

# ExxonMobil

Taking on the world's toughest energy challenges.™

## *The Outlook for Fuels A View to 2030*

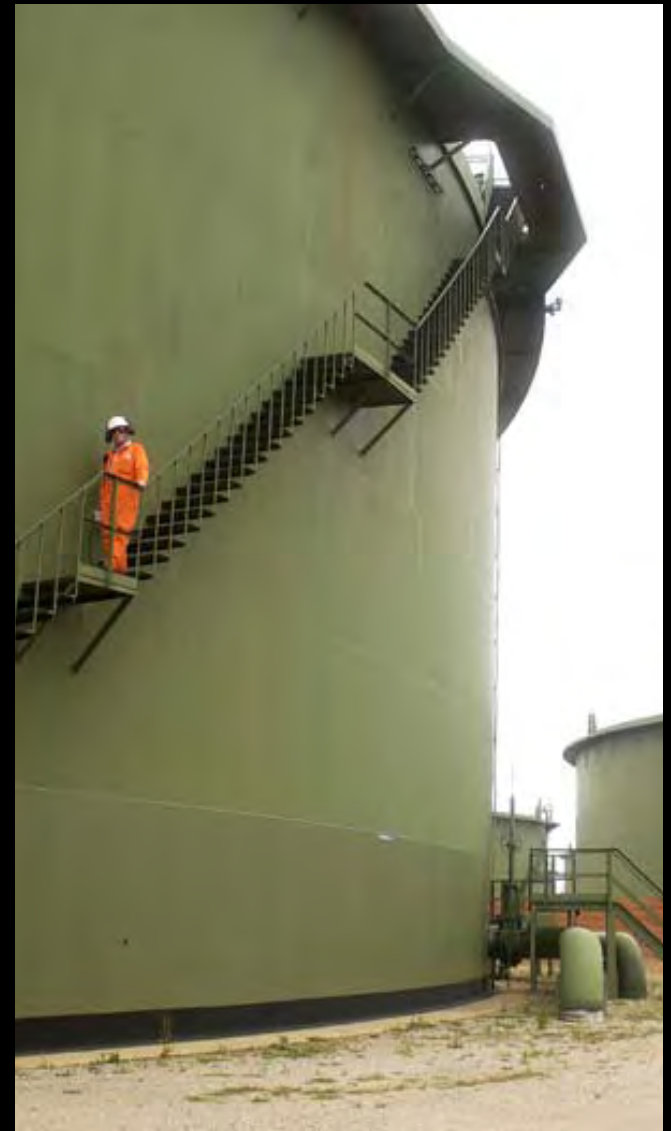
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**Glenn Henson**

ExxonMobil Refining Director

Australian Institute of Energy

Melbourne, 28 November 2006



This presentation includes forward-looking statements. Actual future conditions (including economic conditions, energy demand, and energy supply) could differ materially due to changes in technology, the development of new supply sources, political events, demographic changes, and other factors discussed herein (and in Item 1 of ExxonMobil's latest report on Form 10-K). This material is not to be reproduced without the permission of Exxon Mobil Corporation.

# Global GDP and Energy Demand

Energy Demand  
(MBDOE)

500

400

300

200

100

0

0

10

20

30

40

50

60

70

80

GDP

(Trillion 2000\$)

