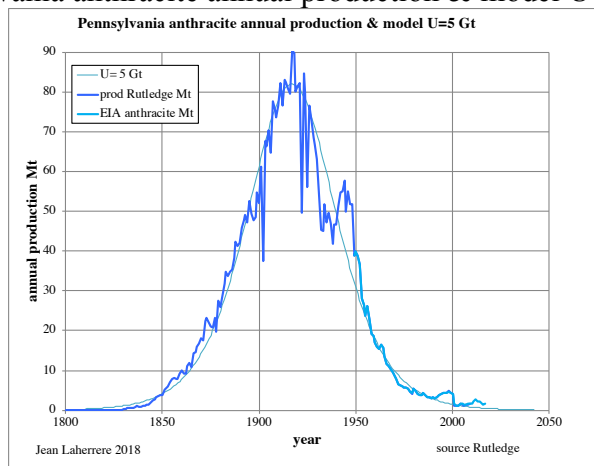
Bakken North Dakota oil monthly production



-estimation of the “ultimate “ (EUR) with HL = Hubbert linearization

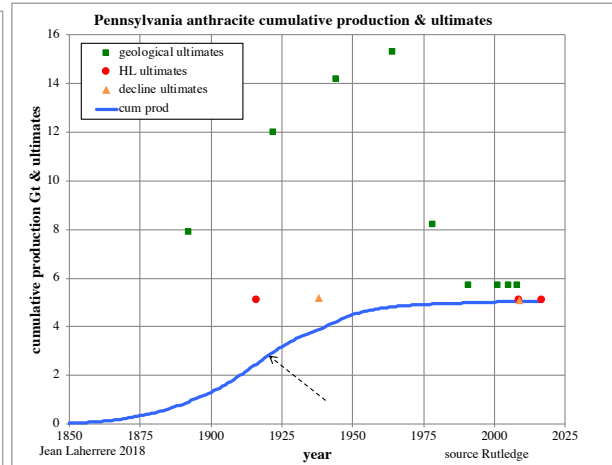
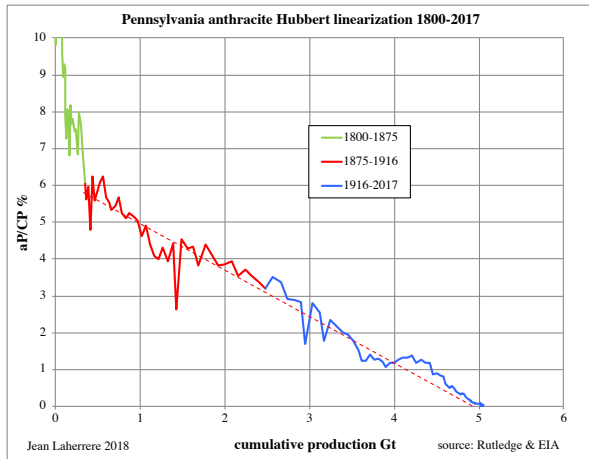
-Pennsylvania anthracite production

Pennsylvania anthracite annual production & model U = 5 Gt



HL of Pennsylvania anthracite production

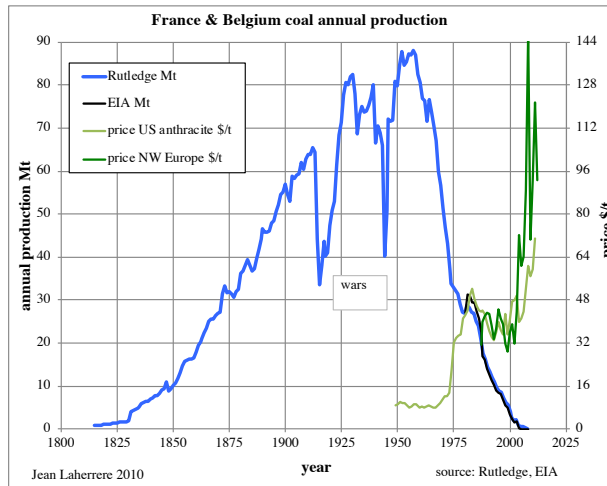
cumulative production and reserves



HL can estimate ultimate reserves in 1916 at 5 Gb = real value, before the peak in 1917. Geological reserves in 1954 at 15.4 Gt were three times the real value!

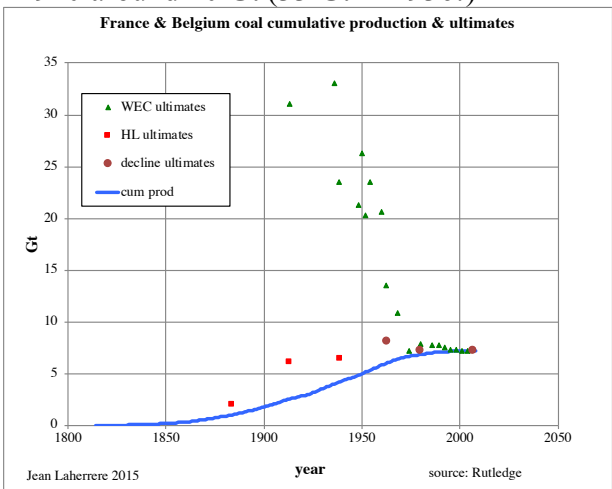
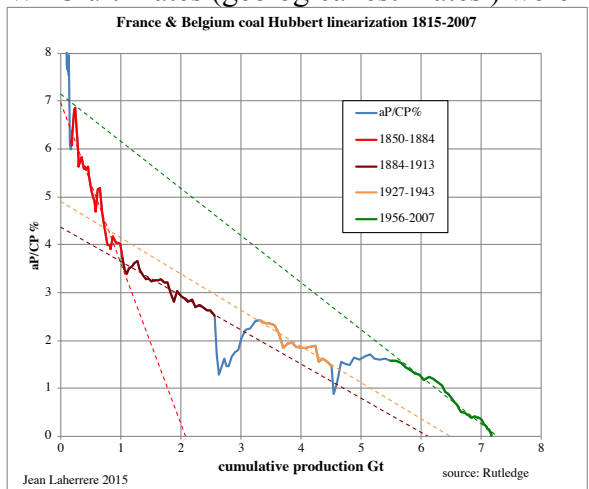
-France & Belgium coal production

France & Belgium coal production started in 1815, peaked in 1957 and stopped in 2008 with a total production of 7.2 Gt



HL of coal production for the period 1927-1947 trends towards 6.3 Gt

WEC ultimates (geological estimates) were in 1920 around 20 Gt (33 Gt in 1936!)



