

***International Energy Outlook 2008***  
**with Projections to 2030**

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**U.S. Energy Information Administration**

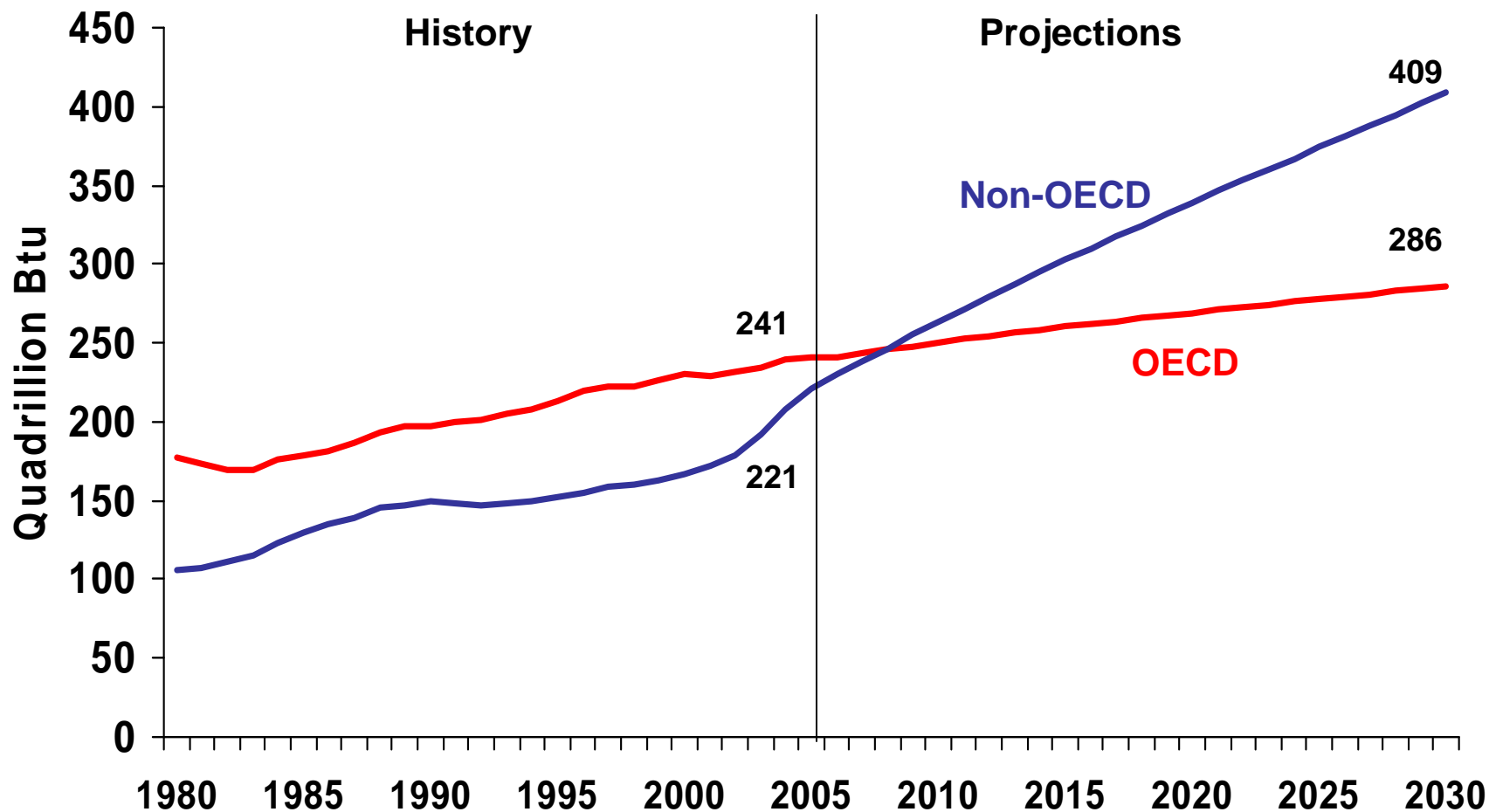
**3<sup>rd</sup> Energy Forum**  
**Budapest, Hungary**  
**October 27, 2008**



# International Energy Outlook 2008 - Summary

- Worldwide marketed energy consumption is projected to grow by 50% between 2005 and 2030. The non-OECD countries grow by 85%.
- World oil prices remain relatively high through 2030. Prices ease somewhat in the mid-term as anticipated new liquids production (in Azerbaijan, Brazil, Canada, Kazakhstan, and the U.S.) reaches the marketplace, but ultimately supply remains tight.
- Sustained high oil prices mean that renewables are the world's fastest-growing energy source (2.1% per year), followed closely by coal (2.0% per year).
- Although petroleum and other liquids retain the largest share of total world energy use through 2030, their share falls from 37% in 2005 to 33% in 2030.
- Energy-related carbon dioxide emissions are projected to rise from 28.1 billion metric tons in 2005 to 34.3 billion metric tons in 2015 and 42.3 billion metric tons in 2030.

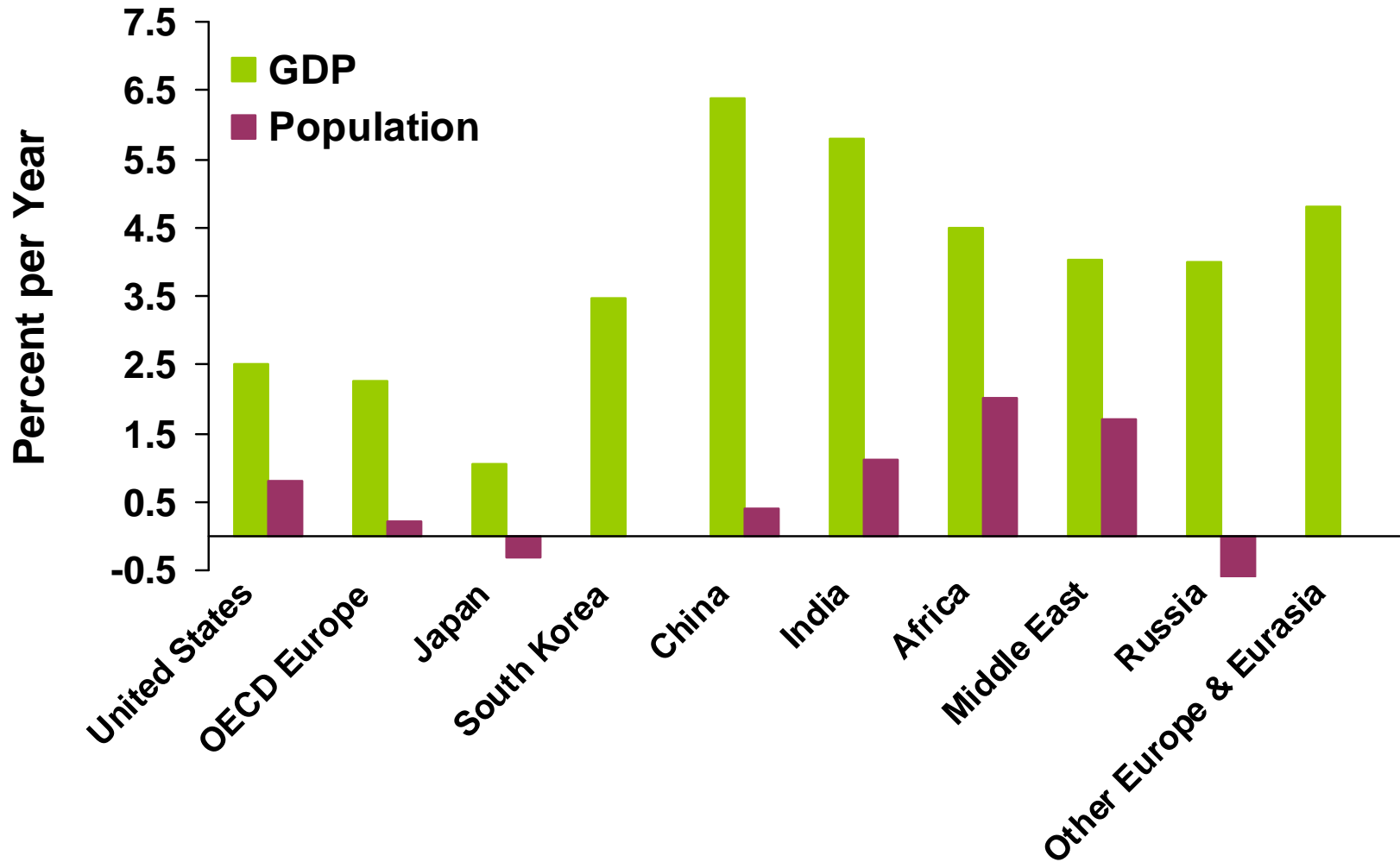
# World Marketed Energy Use: OECD and Non-OECD



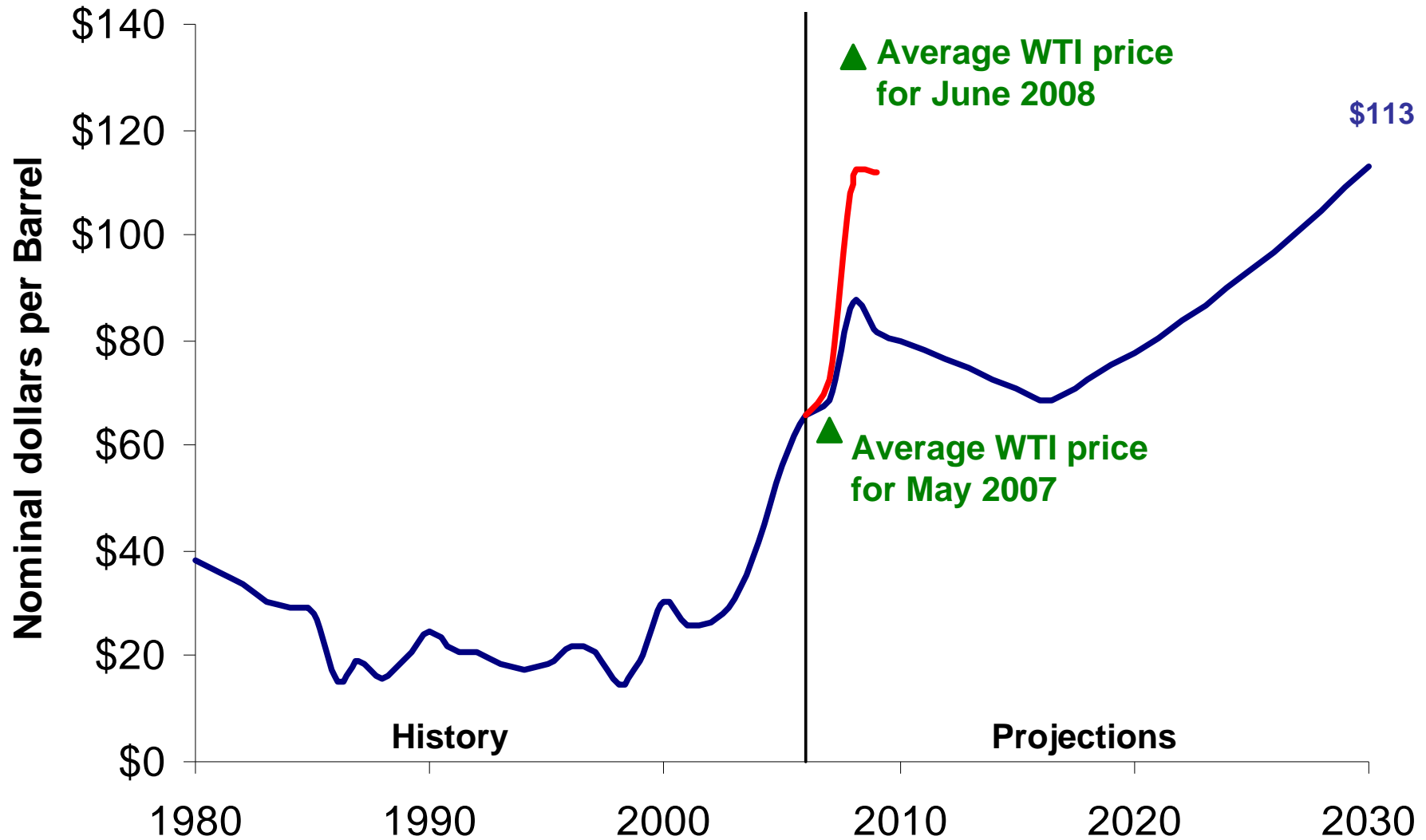
Source: EIA, IEO2008



# Average Annual GDP and Population Growth for Selected Regions, 2005-2030



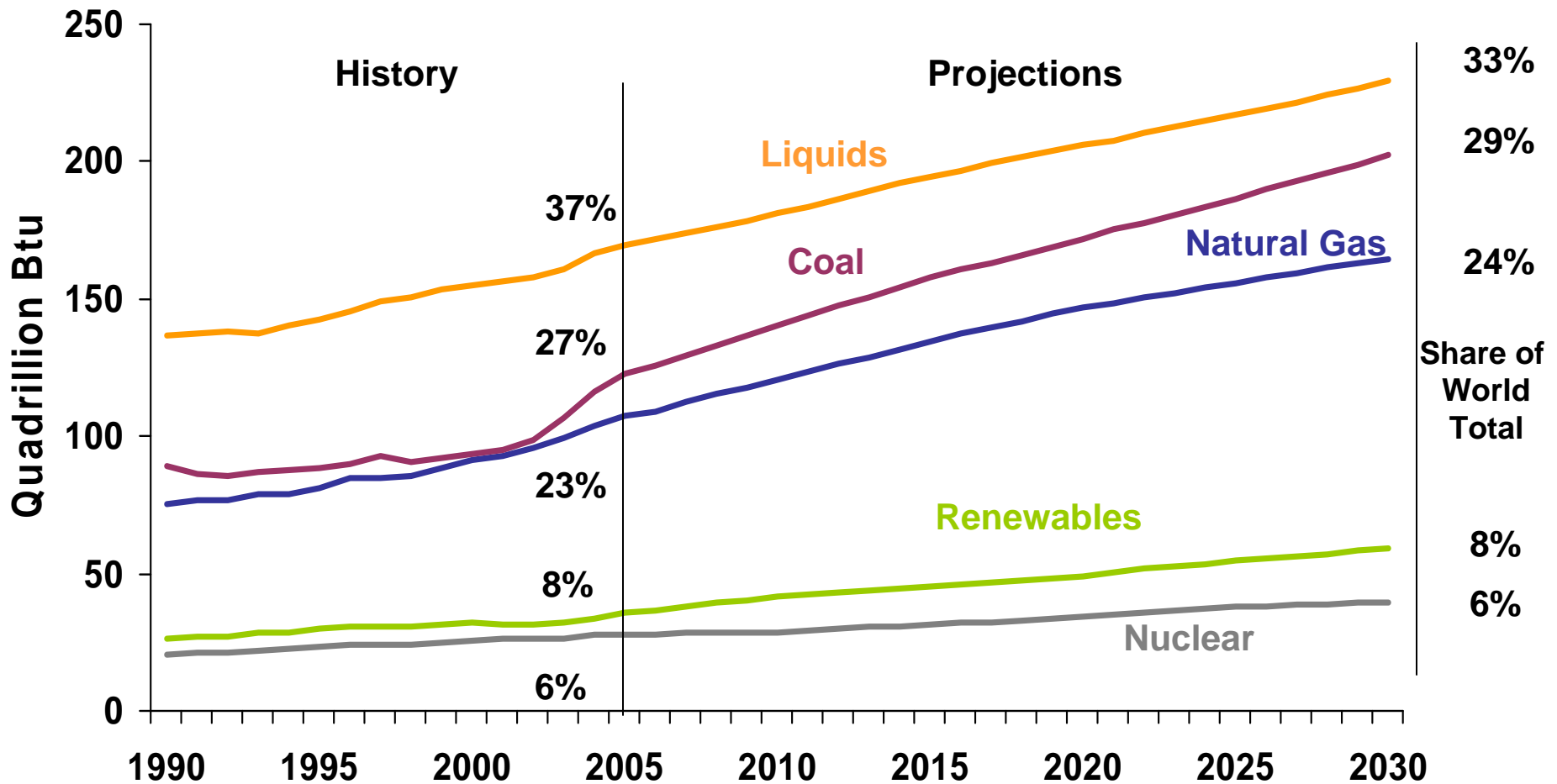
# World Oil Prices in the IEO 2008 Reference Case



