

# The Outlook for Energy: A View to 2040

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October, 2016

**ExxonMobil**  
Energy lives here™

# 2016

*The Outlook for Energy* includes Exxon Mobil Corporation's internal estimates and forecasts of energy demand, supply, and trends through 2040 based upon internal data and analyses as well as publicly available information from external sources including the International Energy Agency. Work on the report was conducted throughout 2015. This presentation includes forward looking statements. Actual future conditions and results (including energy demand, energy supply, the relative mix of energy across sources, economic sectors and geographic regions, imports and exports of energy) could differ materially due to changes in economic conditions, technology, the development of new supply sources, political events, demographic changes, and other factors discussed herein and under the heading "Factors Affecting Future Results" in the Investors section of our website at [www.exxonmobil.com](http://www.exxonmobil.com). This material is not to be used or reproduced without the permission of Exxon Mobil Corporation. All rights reserved.

# Energy Outlook Development

**100 countries**

**15 demand  
sectors**

**trade  
flows**

**20 fuel  
types**

**technology & policy**

# Key Energy Outlook Themes



**Energy** is fundamental to **standards of living**.



**Developing nations lead** gains in GDP and living standards.



**Economics** and **policies** impact the fuel mix.



**Oil** remains the world's primary fuel through 2040.



**Natural gas** grows more than any other energy source.

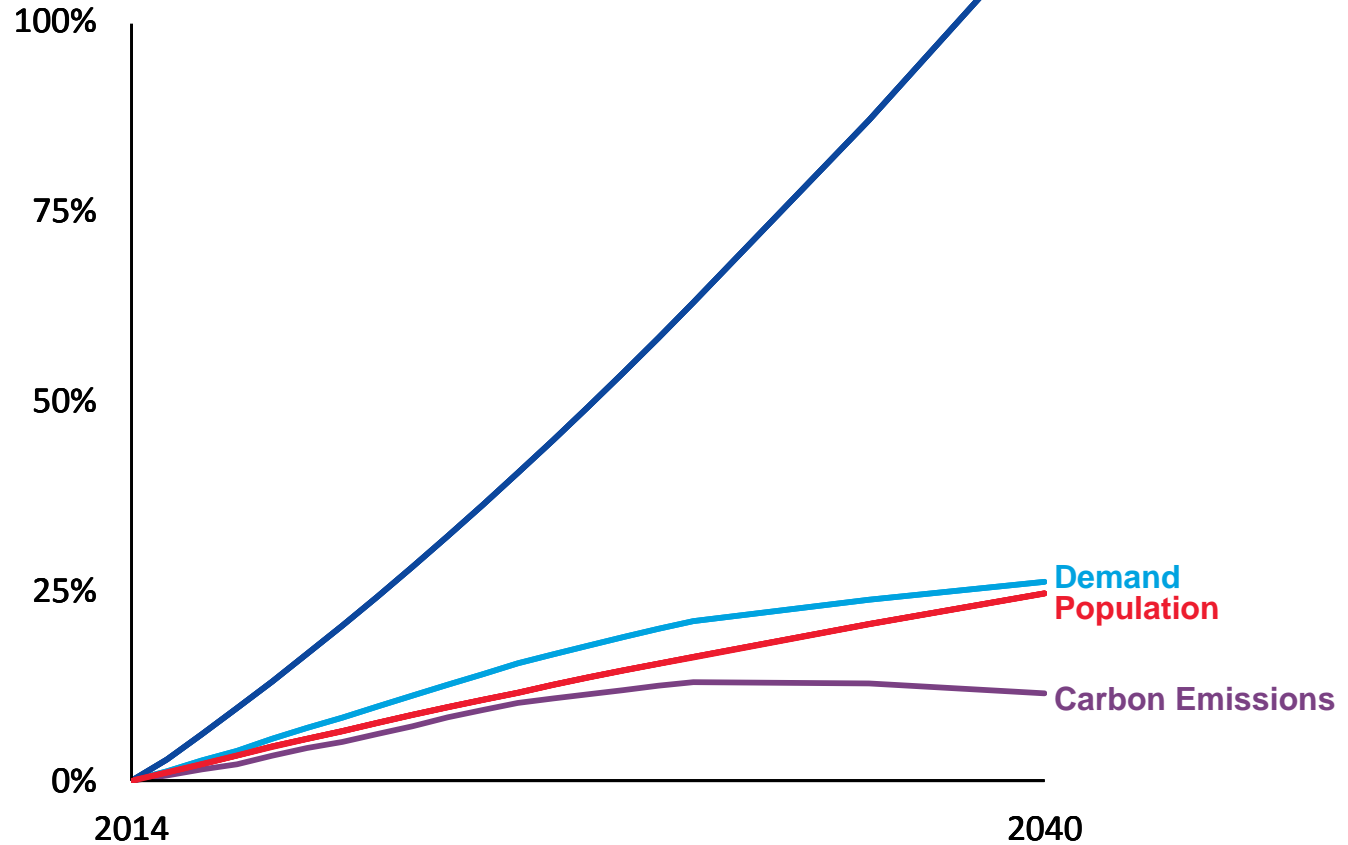


**Technology** has the highest potential and greatest uncertainty.

# Global Trends Continue to Evolve

## Growth from 2014 Level

Percent

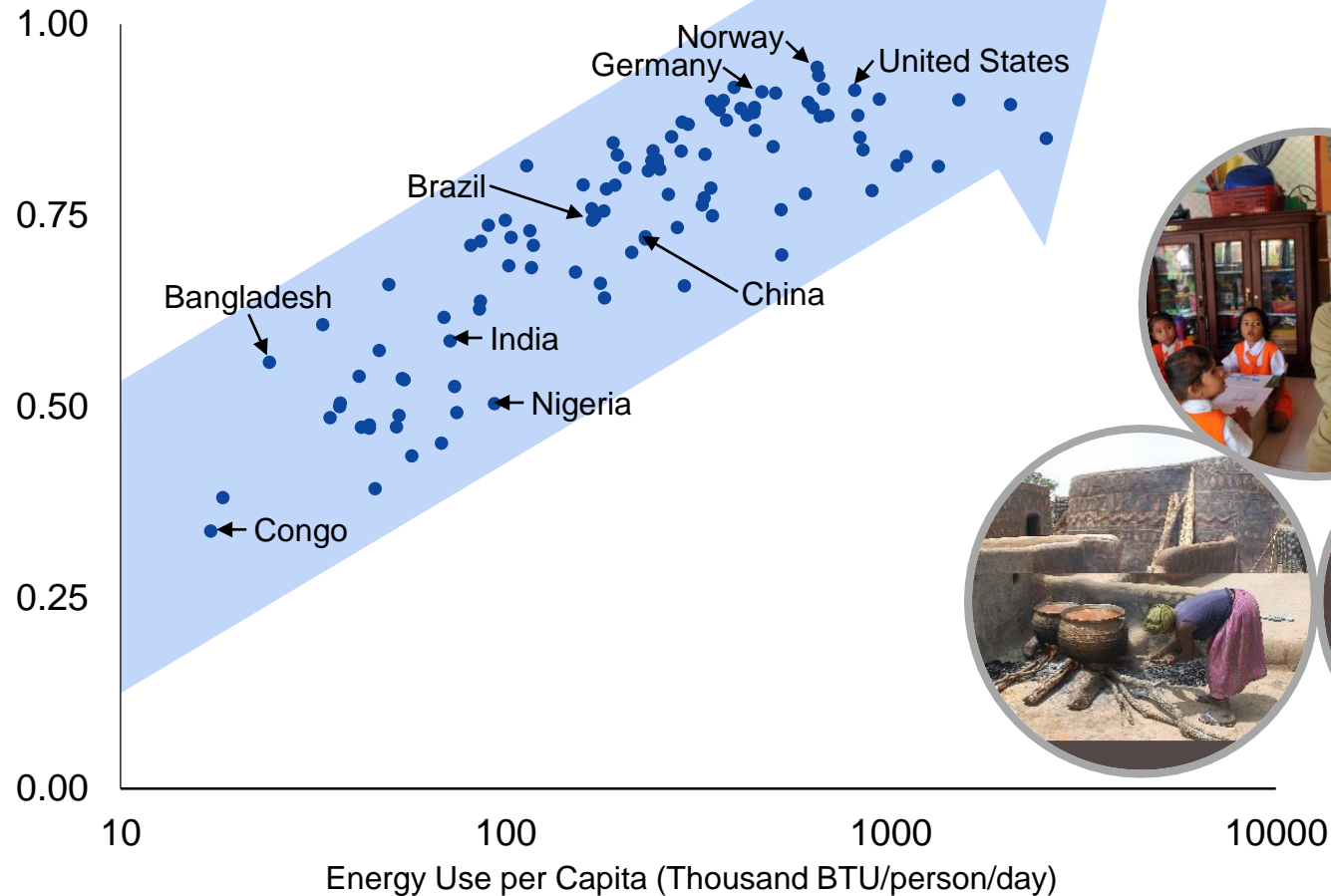




# Energy Fuels Human Development

## U.N. Human Development Index

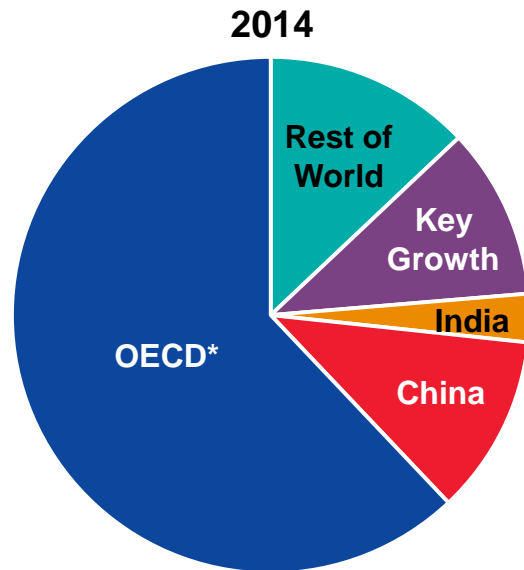
2013 Index



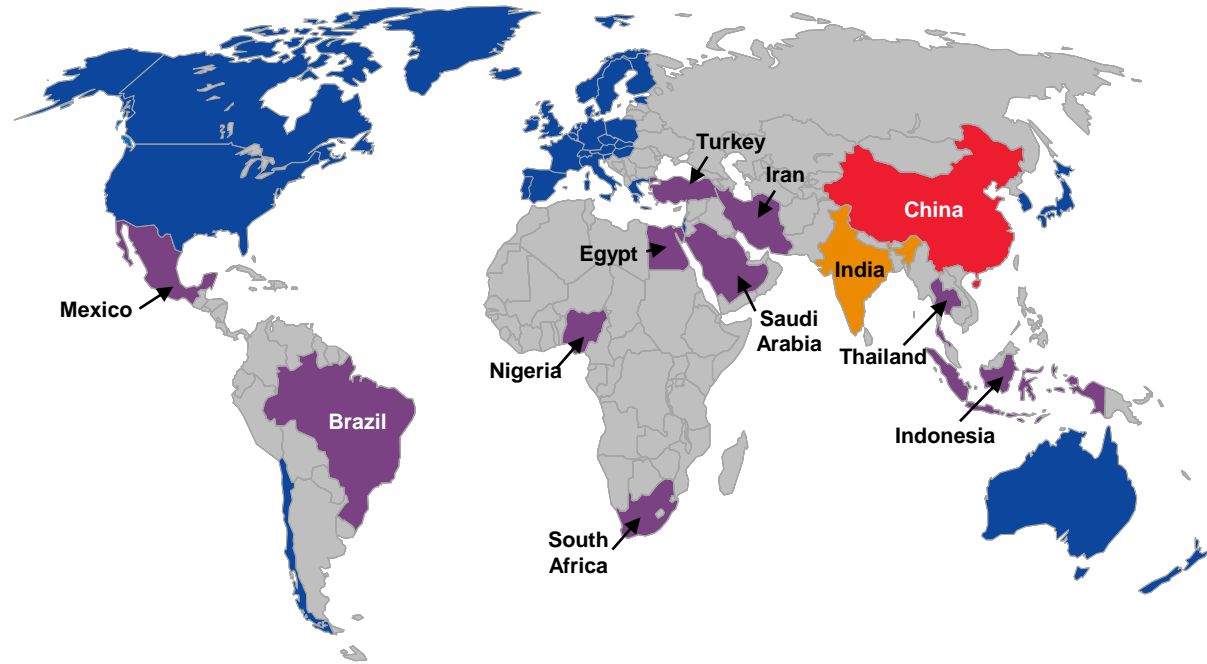
Source: United Nations, ExxonMobil estimates



