

HIDROCARBUROS NO CONVENCIONALES

UNA MIRADA ESTRATÉGICA

Ing. Víctor Bronstein

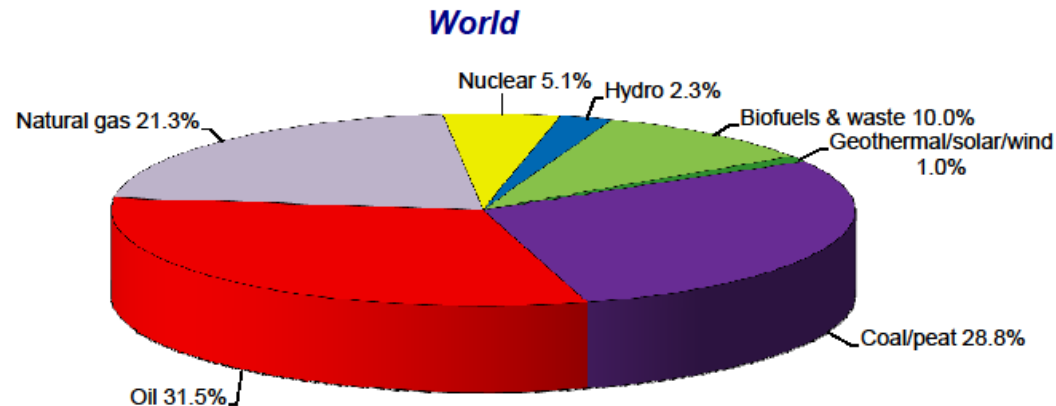
MATRIZ ENERGÉTICA MUNDIAL

IEA Energy Statistics

Statistics on the web: <http://www.iea.org/statistics/>



Share of total primary energy supply* in 2011



13 113 Mtoe

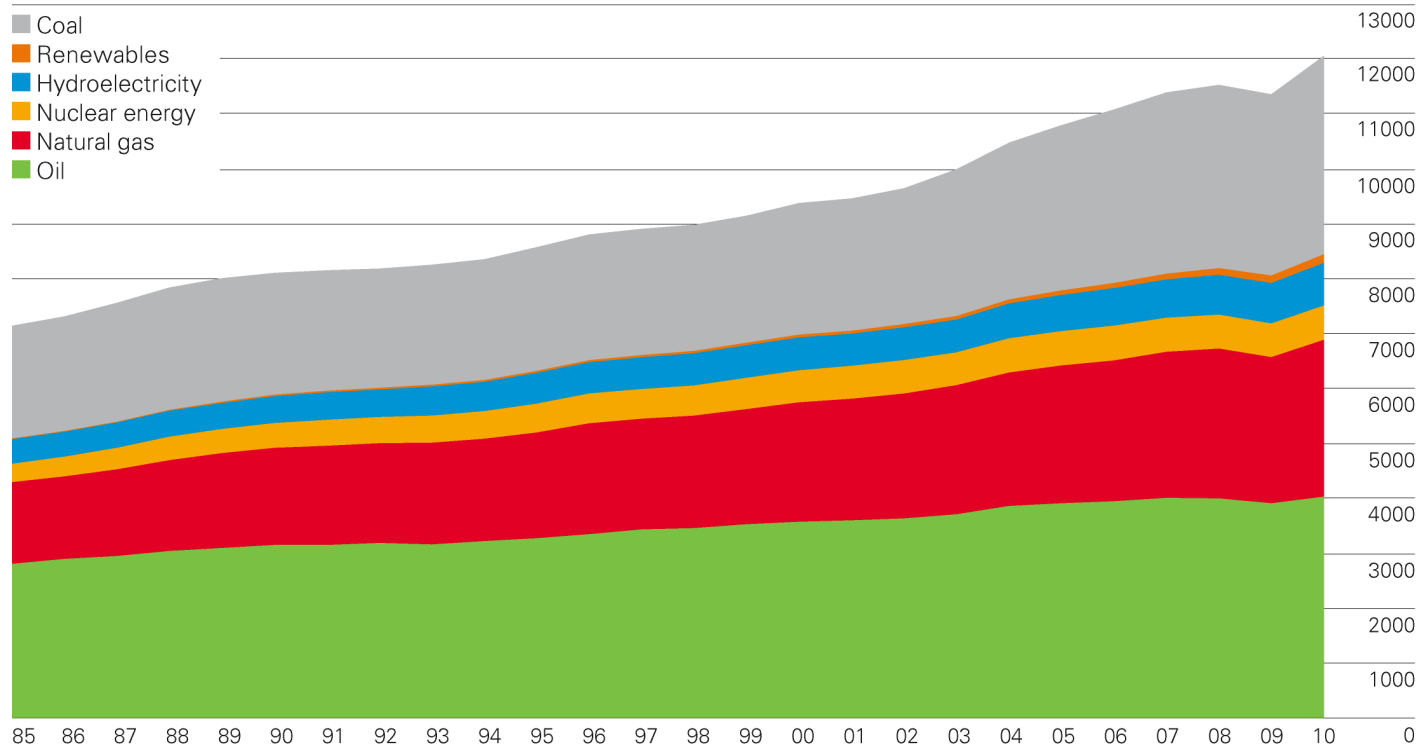
* Share of TPES excludes electricity trade.

Note: For presentational purposes, shares of under 0.1% are not included and consequently the total may not add up to 100%.

CONSUMO ENERGÍA PRIMARIA MUNDIAL

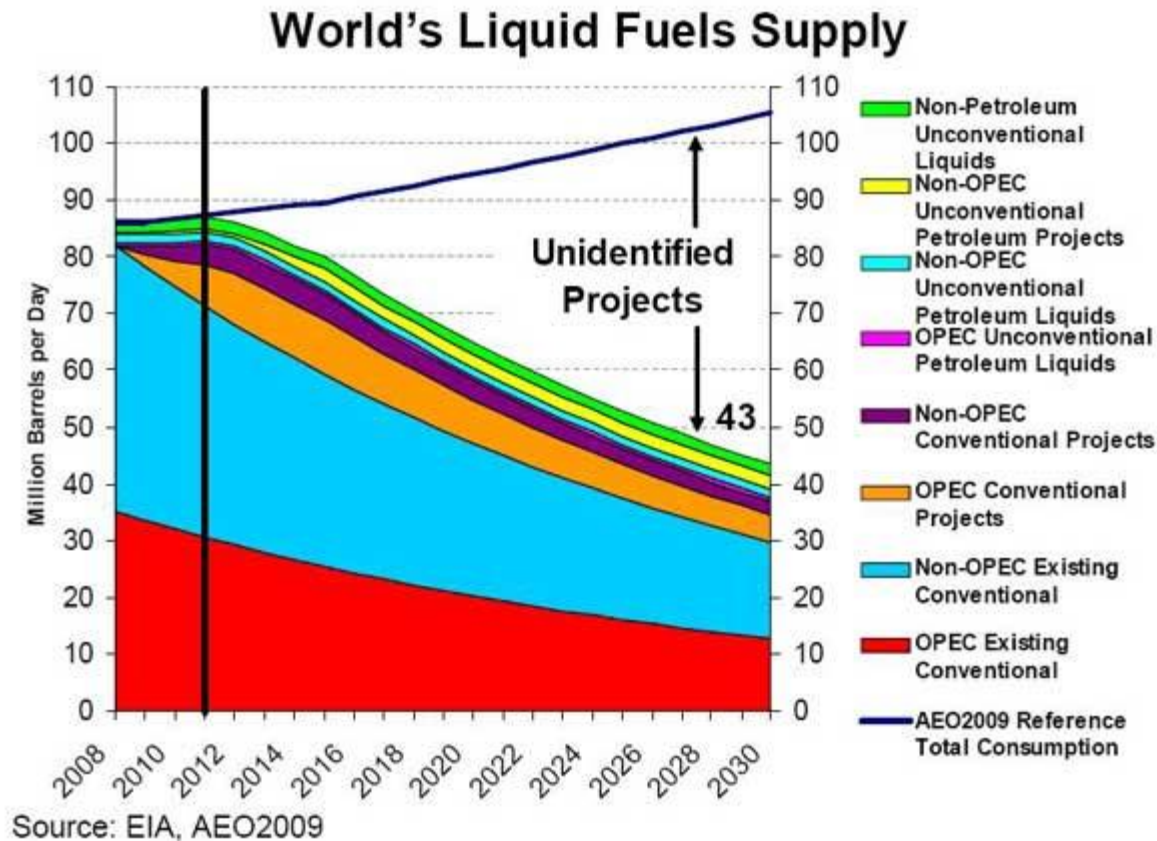
World consumption

Million tonnes oil equivalent



World primary energy consumption grew by 5.6% in 2010, the strongest growth since 1973. Growth was above average for oil, natural gas, coal, nuclear, hydroelectricity, as well as for renewables in power generation. Oil remains the dominant fuel (33.6% of the global total) but has lost share for 11 consecutive years. The share of coal in total energy consumption continues to rise, and the share of natural gas was the highest on record.

RECONOCIMIENTO DEL DOE



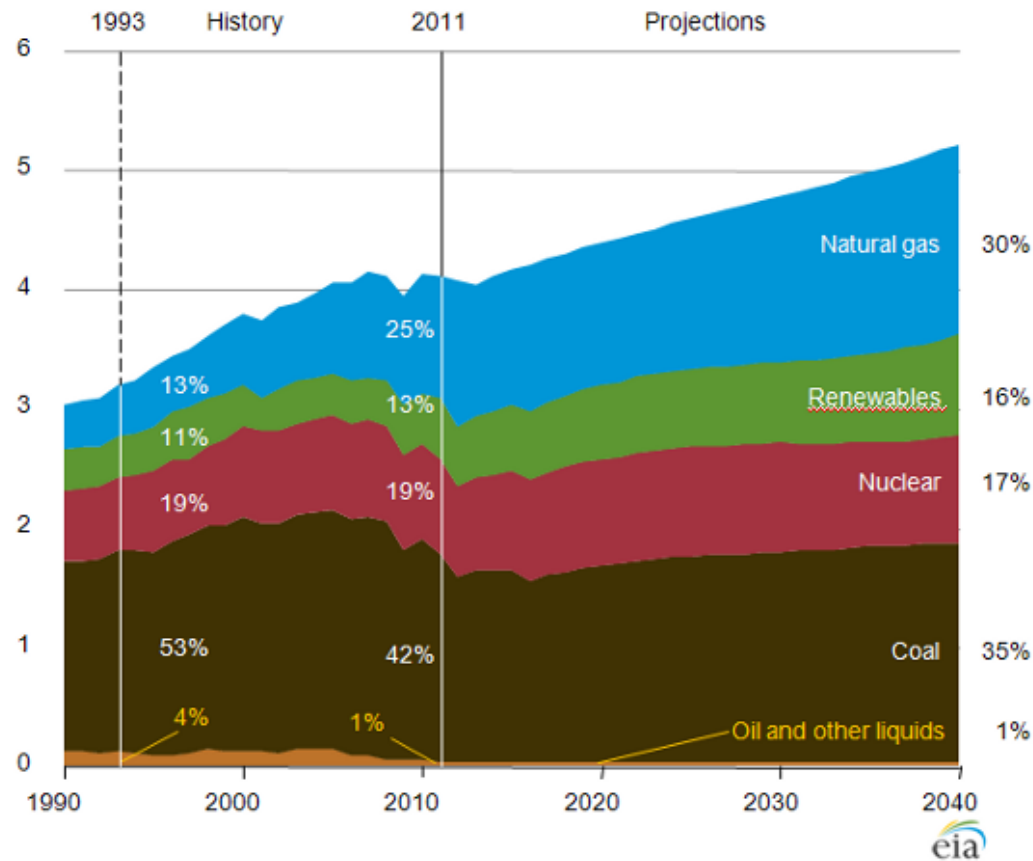
NUESTRA CIVILIZACIÓN (FLUJOS DE ENERGÍA)

