

Peak Oil and the Evolving Strategies of Oil Importing and Oil Exporting Countries

RESEARCH ROUND TABLE:

OIL DEPENDENCE: IS TRANSPORT RUNNING OUT OF
AFFORDABLE FUEL?

Organized by the
Joint Transport Research Centre of the
OECD and the International Transport Forum

IEA, Paris, 15-16 November 2007

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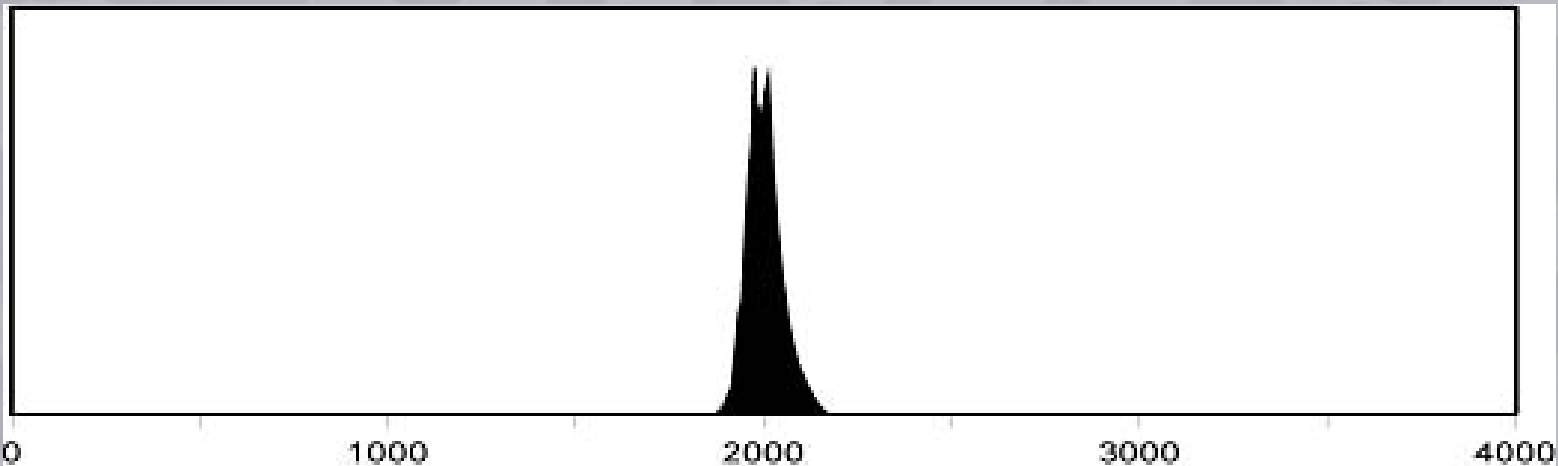
Historical "Peak Oil"

Economist.com

The end of the Oil Age

Oct 23rd 2003

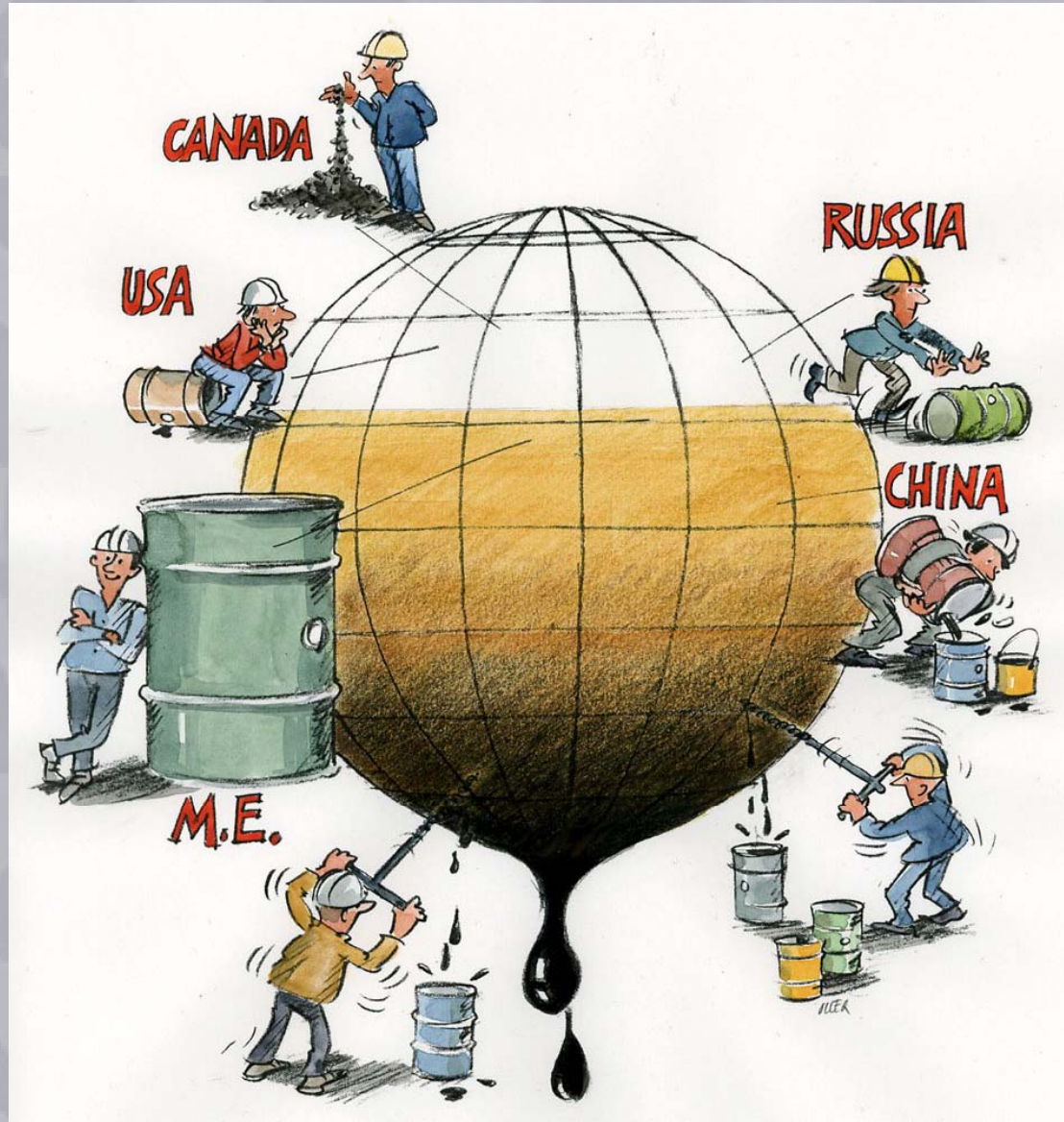
Leaders from The Economist print edition



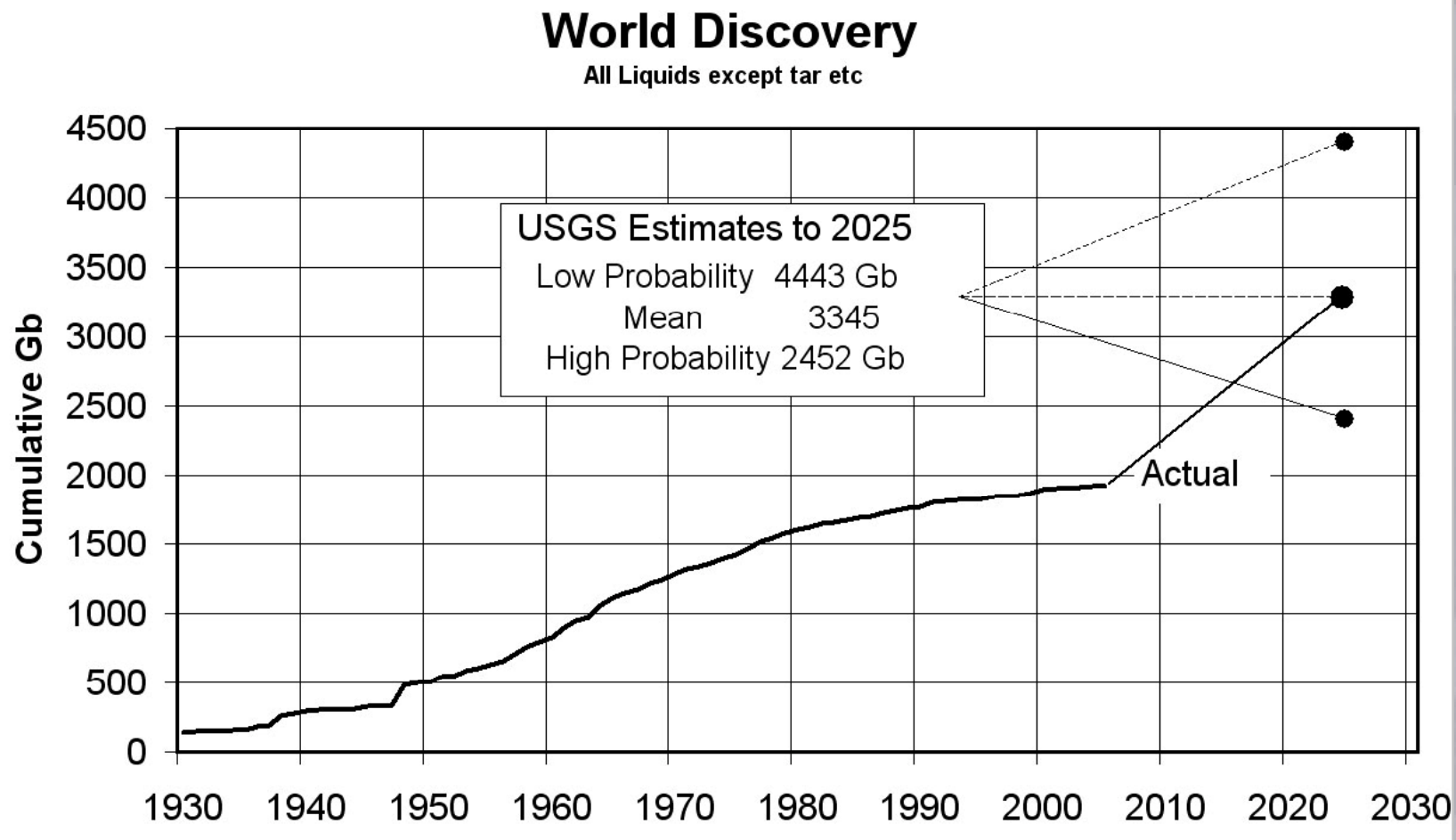
On a time scale starting at year 0 everyone think that there will be a peak in the production between 2000 and 2100



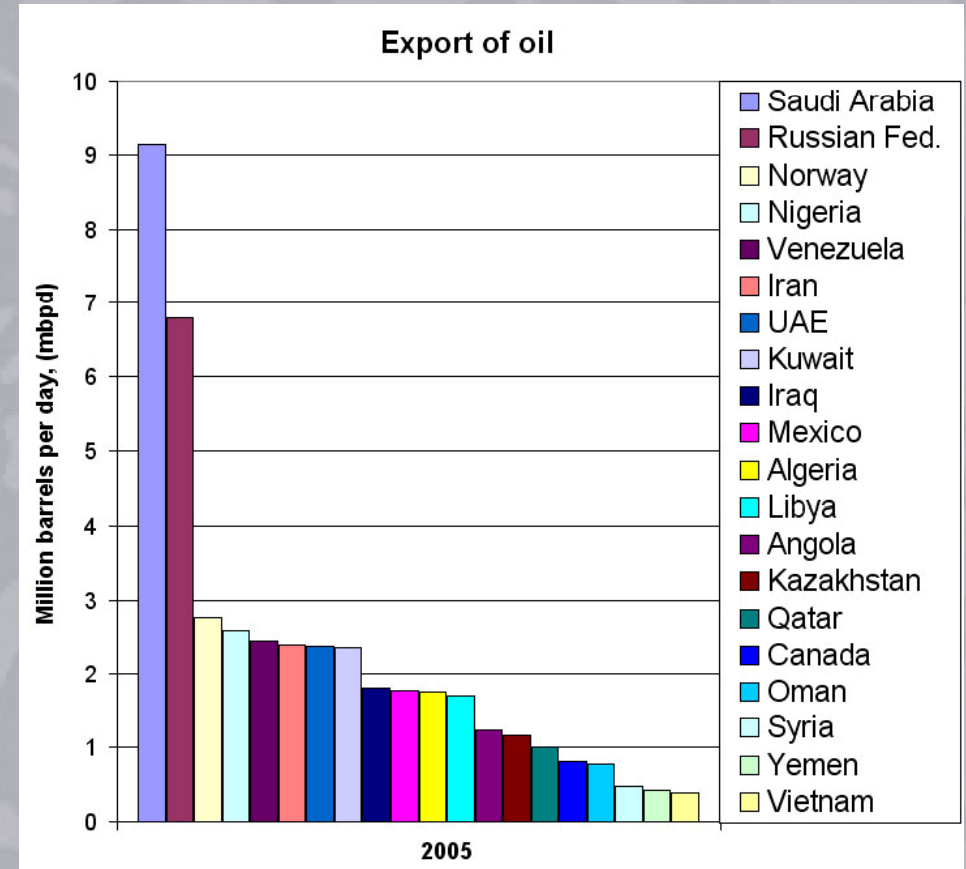
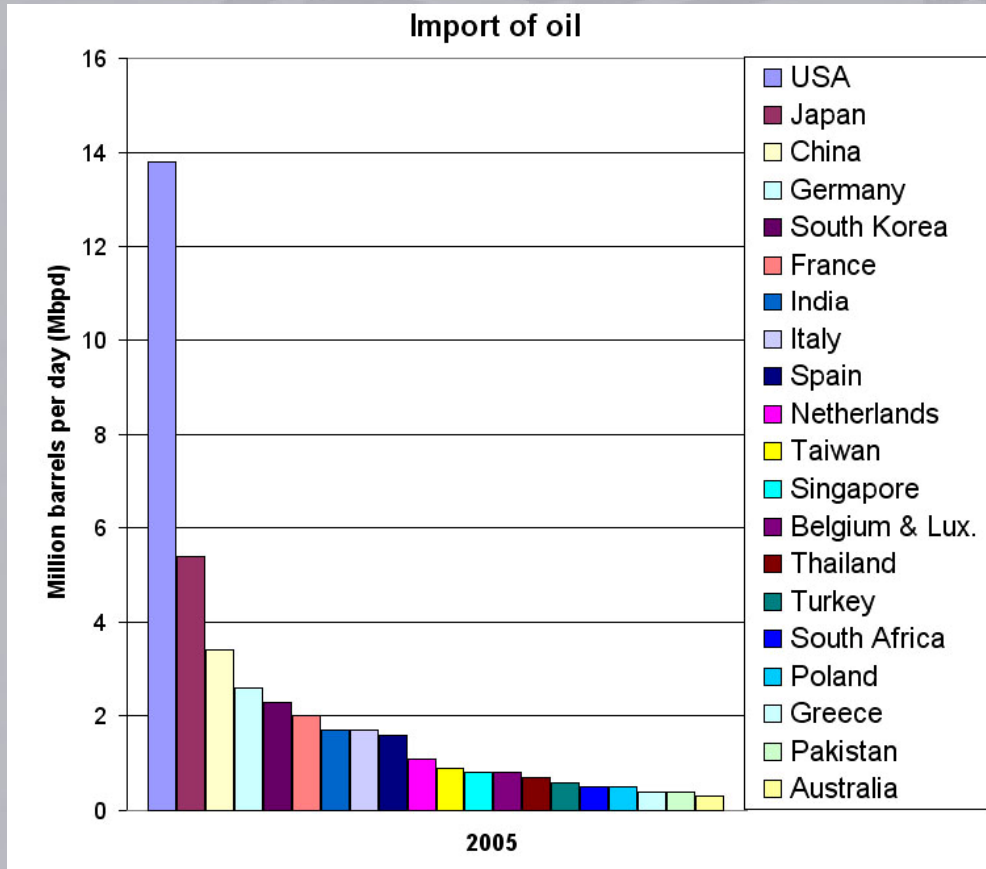
"An Inconvenient Truth About Oil"



