

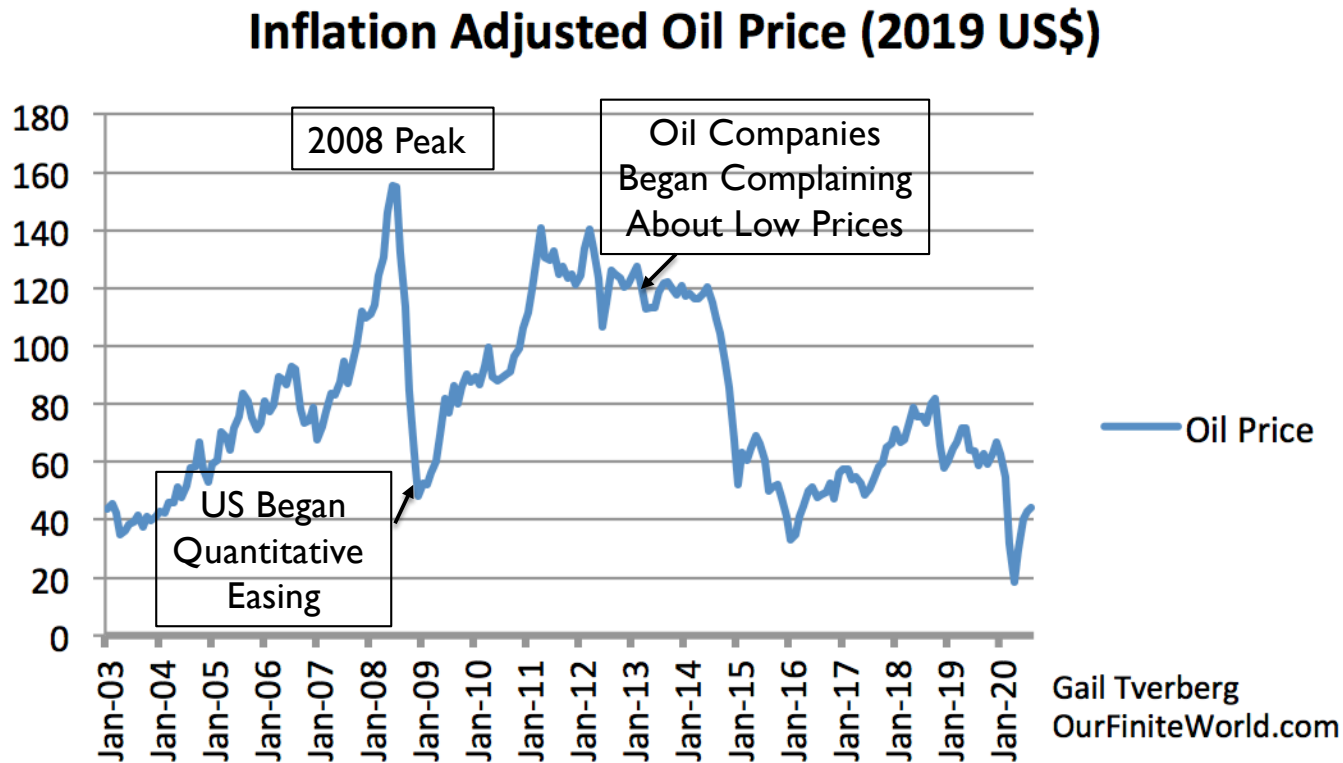


# Energy Economics Update/ Perspective 2020



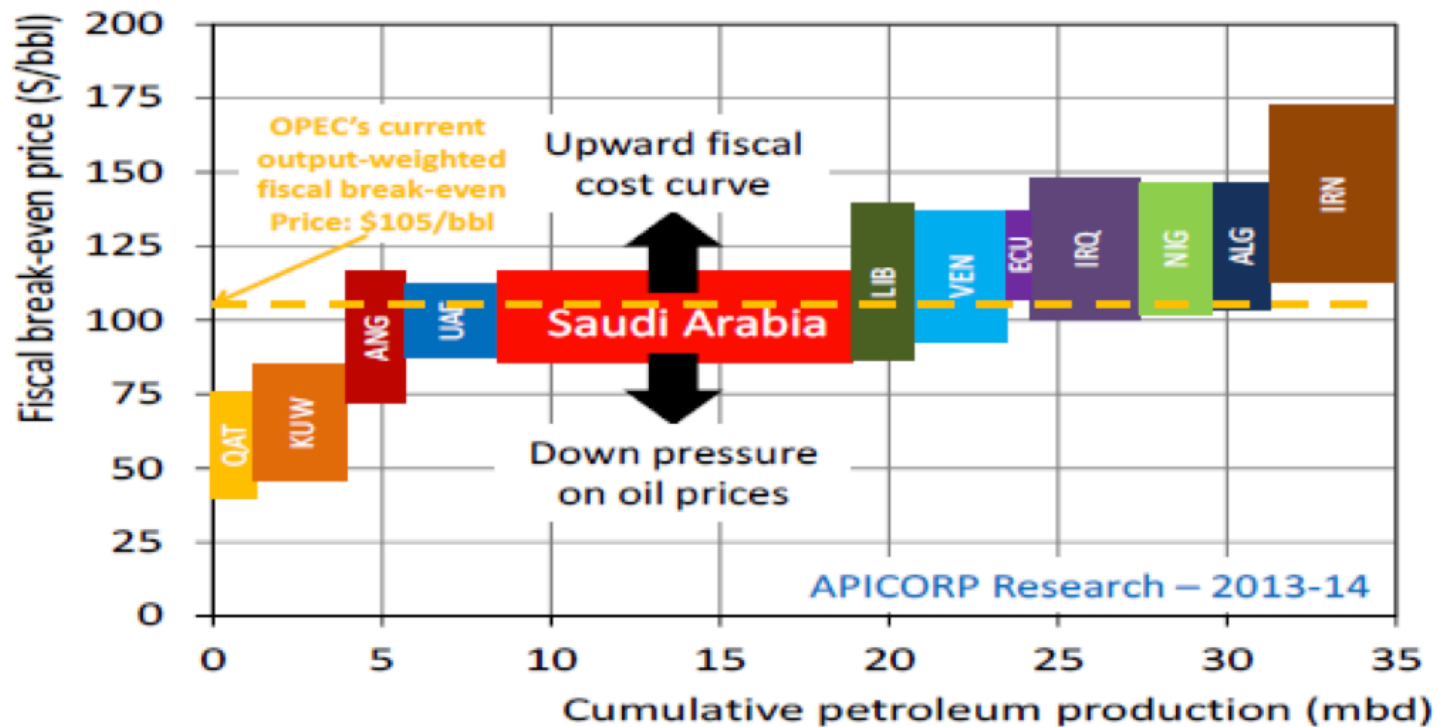
Gail Tverberg, October 12, 2020, SSP IEEE WiSEE

Issue #1) Oil prices have been too low for producers since 2012. At today's prices, 2012 level was \$120 per barrel.