# Global GDP Shifts Toward Developing Nations

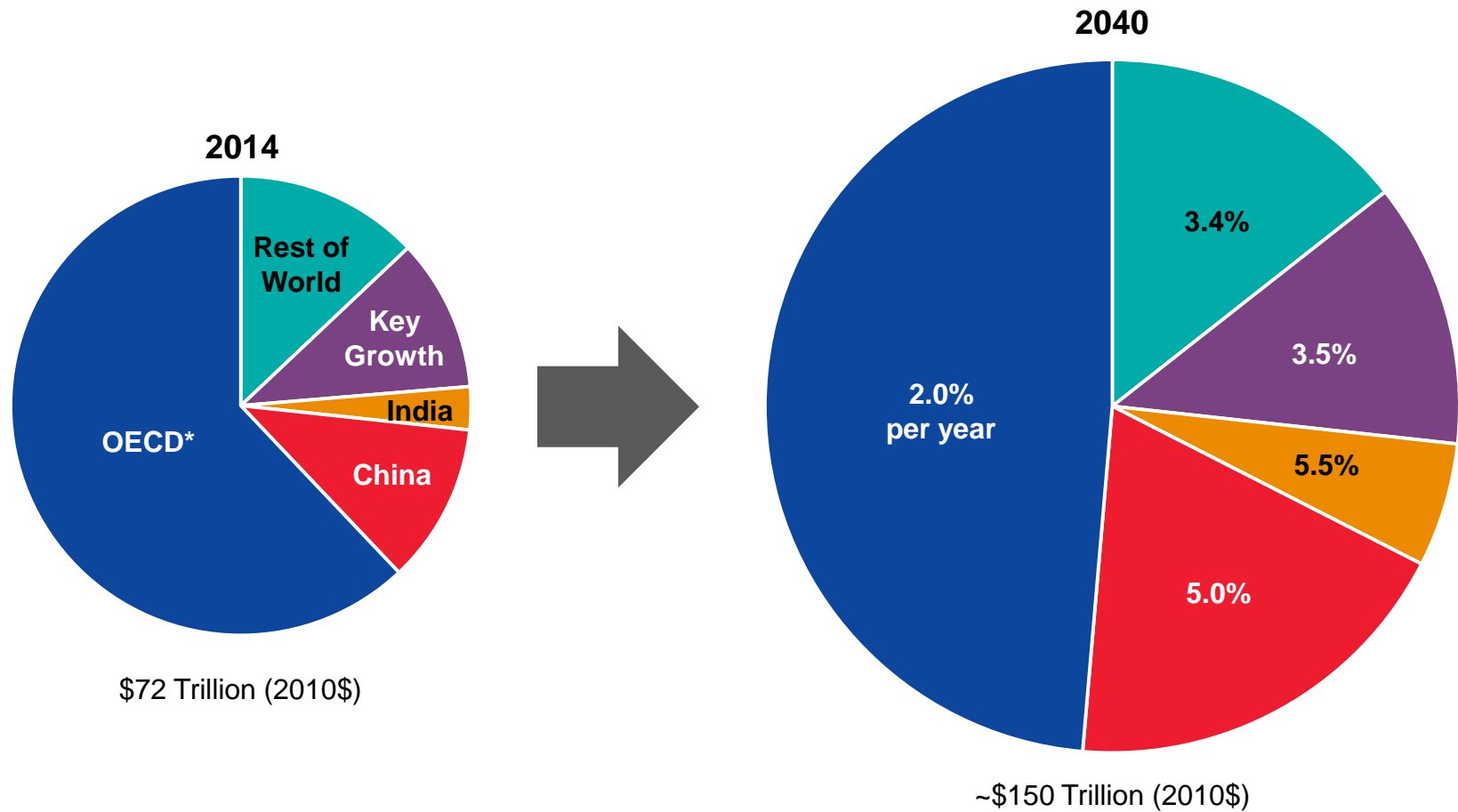


\$72 Trillion (2010\$)