USGS Estimates to 2025

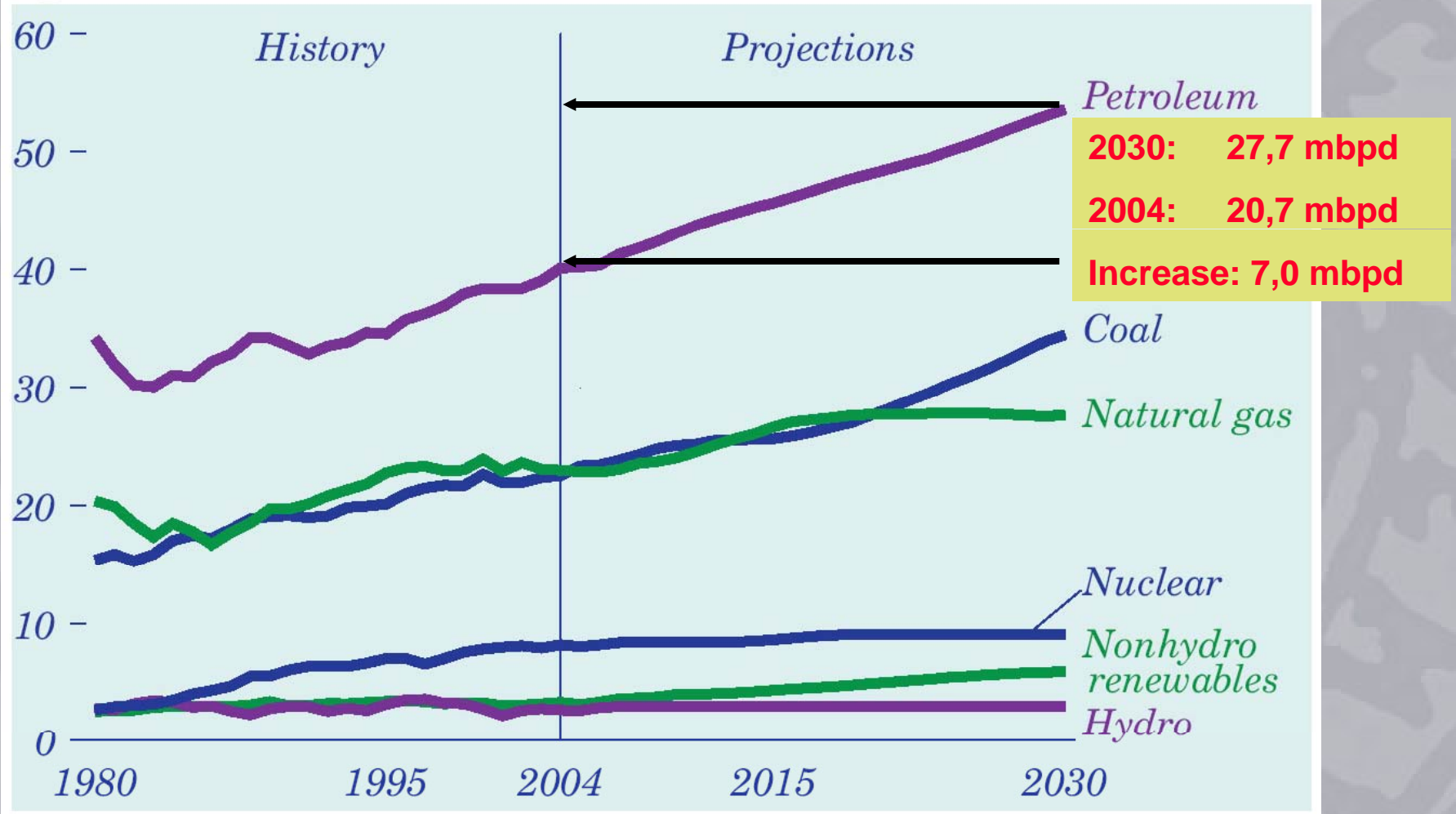


Import and Export countries

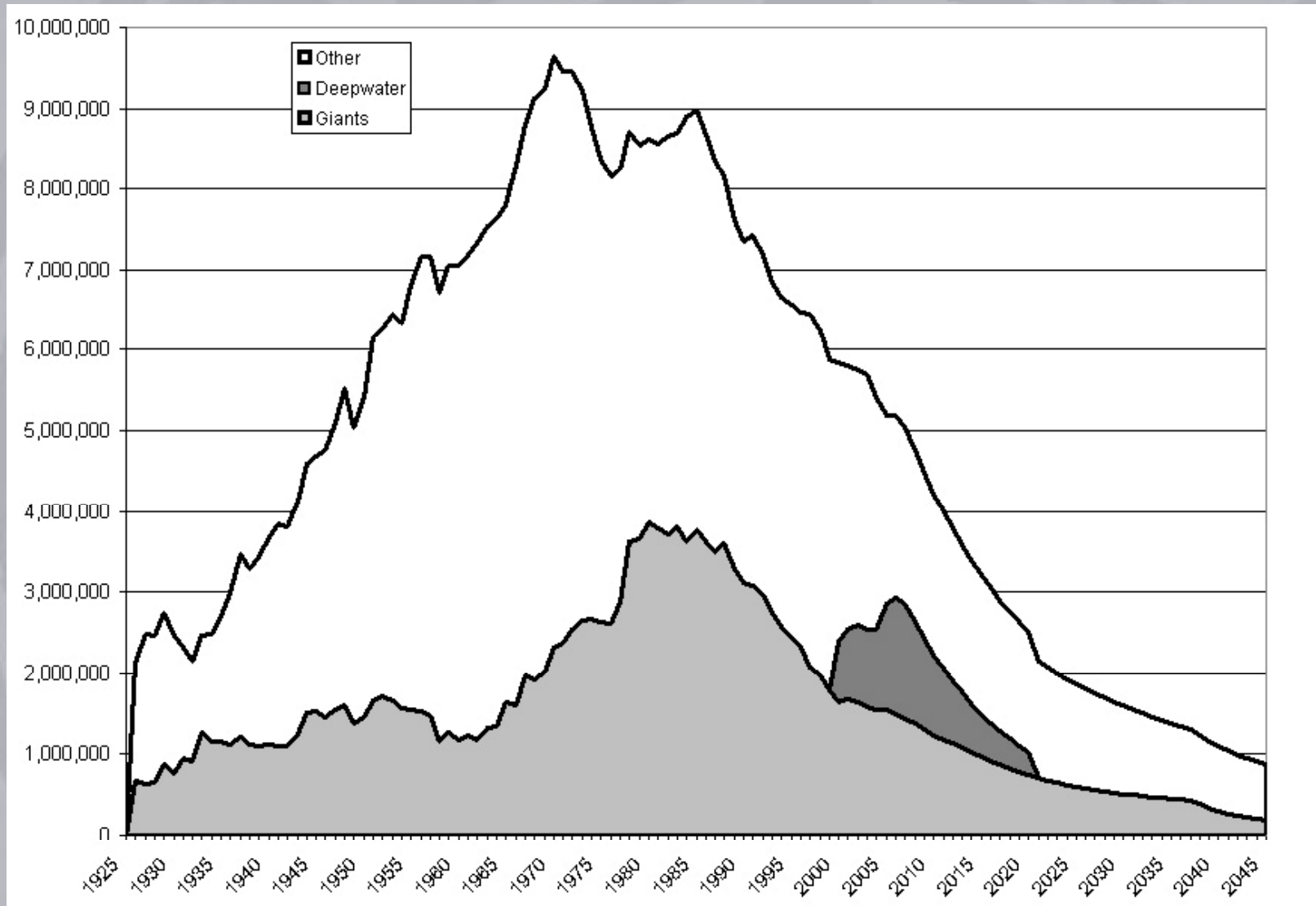


Energy consumption in USA

Figure 3. Energy consumption by fuel, 1980-2030 (quadrillion Btu)