- Combustibles
- Electricidad

GENERACIÓN ELÉCTRICA

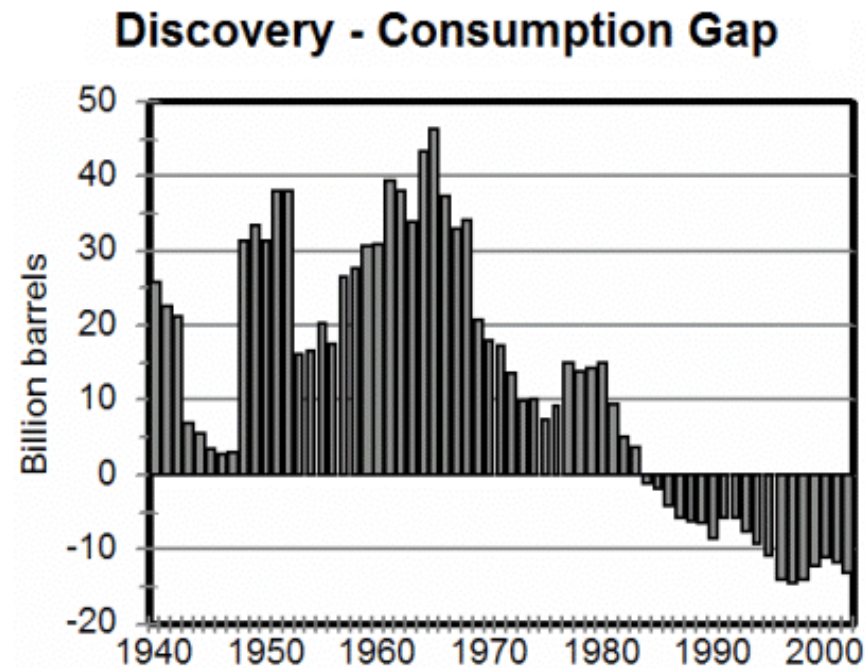
Electricity generation by fuel, 1990-2040

trillion kilowatthours per year



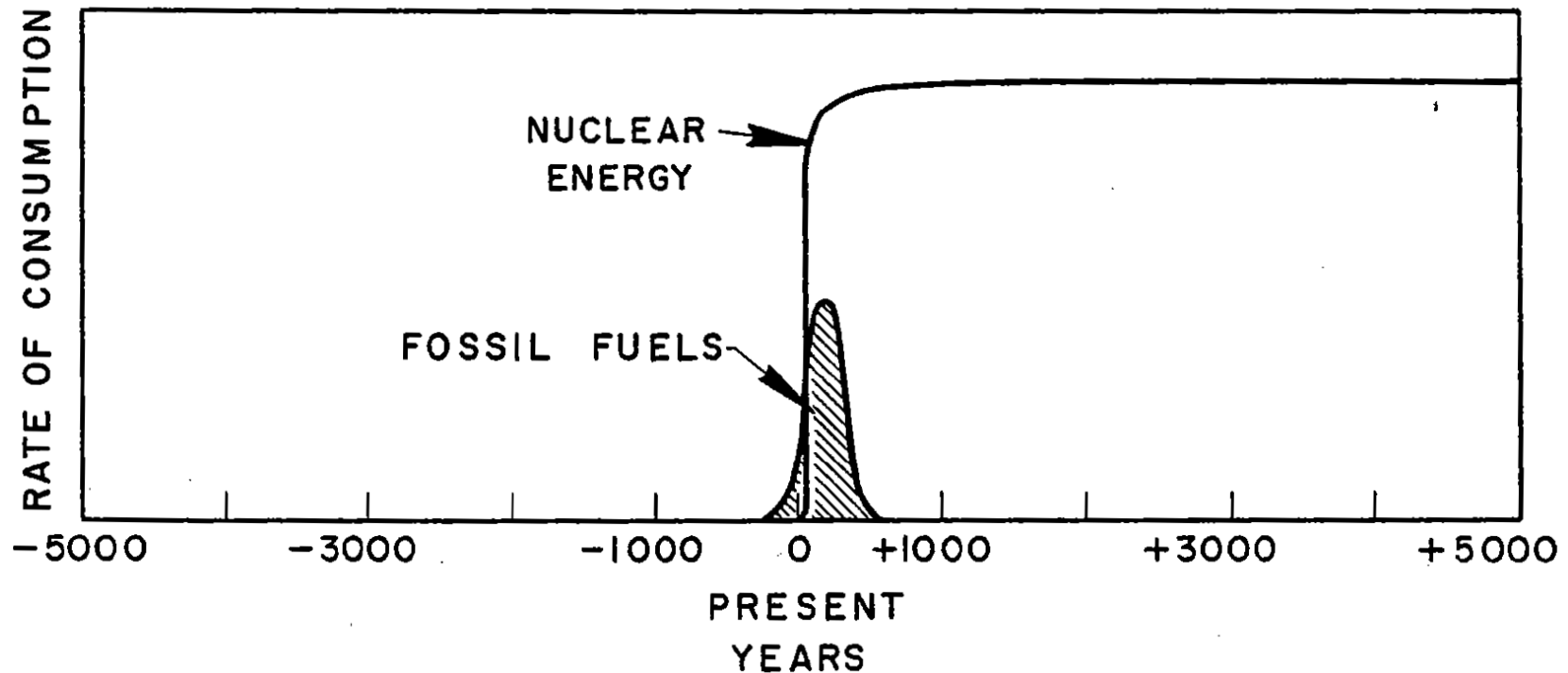
PUNTO DE QUIEBRE

Figure 1

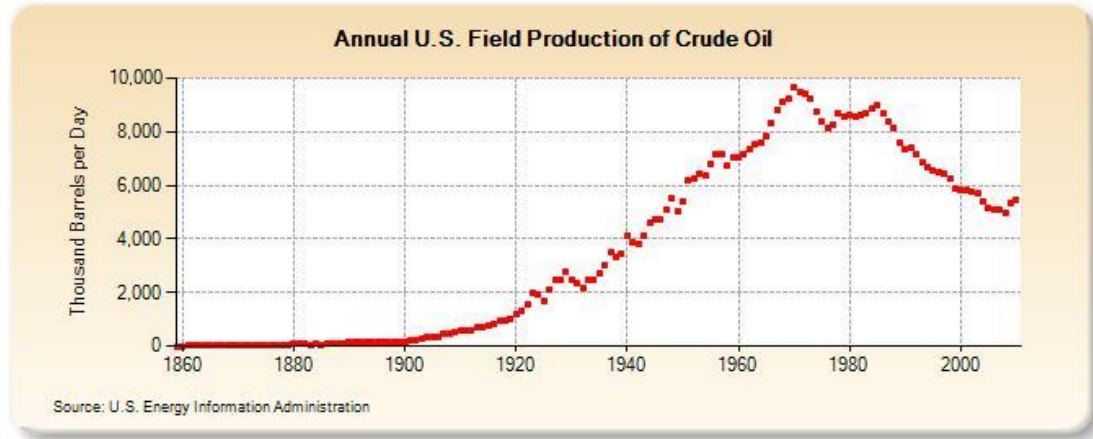


Source: The Peak and Decline Of World Oil And Gas Production, K. Aleklett and C.J.Campbell, Uppsala University, Sweden, 2003

PREDICCIONES DE M. KING HUBBERT



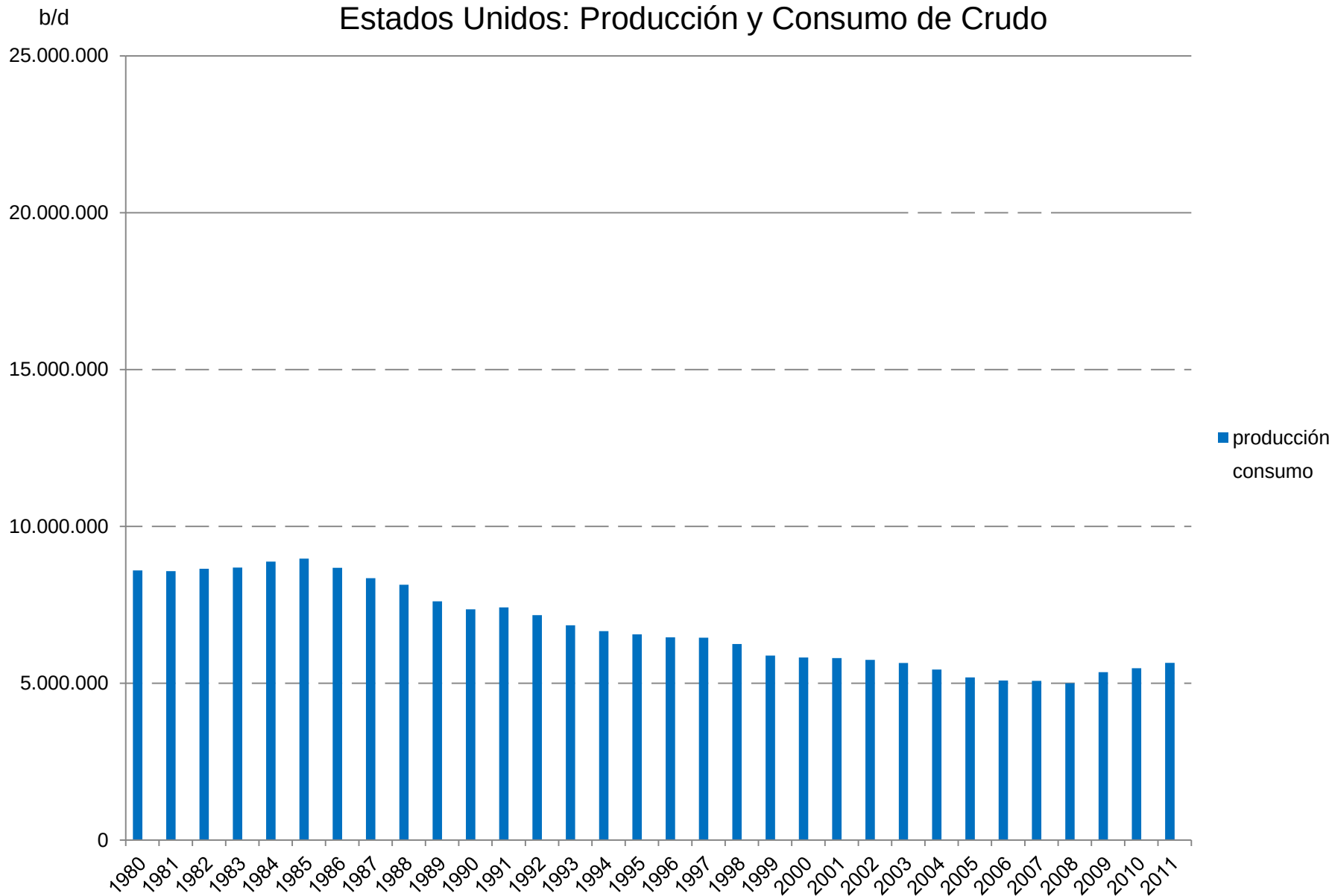
ESTADOS UNIDOS



PROYECTO INDEPENDENCIA

- “Asumamos nuestro objetivo nacional, en el espíritu del Proyecto Apolo y con la determinación del Proyecto Manhattan, que para el fin de esta época (1990) nosotros habremos desarrollado nuevas formas de energía para no depender de ninguna fuente energética extranjera”
Richard Nixon, 1974