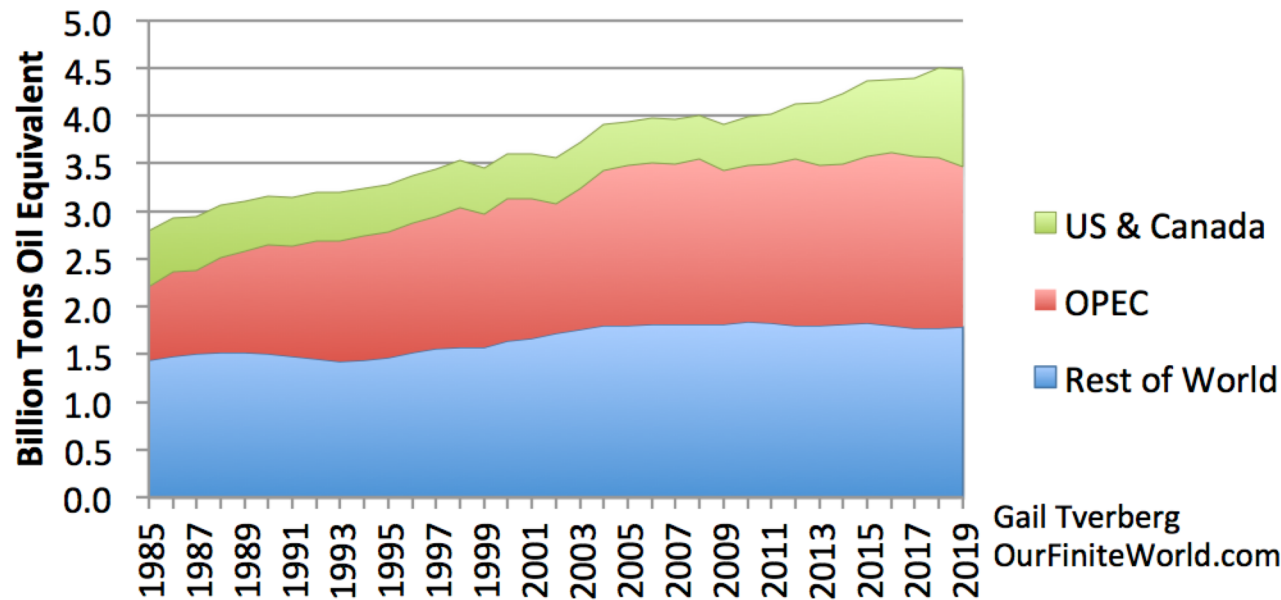
#1) Even OPEC oil producers need high prices to collect enough tax revenue for food subsidies; jobs programs.

**Figure 11: OPEC Fiscal Break-even Prices**



Issue #2) Oil production may head into terminal decline if oil prices cannot be raised to the \$100+ level

**World oil production excluding US & Canada has been on a bumpy plateau since 2005**



## #2) Oil producers need higher prices to match their higher cost of production.

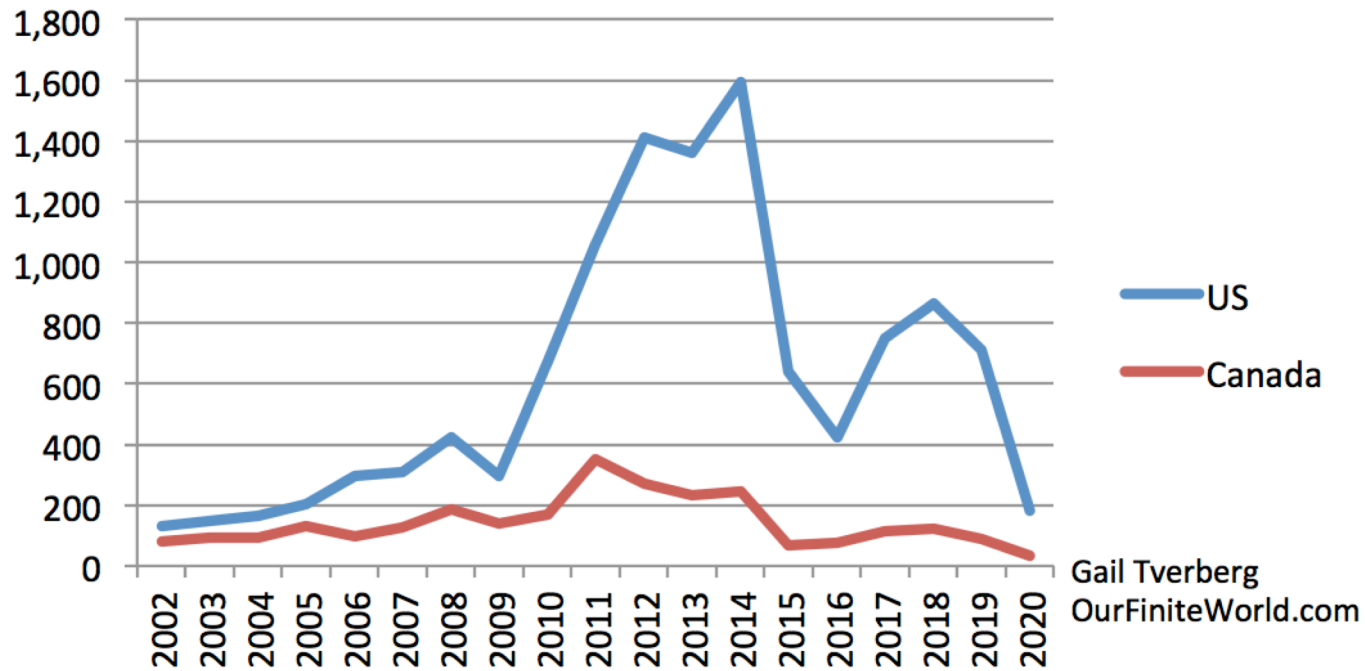
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- ▶ OPEC needs much higher prices to fund its programs
  - ▶ Needs higher funds for higher taxes
  - ▶ Danger of governments being overthrown
  - ▶ Likely much less production if warring factions in country
- ▶ Both US and Canada have added oil from shale and from bitumen since 2005
  - ▶ Many bankruptcies
  - ▶ Banks no longer willing to lend to oil and gas companies
  - ▶ Cutting back on investment in new drilling
- ▶ Even the “Rest of World” producers need high prices, to offset depletion