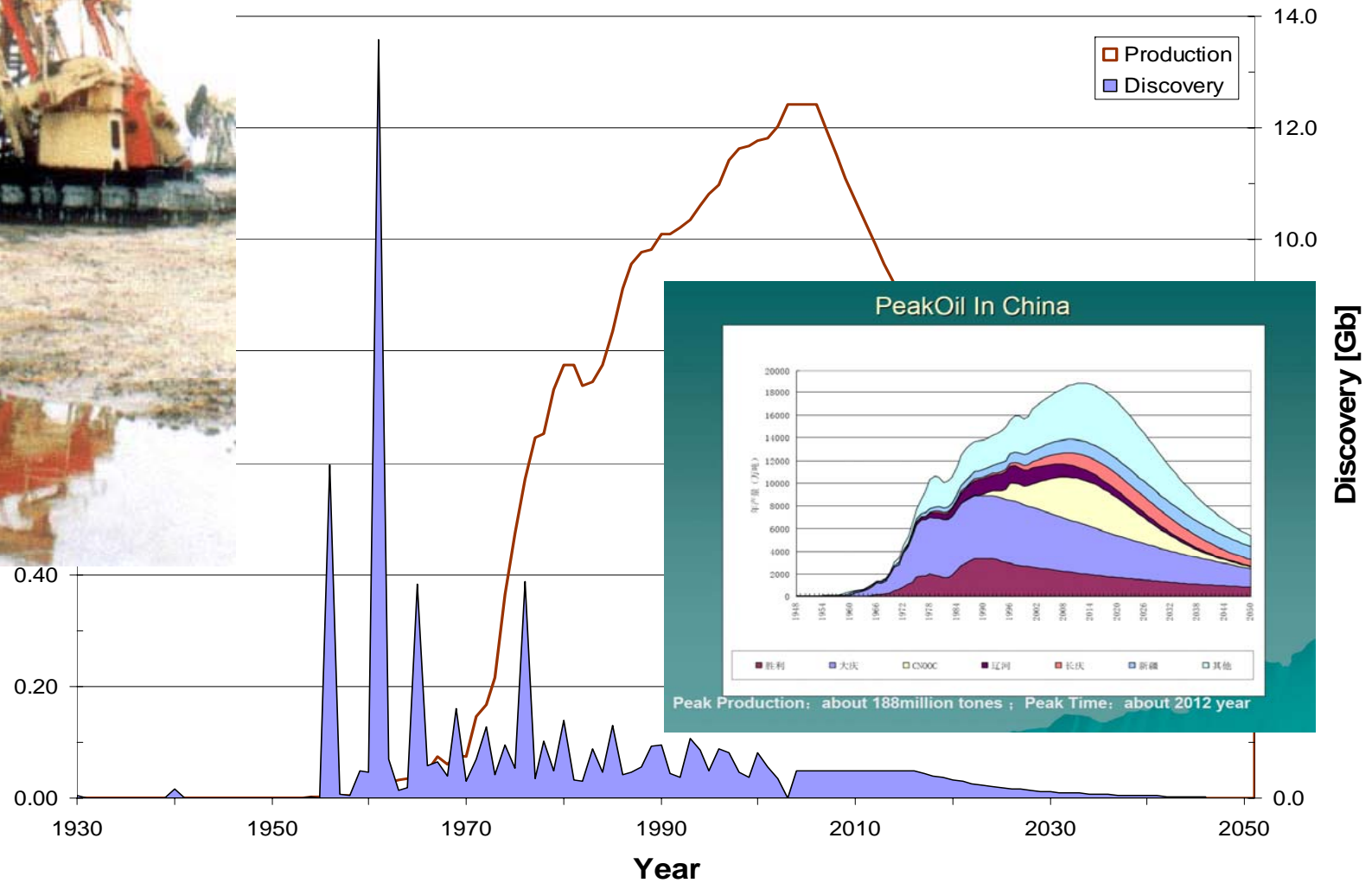
Future oil production in USA



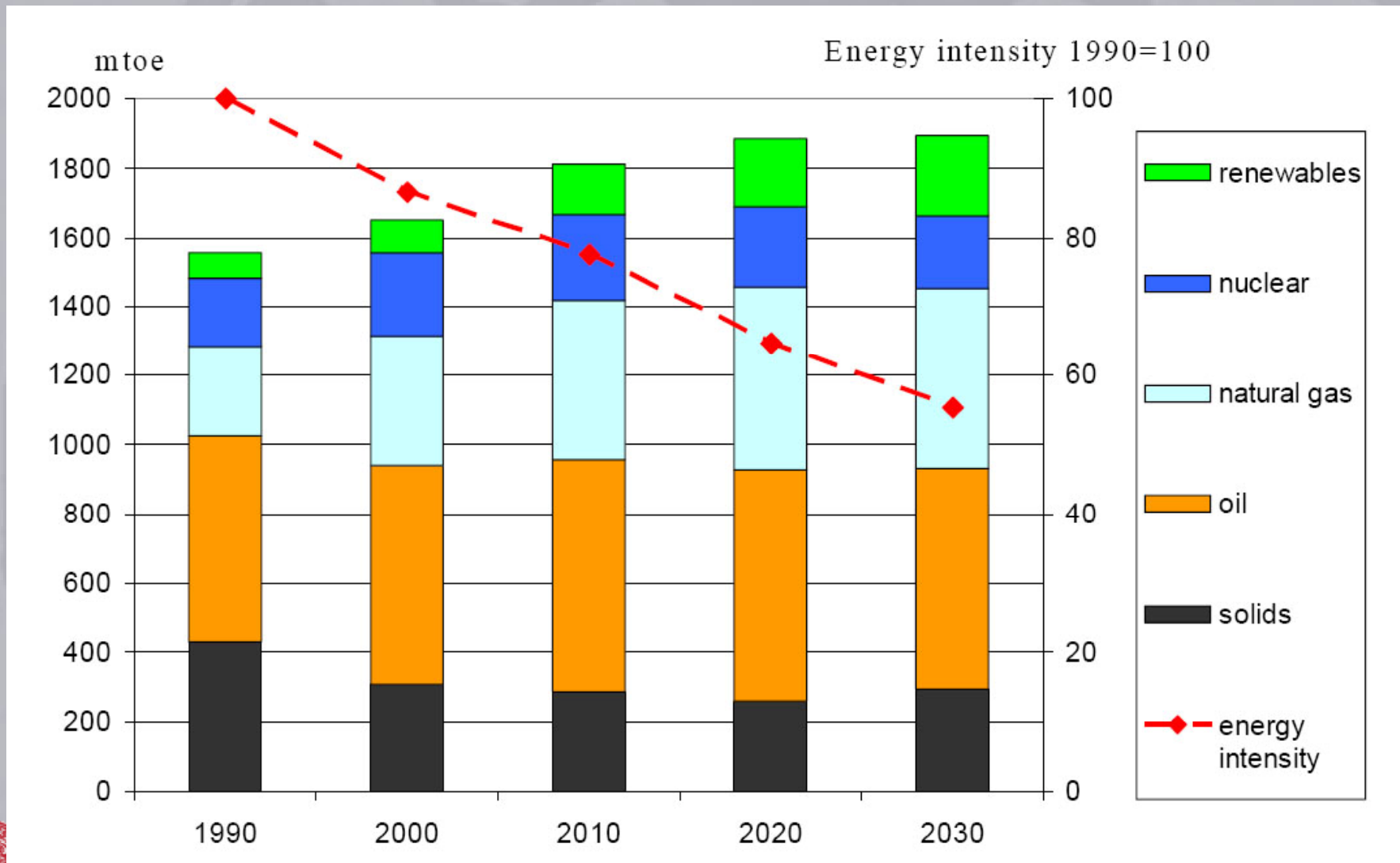
China: Discovery and Production

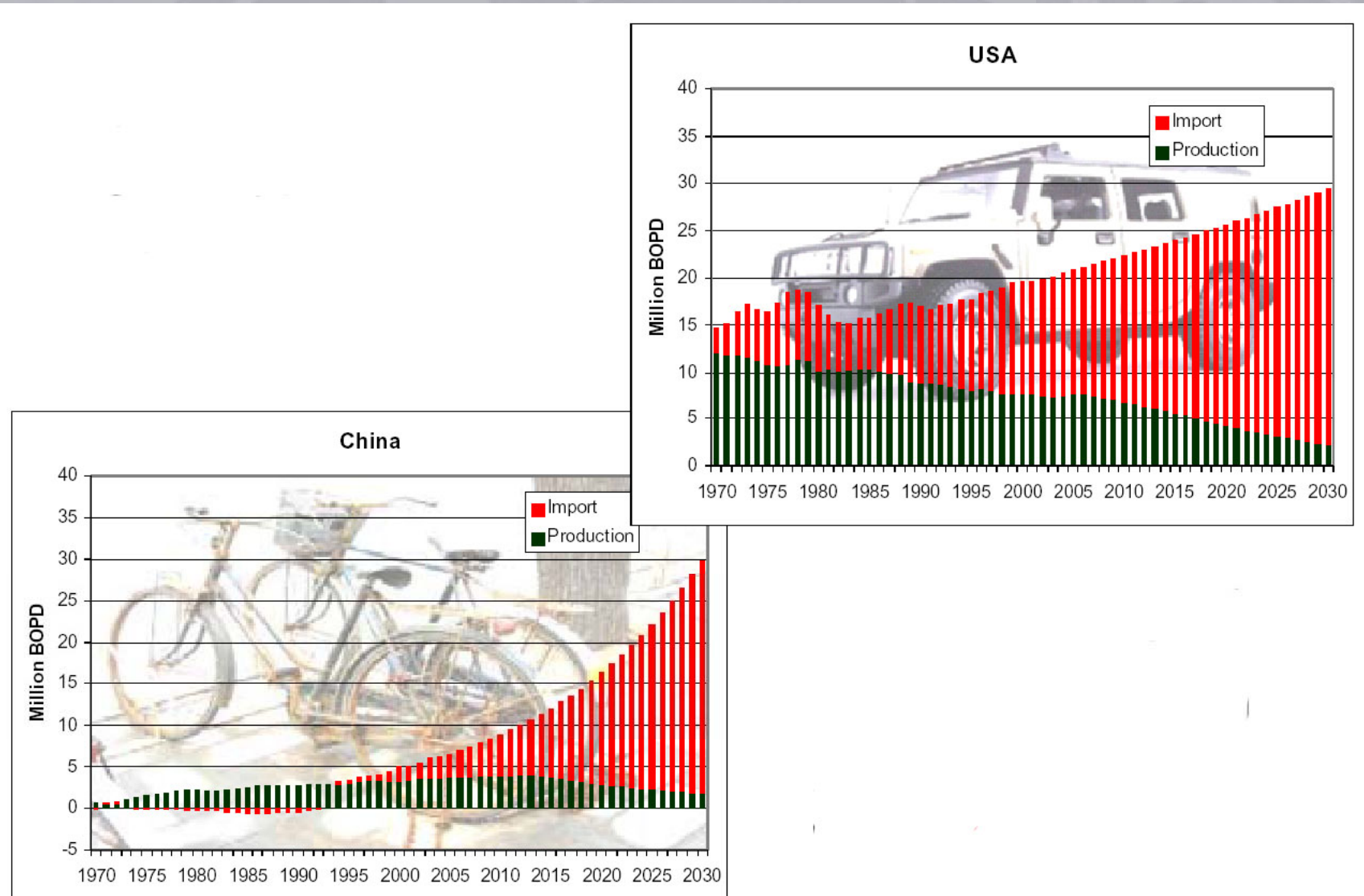


Oil Discovery and Production of China



Consumption of oil in EU25





**The world needs to increase
the import with 30 mbpd by 2030
- from 48 mbpd to 78 mbpd**



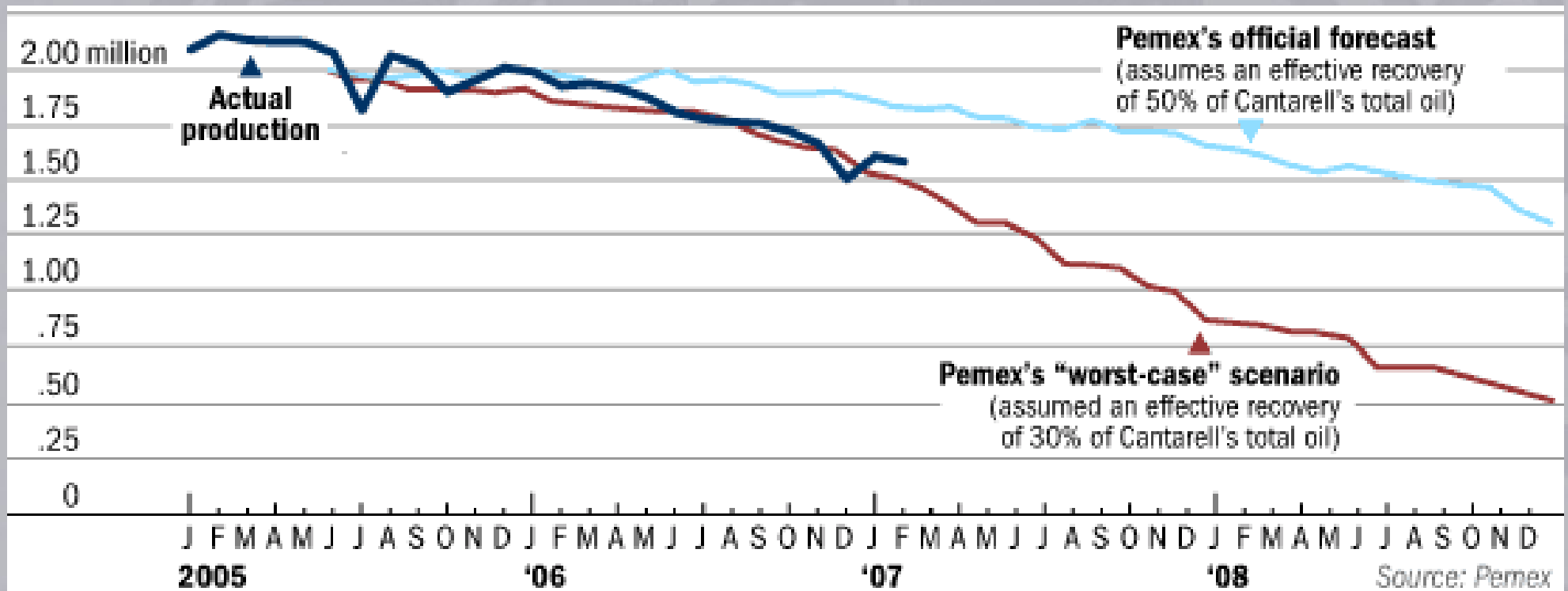
Reality from the speech of the silent elephants



**Cantarell is speaking with Ghawar,
Greater Burgan and Safaniya waiting**



Cantarell is declining



Definitions

- **Ultimate Recoverable Reserves (URR) – cumulative production plus the estimated remaining reserves**
- **Gb – Giga barrel = 10^9 barrels = billion barrels**
- **= $0.159 \times 10^9 \text{ m}^3 = 159 \text{ million m}^3$**
- **Giant Oil Field – an oilfield with estimated ultimate recoverable oil of more than 500 million barrels (>0.5 Gb), also called an elephant.**



Production of oil - UHDSG Giant Oilfield Model

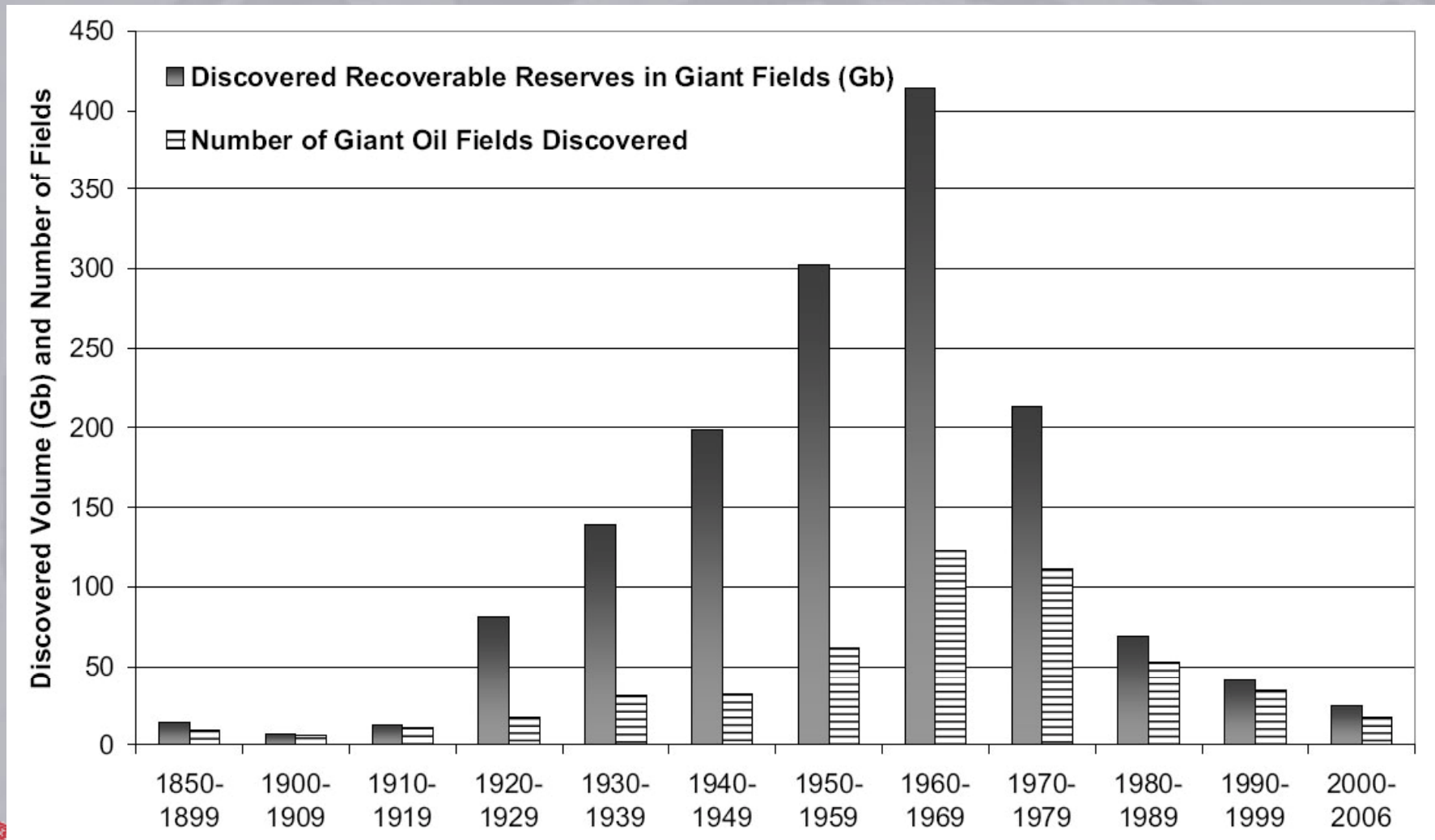
The production of oil can be divided into the following fractions:

1. Giant oil fields – long term
2. Smaller oil fields – long term
3. Heavy oil – long term
4. New fields developments – medium term
5. Deep water – medium term
6. Natural gas liquids – long term

Thesis by Fredrik Robelius: Giant Oil Fields – Highway to oil,
<http://www.peakoil.net/GiantOilFields.html>.