Estados Unidos: Producción y Consumo de Crudo

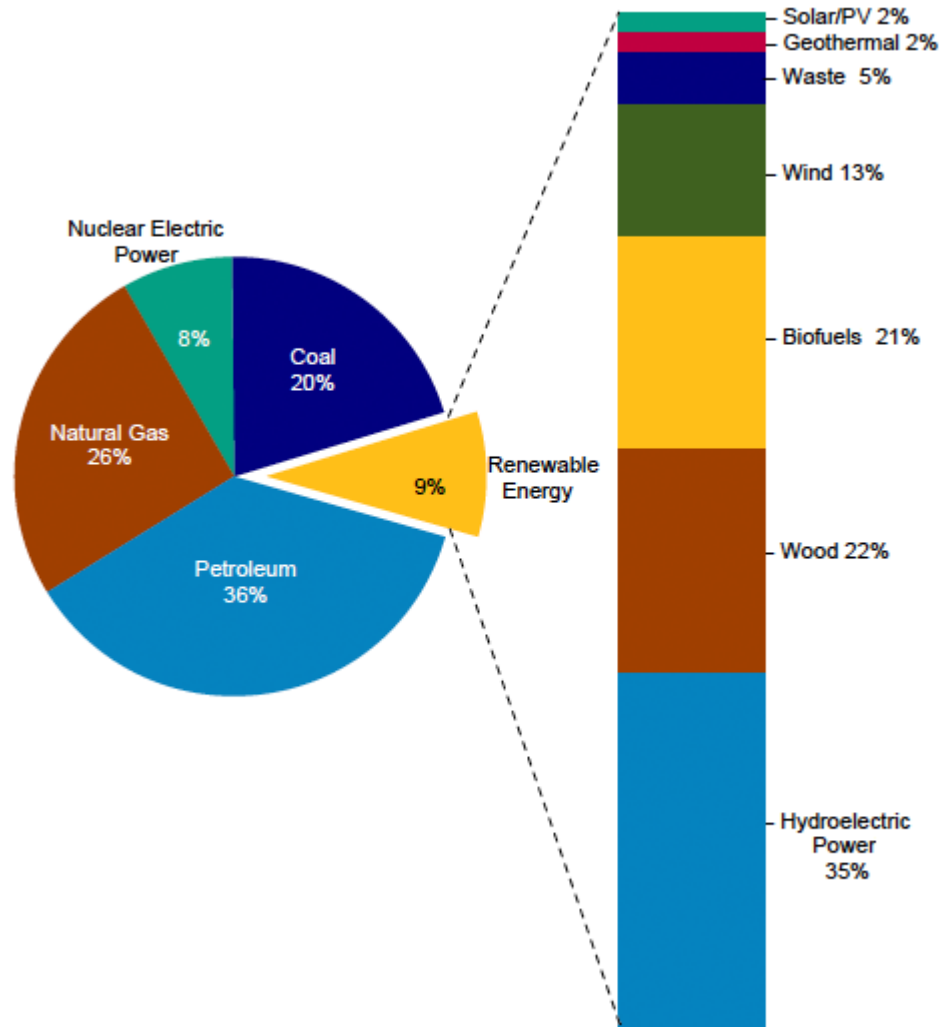


Elaboración: Observatorio Energético Untref – Fuente AIE

ACUERDO NACIONAL PARA LA ENERGÍA SOLAR

- “Para el año 2000 el 20% de la energía de EE.UU. será generada por algún tipo de energía solar.” James Carter, 1979

RENOVABLES EE.UU.



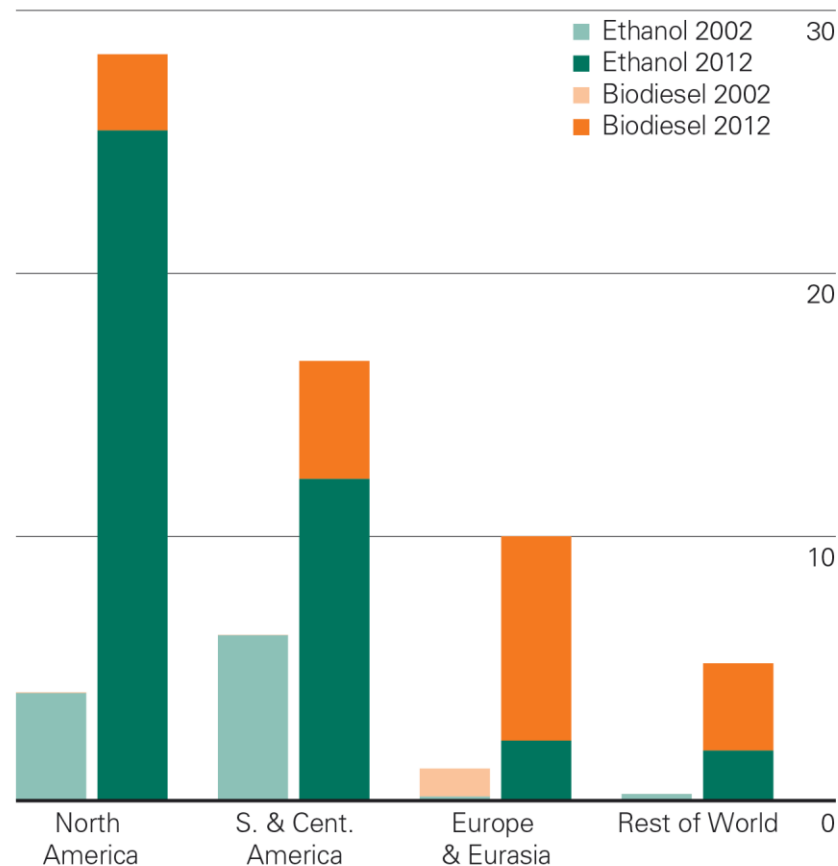
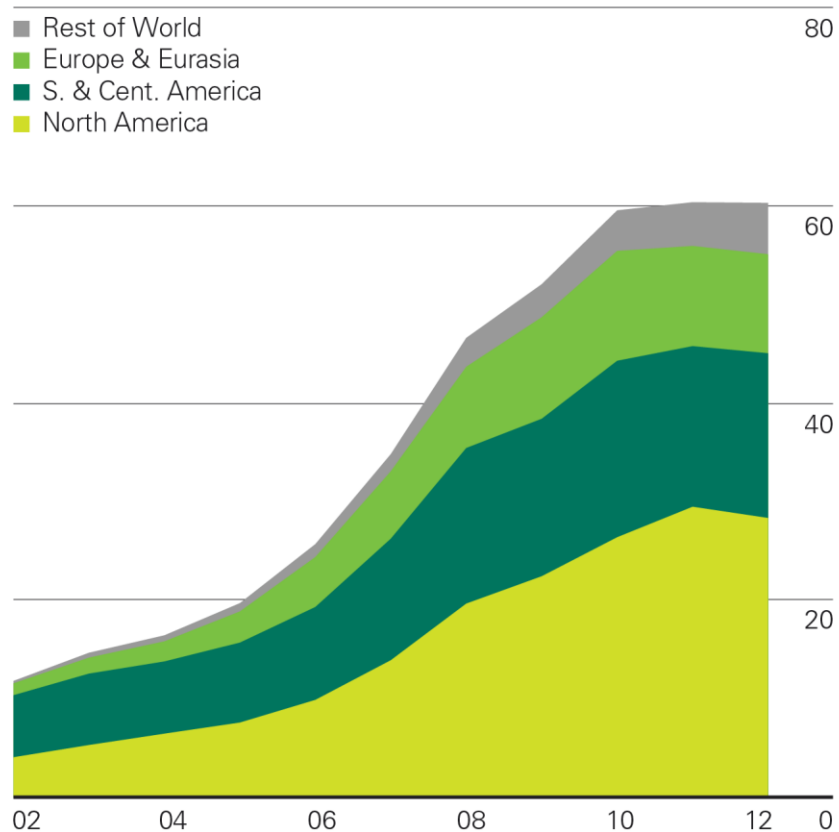
BIOCOMBUSTIBLES

- El presidente Bush, en 2007, intenta mostrar a los biocombustibles como una alternativa para superar la “adicción al petróleo” como él mismo definió a uno de los problemas más graves del país.