*\*Mexico and Turkey included in Key Growth countries*

# Global GDP Shifts Toward Developing Nations

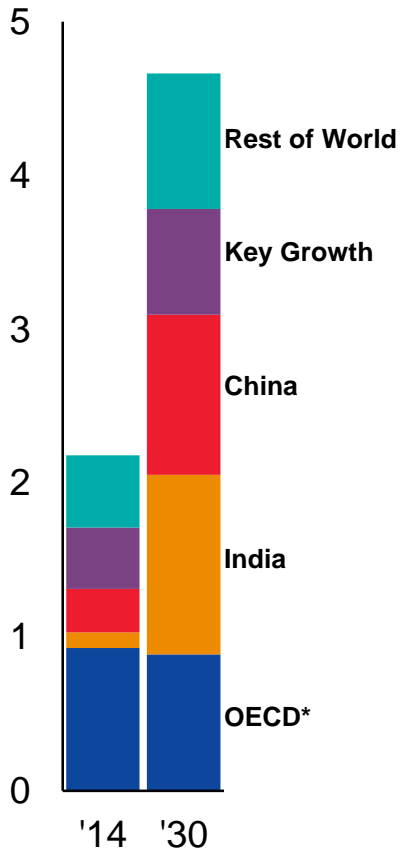


\*Mexico and Turkey included in Key Growth countries

# Middle Class and Urbanization Increase

## Global Middle Class

Billion People

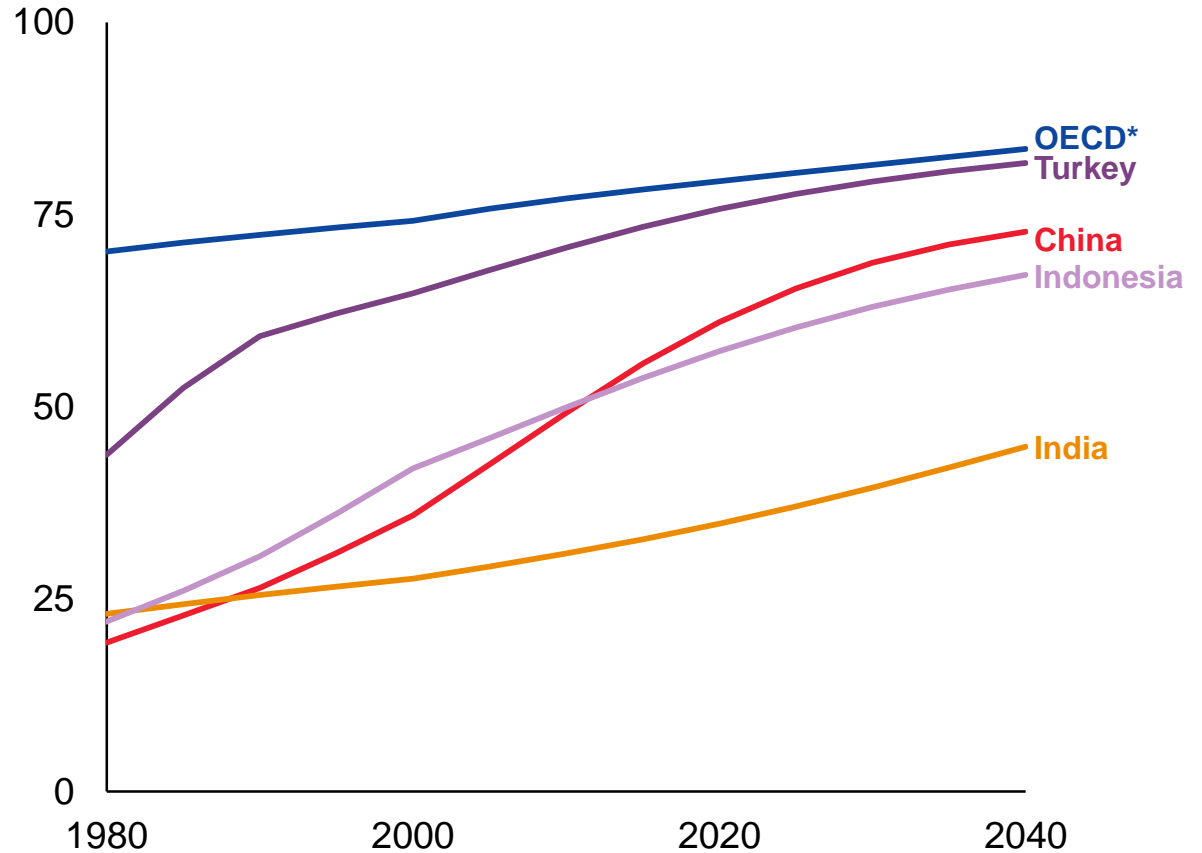


Source: The Brookings Institution

\*Mexico and Turkey included in Key Growth countries

## Urbanization

Percent



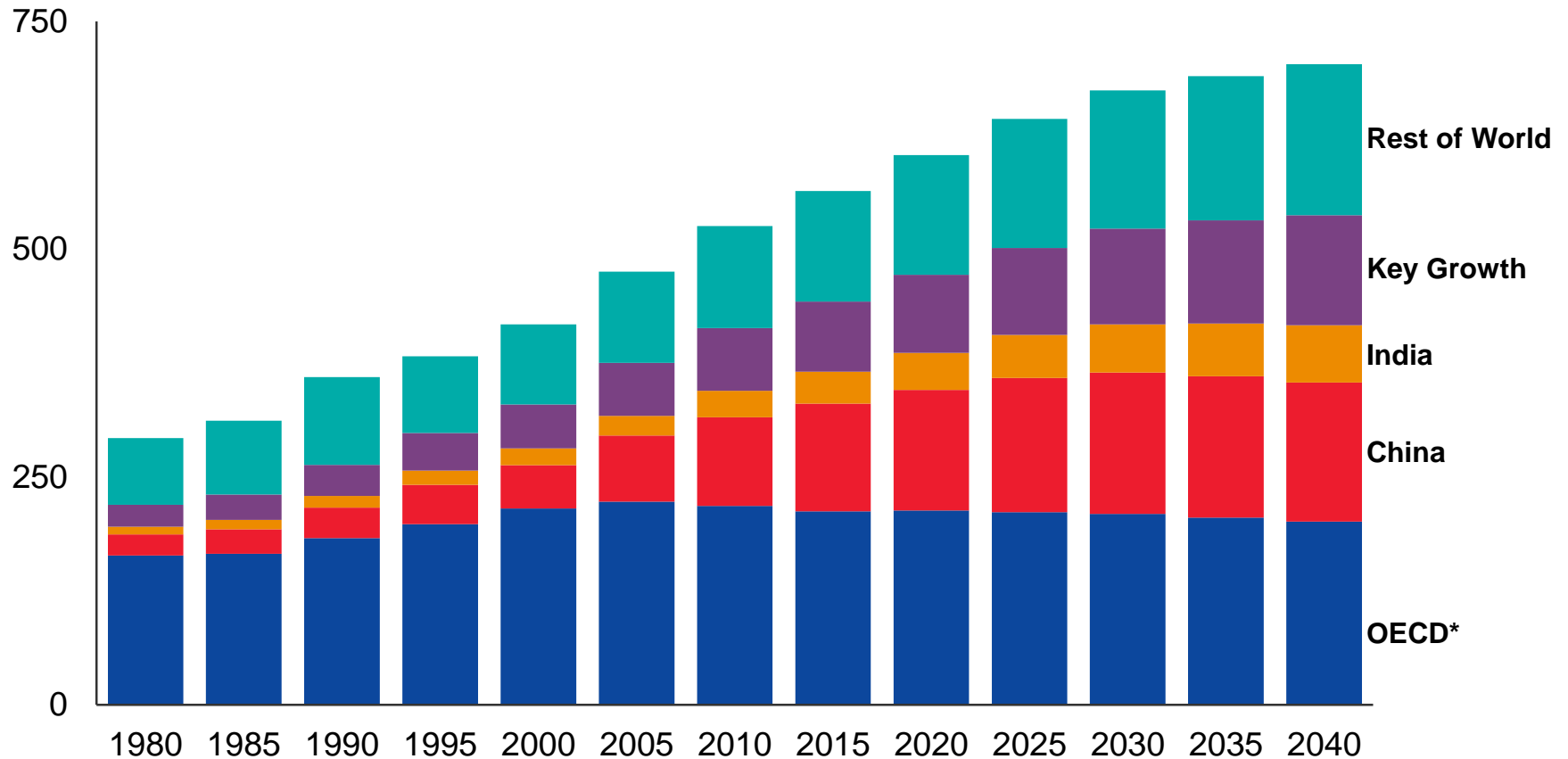
Source: United Nations



# Developing Economies Dominate Growth

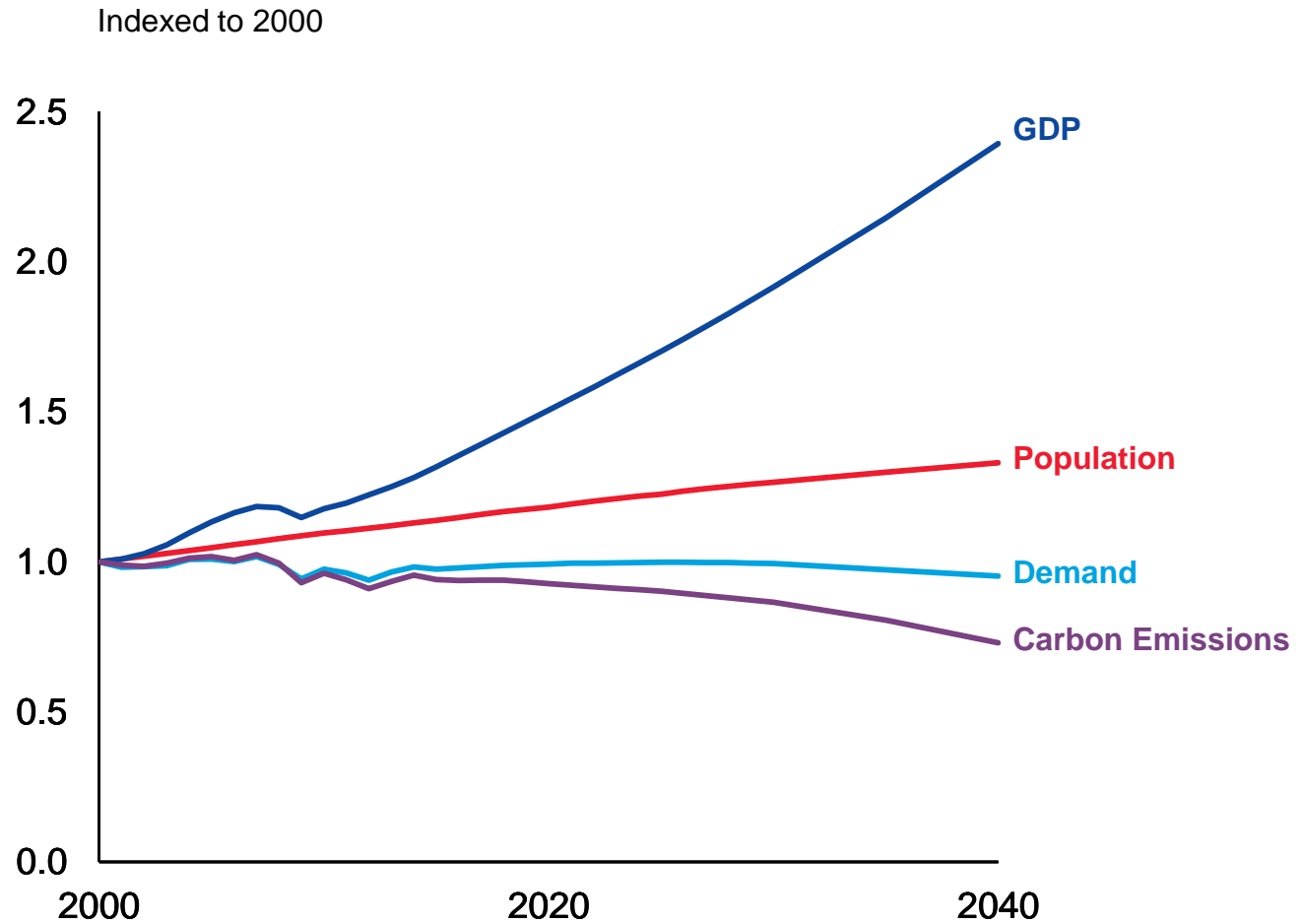
## Demand by Region

Quadrillion BTUs



\*Mexico and Turkey included in Key Growth countries

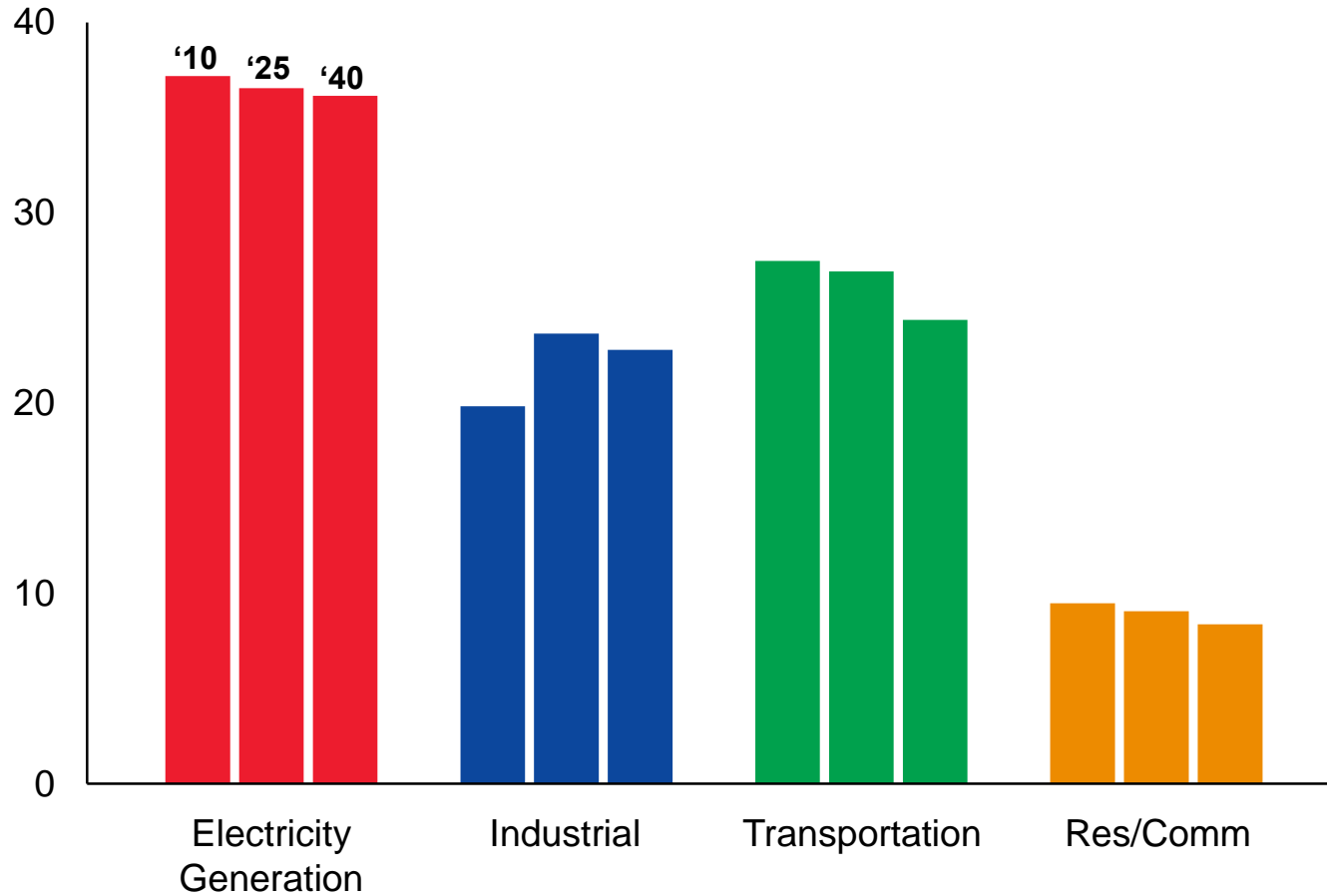
# United States Energy Trends



# United States Energy Demand

## Primary Energy Demand by Sector

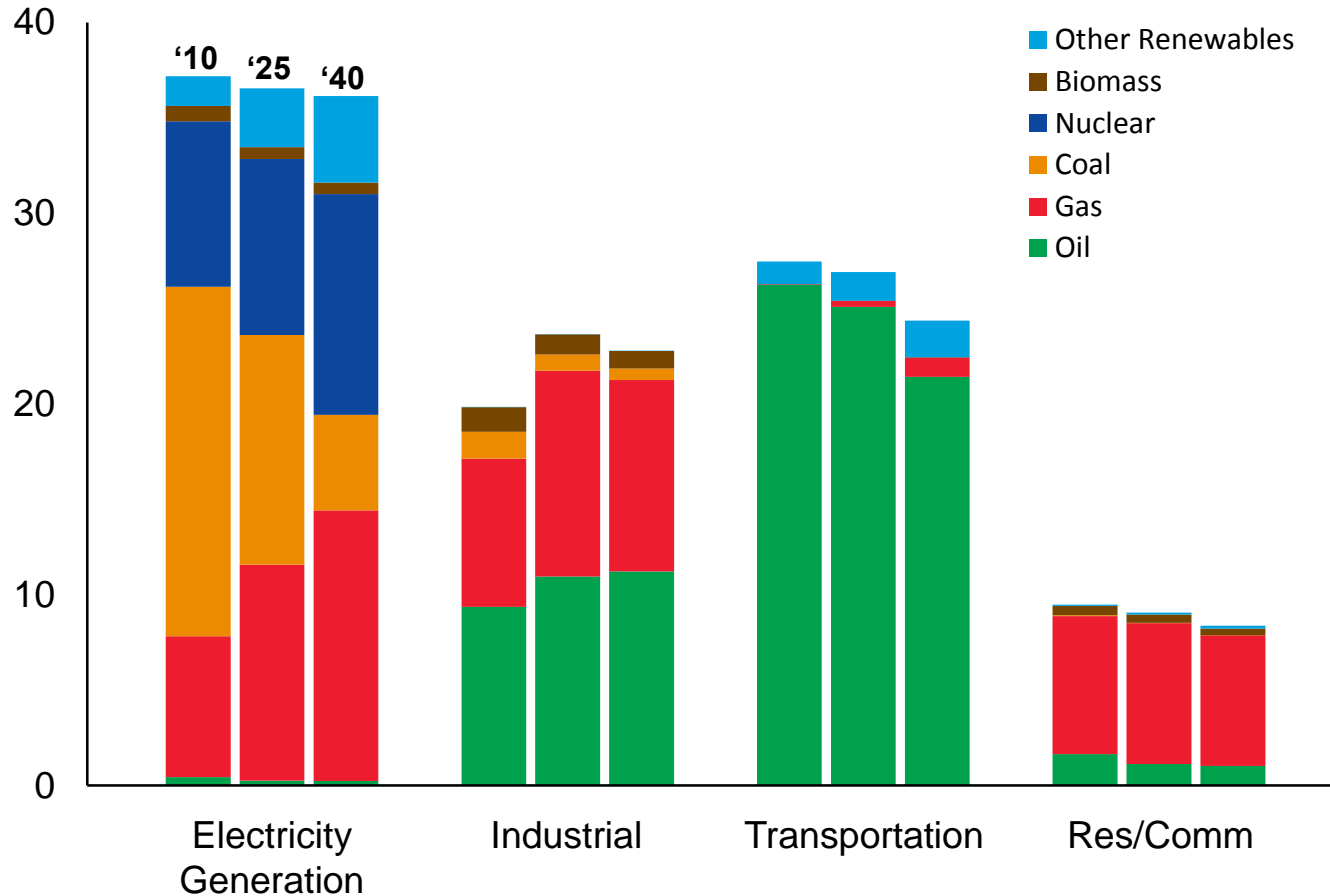
Quadrillion BTUs

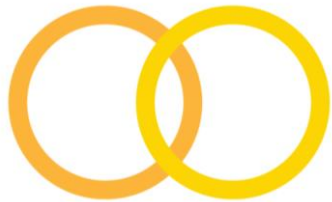


# United States Energy Demand

## Primary Energy Demand by Sector

Quadrillion BTUs