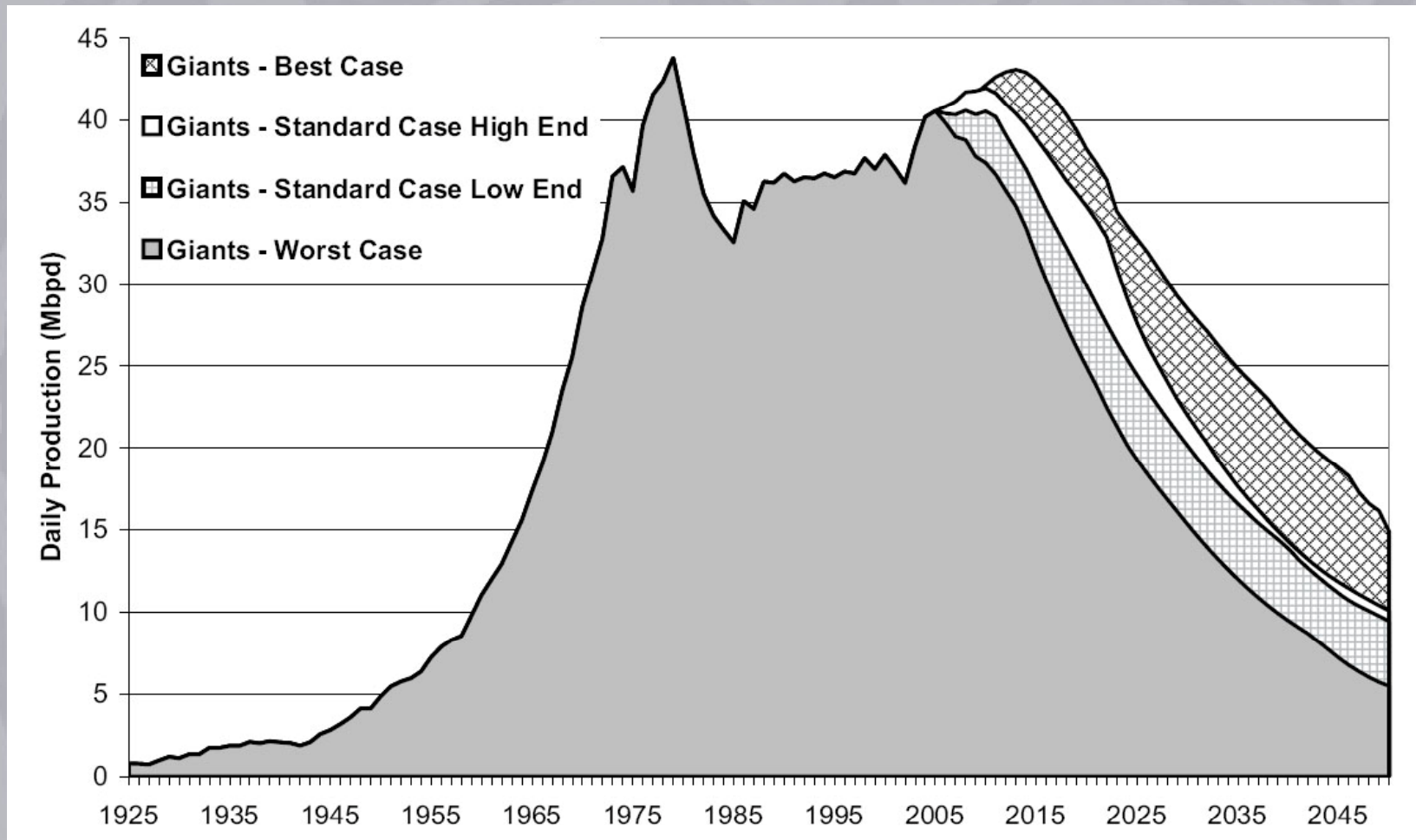
Global Giant Oilfields



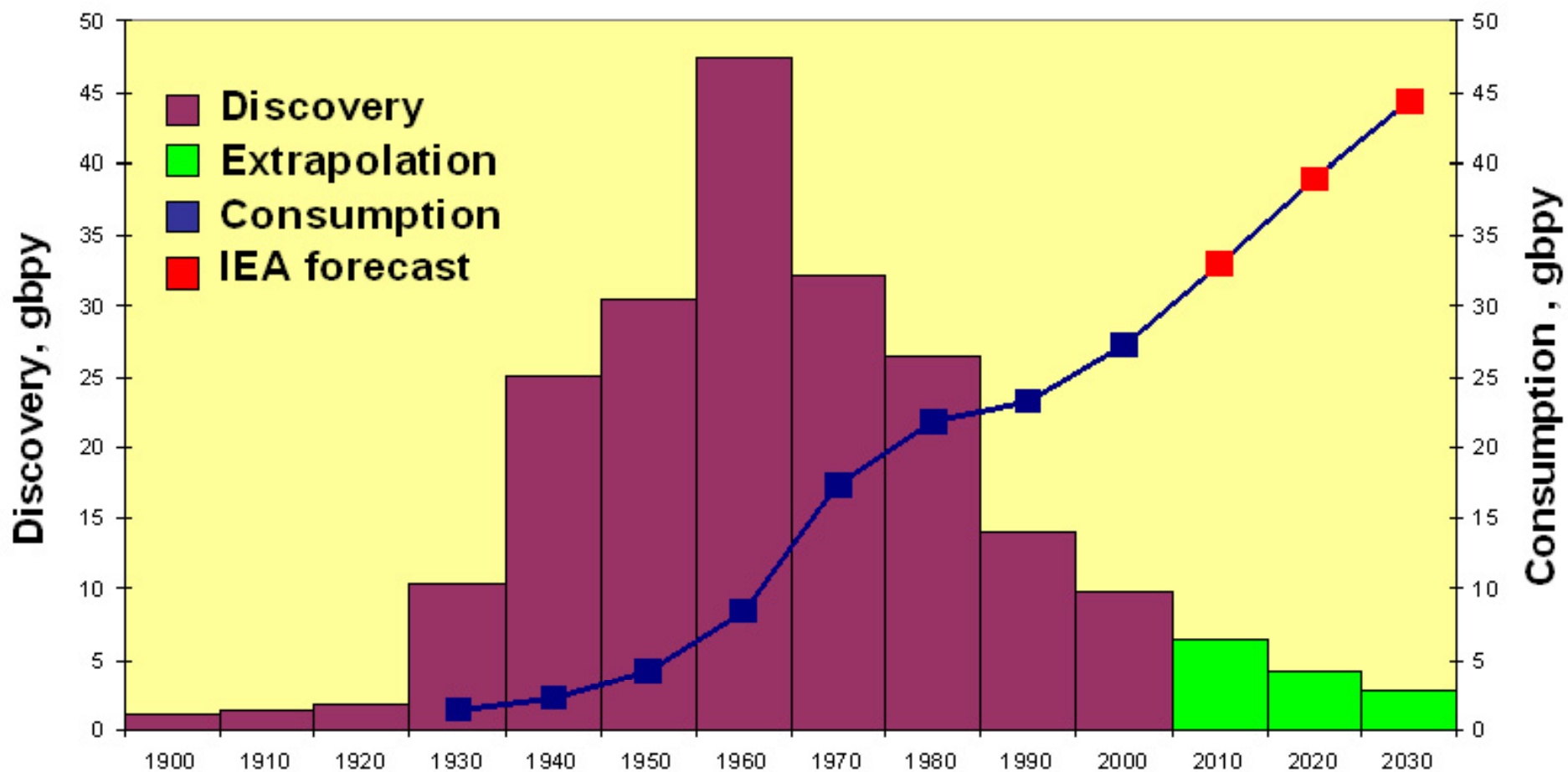
F.Robelius, Uppsala Hydrocarbon Depletions Study Group