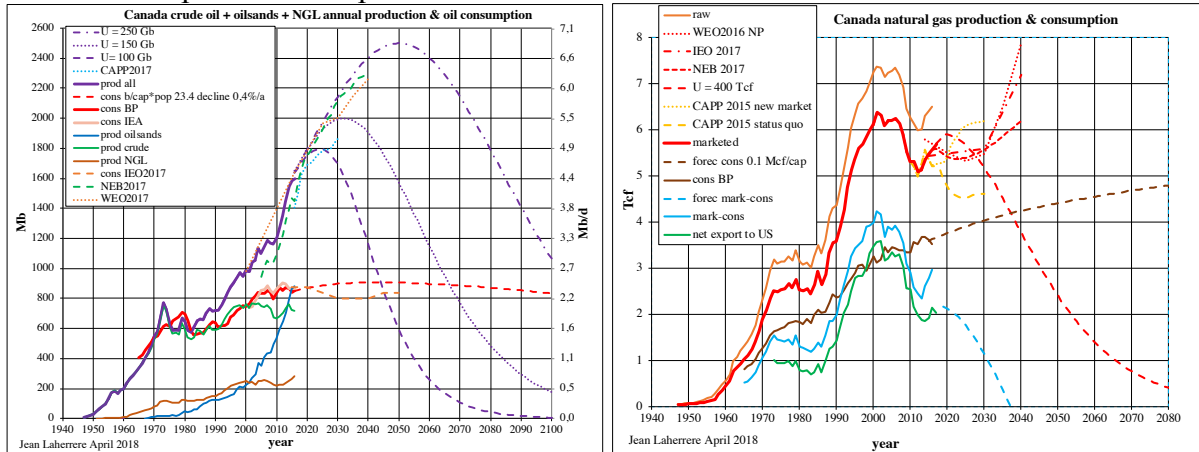
-Canada

Canada crude oil (35-40 Gb) +NGL (14 Gb) +oilsands (50-225 Gb) ultimate estimates can vary from 100 to 150 and 250 Gb depending upon the above ground constraints on oilsands production (pollution and pipeline)

Canada liquids could peak around 2025, 2035 or 2050

Canada oil consumption is in 2016 880 Mb (production = 1600 Mb) and will stay at this level for the next 50 years (consumption per capita 23 b/cap/a declining at 0.4 %/a).

Canada oil export could stop either before 2050 or 2070 or after 2100



Canada natural gas marketed production has peaked in 1979, 2002 and will peak again around 2020 for an ultimate of 400 Tcf

Canada NG consumption has been increasing and will continue for the next 50 years

Canada NG export will stop before 2040.

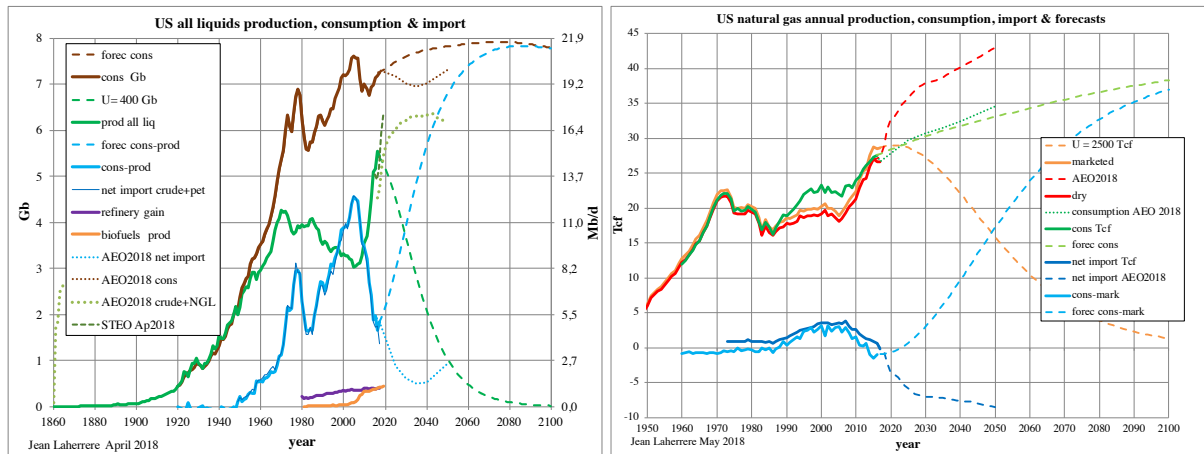
-US

US all liquids production peaked in 1970 and 2015 at 5.5 Gb. For an ultimate of 400 Gb, US production will be around 1 Gb in 2050 against a forecast of 6.2 Gb (crude +NGL) for EIA/AEO 2018 (adding refinery gain and biofuels about 0.8 Gb in 2017 = 7 Gb)

The LTO production peaked in 2015 and its decline is assumed to be as sharp as its increase.

US oil consumption peaked in 1979 and 2005, presently increasing and will peak around 2060

US oil import (consumption less production) peaked in 1977 at 3 Gb and in 2005 at 4.6 Gb, at a low of 1.7 Gb in 2016 and will increase to 6.8 Gb in 2050, against 1 Gb for AEO2018.



