

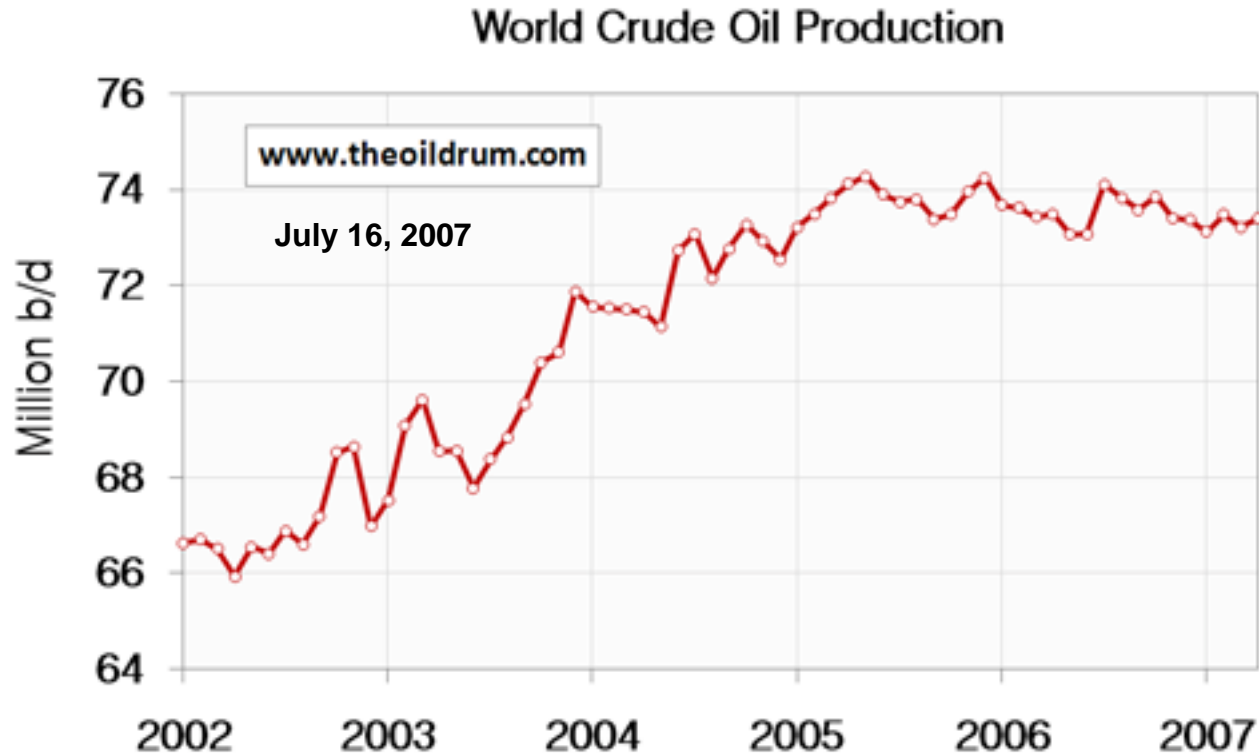
Peak Oil Will Affect Us All

Ari Berenbaum, Abraham Palmer, Daniel
Morris and NCPowerdown

Why Peak Oil will soon arrive and Gasoline Prices will Rise

- Worldwide, less oil produced now than 3 years ago
- Almost half of recoverable oil already produced
- Oil costs more to extract leaving less energy for use
- Oil Exporting nations use more oil decreasing that available for export
- Decline of production in existing fields

To Date The World Oil Production Peak Occurred in June of 2005



World Crude Oil Production January 2002-April 2007
Source Energy Information Agency, US Dept Energy

US Peak Oil Production Occurred in 1970

- US had been world's largest producer
- Peak came as a surprise to most
- Had been predicted by Hubbert in 1956

Very simple logic:

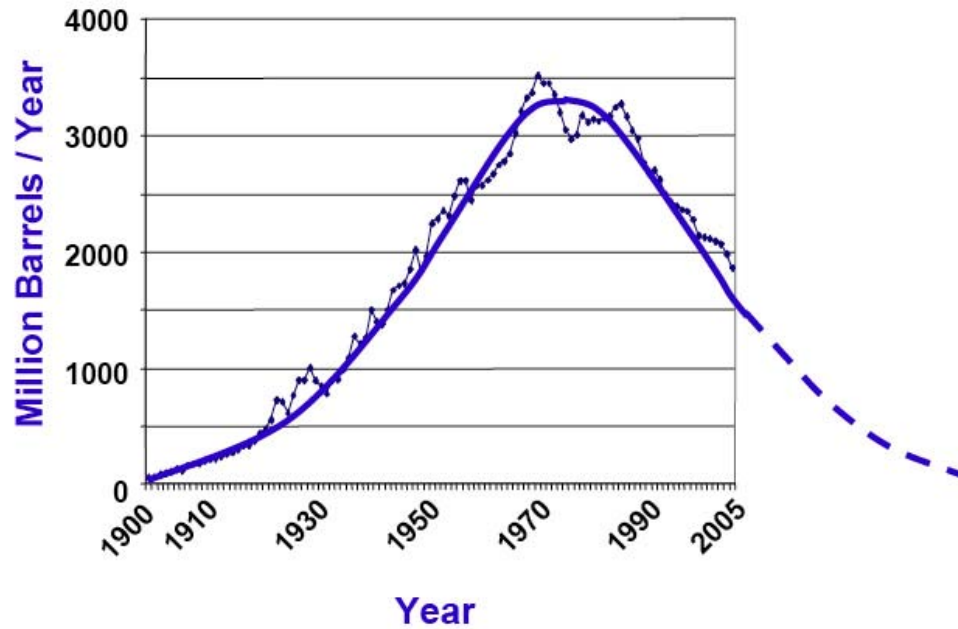
Oil is finite and must peak

Shape of peak will be bell curve

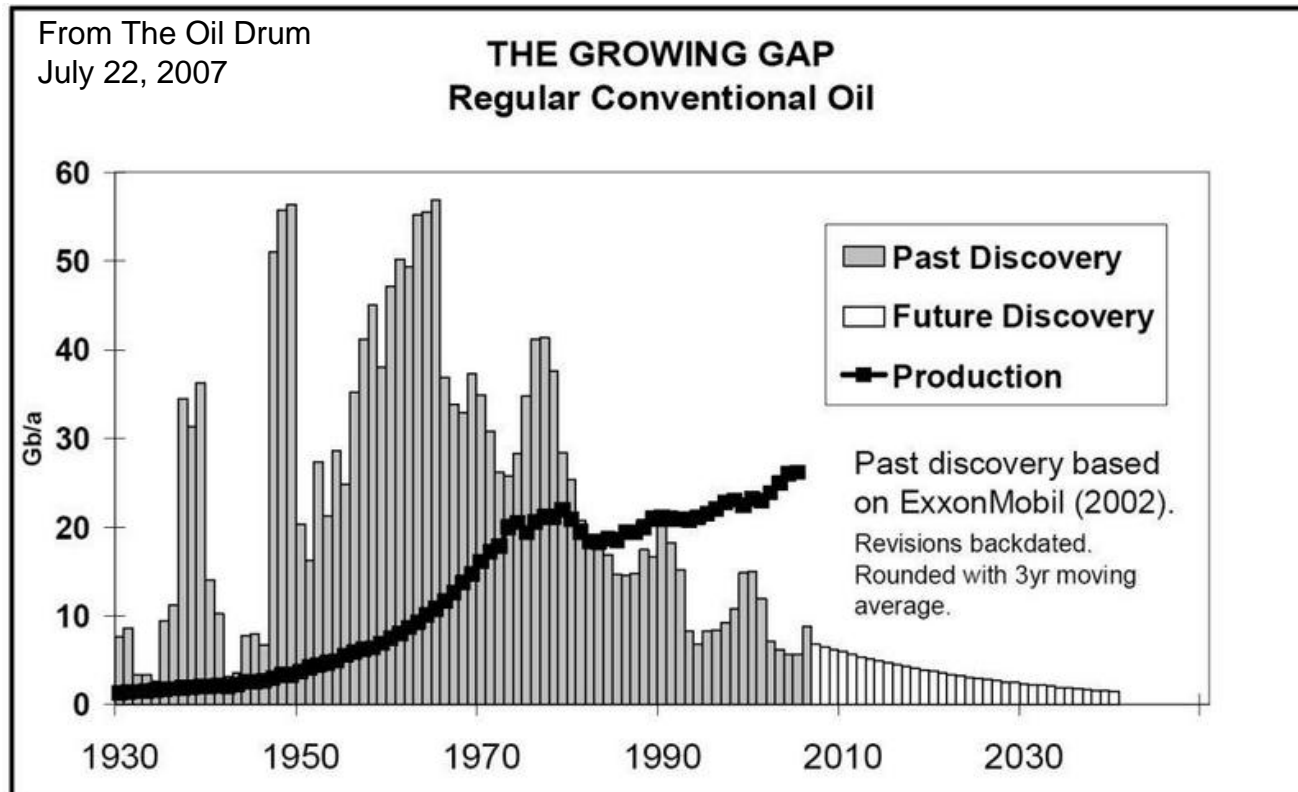
Center of curve when half reserves used

US Crude Oil Production

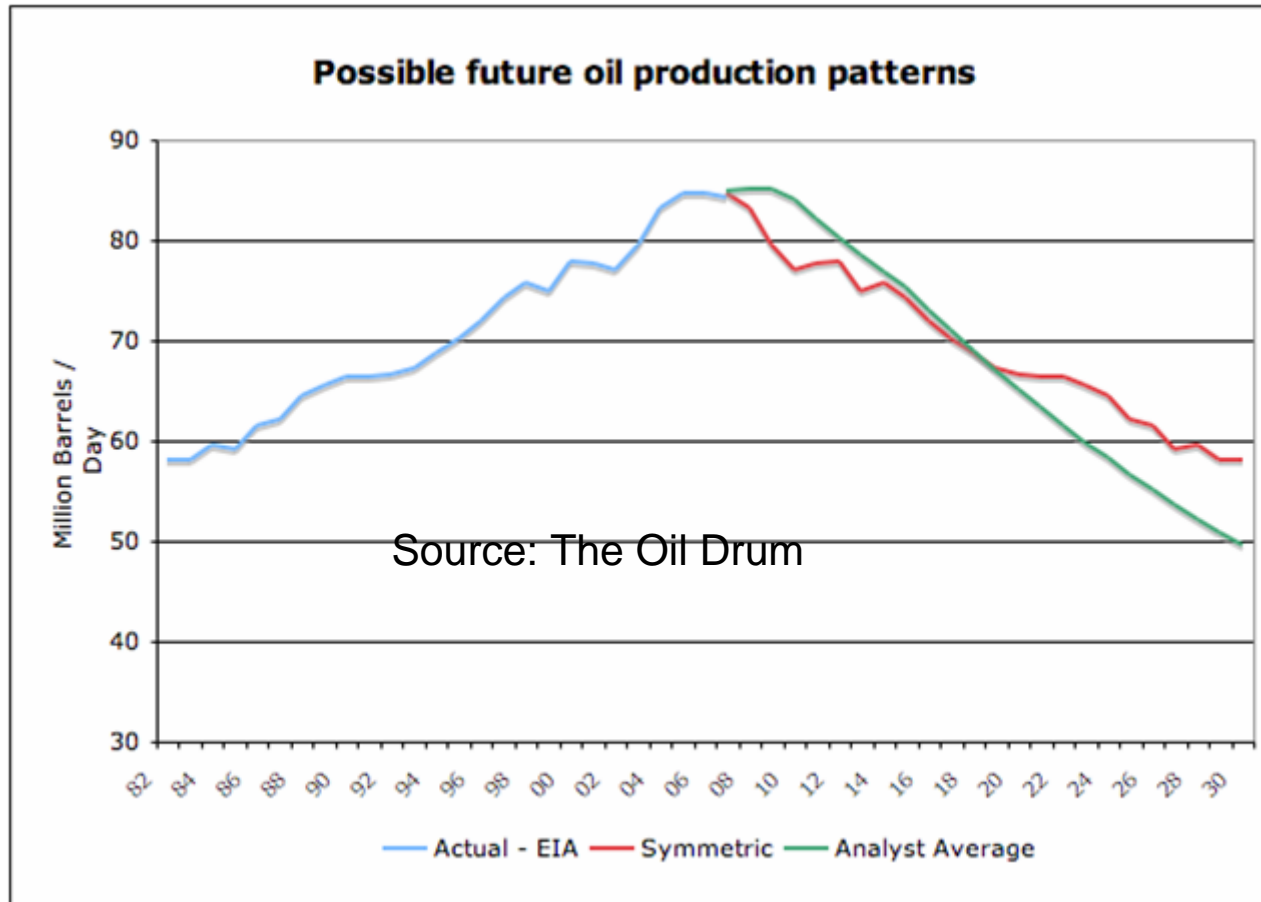
The U.S. Oil Production History Fits the Logistic (Bell Curve) Distribution Well Thus Far