Giant fields

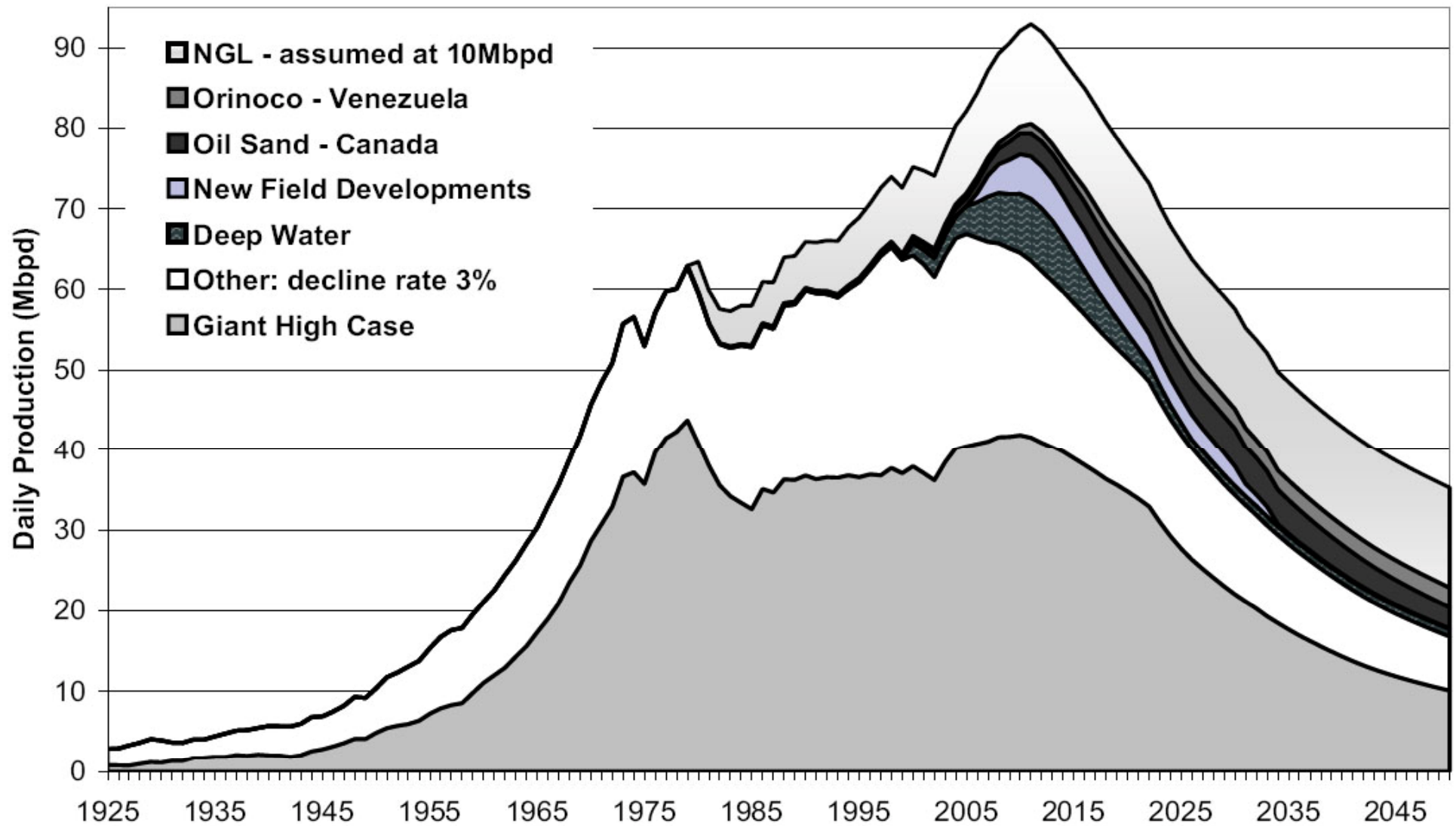


Comparison between discovery and consumption

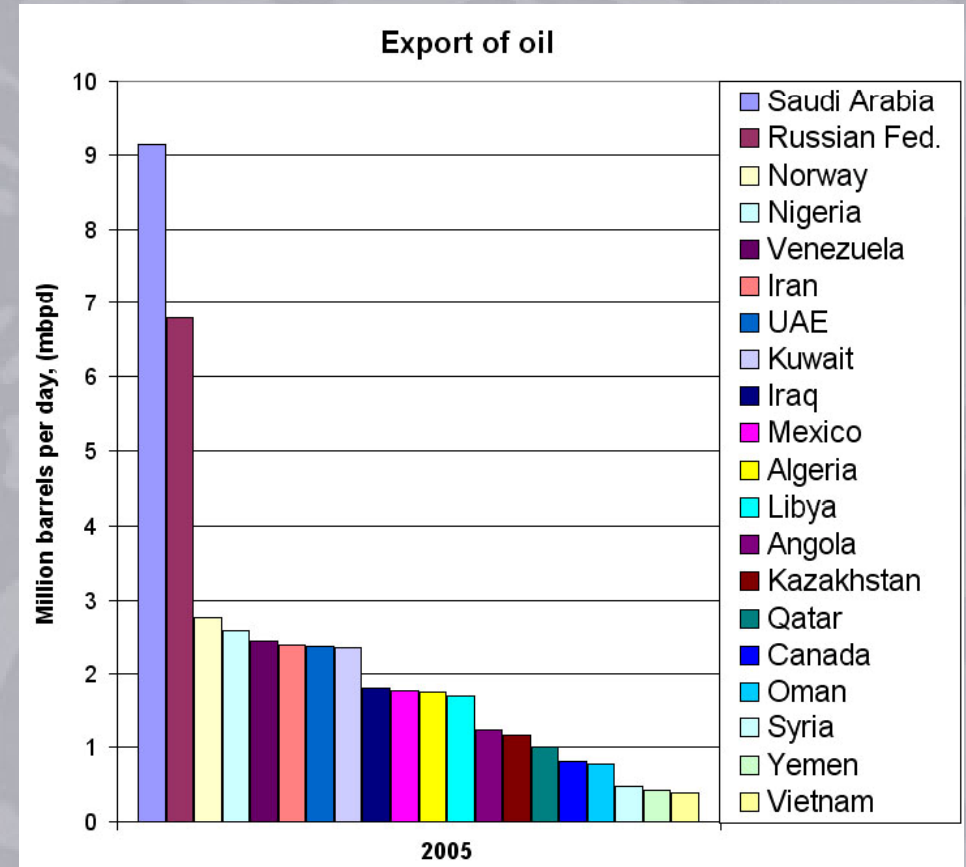
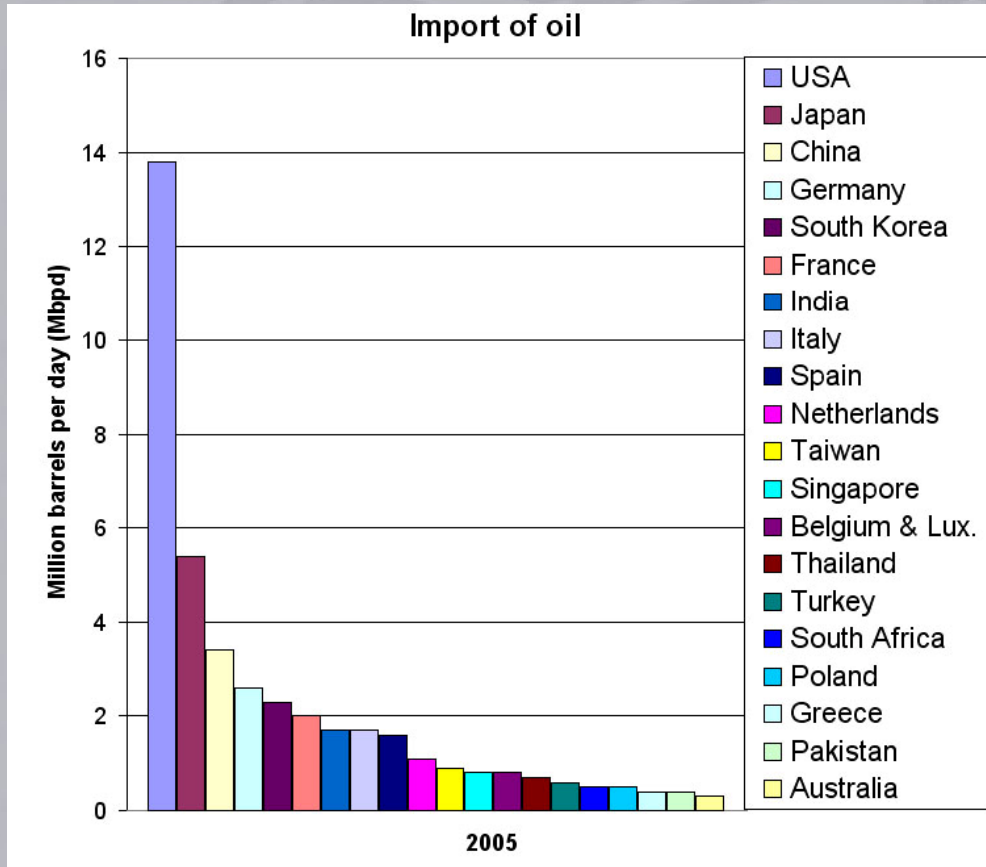


New discoveries from 1995 till 2025 is 100 billion barrels found and 100 billion barrels expected to be found. USGS mean prediction for the same time period is 649 billion barrels.