US NG marketed production peaked in 1973 at 22.7 Tcf and likely in 2020 at 29 Tcf for an ultimate of 2500 Tcf, being at 16 Tcf in 2050 against 43 Tcf (dry) for AEO 2018

US NG consumption peaked in 1973 at 22 Tcf and after a low at 16.8 in 1983 is in 2016 at 27.5 Tcf, and will increase to 33 Tcf in 2050.

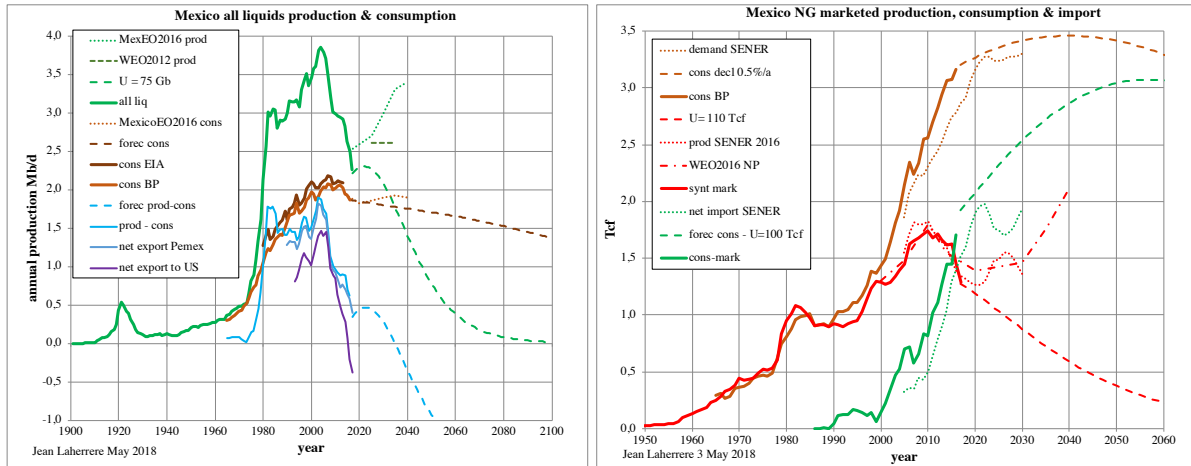
US NG net import peaked in 2007 at 3.8 Tcf and in 2017 is around zero. For an ultimate of 2500 Tcf the net import in 2050 will be 17 Tcf when AEO2018 forecasts a net export of 8.5 Tcf: the difference is huge = 25 Tcf.

An article “Hubbert linearization: a "new" and explicit method to estimate petroleum reserves and its application to U.S. shale gas and oil resources” Jean Laherrere and Charles A.S. Hall is presently submitted to Nature Energy edition.

-Mexico

Mexico all liquids production peaked in 1931 and 2004 at 3.8 Mb/d, but is in 2017 at 2.3 Gb and will for an ultimate of 75 Gb (with new deepwater production) at 1.4 Mb/d in 2040 against 3.4 Mb/d for Mex2016

Mexico oil consumption has peaked in 2008 at 2 Mb/d and will decline to 1.8 Mb/d in 2040. Mexico oil net export has peaked in 1983 and 2004 and likely will turned into import around 2035



Mexico marketed NG has peaked in 1983 and 2010 and for an ultimate of 110 Tcf will decline to 0.6 Tcf in 2040, against 2.1 Tcf for WEO2016NP

Mexico NG consumption peaked in 1985 and after a low in 1989 has increased to 3.2 Tcf in 2016 and will peak at 3.5 Tcf around 2040

Mexico NG net import has increased sharply since 1999 and will reach 2.5 Tcf in 2040 against 1.9 Tcf for SENER.

**-North America
-oil**

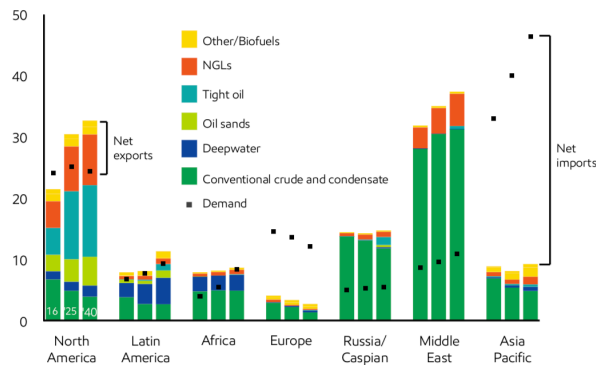
US, Canada and Mexico (North America) are strongly connected with oil and gas pipelines and they must be considered as one unit for export.

Europe is counting on North America oil export in 2040, together with Russia and Middle East

ExxonMobil 2018 outlook for energy forecasts in 2040 about 9 Mb/d of net export from North America with 11 Mb/d net import for Europe

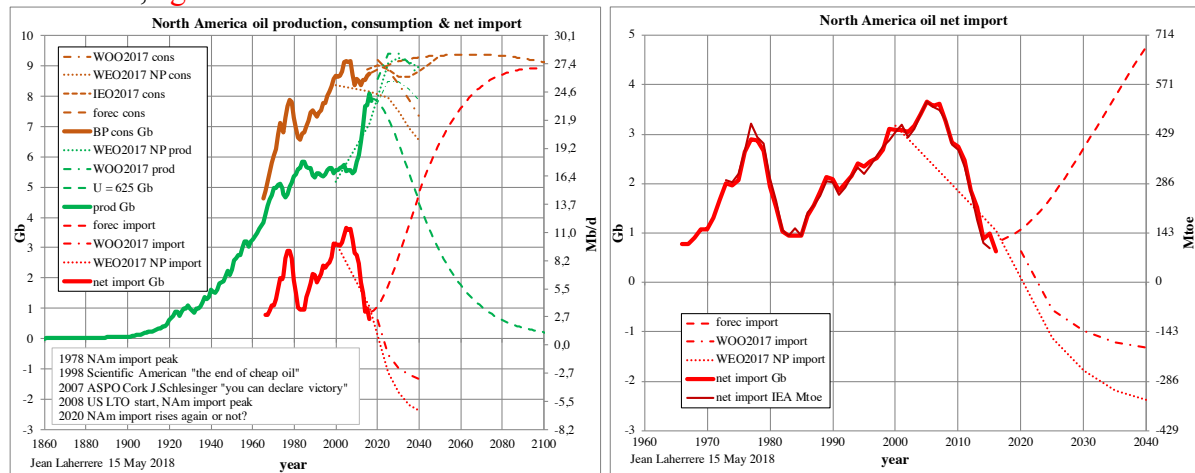
The North America conventional oil is only 4 Mb./d in 2040

