

International Energy Outlook 2011



Center for Strategic and International Studies
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Key findings in the IEO2011 Reference case

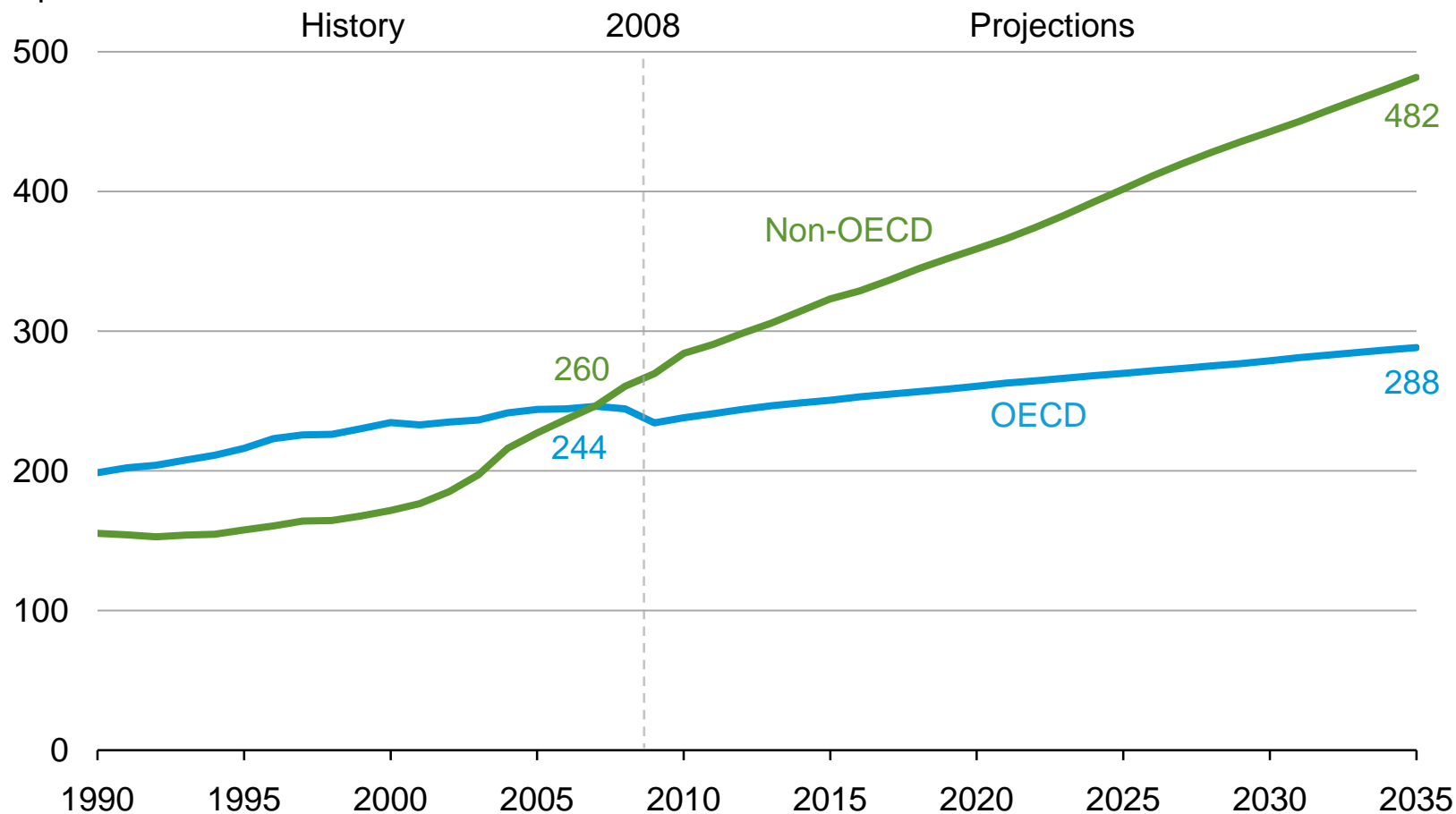
- World energy consumption increases by 53% between 2008 and 2035 with half of the increase attributed to China and India
- Renewables are the world's fastest-growing energy source, at 2.8% per year; renewables share of world energy grows to roughly 15% in 2035
- Fossil fuels continue to supply almost 80% of world energy use in 2035
- Liquid fuels remain the largest energy source worldwide through 2035, but the oil share of total energy declines to 28% in 2035, as sustained high oil prices dampen demand and encourage fuel switching where possible and modest use of liquid biofuels

Key findings in the IEO2011 Reference case (continued)

- Increasing supplies of unconventional natural gas support growth in projected worldwide gas use. Global natural gas consumption grows by 1.6% per year, and projected natural gas use in 2035 is 8 percent higher than in last year's outlook
- Worldwide energy-related carbon dioxide emissions rise 43 percent between 2008 and 2035, reaching 43.2 billion metric tons in 2035

Non-OECD nations drive the increase in energy demand

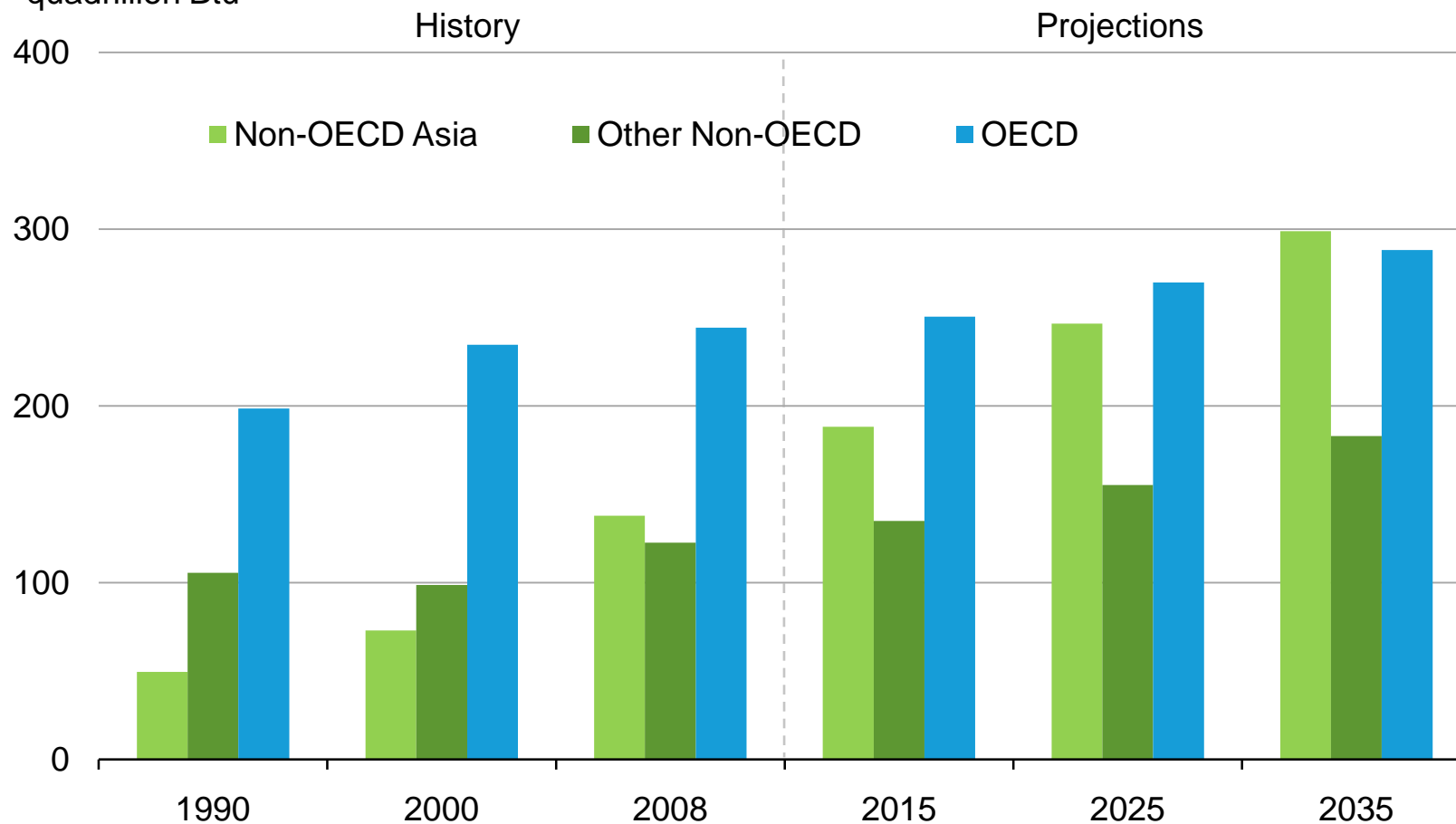
world energy consumption
quadrillion Btu