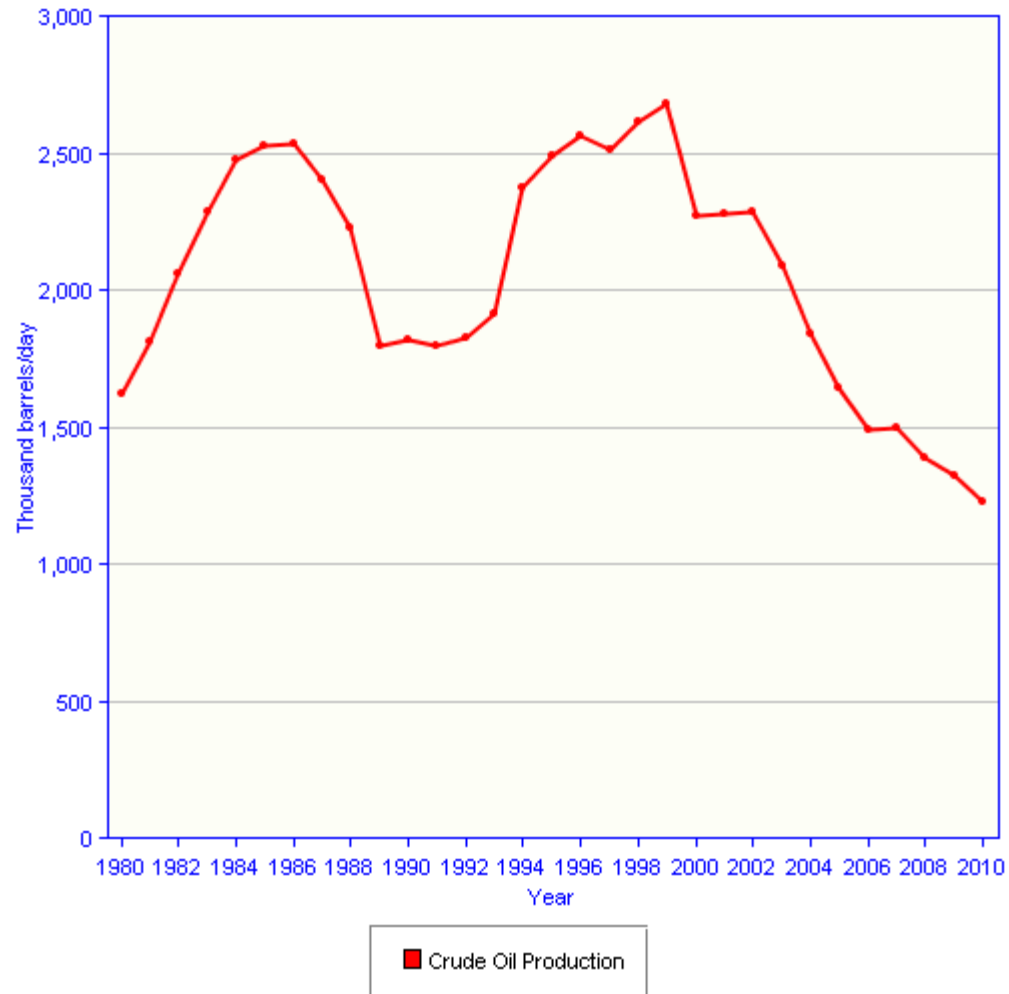
BIOCOMBUSTIBLES PRODUCCIÓN POR REGIÓN

Milones de toe

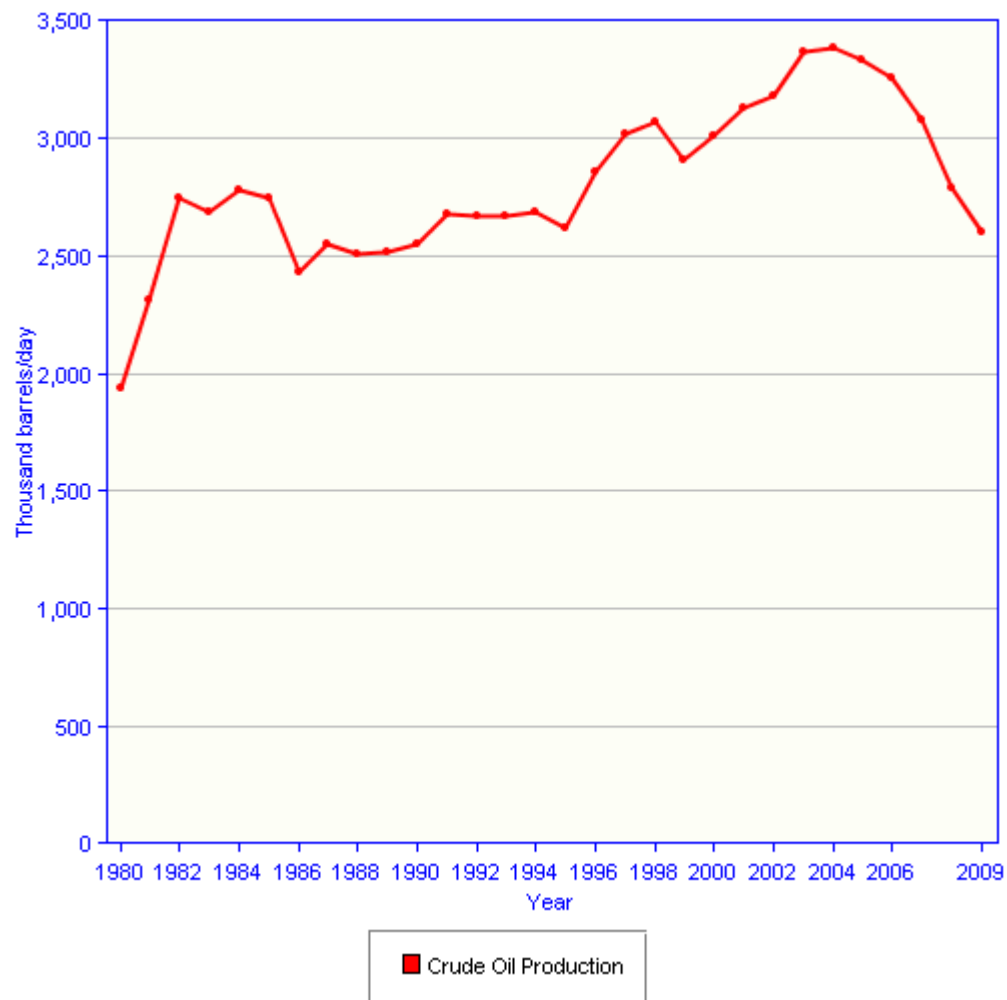
World biofuels production



REINO UNIDO



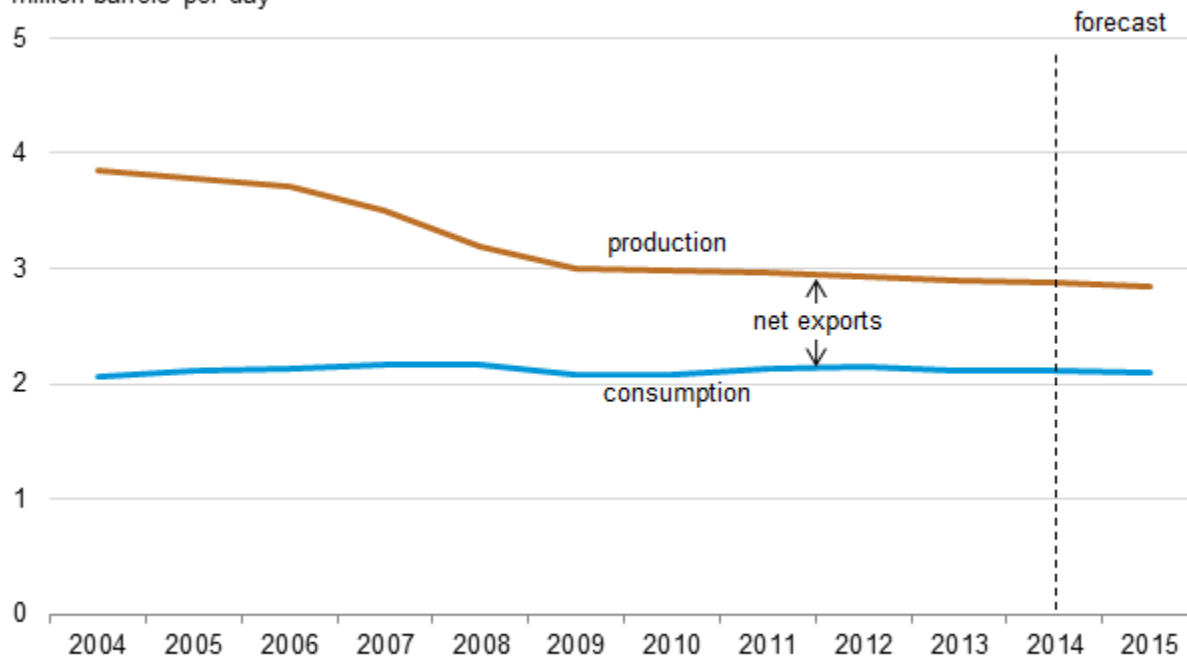
MÉXICO



MÉXICO

Mexico total oil production and consumption, 2004-15

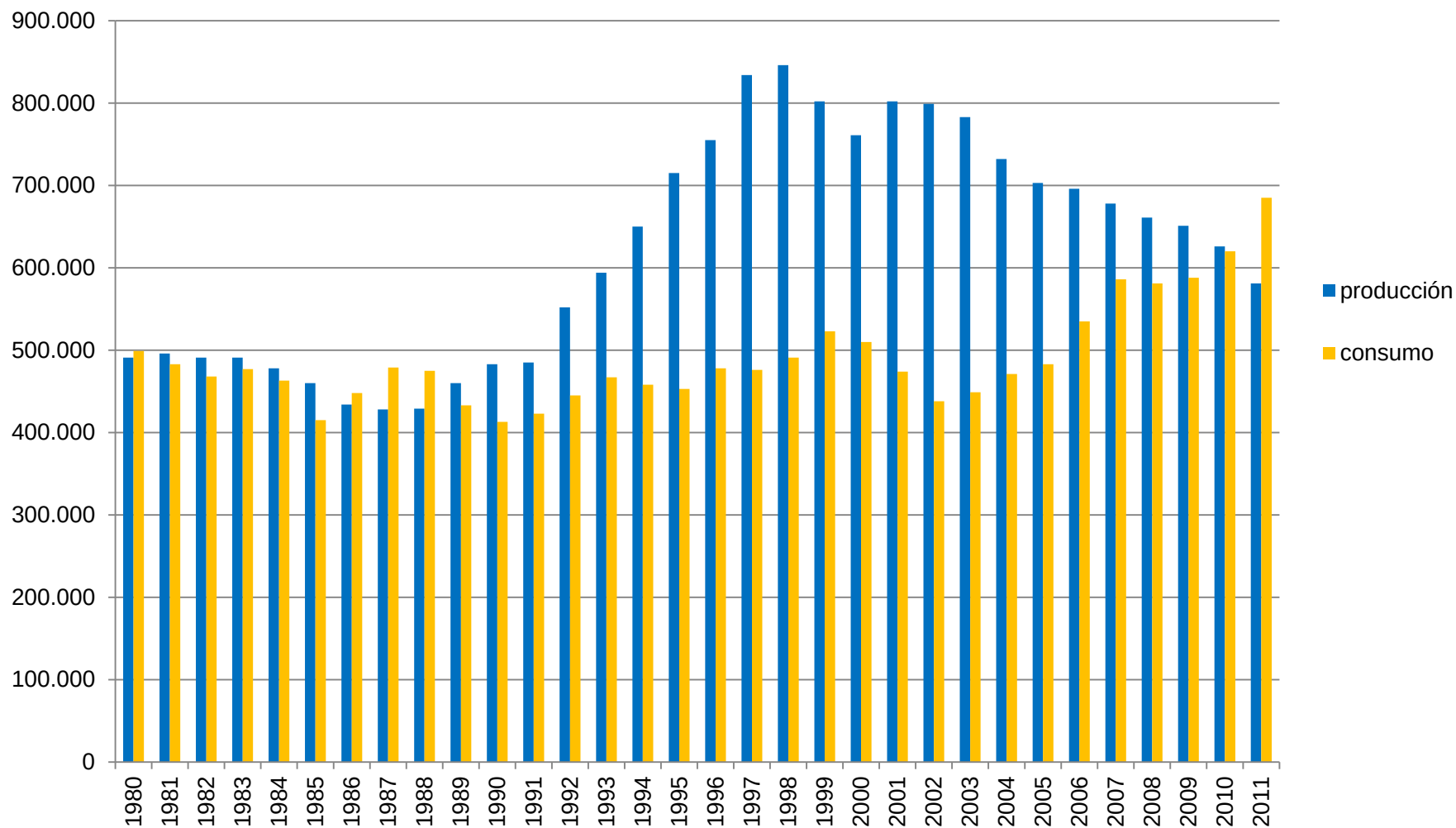
million barrels per day



Source: U.S. Energy Information Administration

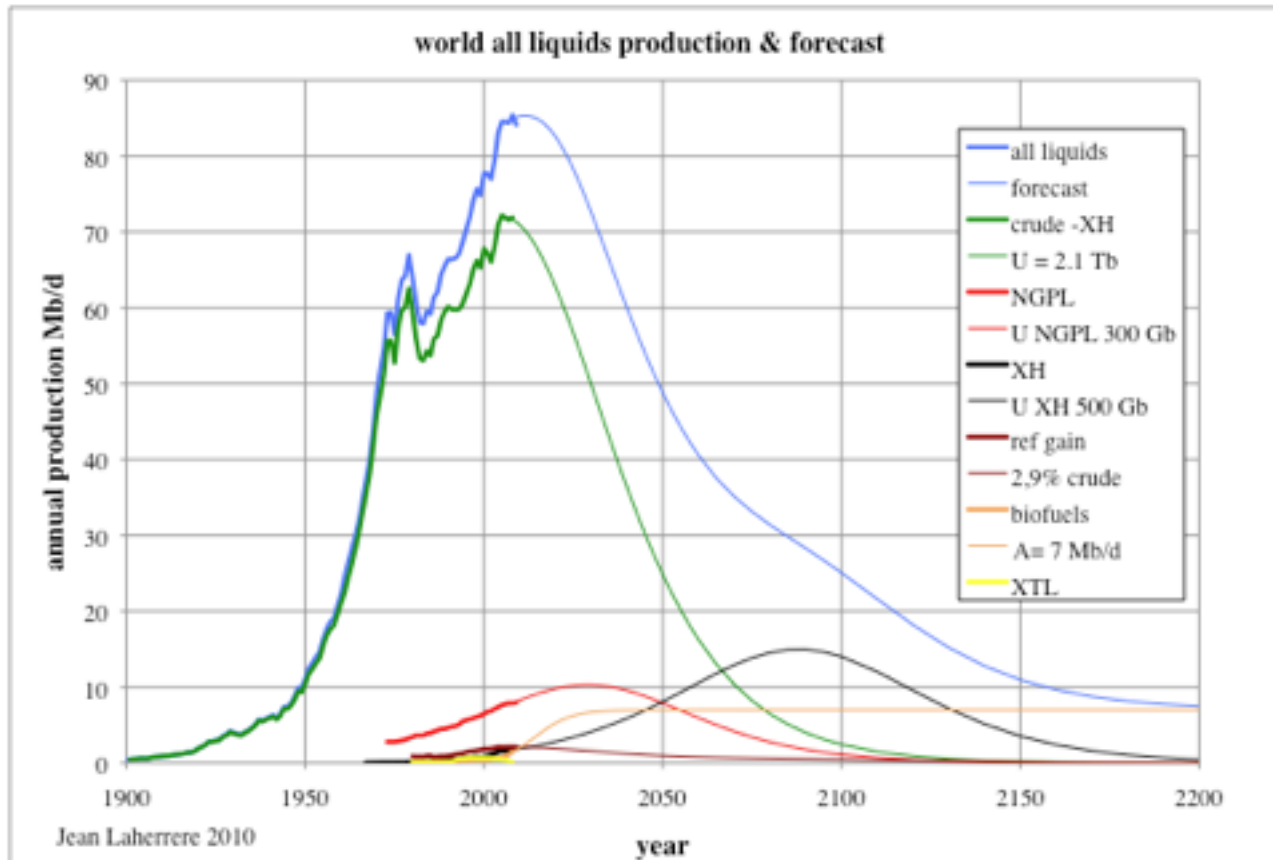
b/d