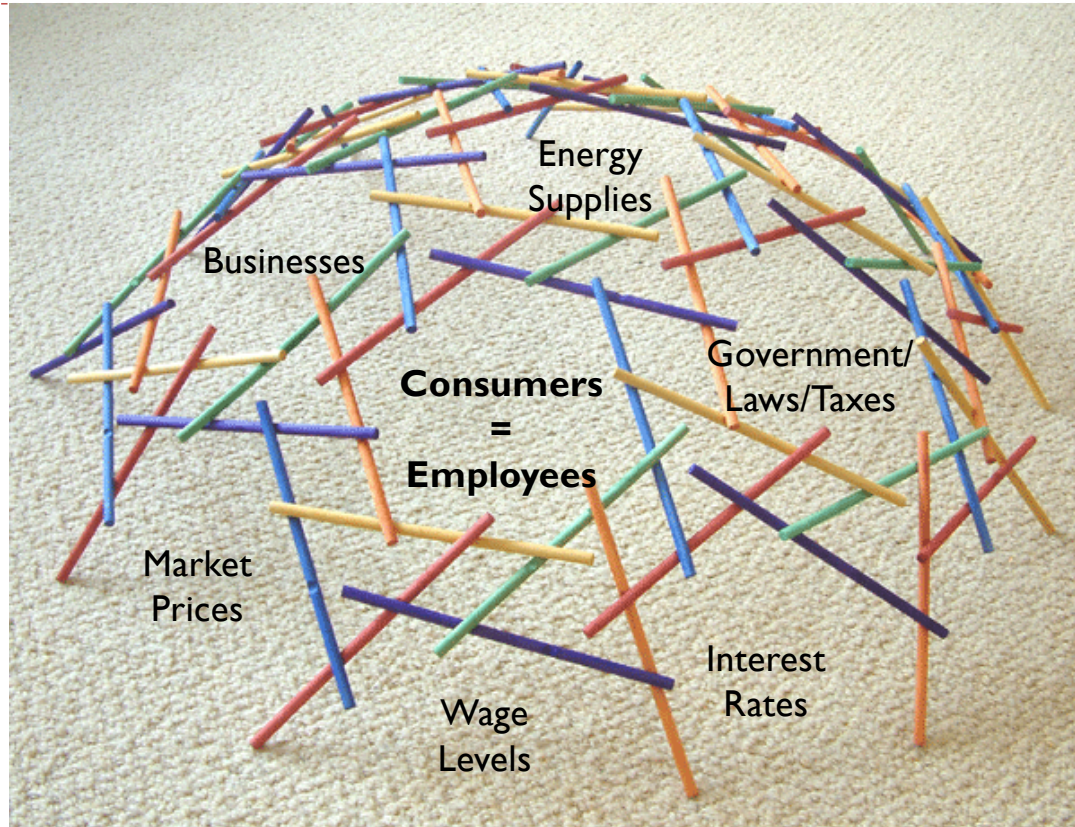
#2) Drilling rigs are down dramatically in 2020, likely leading to lower oil production in 2021 and beyond

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**Drilling Rig Count at End of September**