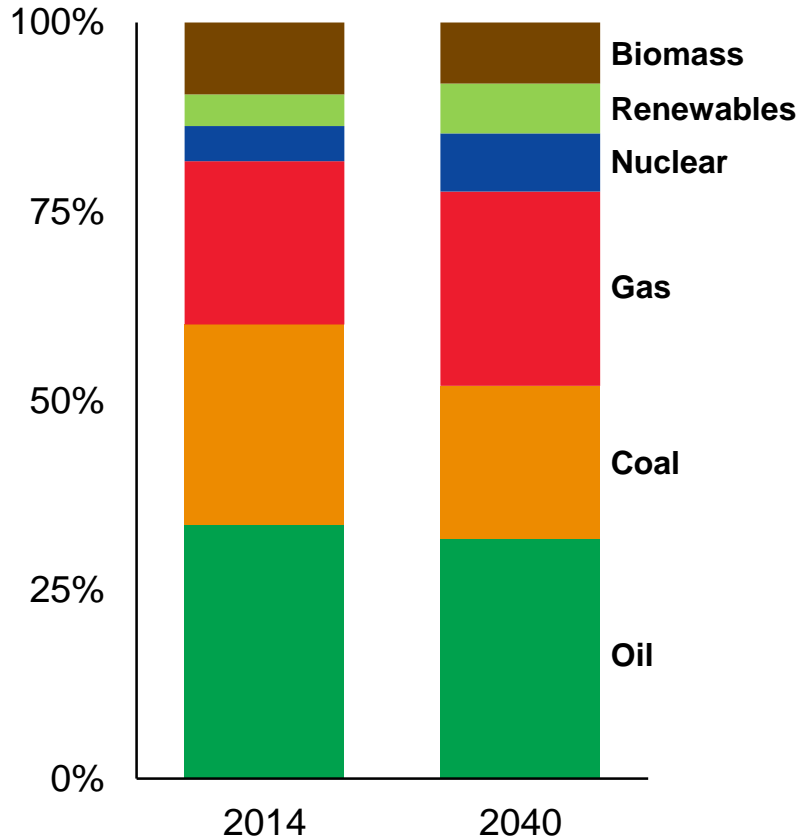


**Economics** and **policies**  
impact the fuel mix.

# Energy Mix Shifts to Lower-Carbon Fuels

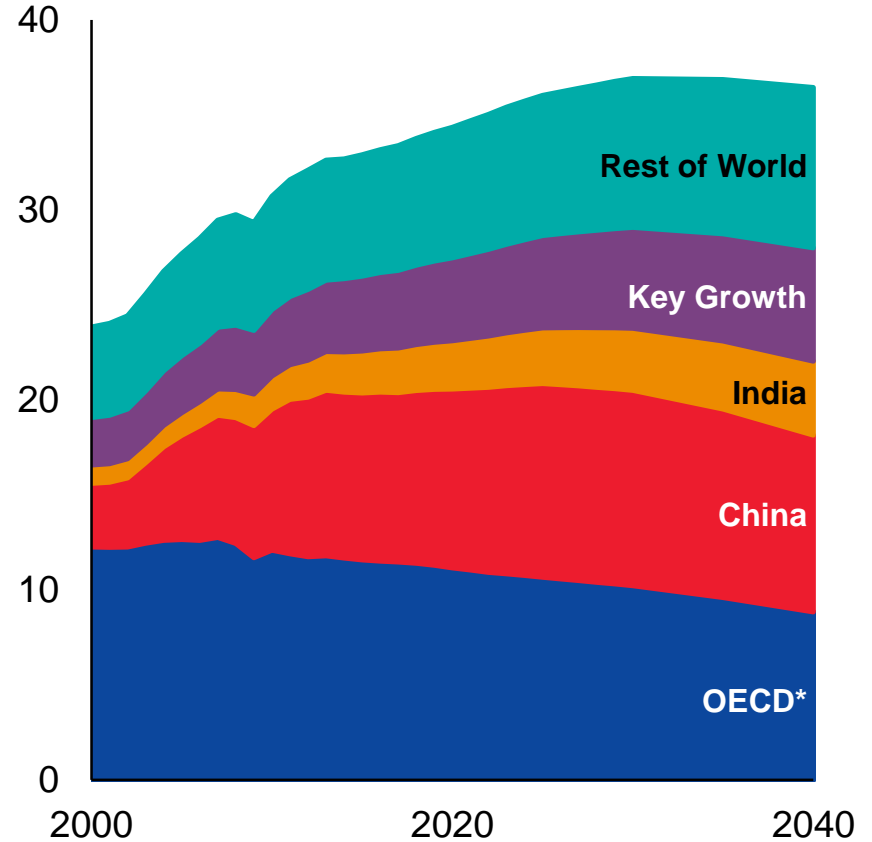
## Global Energy Mix

Percent



## Energy-Related CO<sub>2</sub> Emissions by Region

Billion Tonnes



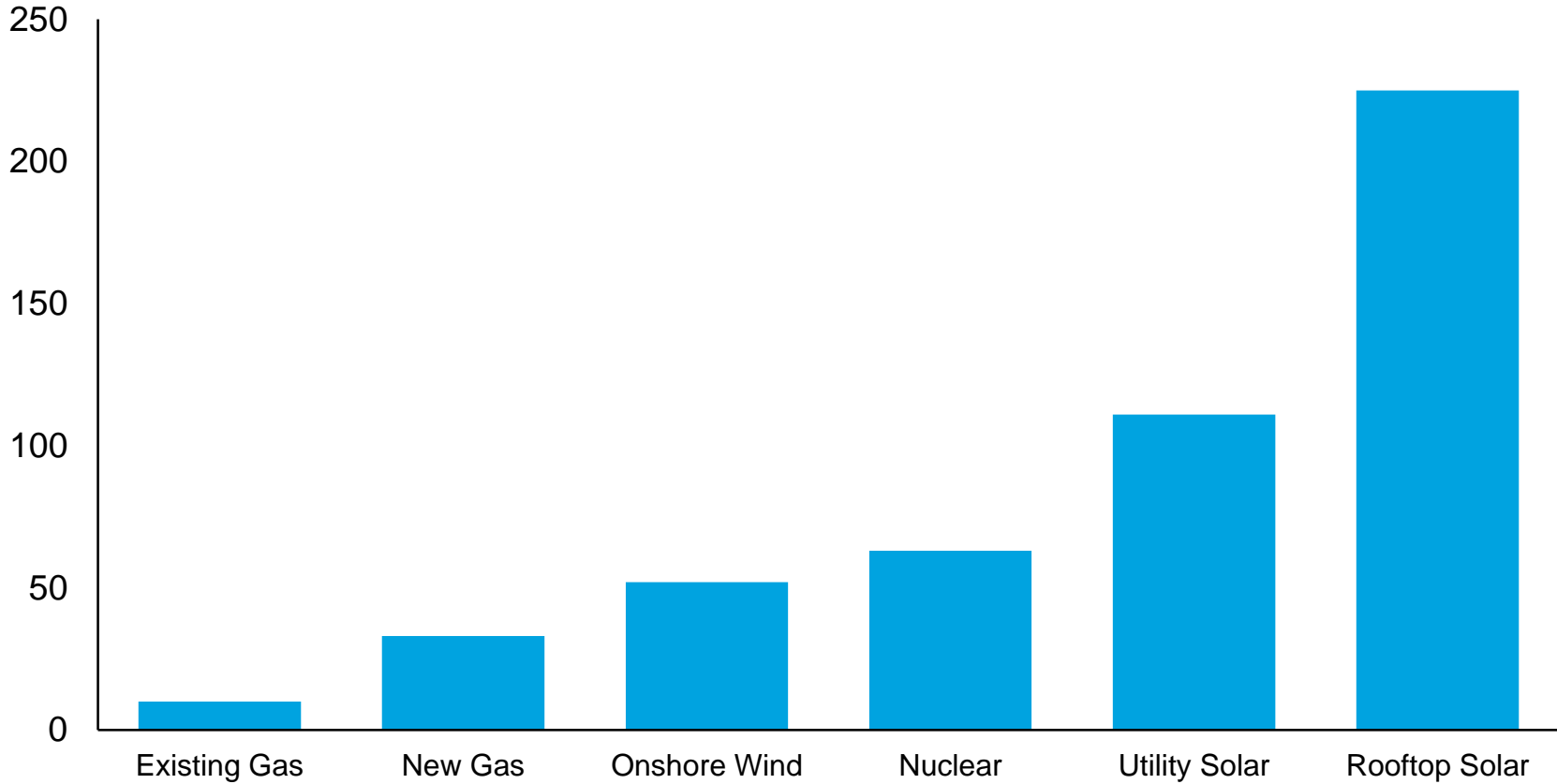
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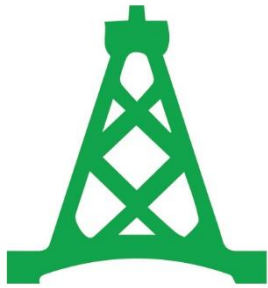
# Managing Climate Risk

## U.S. Average CO<sub>2</sub> Abatement Costs vs. Existing Coal

Dollars per tonne



Wind and solar exclude full costs for integration and intermittency

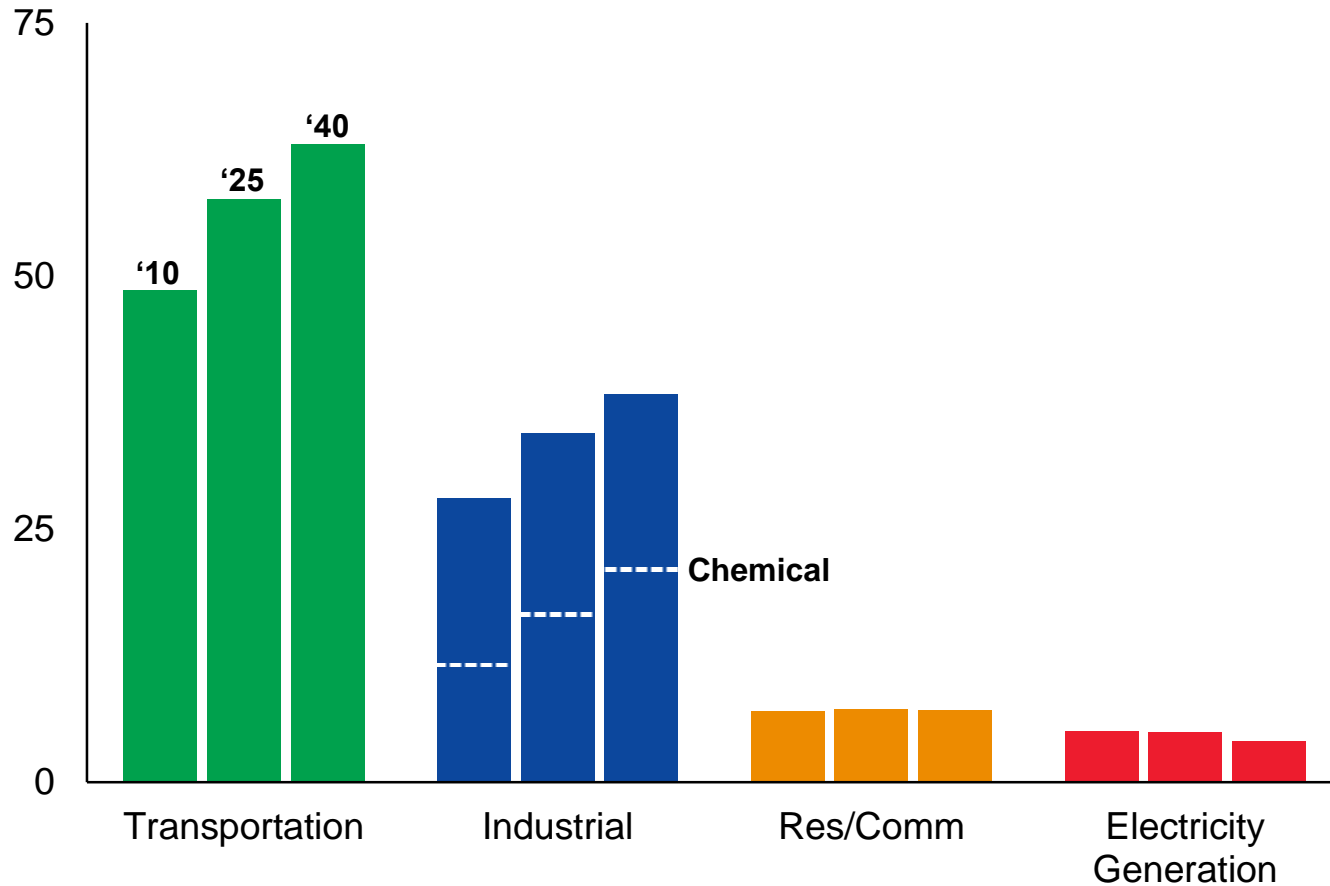


**Oil** remains the world's primary fuel through 2040.

# Transportation and Chemicals Drive Growth

Liquids Demand by Sector

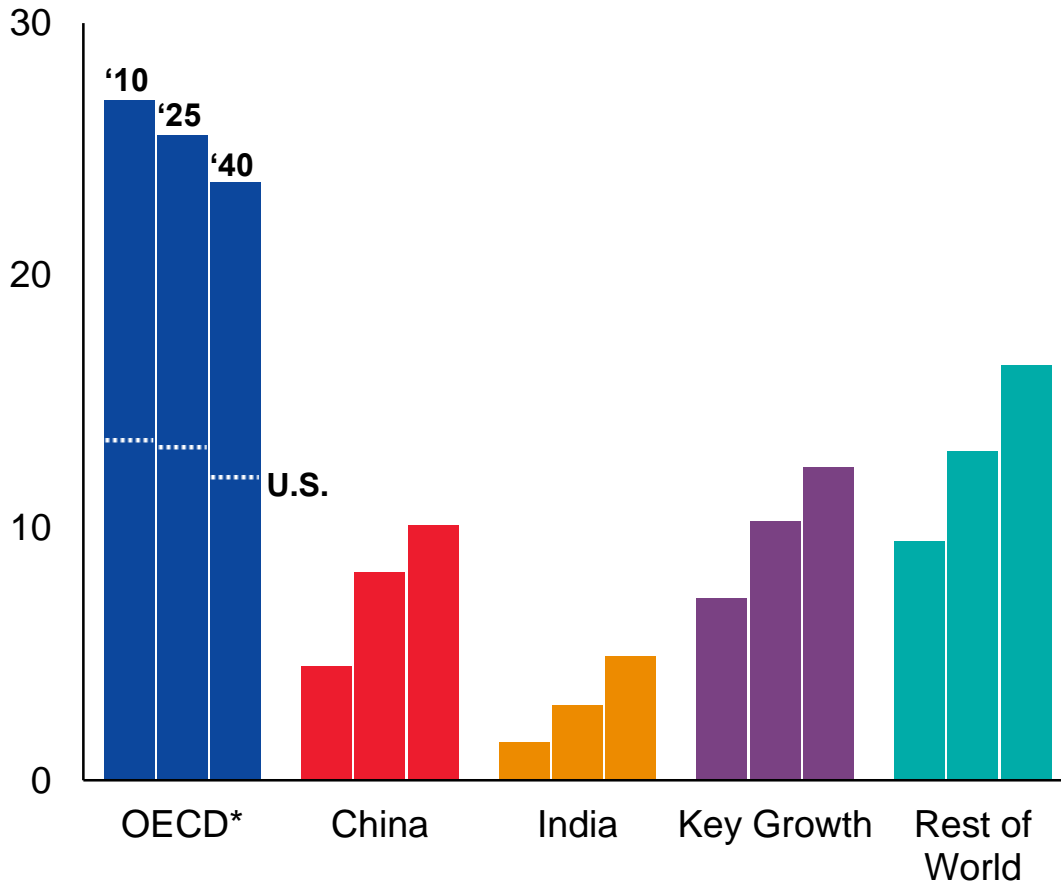
MBDOE



# Transportation Demand

## Demand by Region

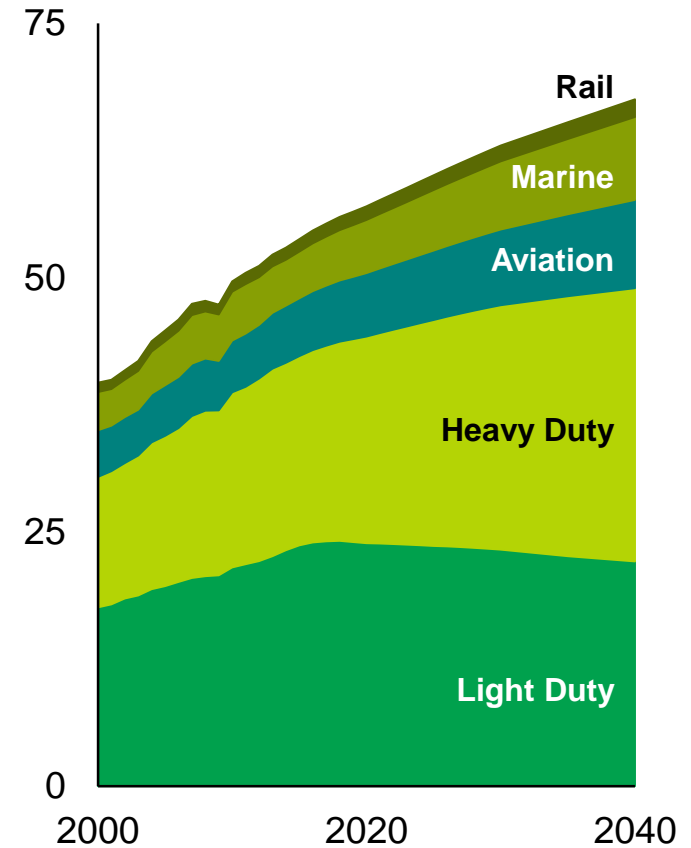
MBDOE



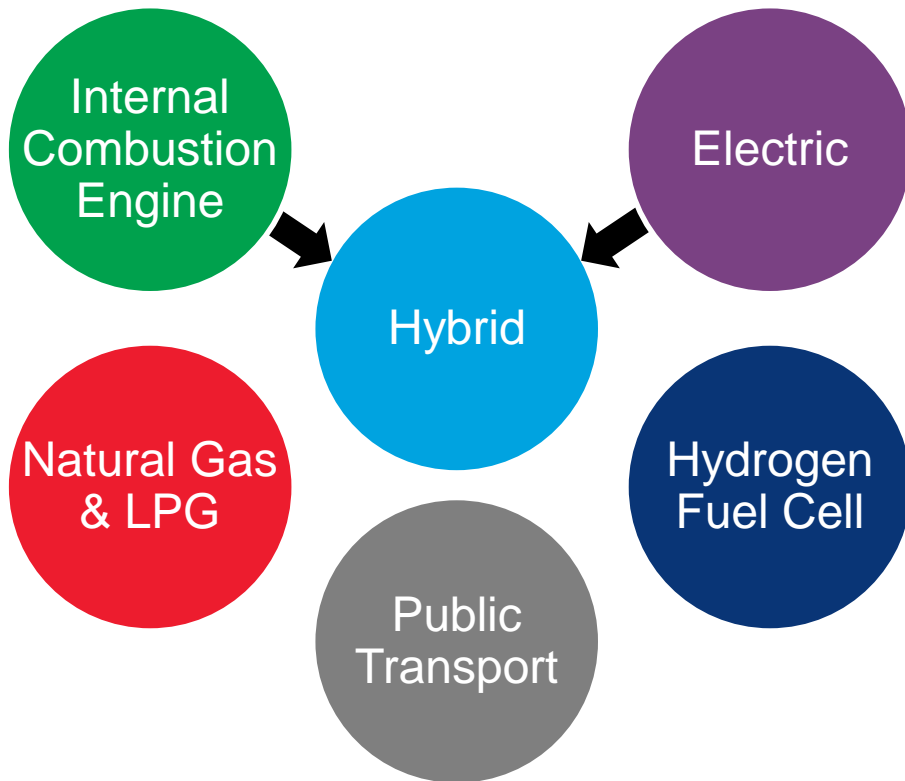
\*Mexico and Turkey included in Key Growth countries