Giant High Case



Import and Export countries

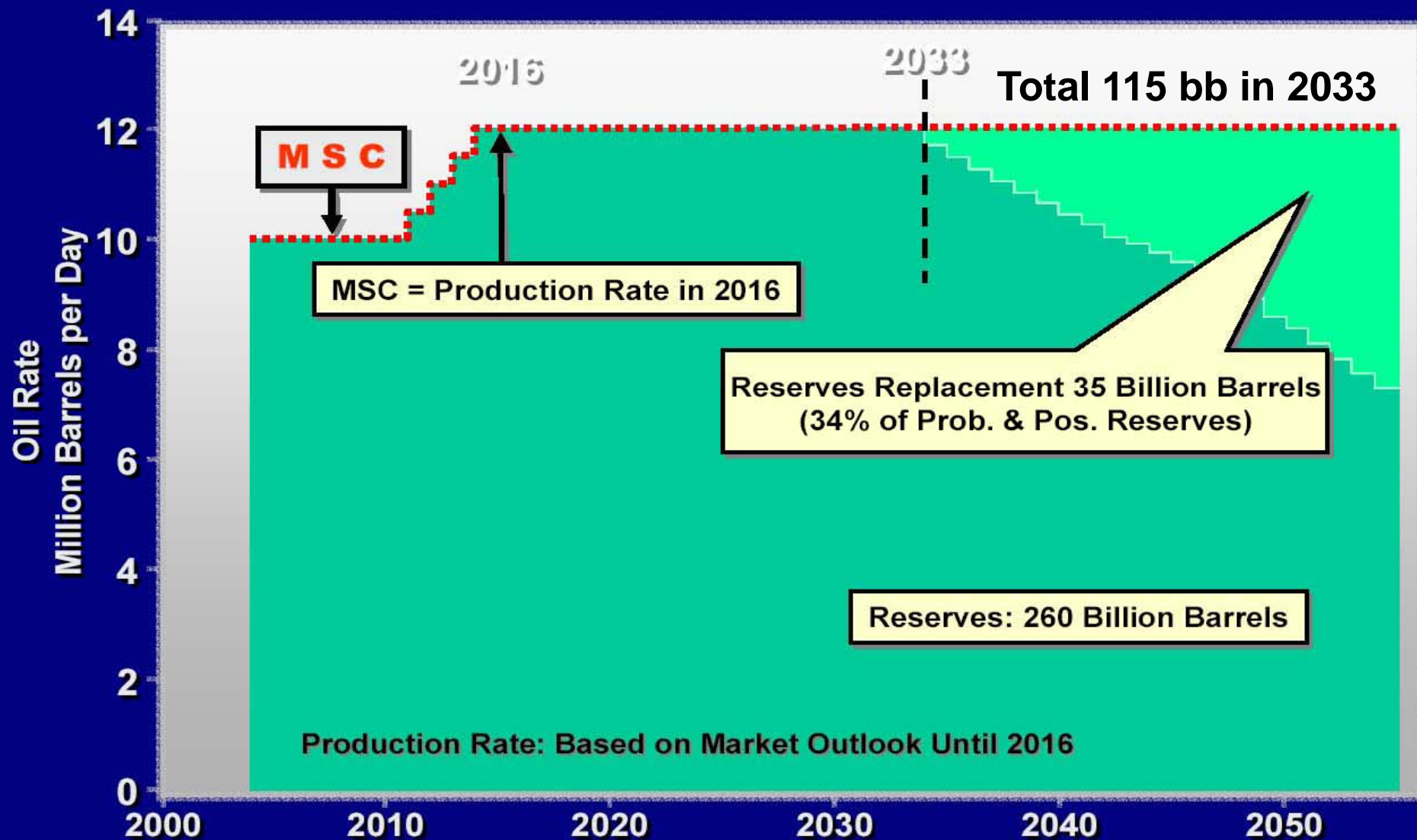




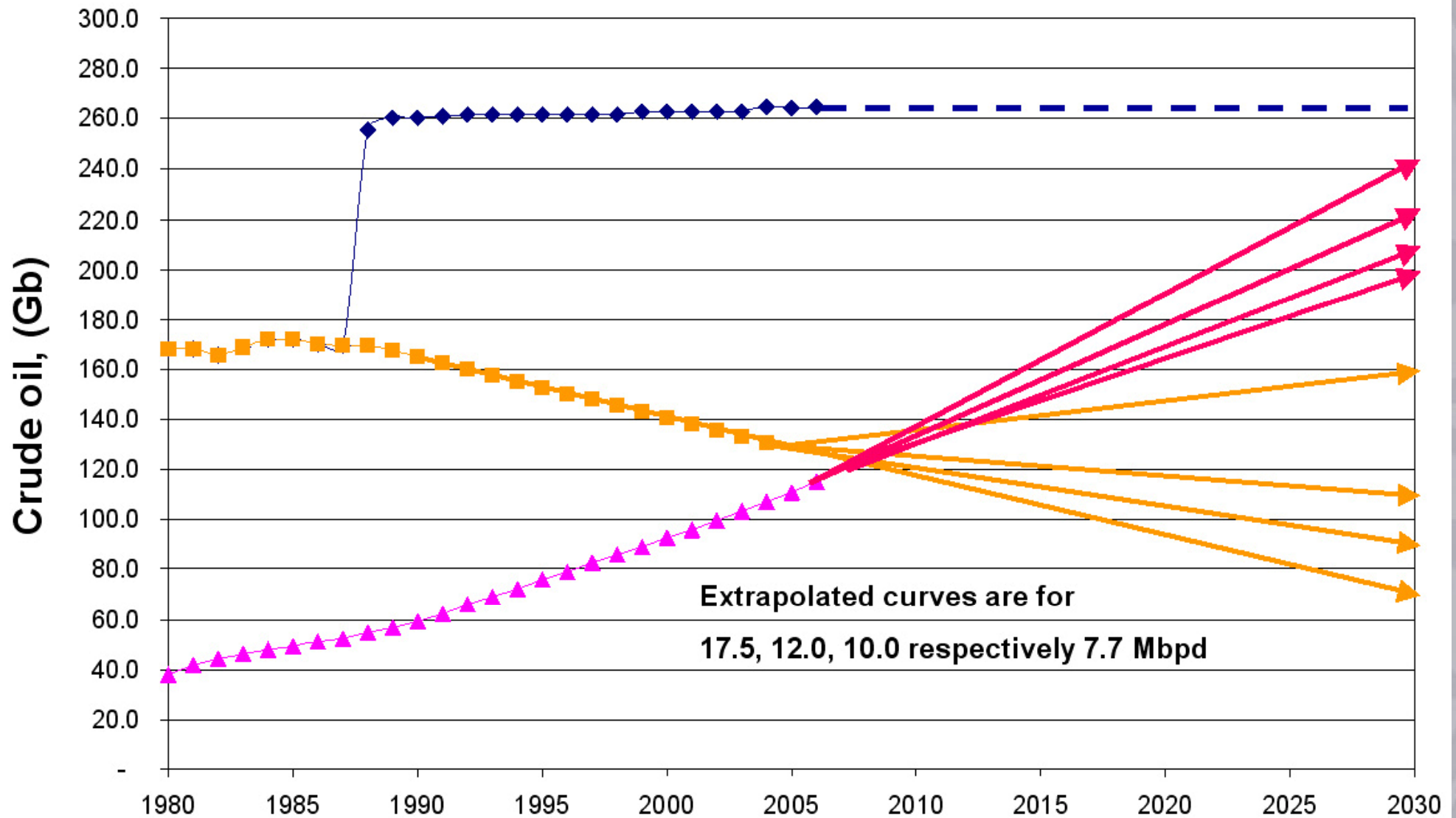
50-Year Crude Scenarios

12 Million Barrels / Day

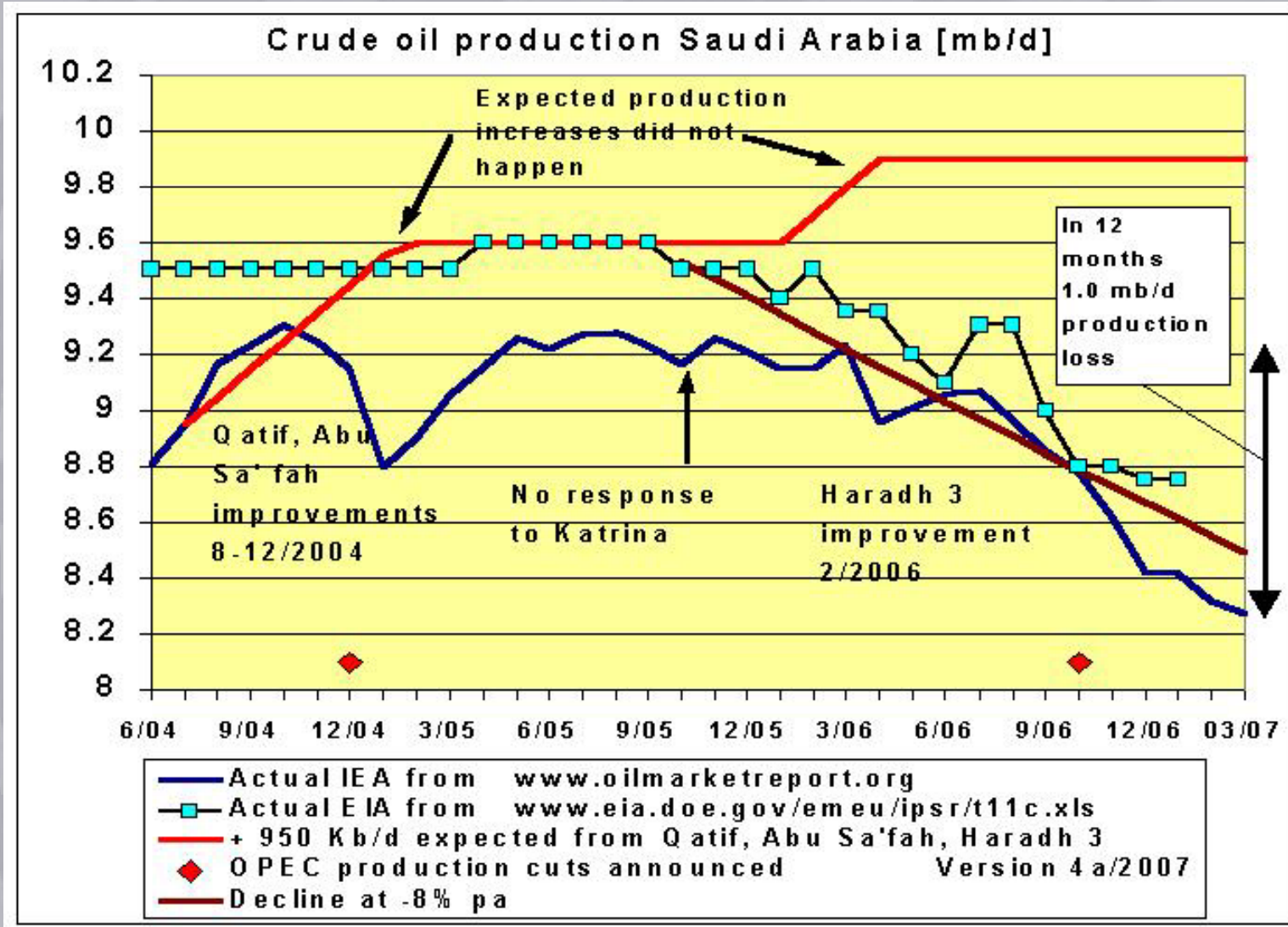
Maximum Sustainable Capacity - MSC



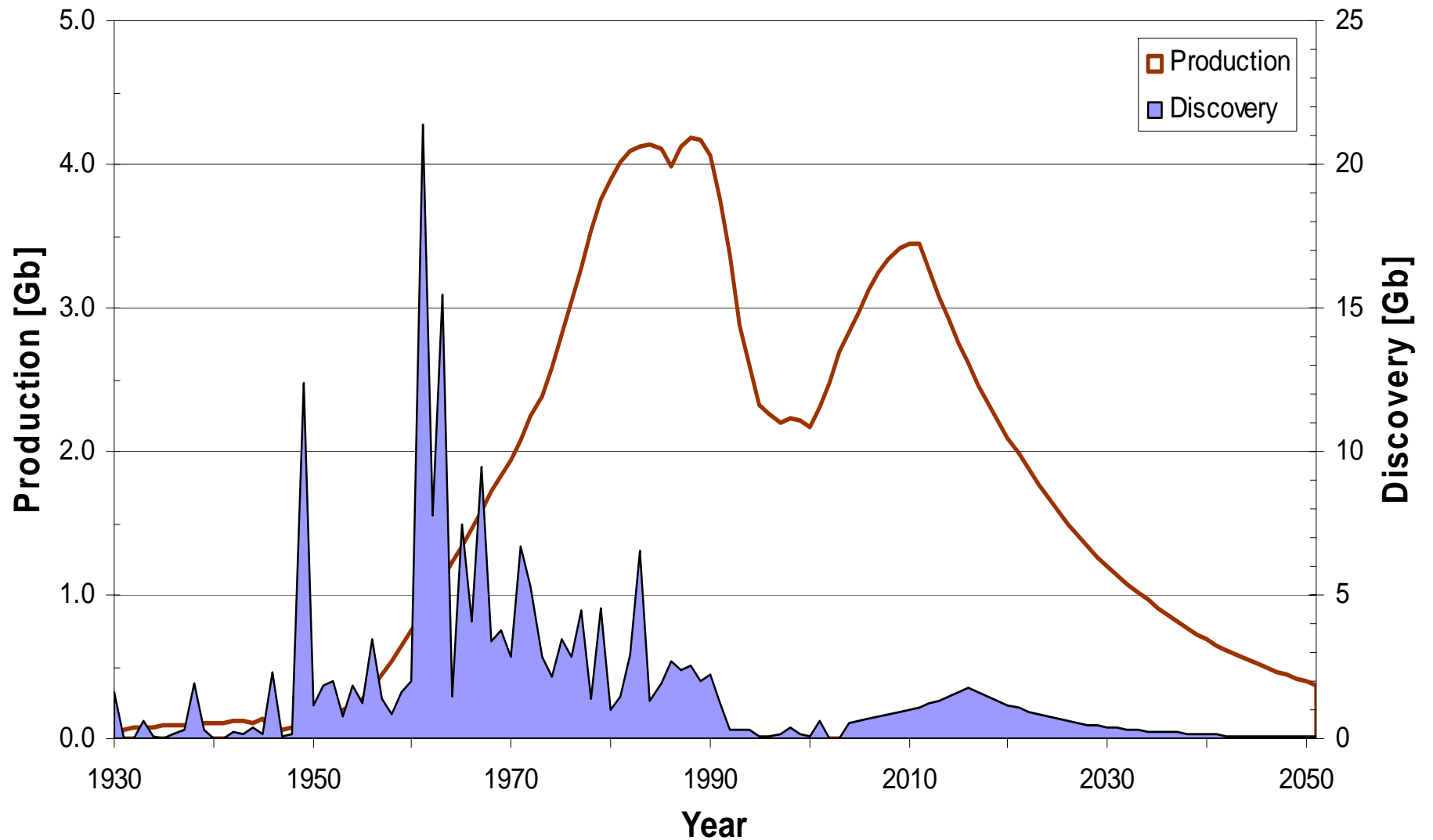
Reported reserves (2p), Developed reservs (1P) and Cumulative production for Saudi Arabia



Production in Saudi Arabia



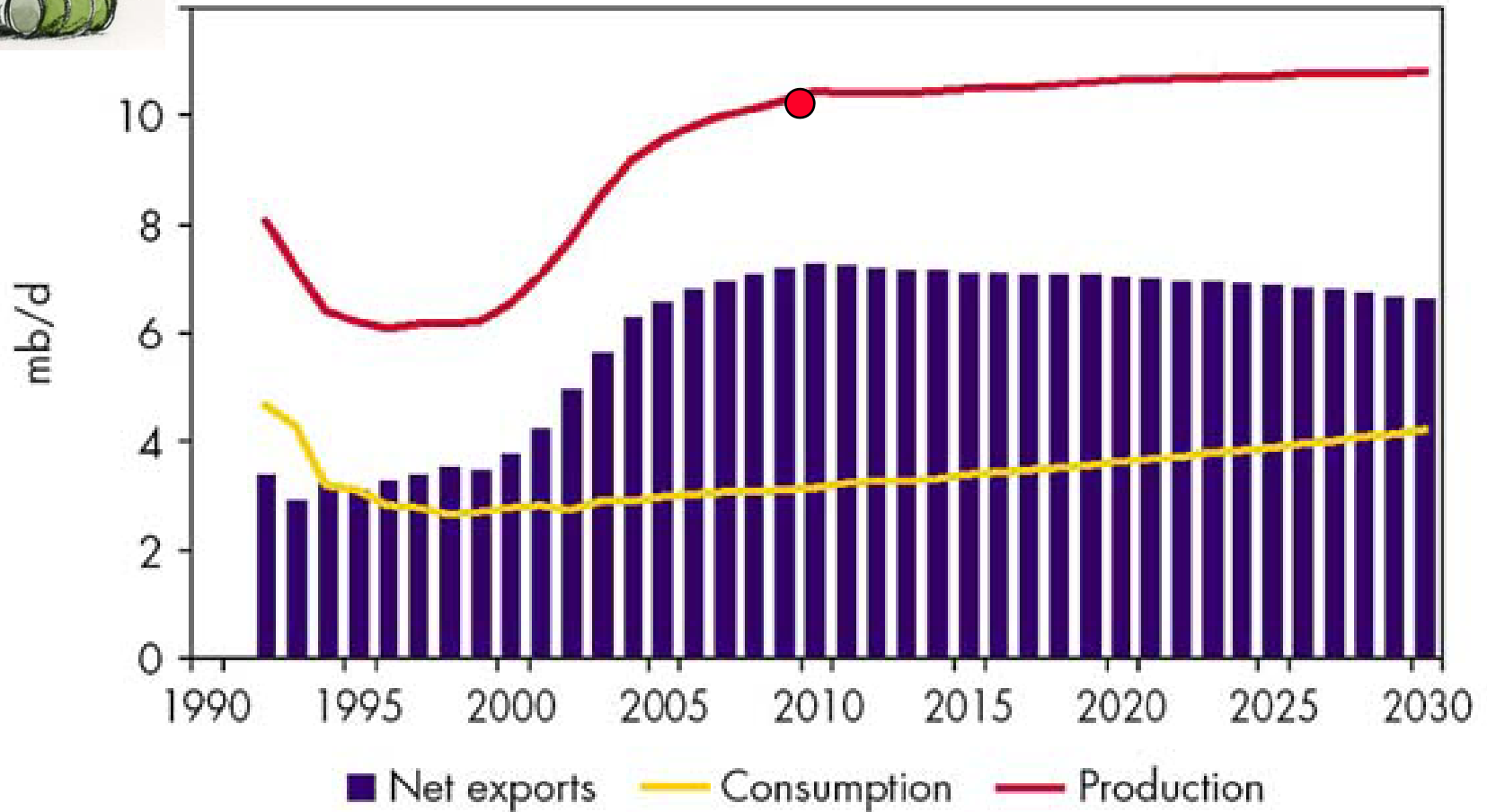
Oil Discovery and Production of Russia



RUSSIA



Russia



Future export of oil from Russia

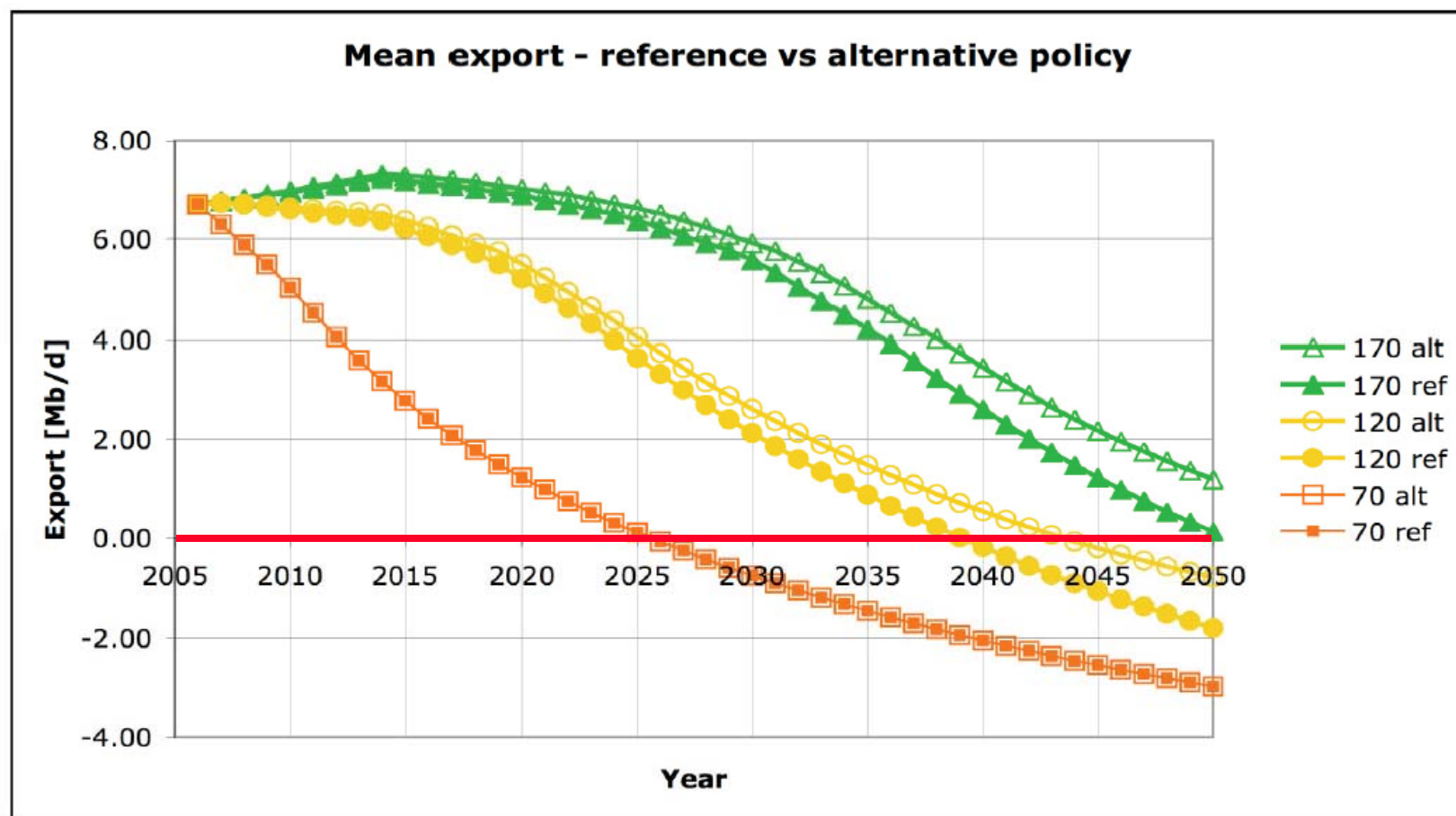
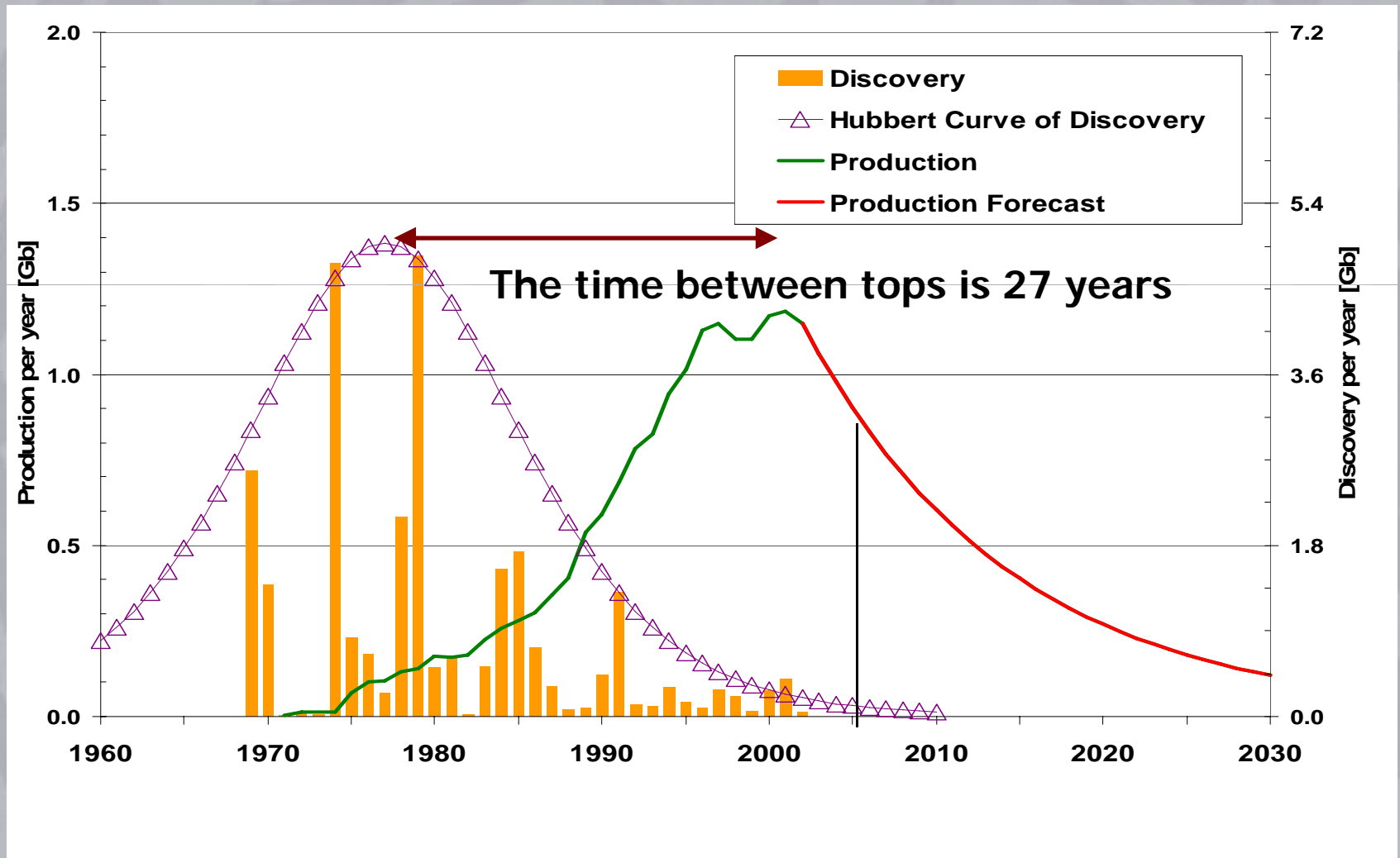