### Issue #3) Low oil price problem comes from consumers being unable to purchase economic output



### #3) Many reasons why potential consumers cannot purchase the output of the economy:

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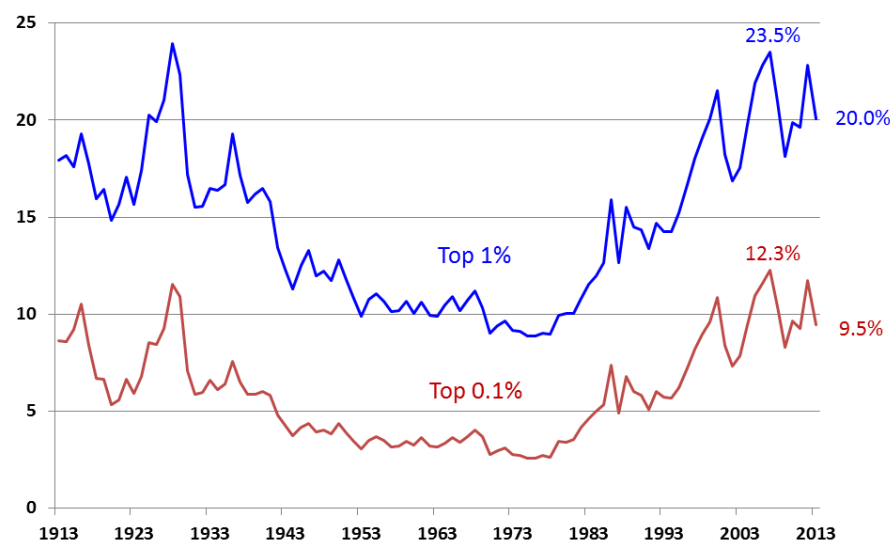
- ▶ Workers often have very low wages
  - ▶ Can't afford homes, vehicles, restaurant meals
  - ▶ Globalization contributes to low-wage problem
  - ▶ Paying high wages to high tech workers leaves less for those less skilled
- ▶ Loans aren't as helpful to low-wage workers
  - ▶ Interest rates are likely to be high
- ▶ Robots sometimes replace workers completely
- ▶ COVID shutdowns make problem much worse
  - ▶ Many more unemployed
  - ▶ Rich can no longer purchase overseas vacations; need fewer fancy clothes
  - ▶ Like taking out sticks supporting dome



