

2009 ENERGY OUTLOOK

- Refining
- Gas Processing
- LNG
- Synfuels
- Biofuels
- Petrochemical/Chemical
- Engineering/Procurement/Construction



Refining



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Price Impact Points for Refining Industry

1998

Oil < \$20/bbl

RFG

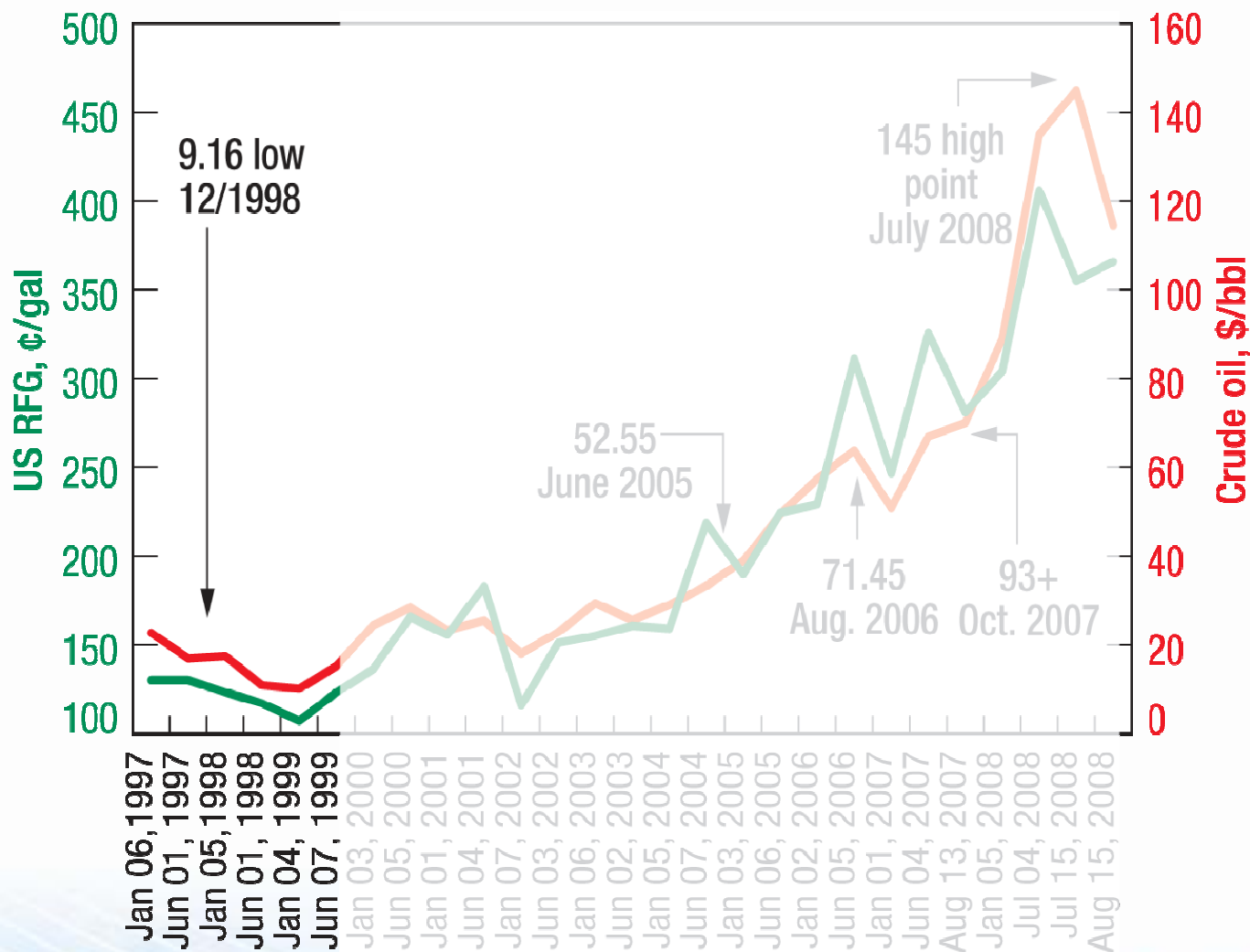
Environment

Global Energy

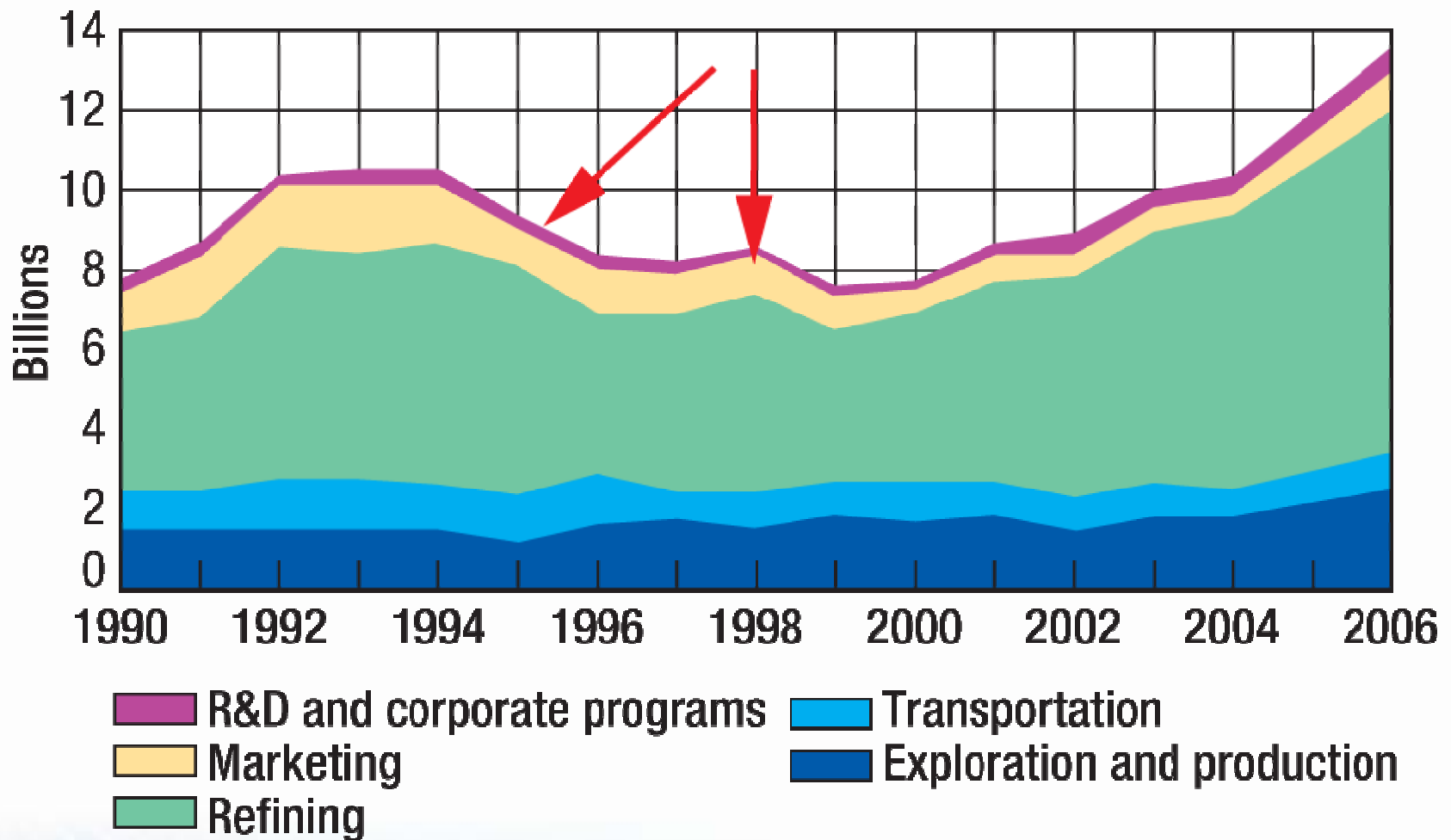
Market

Asia Economic

Meltdown



US Oil Companies Environmental Alignment



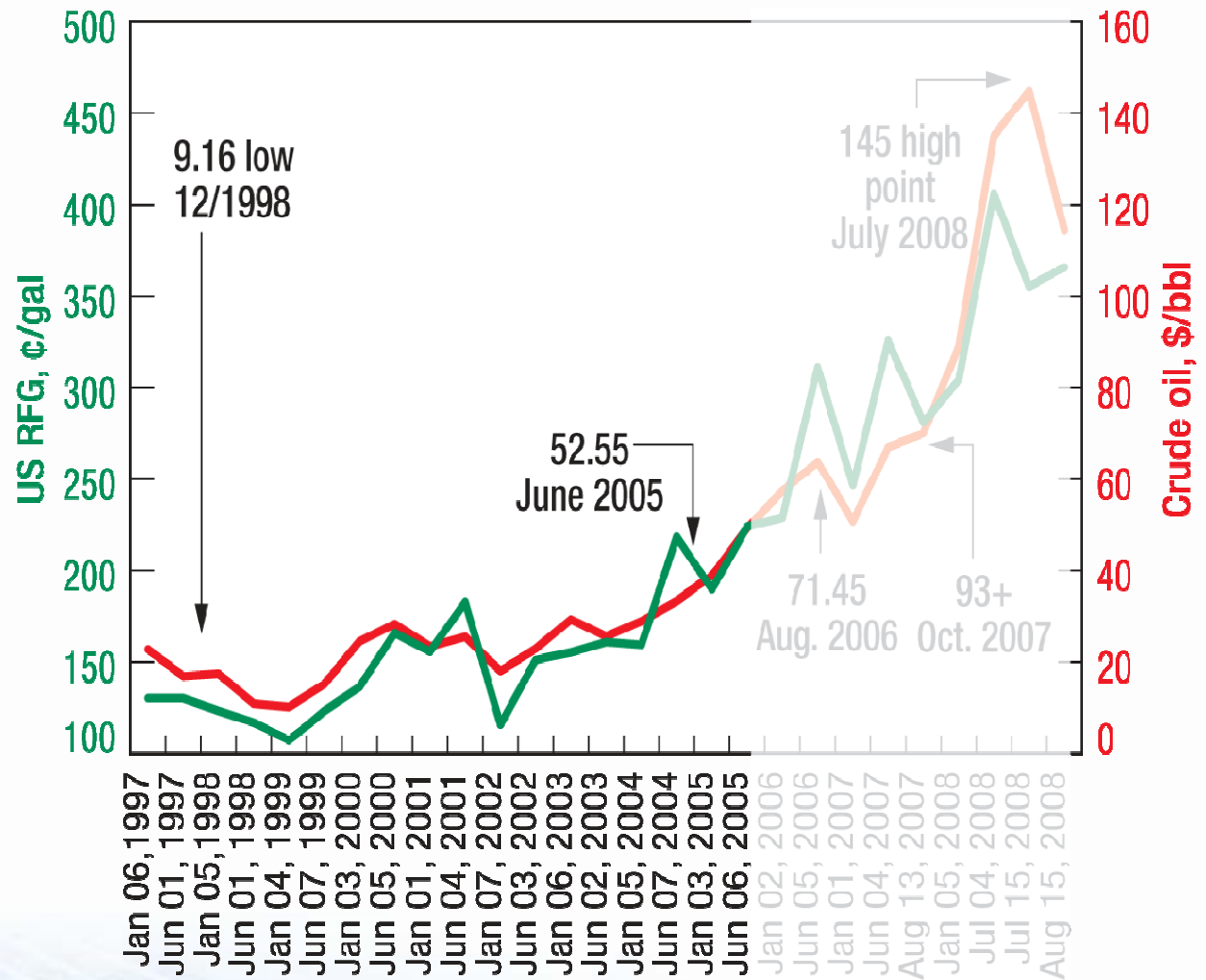
Source: API

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Price Impact Points for the Refining Industry