## Sector Demand

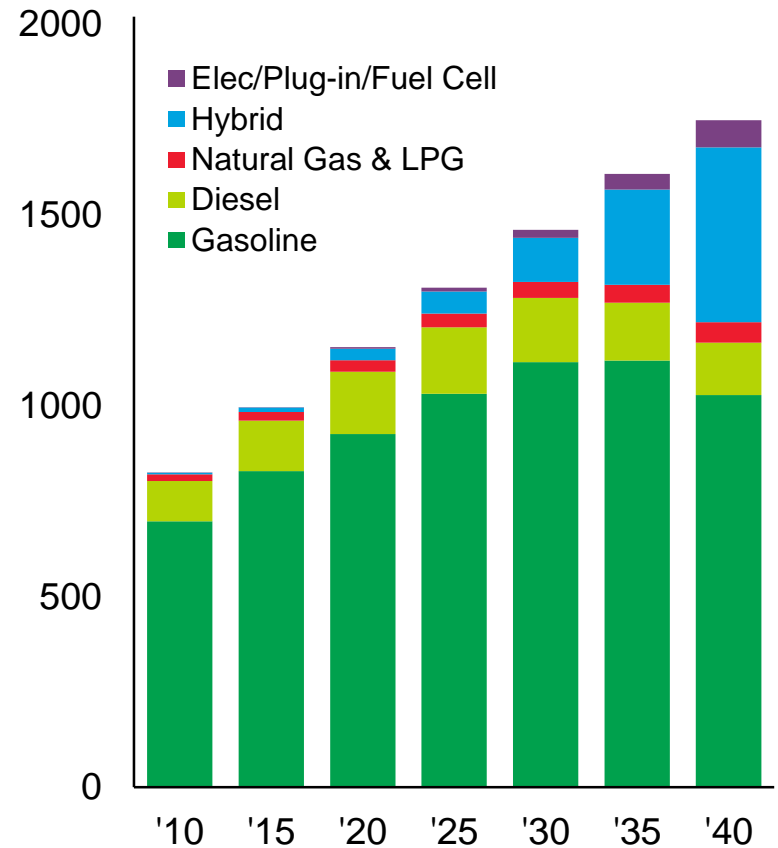
MBDOE



# Global Vehicle Fleet



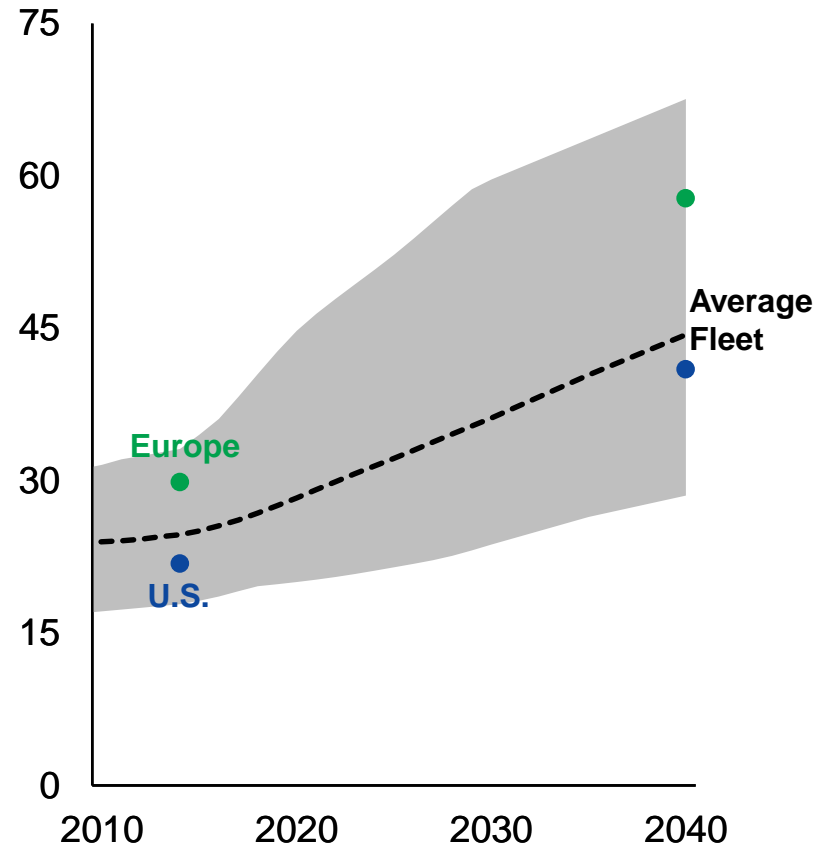
**By Type**  
Million Cars



# Light Duty Vehicle Efficiency

## Average Vehicle Efficiency

On-Road Miles per Gallon

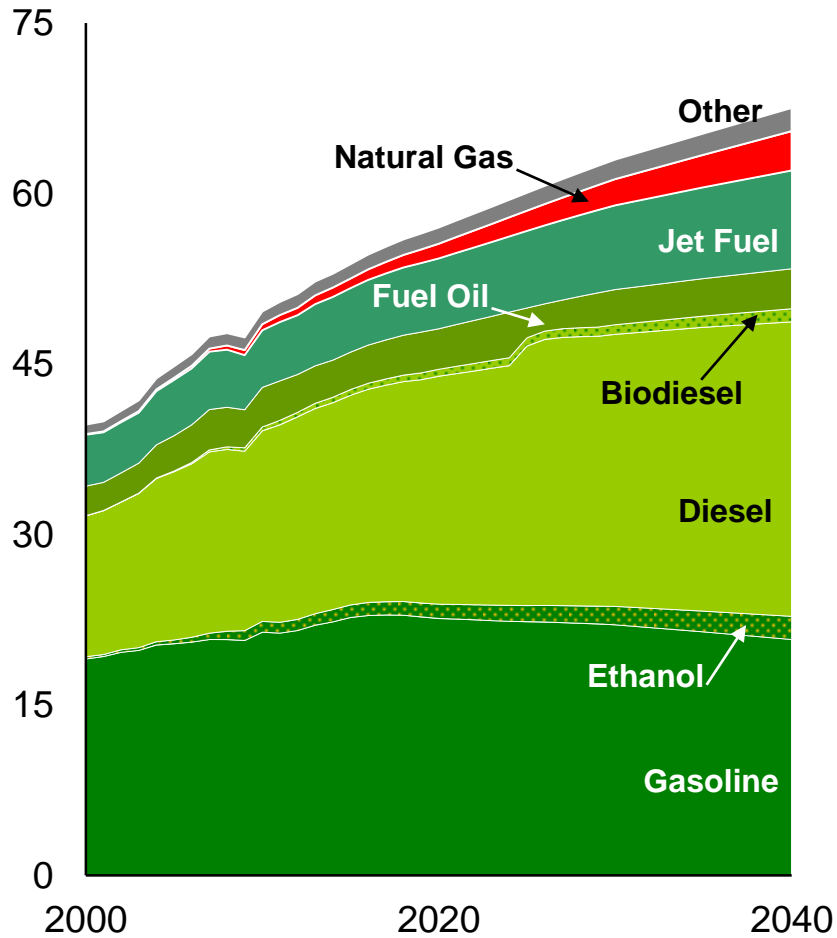




# Transportation Fuel Demand

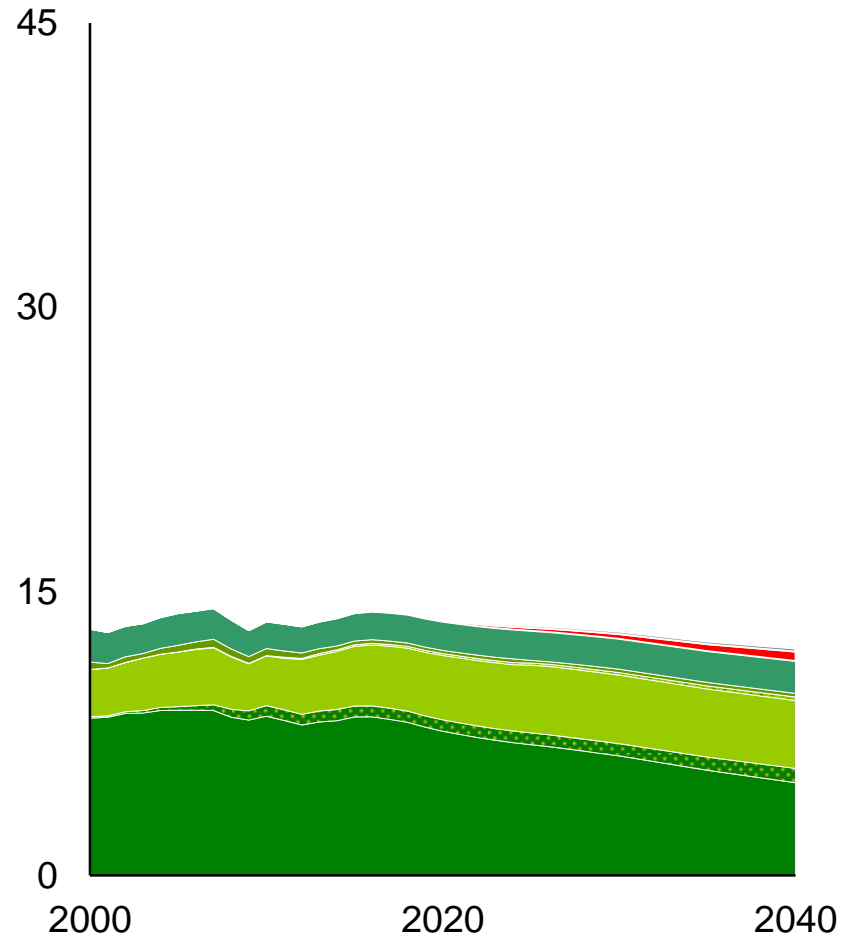
## World

MBDOE

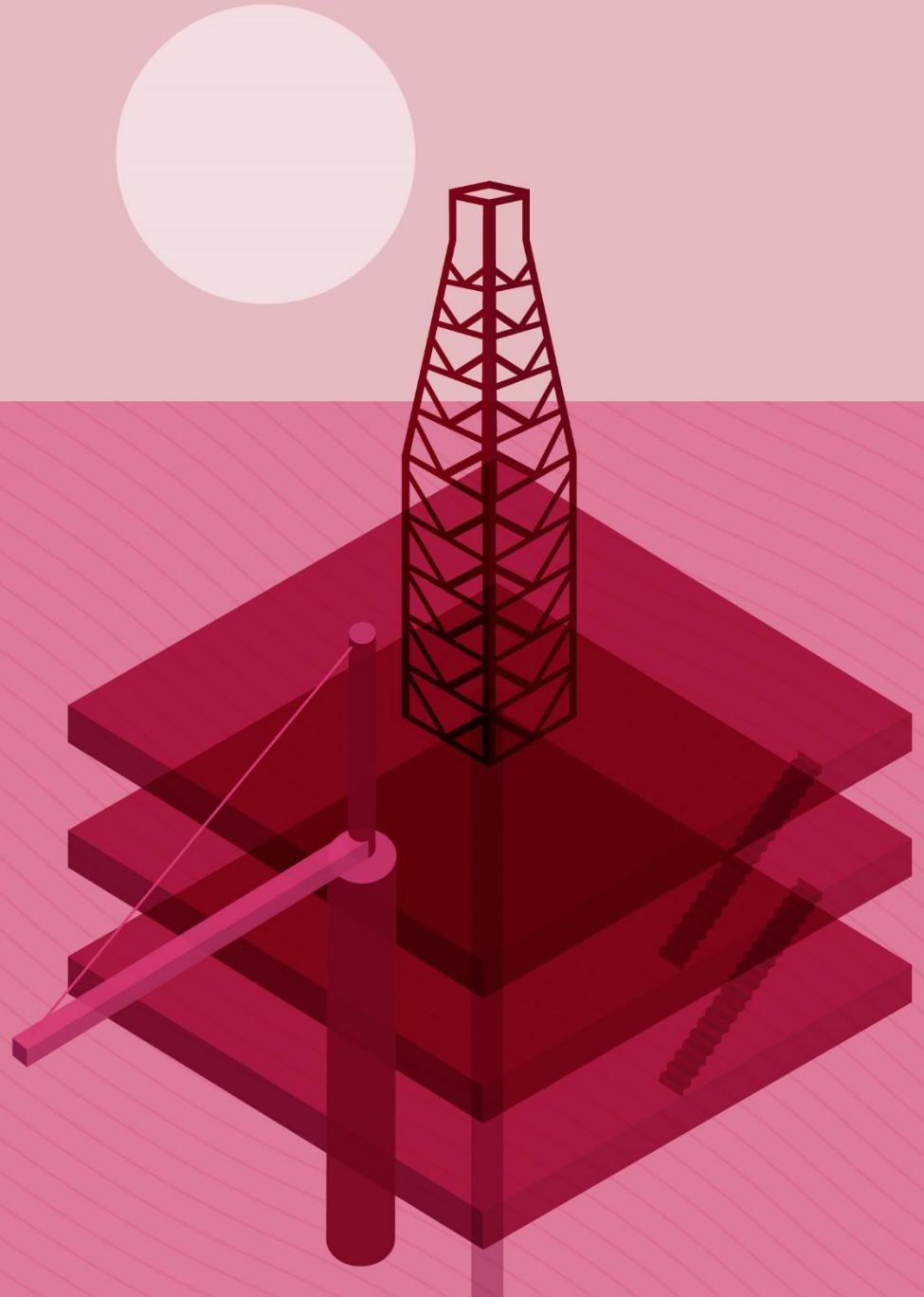


## United States

MBDOE