Source: EIA, IEO2008 and Oct 2008 STEO



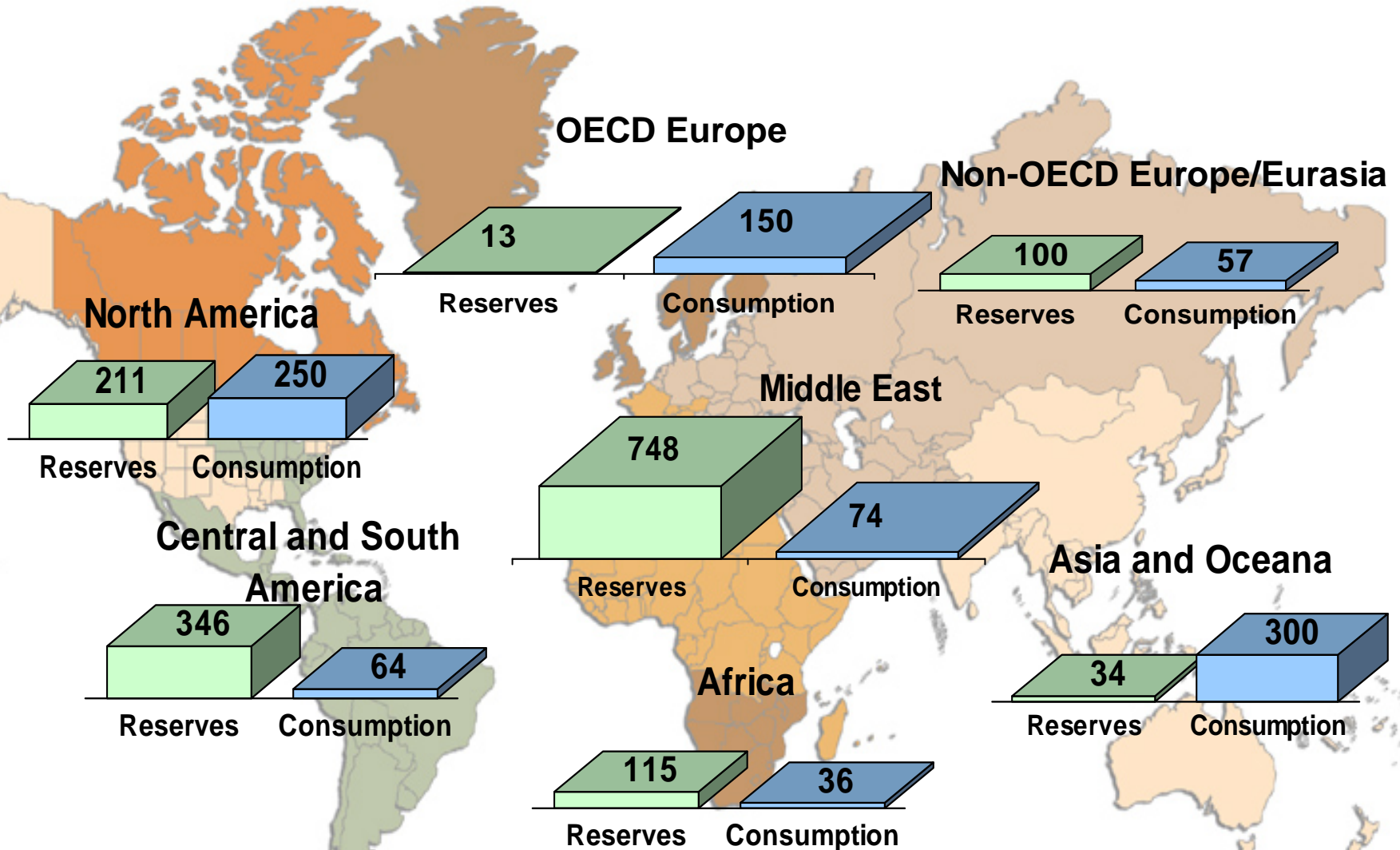
# World Marketed Energy Use by Fuel Type



Source: EIA, IEO2008

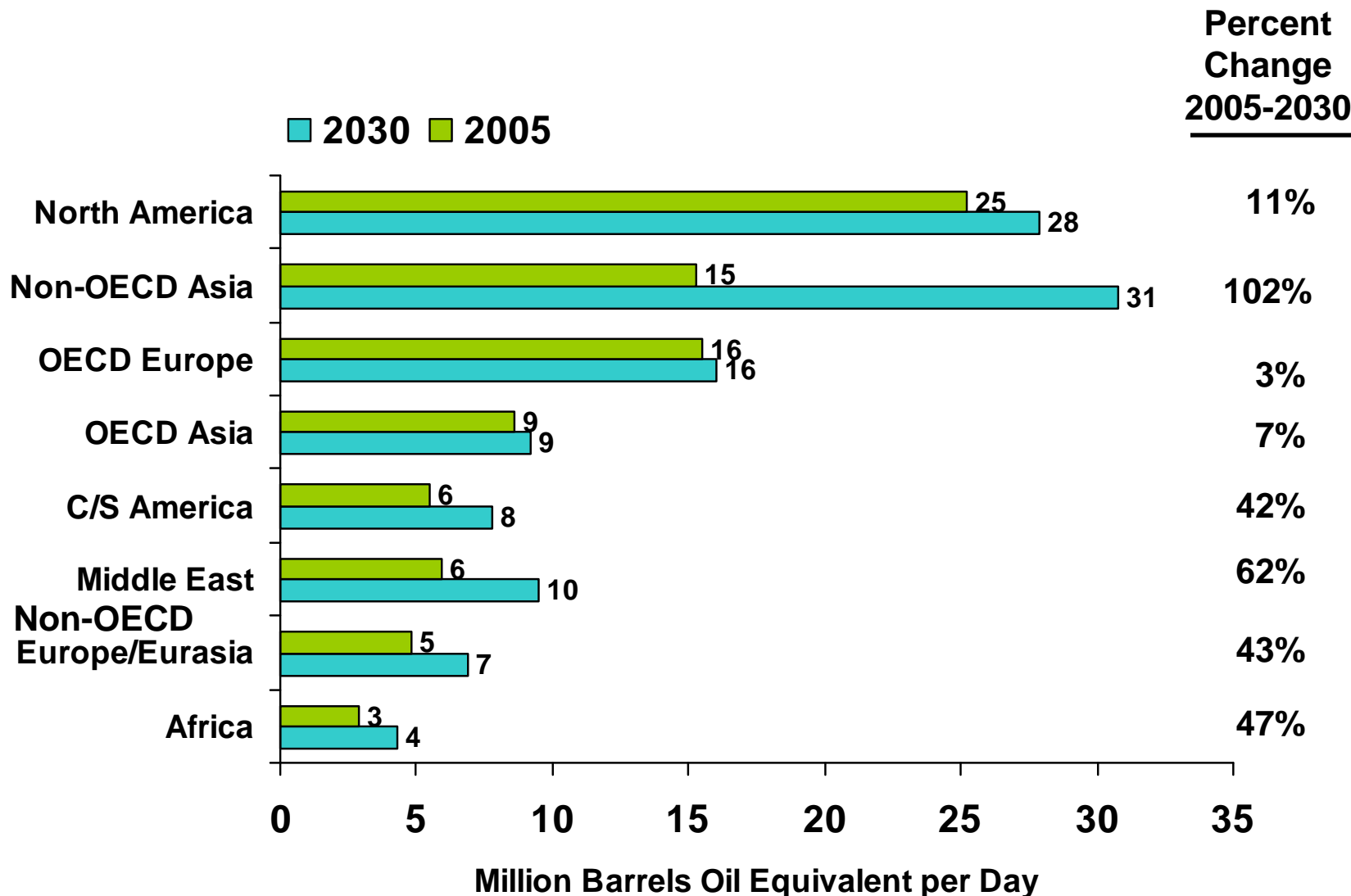


# World Proved Oil Reserves and Projected Total Liquids Consumption from 2005 through 2030 (billion barrels)



Source: Reserves: Oil & Gas Journal. Consumption: EIA, IEO2008

# World Liquids Consumption by Region

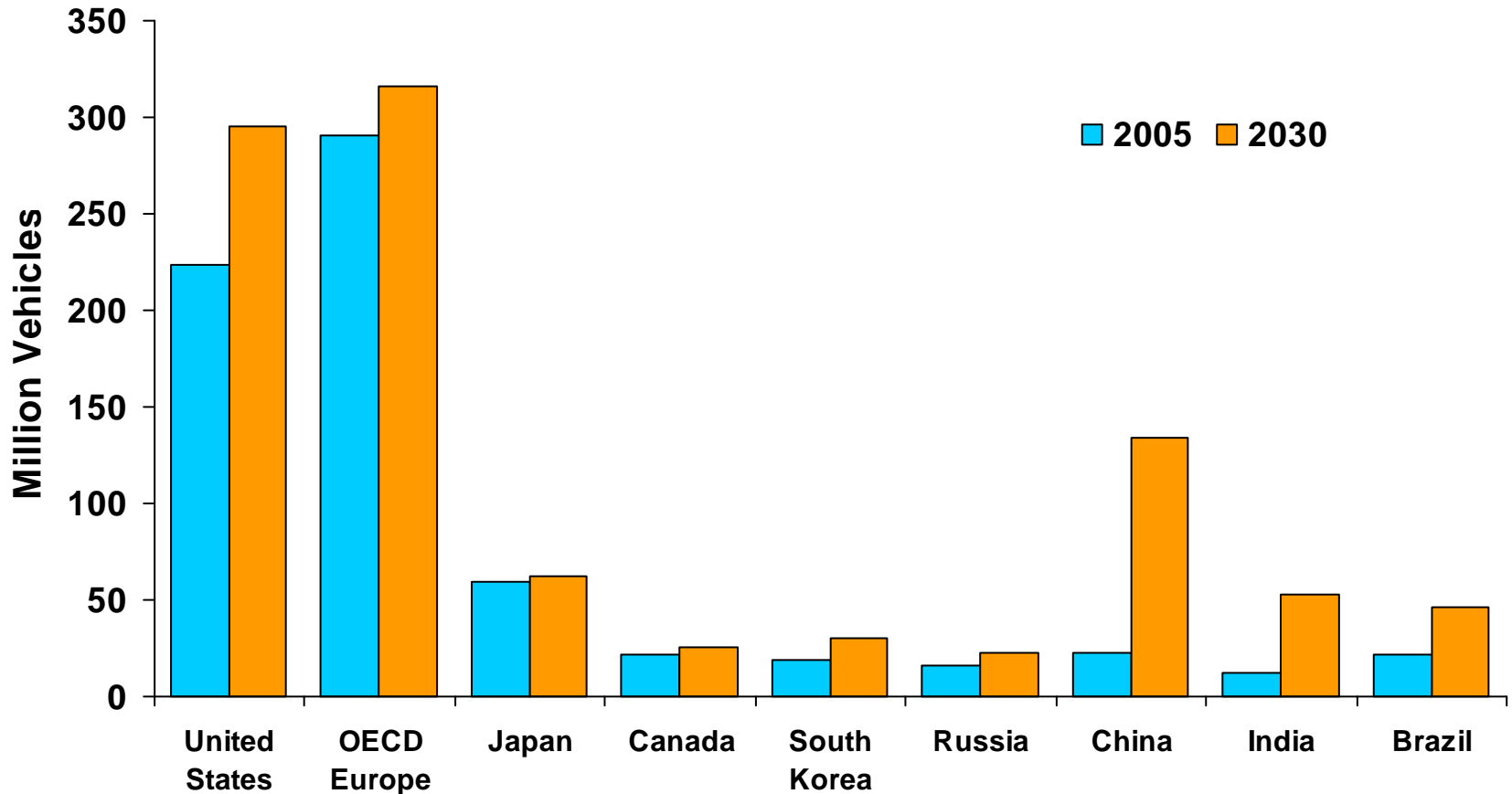


Source: EIA, IEO2008





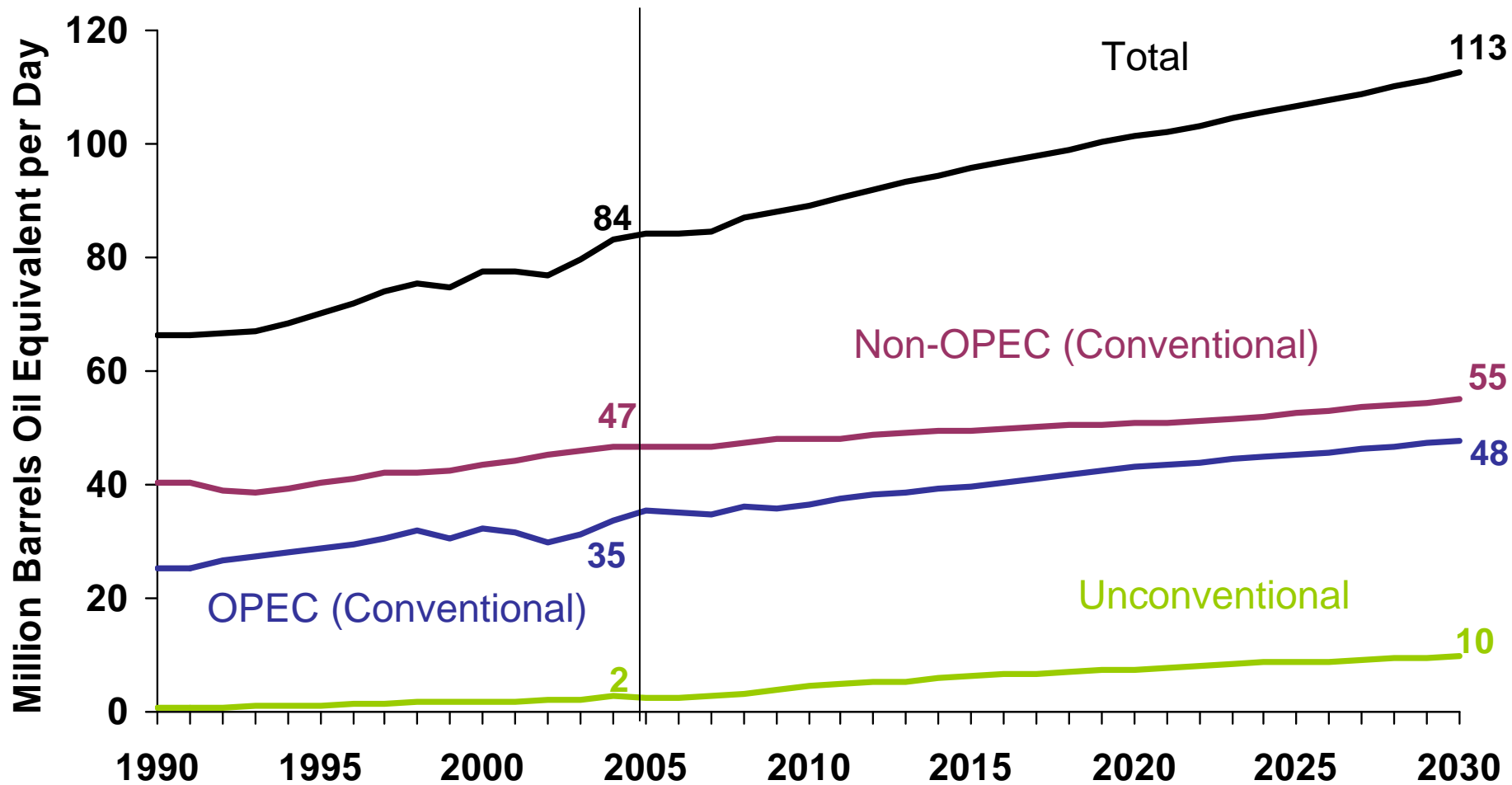
# Motor Vehicle Ownership by Selected Region