1950

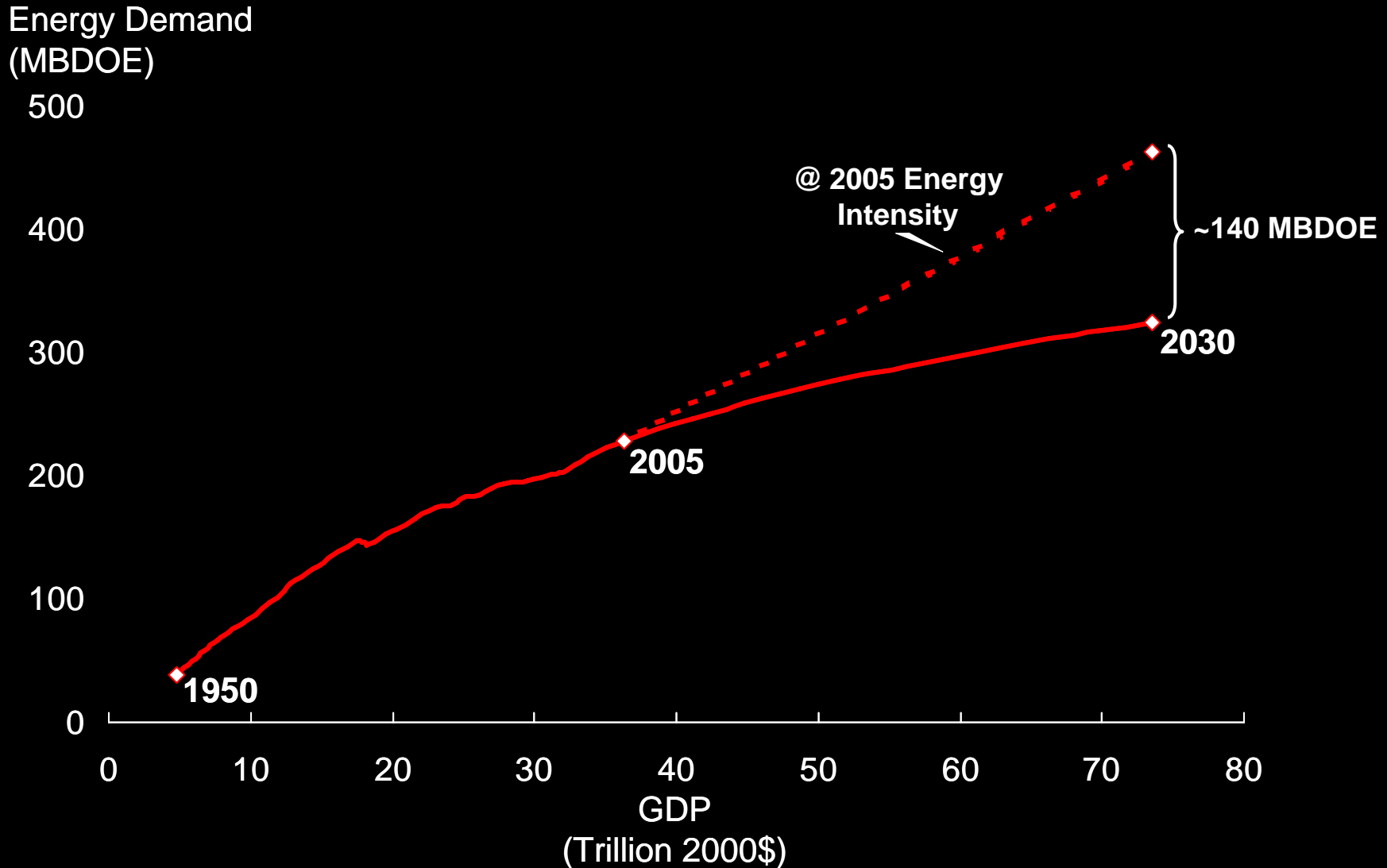
2005

@ 2005 Energy  
Intensity

2030

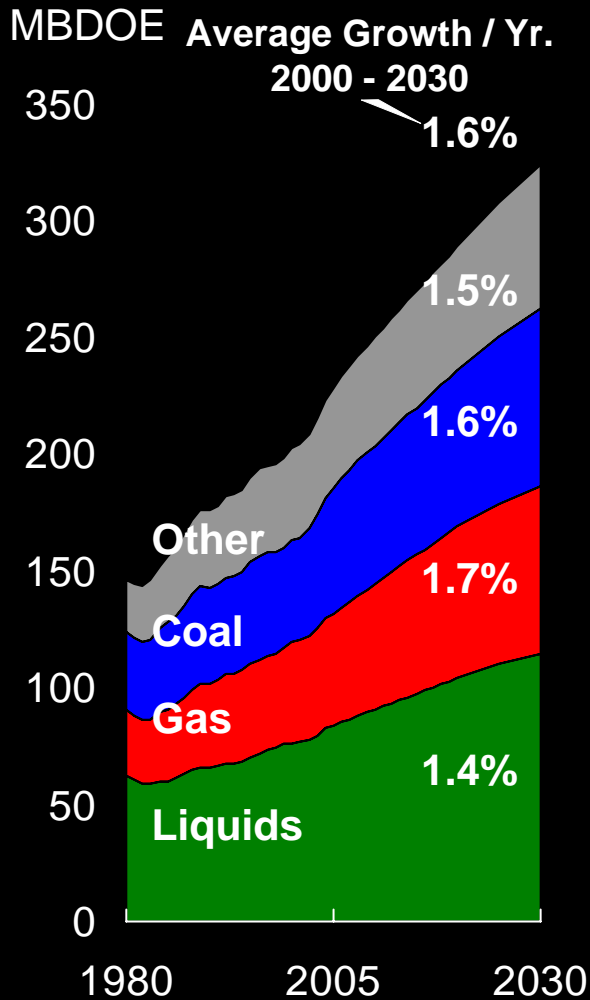
~140 MBDOE

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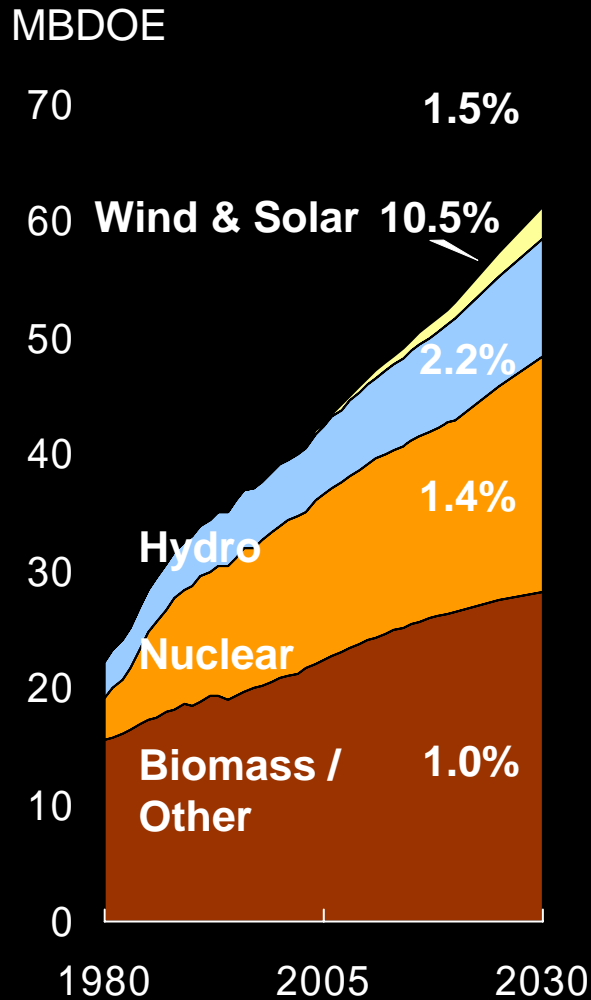