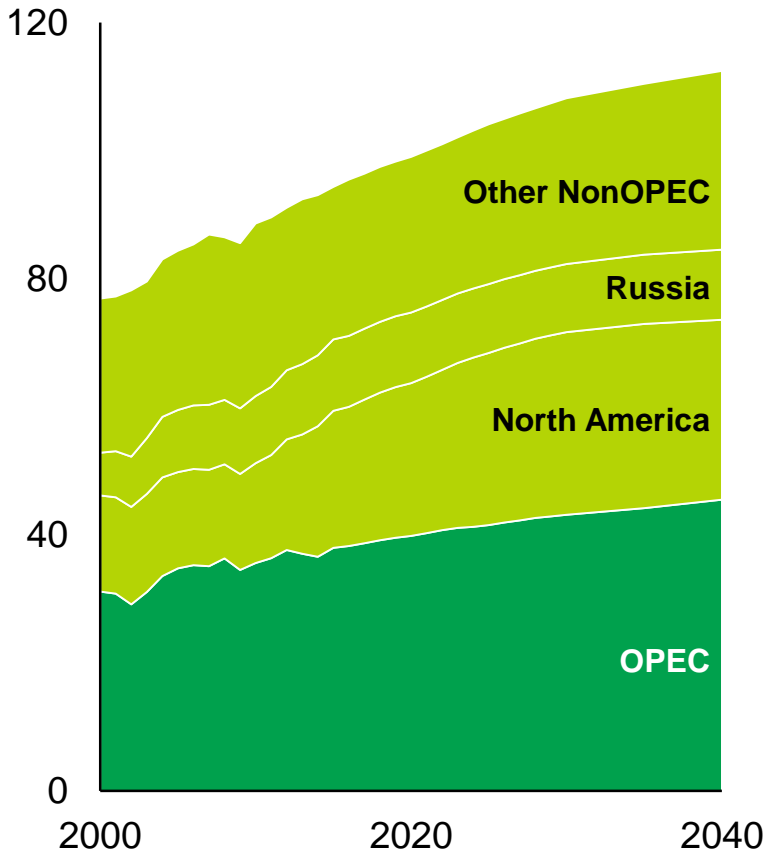
# Supply



# Liquids Production

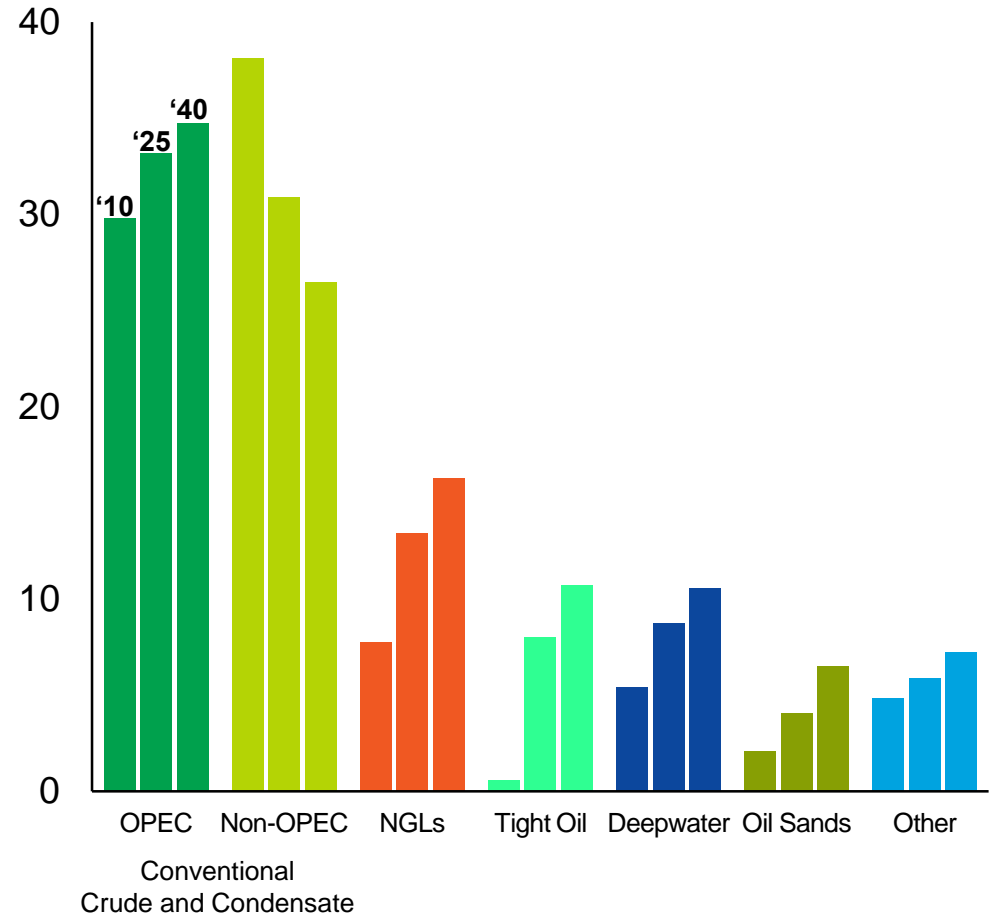
## By Region

MBDOE

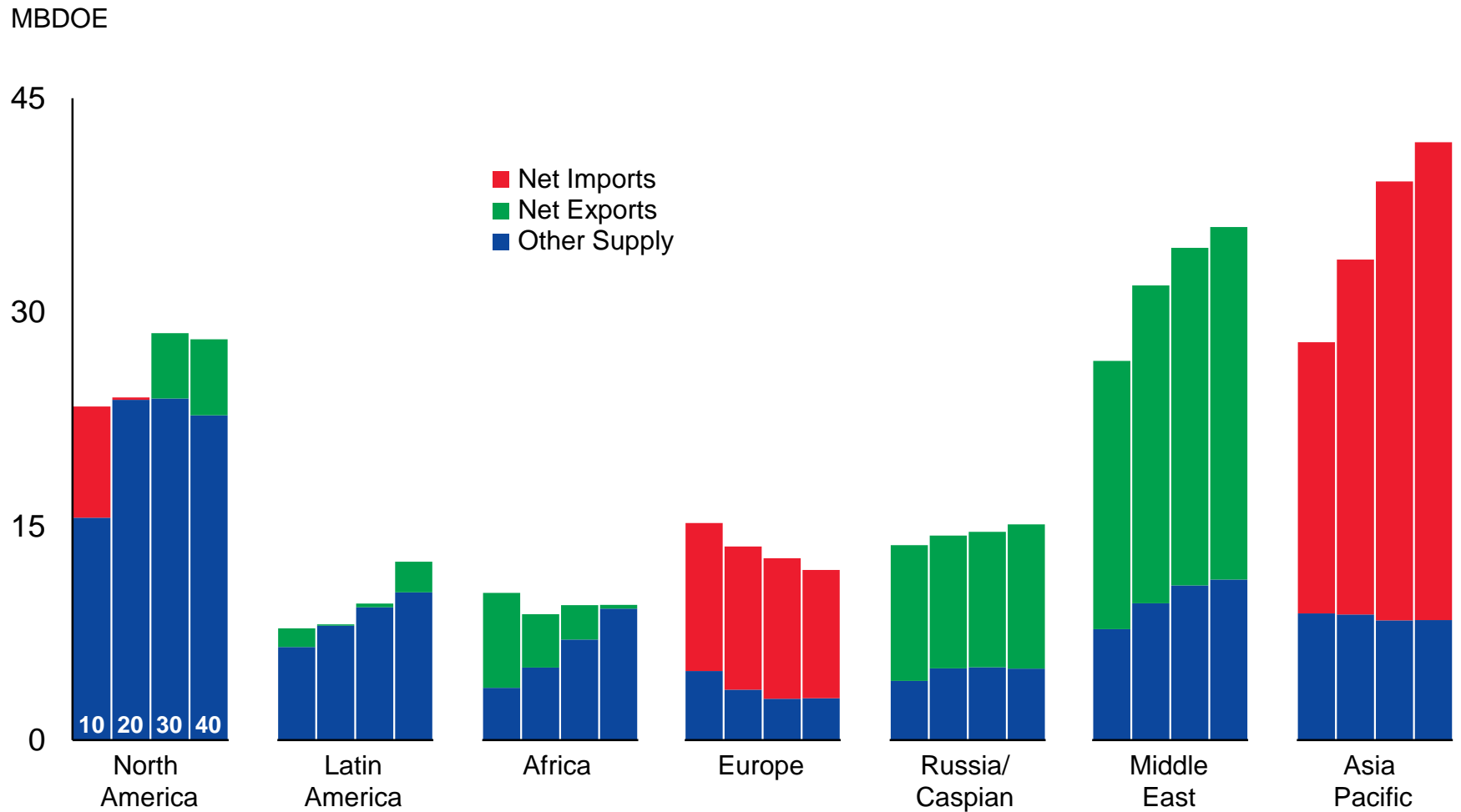


## By Type

MBDOE



# Liquids Trade Balance by Region



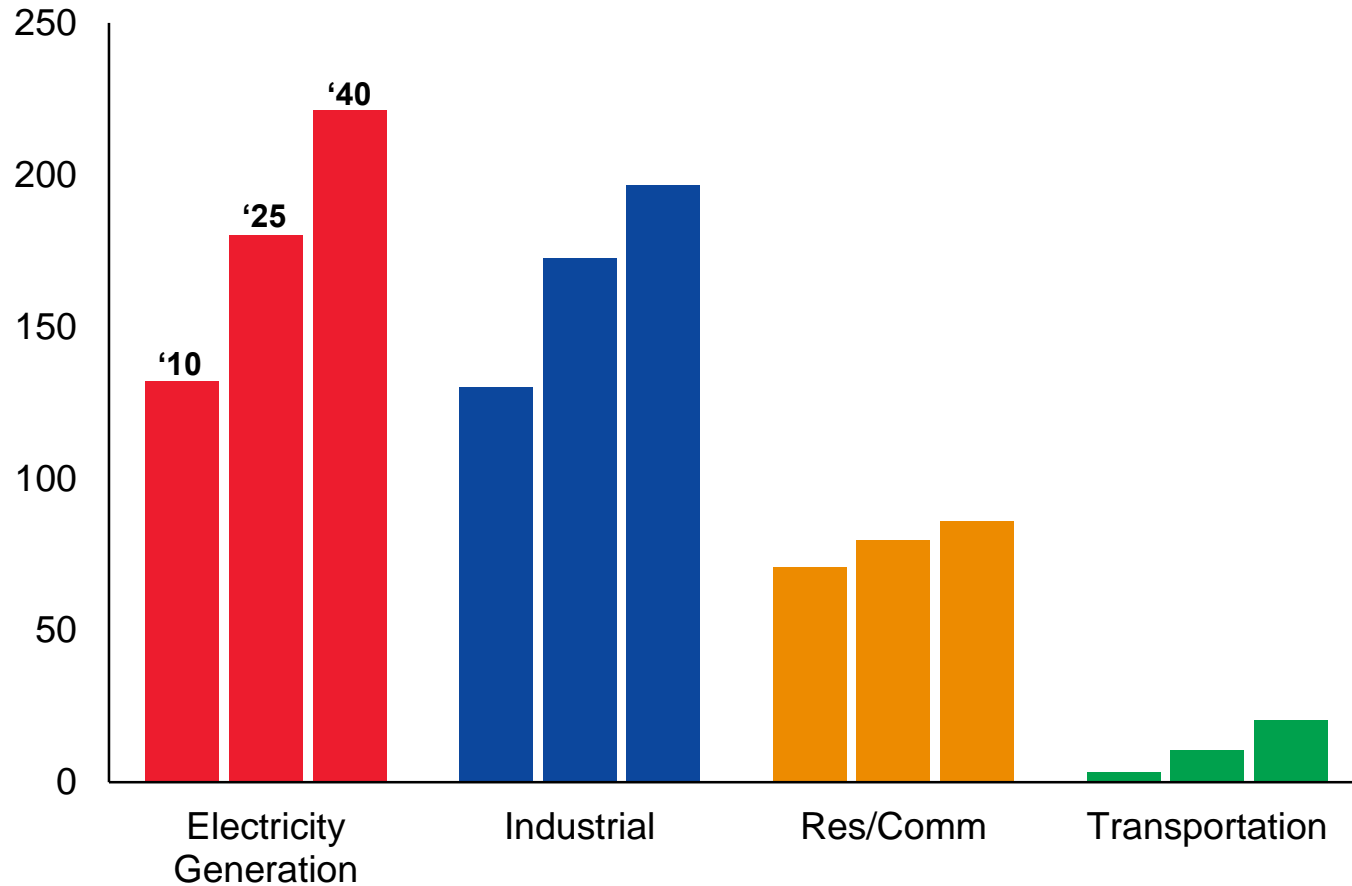


**Natural gas** grows  
more than any other  
energy source.

# Gas Demand Grows in All Sectors

Gas Demand by Sector

BCFD

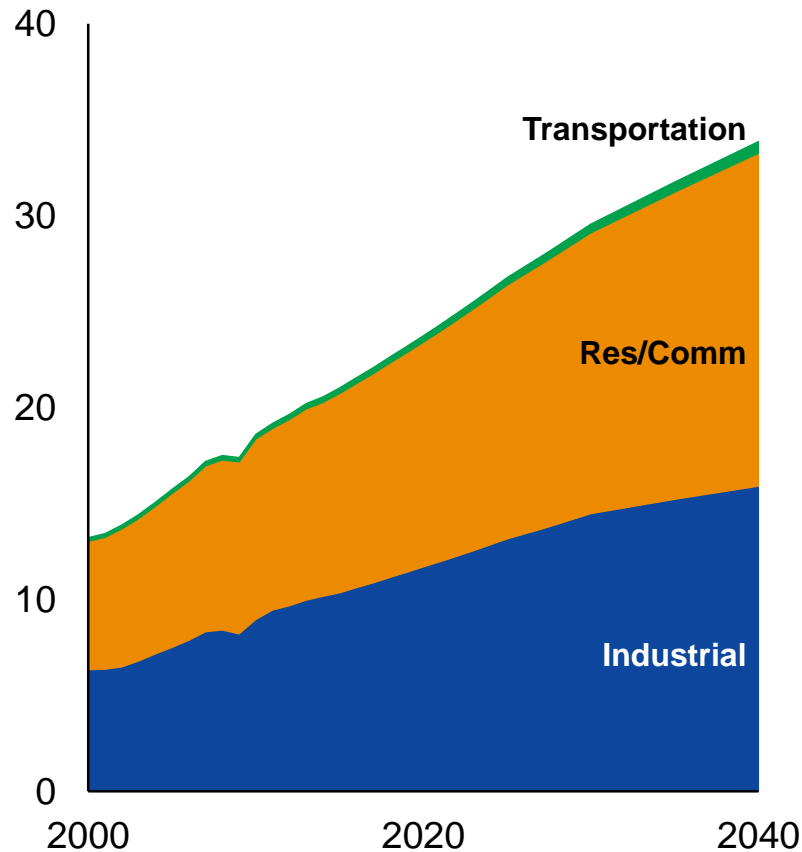