Liquids supply highlights regional diversity
By region and sector – MBDOE



NAm oil consumption peaked in 2004 above 9 Gb and is presently at 8.7 Gb, forecasted to stay around 9 Gb for the next 50 years

NAm oil production has peaked in 2016 at 8 Gb and will be at 4.5 Gb in 2040 for an ultimate of 625 Gb, **against the double for WEO2017NP**



NAm oil net import has varied from 1 to 3 Gb from 1965 to 2017, with peaks in 1979 and 2006, but on 3016 at 0.6 Gb. It will be in 2040 at 5 Gb against -2.4 Gb for WEO2017NP: a difference of over 7 Gb! OPEC WOO2017 forecasts a net export of 1.3 Gb.

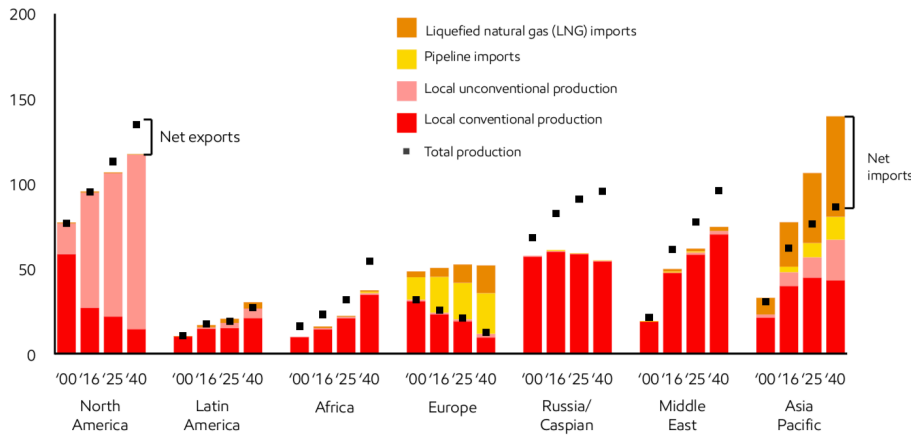
ExxonMobil outlook 2018 forecasts NAm oil net export in 2040 at over 3 Gb (9 Mb/d), more than WEO2017 NP

NAm oil net import in Gb coincides perfectly with net import in Mtoe: for me it means that authors use a constant heat content, because in fact it varies with time!

-natural gas

ExxonMobil 2018 outlook for energy forecasts in 2040 a NAM net export of 20 Gcf/d (7 Tcf) and for Europe a net import of 14 Tcf (LNG = 5 Tcf)

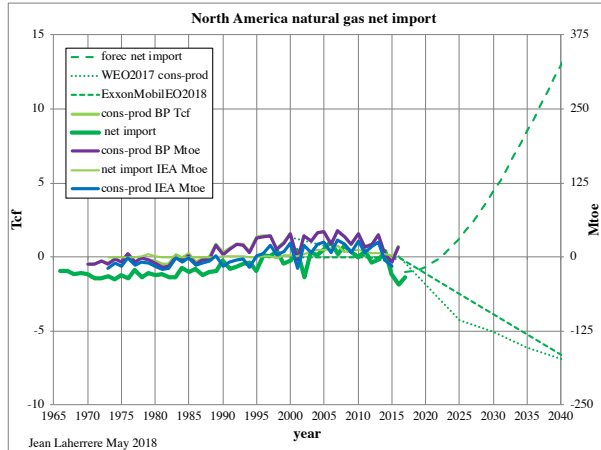
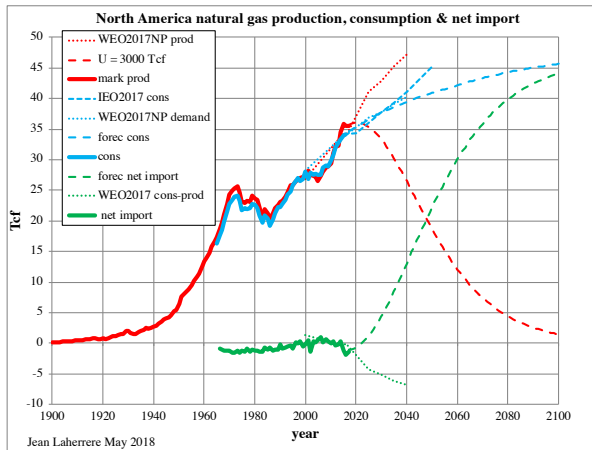
BCFD



NAM conventional NG peaked in 2000!

