The Outlook for Energy: A View to 2040

February 2015
Energy Outlook Development

100 countries

15 demand sectors

trade flows

20 fuel types

technology & policy
GDP Growth Varies By Region

World GDP by Region
Trillion 2010$

OECD

Non OECD

2010
2025
2040

3.1%

2.8%

OECD

World GDP by Region

GDP Growth Rate
Y/Y Percent

India

China

Key Growth

United States

OECD Europe*

*Turkey included in Key Growth countries
Standards of Living Increase in the Non OECD

2040 GDP per Capita
PPP 2005$k

OECD* | China | India | Key Growth | ROW
--- | --- | --- | --- | ---
60 | 40 | 20 | 10 | 0

*Mexico and Turkey included in Key Growth countries
The Middle Class Continues to Grow

Middle Class per The Brookings Institution
Billion People

*Mexico and Turkey included in Key Growth countries
Electricity Generation Leads Growth

Primary Energy Demand by Sector
Quadrillion BTUs

Electricity Generation Leads Growth
Electricity Generation Leads Growth

Primary Energy Demand by Sector
Quadrillion BTUs

- Electricity Generation
- Industrial
- Transportation
- Res/Comm

Non OECD
OECD
Electricity Generation Leads Growth

Primary Energy Demand by Sector
Quadrillion BTUs

- Electricity Generation
- Industrial
- Transportation
- Res/Comm

- Other Renewables
- Biomass
- Nuclear
- Coal
- Gas
- Oil

ExxonMobil 2015 Outlook for Energy
Middle East Energy Demand

Primary Energy Demand by Sector
Quadrillion BTUs

- Electricity Generation
- Industrial
- Transportation
- Res/Comm
Middle East Energy Demand by Country

**By Country**
- Quadrillion BTUs

- Iran
- Rest of Middle East
- Iraq
- UAE
- Saudi Arabia

**By Fuel**
- Quadrillion BTUs

- Oil
- Gas
- Coal
- Nuclear
- Other Renewables
- Biomass
Transportation
Transportation Demand

Sector Demand
MBDOE

- Rail
- Marine
- Aviation
- Heavy Duty
- Light Duty

2000 2020 2040

ExxonMobil 2015 Outlook for Energy
Light Duty Vehicle Fleet and Demand

2040 LDV Fleet

Million

OECD*  China  India  Key Growth  ROW

Improved Standard of Living
Population Growth
Base Fleet

*Mexico and Turkey included in Key Growth countries

World LDV Demand

MBDOE

Energy Savings
Improved Standard of Living
Population Growth

ExxonMobil 2015 Outlook for Energy
M.E. Transportation Demand & Fleet Shift

Transportation Demand
MBDOE

2000 2020 2040
Light Duty Vehicles
Million

2000 2010 2020 2030 2040

Elec/Plug-in/Fuel Cell
Full Hybrid
Natural Gas & LPG
Diesel
Gasoline

ExxonMobil 2015 Outlook for Energy
Transportation Demand Shifts Toward Diesel
Industrial
Chemicals Demand Grows Globally

By Sector
MBDOE

By Region
MBDOE

ExxonMobil 2015 Outlook for Energy
Chemical Demand

Chemical Demand by Region
Quadrillion BTUs

Chemical Demand by Fuel Type
Quadrillion BTUs

*Mexico and Turkey included in Key Growth countries
Electricity Generation
Electricity Demand

Electricity Demand
Thousand TWh

0 10 20 30 40

'10 '20 '30 '40

Improved Standard of Living
Population Growth
Industrial Growth
Base Demand

Electricity Demand by Region
Thousand TWh

1980 2010 2040

China
Key Growth
United States
Europe
India

ExxonMobil 2015 Outlook for Energy
Electricity Generation Fuel by Region

Quadrillion BTUs

OECD* | China | India | Key Growth | ROW

*Mexico and Turkey included in Key Growth countries

ExxonMobil 2015 Outlook for Energy
# Global Demand

## 2040 By Fuel

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Quadrillion BTUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>0.8%</td>
</tr>
<tr>
<td>Gas</td>
<td>1.6%</td>
</tr>
<tr>
<td>Coal</td>
<td>0.1%</td>
</tr>
<tr>
<td>Biomass</td>
<td>0.5%</td>
</tr>
<tr>
<td>Nuclear</td>
<td>2.3%</td>
</tr>
<tr>
<td>Solar / Wind / Biofuels</td>
<td>5.8%</td>
</tr>
<tr>
<td>Hydro / Geo</td>
<td>1.8%</td>
</tr>
</tbody>
</table>

### Average Growth / Yr. 2010 - 2040

- Oil: 0.8%
- Gas: 1.6%
- Coal: 0.1%
- Biomass: 0.5%
- Nuclear: 2.3%
- Solar / Wind / Biofuels: 5.8%
- Hydro / Geo: 1.8%

ExxonMobil 2015 Outlook for Energy
CO$_2$ Emissions
World Emissions

CO₂ Emissions by Region
Billion metric tonnes

Emissions per Capita
Tonnes / Person

*Mexico and Turkey included in Key Growth countries
Supply
Global Liquids Demand by Sector

By Sector
- MBDOE
- Electricity Generation
- Res/Comm
- Industrial
- Transportation

By Region
- MBDOE
- OECD*
- Rest of World
- Key Growth
- India
- China

*Mexico and Turkey included in Key Growth countries
Liquids Supply

World Supply by Type
MBDOE

Crude & Condensate Resource Estimates
Trillion Barrels

Source: USGS and IEA historical estimates
Liquids Trade Balance by Region

North America

Demand
Biofuels
Other
Natural Gas Liquids
Tight Oil
Oil Sands
Deepwater
Conventional C&C Development
Conventional Crude & Condensate

MBDOE

'10 '20 '30 '40

ExxonMobil 2015 Outlook for Energy
Gas Trade Balance by Region

BCFD

- Unconventional Production
- Conventional Production
- Demand

North America
Latin America
Africa
Europe
Russia/Caspian
Middle East
Asia Pacific

ExxonMobil 2015 Outlook for Energy
Indicative trade flows
Energy Trade

Liquids Demand
MBDOE

Gas Demand
BCFD

Imports/Exports
Local Production

LNG
Pipeline
Local Production

ExxonMobil 2015 Outlook for Energy
Developing Economies Dominate Growth

Demand by Region
Quadrillion BTUs

*Mexico and Turkey included in Key Growth countries
Energy Use Evolves Over Time

Demand by Fuel
Quadrillion BTUs

- Nuclear
- Hydro
- Gas
- Oil
- Coal
- Biomass
- Other Renewables

ExxonMobil 2015 Outlook for Energy
For a more information, visit exxonmobil.com/energyoutlook

or download the ExxonMobil app