World Crude Oil Usage is Far in Excess of New Discoveries - Reserves about Half Gone



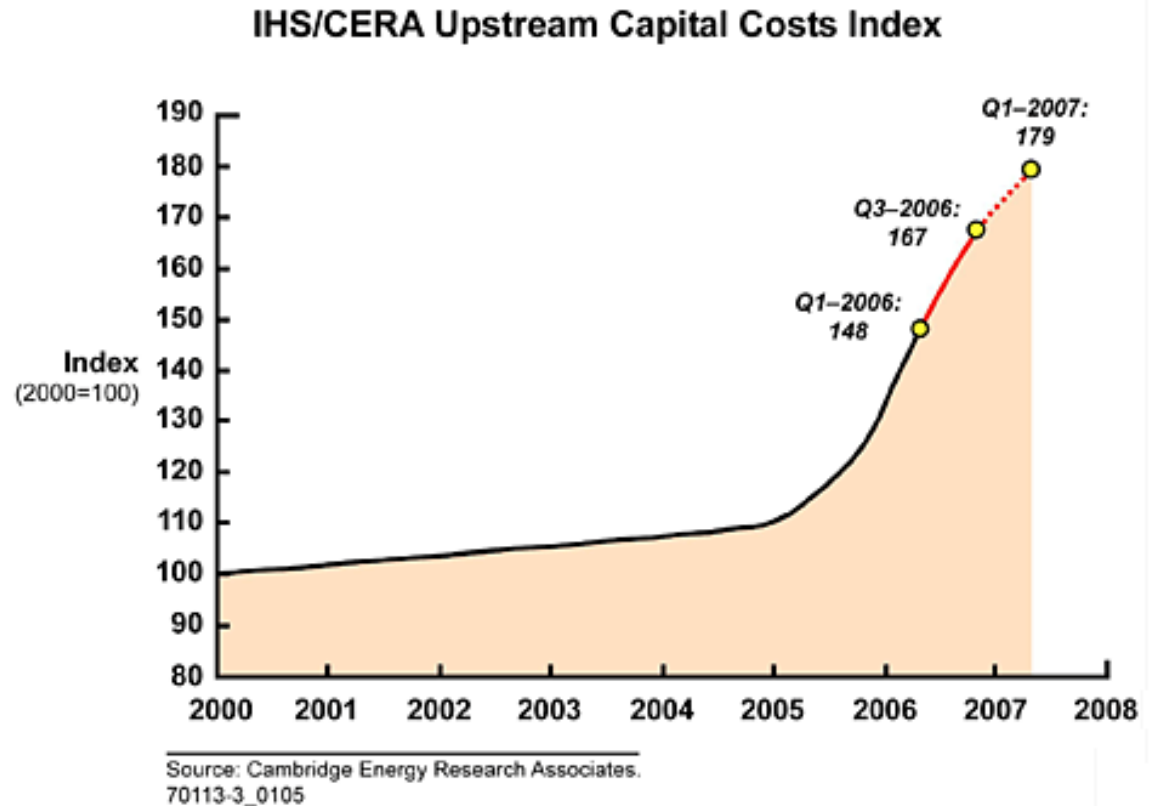
Rough estimates of future world oil production - if peak is now



Enough Investment can Extend the Period to Peak

CERA has been quoted as stating most increased investment dollars were used to maintain prior investment level.

Graph is old. By Q3, 2007 index stood at 198.