Source: EIA, International Energy Outlook 2011

China and India account for about half of the world increase in energy use

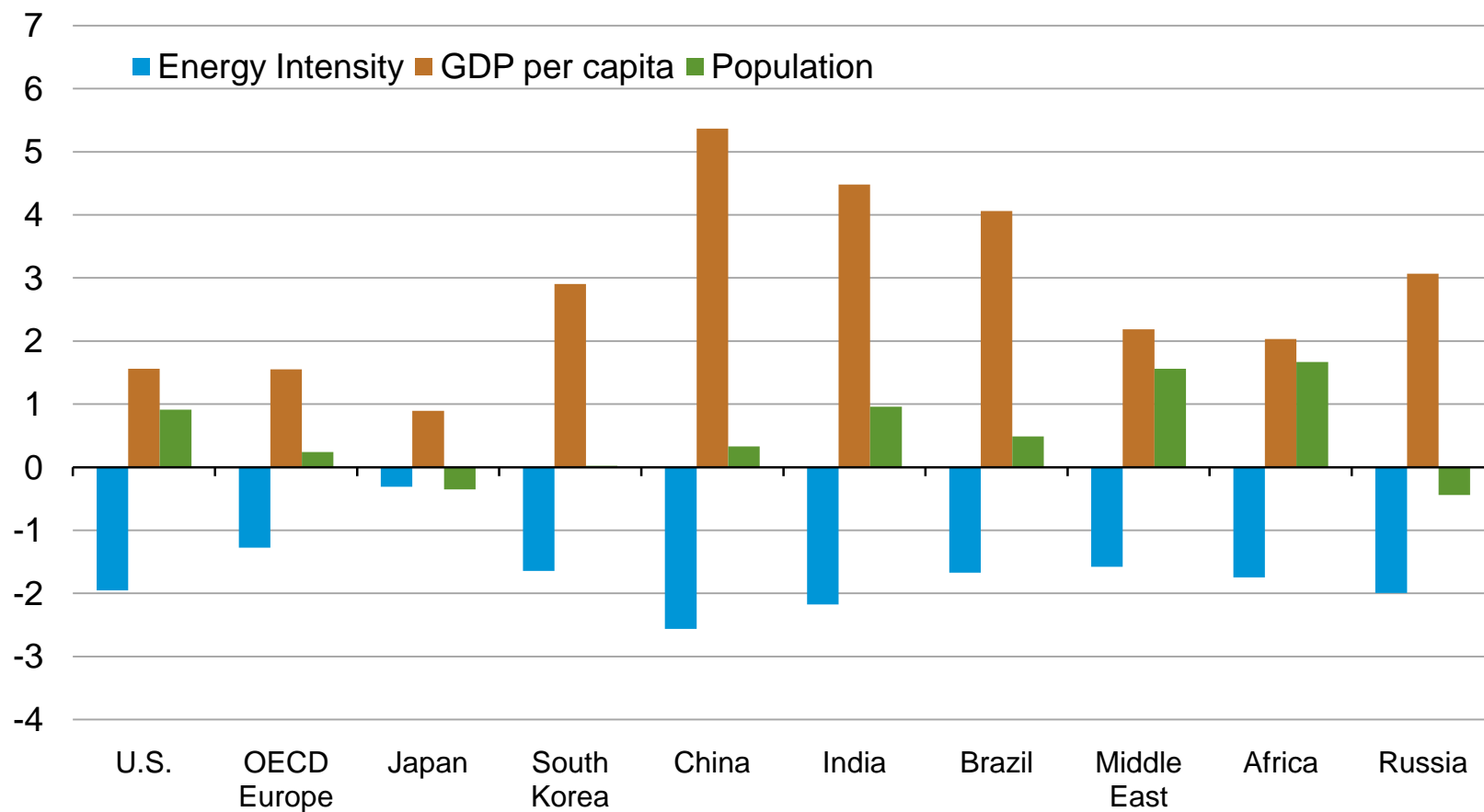
world energy consumption
quadrillion Btu



Source: EIA, International Energy Outlook 2011

Growth in income and population drive rising energy use; energy intensity improvements moderate increases in energy demand

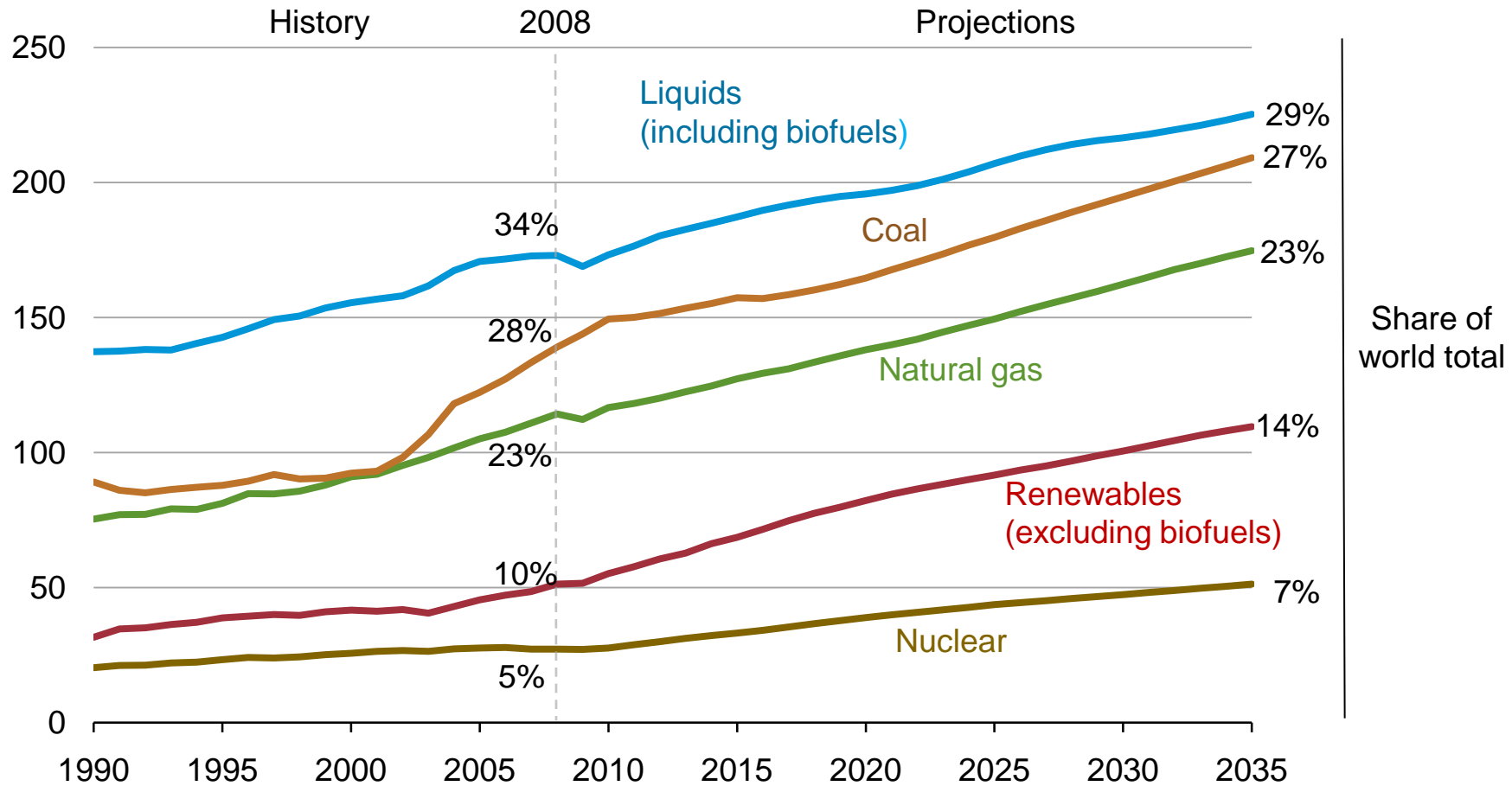
average annual change (2008-2035)
percent per year