# Global Energy Demand by Fuel

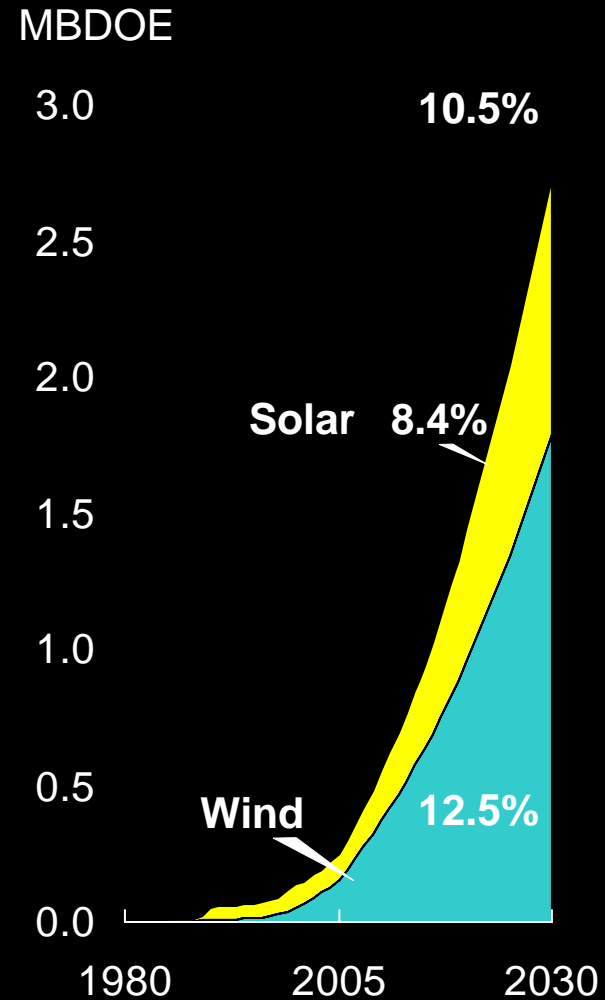
## Primary Energy



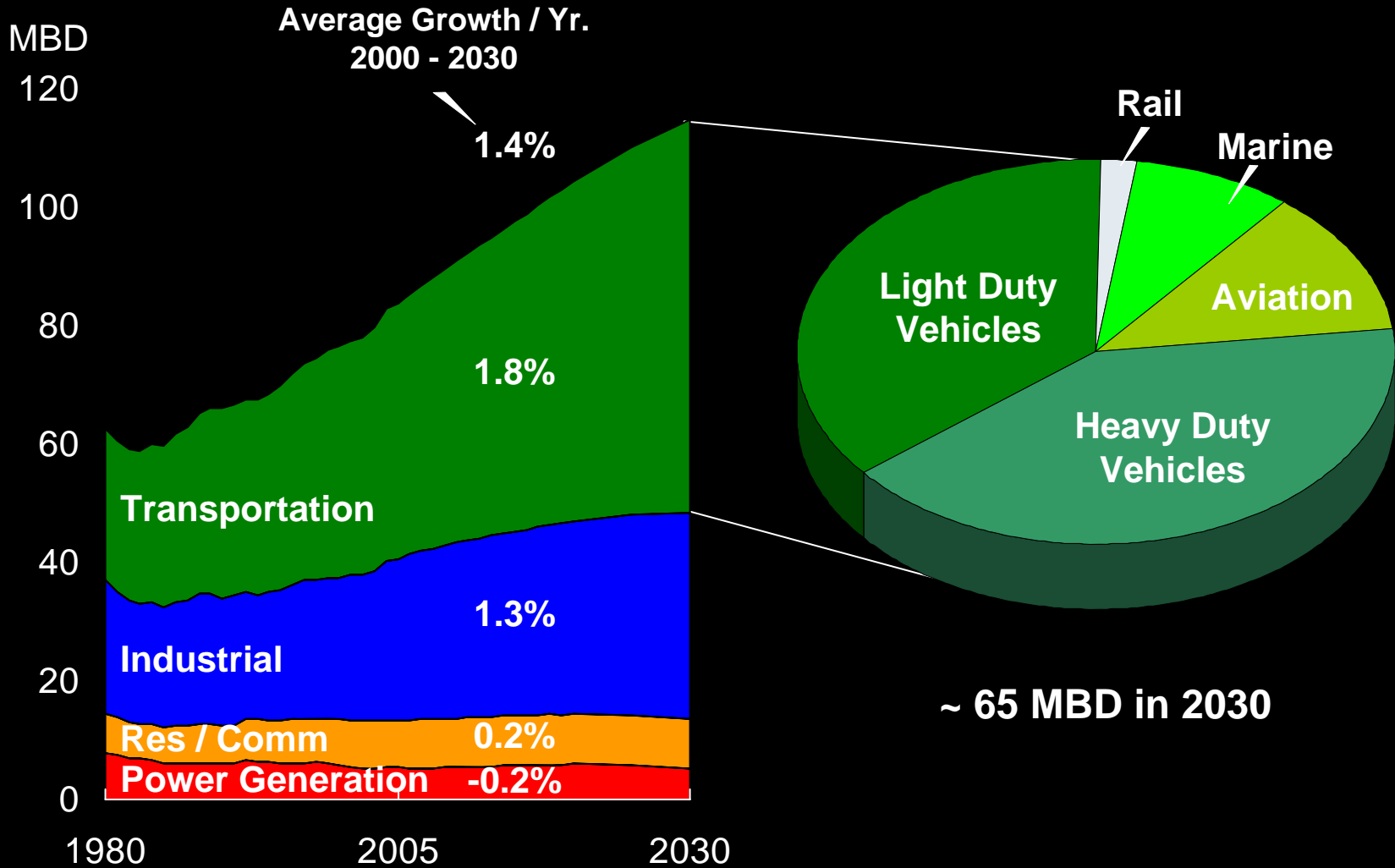
## Other Energy



## Wind & Solar

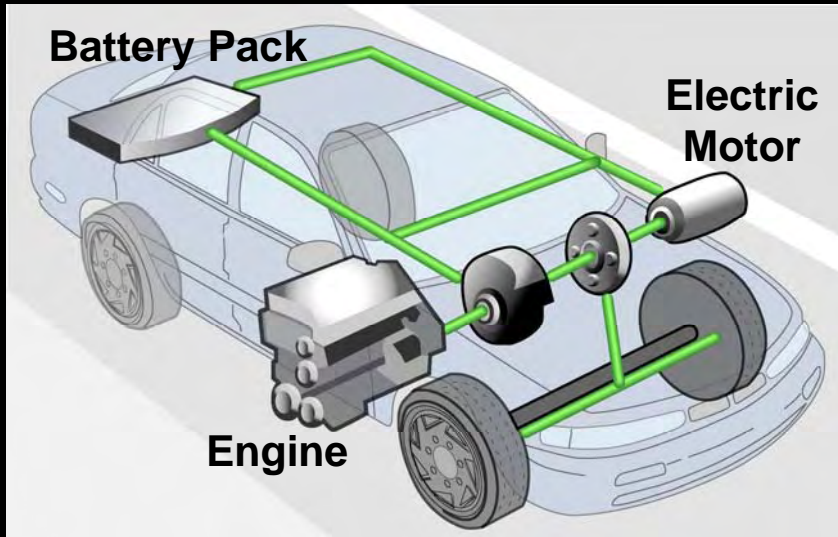


# Global Liquids Demand by Sector



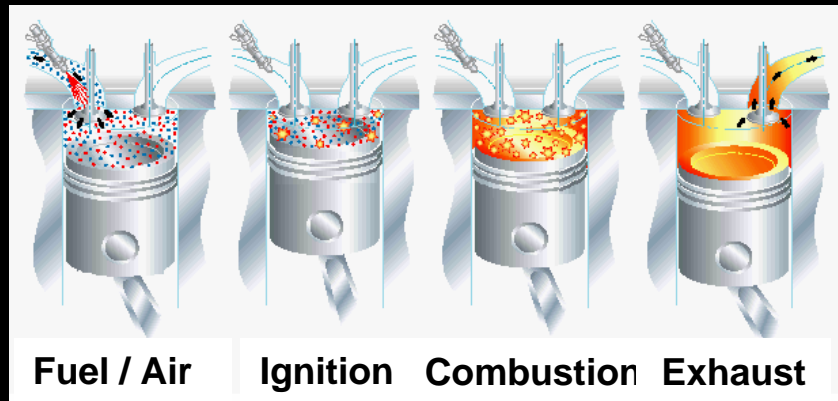
# Penetration of High Efficiency Technology

## Hybrid Vehicle Design



- Large efficiency and emissions improvements captured in the past
- Focus is now on lower emissions from diesel and higher efficiency from gasoline
- HCCI R&D includes fuel composition - engine performance - aftertreatment system links