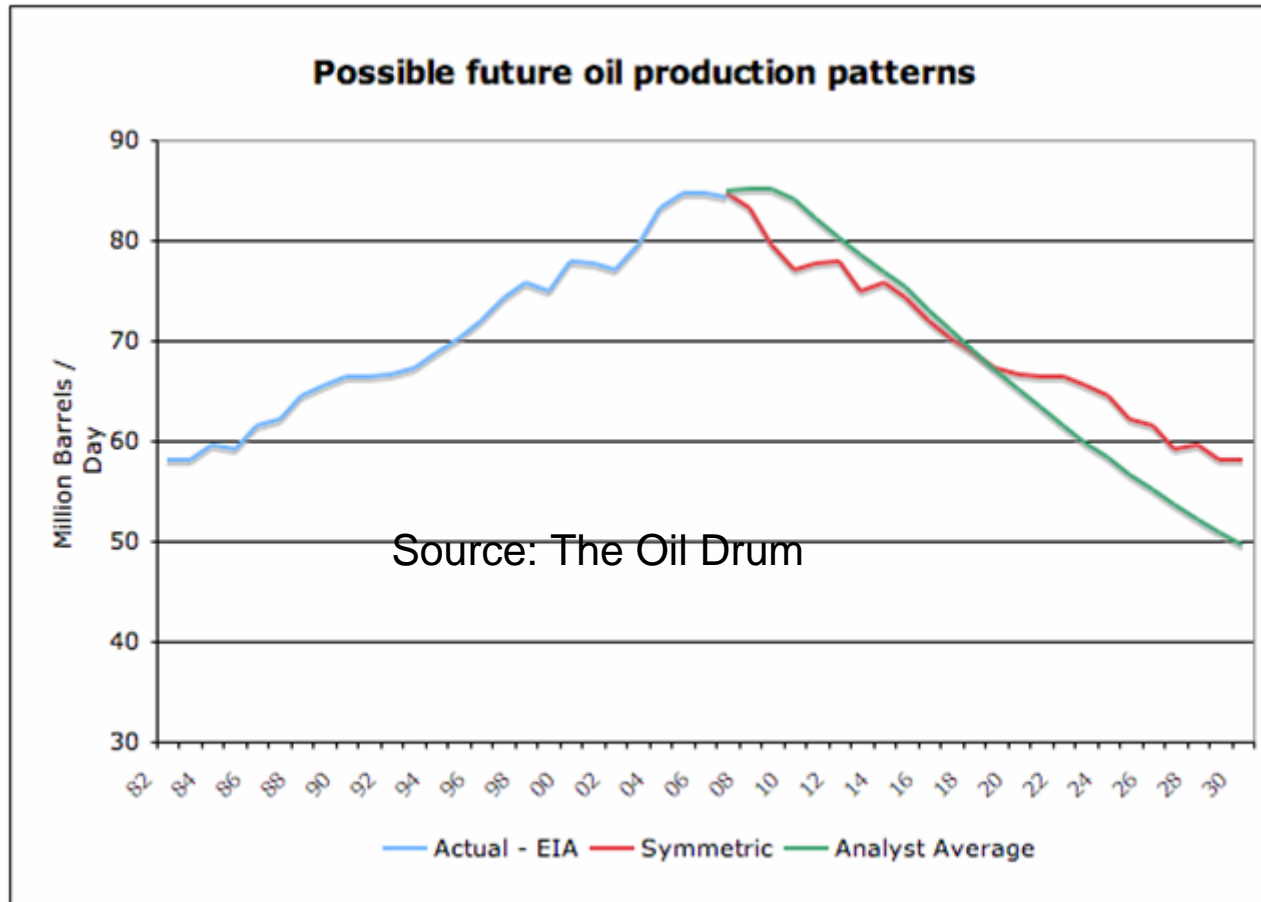


Energy Return On Energy Invested (EROI)

- Crude oil: EROI = 15 today vs 50 in the 70s
- Canadian Tar Sands: EROI = 3-4
- Ultra-deep water such as Jack in gulf: EROI = 3-4
- When EROI is 1, produced energy uses the same energy in production:
 - Ethanol from corn; EROI = 1 to 1.6
Science Magazine; June, 23 2006
 - Electricity from solar panels; EROI~1 at this time
April 1 2008: www.theoildrum.com/node3786#more
 - Shale oil; EROI>1

SO: LESS ENERGY AVAILABLE FOR USE

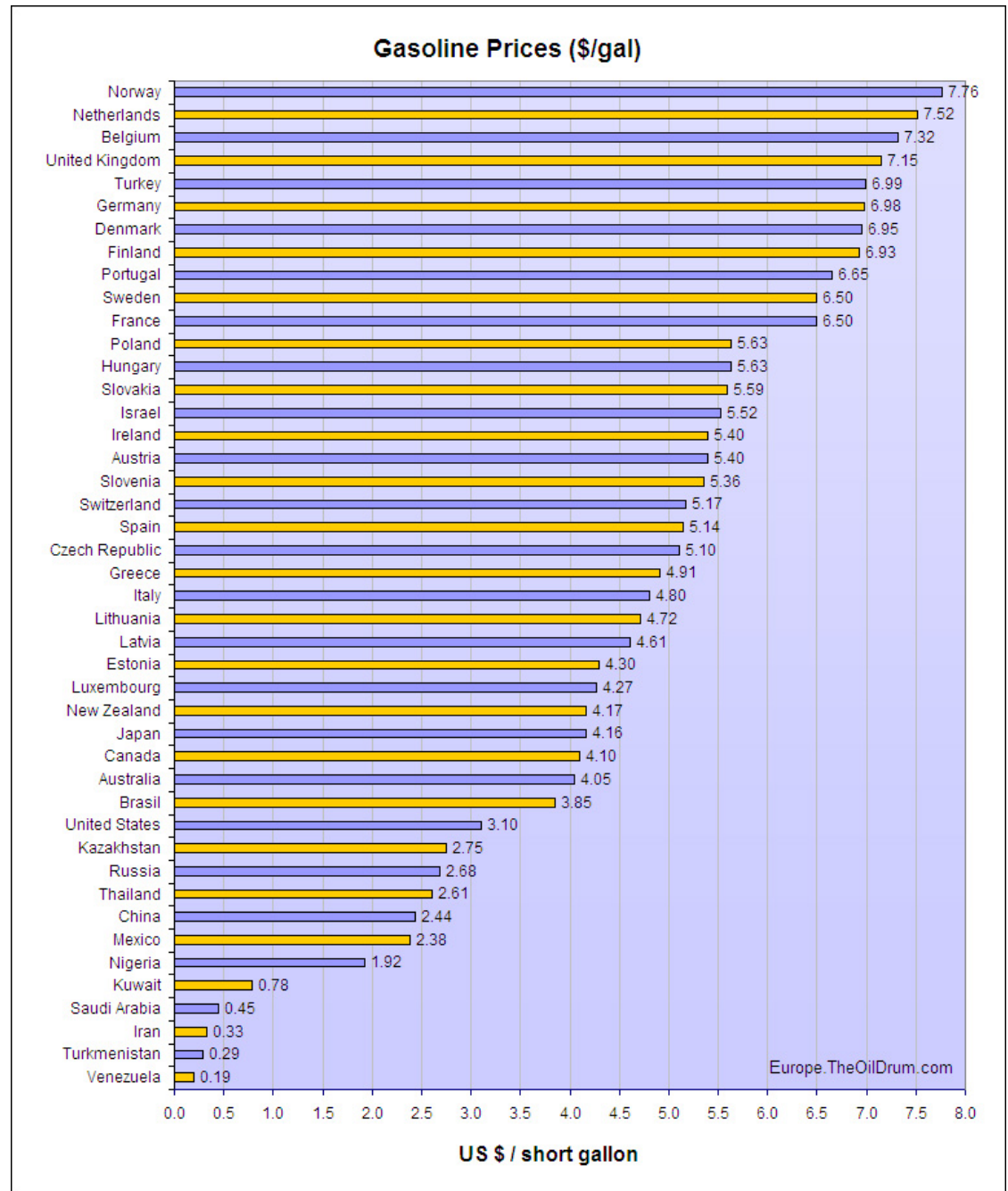
Rough estimates of future world oil production - if peak is now