Source: EIA, *International Energy Outlook 2011*

Renewables are the fastest growing source of energy consumption

world energy consumption by fuel
quadrillion Btu

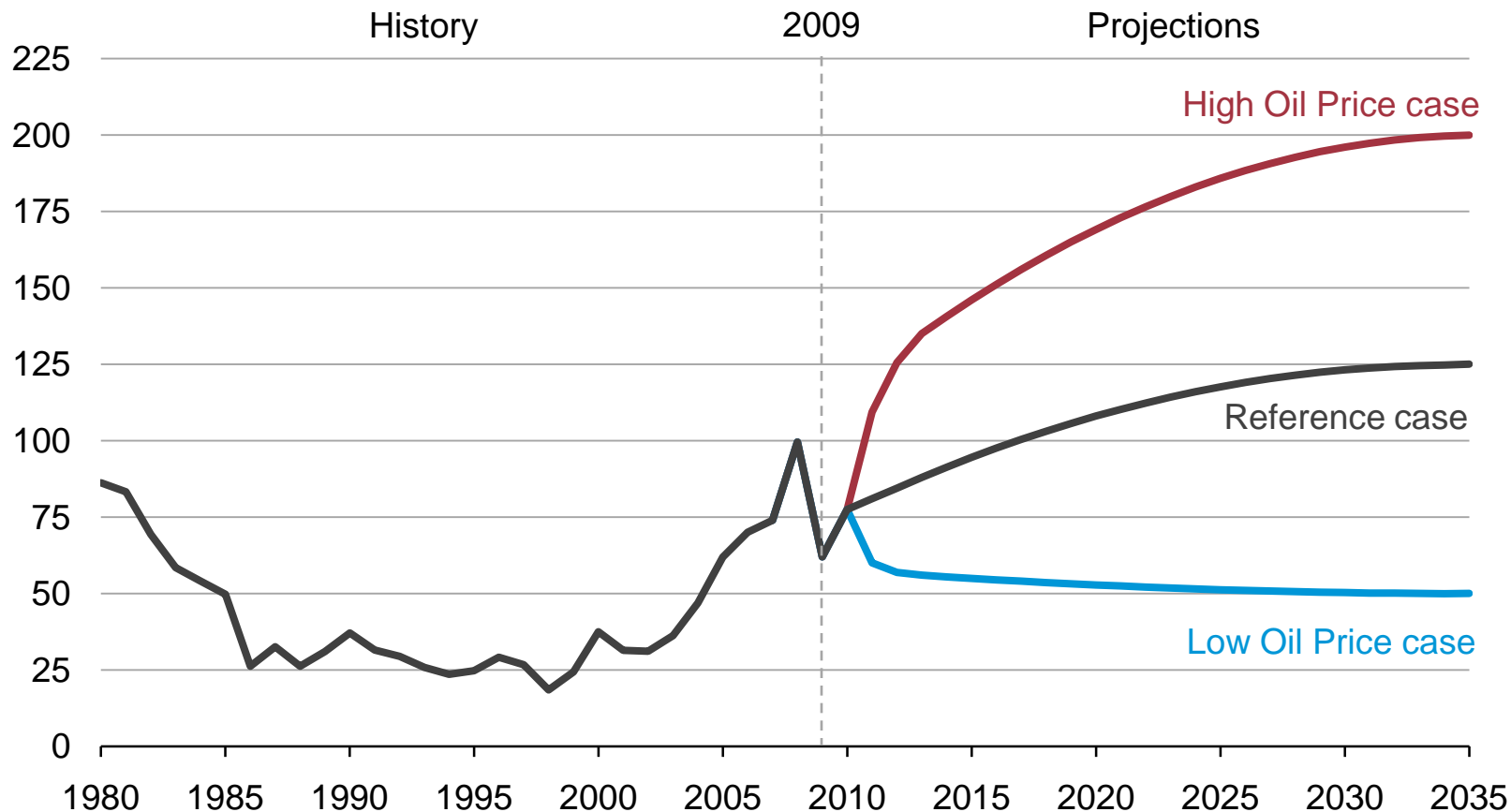


Source: EIA, International Energy Outlook 2011

Liquid fuels markets

Oil prices in the Reference case rise steadily; the other cases represent a wide range of prices

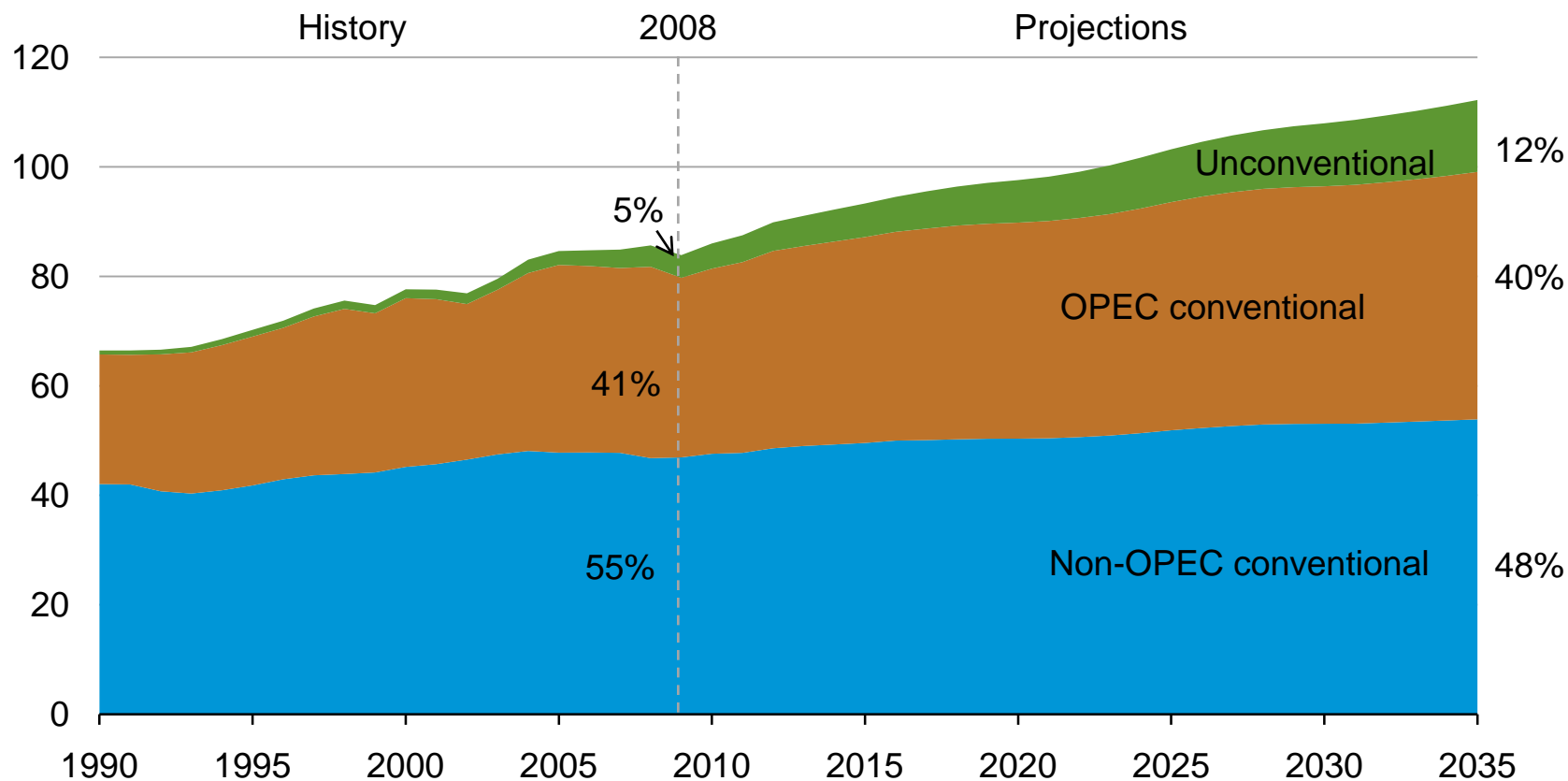
world oil price paths
real 2009 dollars per barrel



Source: EIA, International Energy Outlook 2011

Unconventional liquids become increasingly important in the total supply of liquid fuels

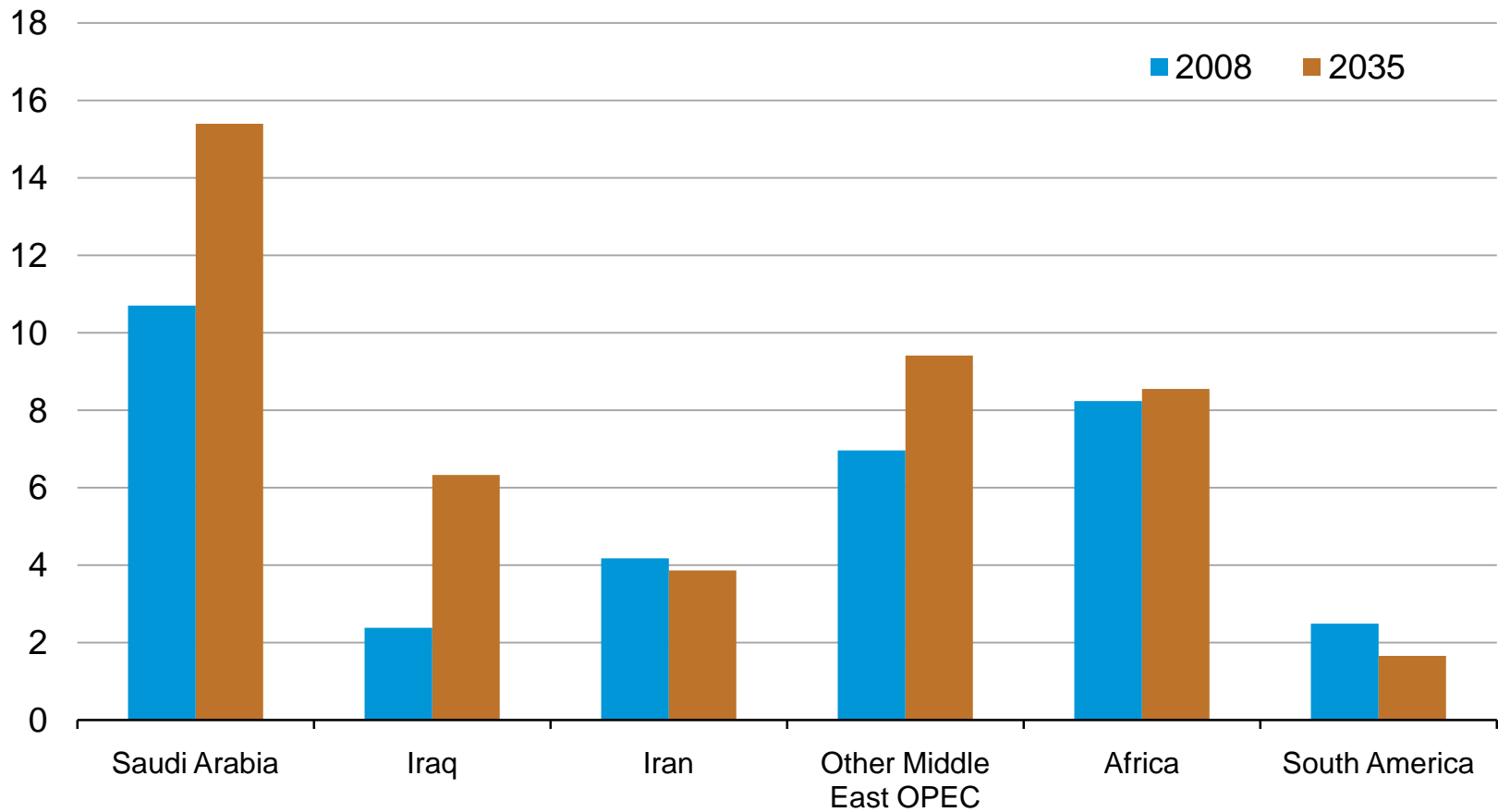
world liquids production
million barrels per day