NAM NG production peaked in 1973 and is presently plateauing at 36 Tcf : it is forecasted for an ultimate of 3000 Tcf in 2040 to be at 26 Tcf against 47 Tcf for WEO2017NP

NAM NG consumption was close to NG production from 1965 to 2017; it is forecasted to be in 2040 around 40 Tcf

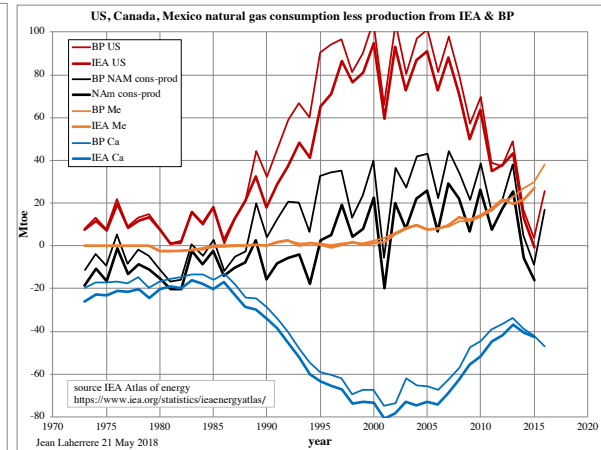
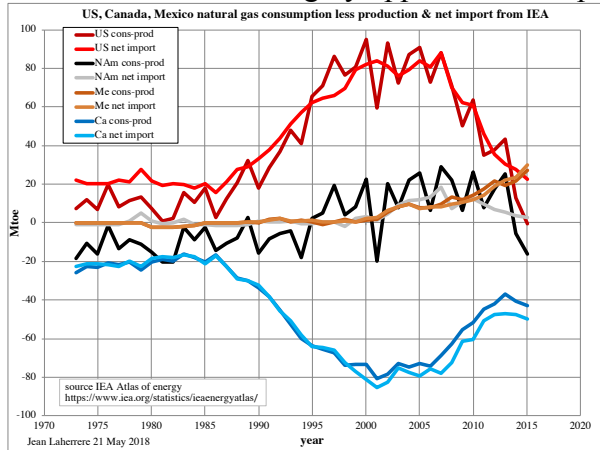


NAM net import is forecasted in 2040 to be 13 Tcf against -7 Tcf for WEO2017NP

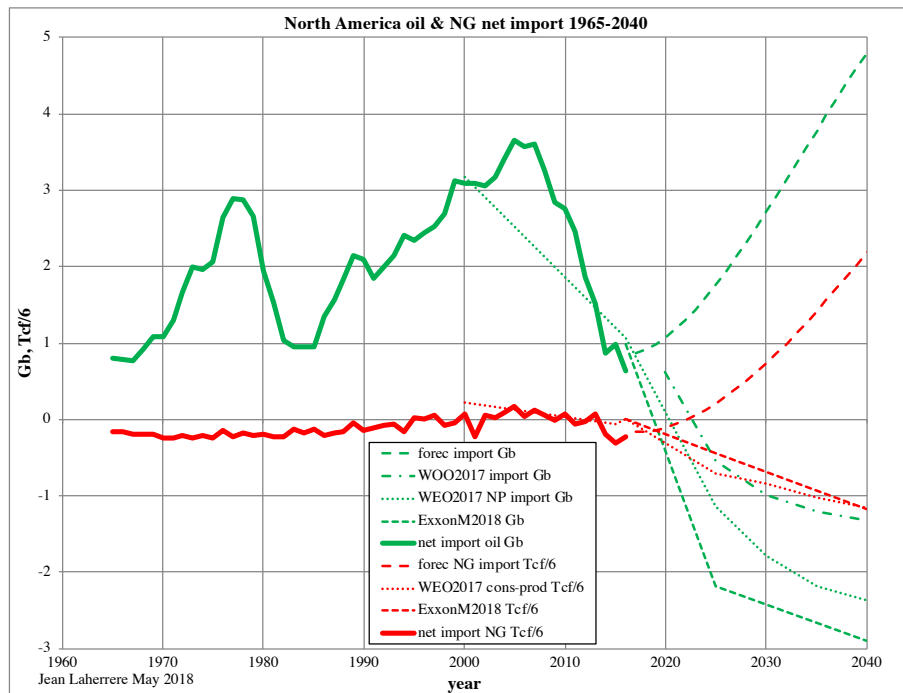
NAM NG net import in Gb does not agree with net import in Mtoe for the zero years.

Net NG net import as consumption less production for US, Canada & Mexico in Mtoe

US and Canada are roughly opposite for the period 1973-2013.



-Conclusion



IEA, as ExxonMobil, forecasts that North America oil & gas net export will exist in 2020, increasing to 2040, thanks to shale plays.

Our forecast is that from 2022 North America will be forced to import oil and gas.

Donald Trump's pressure on Angela Merkel on Russian North Stream II is based on wrong forecasts.

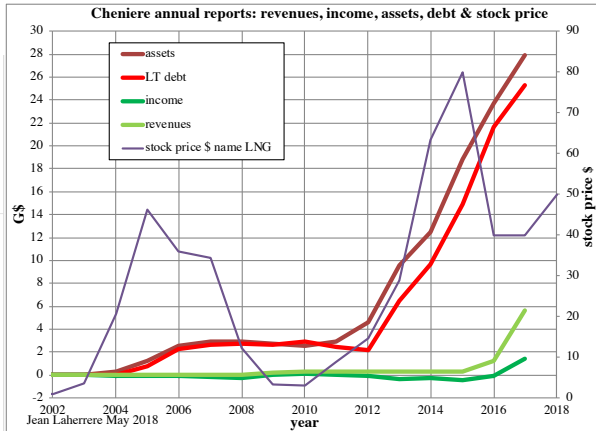
-Annex

-Main US shale oil & gas producers or exporters

-exporter

-Cheniere = importer turning into exporter

Cheniere share = symbol = LNG

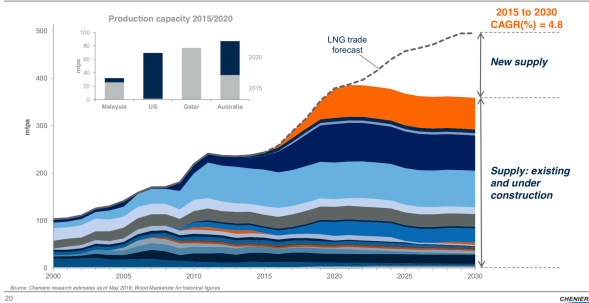


First Sabine plant was designed for gasification of import LNG, but later changed into liquefaction of export NG.