The Price of Gasoline is subsidized in most Oil Exporting Counties.

Gasoline use in these countries is increasing.

So: no price signals to reduce use.



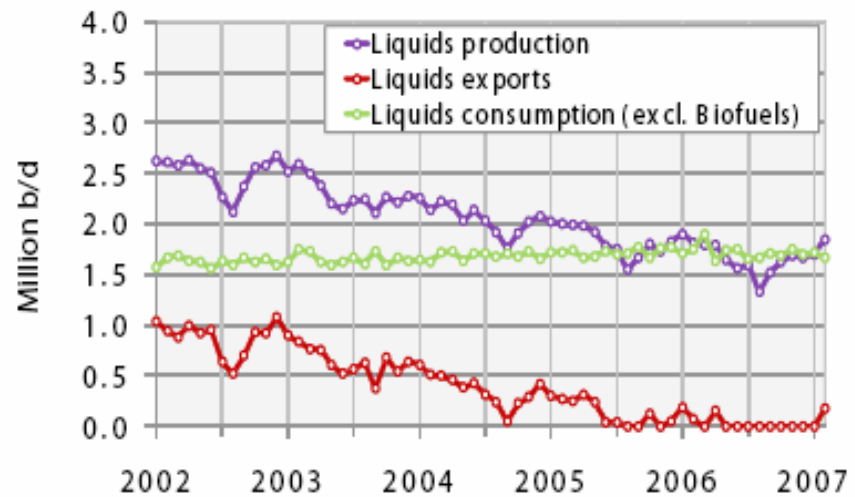
After Peak, Oil Exports Decrease Faster than Oil Production

Oil production declines and use increases, leaving less for export.

- England (north sea):
- Mexico (Cantarell) In 2007: 6% decline +12% increased use = 18% decline in exports

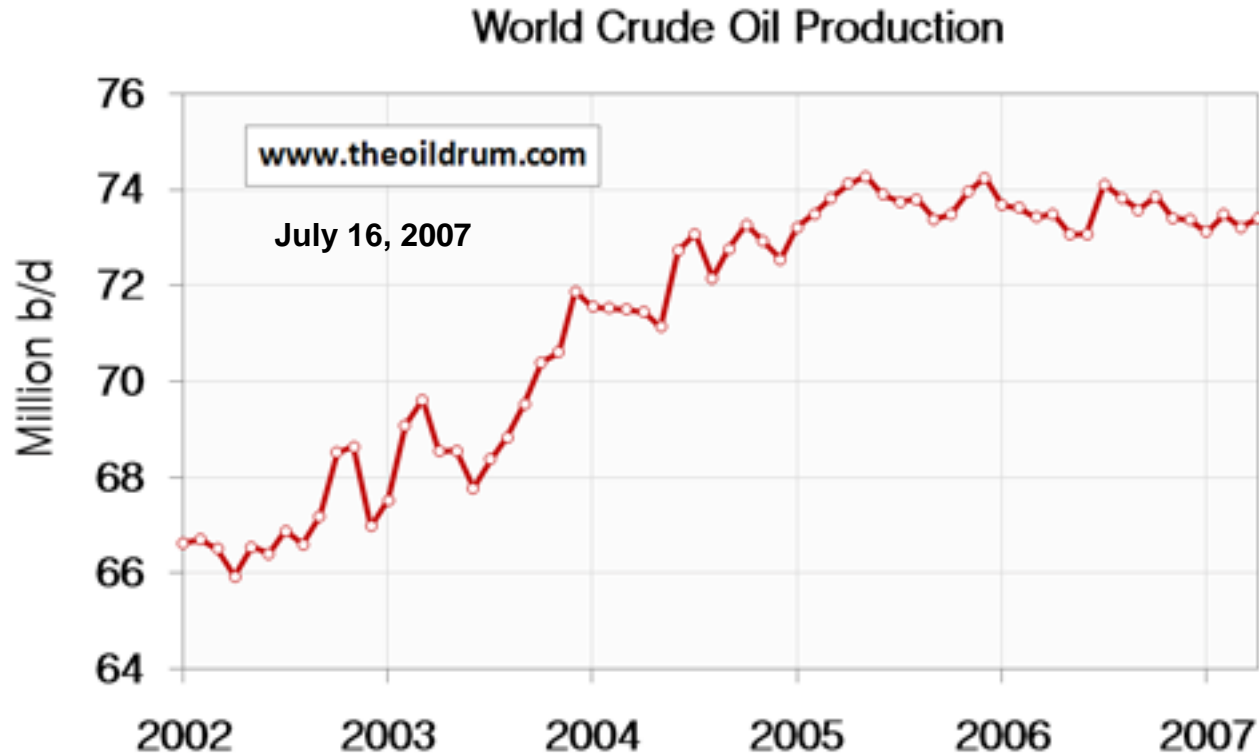


Chart 24: United Kingdom Liquids Exports Jan. 2002 - Feb. 2007



Source: Joint Oil Data Initiative, Energy Information Administration

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World Crude Oil Production January 2002-April 2007
Source Energy Information Agency, US Dept Energy