Argentina: Producción y Consumo de Crudo



Elaboración: Observatorio Energético Untref – Fuente AIE

PEAK OIL

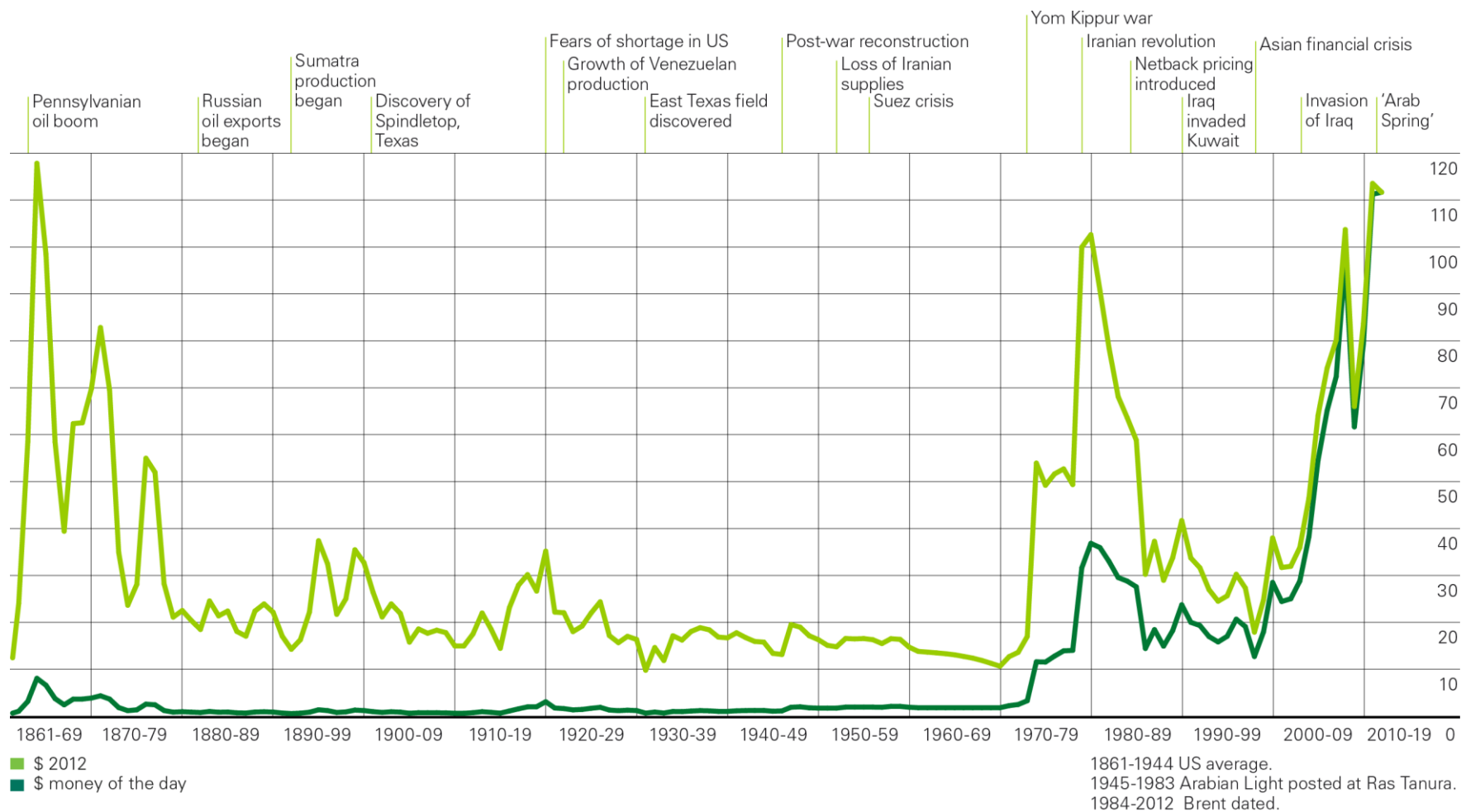


NO CONVENCIONALES

- Ultra pesado
- Aguas profundas
- Oil Sands
- Shale

Crude oil prices 1861-2012

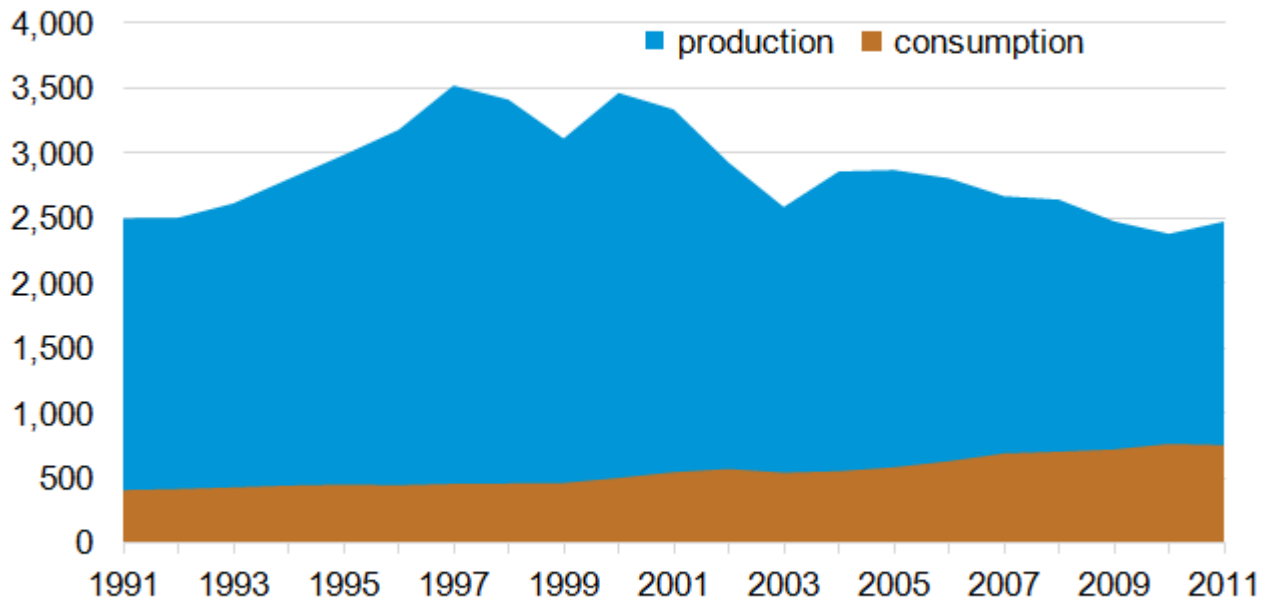
US dollars per barrel, world events



VENEZUELA

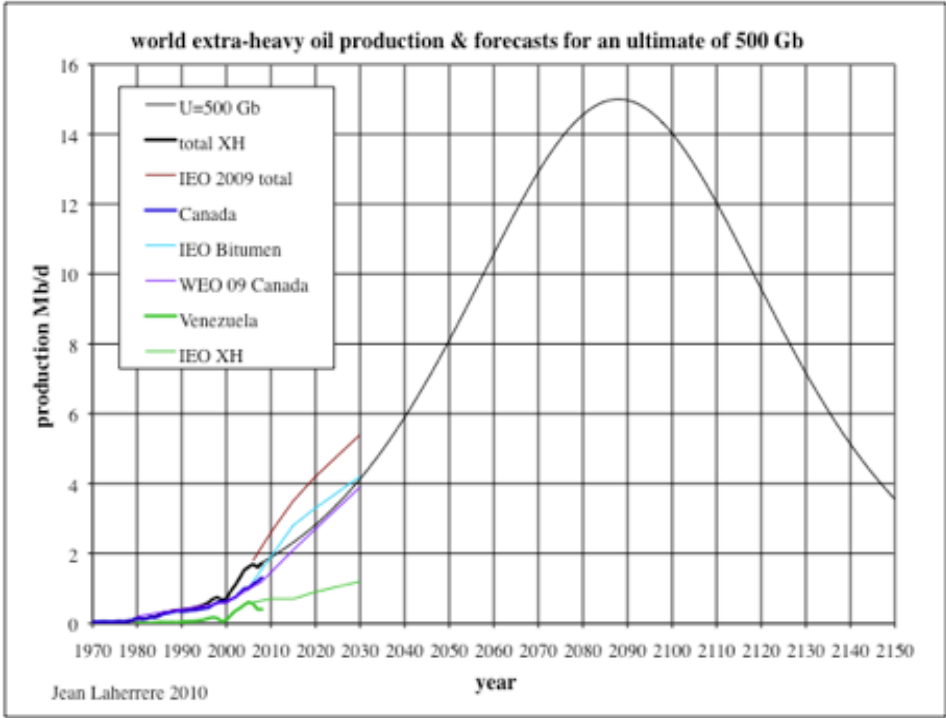
Venezuela's oil production and consumption (1991-2011)

thousand barrels per day