Source: EIA, IEO2008



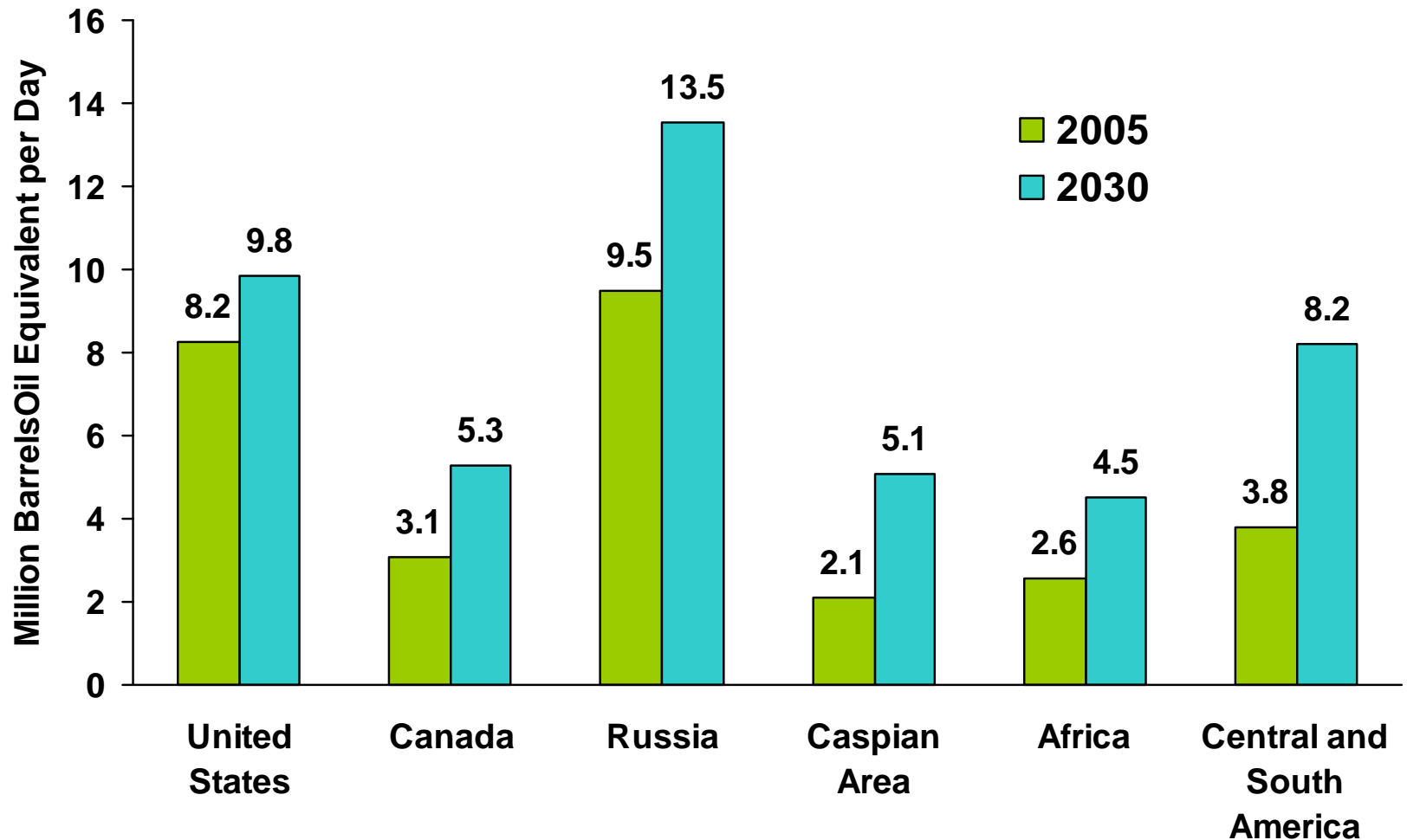
# World Liquids Production, 1990-2030



Source: EIA, IEO2008



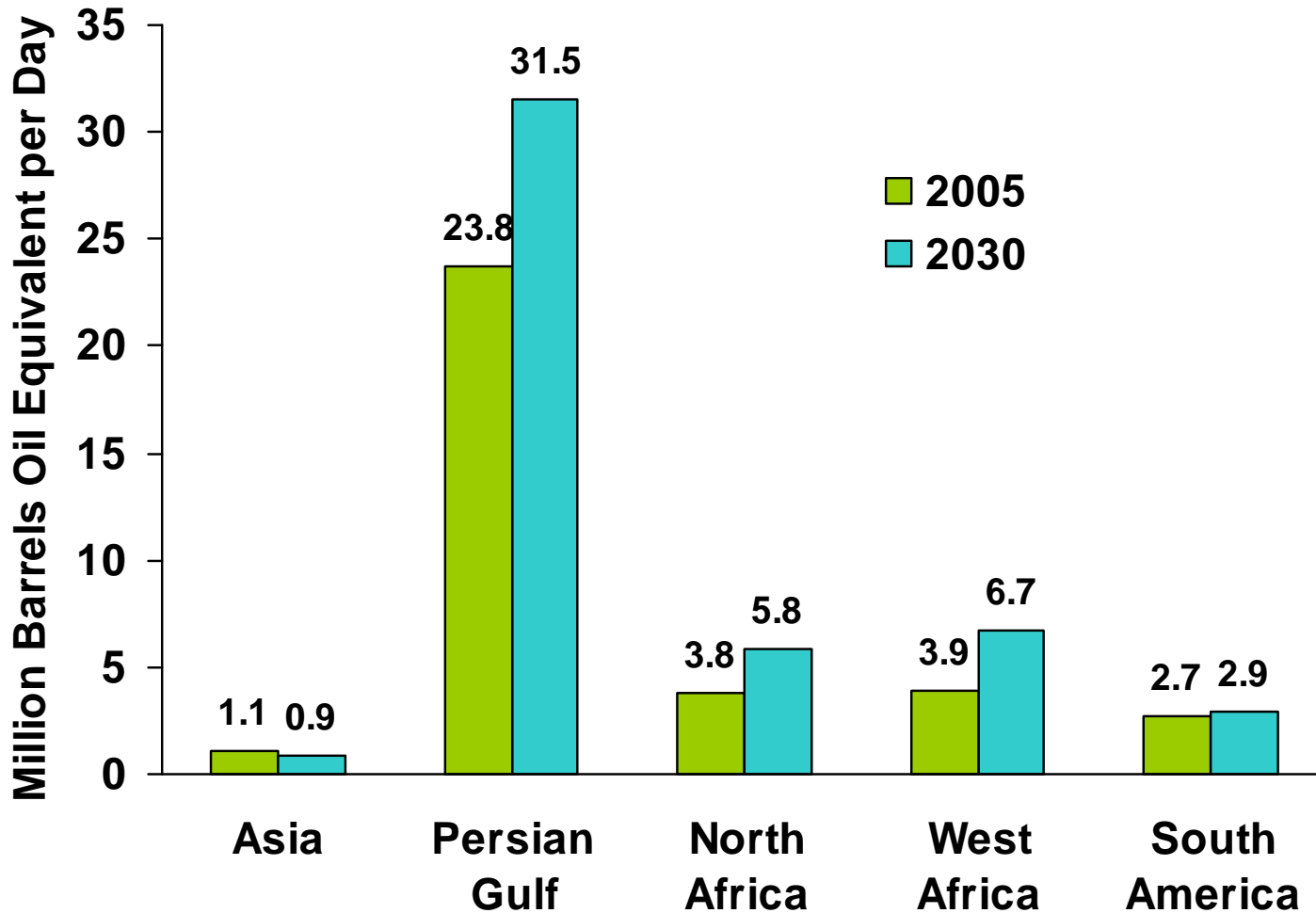
# Liquids Production in Select Non-OPEC Regions, 2005 and 2030