### 3) Low wage problem is similar to the late 1920s

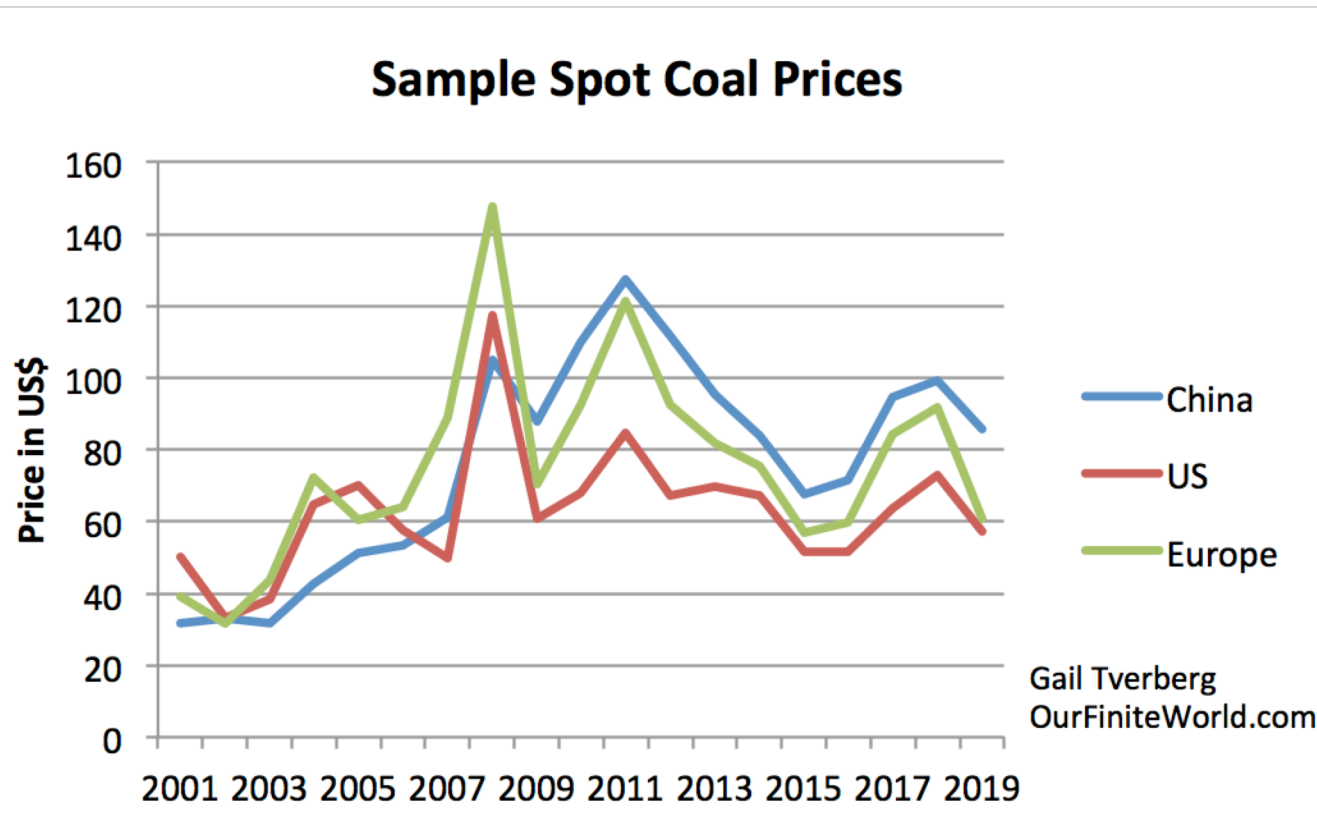
- ▶ Fix is likely to take years; much pain
- ▶ We are likely past “peak oil”; oil production may fall for years

U.S. Income Shares of Top 1% and Top 0.1% Households – Incl. Capital Gains (1913-2013)