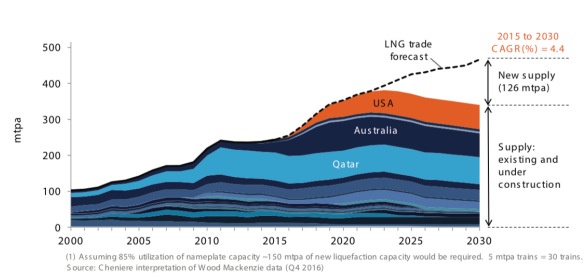
Charif Souki, founder of Cheniere in 1983, highest CEO salary in 2013, was ousted in 2015 by Carl Icahn. Since 2016 he founded Tellurian Inc.

Cheniere forecast since 2017 a strong US LNG trade, steady from 2020 to 2040 about 70 Mt/a
Cheniere Presentation May 2018 AR 2016

LNG Supply v. Demand Forecast Supportive of Long-Term Growth



LNG SUPPLY - DEMAND GAP OPENS POST 2020



Cheniere Energy had a subsidiary “Oil and Gas Exploration, Development and Exploitation Activities” with an office in Paris, France.

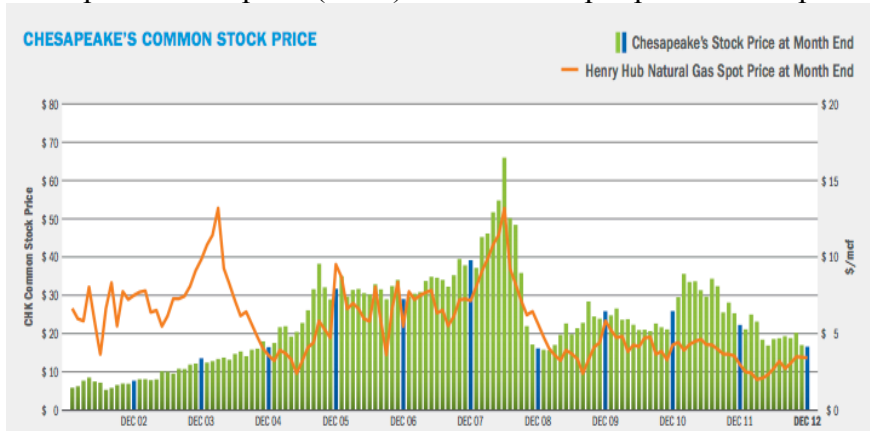
Jean-Marie Bourdairre was advisor to the President of Cheniere Energy (in his CV in ASPO France)

-producers

-Chesapeake

Chesapeake was founded in 1989 by Aubrey McClendon: he was a land-man and he promoted fracking.

Chesapeake stock price (CHK) close to HH spot price for the period 2004-2010



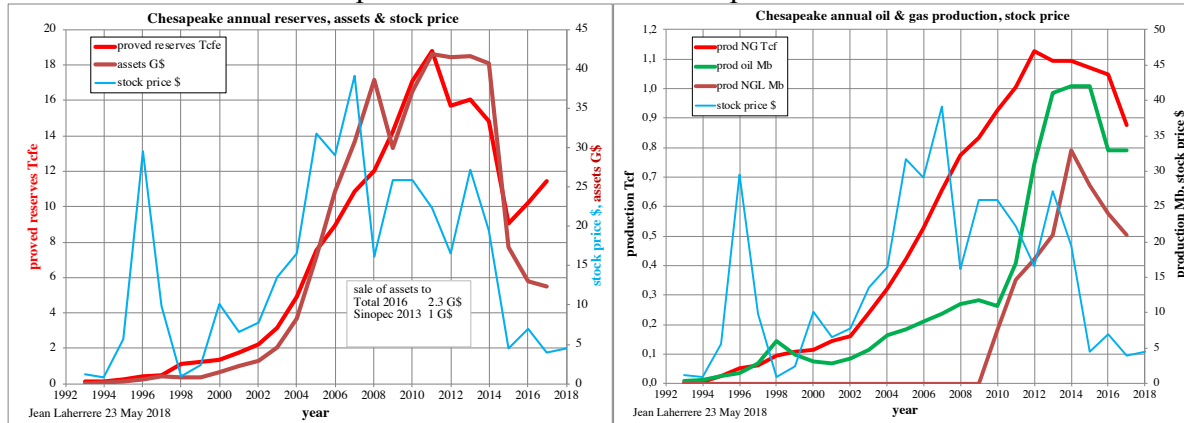
Chesapeake stock price peaked in 1996, 2007 and 2014



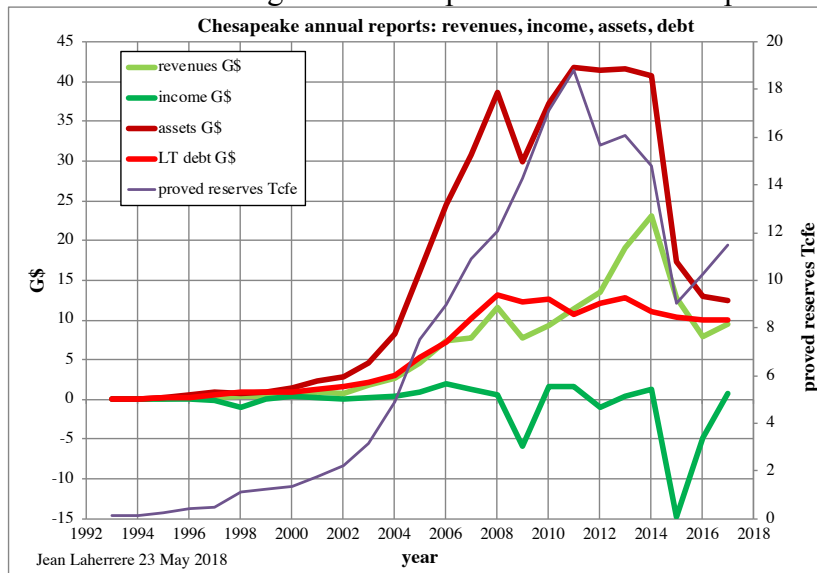
McClendon was in 2008 the highest paid CEO, but in 2013 Chesapeake's board ousted him as CEO, after a series of conflict-of-interest allegations and a huge wrong-way bet on natural gas prices (Carl Icahn was on the board). The next day, he started a new company "American Energy Partners". In 2015 American Energy, which was struggling under heavy debt, still-low gas prices, and growing investor concern about his legal battle with Chesapeake removed him of his positions. On March 1, 2016, McClendon was indicted by a federal grand jury on charges of conspiring "to rig bids for the purchase of oil and natural gas leases in northwest Oklahoma. The following day, he died, driving, without seat belt at high speed, his car into a wall: police reported that it was an accident!