Source: EIA, IEO2008



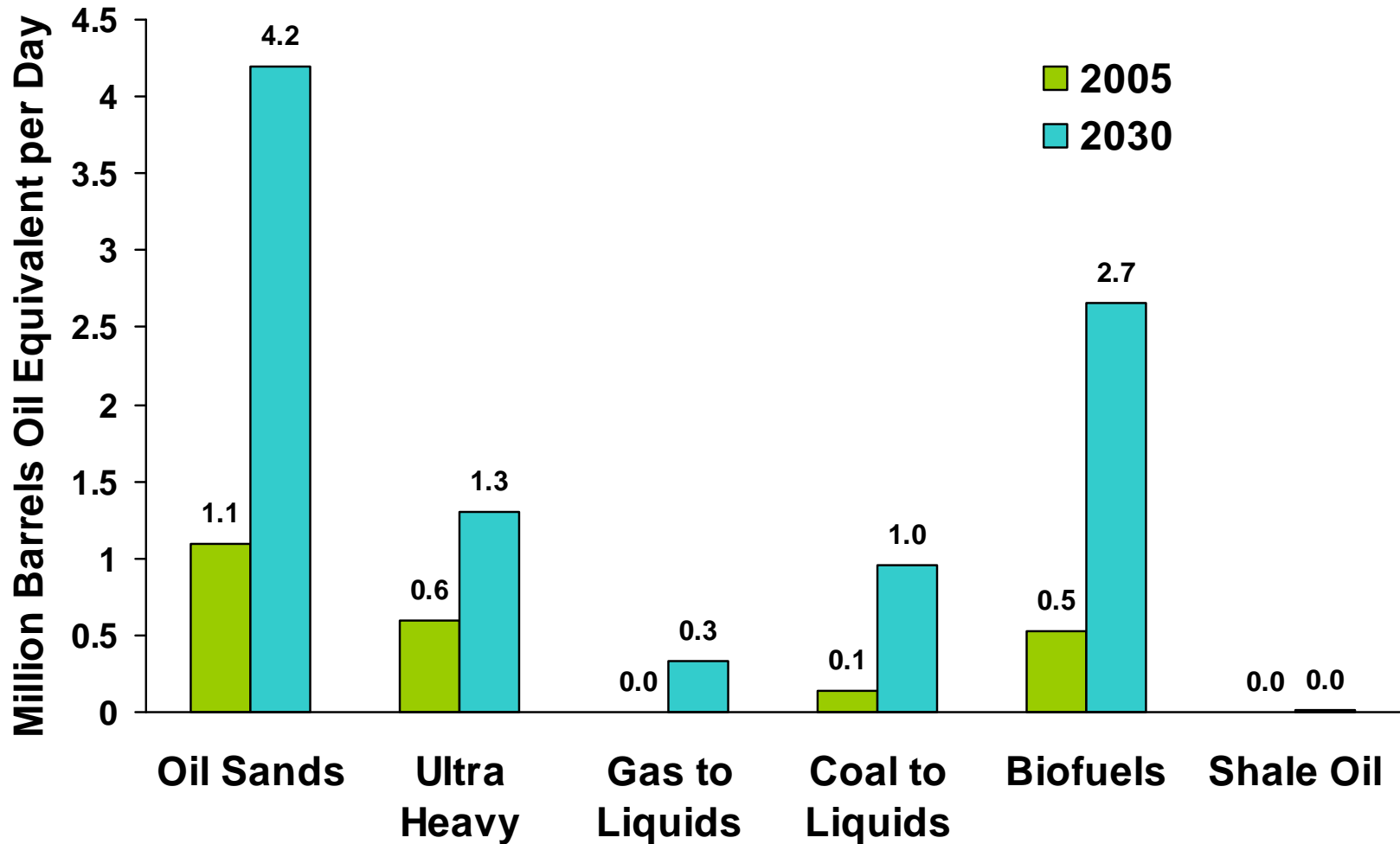
# OPEC Conventional Liquids Production



Source: EIA, IEO2008



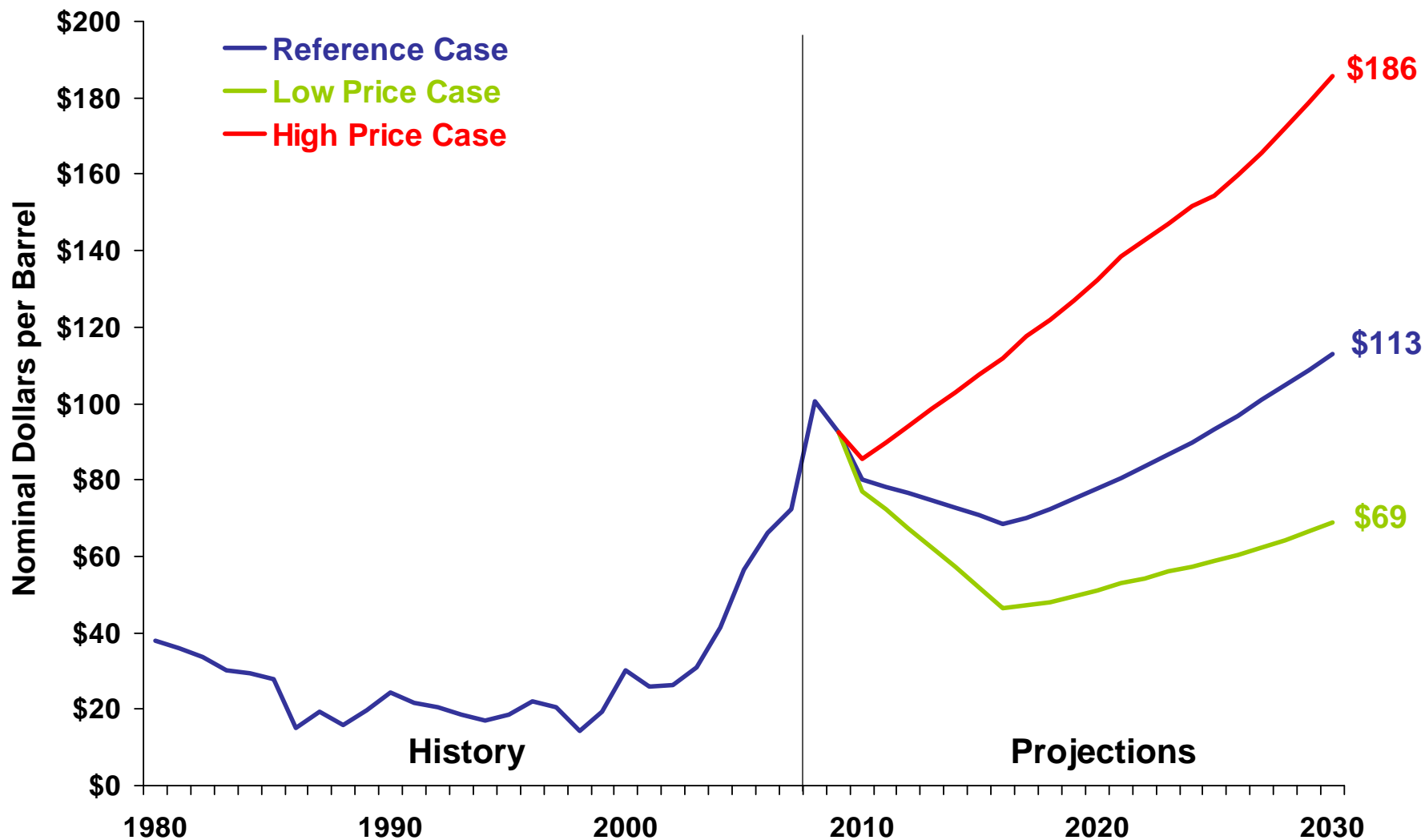
# Worldwide Unconventional Liquids Production, 2005 and 2030



Source: EIA, IEO2008



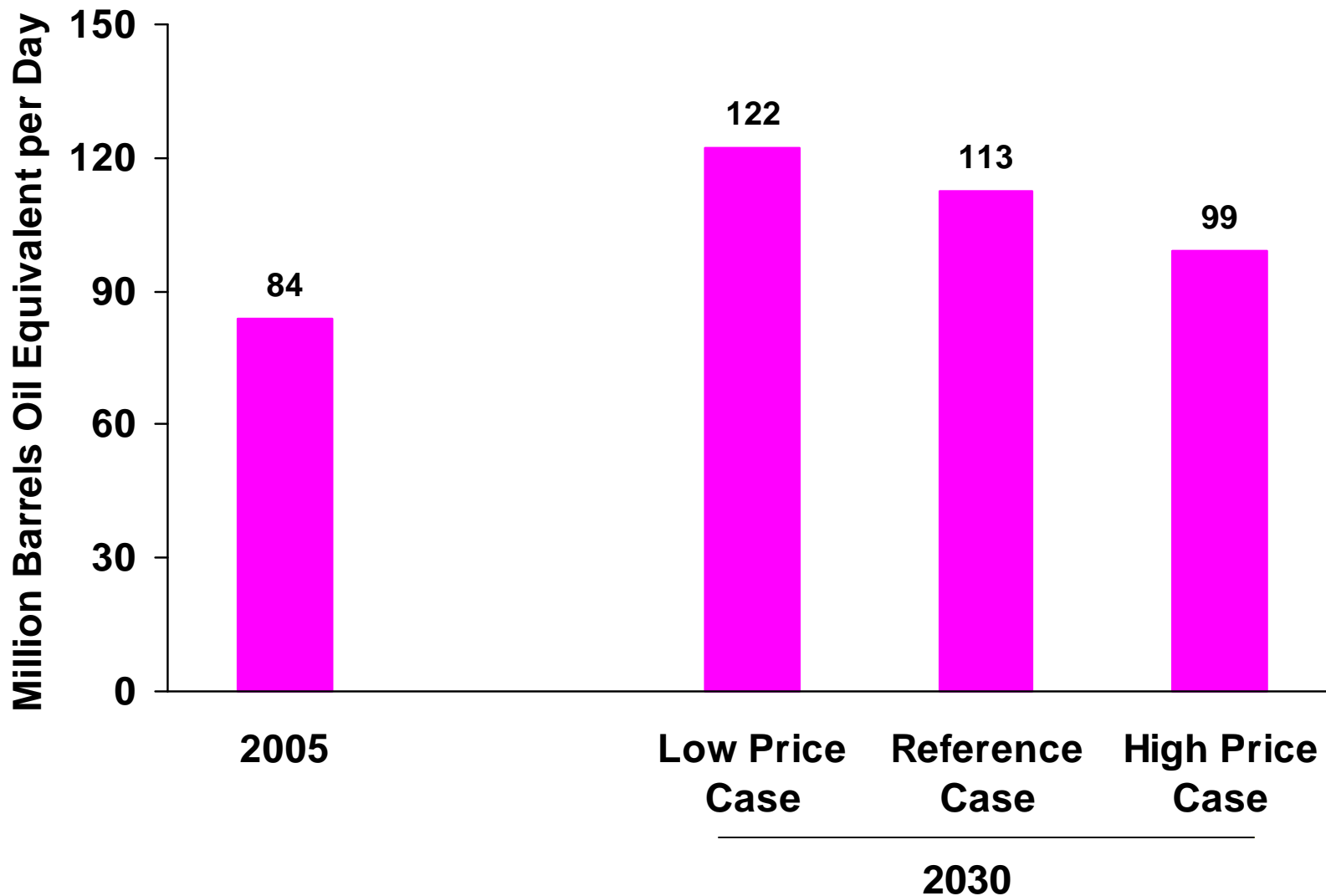
# Nominal World Oil Prices in Three Price Cases



Source: EIA, IEO2008



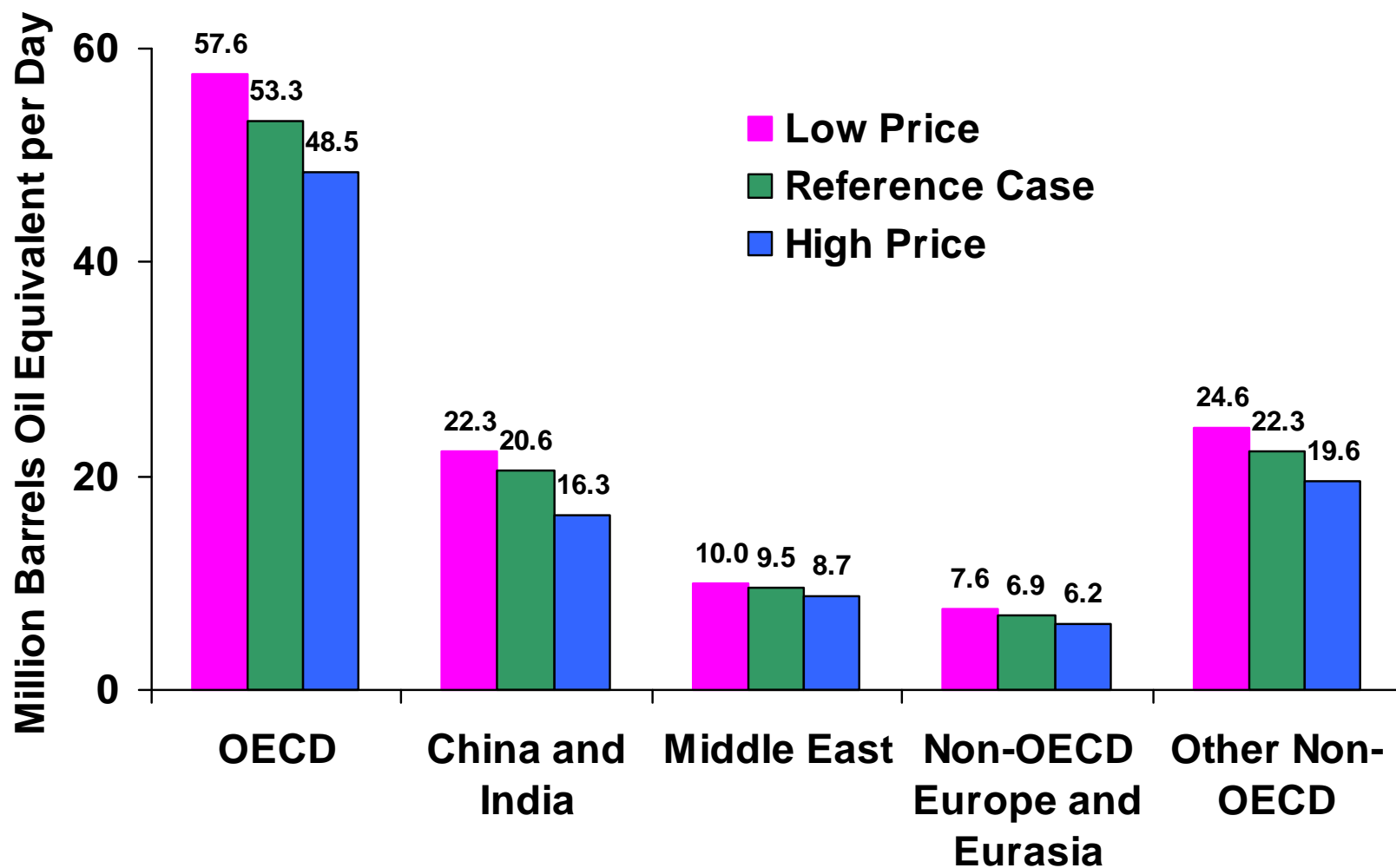
# World Liquids Consumption in Three Price Cases, 2005 and 2030