Figure 38. Mean export comparison between the reference policy and the alternative policy for 70, 120 and 170 Gb oil left estimates.

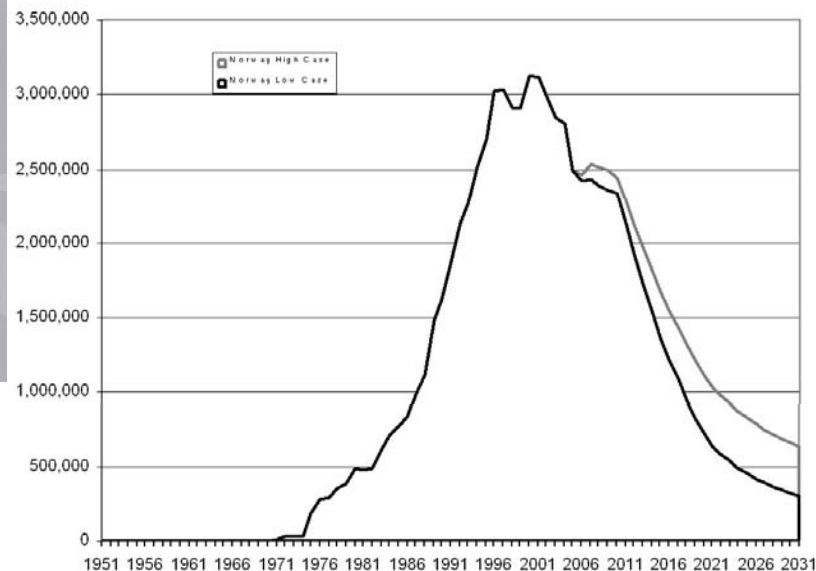
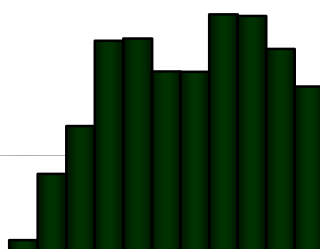


Found and produced oil in Norway



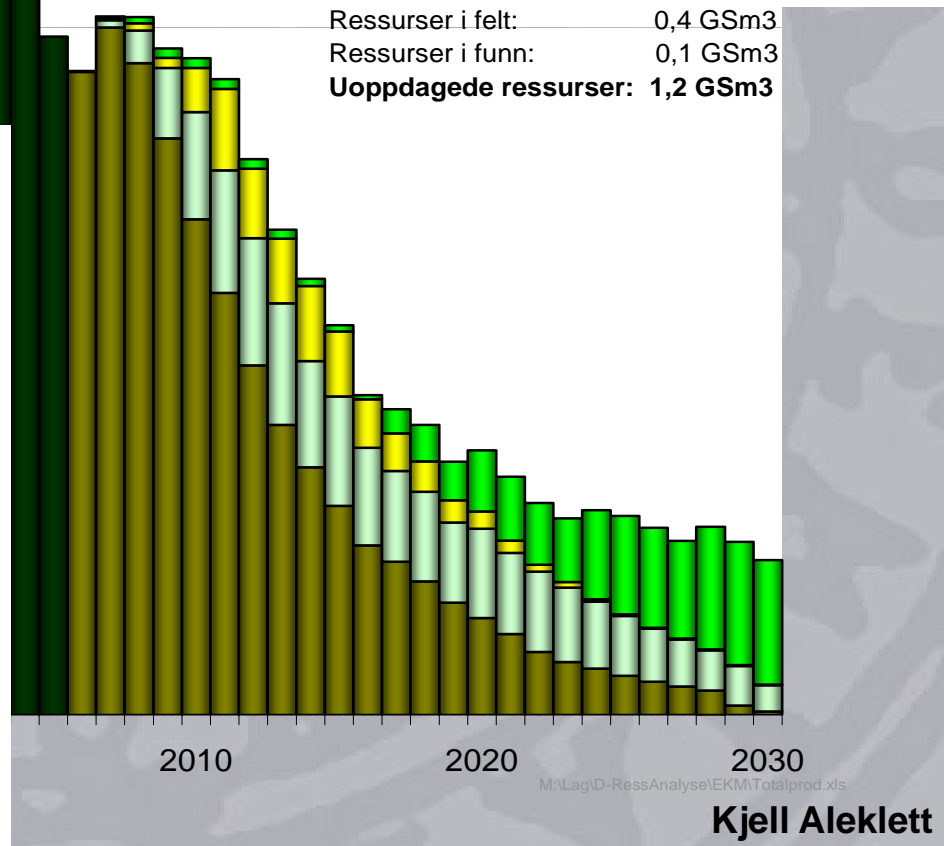
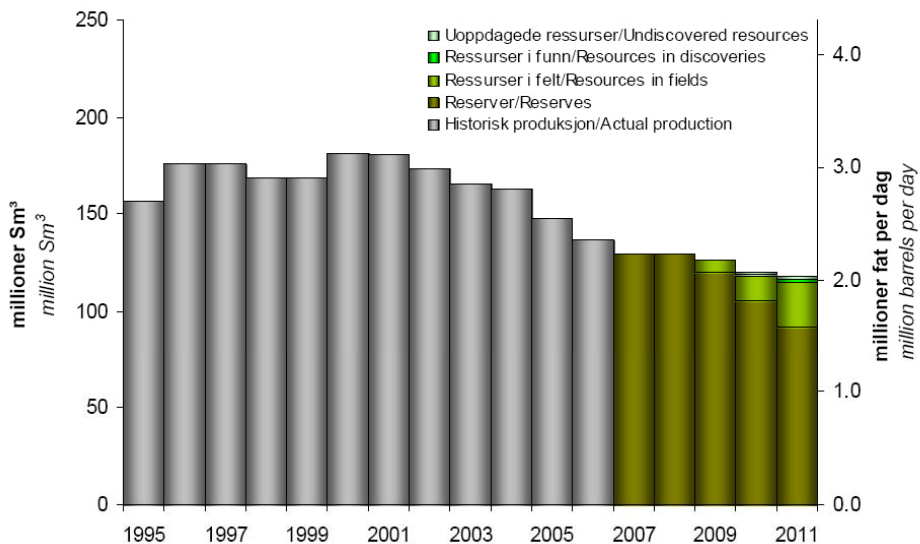
Norway official numbers 2006

Oljeproduksjon, Norsk kontinentalsokkel Alle ressurskategorier



Ressurser i felt: 0,4 GSm³
 Ressurser i funn: 0,1 GSm³
 Uoppdagede ressurser: 1,2 GSm³