Chesapeake is the second US NG producer after Exxon Mobil for the period 2011-2017, but it was first in 2010 before ExxonMobil bought XTO in 2010 for 36 G\$ (11 G\$ debt)
 CHK assets peaked in 2011-2013 and dropped after the sale to several majors (BHP 4.8 G\$ for Arkansas, Total 2.3 G\$ for 25% Utica and later 0.5 G\$ for 75%, Sinopec 1 G\$ for Oklahoma).

CHK assets fell in 2015 as proved reserves and as stock price



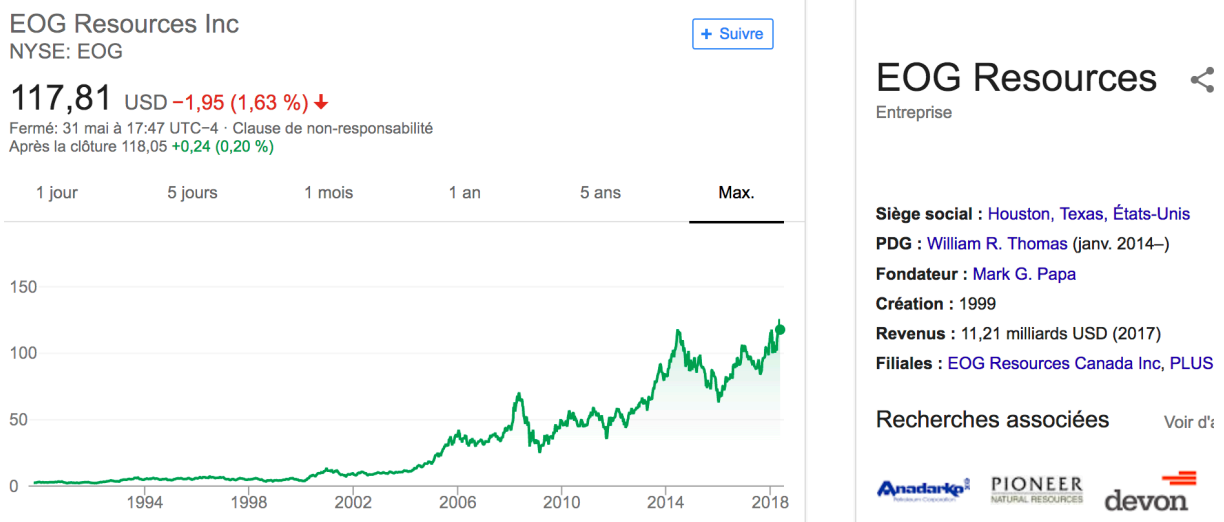
CHK net income was zero or negative for the period 1993-2017 despite the rise of assets.



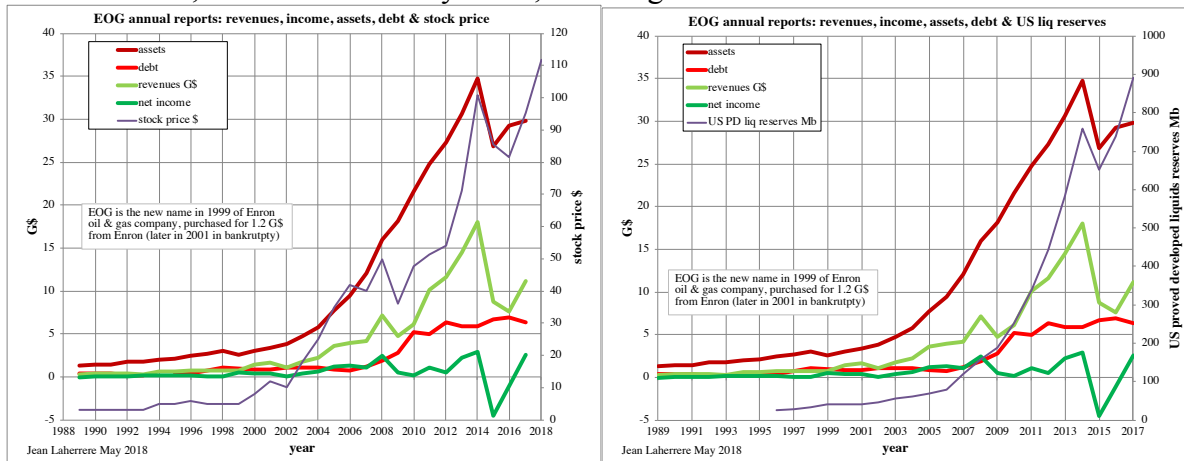
-EOG

EOG is the new name given in 1999 by Mark Papa president & CEO (32 years with Enron)) of Enron Oil & Gas Company, purchased for 1.2 Gb from Enron (which fell in bankruptcy in 2001 due to a financial scandal: it was the largest bankruptcy at that time and caused the fall of Arthur Andersen).