Source: U.S. Energy Information Administration

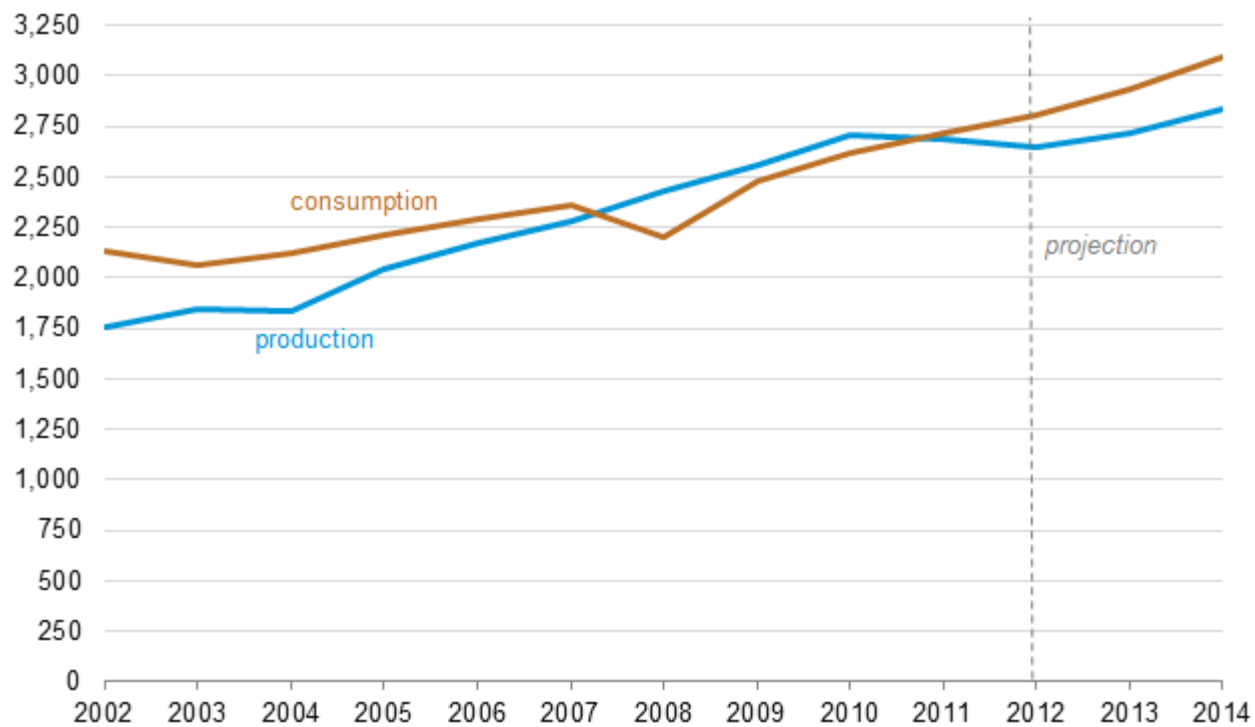
PETRÓLEO ULTRA PESADO



BRASIL

Brazil's liquid fuels production and consumption, 2002-2014

thousand barrels per day

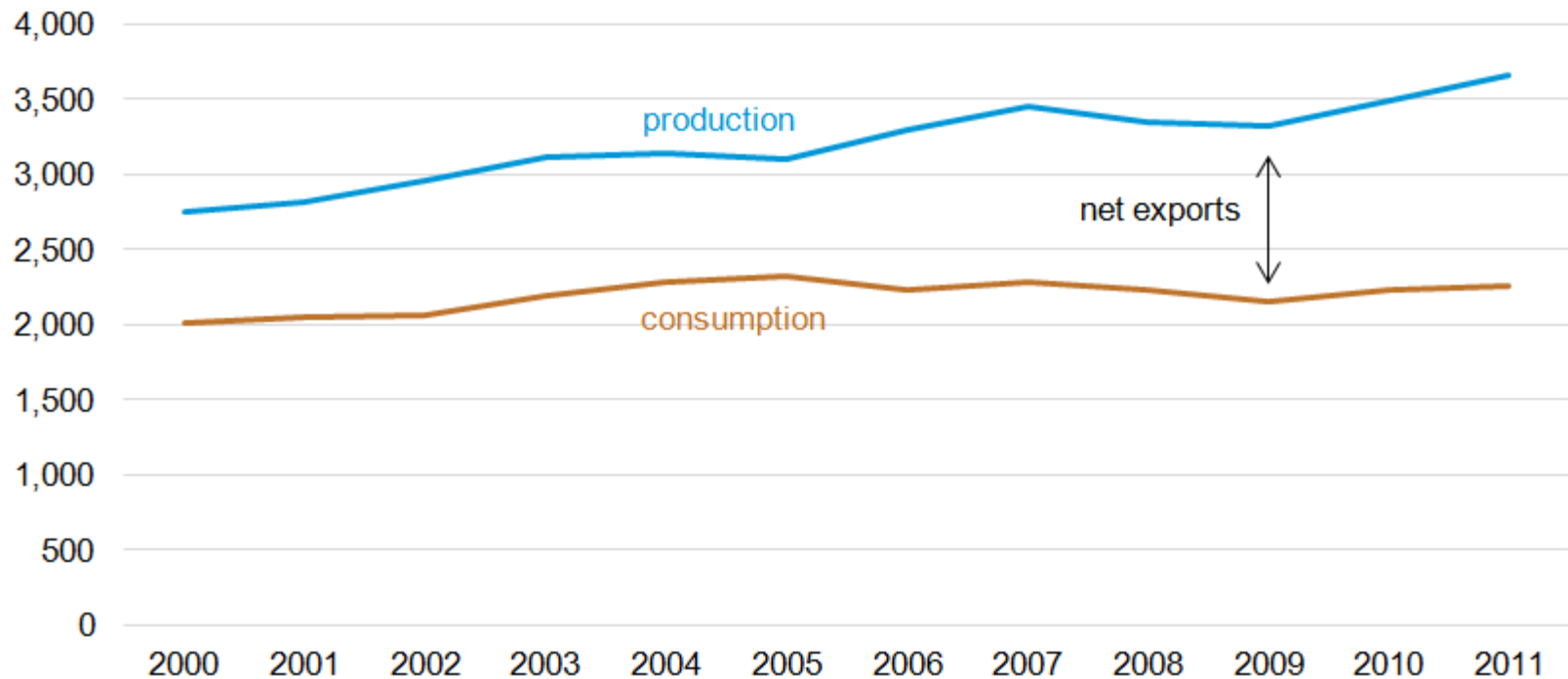


Source: U.S. Energy Information Administration

CANADÁ

Canada's oil production and consumption, 2000-2011

thousand barrels per day



Source: U.S. Energy Information Administration, *International Energy Statistics*