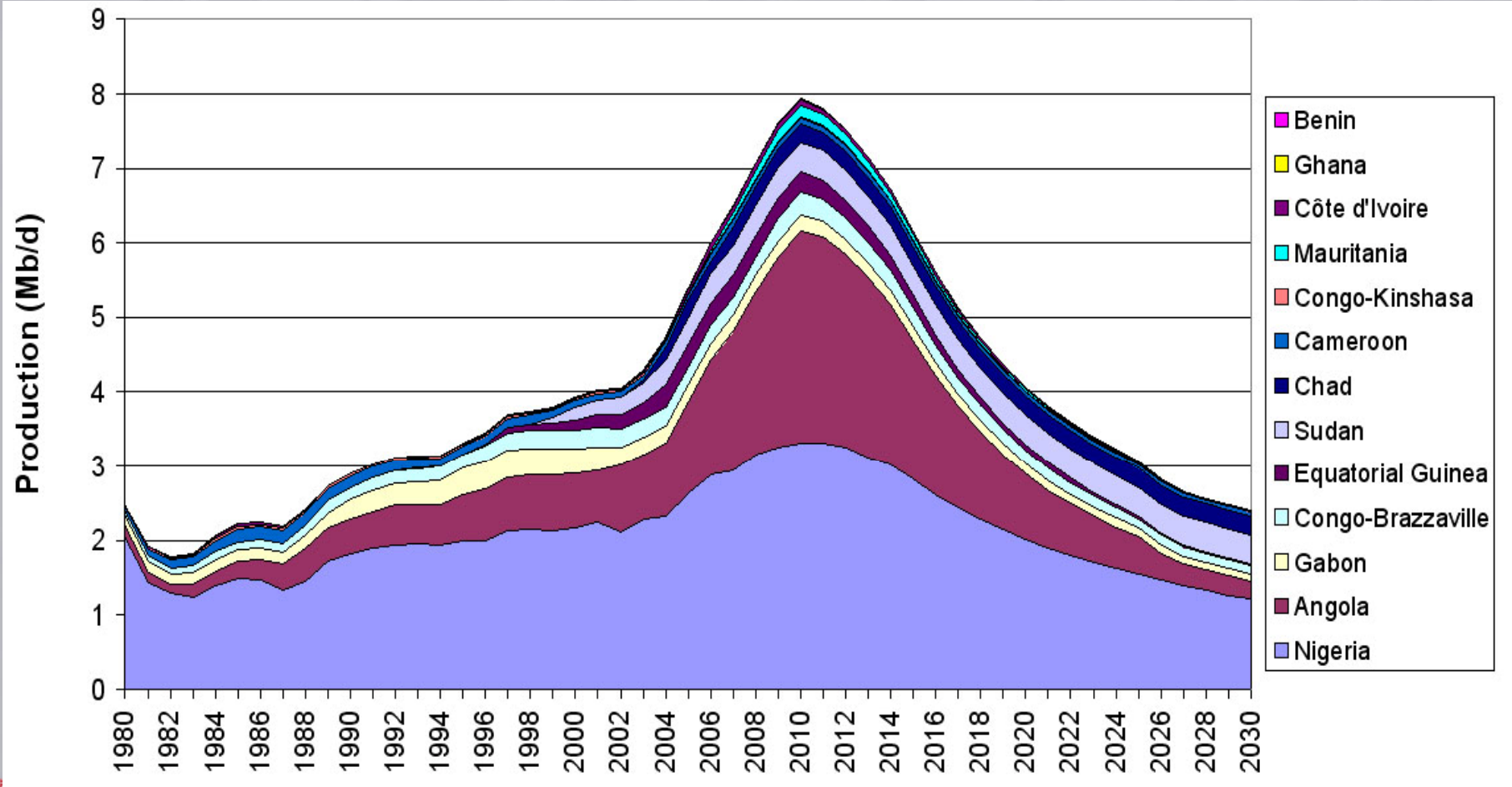
Oil production



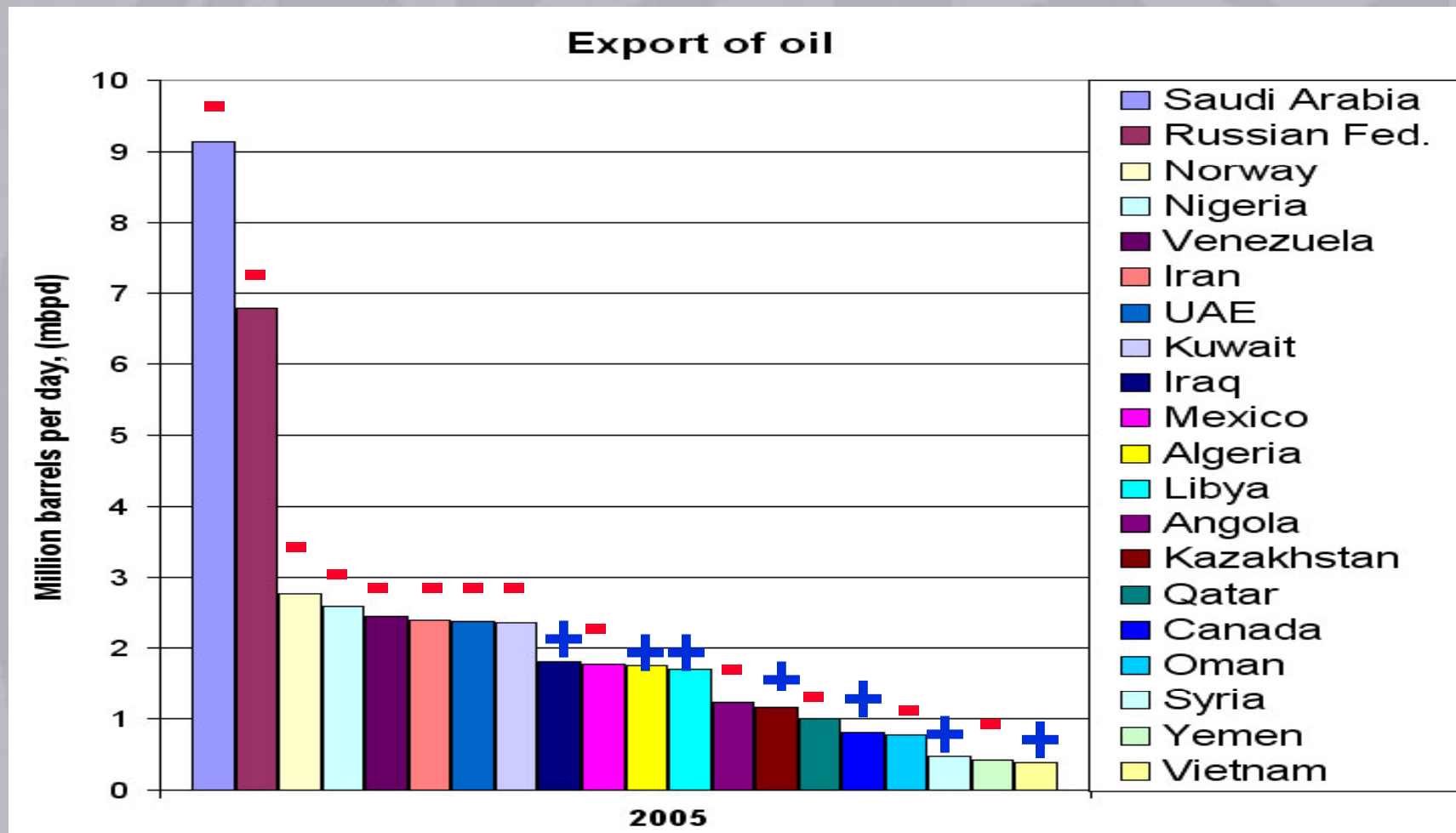
M:\LagID-RessAnalyse\EKM\Totalprod.xls

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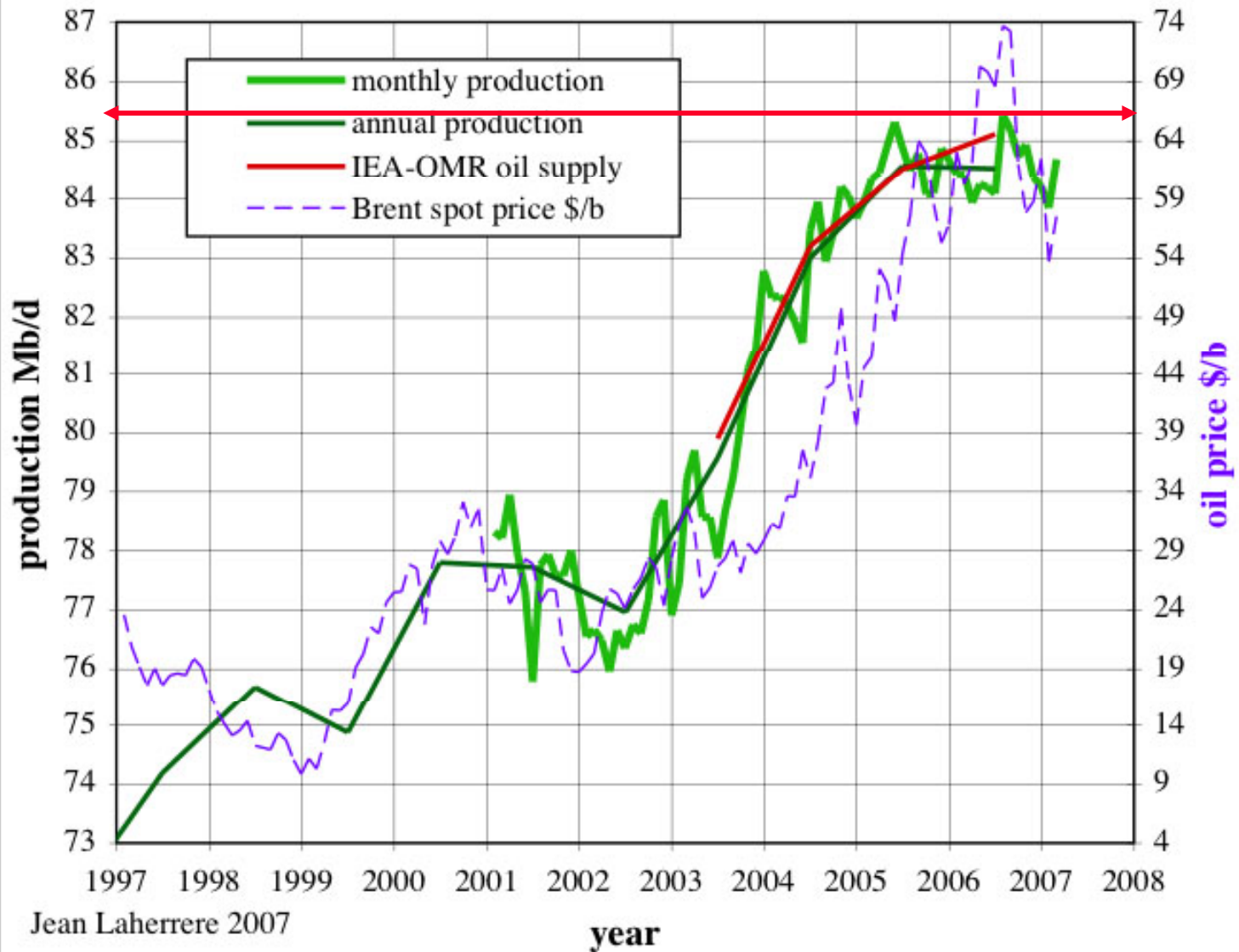
Oil production in SSA



Exports + and - in 2030



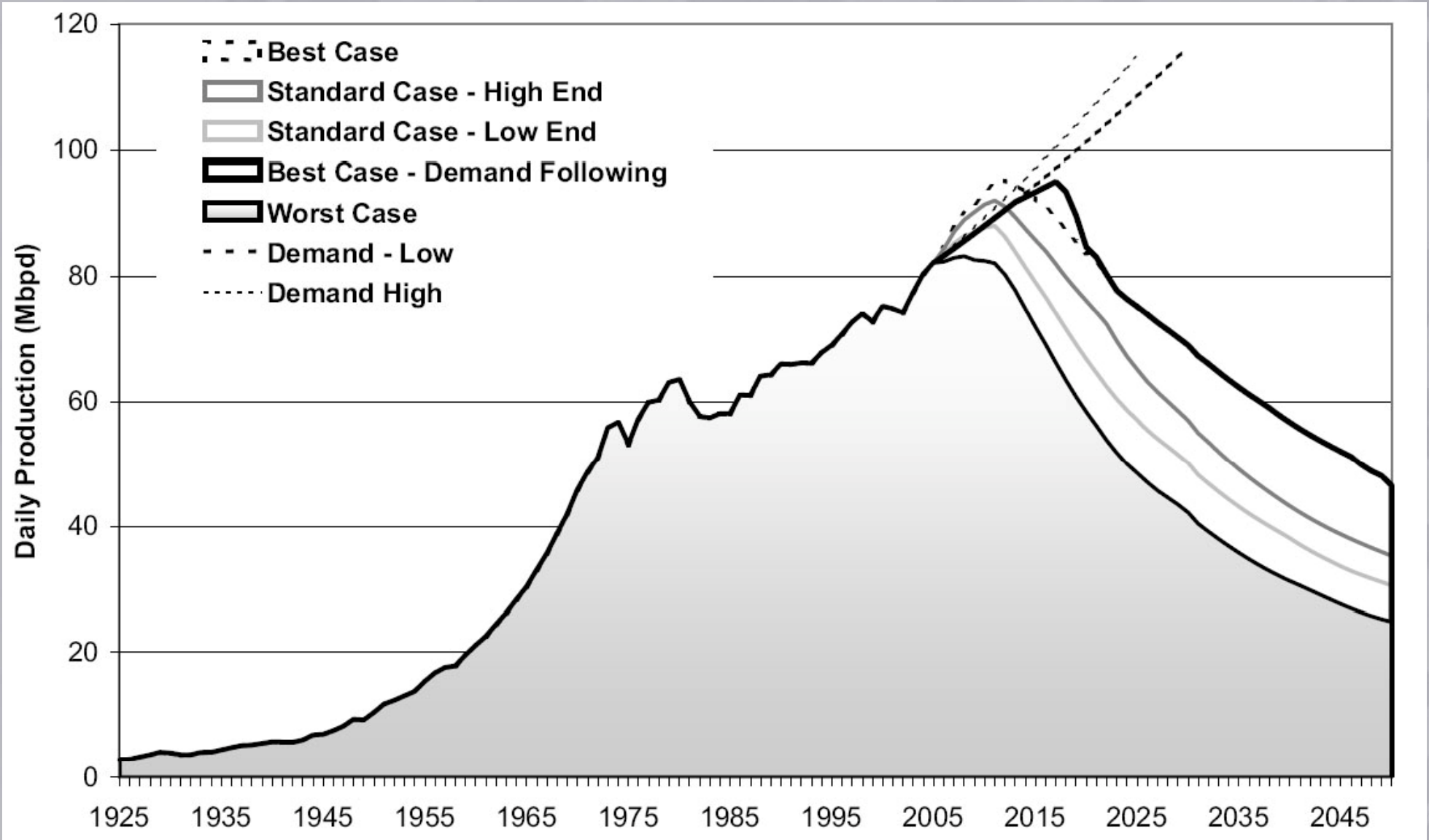
World liquids production from USDOE/EIA 1997-Feb.2007



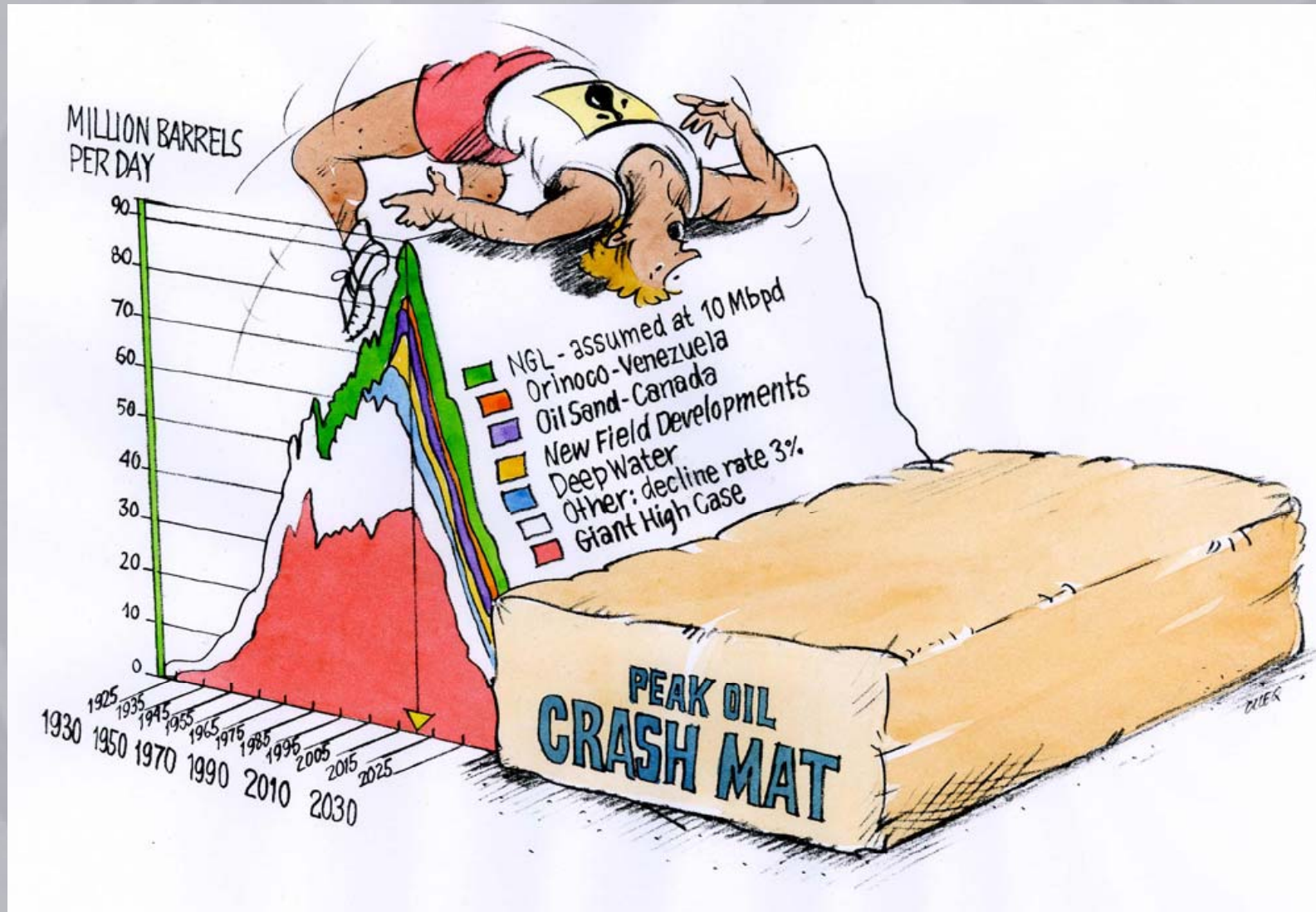
Jean Laherrere 2007



The Uppsala Giant Oilfield Model



We have to build a "Crash Mat"



Uppsala Hydrocarbon Depletion Study Group, Uppsala University, Sweden



**Resource Physics
Energy Systems
Energy and Technology in the Society**

www.tsl.uu.se/uhdsg



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