EOG stock price at 2.5 \$ in 1990 (before 1999 it was Enron oil & gas Company), 4 \$ in 1999, displaying up to 2018 (118 \$ 1st June 2018) a considerable growth (50 times from 1990 and 30 times from EOG start)



Assets increased significantly from 2000 to 2017 as stock price and as US liquids reserves, less than revenues, but net income stays low, even negative in 2015.



Mark Papa retired in 2013 from EOG and in 2015 founded "Centennial Resource Development".

In Nov 2017 Mark Papa divided by half the optimistic EIA US oil production growth forecast, based on GOM decline, lack of drilling locations in Bakken and Eagle Ford, frac hits (JPT Nov 2017 from Schlumberger, Shell, Chevron & Statoil studies) and “completion technology can’t cure bad rock” (it is not Silicon Valley)

EOG CEO WR Thomas forecasts EOG growth for decades to come in Feb 2018

EOG is a high-return organic growth company poised to be a leader in both returns and growth for decades to come.

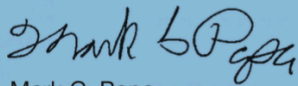


William R. Thomas
Chairman and Chief Executive Officer

February 27, 2018

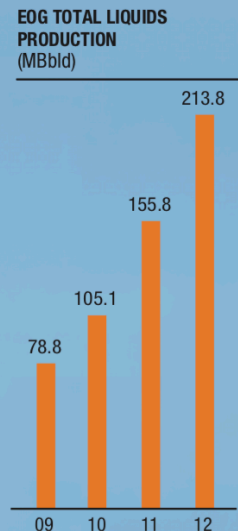
But Mark Papa was saying the same thing in 2013, as in 2007: growth for ever

At EOG, we take pride in our leadership in the evolution of the North American oil and gas industry, first in the natural gas shale boom and, more recently, at the helm of pioneering the shale oil revolution. We will continue to do our part in helping to strengthen the U.S. economy, while enhancing financial returns for EOG’s stockholders.



Mark G. Papa
Chairman and Chief Executive Officer

February 22, 2013



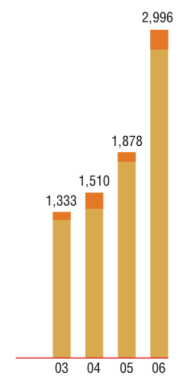
Entering 2007, EOG’s balance sheet is very strong; we have both an attractive growth portfolio and a demonstrated ability to maintain cost control. Therefore, we believe EOG is positioned to continue to achieve both favorable debt-adjusted growth per common share and excellent reinvestment rates of return for our shareholders.



Chairman and Chief Executive Officer

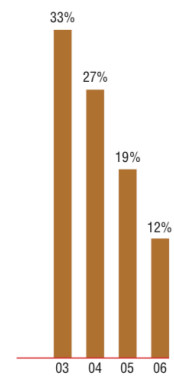
February 26, 2007

EOG Total Exploration and Development Expenditures (\$ Millions)



Trinidad/United Kingdom/Other International
United States and Canada

EOG Year-End Debt-to-Total Capitalization Ratio



(2) Refer to reconciliation schedules on page 58.

Why is now Mark Papa pessimistic on LTO?

-Centiennial Resource Development

Centiennial Resource Development is founded in 2015 by Mark Papa (changing the name of Silver Run Acquisition Corporation) with activities only in the Delaware (Permian) Basin
Centennial stock price stays flat for the last 2 years below 20 \$

Centennial Resource Development Inc
NASDAQ: CDEV

[+ Suivre](#)

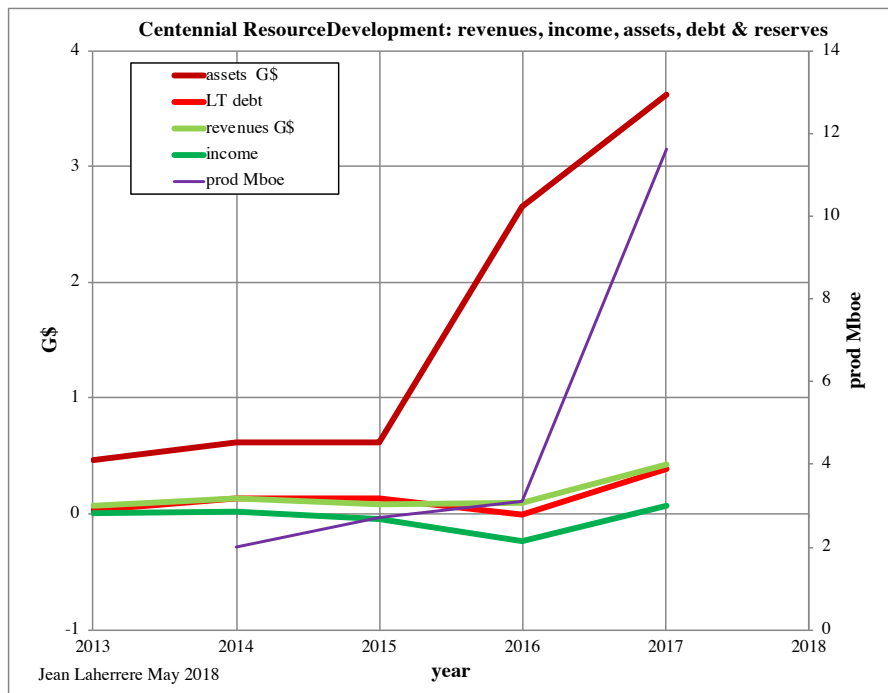
16,92 USD -0,68 (3,86 %) ↓

Fermé: 1 juin à 16:19 UTC-4 · Clause de non-responsabilité
Après la clôture 16,92 0,00 (0,00 %)

1 jour 5 jours 1 mois 1 an 5 ans **Max.**



Papa wants to keep debt low, but if assets& production increase, net income stays around zero.



But it is difficult to explain new Mark Papa's stand on LTO.