## Homogenous Charge Compression Ignition



# Light Duty Vehicle Trends

## Light Duty Fleet

Millions

1500

1200

900

600

300

0

Average Growth / Yr.  
2000 - 2030

2.1%

5.1%

Advanced ICE / Hybrid

1.0%

Non-OECD

OECD

2000

2010

2020

2030

## Light Duty Fuels Demand

MBD

35

30

25

20

15

10

5

0

1.1%

4.2%

0.0%

Non-OECD

OECD

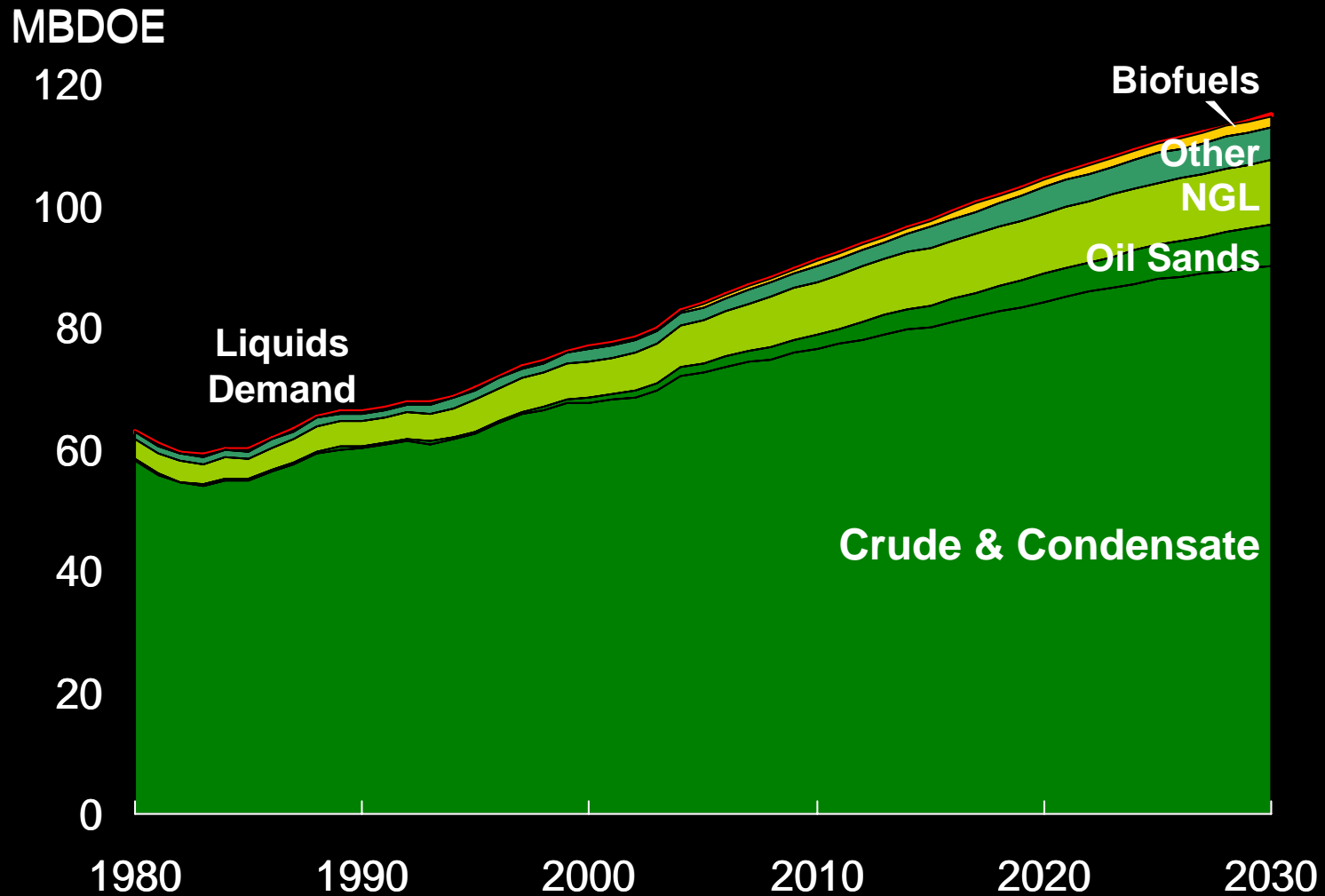
2000

2010

2020

2030

# Global Liquids Supply & Demand



# Global Oil Resource Base

Trillion Barrels

5

4

3

2

1

0

USGS  
1984

USGS  
1987

USGS  
1991

USGS  
1994

USGS  
2000

ExxonMobil  
2006

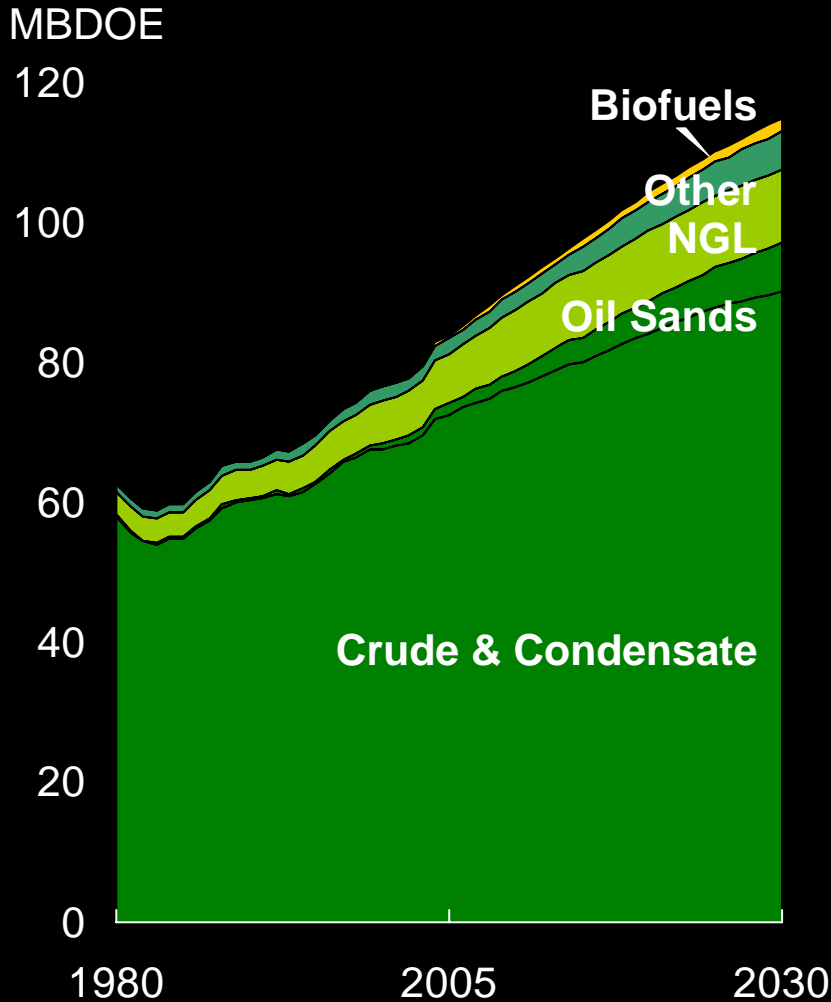
Frontier

Conventional

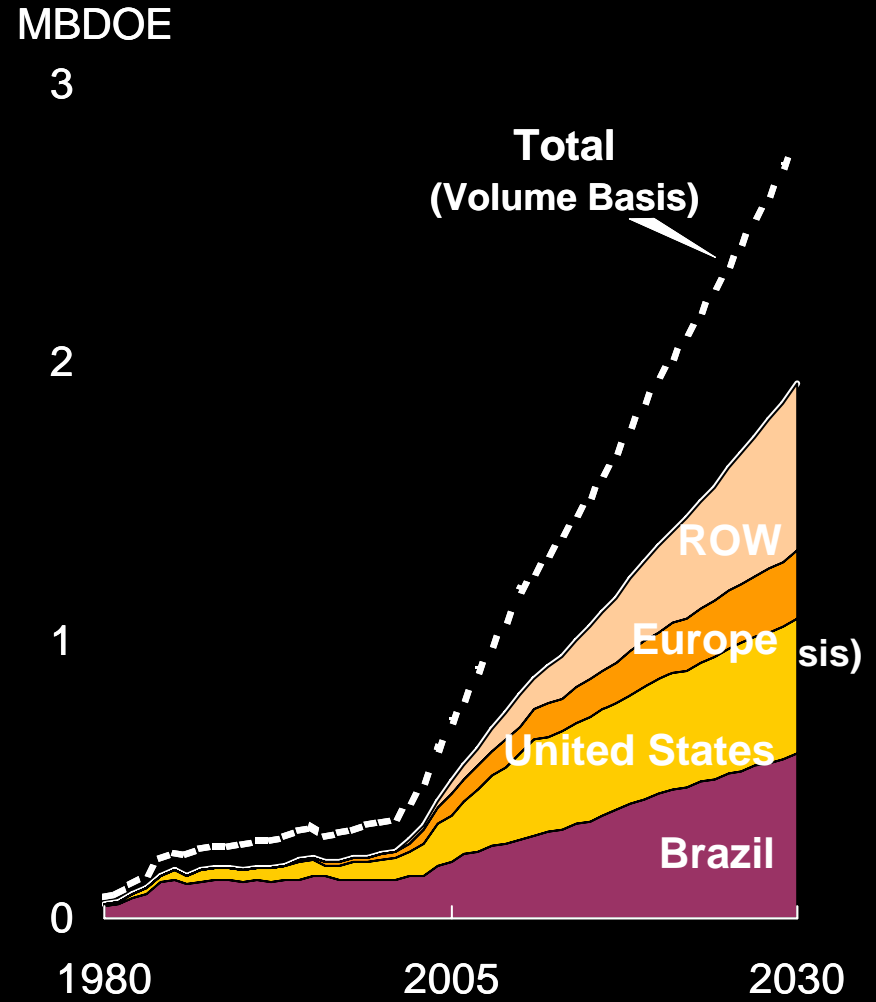
Produced  