Source: EIA, International Energy Outlook 2011

Growth in OPEC production comes mainly from the Middle East

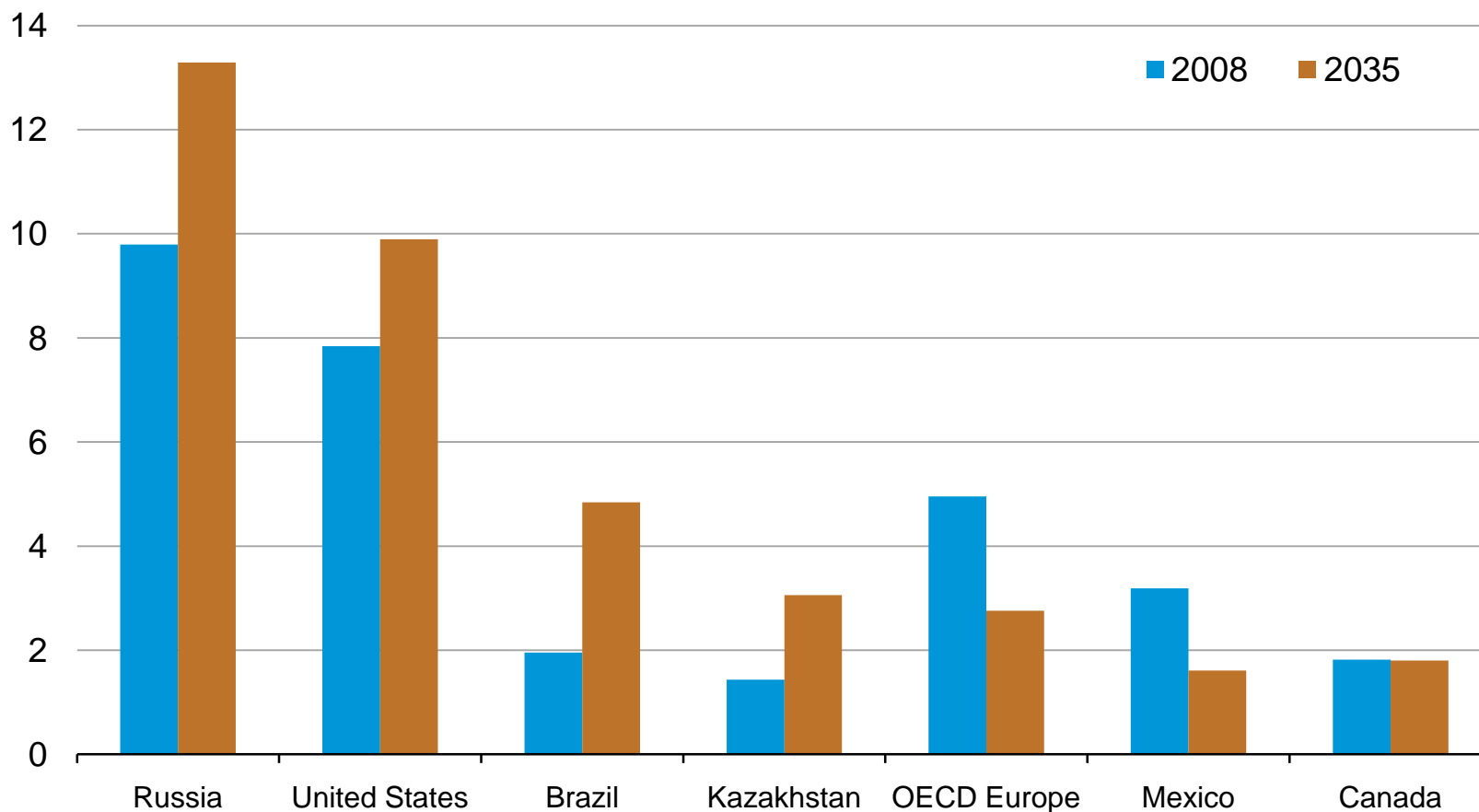
OPEC conventional production
million barrels per day



Source: EIA, *International Energy Outlook 2011*

Non-OPEC conventional supply growth comes mainly from Russia, United States, Brazil, and Kazakhstan

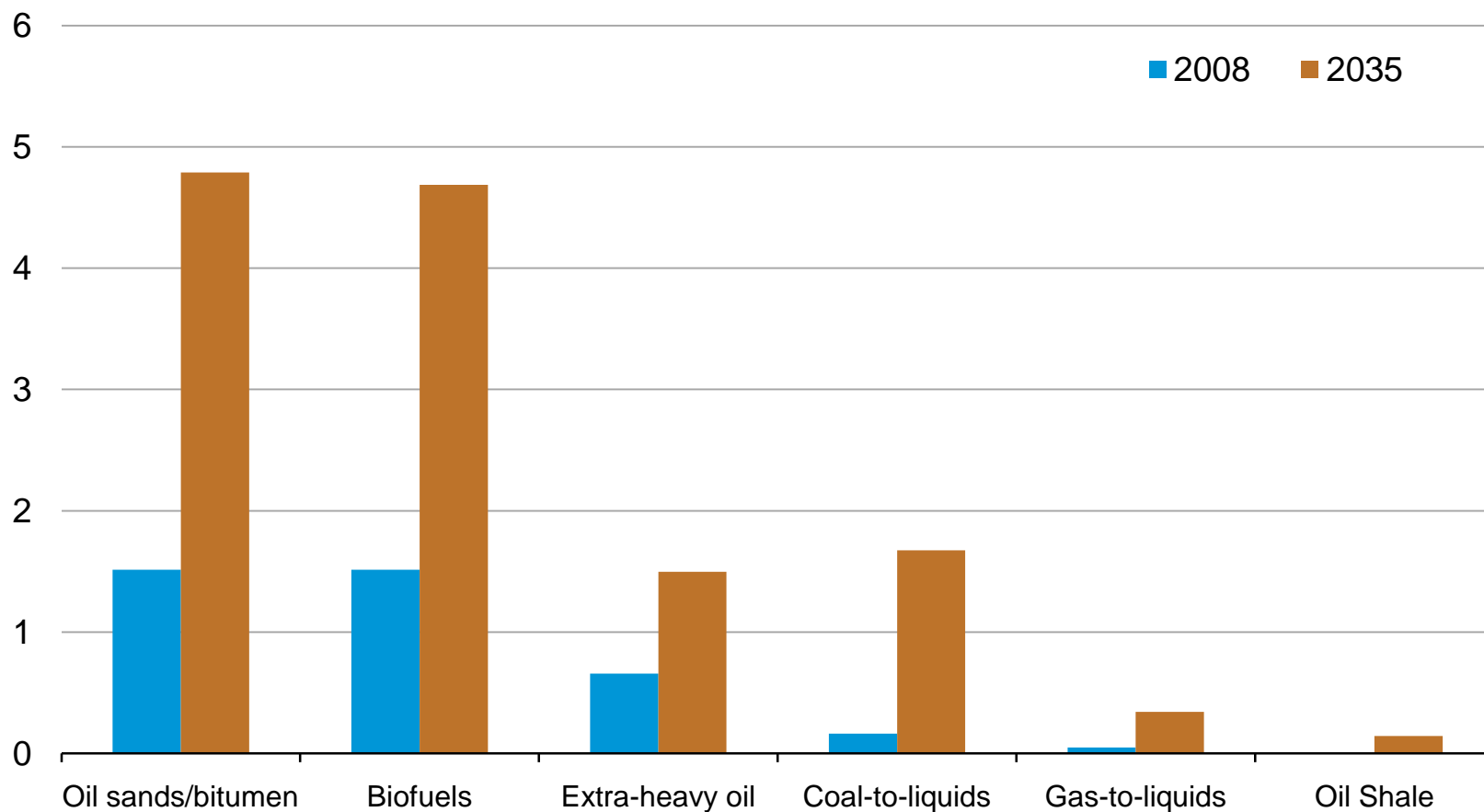
Non-OPEC conventional production
million barrels per day



Source: EIA, *International Energy Outlook 2011*

Oil sands/bitumen and biofuels account for 70 percent of the increase in unconventional liquid fuels