2004/05

Lower Sulfur Fuels
MTBE Fallout
Developing Nations
Geopolitical
Instabilities

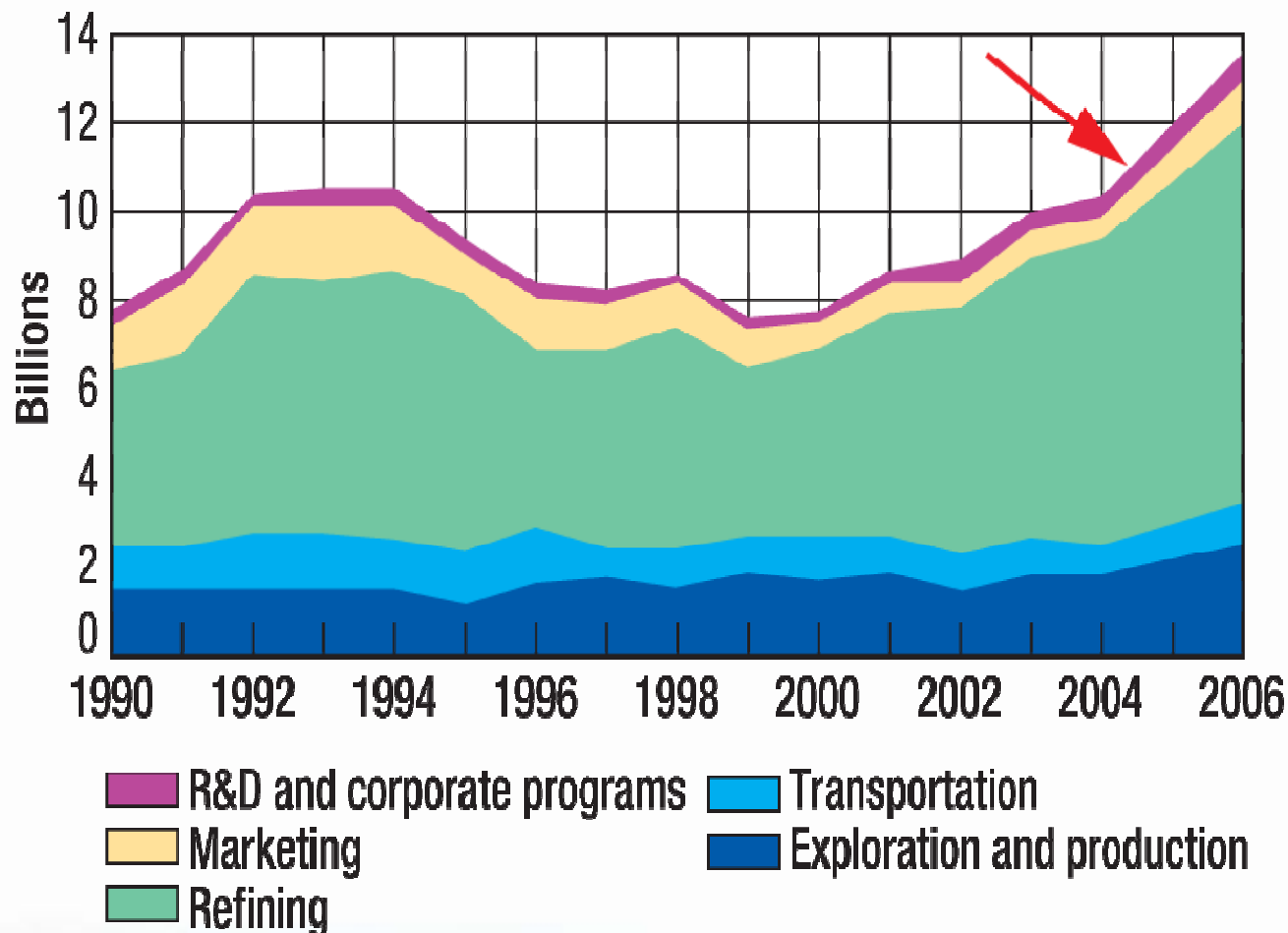


European Fuel Specifications

<u>Year</u>				<u>2000</u>	<u>2005</u>	<u>2009 WWFC*</u>	
<u>Gasoline Unleaded 95/85 – EN228</u>							
Sulfur	ppm m/m	max	150		50/10	10	5-10
Benzene	%v/v	max	1				
Aromatic	%v/v	max	42		35		
Olefins	%v/v	max	18			10	
<u>Diesel (standard grade) – EN590</u>							
Cl	min						
CN	min		51		55		
Sulfur	ppm m/m	max	350		50/10	10	5-10
Density	kg/m ³	max	845				840

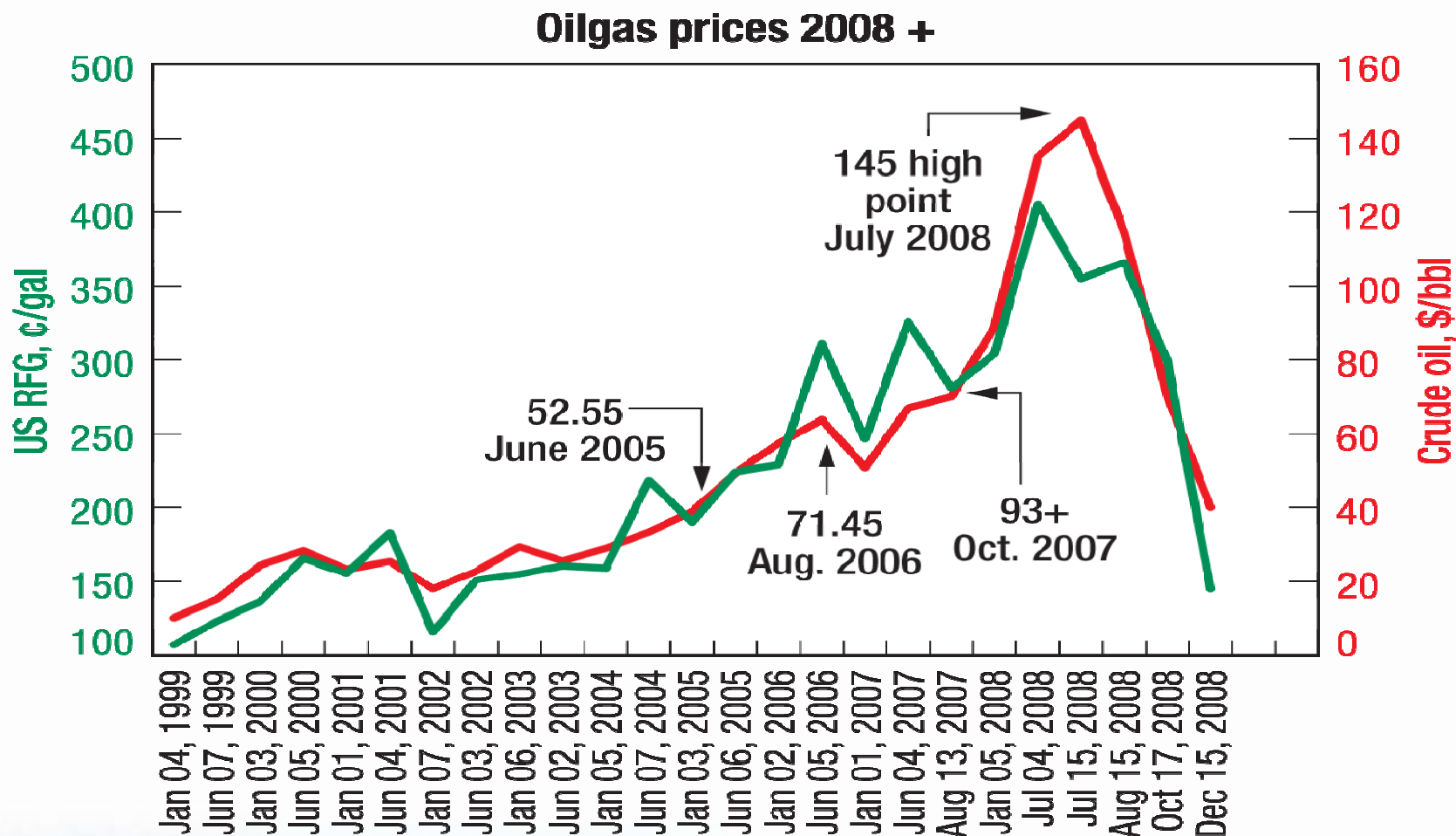
***WWFC = Engine/vehicle manufacturers World-Wide Fuels Charter**