Source: EIA, IEO2008

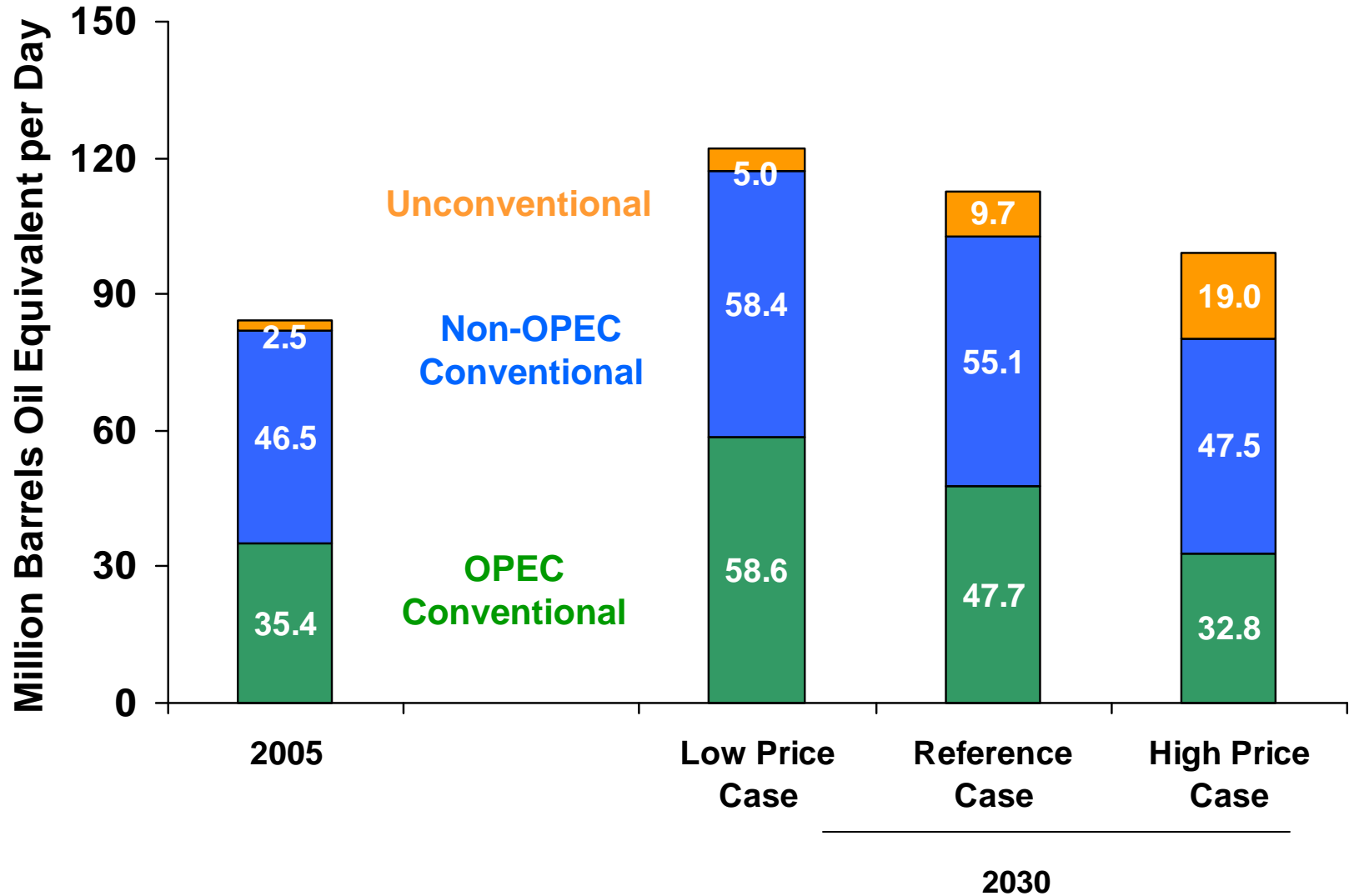


# World Liquids Consumption in Three Price Cases, 2030

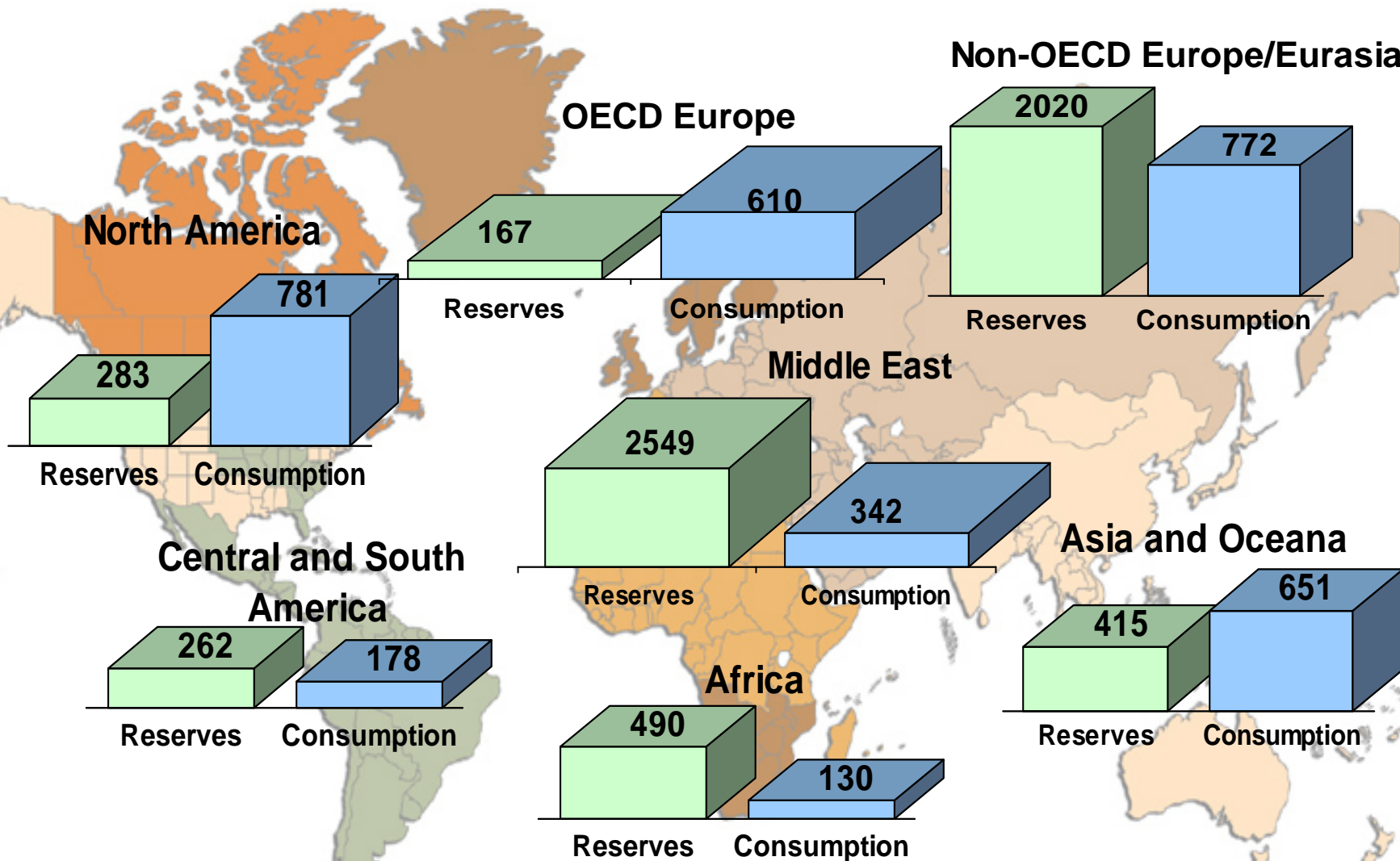




# World Liquids Supply in Three Price Cases, 2005 and 2030

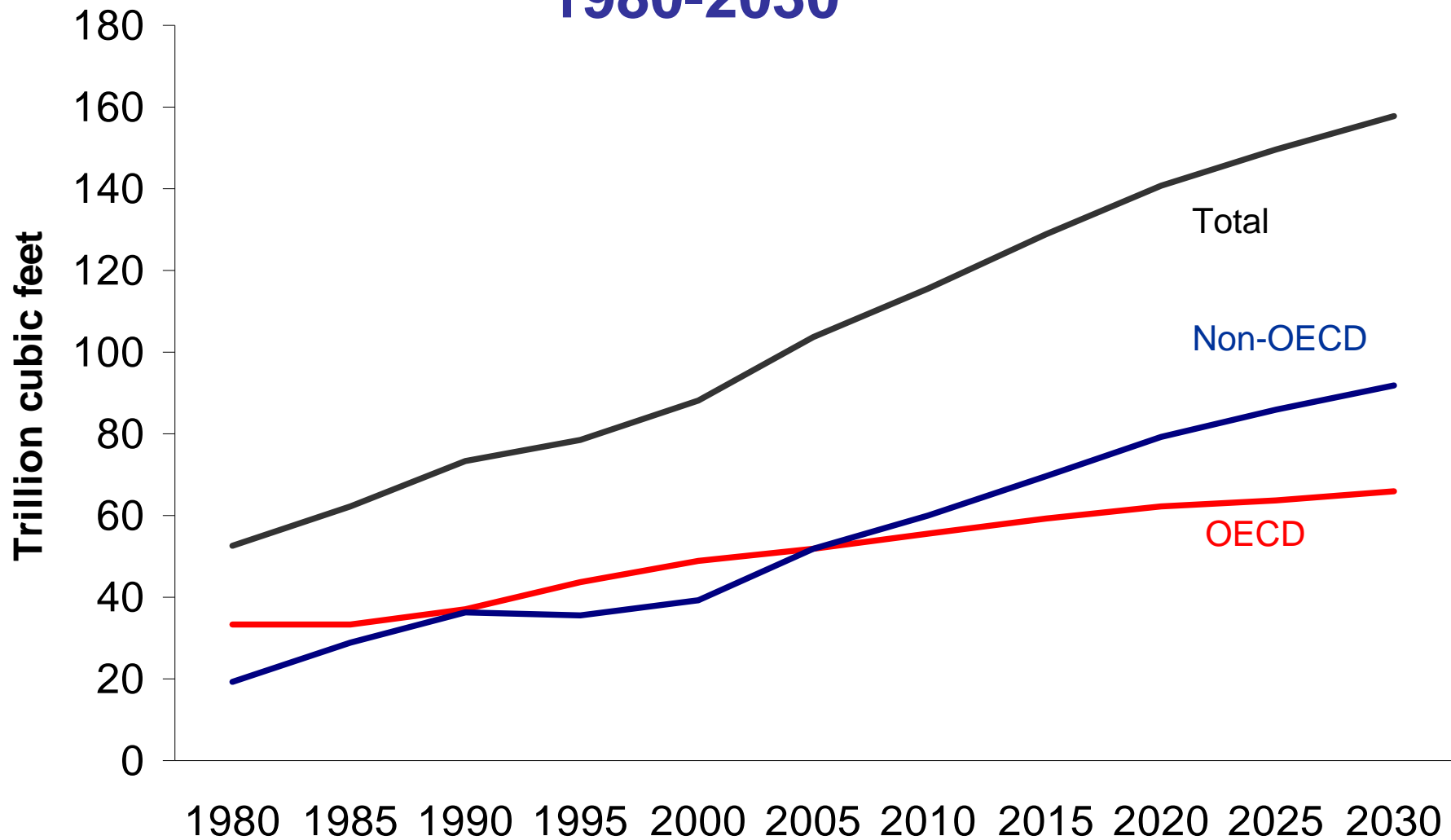


# World Proved Natural Gas Reserves and Projected Total Gas Consumption from 2005 through 2030 (trillion cubic feet)



Source: *Reserves*: Oil & Gas Journal. *Consumption*: EIA, IEO2008

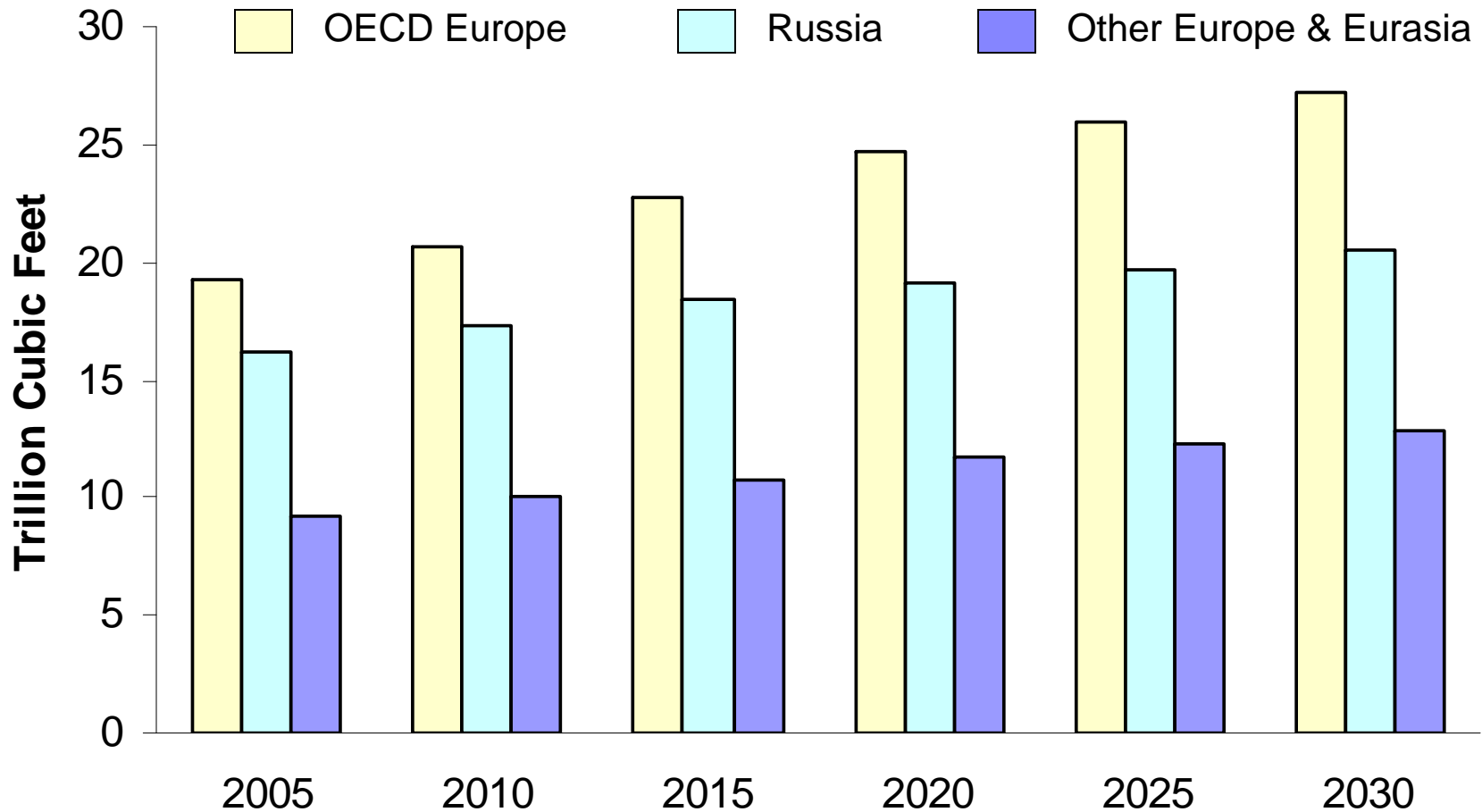
# World Natural Gas Consumption, 1980-2030



Source: EIA, IEO2008



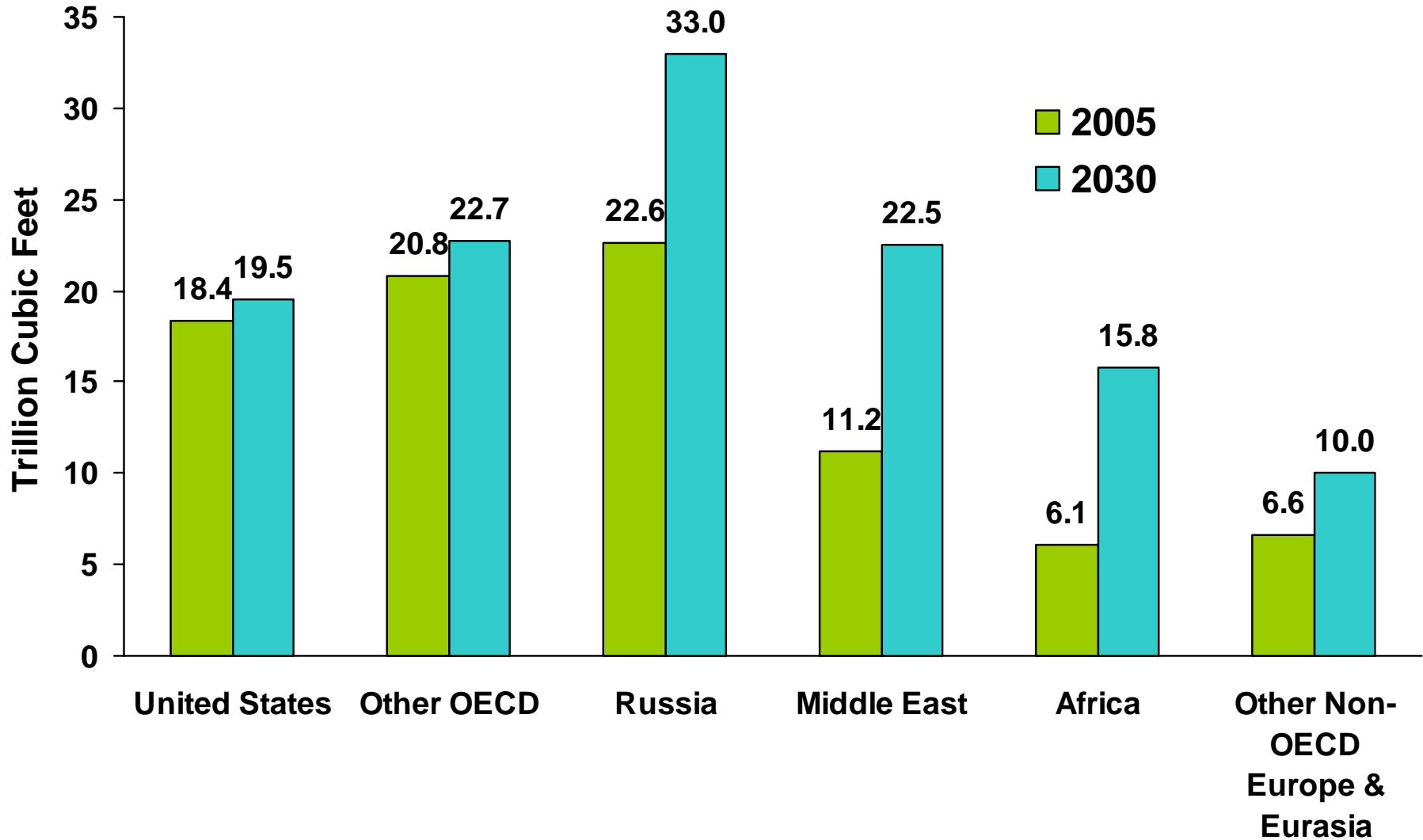
# Figure 39. Natural Gas Consumption in Europe and Eurasia, 2005-2030