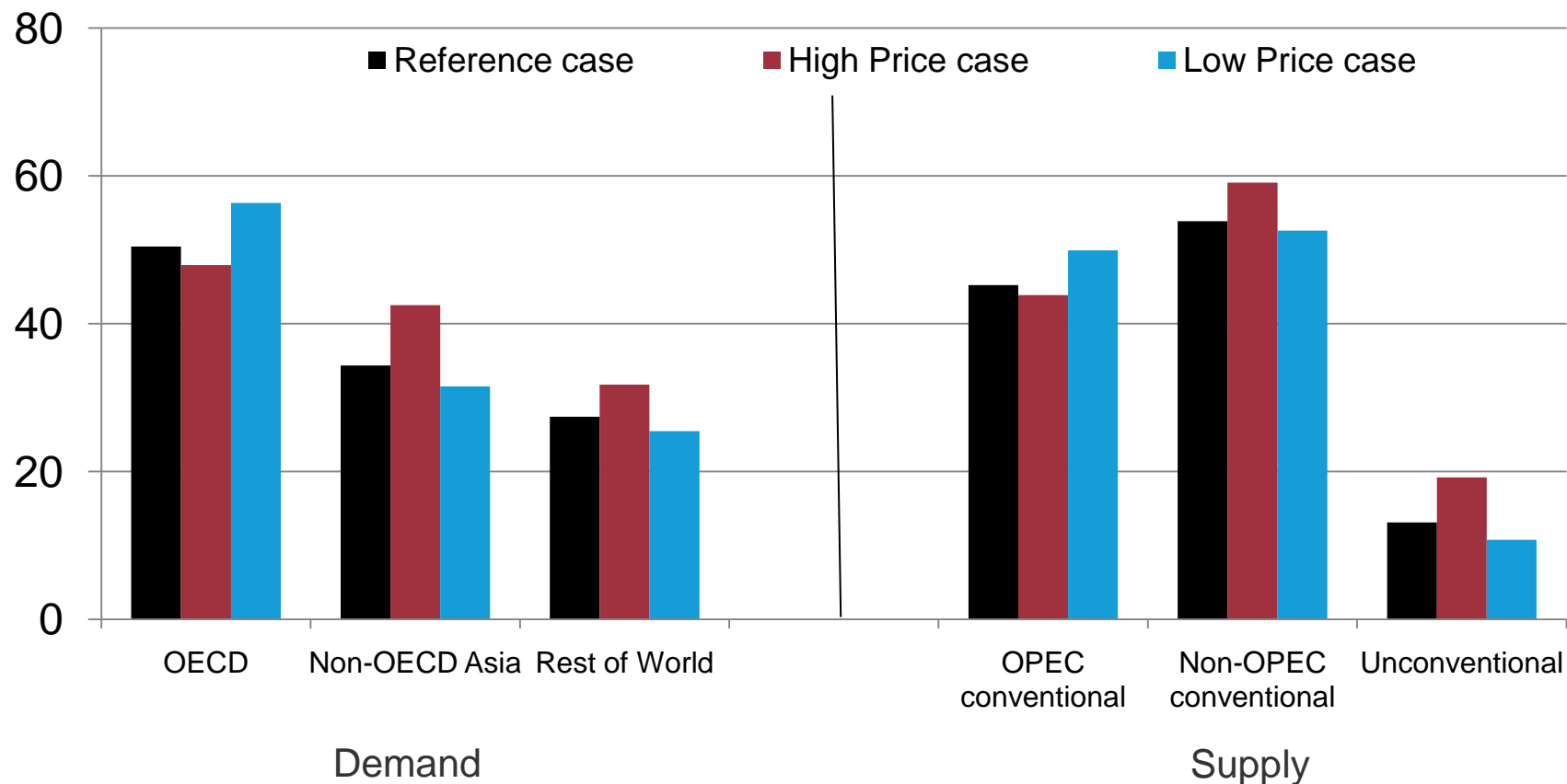
Unconventional production
million barrels per day



Source: EIA, *International Energy Outlook 2011*

High and Low Oil Price cases reflect shifts in both demand and supply schedules relative to the Reference case

worldwide liquids consumption and production in 2035
million barrels per day



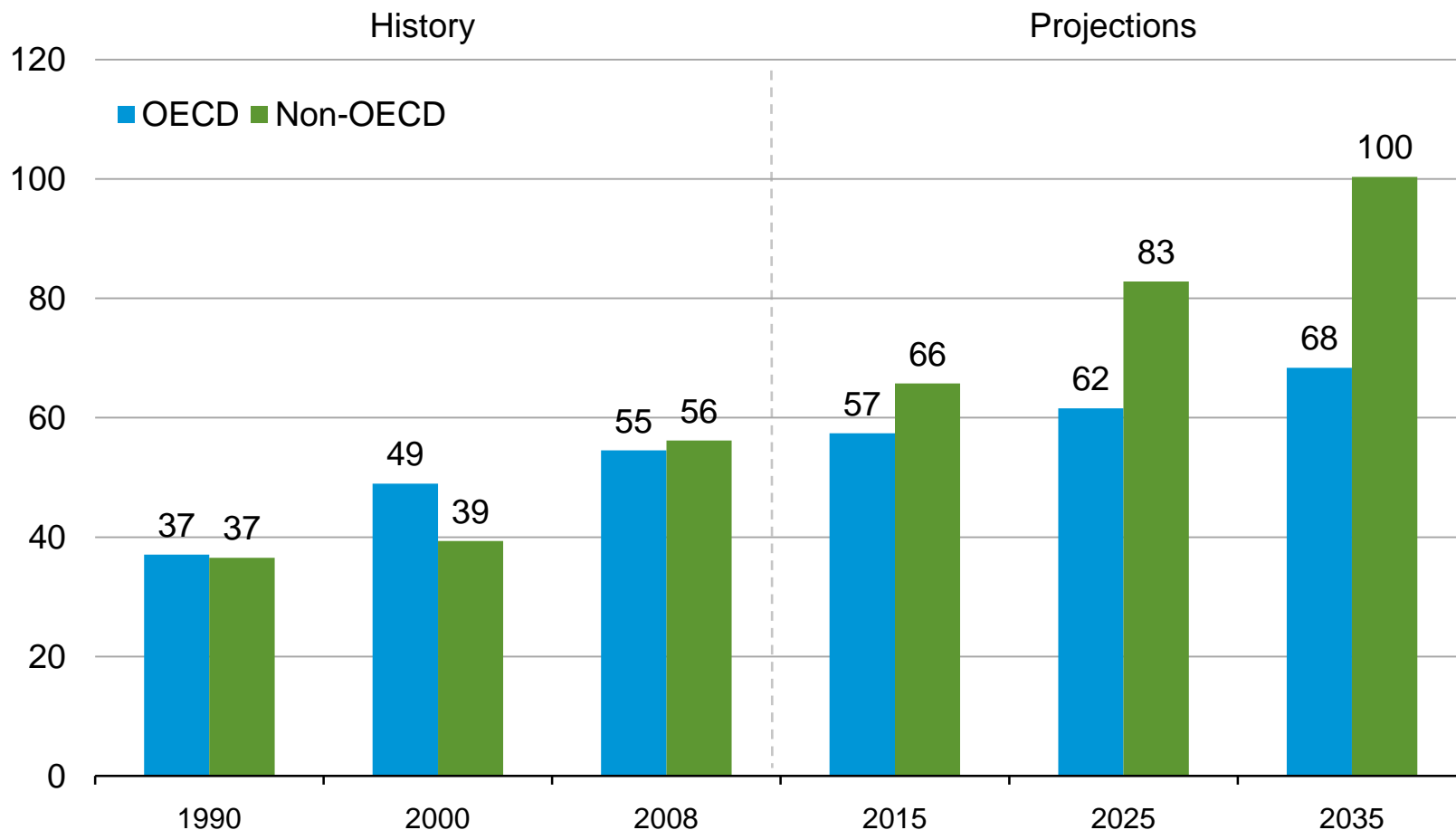
Source: *International Energy Outlook 2011*