# Electricity Demand Continues to Surge

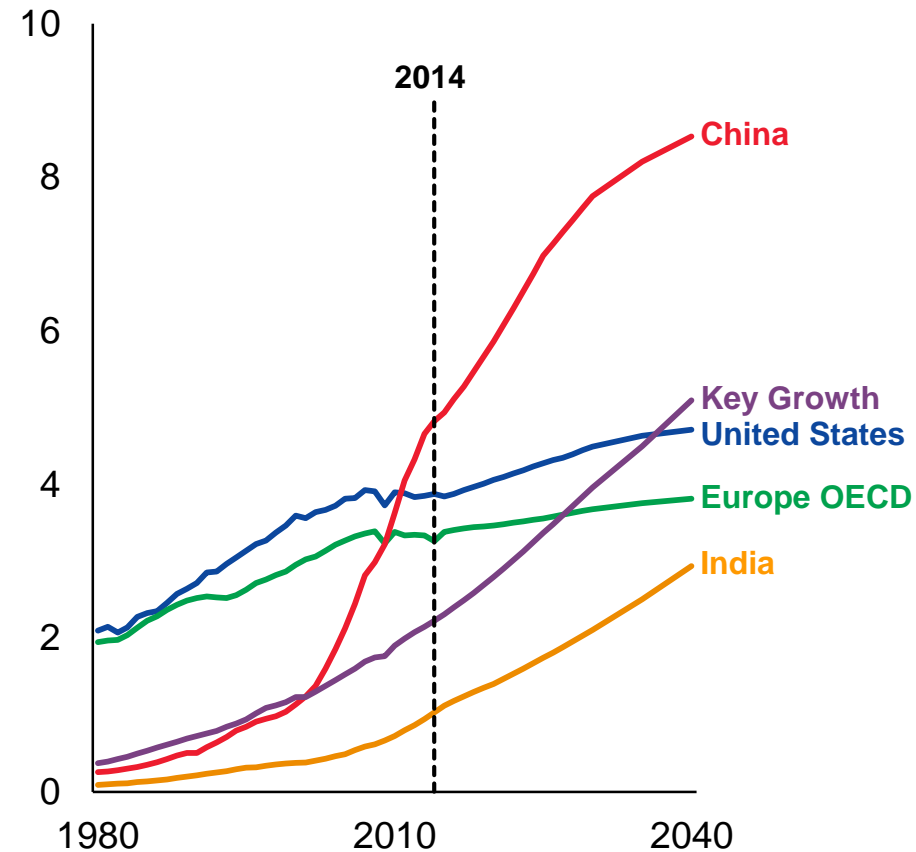
## By Sector

Thousand TWh



## Electricity Demand by Region

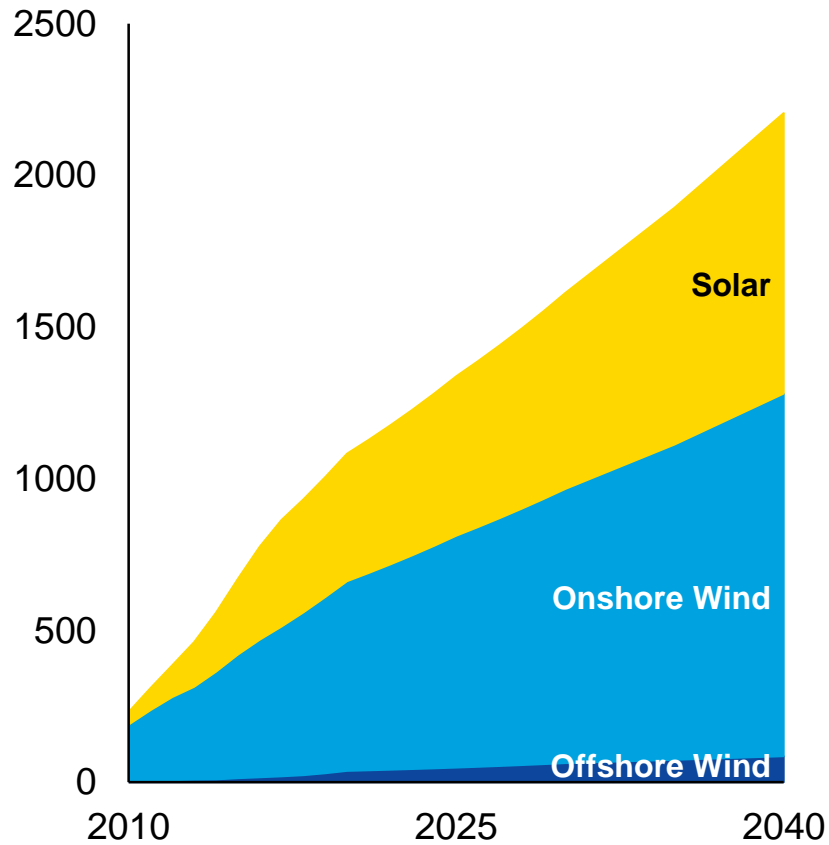
Thousand TWh



# Wind and Solar Demand

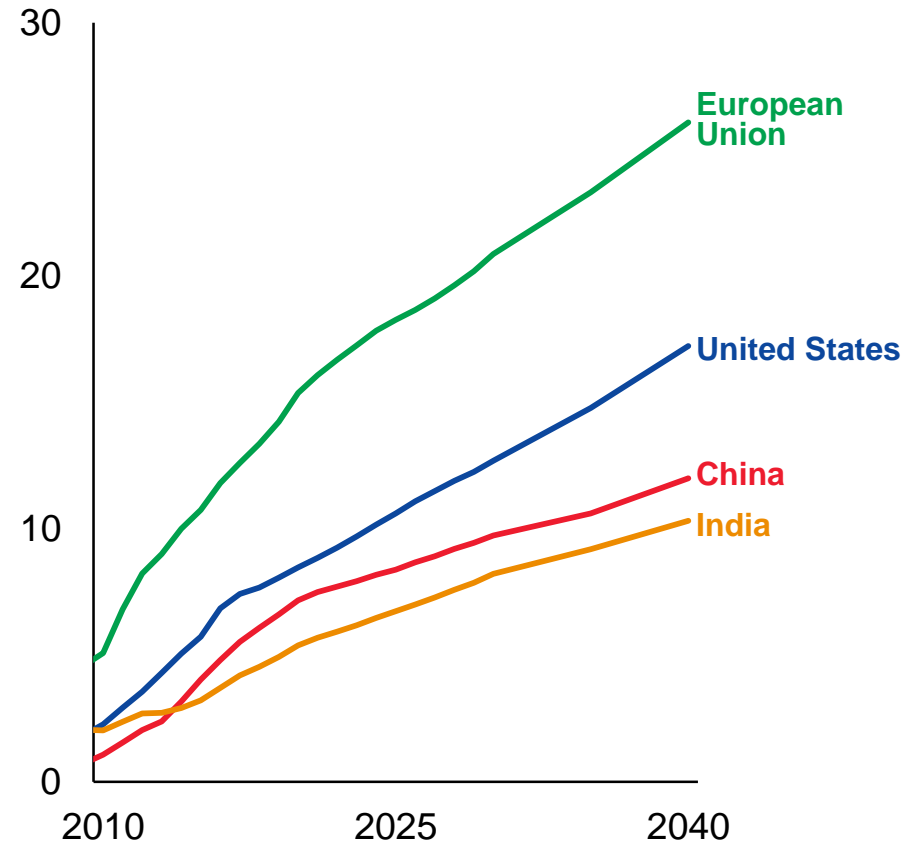
## Global Wind and Solar Capacity

Gigawatts



## Electricity Share Delivered by Wind and Solar

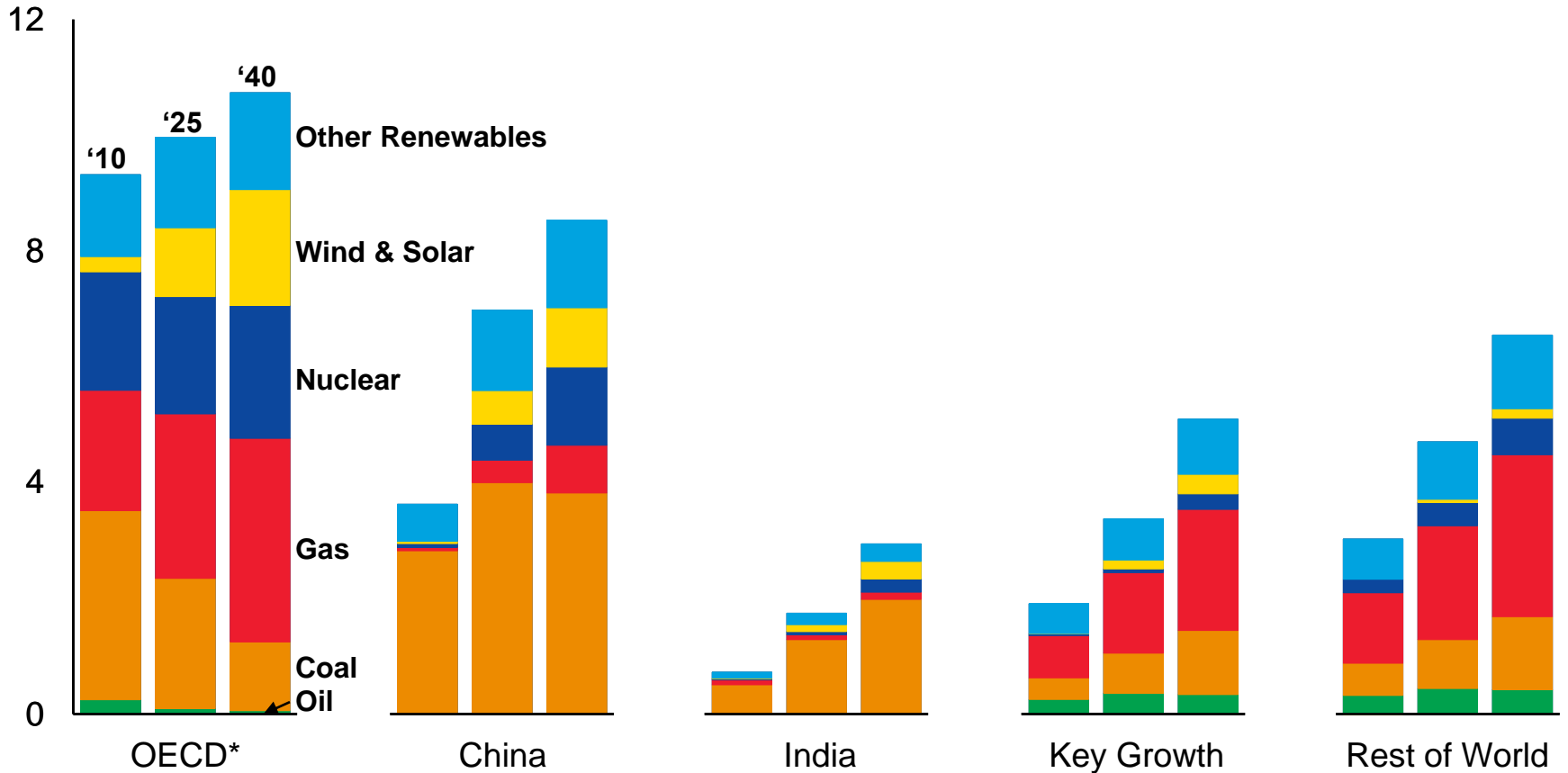
Percent



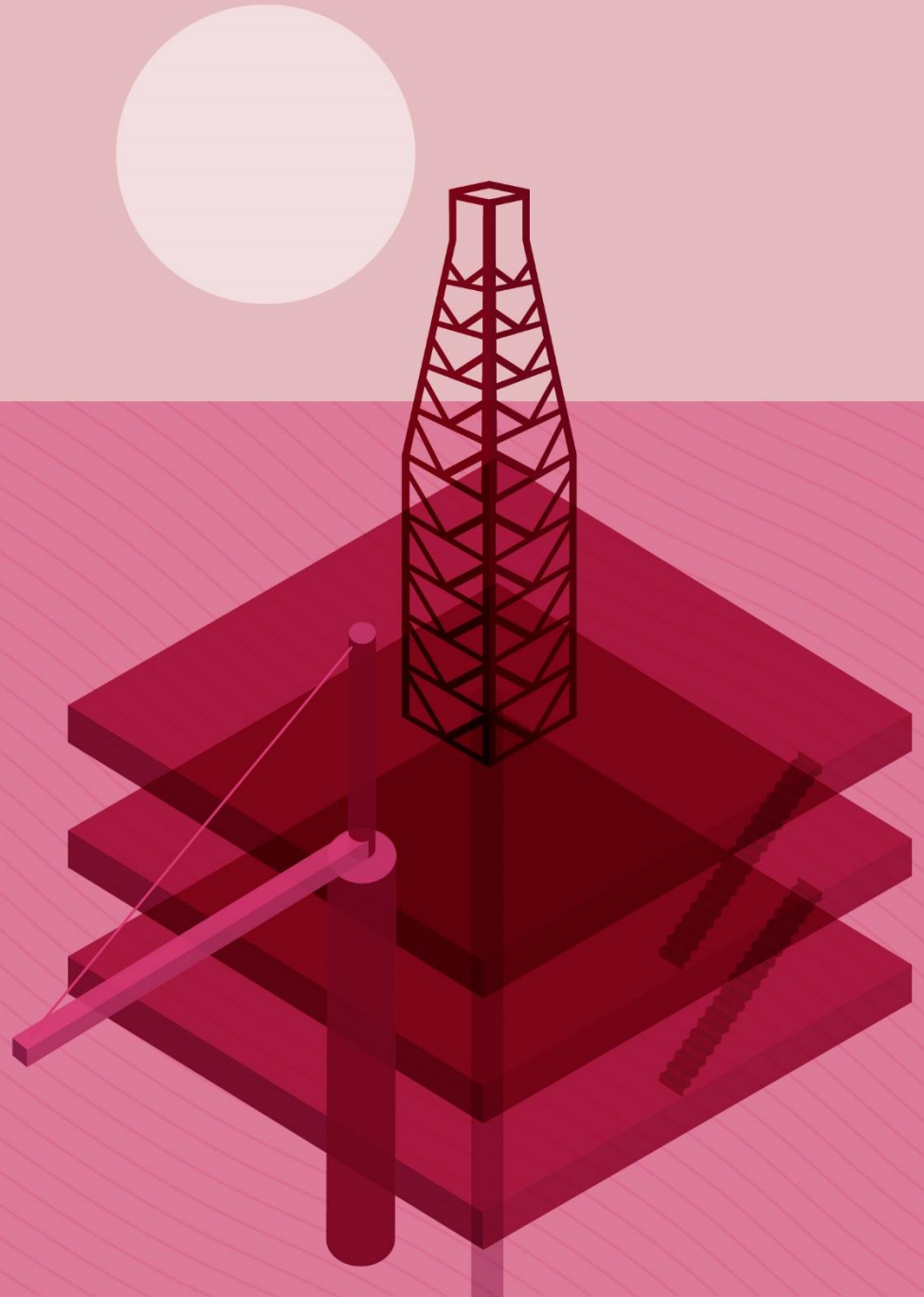