Source: EIA, IEO2008



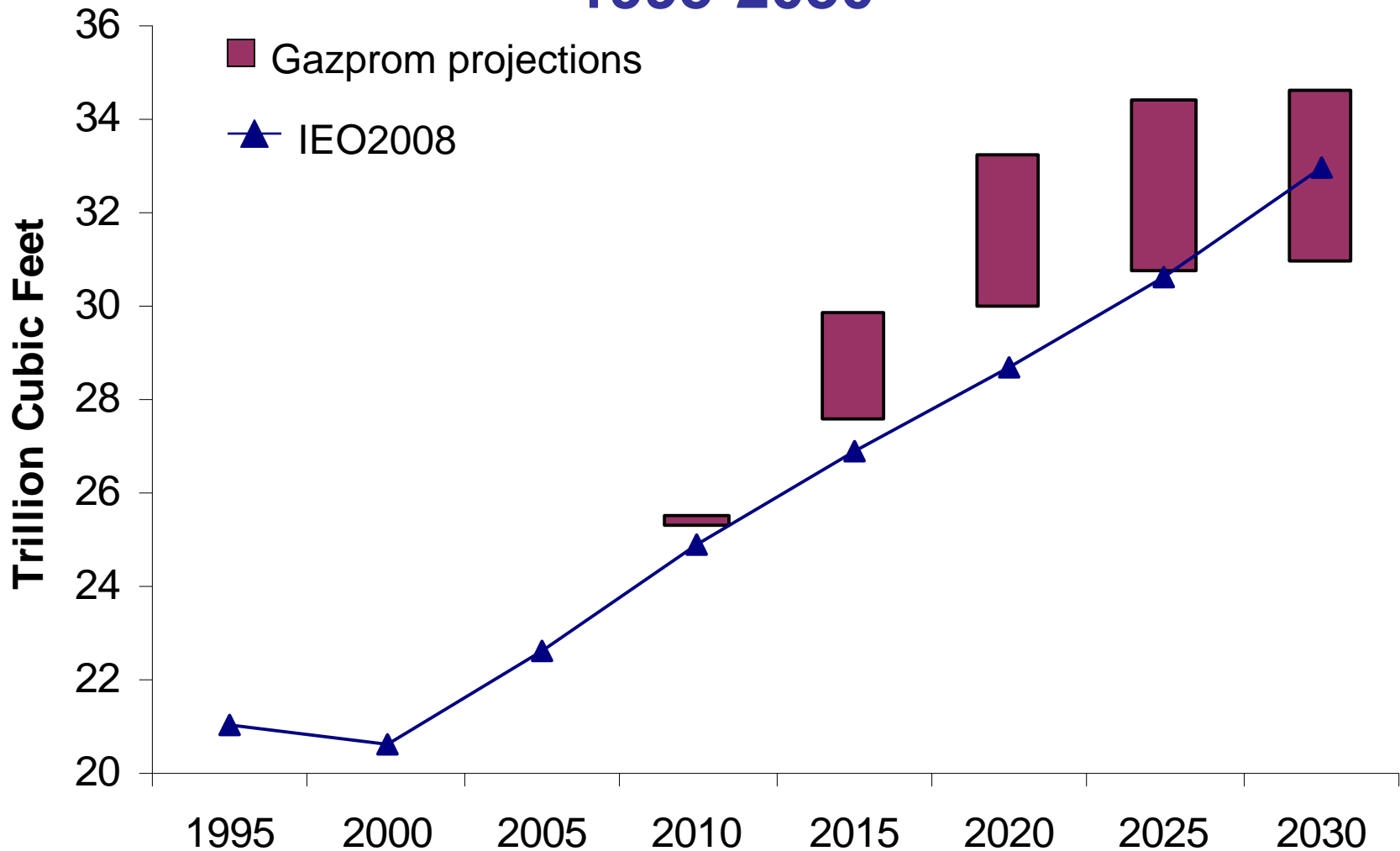
# Natural Gas Production in Select Regions, 2005 and 2030



Source: EIA, IEO2008



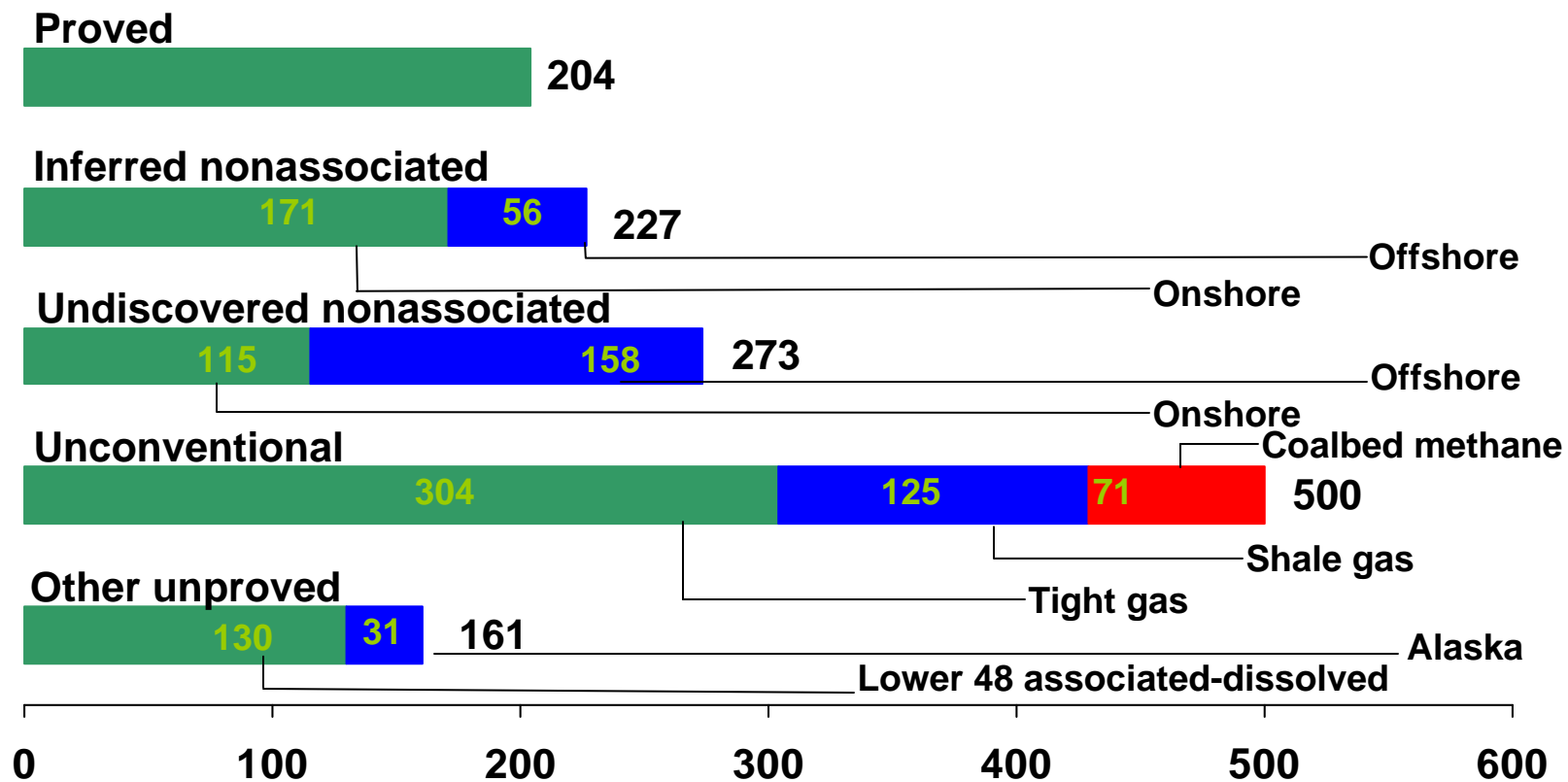
# Russian Natural Gas Production, 1995-2030