Natural gas markets

Non-OECD nations account for 76% of the growth in natural gas consumption in the IEO2011 Reference case

world natural gas consumption

trillion cubic feet

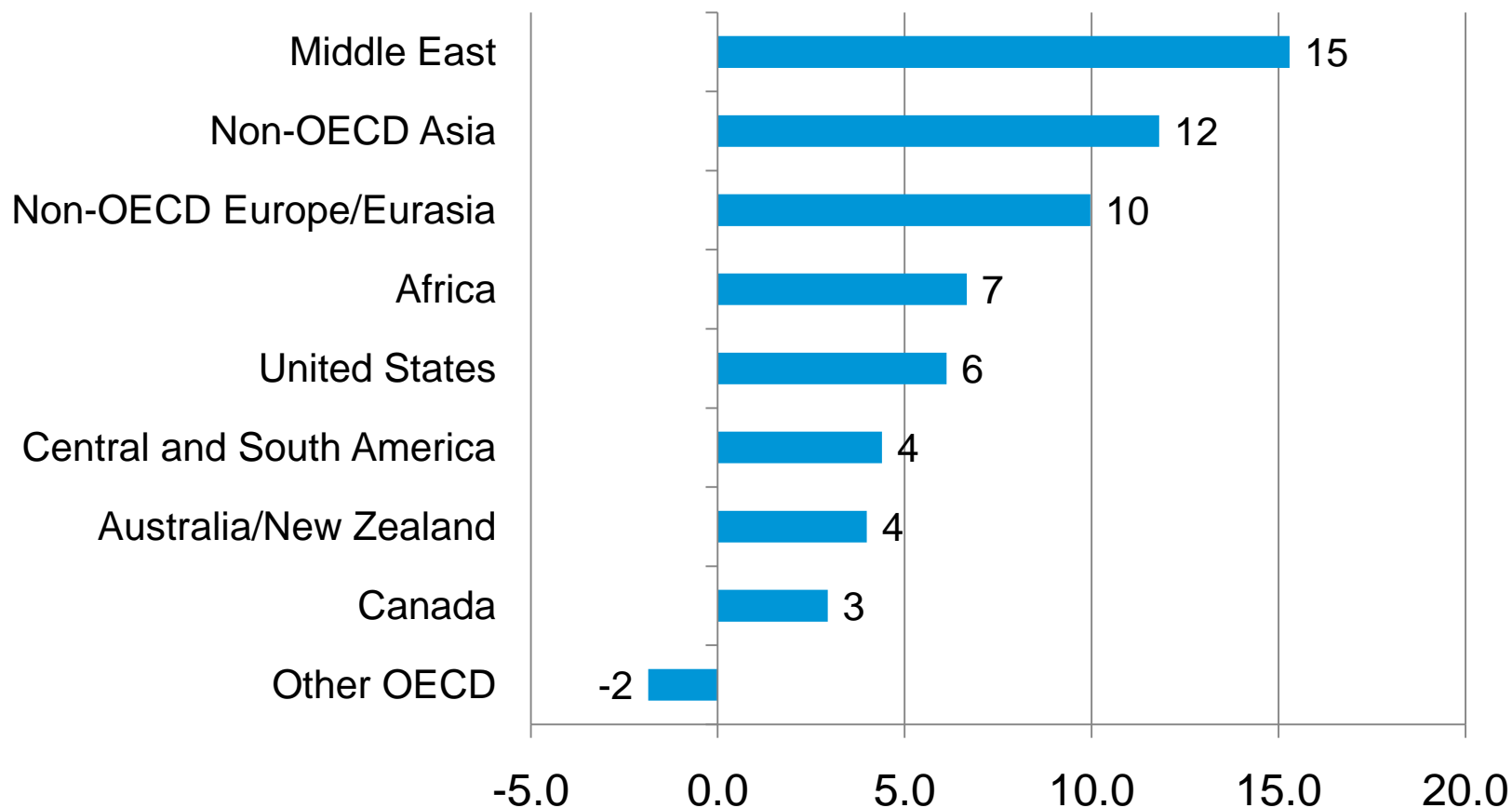


Source: EIA, International Energy Outlook 2011

The Middle East and non-OECD Asia account for the largest increases in natural gas production

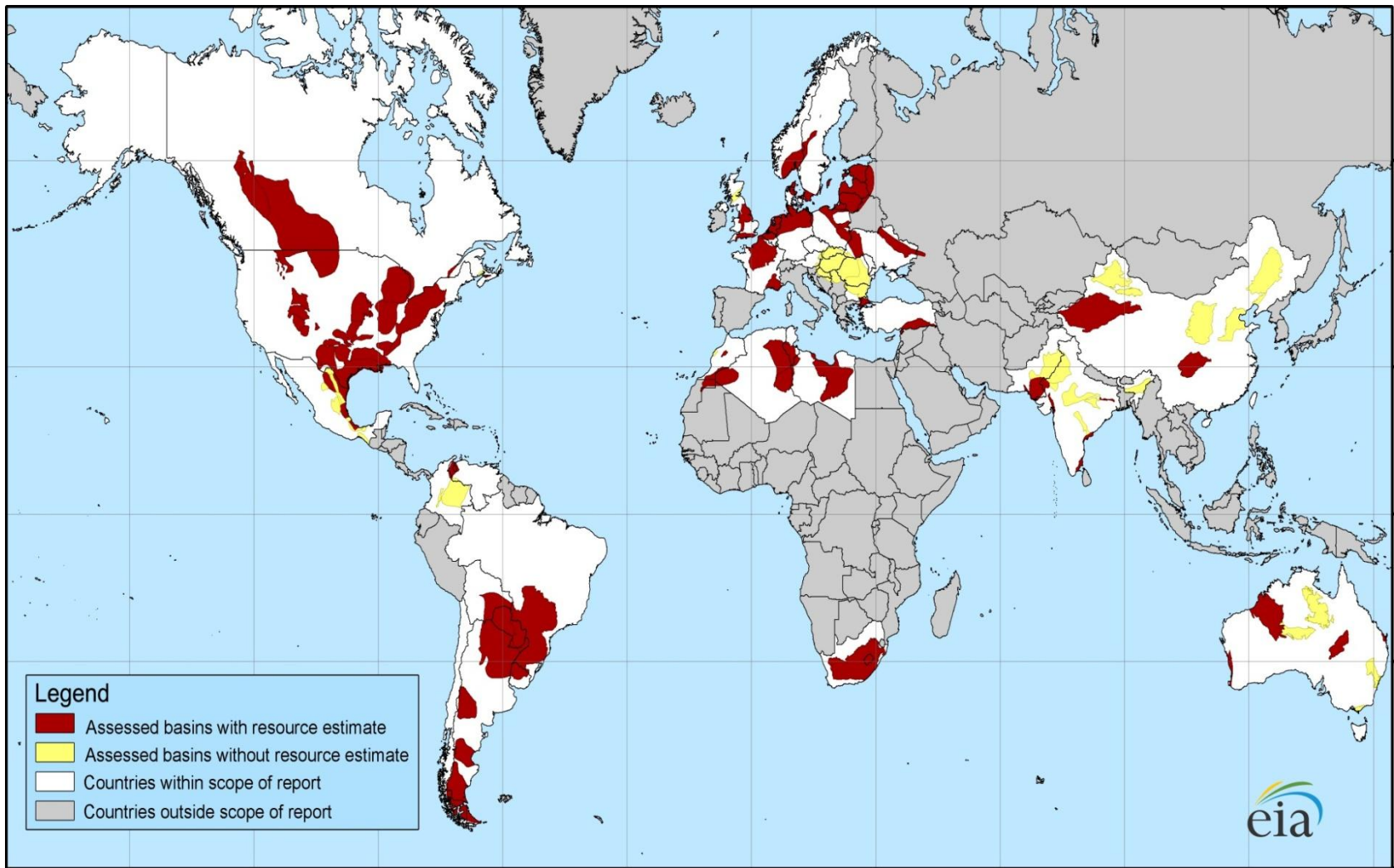
world natural gas production increment, 2008-2035

trillion cubic feet



Source: EIA, *International Energy Outlook 2011*

Initial assessment of shale gas resources in 48 major shale basins in 32 countries indicates a large potential



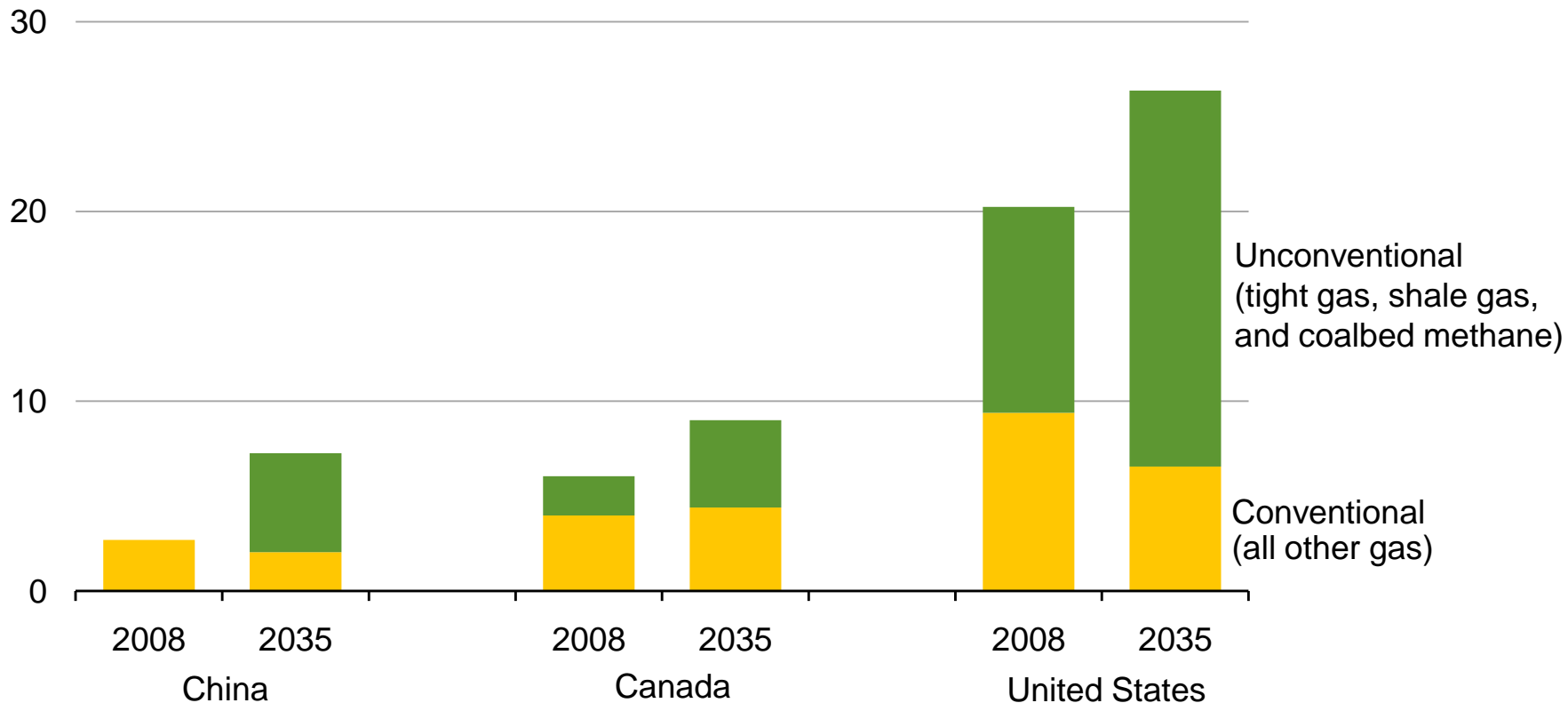
Source: U.S. Energy Information Administration