Saudi Arabia as Savior

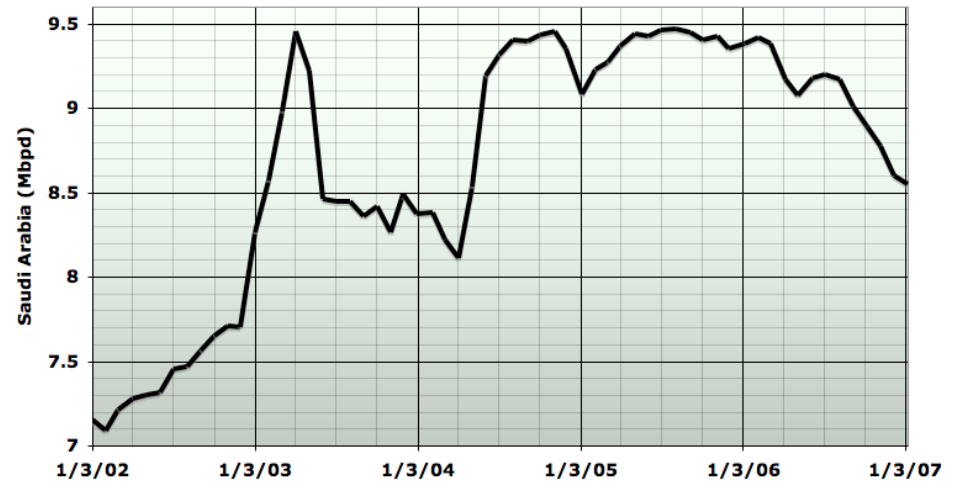
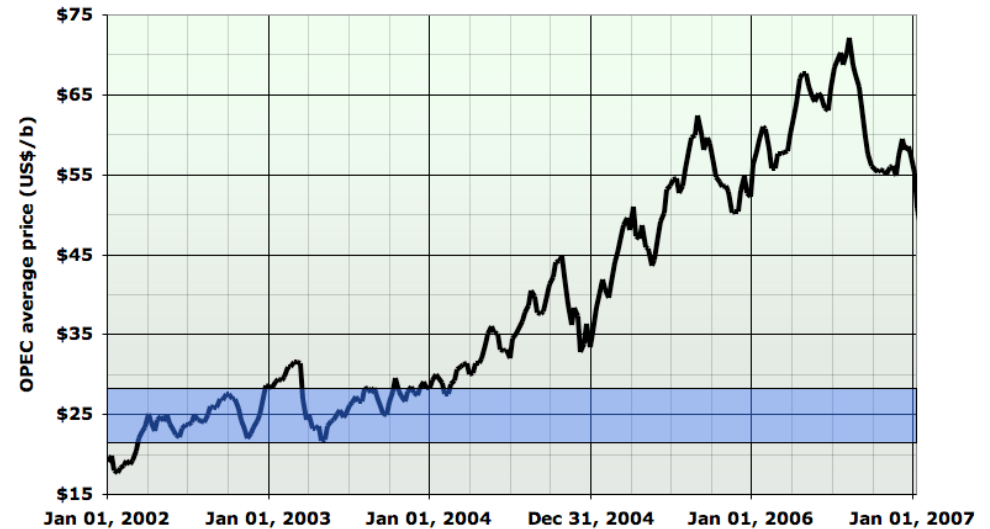
Mathew Simmons: Twilight in the desert

- With Hirsch report, marked the begging of peak oil movement
- Saudi 7 giant sister fields are old and beginning to decline
- Water cut going through the roof

Like many in world, soon to produce Oil Stained Brine

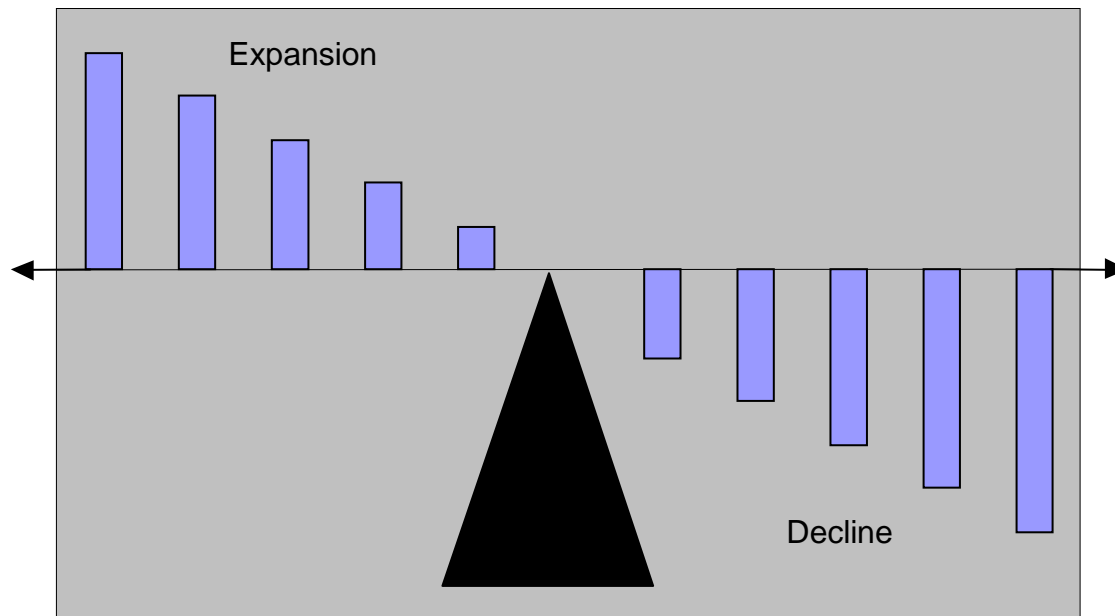
Even 2 years ago the Energy dept claimed production would double until the Saudi's started calling them silly.