Sources: EIA, IEO2008 and World Gas Intelligence, October 22, 2008

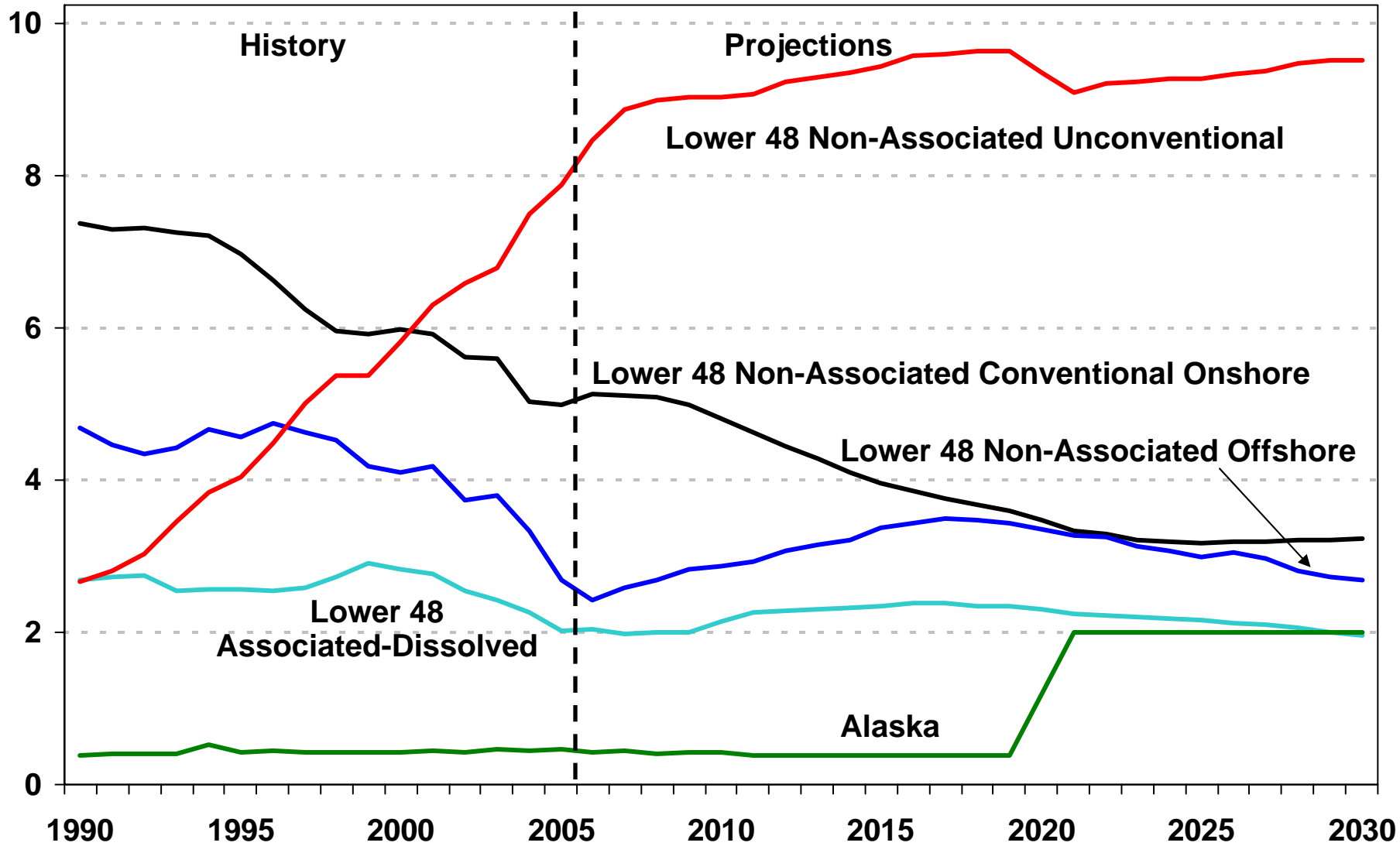


# Technically Recoverable U.S. Natural Gas Resources as of January 1, 2006 (trillion cubic feet)



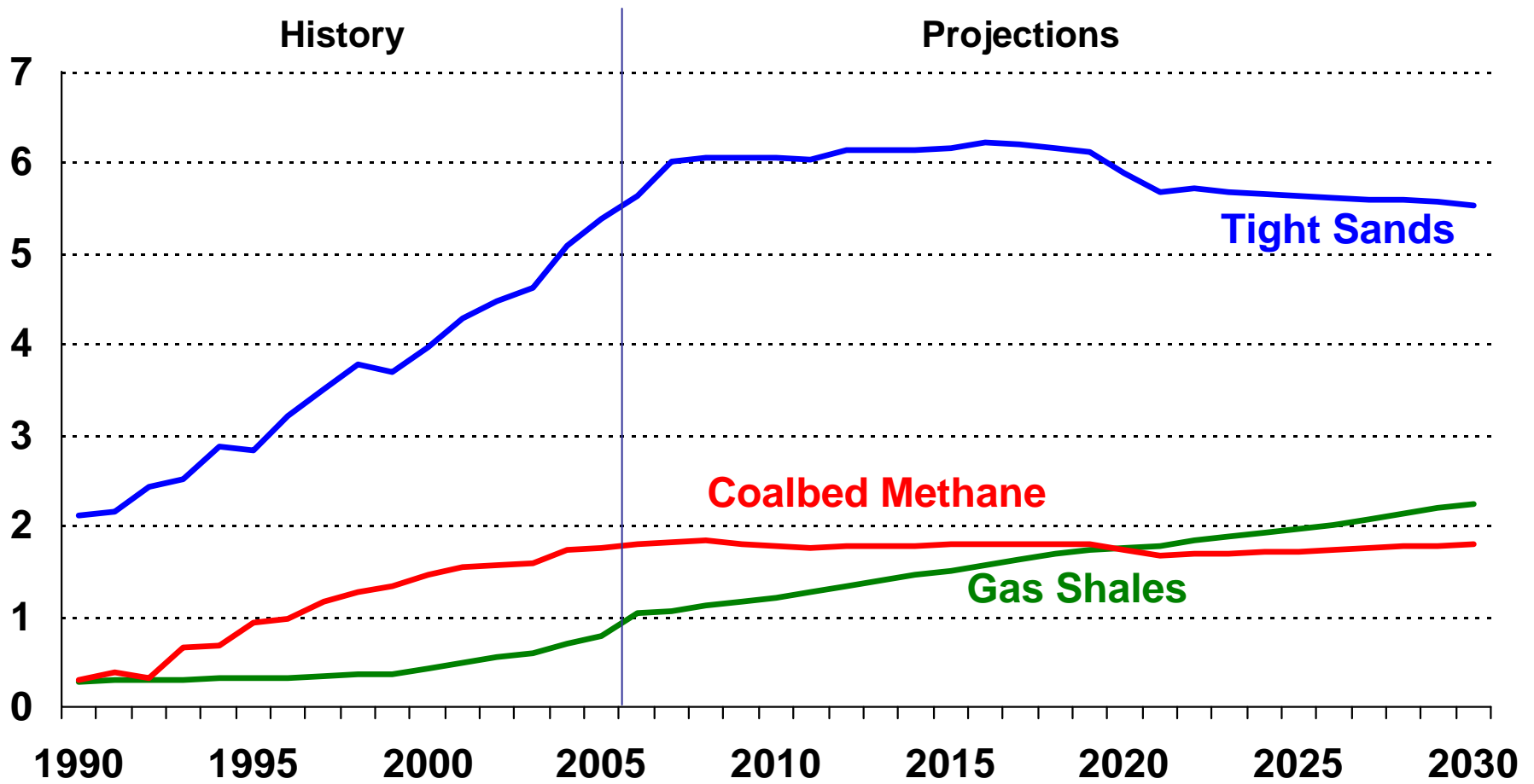
**Total: 1,365 trillion cubic feet**

# U.S. Natural Gas Production by Source, 1990-2030 (trillion cubic feet)





# Unconventional Natural Gas Production, 1990-2030 (trillion cubic feet)



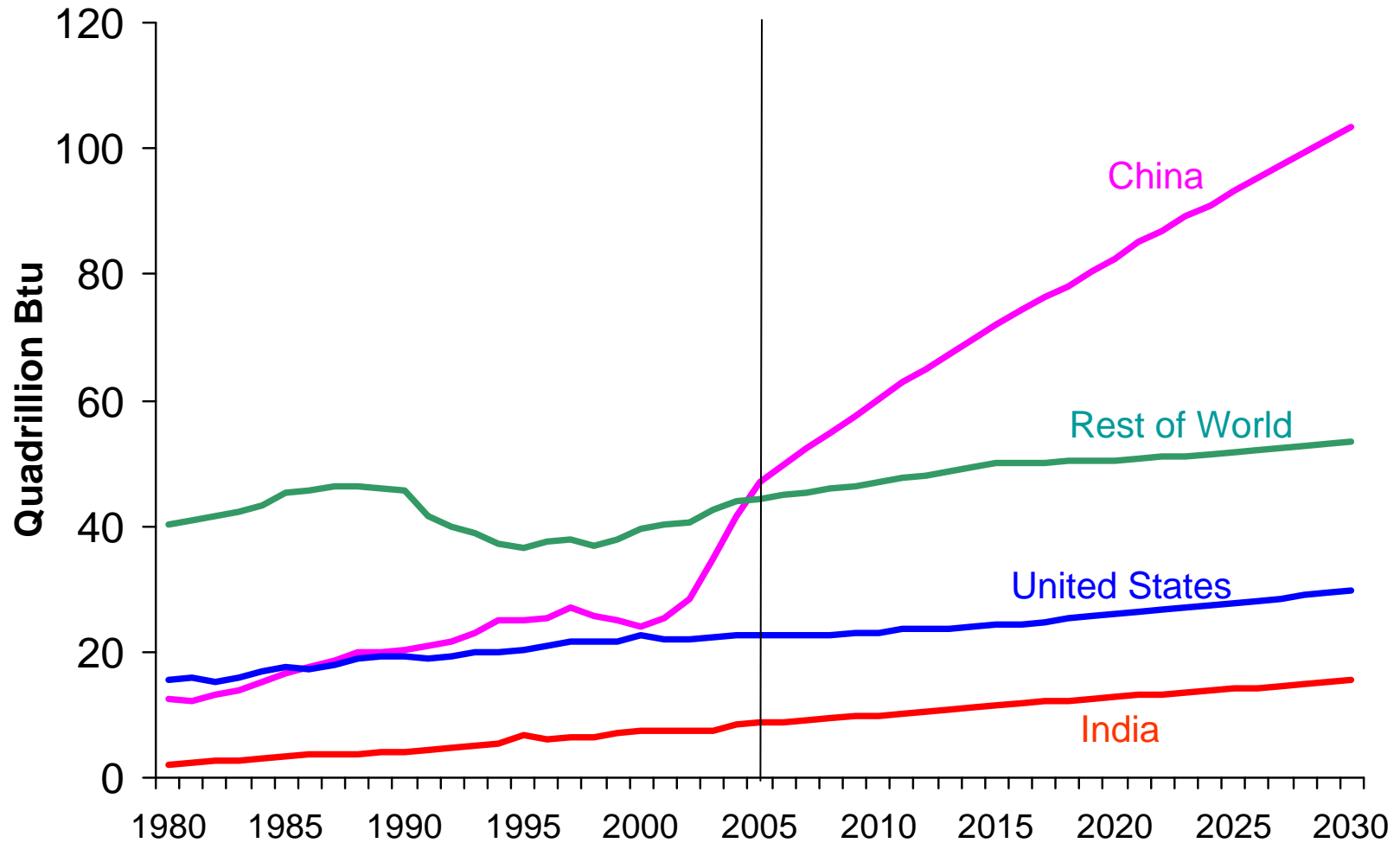
# Unconventional Natural Gas Resources (Gas in Place)

Region	Coalbed Methane Tcf	Shale Gas Tcf	Tight-Sand Gas Tcf	Total Tcf
North America	3017	3840	1370	8228
Latin America	39	2116	1293	3448
Western Europe	157	509	353	1019
Central and Eastern Europe	118	39	78	235
Former Soviet Union	3957	627	901	5485
Middle East and North Africa	0	2547	823	3370
Sub-Saharan Africa	39	274	784	1097
Centrally planned Asia and China	1215	3526	353	5094
Pacific OECD	470	2312	705	3487
Other Asia Pacific	0	313	549	862
South Asia	39	0	196	235
World	9051	16103	7406	32560

Source: "Tight Gas Sands", Journal of Petroleum Technology, June 2006, Page 86-93.

Table 1 - Distribution of Worldwide Unconventional-gas resources (After Rogner 1996, Taken from Kawata and Fujita 2001)

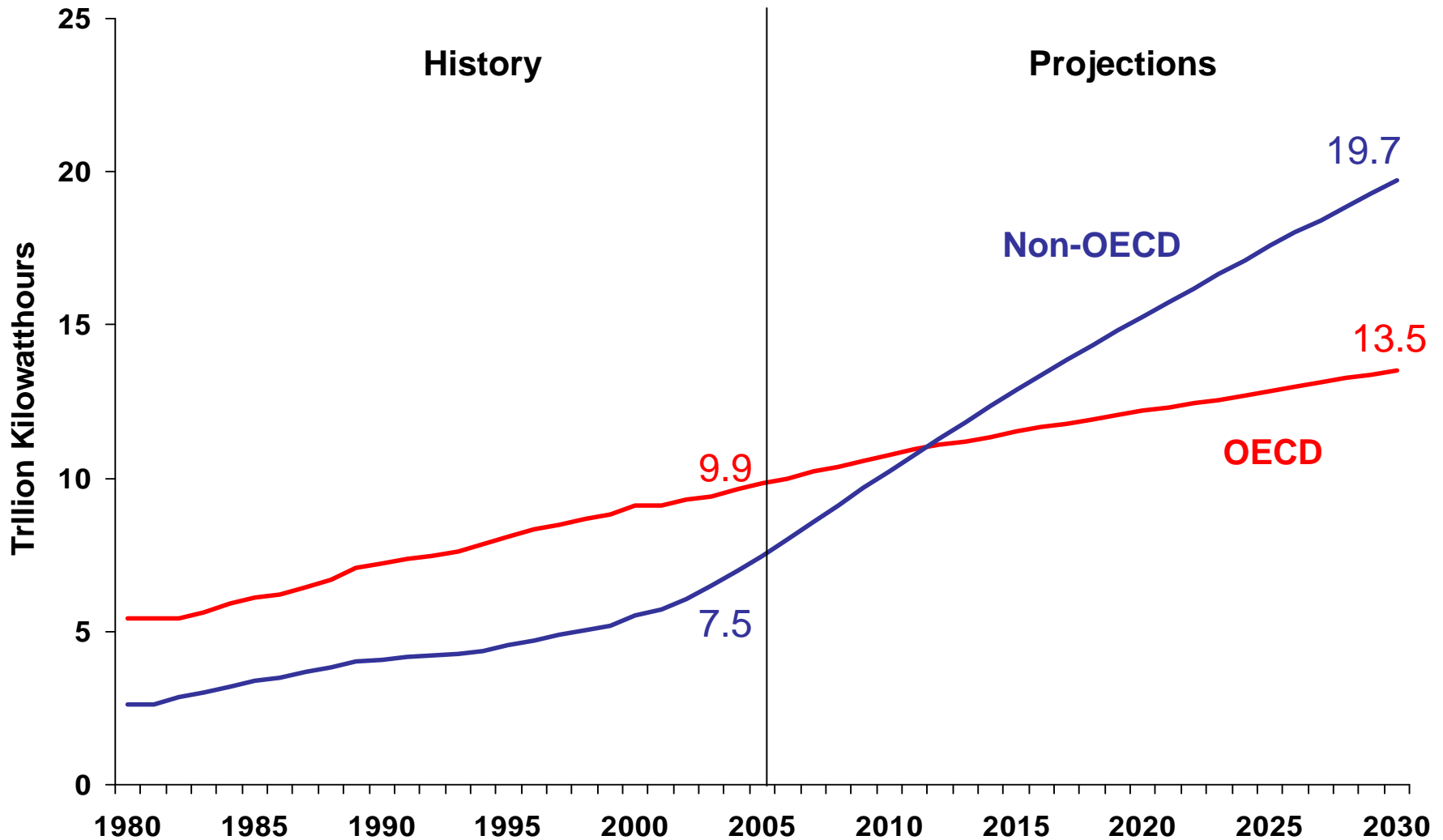
# World Coal Consumption, 1980-2030



Source: EIA, IEO2008



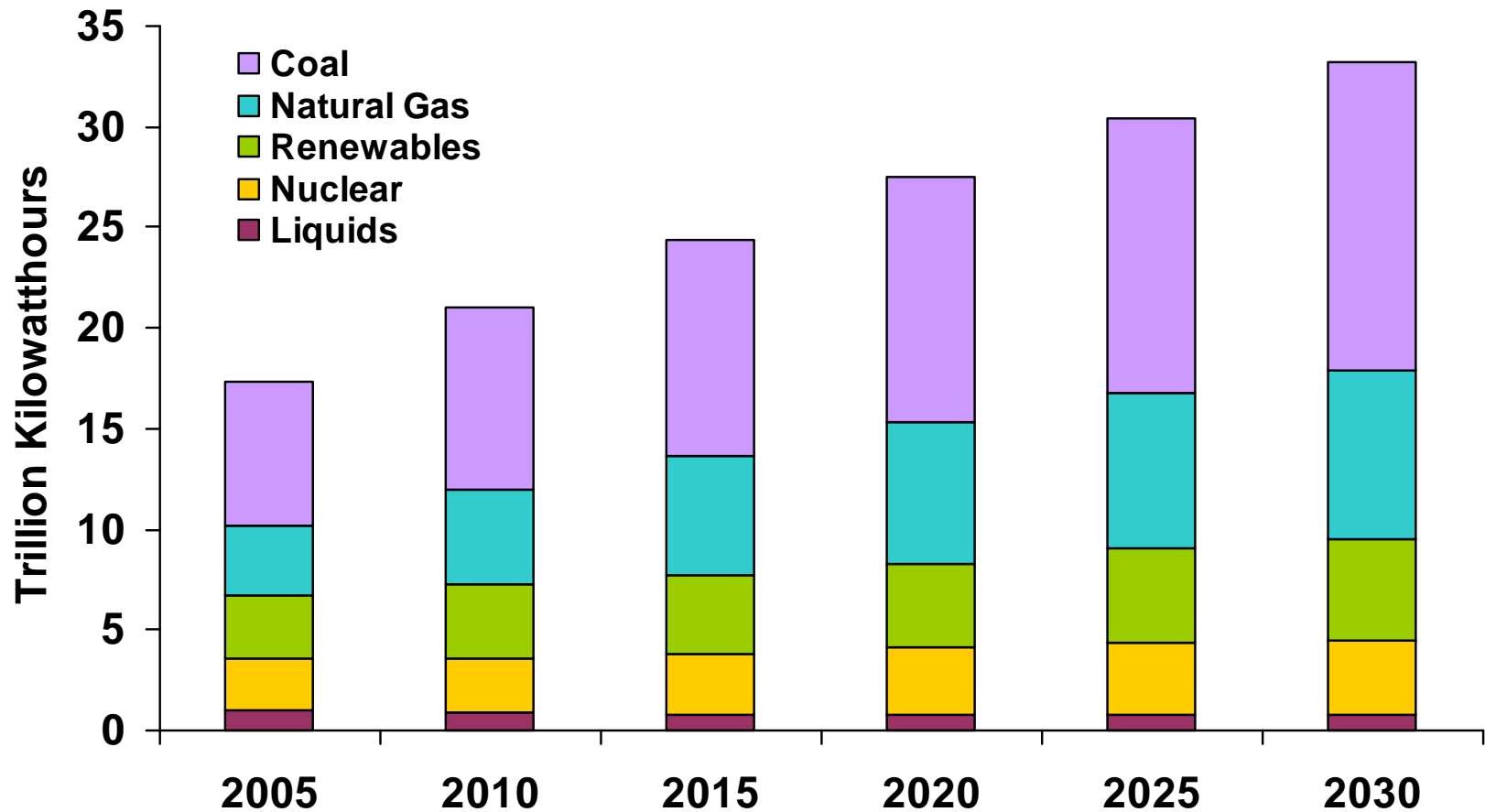
# World Electric Power Generation by Region



Source: EIA, IEO2008



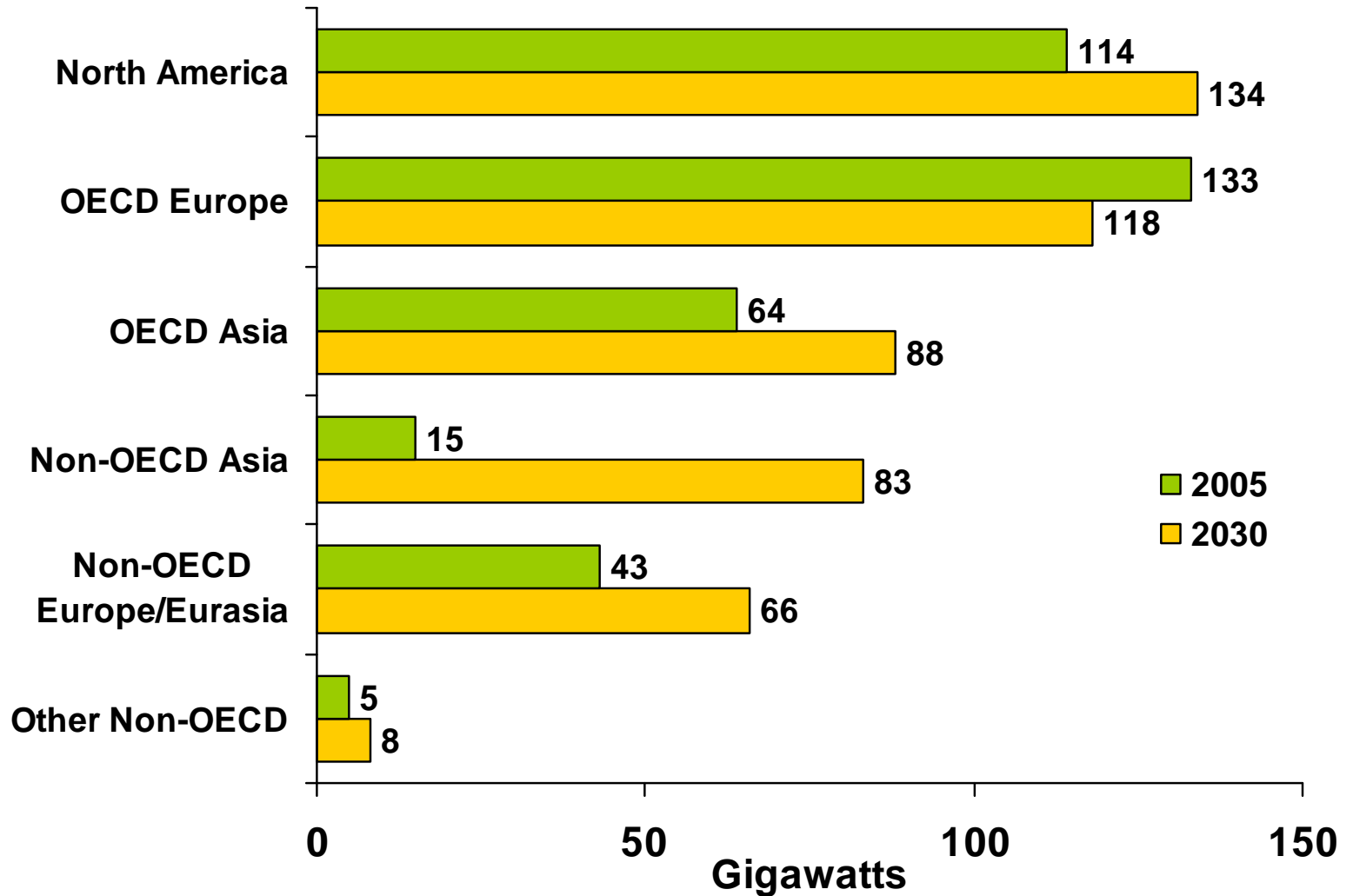
# World Electric Power Generation by Fuel