CANADÁ

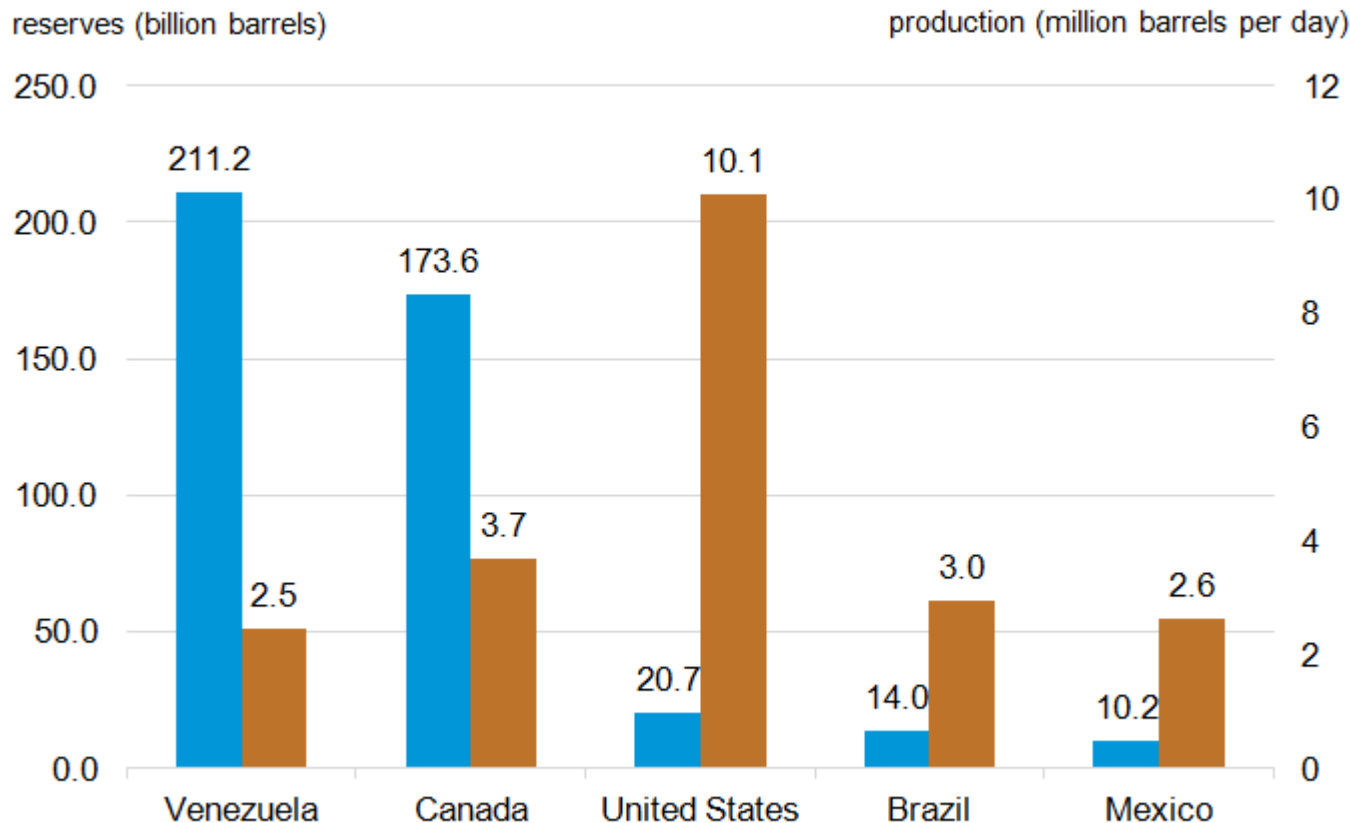
- RESERVAS 176.000 MMb
- OIL SANDS 170.000 MMb
- PRODUCCIÓN TOTAL 3, 7 MMb
- OIL SANDS 2,9 MMb

CANADÁ

- Steam-Assisted Gravity Drainage (SAGD)
- Cyclic Steam Stimulation (CSS) (US\$ 40-70/bbl)
- Minería de superficie (US\$ 80-100/bbl)
- commonly cited ranges are \$40-70/bbl for

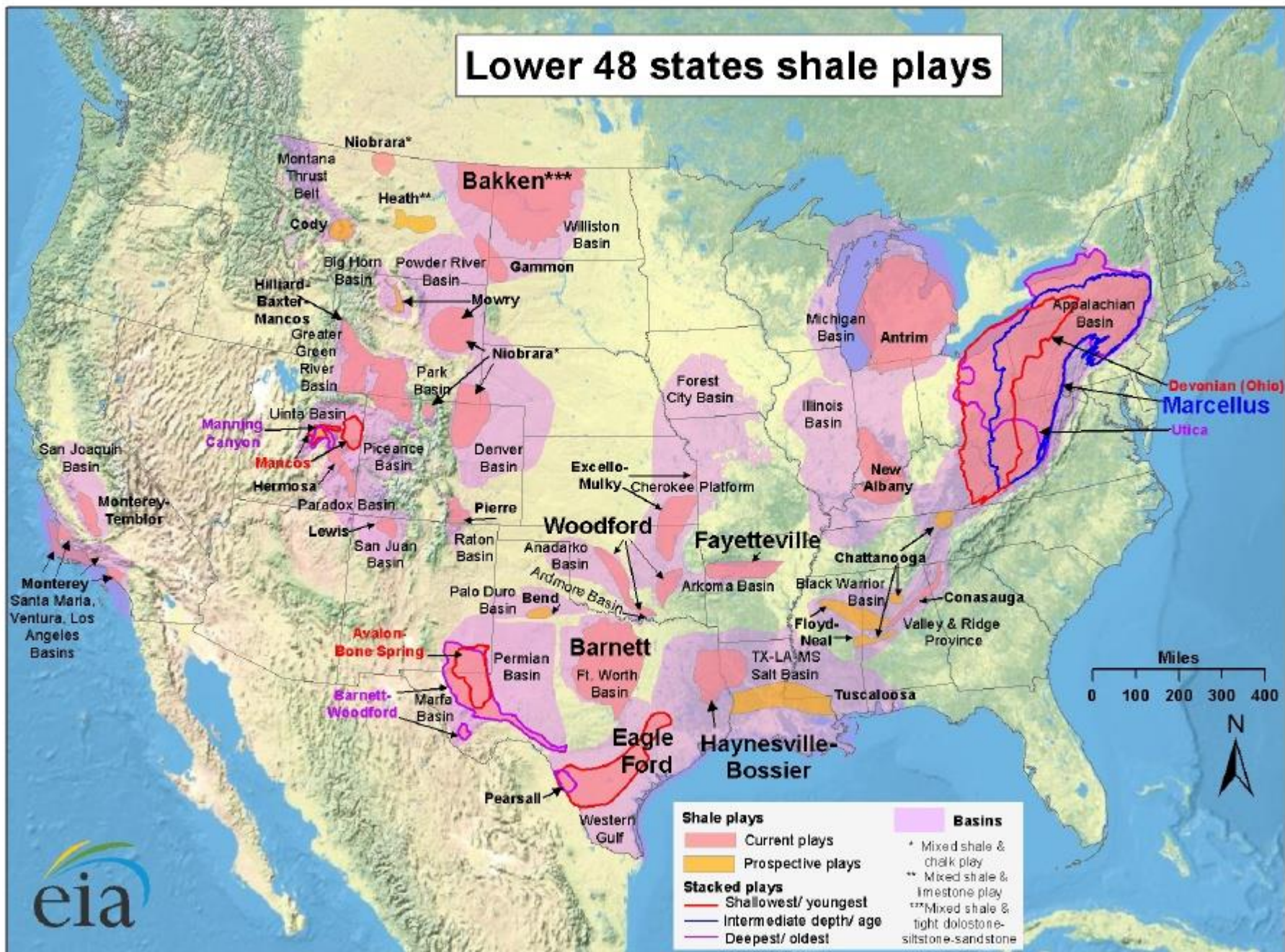
RESERVAS/PRODUCCIÓN

Western Hemisphere proven oil reserves and production (2011)



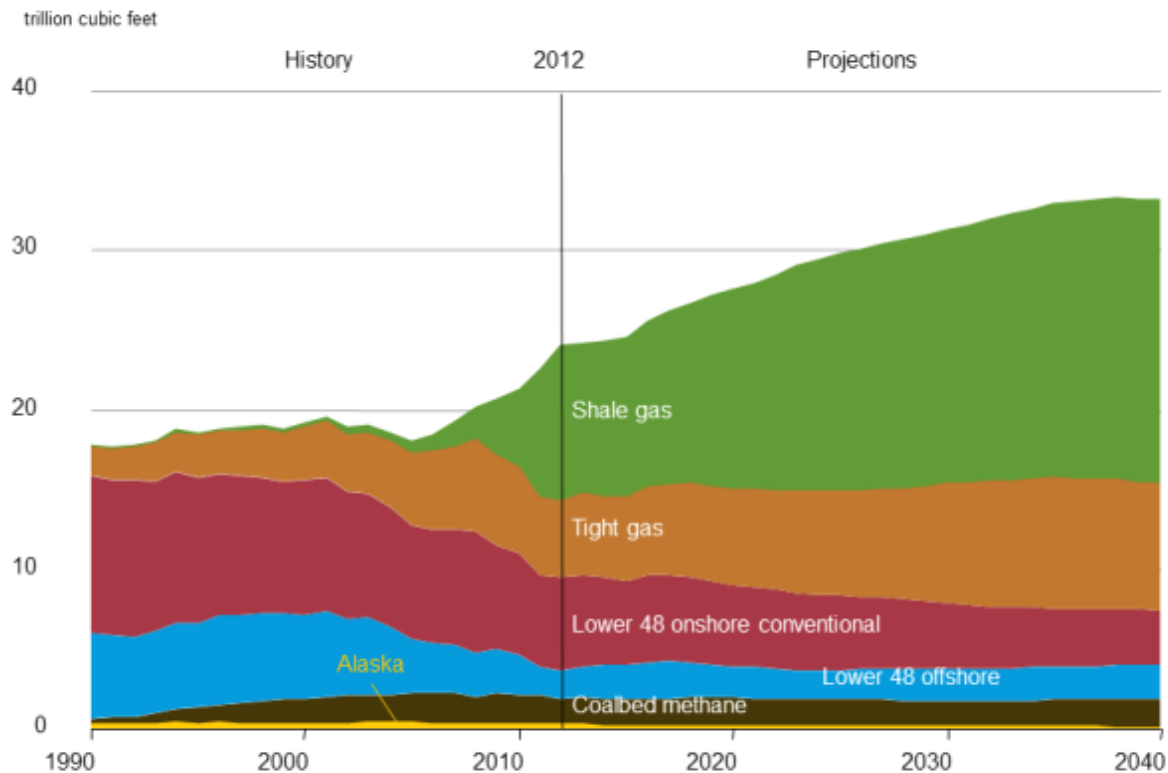
Sources: *Oil and Gas Journal*, U.S. Energy Information Administration

Lower 48 states shale plays



GAS EE.UU.