Breaking the OPEC price band

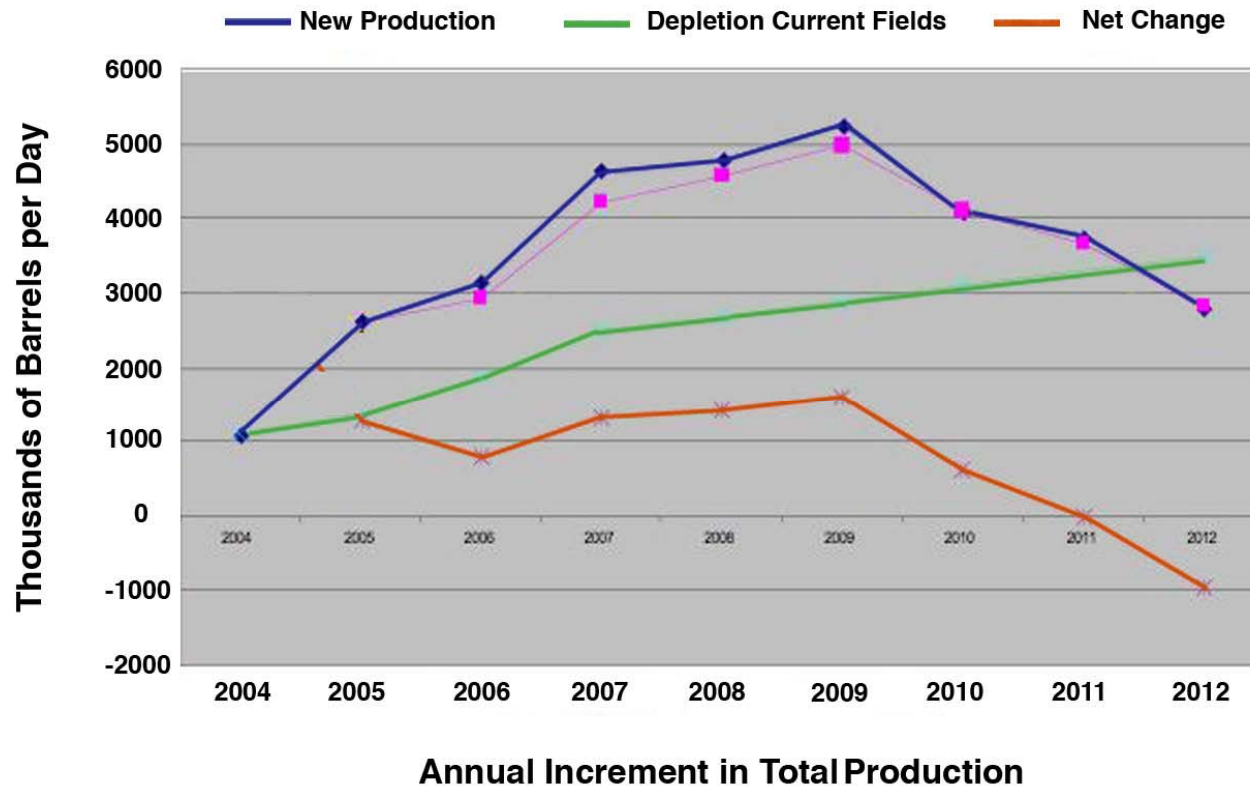


A simple observation -- or why peak will be earlier than most people expect

Global production falls when loss of output from countries in decline exceeds gains in output from those that are expanding.



Megaprojects Bottom Up Forecast Of Future Changes in Crude Oil Production



Currently no Projects are scheduled to begin Later than 2012. Given that future projects currently scheduled are predicted to take 7.7 years to First Production, this analysis also suggests a near-term peak in oil production.

What will Peak Oil Cost us?

- Inflated Fuel Costs for Public Vehicles, Including Bus Fleet
- Negative Financial Impact on UNC Which Impacts Chapel Hill
- Lower Tax Receipts or Assistance from State of NC
- Increased Wages for Town of Chapel Hill Employees to Keep Up With Inflation
- Possible Cut-Back of Services to Meet Budget

What can we do?