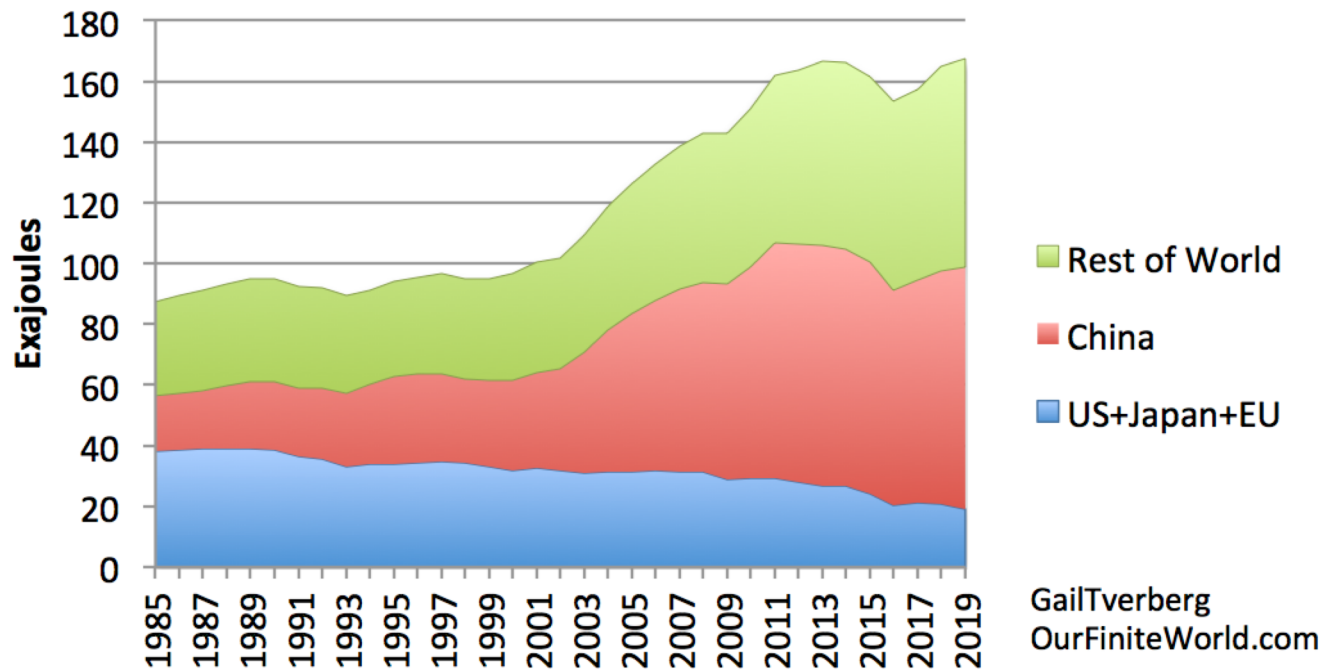
Source: Piketty & Saez – January 2015

Issue #4) We seem to be reaching “peak coal” as well. Low price problem affects coal, too.



#4) World coal production has been on a bumpy plateau since 2012. China's coal production flat since 2012.

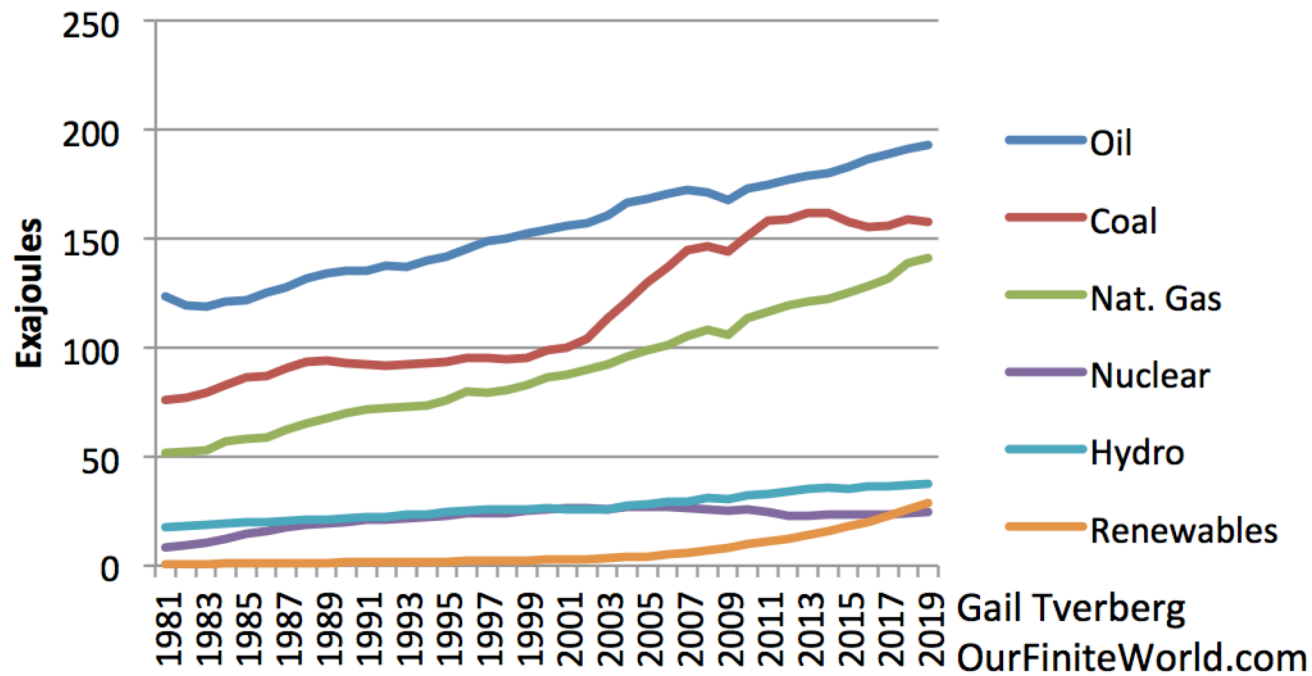
**World coal production is on a bumpy plateau.**



Issue #5) Coal and oil are the world's top energy sources.  
We have a major problem without them!