YE 2005

# Global Biofuels Production

## Liquids Supply

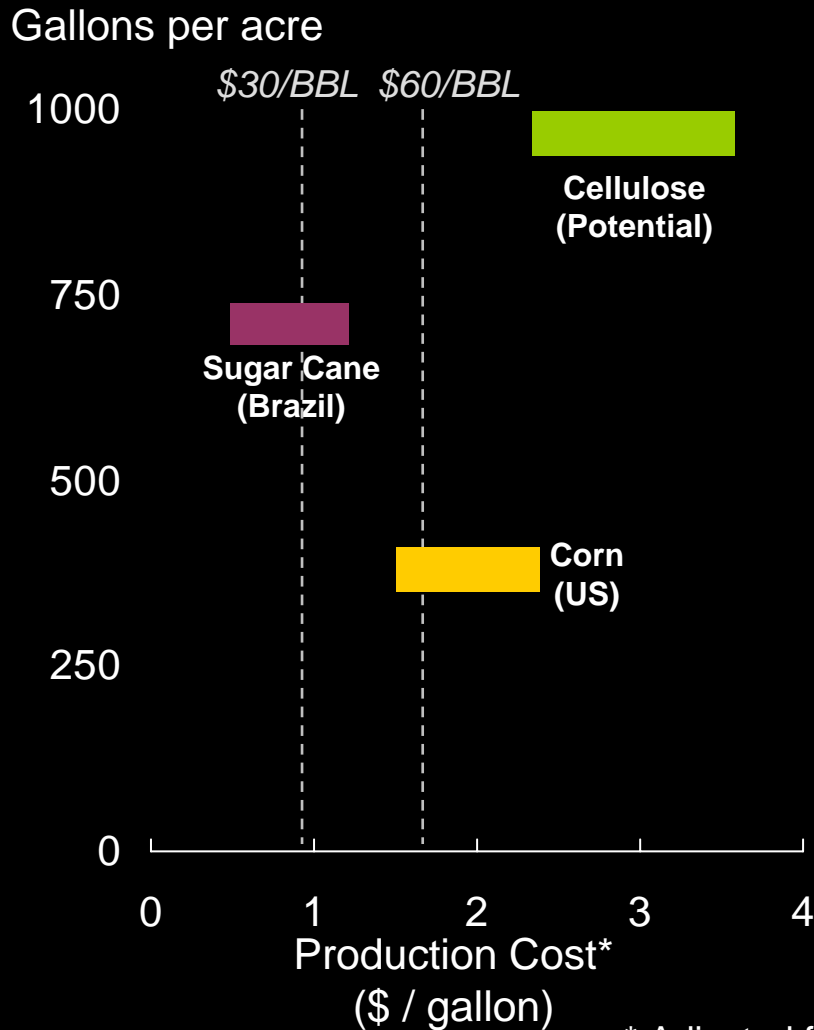


## Biofuels

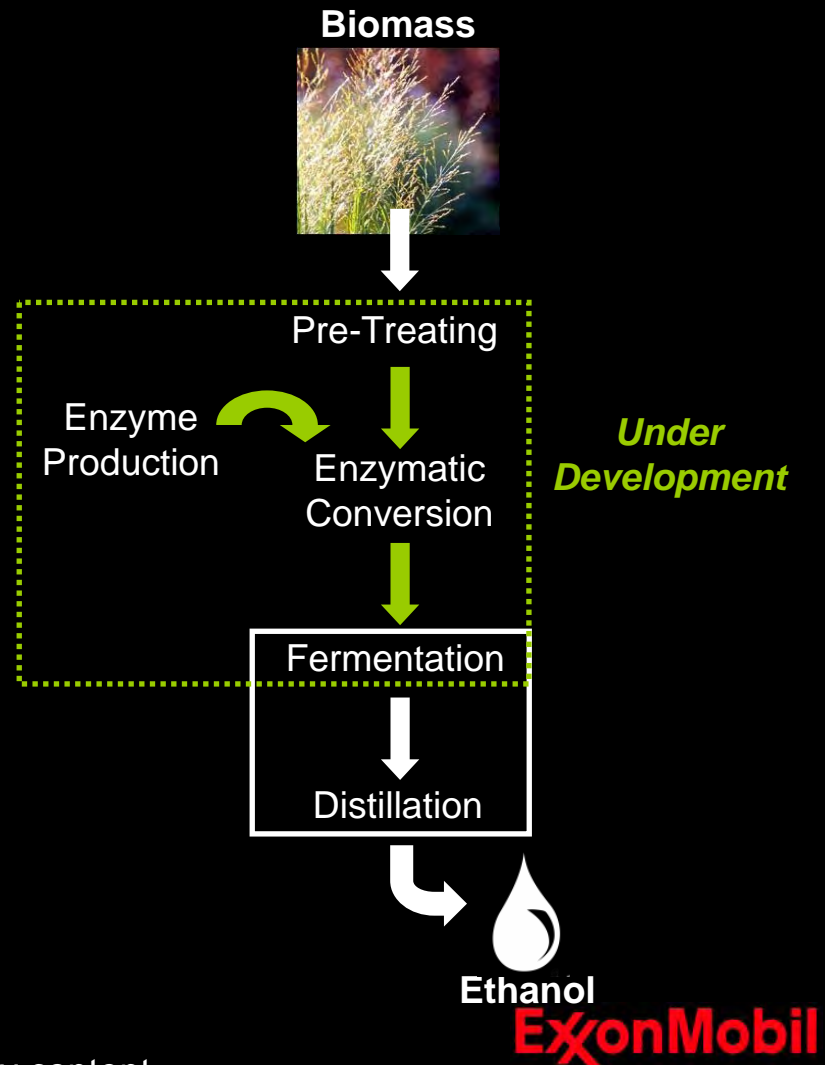


# Cellulosic Ethanol - Potential

## Yield and Cost

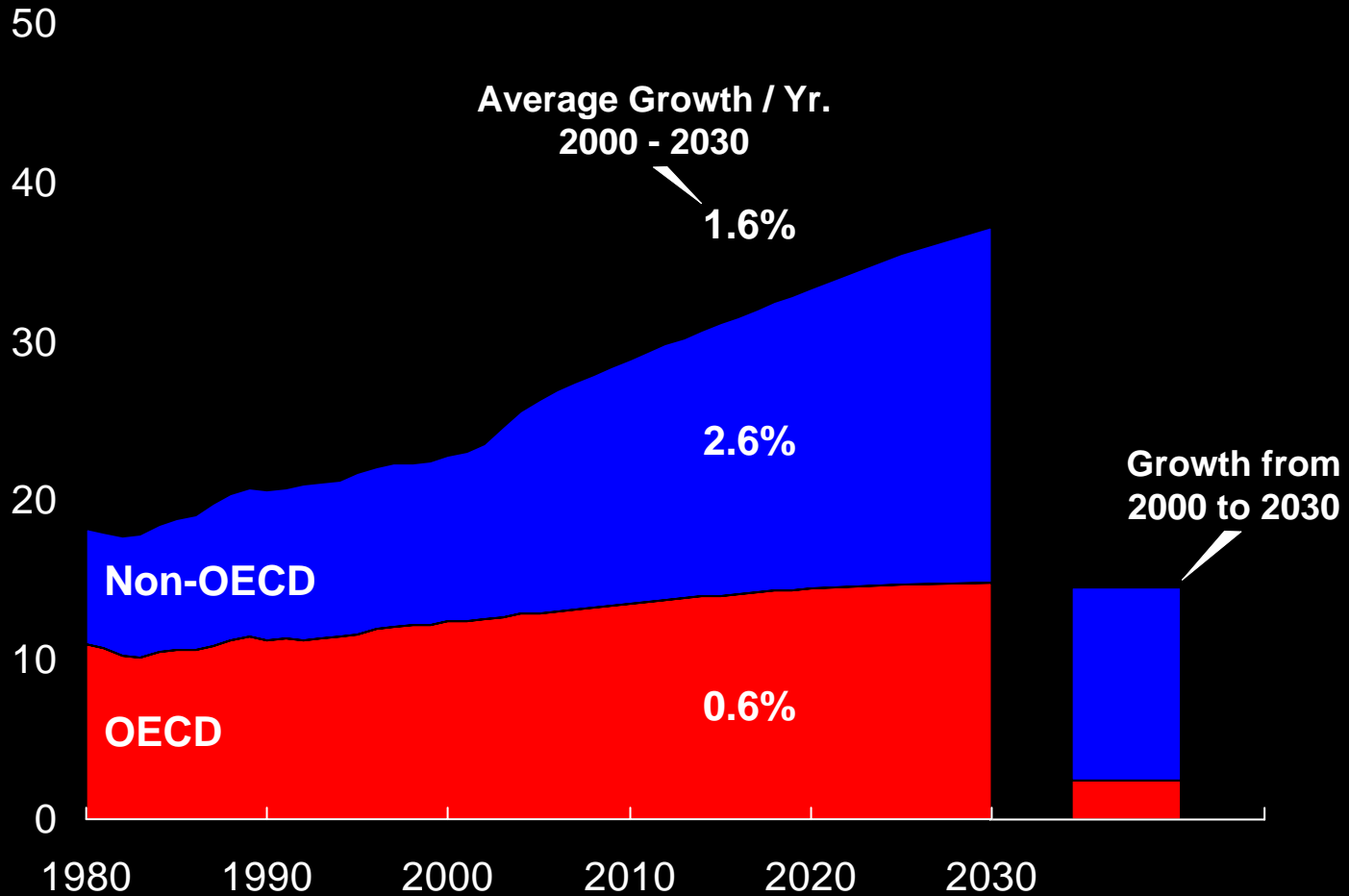


## Process Complexity



# Global CO<sub>2</sub> Emissions

Annual CO<sub>2</sub> (Billion Tonnes)