US Oil Companies Environmental Alignment



Source: API

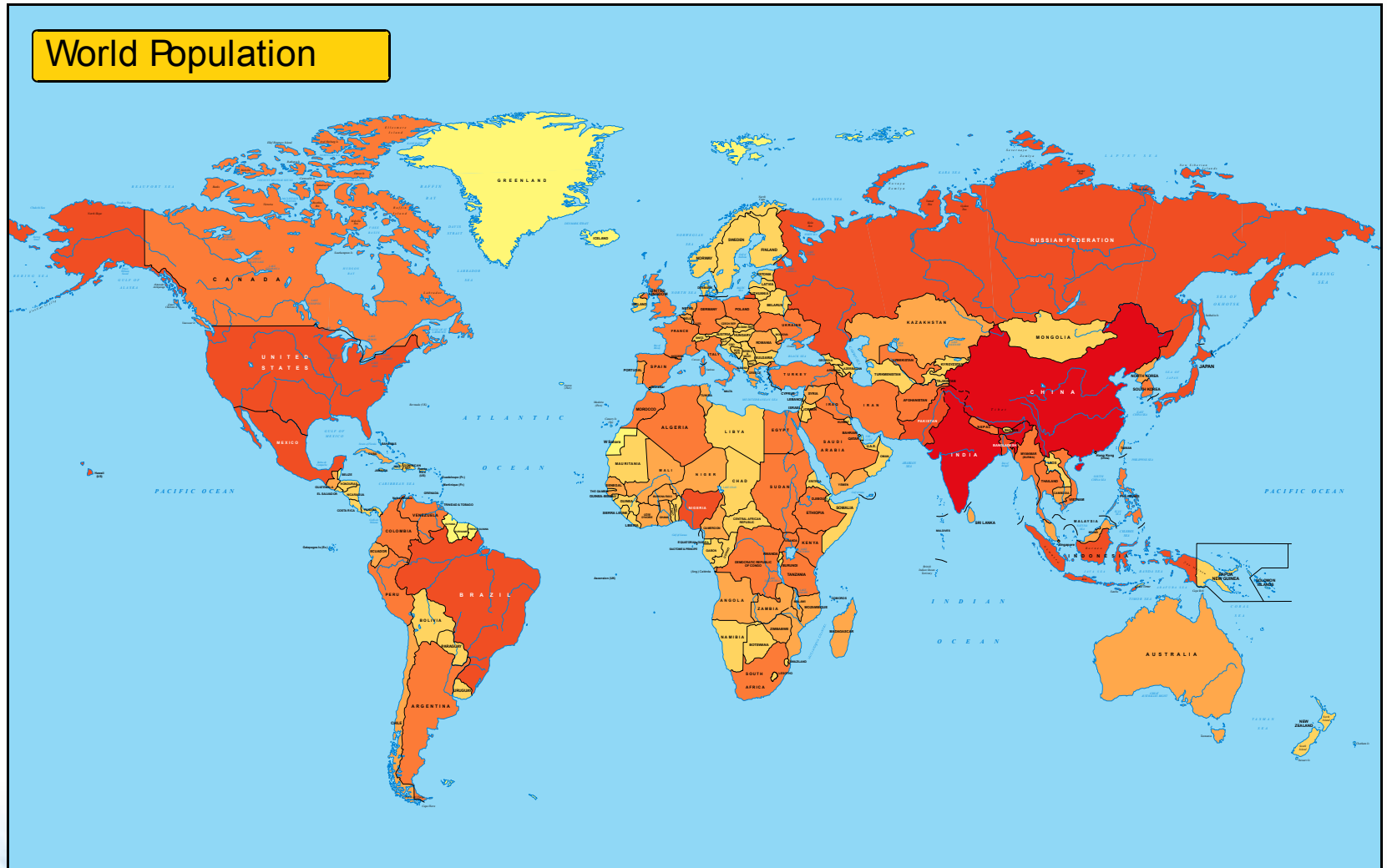
Price Impact Points - 2008



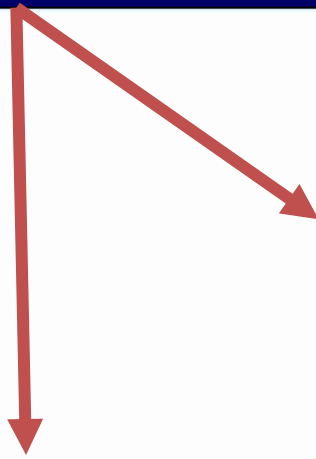
Factors Shaping Energy Expansion for the Next Decade

- Climate Change
- Economic Nationalism
- Growth in World Population
- China and India
- Energy Security
- Overcapacity
- Biofuels
- Changes in Crude Specifications