Figure MT-44. U.S. natural gas production by source in the Reference case, 1990-2040

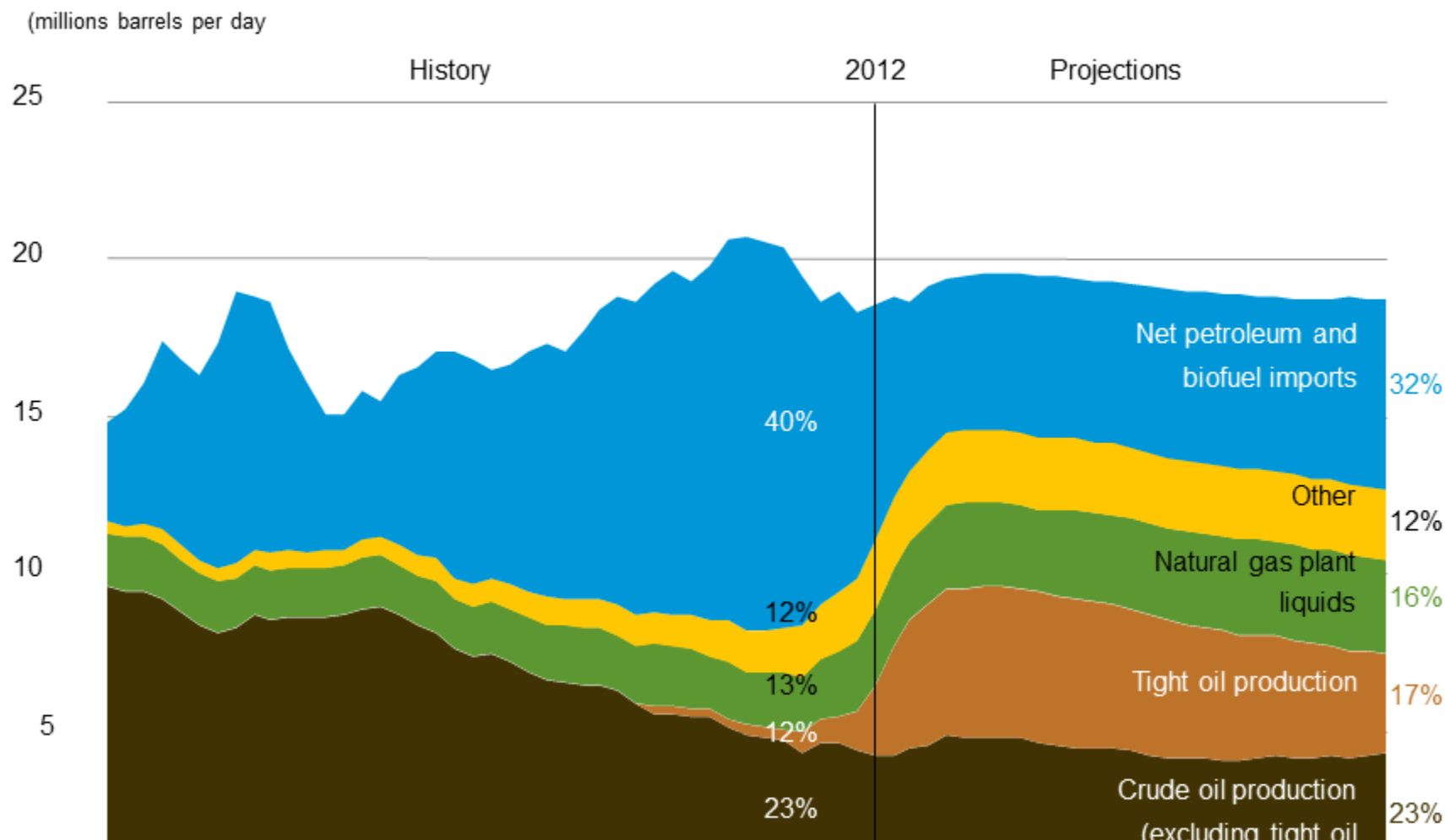


QUEMA DE GAS

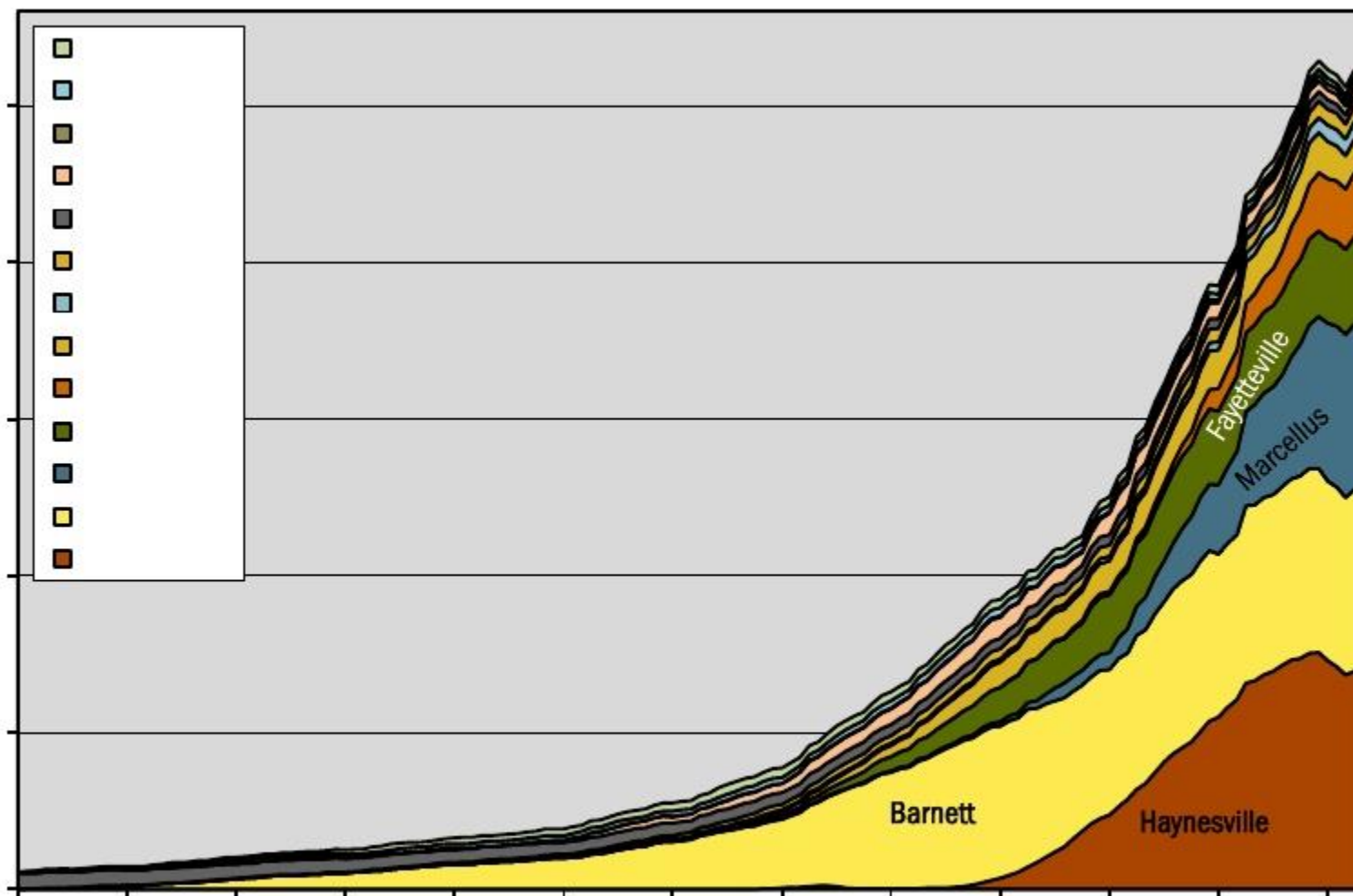


PETRÓLEO EE.UU.

Figure 1. U.S. petroleum and other liquid fuels supply by source, 1970-2040

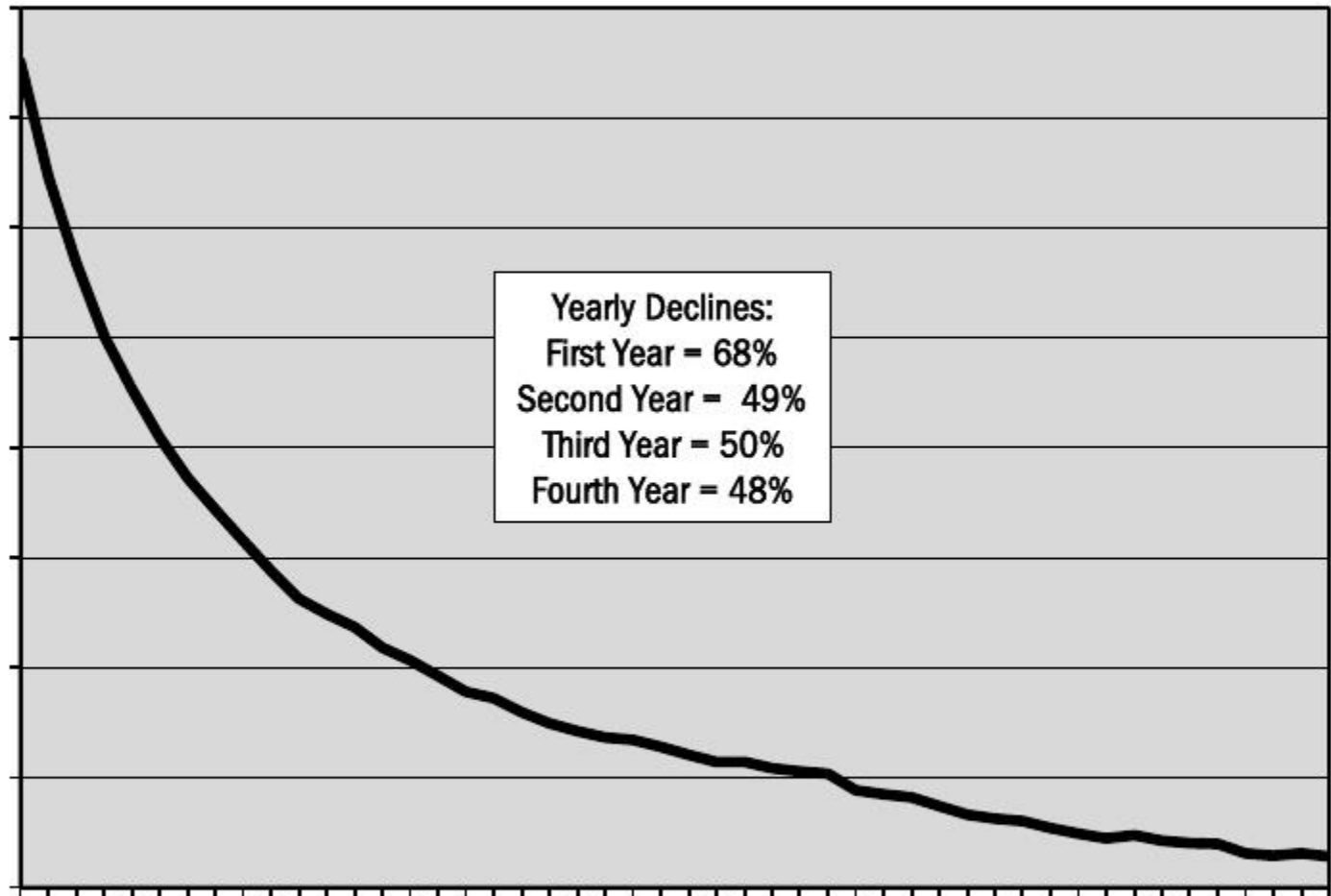


Shale gas production by play, 2000 through May 2012



POZO DE SHALE

Type decline curve for Haynesville shale gas wells



SHALE ARGENTINA



RESERVAS GAS SHALE Y P1

	Shale	P1
China	1115	124,2
Argentina	802	11,7
Argelia	707	159
EE.UU.	665	334
Canadá	573	68,2
Rusia	285	1700
Mundo	7299	6379,6

TIGHT (SHALE) OIL Y P1

	Tight	P1
Rusia	75	80
EE.UU.	58	26
China	32	25,5
Argentina	27	2,7
Venezuela	13	297
Mundo	345	1467