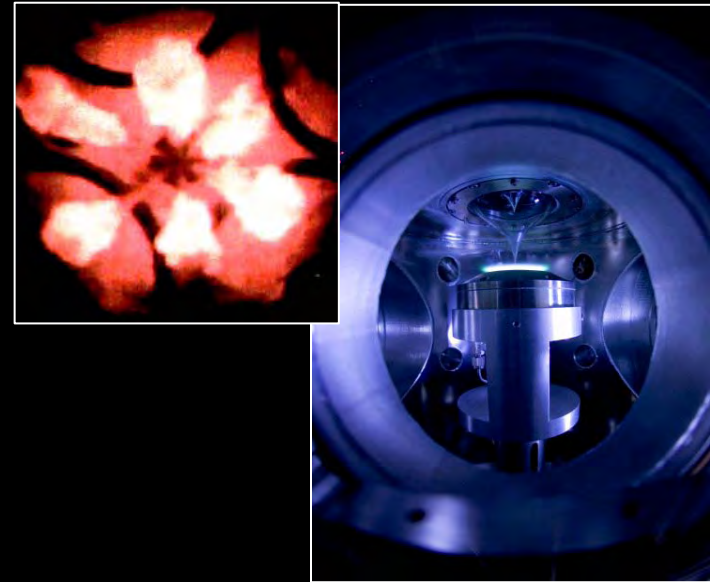


# Technology Critical for Reducing CO<sub>2</sub>

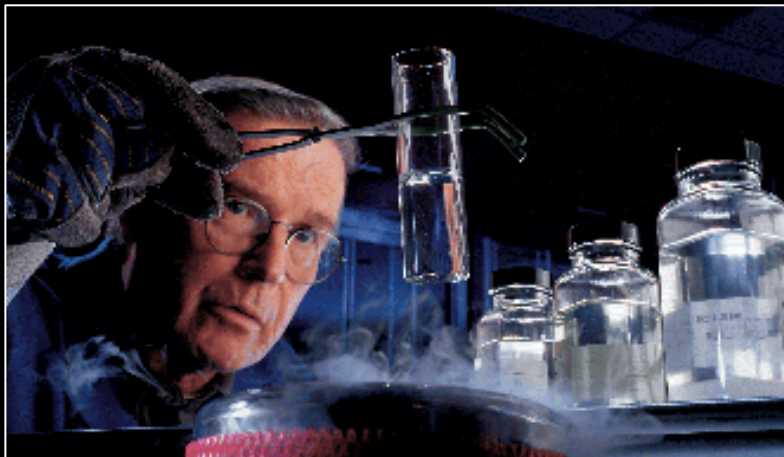
## Vehicle Advancements



## Combustion



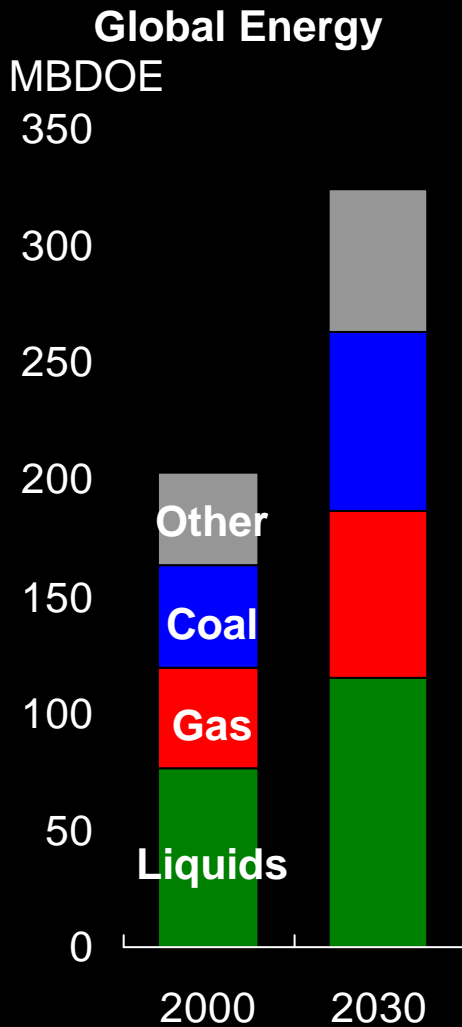
## Fuels



[gcep.stanford.edu](http://gcep.stanford.edu)

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# Conclusion



- **Global energy demand will increase about 60% versus 2000**
  - Driven by population growth and economic progress
- **Liquids, gas and coal remain predominant**
  - Fuel shares essentially unchanged
- **Energy resources are adequate to sustain growth**
  - Large scale investments required in a timely manner
- **Technology remains vital to meeting energy challenges**
  - Increase energy efficiency and mitigate CO<sub>2</sub> emissions
  - Expand available energy resources
- **Policy makers need to act for the long-term**

# ***The Outlook for Energy***

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***For more information regarding ExxonMobil's Energy Outlook  
please visit the link below:***

**[www.exxonmobil.com/energyoutlook](http://www.exxonmobil.com/energyoutlook)**