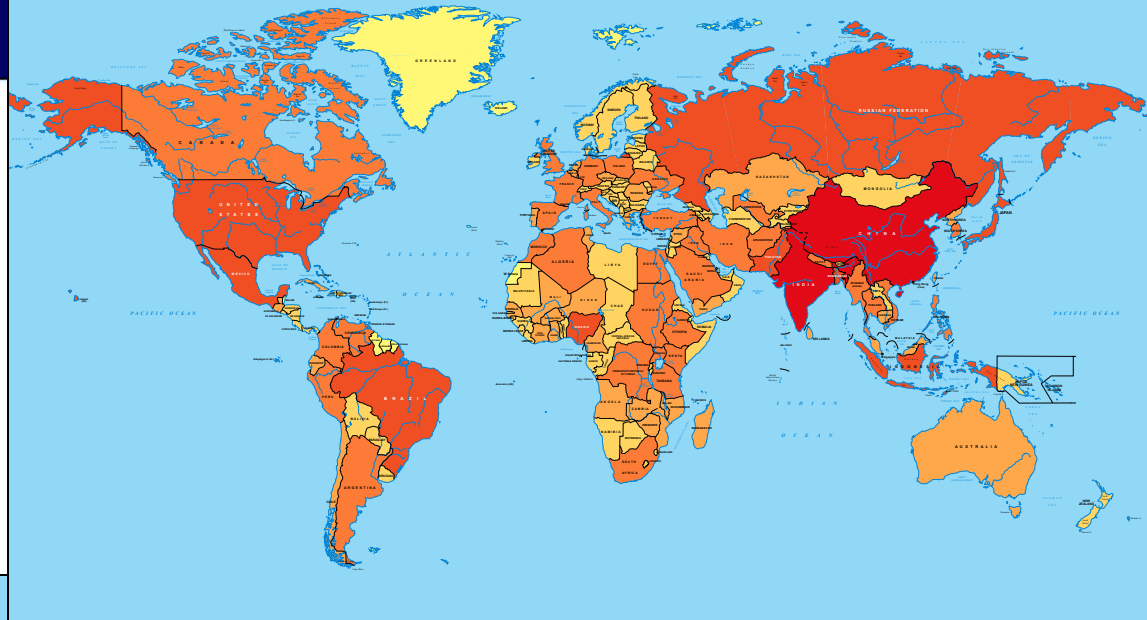
World Population – 2008



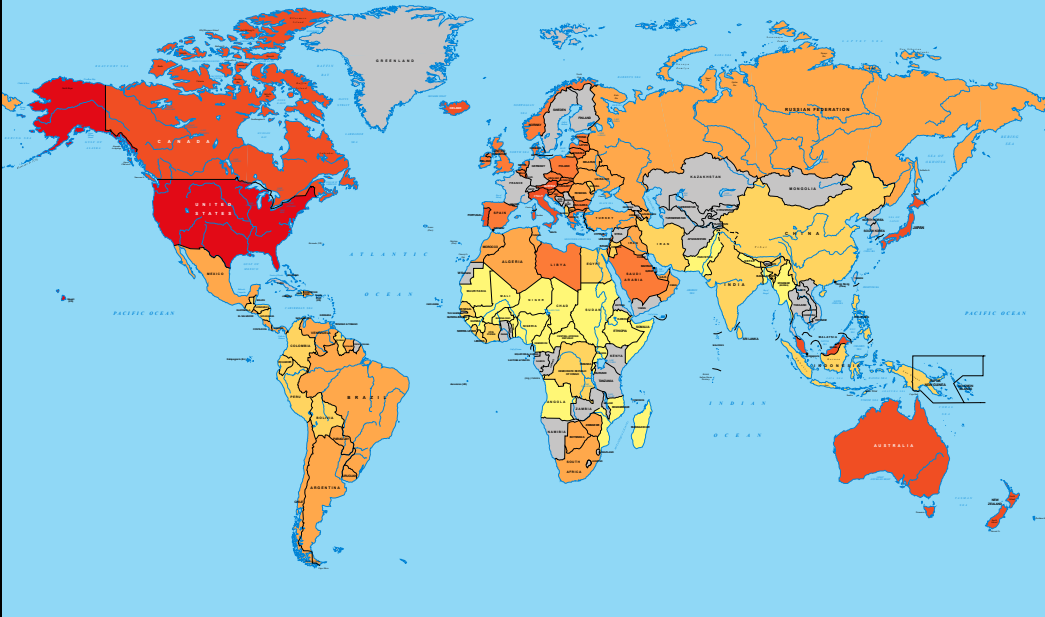
Now 2008



World Population

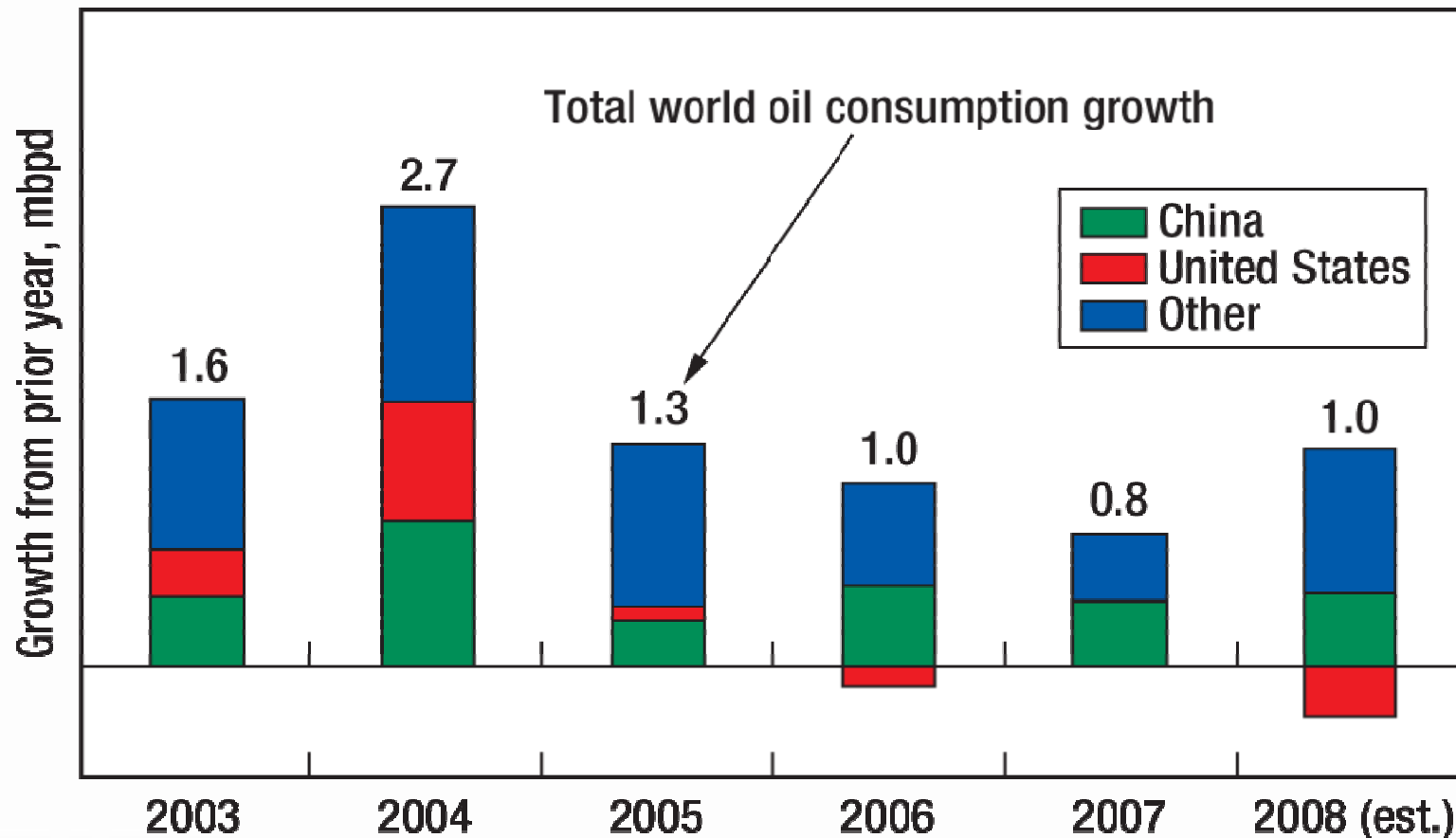


Motor Vehicles (per 1000 people)



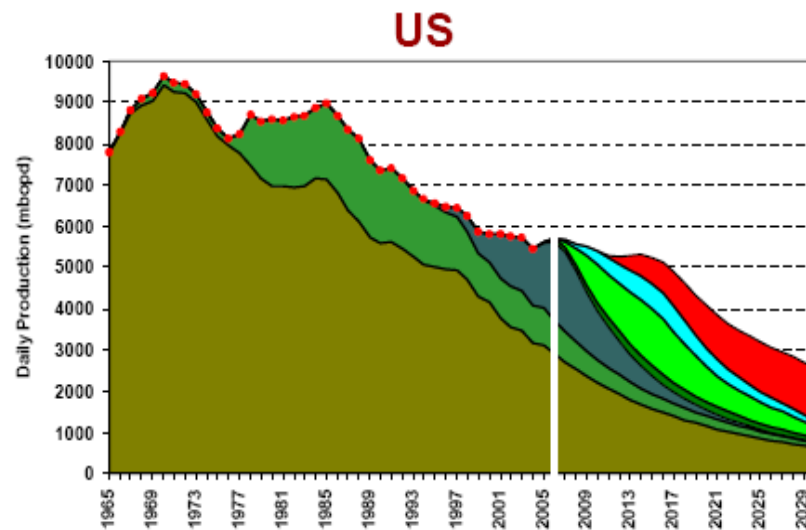
2020?