Source: EIA, IEO2008



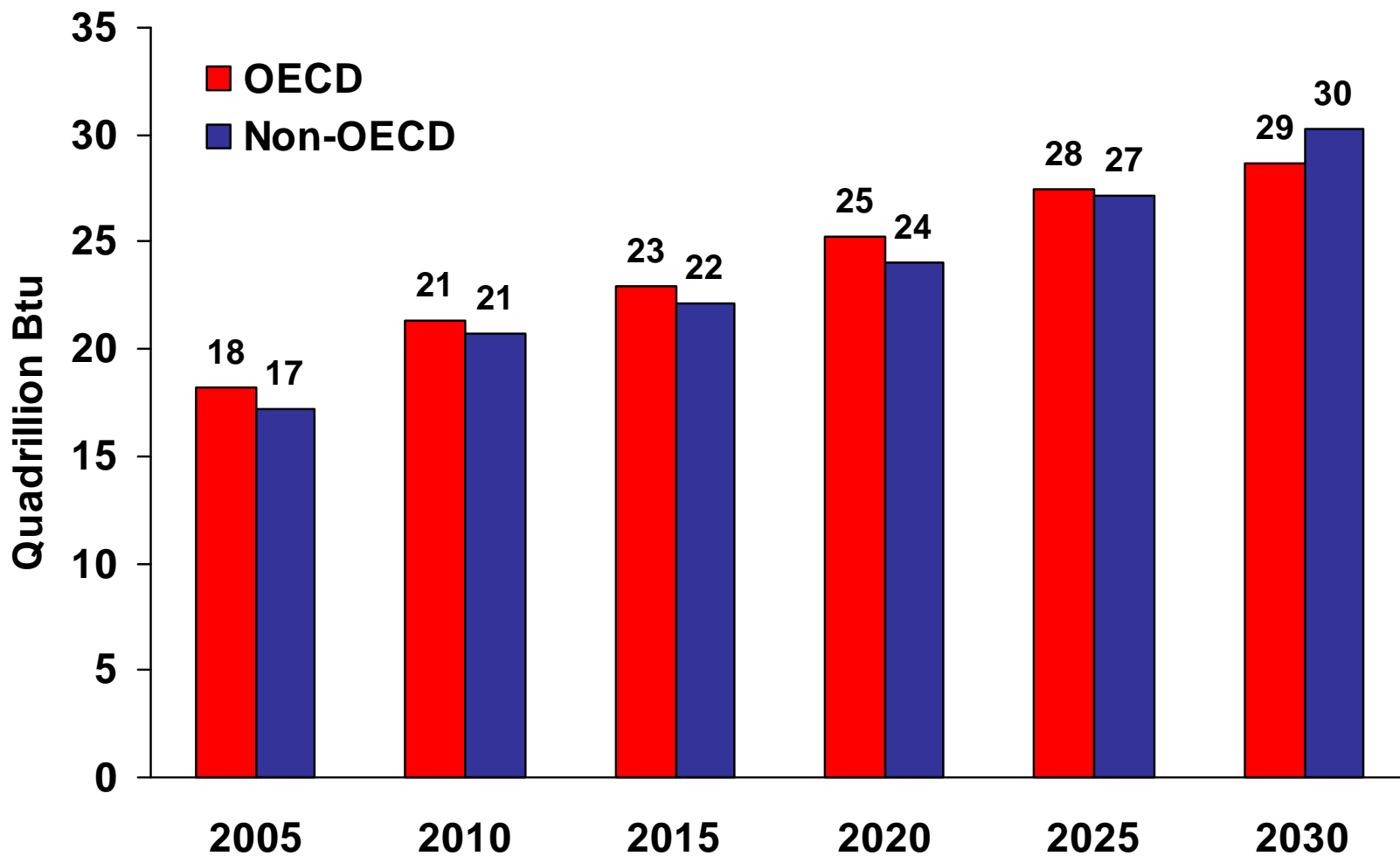
# Nuclear Capacity by Region



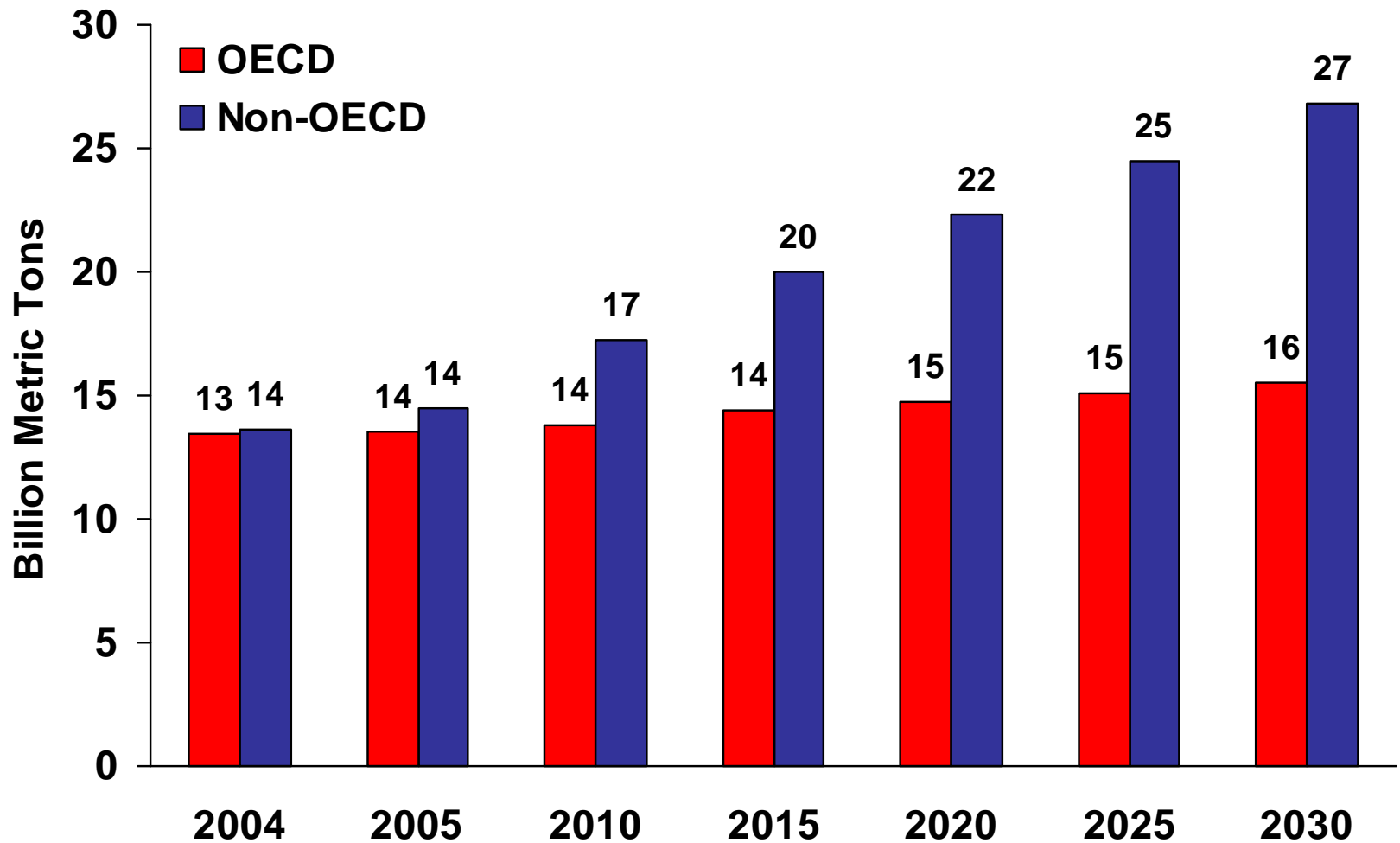
Source: EIA, IEO2008



# World Renewable Energy Use, 2005-2030



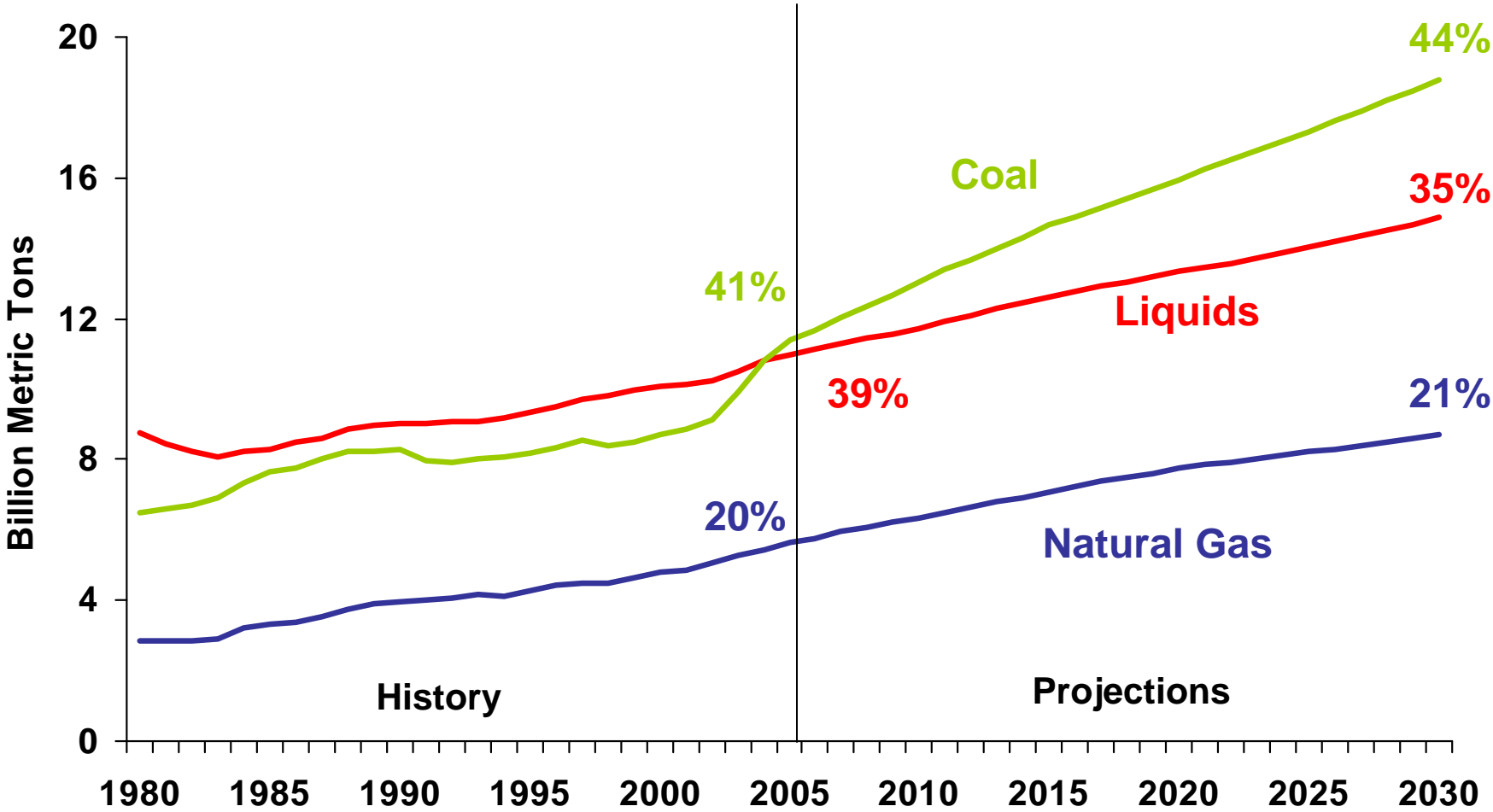
# World Carbon Dioxide Emissions by Region



Source: EIA, IEO2008



# Carbon Dioxide Emissions by Fossil Fuel



Source: EIA, IEO2008



# Major Trends in the IEO2008 Outlook

- Total world energy use is 50% higher in 2030 compared to 2005.
- Sustained high world oil prices dampens demand in the out years of the projections; liquids demand is 4% lower in 2030 than in last year's outlook.
- Renewable energy is the fastest growing worldwide in the forecast, at 2.1% per year, but coal is close behind at 2.0% per year.
- It is likely that energy use in the non-OECD will exceed energy use in the OECD this year! By 2030, non-OECD energy use is 43% higher than that in the OECD.
- China's energy use exceeds that of the U.S. by 2017 and is 32% (37 quadrillion Btu) higher than in the U.S. by 2030 in the IEO2008 reference case.
- Given the continued importance of fossil fuels in the forecast, carbon dioxide emissions are projected to rise by 1.7 percent per year between 2005 and 2030.

## Periodic Reports

*International Energy Outlook 2008, June 2008*

*Annual Energy Outlook 2008, March 2008, full report, June 2008*

*Short-Term Energy Outlook, monthly*

*Petroleum Status and Natural Gas Storage Reports, weekly*

## Examples of Special Analyses

*Economic Effects of High Oil Prices,” Annual Energy Outlook 2006*

*The Global Liquefied Natural Gas Market: Status and Outlook, December 2003*

*“Impacts of Increased Access to Oil and Natural Gas Resources in the Lower 48 Federal Outer Continental Shelf,” Annual Energy Outlook 2007*

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