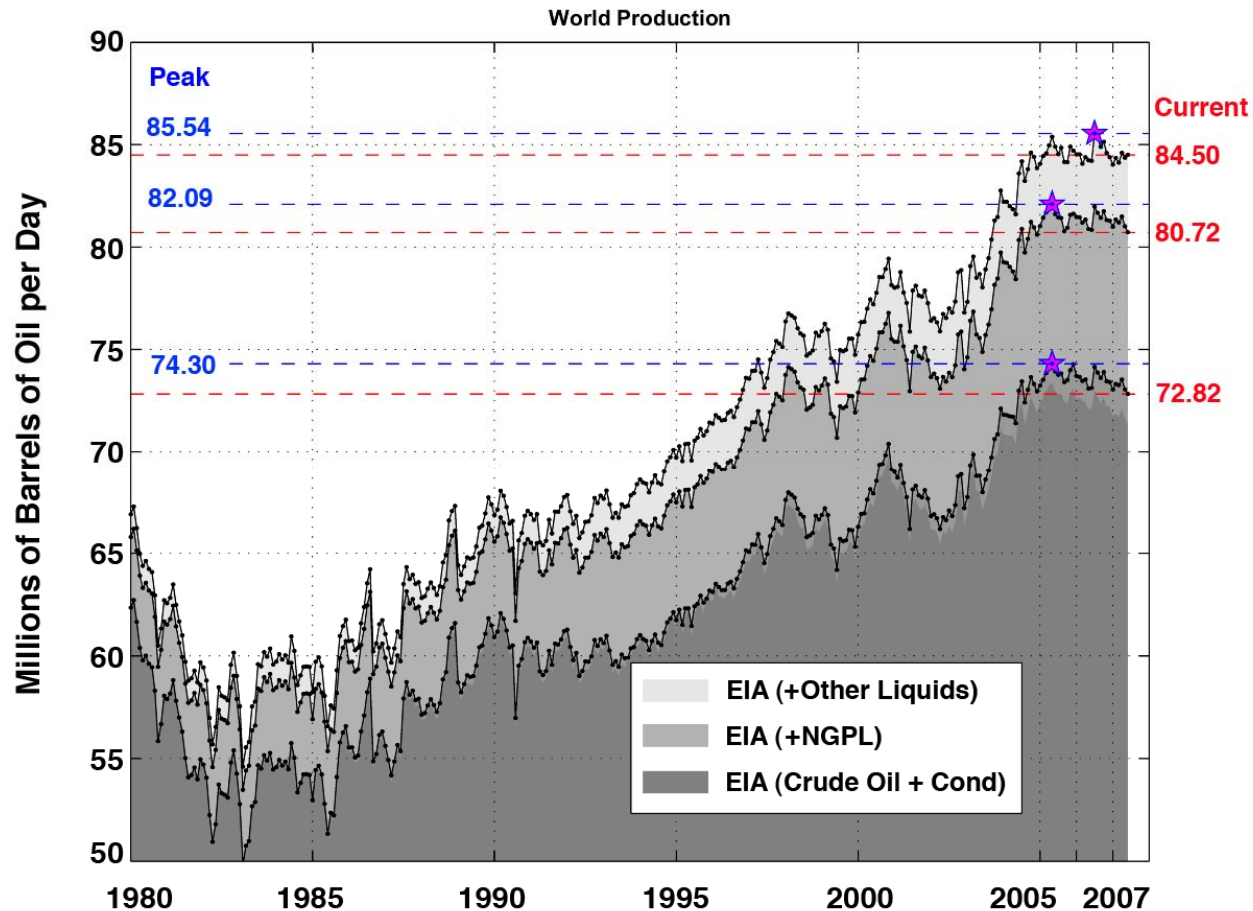
- Our energy use is roughly 1/3 in transportation, 1/3 in where we live/work (includes embedded energy costs), and 1/3 in our consumption (food, etc.). All of these have viable options for reducing energy use.
- Use policy to make the target clear and keep us moving in the right direction, but challenge and empower citizens and people who visit and work in the town to create and implement the solutions.

Other idea sources

Portland's PO task force recommendations

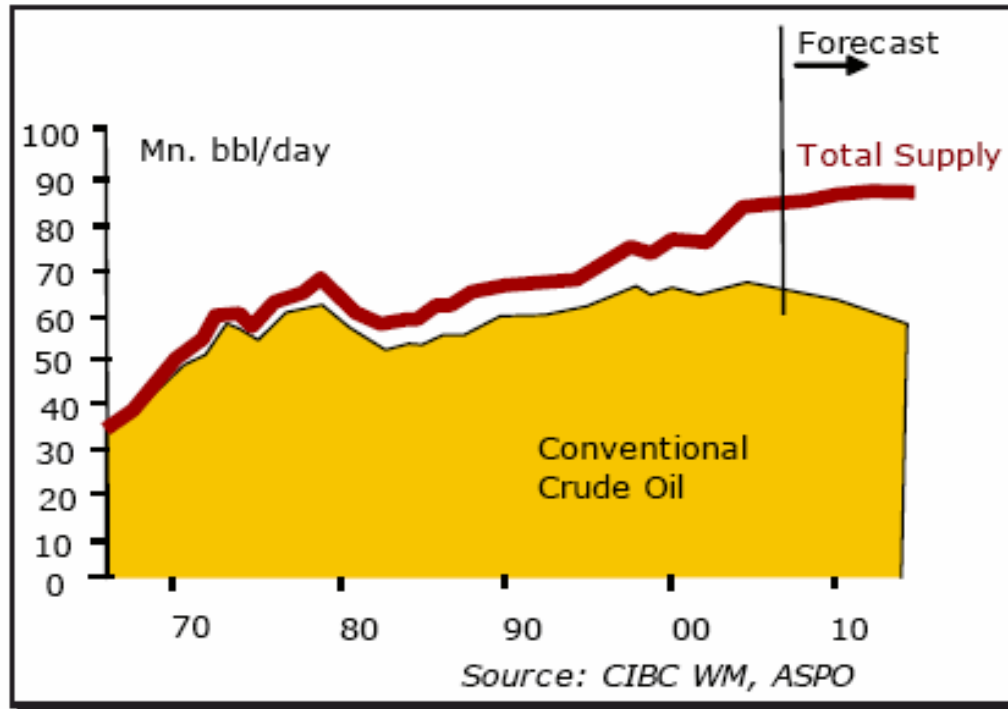
Hirsch report mitigation strategies

By All Common Measures, Liquid Fossil Fuel Production Appears to have Reached a Plateau



Separating Conventional Crude from Other Liquid Fuels

Conventional Oil Production
Has Not Grown Since 2004



World non-Opec Oil Supply Growth (2006 - 2007 - 2008)