Oil Demand Growth from Prior Year in Million Barrels per Day



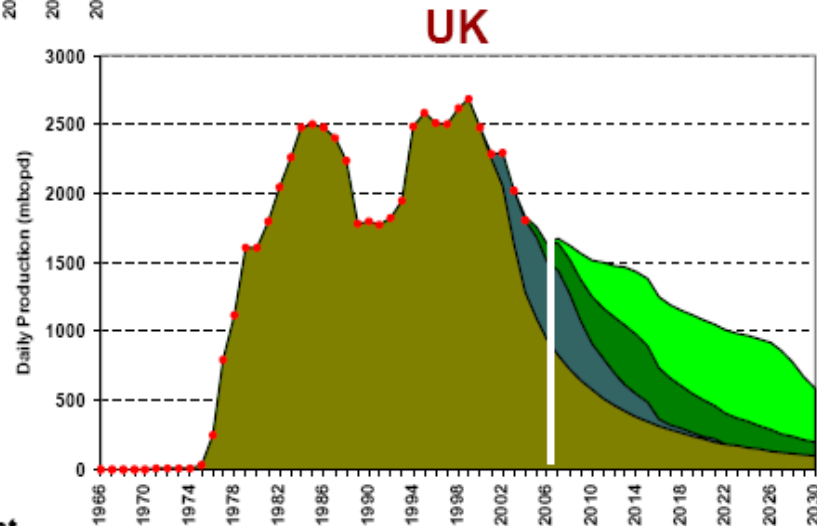
Source: Short-term Energy Outlook, EIA

Legacy OECD are Mature and in Decline

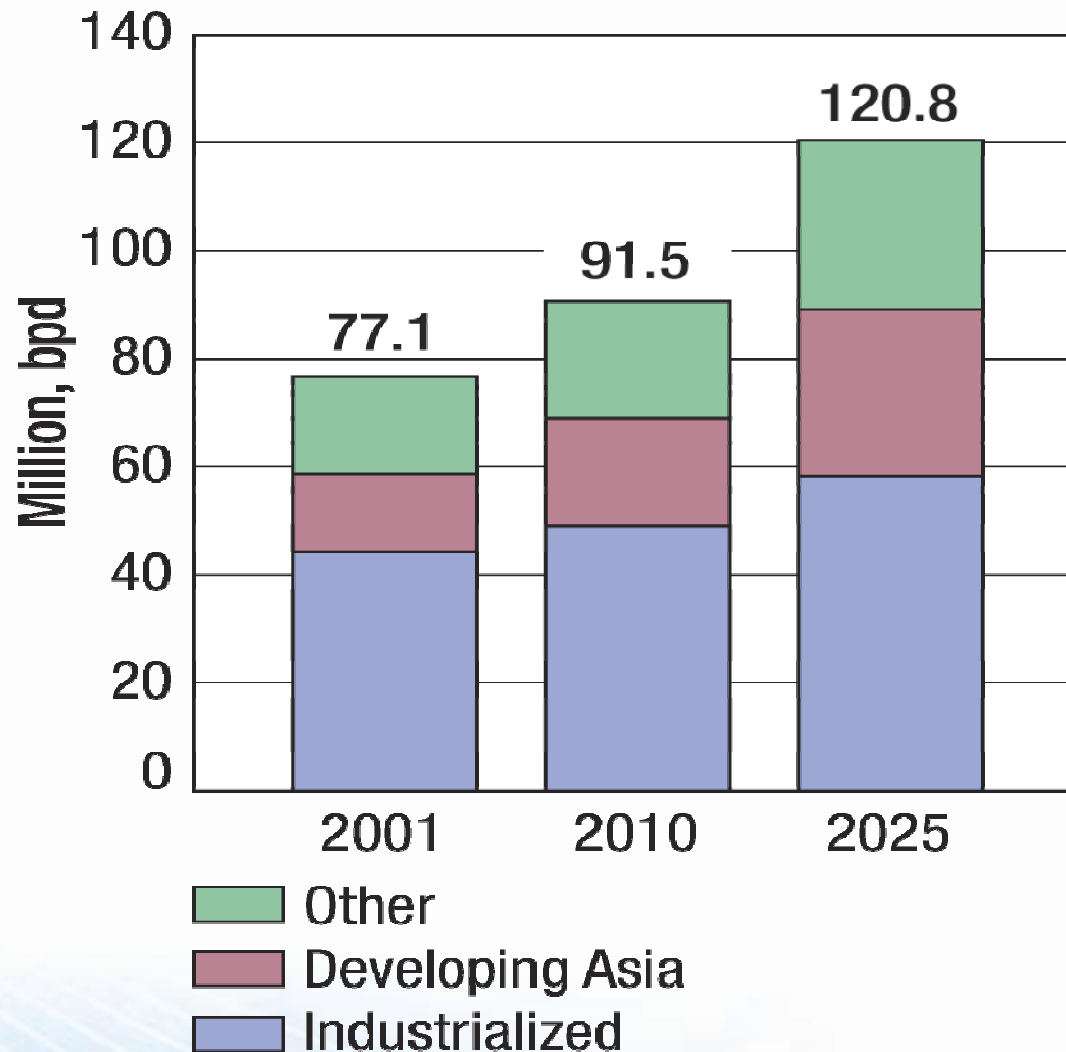


**P50 Liquids Production
Thousands bpd**

Source: PFC Energy Global Liquids Supply Forecast



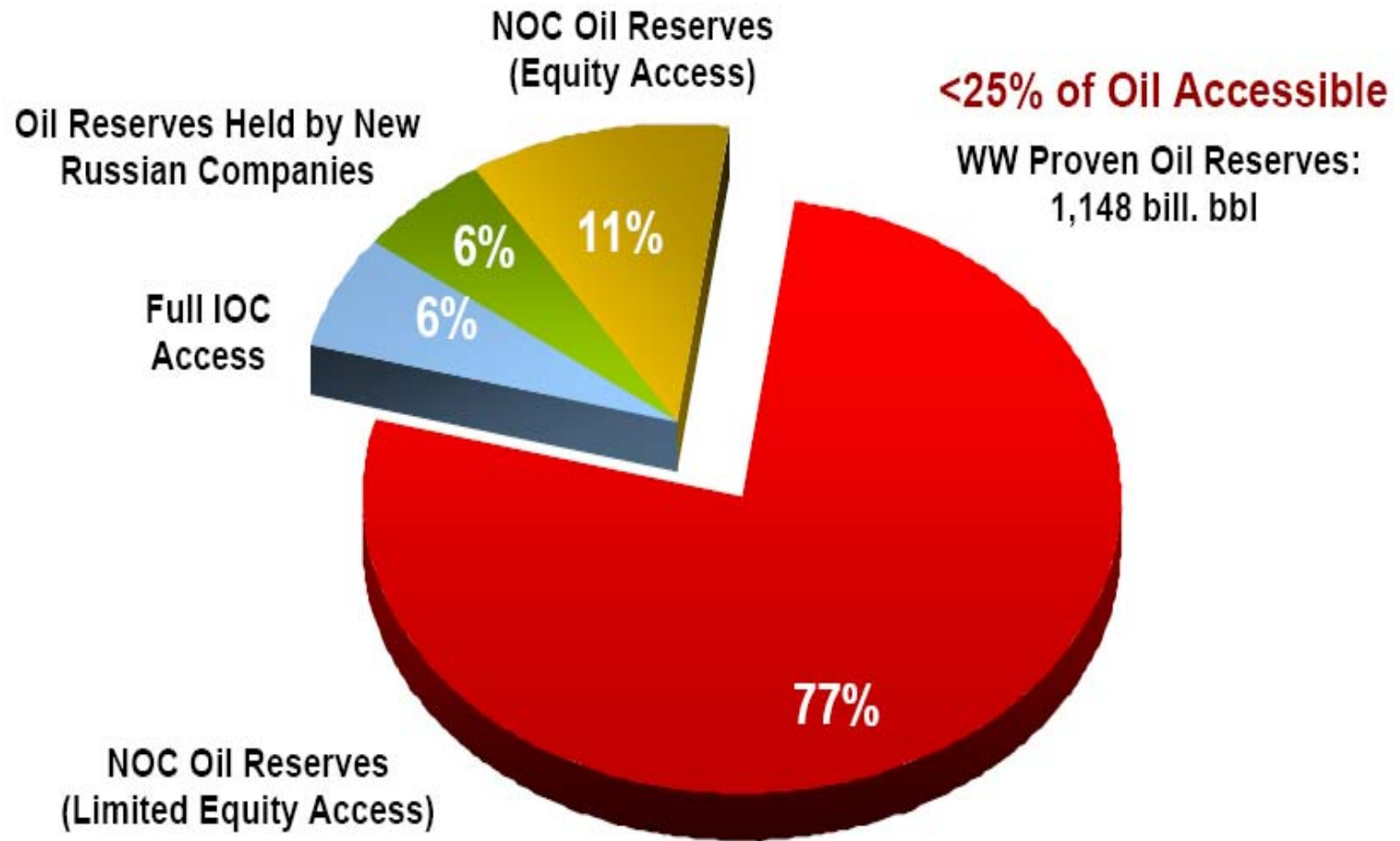
World Oil Consumption



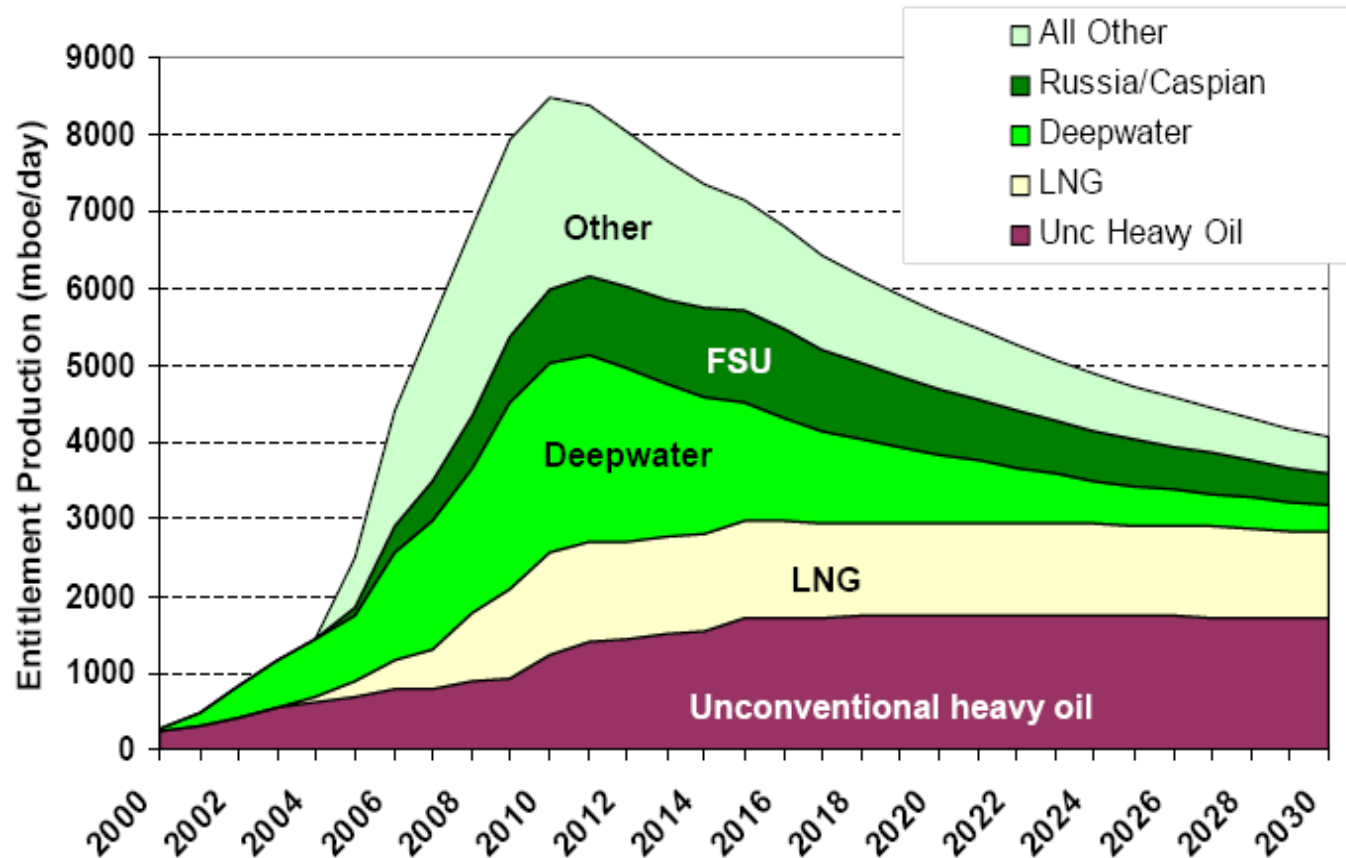
Source: Energy Information Administration

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Access to New Oil is Mainly Controlled by NOC'S