# Global Electricity Transitions

## Regional Generation

Thousand TWh



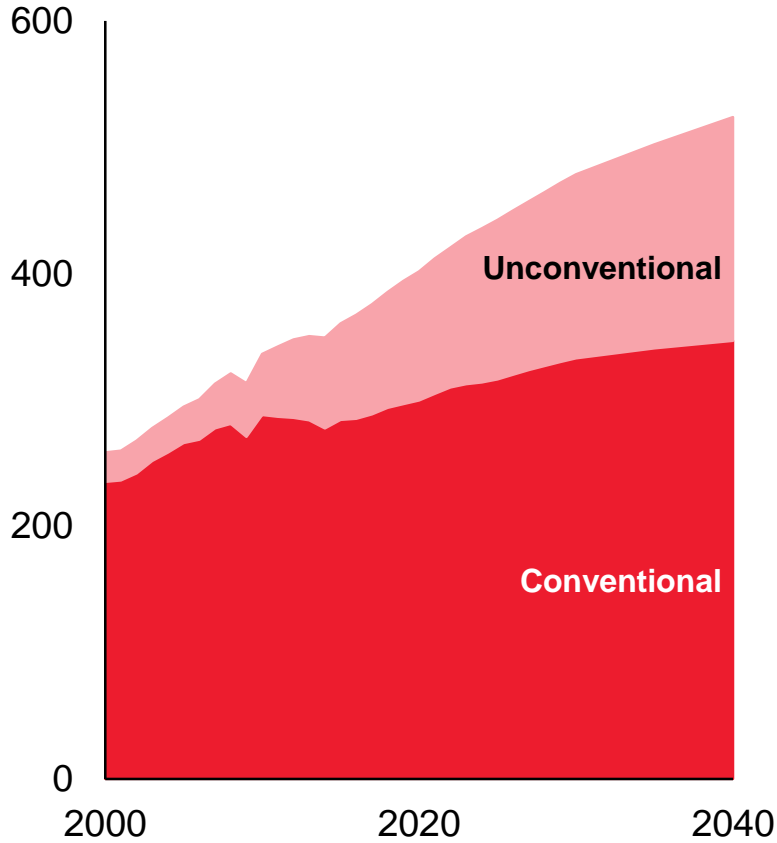
# Supply



# Natural Gas Supply

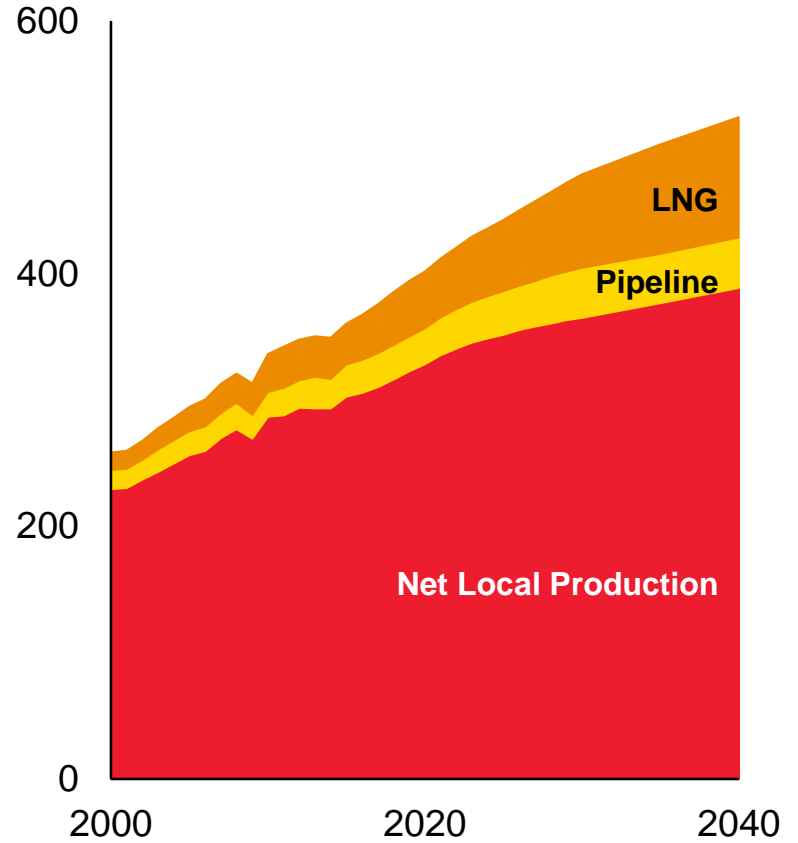
## By Production Type

BCFD

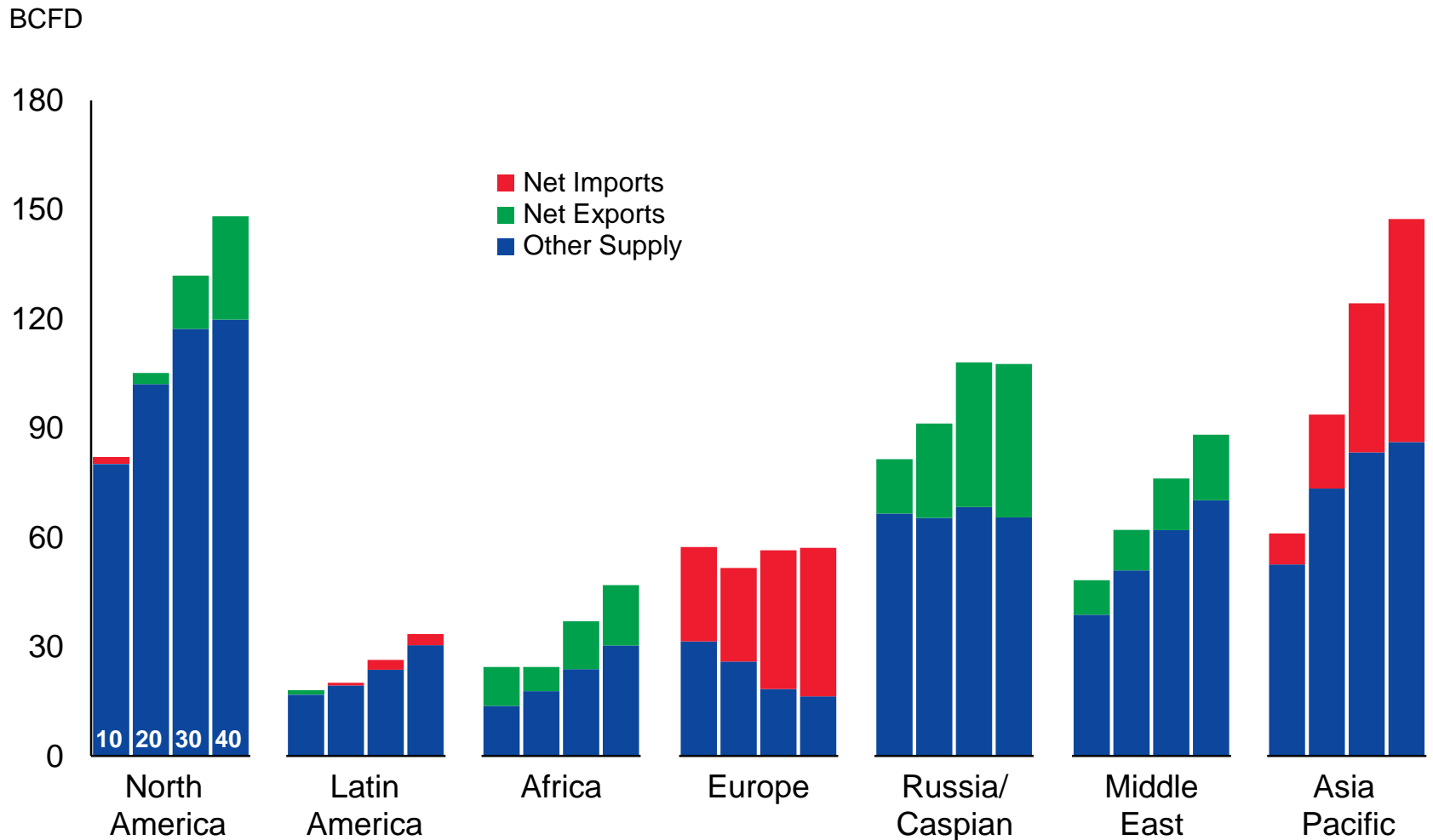


## By Delivery Type

BCFD



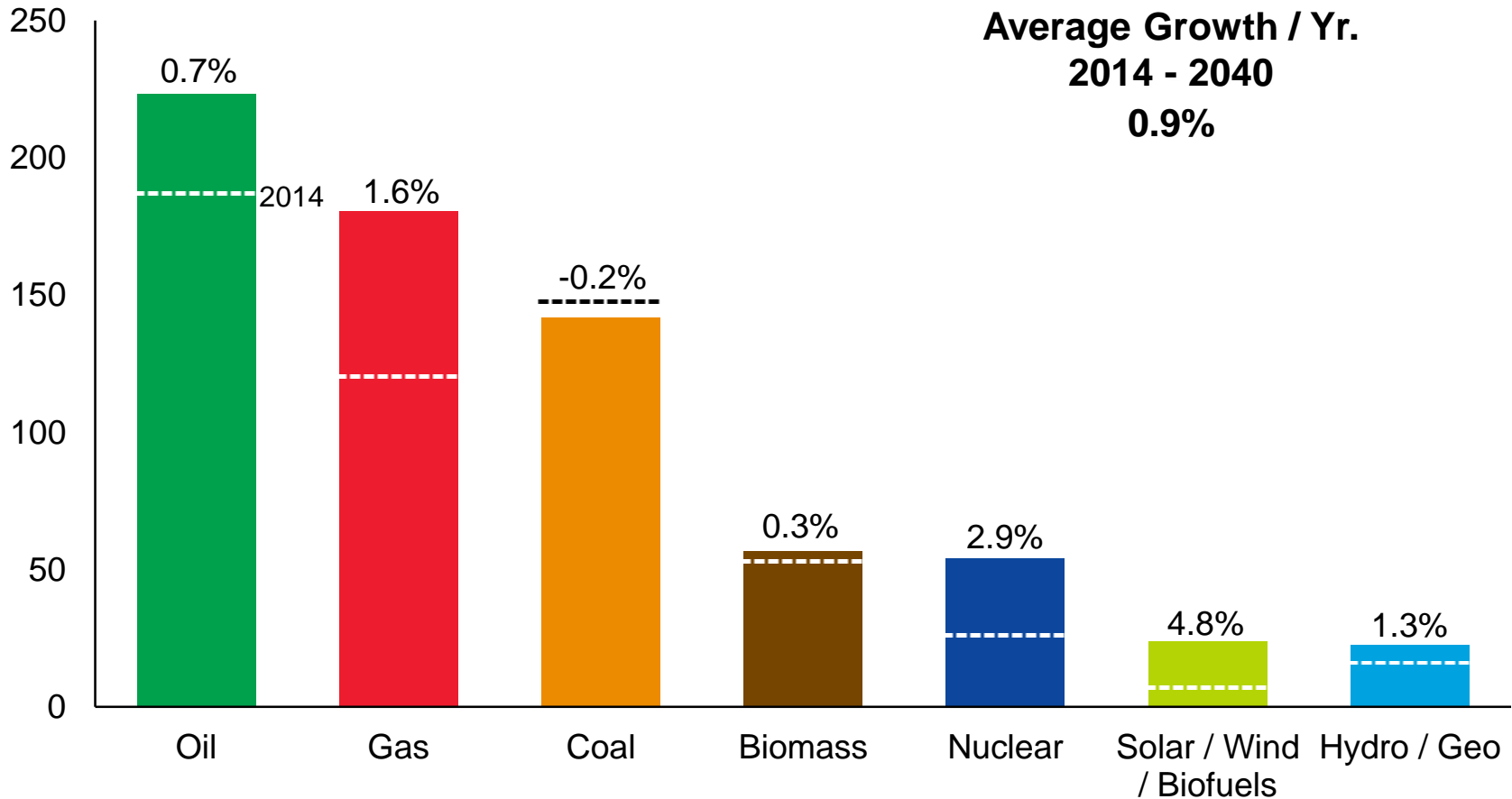
# Gas Trade Balance by Region



# Global Demand

## 2040 By Fuel

Quadrillion BTUs





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