Estimates of technically recoverable shale gas resources in the 48 shale gas basins that were recently assessed

Continent		Technically Recoverable (trillion cubic feet)
North America	Canada, Mexico	1,069
Africa	Morocco, Algeria, Tunisia, Libya, Mauritania, Western Sahara, South Africa	1,042
Asia	China, India, Pakistan	1,404
Australia		396
Europe	France, Germany, Netherlands, Sweden, Norway, Denmark, U.K., Poland, Lithuania, Kaliningrad, Ukraine, Turkey	624
South America	Colombia, Venezuela, Argentina, Bolivia, Brazil, Chile, Uruguay, Paraguay	1,225

Unconventional gas is an increasingly important component of supply, not only for the U.S., but also China and Canada

natural gas production
trillion cubic feet

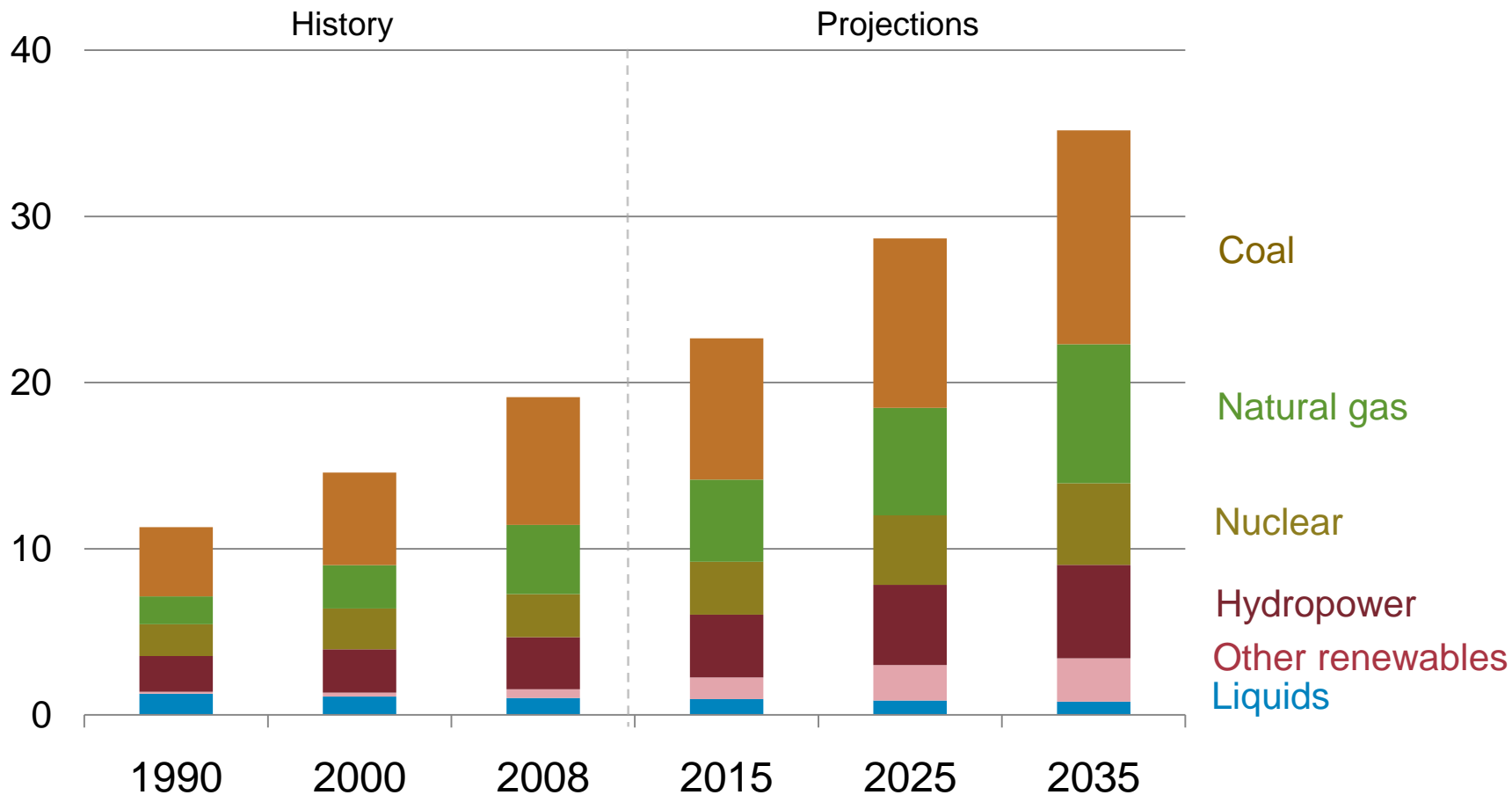


Source: EIA, International Energy Outlook 2011

Electricity markets

Renewables and natural gas are fastest growing, but coal still fuels the largest share of the world's electricity in 2035

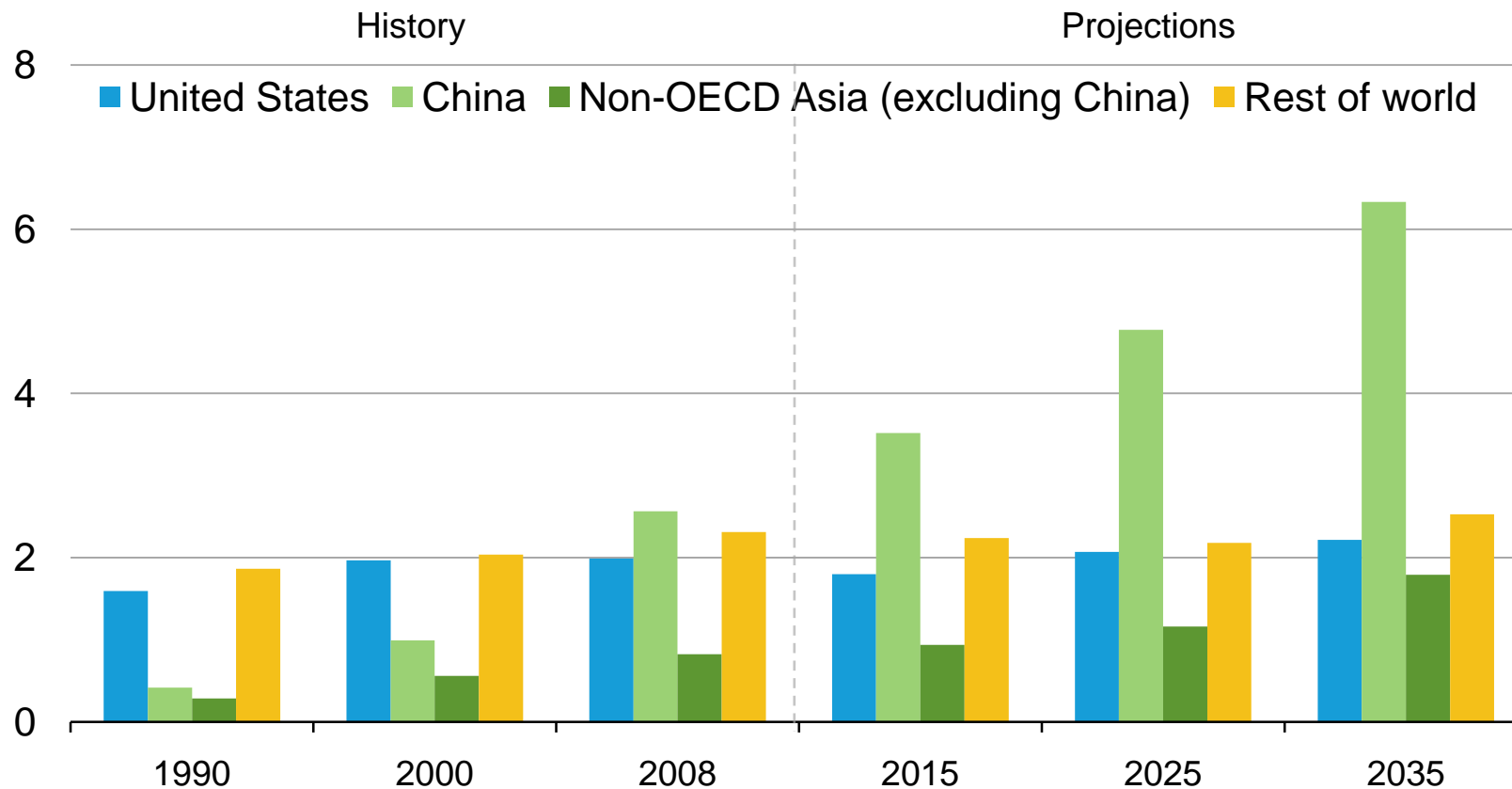
world electricity generation by fuel
trillion kilowatthours