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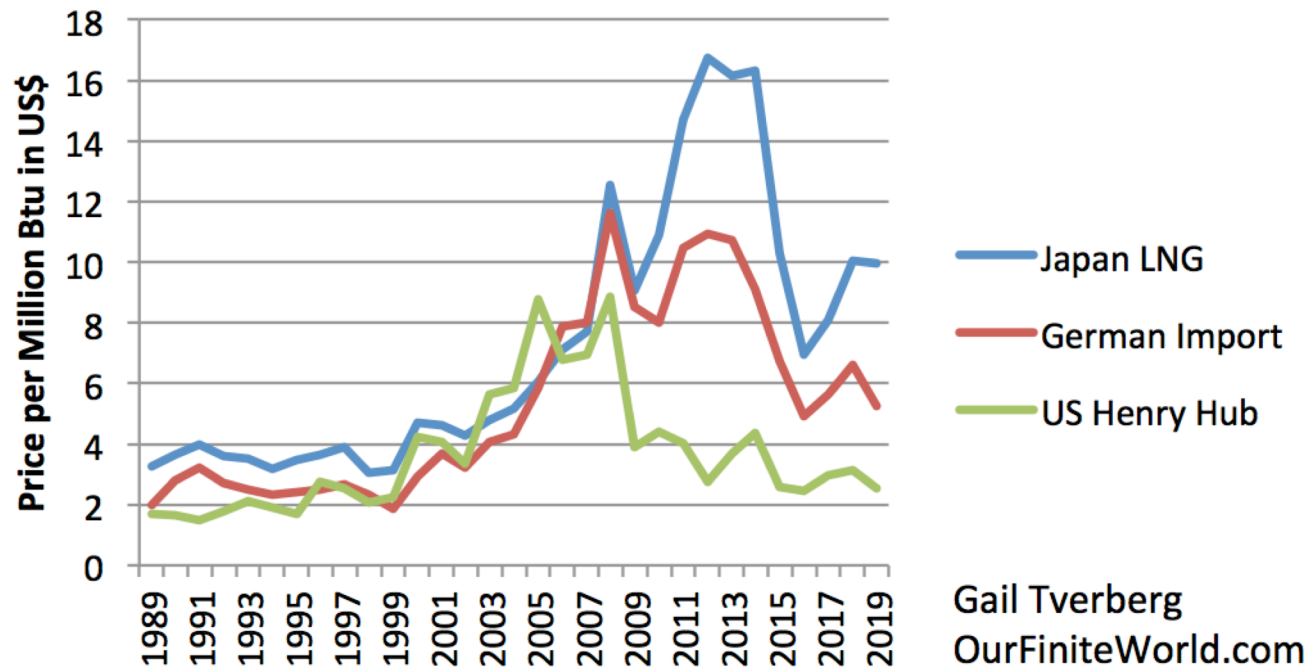
**World Energy Consumption by Type**



#5) Difficult to depend on natural gas instead. Its prices have been low in recent years. 2020 lower yet!

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### Historical Natural Gas Prices



## Issue #6) The economy needs a bail-out similar to the growth of oil production after World War II

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- ▶ Oil: Very inexpensive to produce, initially
- ▶ Value to customers was very much higher
  - ▶ Sales price could be high above the cost of production
  - ▶ Very high “energy return on energy investment”
  - ▶ Opposite of “needing a subsidy”
- ▶ Oil profits benefited economy as a whole
  - ▶ High taxes helped governments; high dividends helped pensions
  - ▶ Easy to add new jobs, roads, electricity transmission lines
- ▶ Without a new, exceedingly inexpensive-to-produce energy source, the economy will tend to shrink back and may even collapse

## Conclusion: The world economy really needs a new, very inexpensive energy source now

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- ▶ Current economic situation makes it difficult to reach this goal
  - ▶ Economy is doing poorly
  - ▶ Overall “energy return” of today’s fuel mix seems to be too low
  - ▶ Makes it difficult to fund temporary subsidies for alternatives
- ▶ Economic crisis may take years to resolve
  - ▶ Energy innovations may have a chance in the rebuilding stage
- ▶ Perhaps hope?
  - ▶ Recent headline: [UAE Bets Big on Space Tech to Diversify from Oil](#)
  - ▶ Funds for research may be available, even if not for full implementation