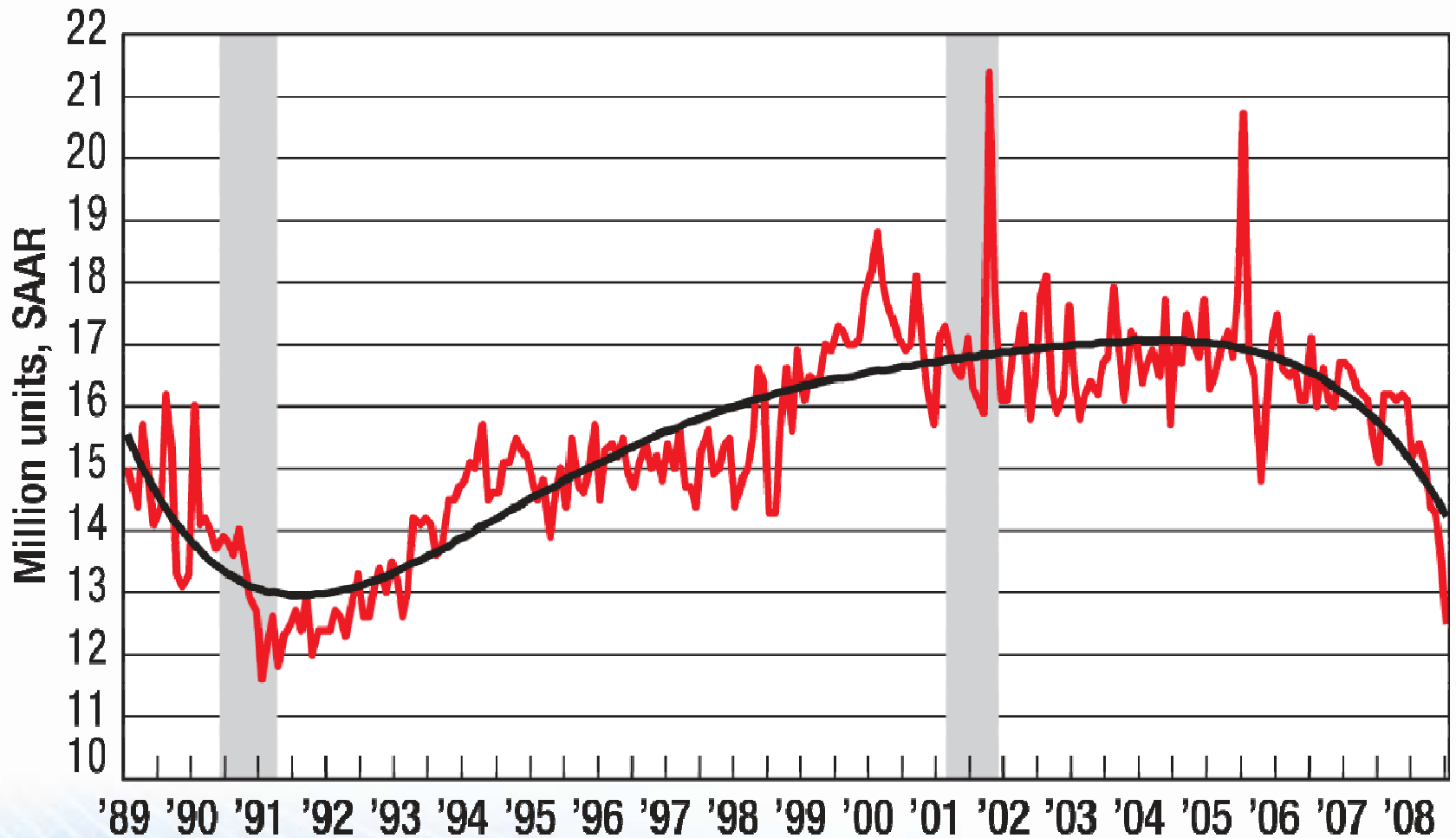
Five New Sources of Oil and Gas to be Developed to 2030



- New source entitlement production (barrels equivalent) for: *XOM, BP, Shell, Chevron, ConocoPhillips, Total, Eni*

Source: PFC Energy Upstream Competition Service

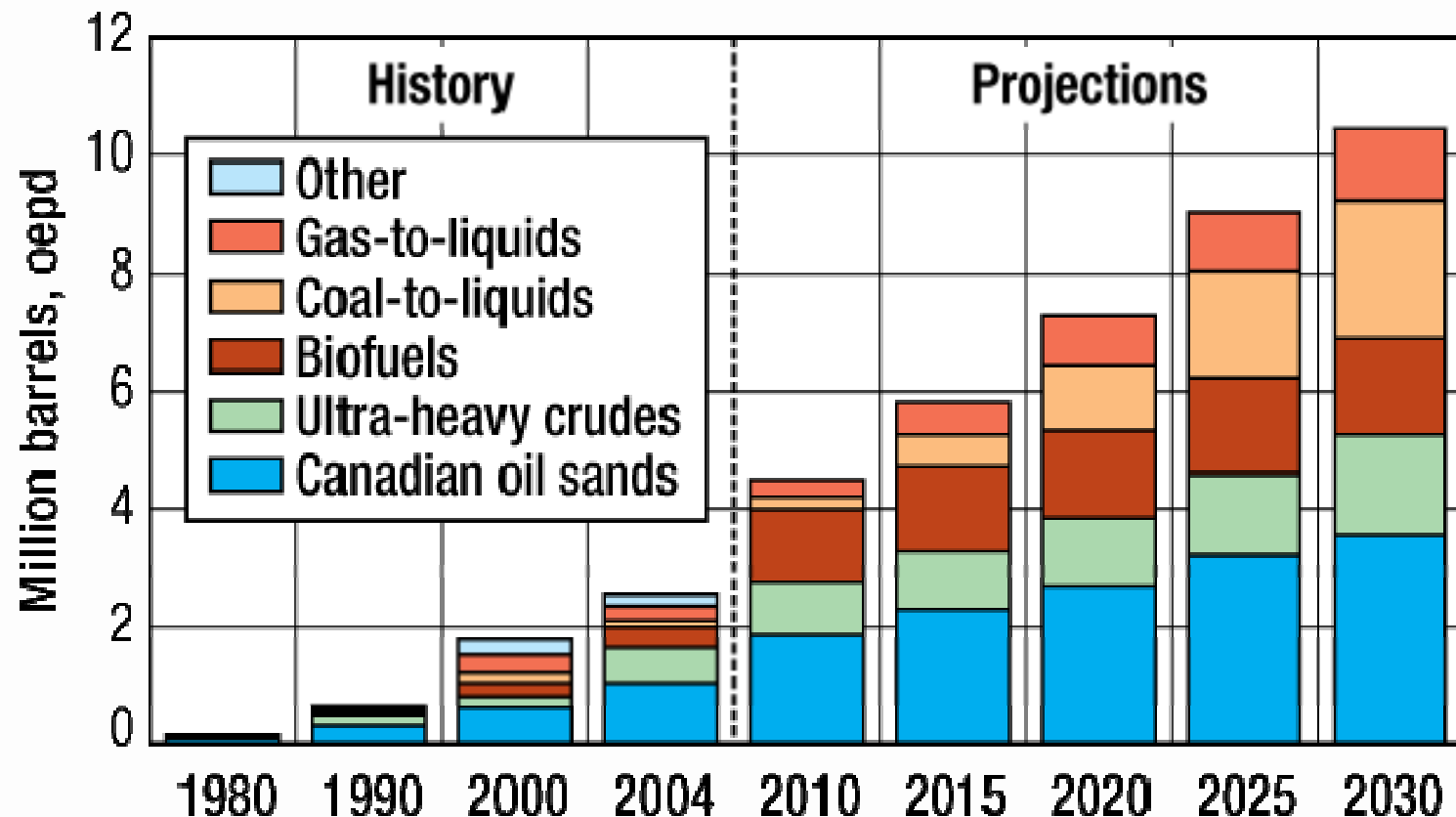
Light Vehicle Sales



Source: Bureau of Economic Analysis

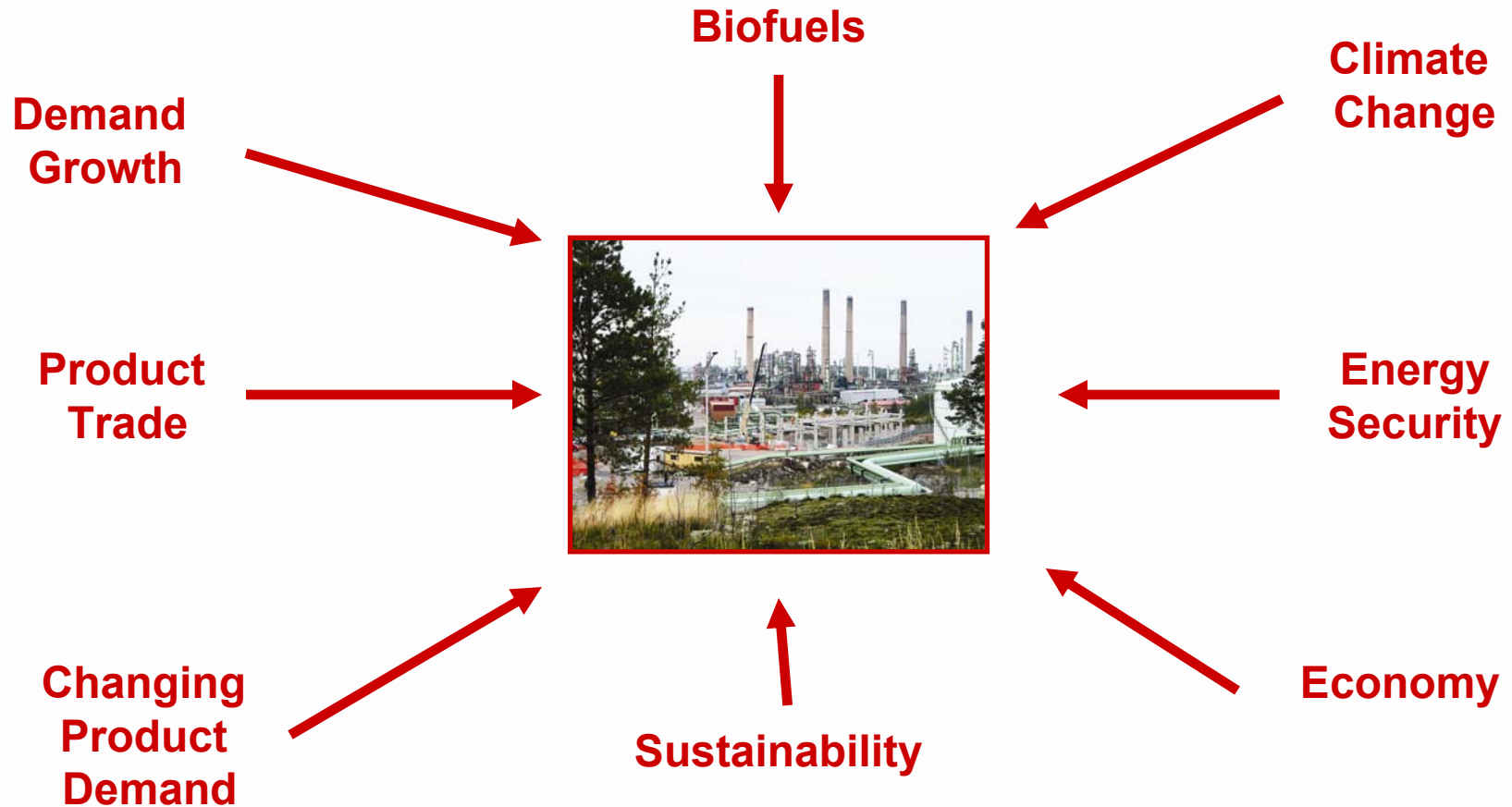
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Projected World Unconventional Liquids Production 1980-2030

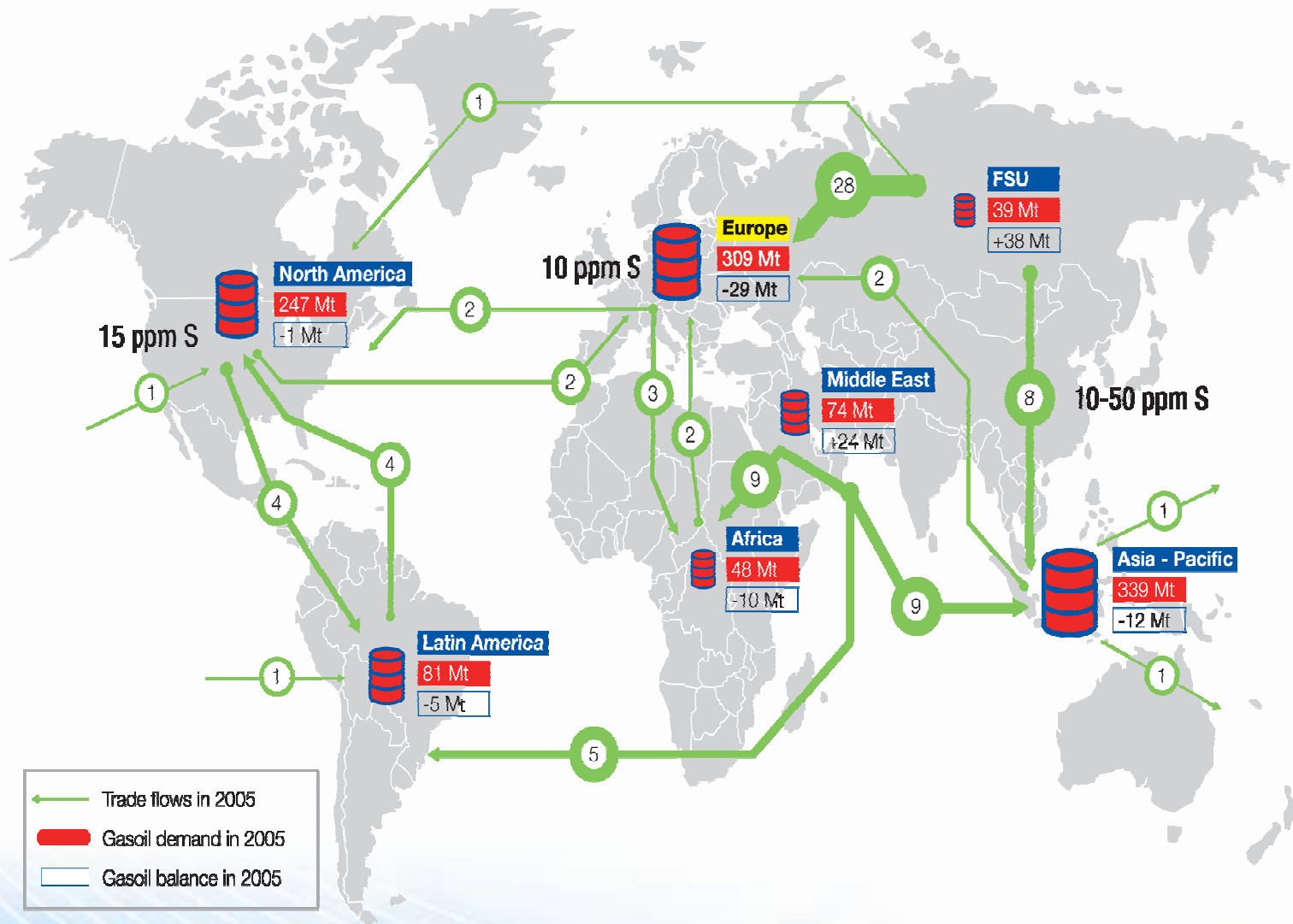


Note: "Other" includes shale oils and other unidentified sources of unconventional liquid fuels.

Key 2008/2009 Refining



Worldwide Gasoil Trade Flows in 2005

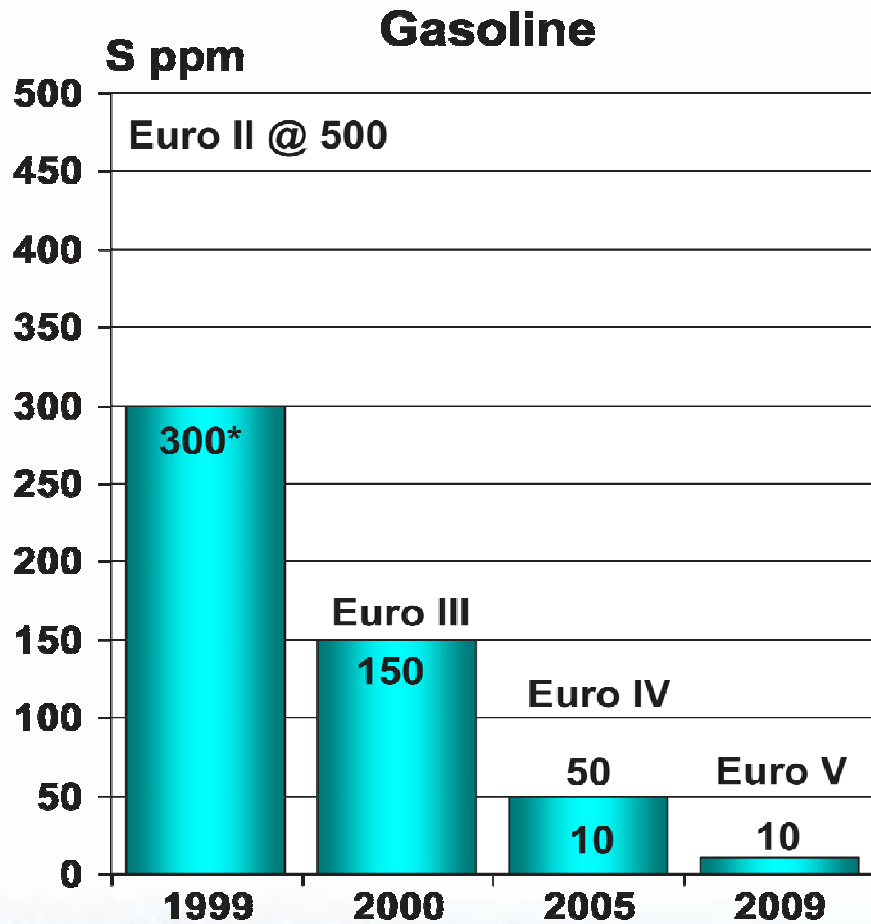


Source: International Energy Agency, Total

Unit: Million tpy

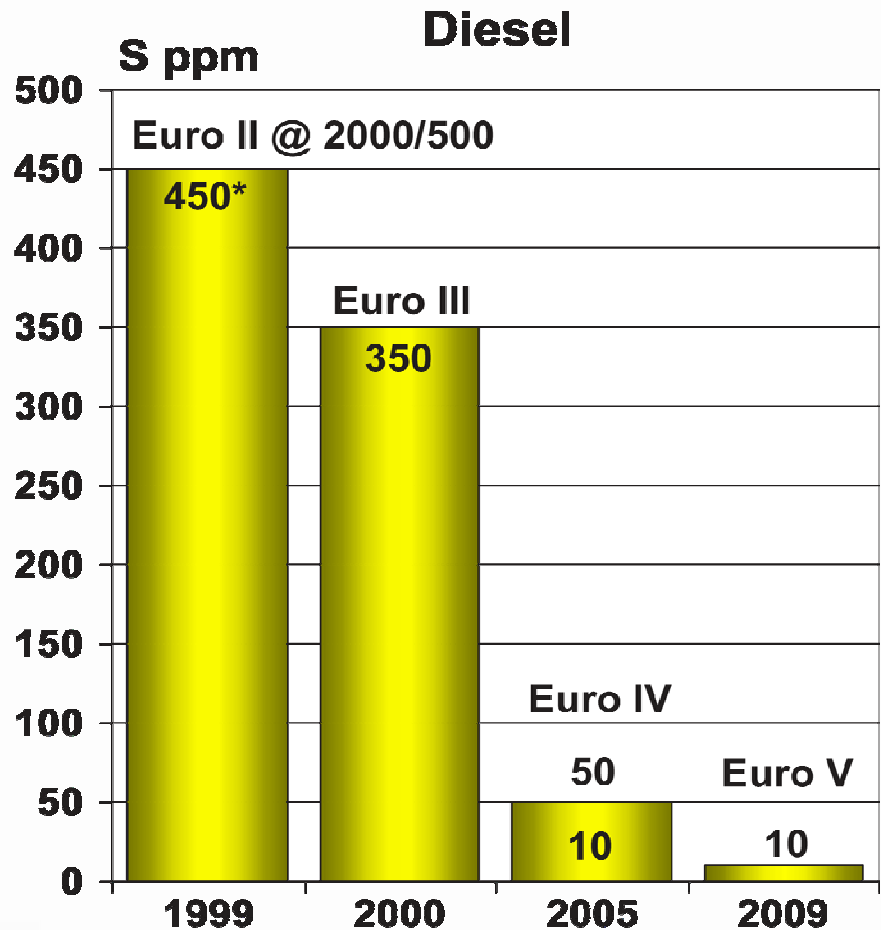
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European Transport Fuel Sulfur Approaching “Zero”



US @ 30 ppm from 2006

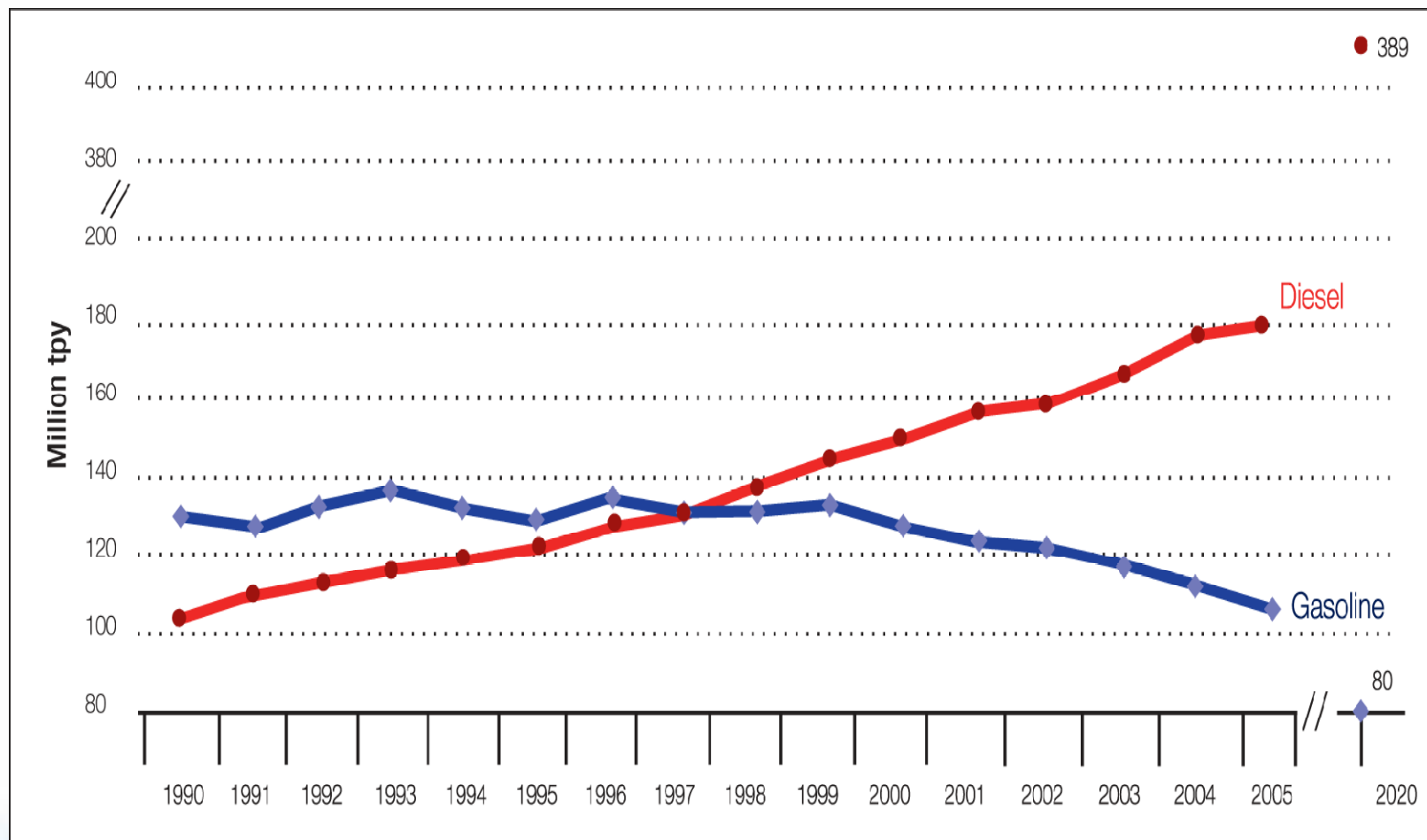
Source: PIRA



US @ 15 ppm from 2006

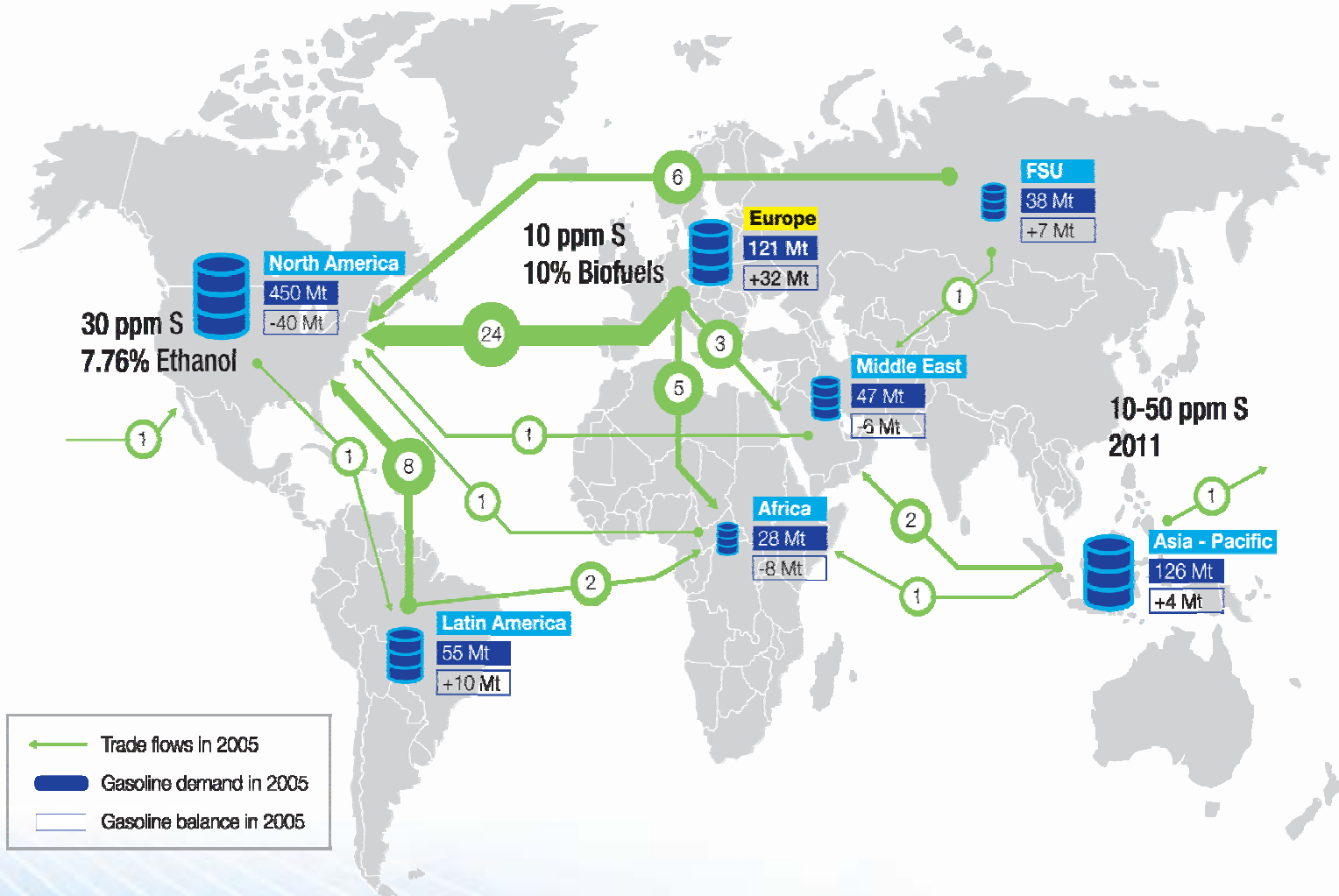
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Evolution of Diesel and Gasoline Demand in the EU



Source: EUROSTAT (historical data) Purvin & Gertz (projection to 2020)

Worldwide Gasoline Trade Flows in 2005



Source: International Energy Agency, Total

Unit: Million tpy

World Vehicle Fuels Demand