Source: EIA, International Energy Outlook 2011

China accounts for nearly three-quarters of the world increase in coal-fired generation

coal-fired generation
trillion kilowatthours

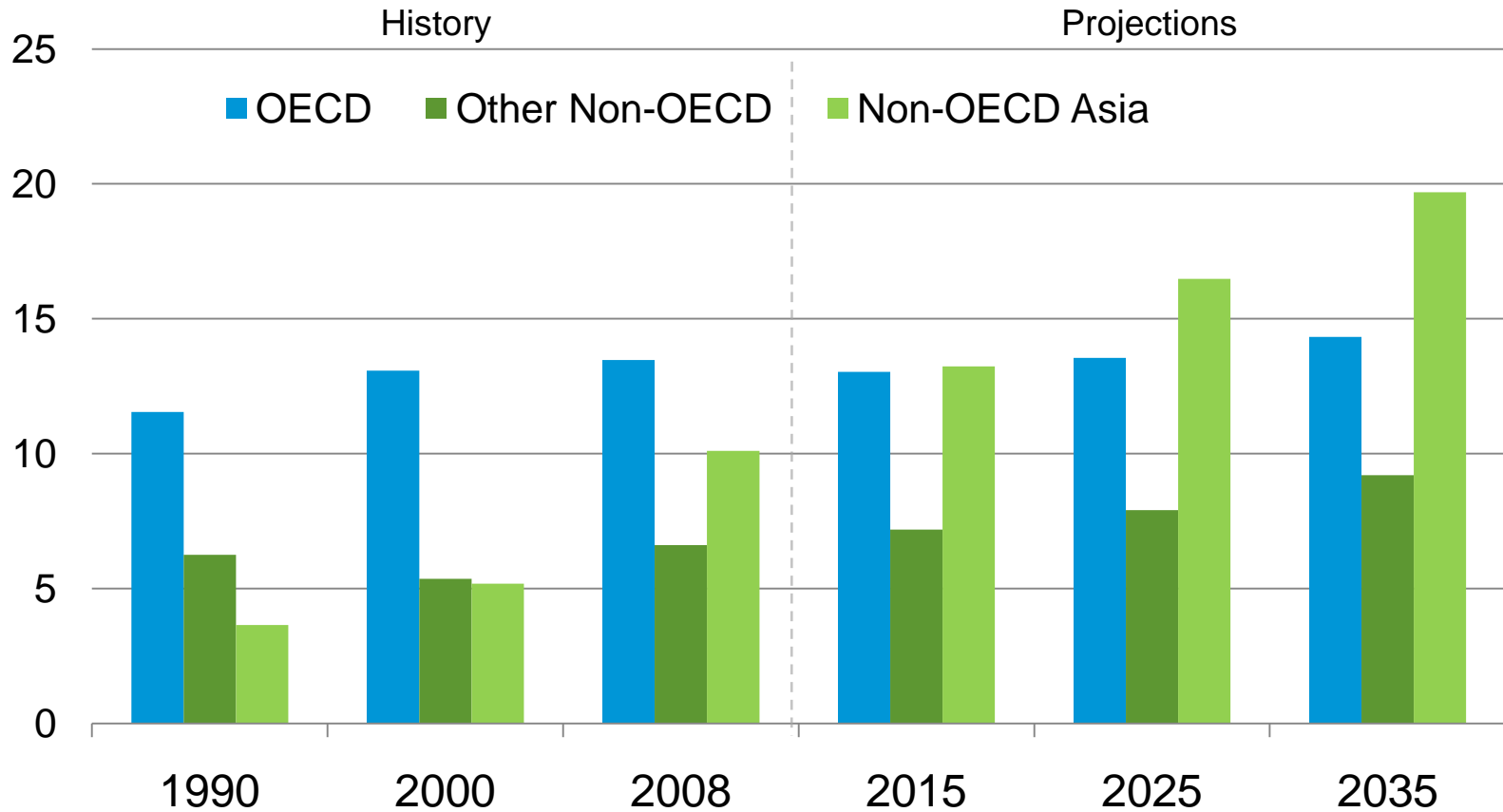


Source: EIA, International Energy Outlook 2011

Energy-related carbon dioxide emissions

Non-OECD Asia accounts for almost 75% of the world increase in energy-related carbon dioxide emissions

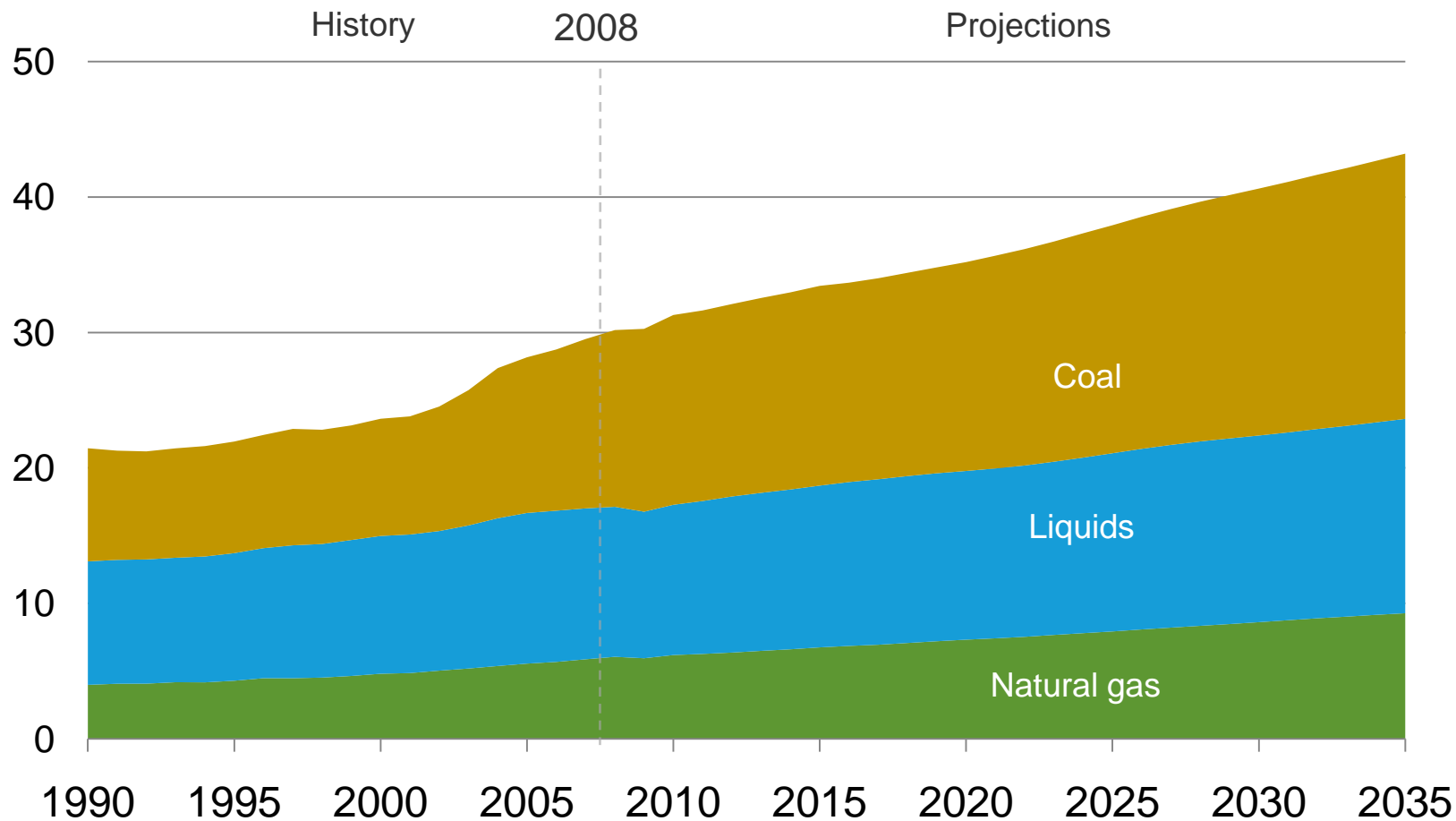
world energy-related carbon dioxide emissions
billion metric tons



Source: EIA, International Energy Outlook 2011

Coal continues to account for the largest share of carbon dioxide emissions throughout the projection

world energy-related carbon dioxide emissions by fuel
billion metric tons



Source: EIA, International Energy Outlook 2011

For more information

U.S. Energy Information Administration home page | www.eia.gov

Short-Term Energy Outlook | www.eia.gov/steo

Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer