

# BP Statistical Review of World Energy

## June 2009



[bp.com/statisticalreview](http://bp.com/statisticalreview)

## Volatility and Structural Change

June 10<sup>th</sup>, 2009



# Outline

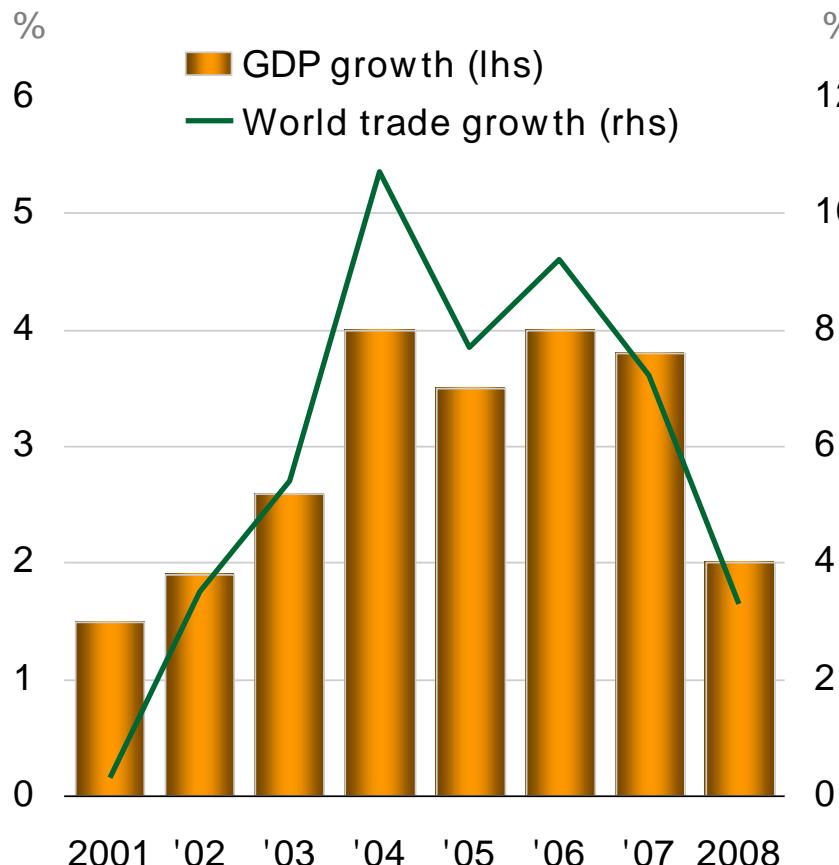
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- Introduction
- Volatility and Structural Change
- Fuel by Fuel
- Conclusion

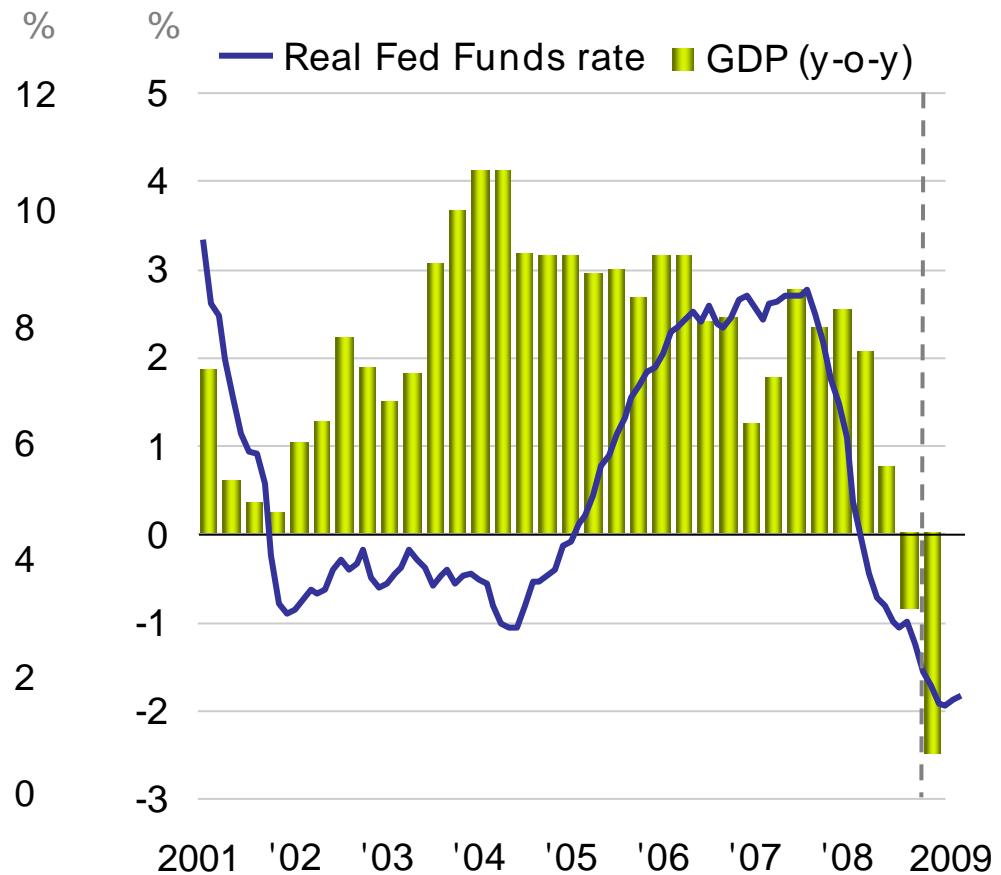


# The Economy

Growth in global GDP and trade



US real policy rates and GDP growth



Source: Includes data from IMF World Economic Outlook and Oxford Economics

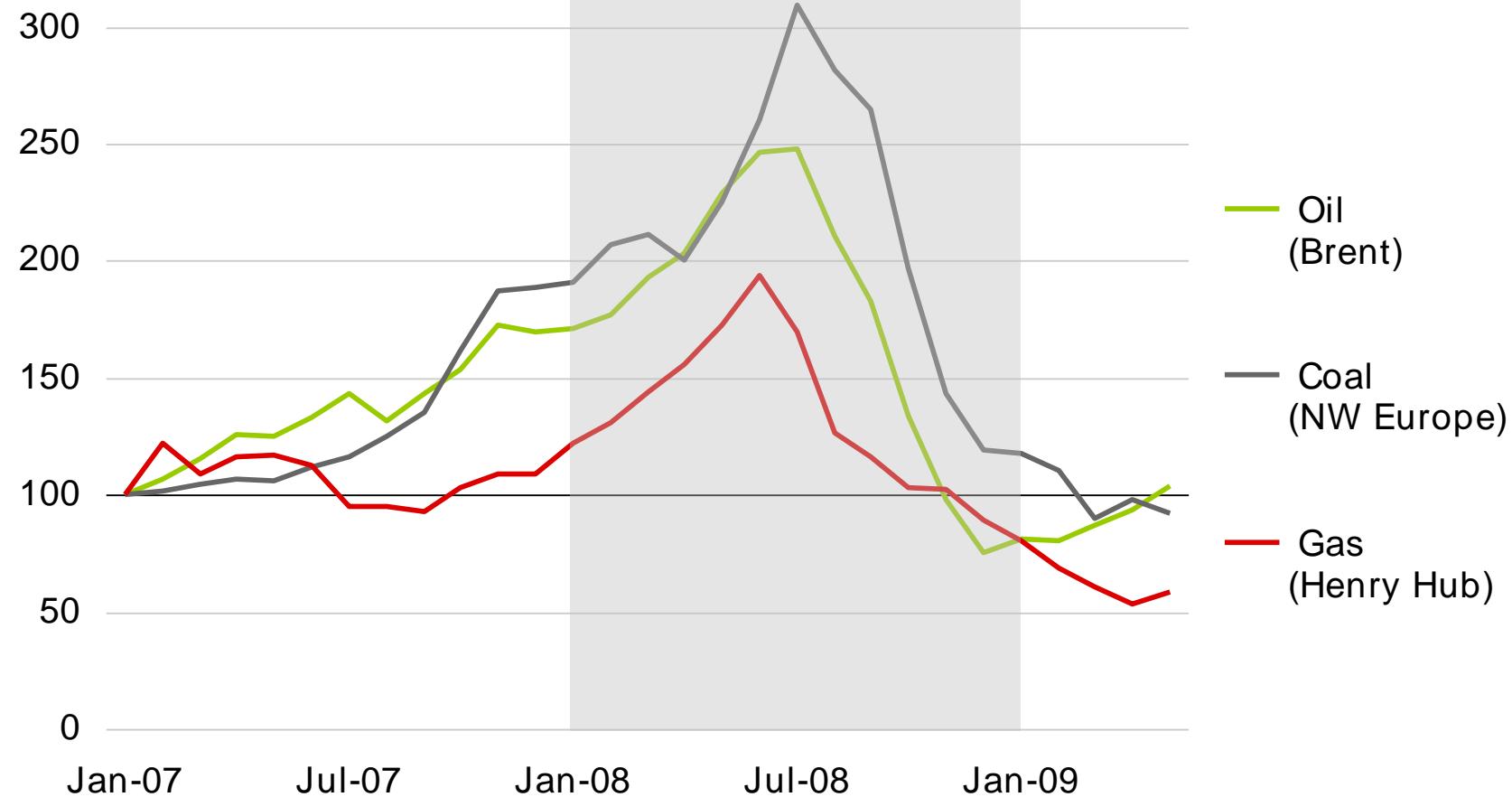
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# Energy Prices

Index: Jan-07=100

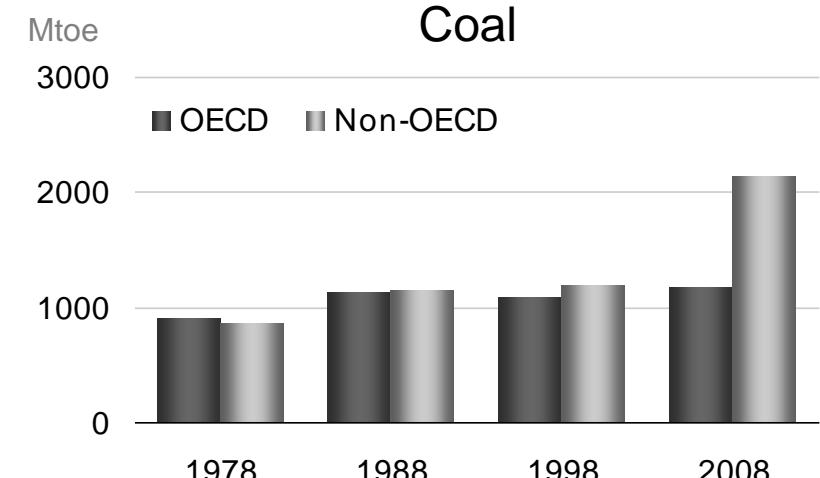
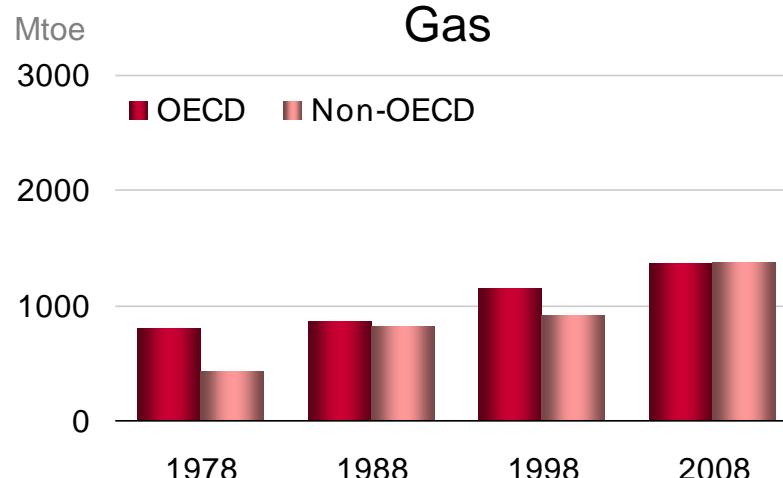
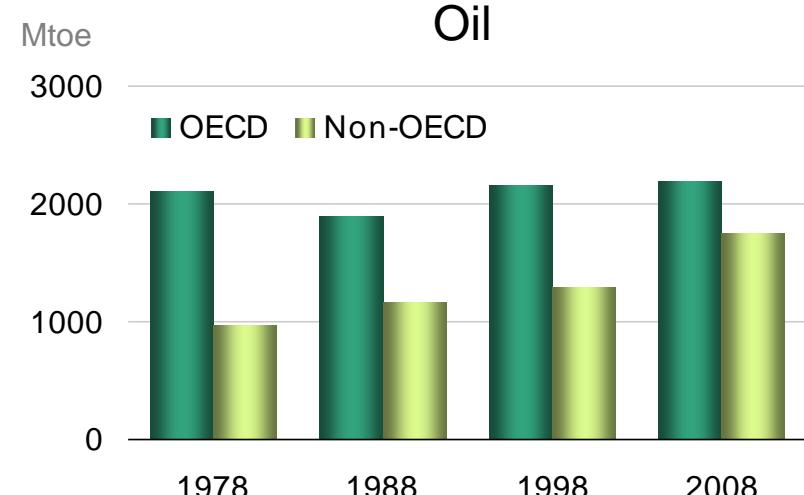
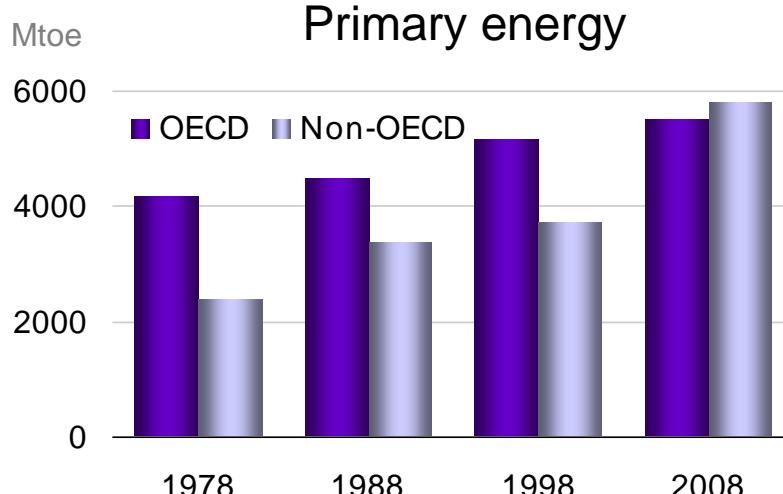


Source: Includes data from Platts and McCloskey

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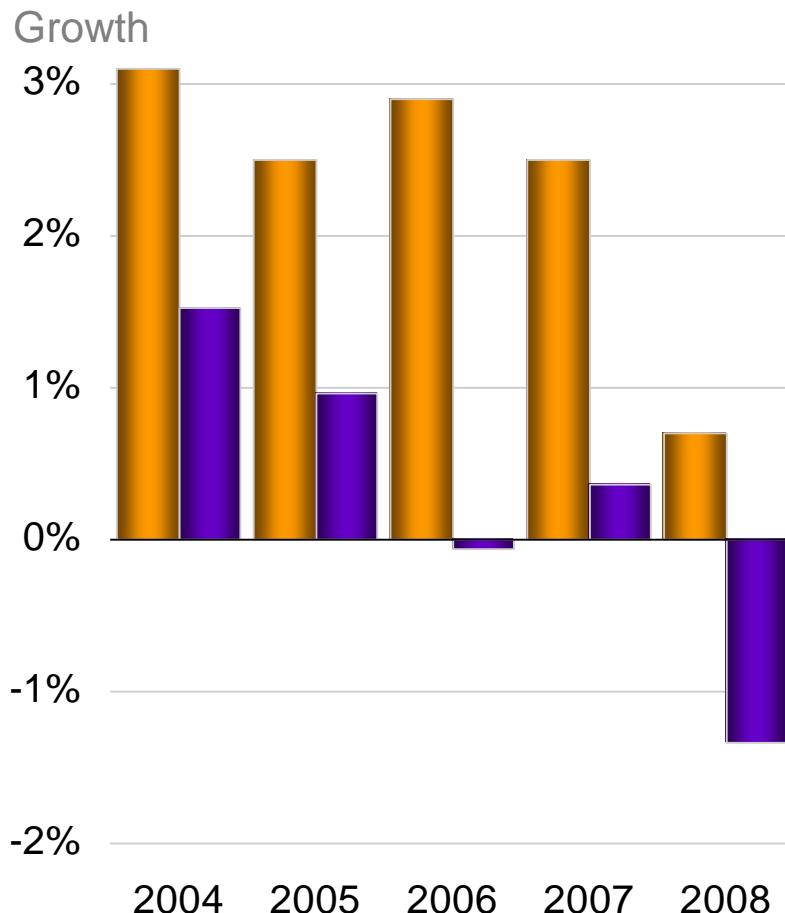
# OECD and Non-OECD Energy Consumption



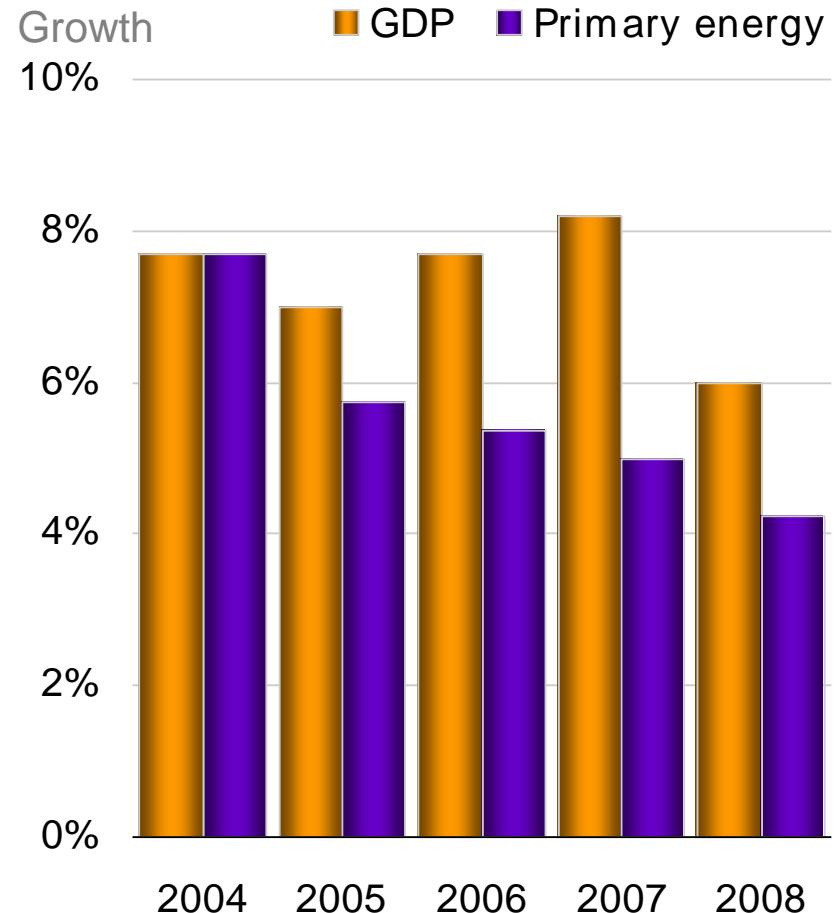


# GDP and Primary Energy Growth

## OECD



## Non-OECD



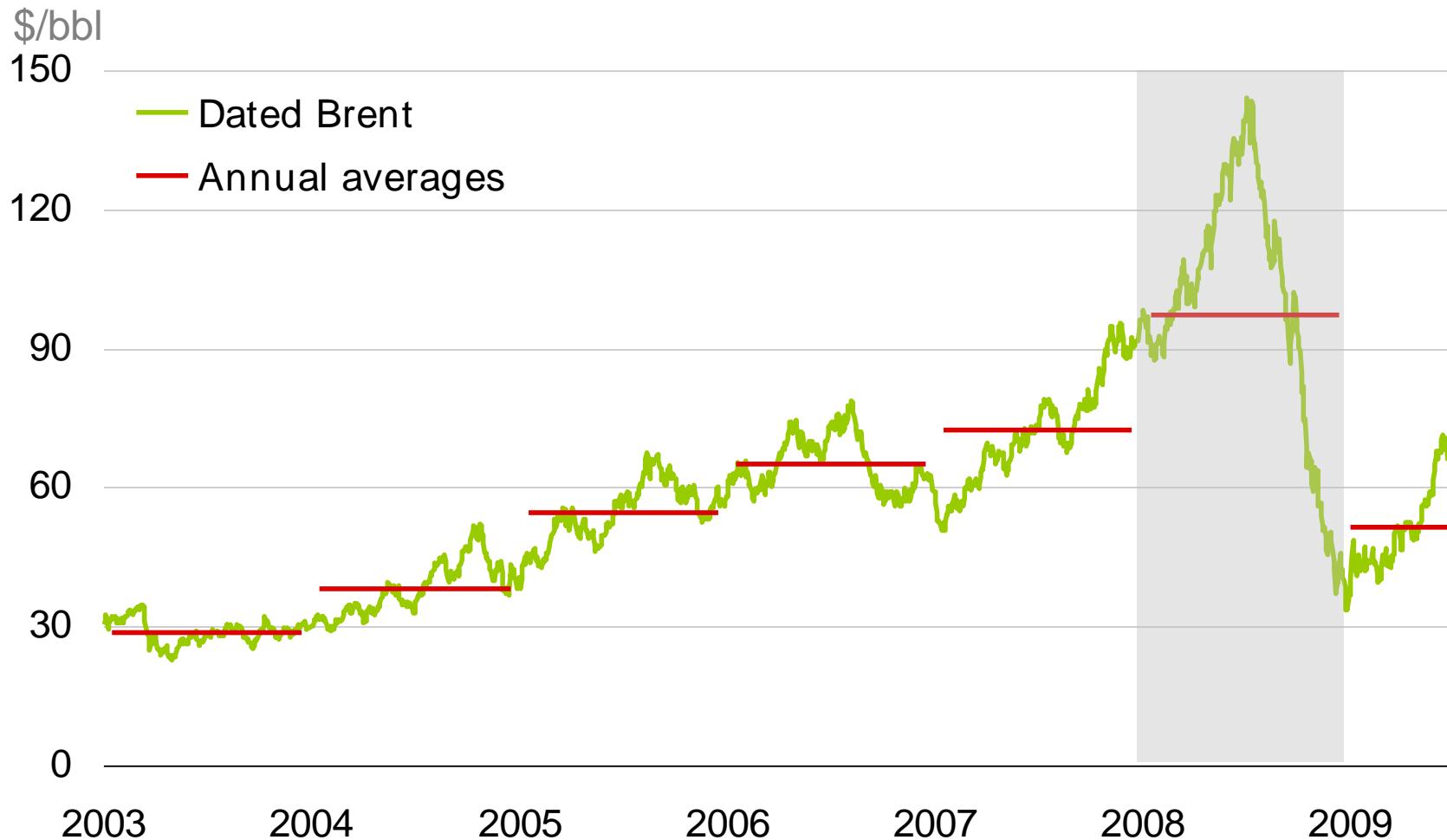
Source: Includes data from Oxford Economics

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# Crude Prices: What Happened?



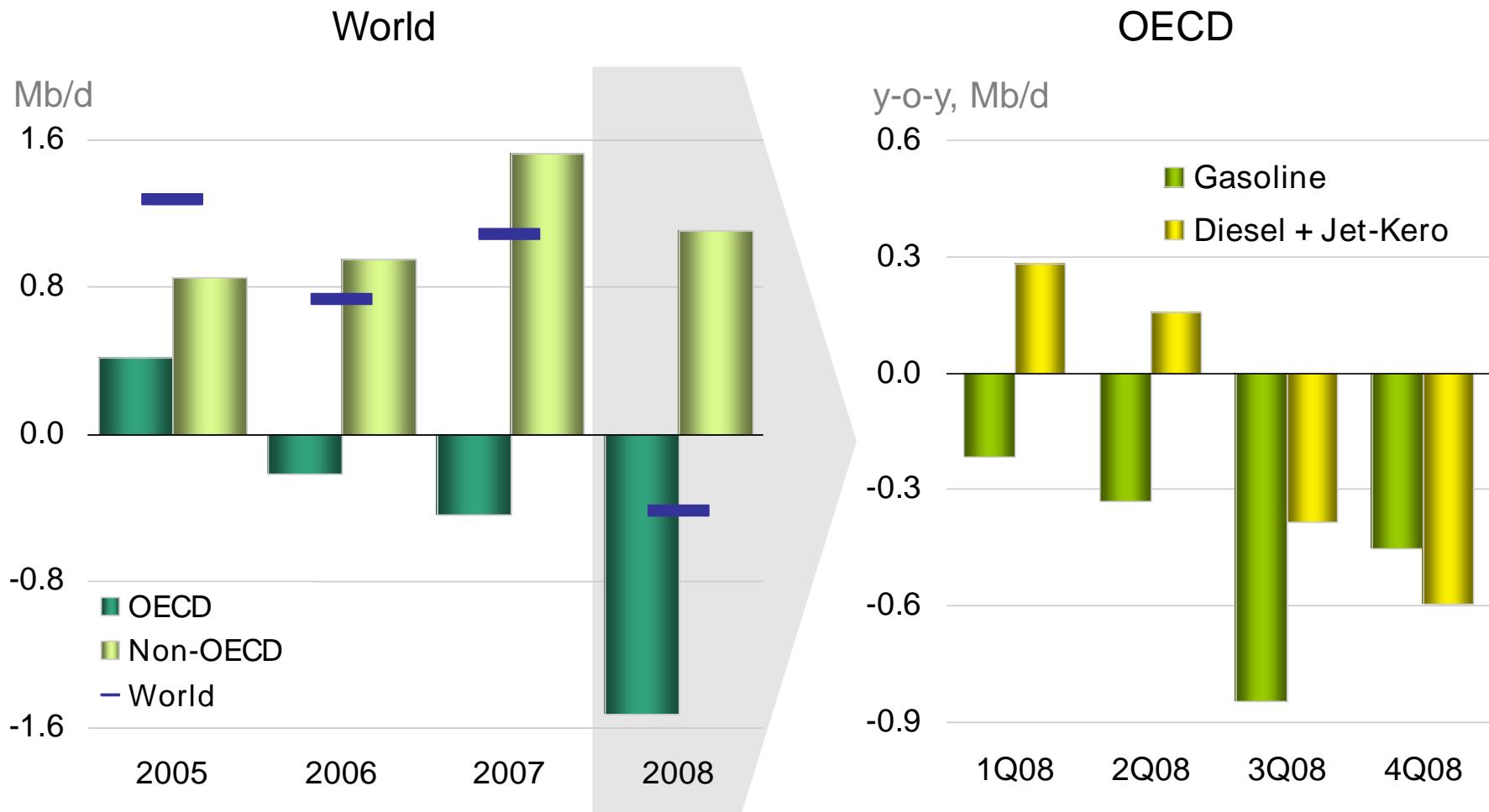
Source: Includes data from Platts

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# Oil Consumption Growth



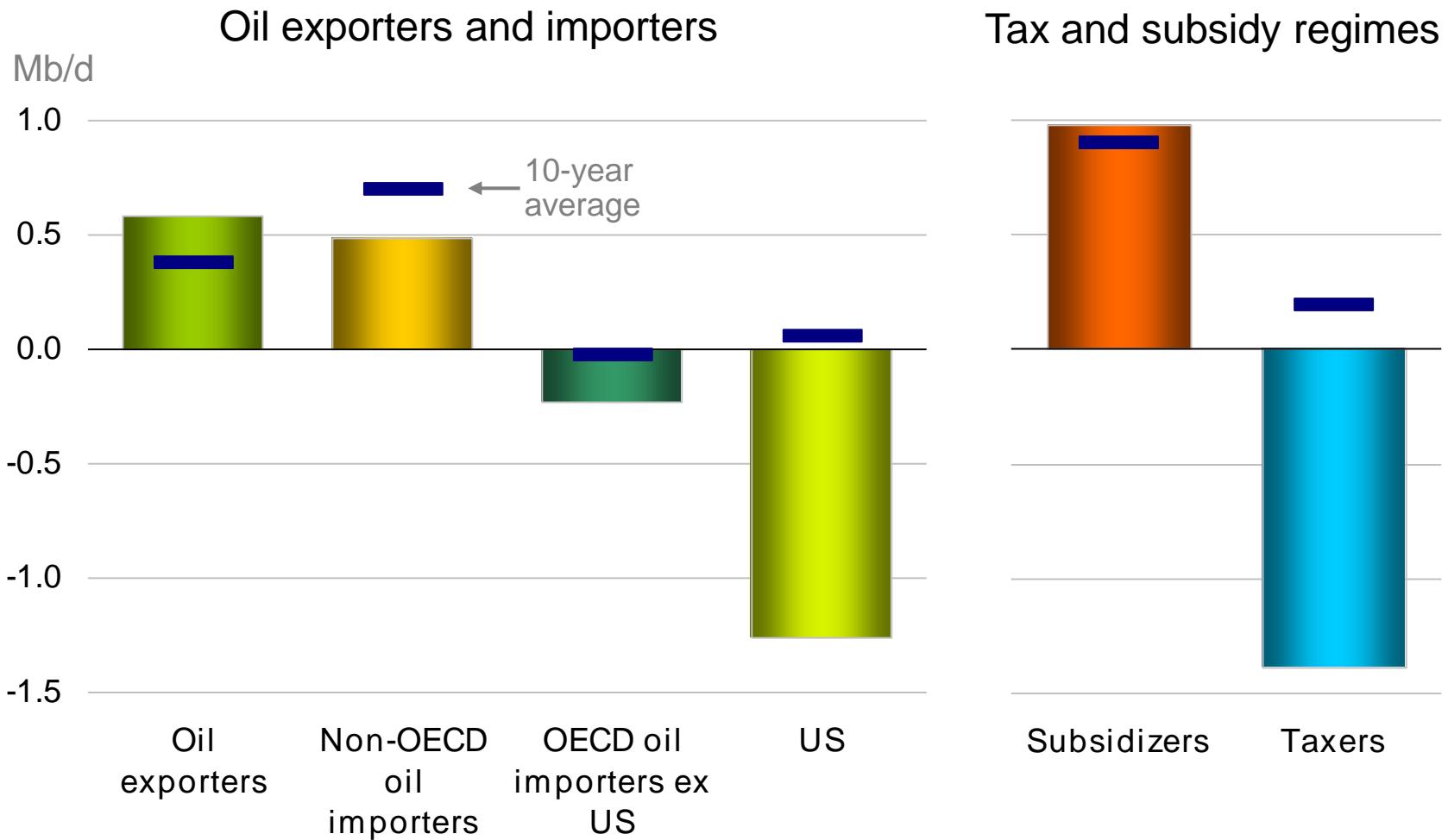
Source: Includes data from IEA

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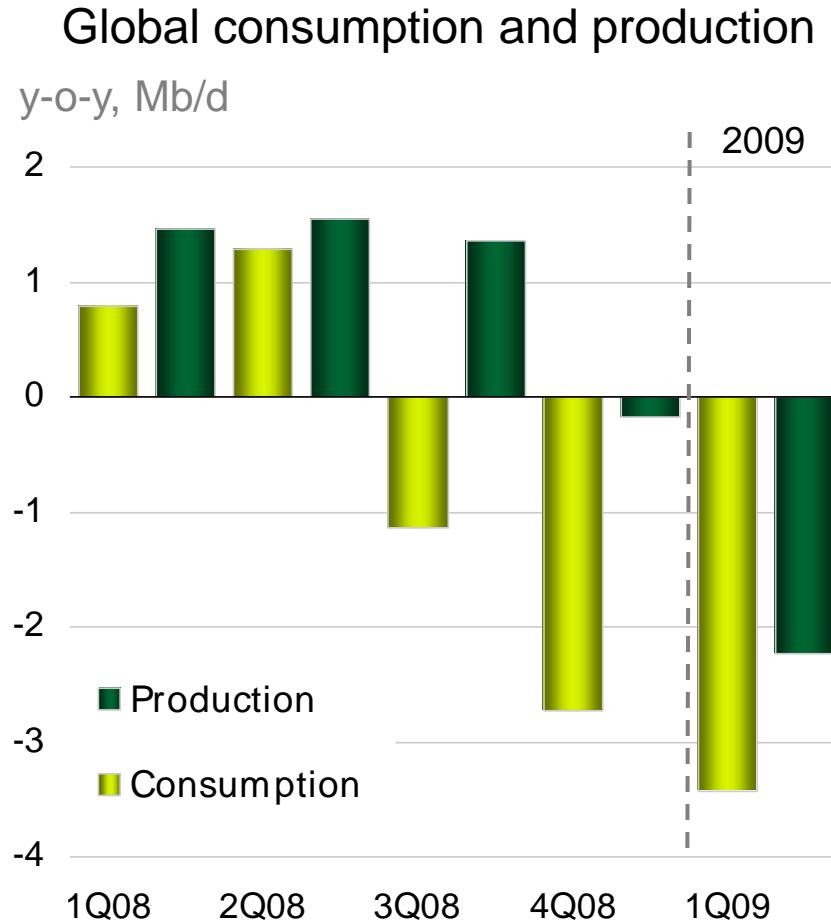


# Oil Consumption Growth in 2008





# OPEC Adjusts to Falling Consumption



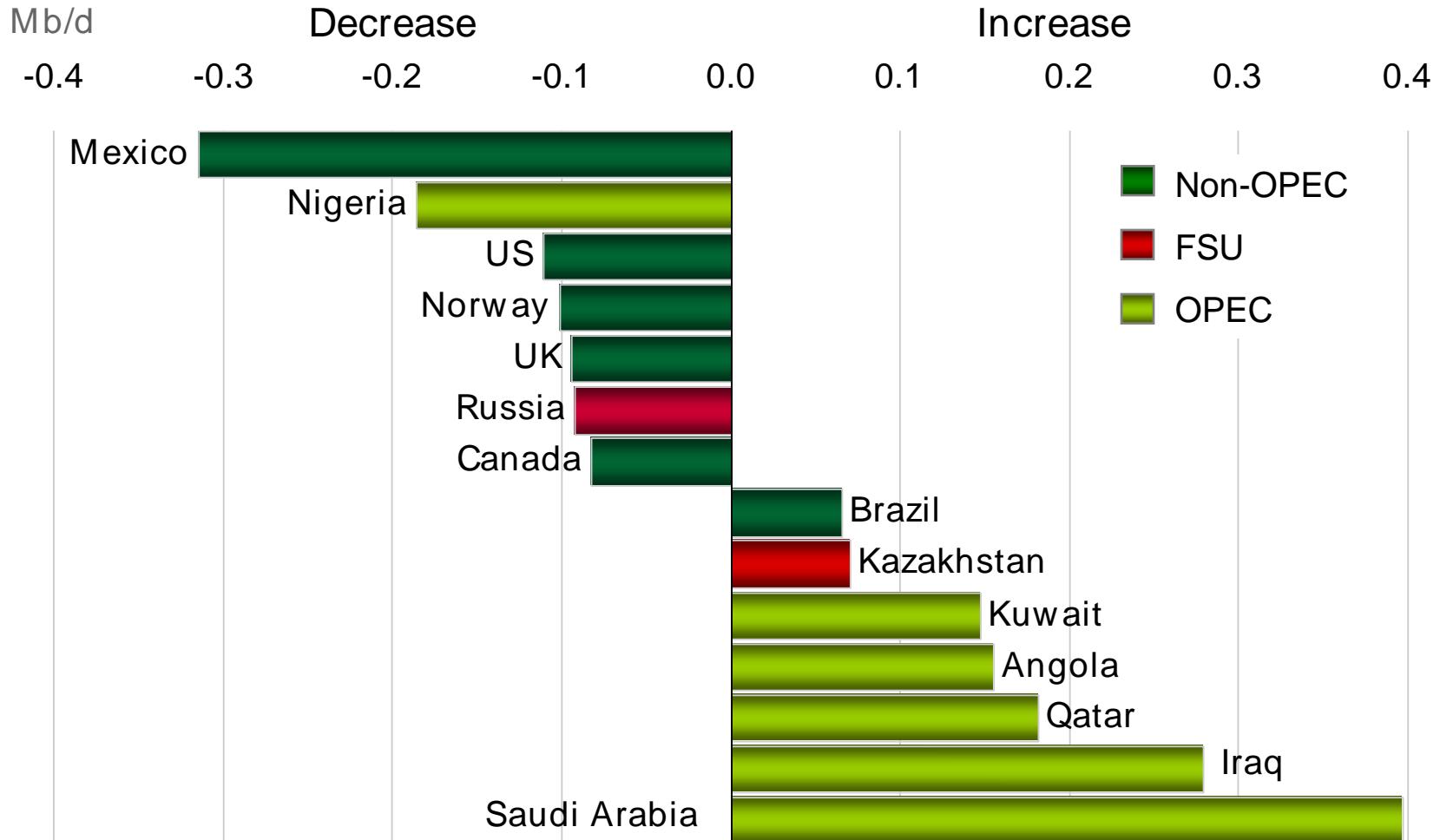
Source: Includes data from US DOE

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# Main Oil Production Changes

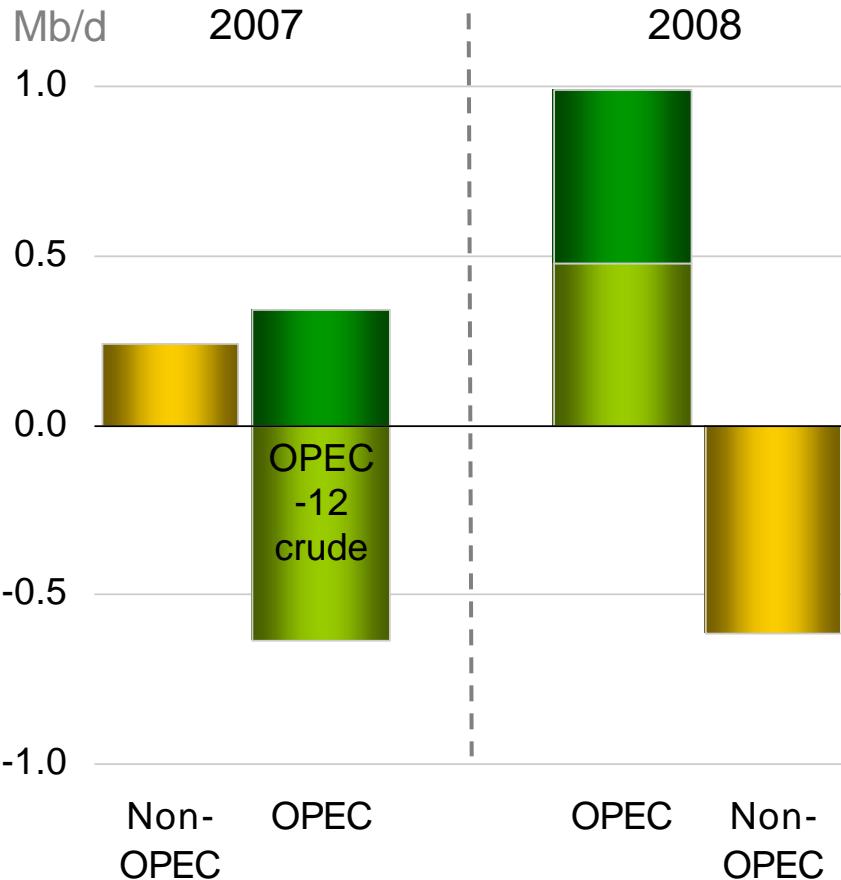


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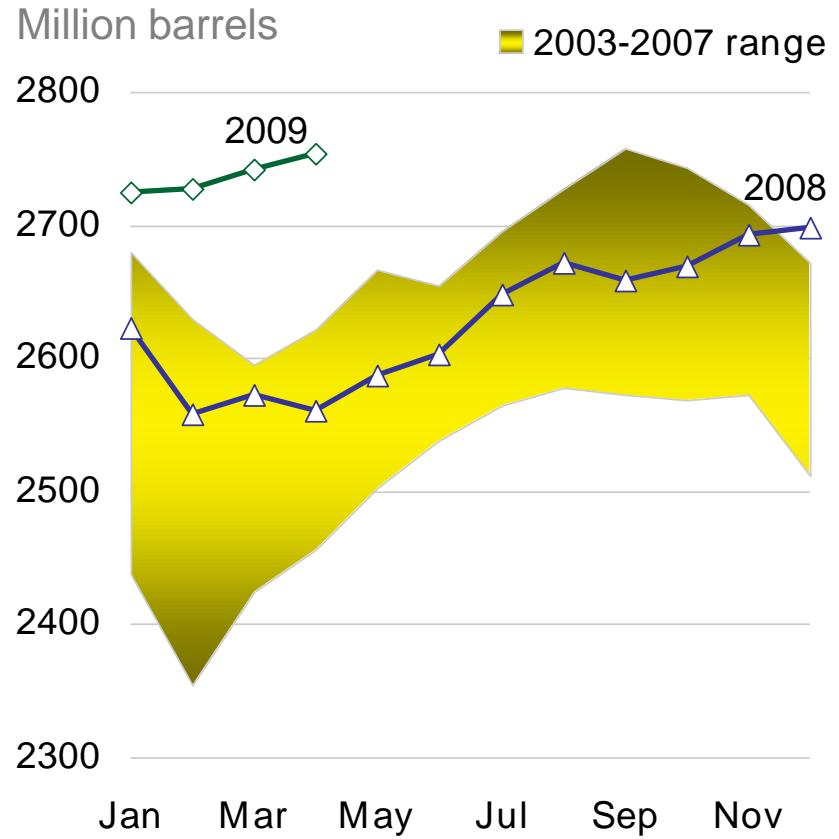


# Changes in Production and Inventories

Global oil production changes



OECD commercial inventories



Source: Includes data from IEA

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# Non-OPEC ex FSU Oil Production

Mb/d

North America

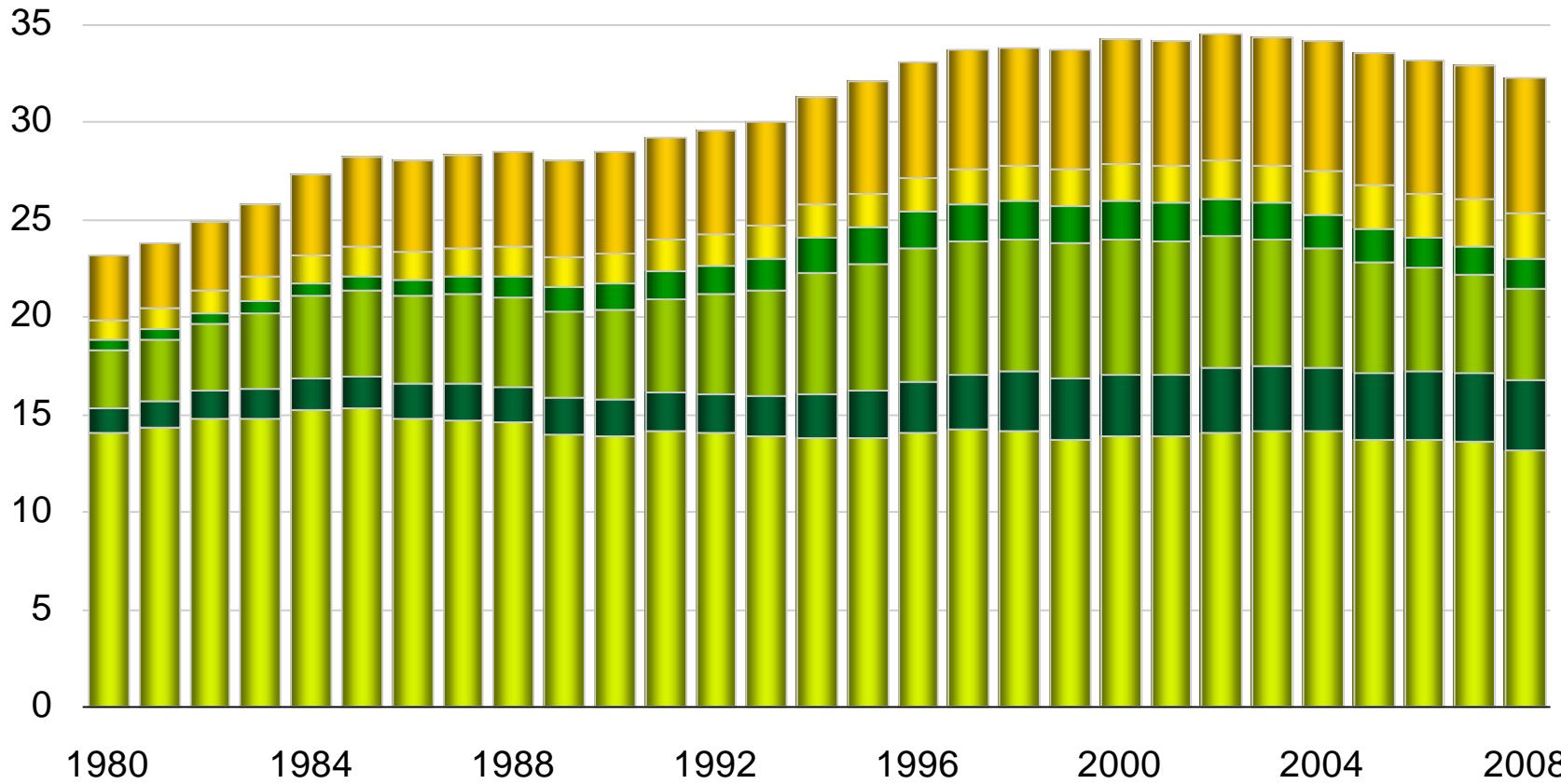
Middle East

S&C America

Africa

Europe

Asia Pacific



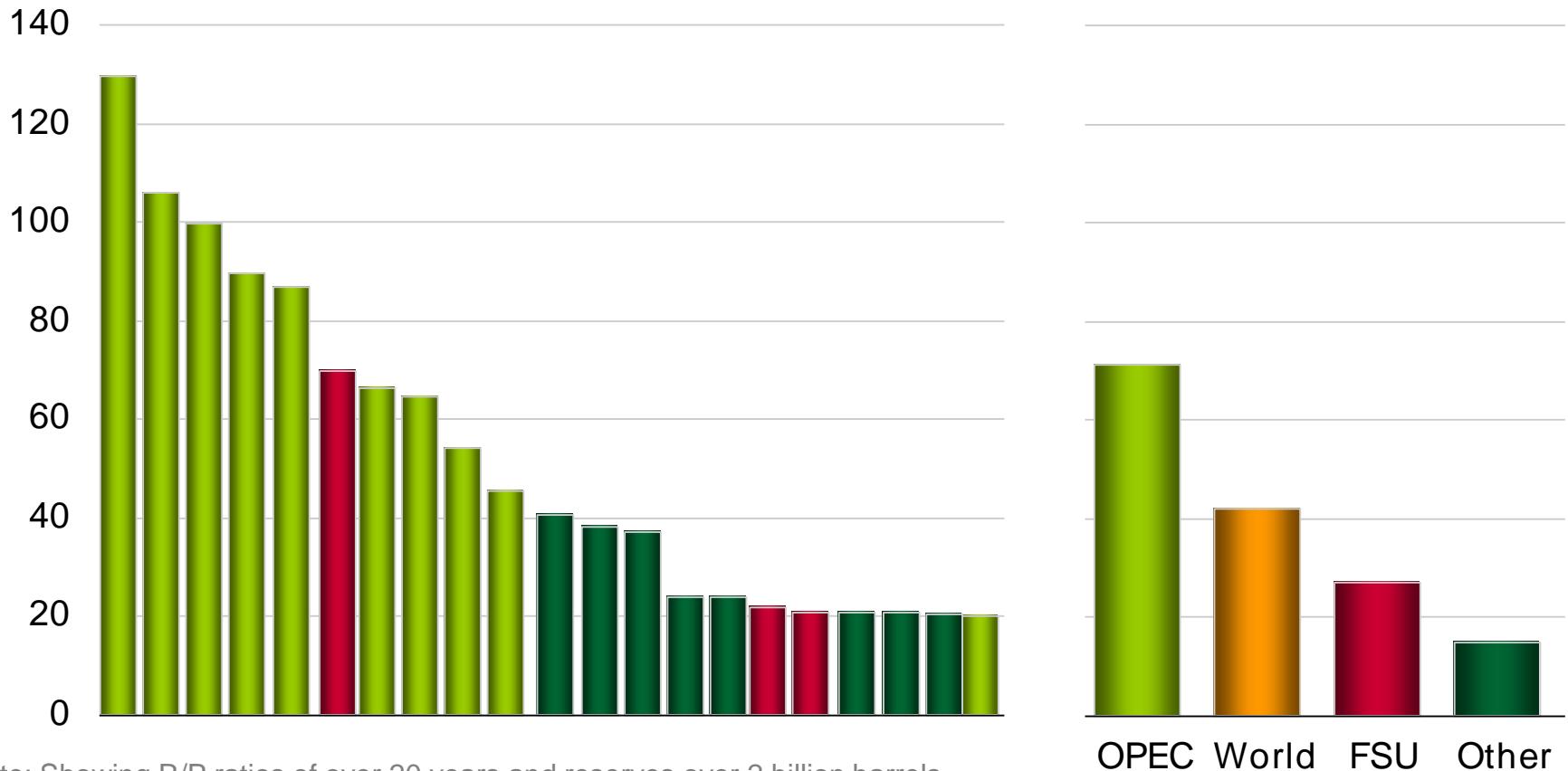
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# Reserves-to-Production Ratios

R/P (years)

■ OPEC ■ FSU ■ Other

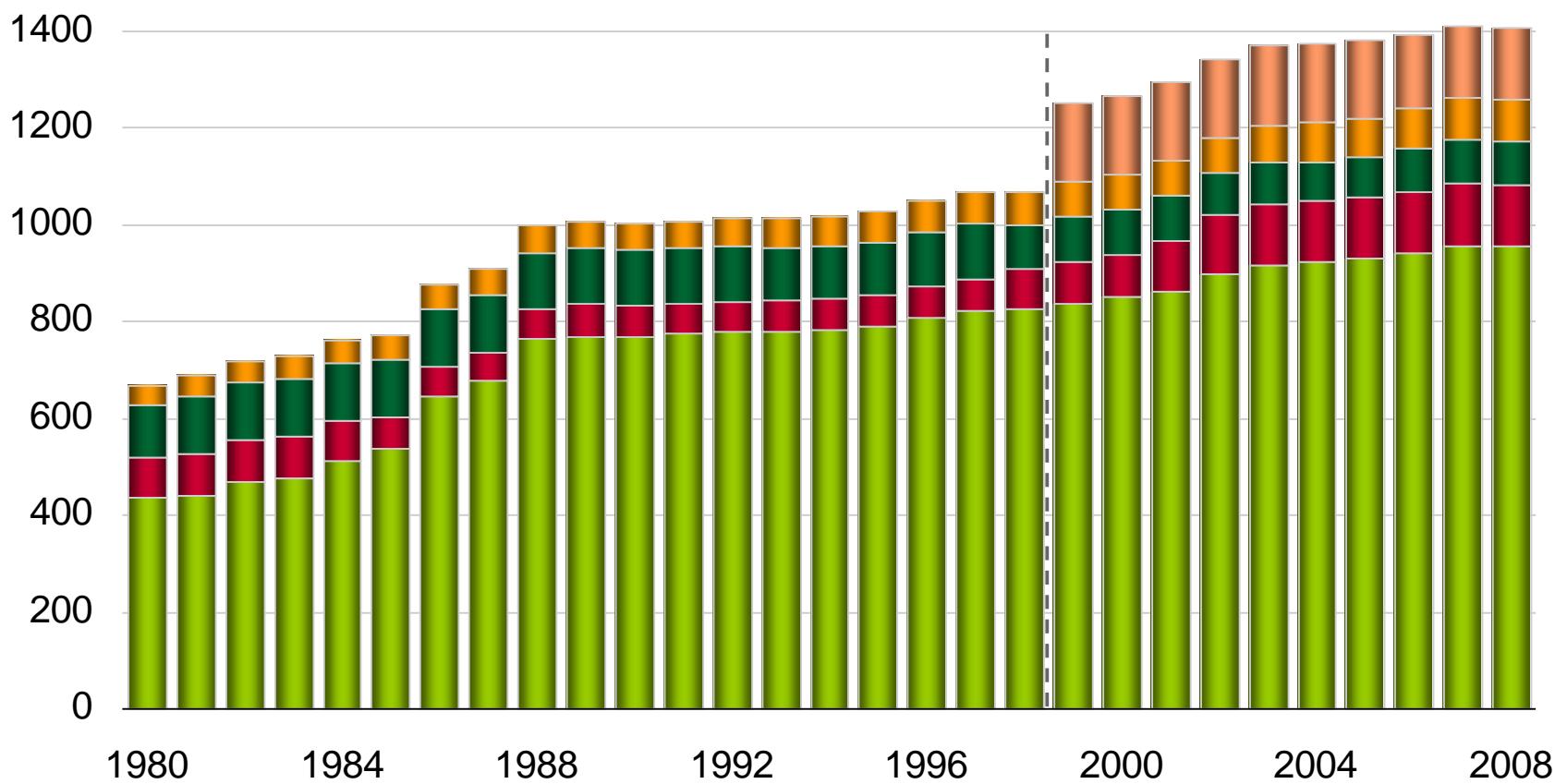


Note: Showing R/P ratios of over 20 years and reserves over 2 billion barrels.



# Global Oil Reserves

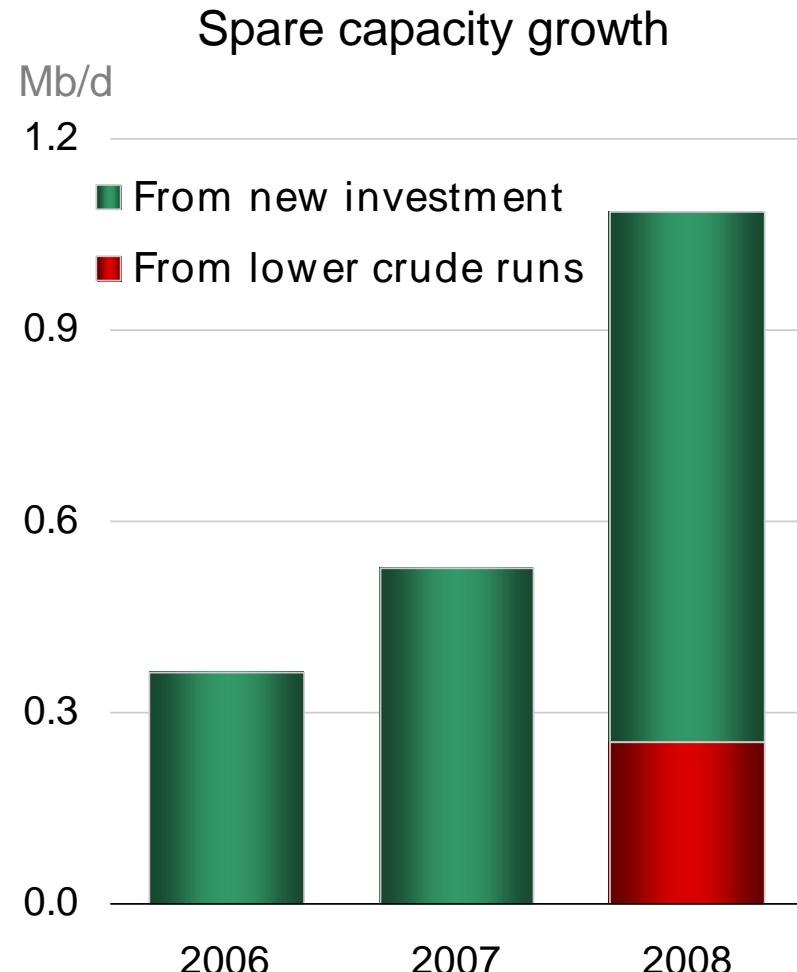
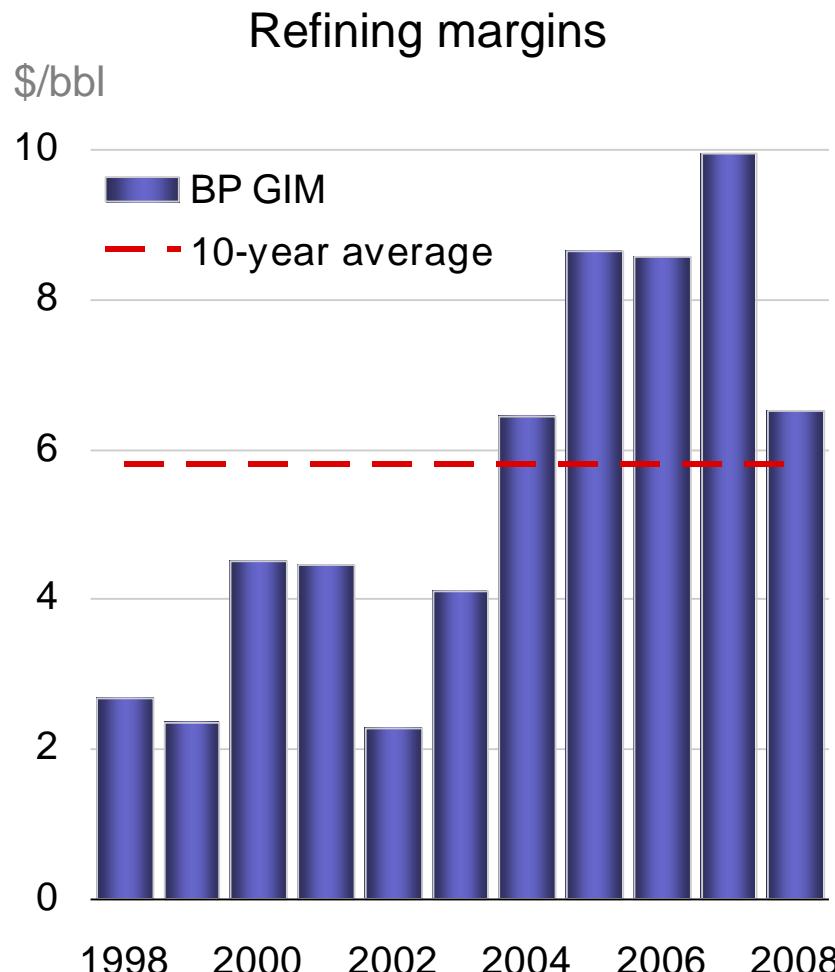
Bn bbls



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# Refining Margins and Spare Capacity



Source: Includes data from Parpinelli and Energy Security Analysis Inc.

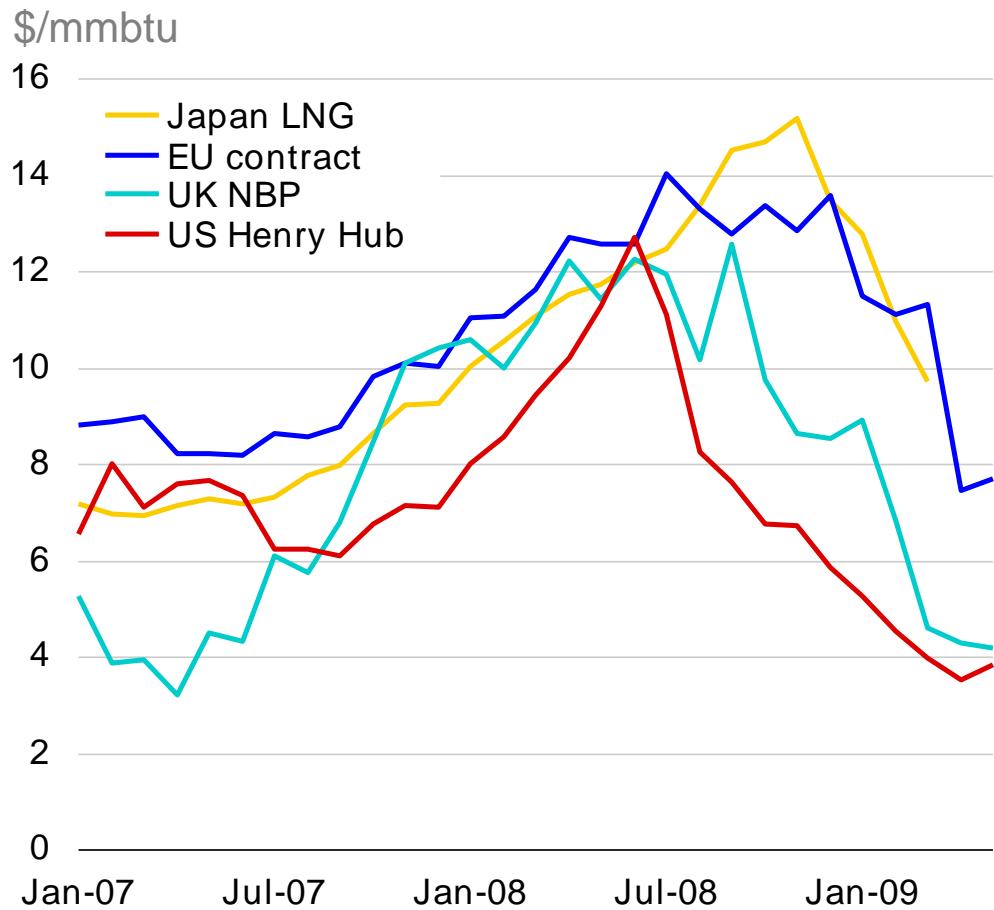
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# Natural Gas Market

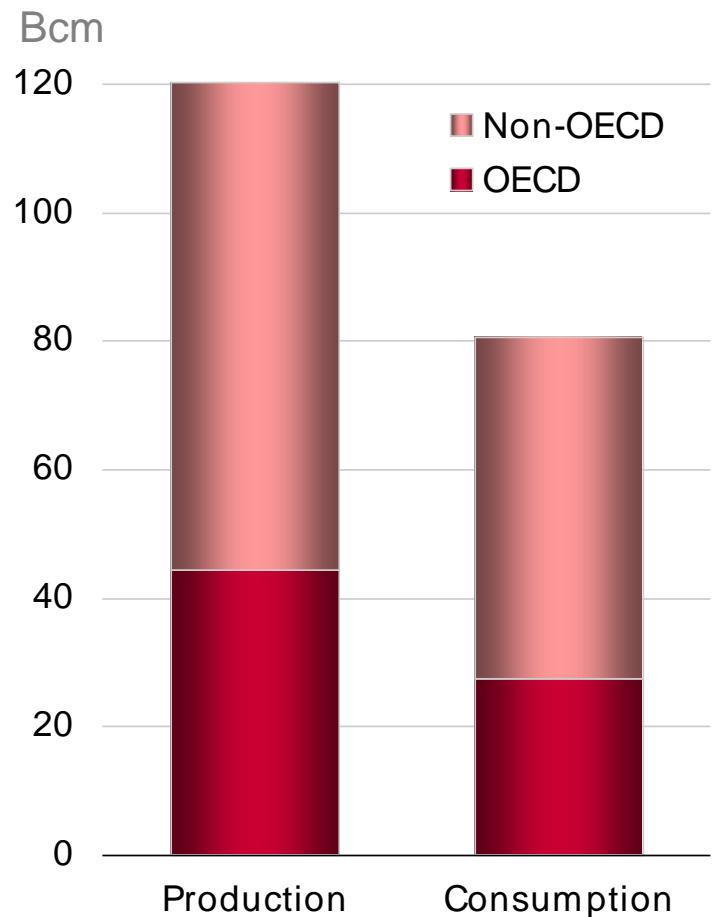
## Gas prices



Source: Includes data from Platts

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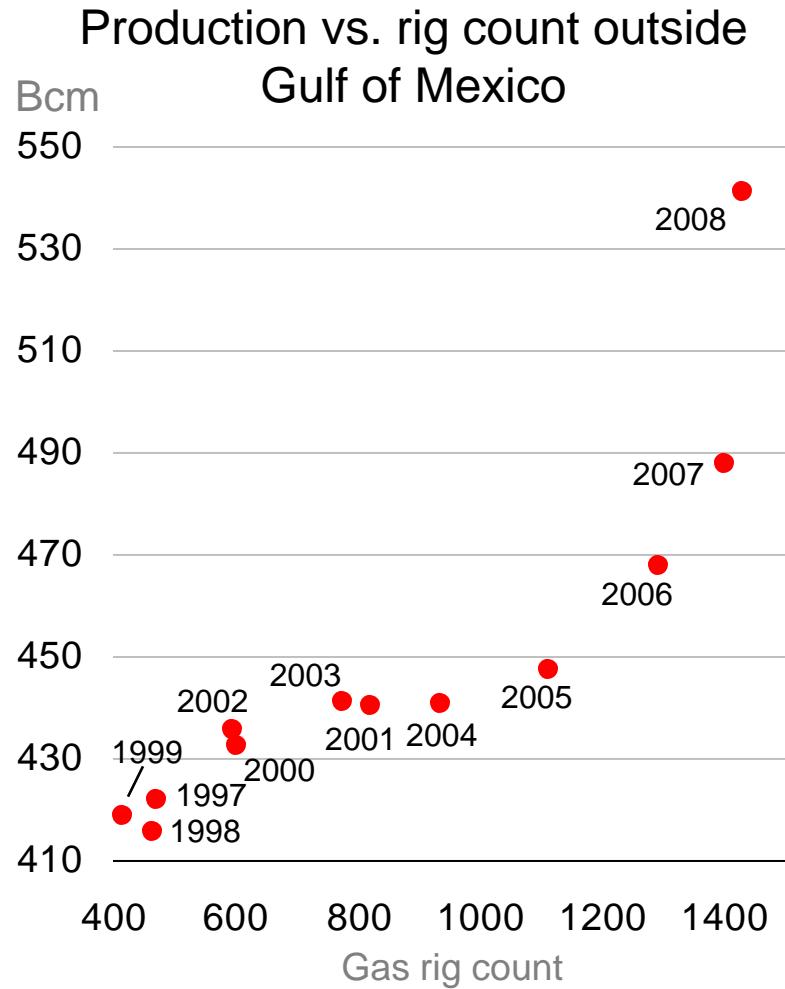
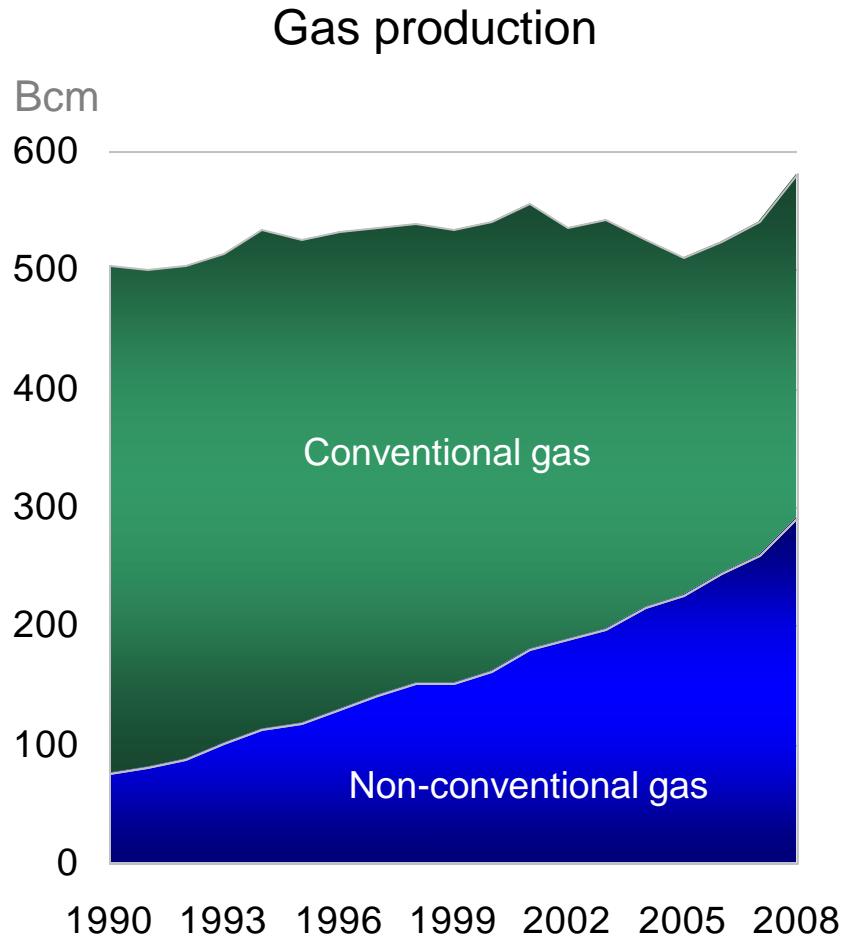
## Growth in 2008



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# US Gas Production



Sources: Includes data from US DOE and Baker Hughes

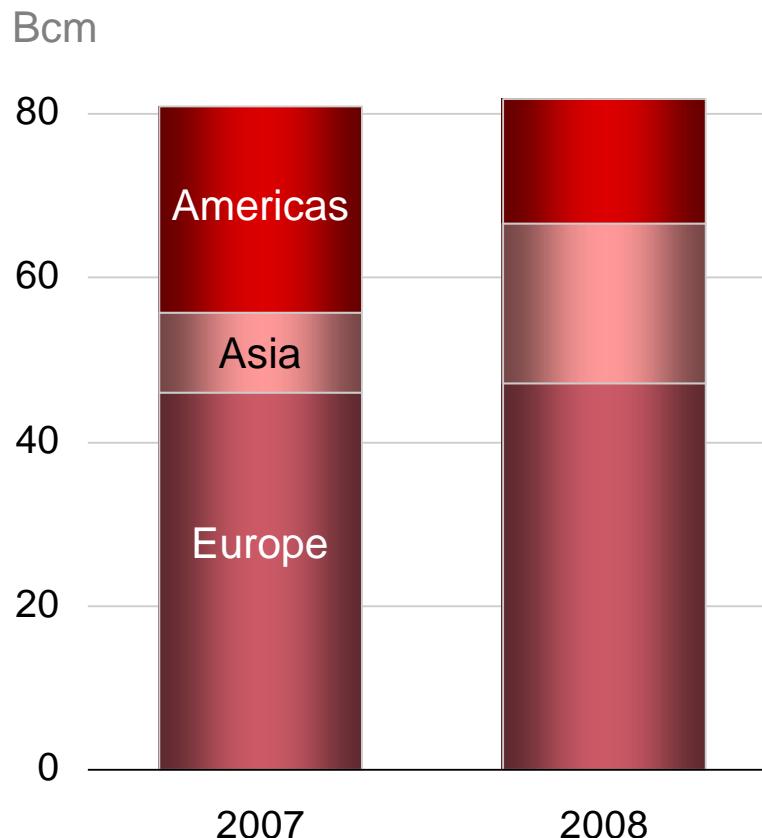
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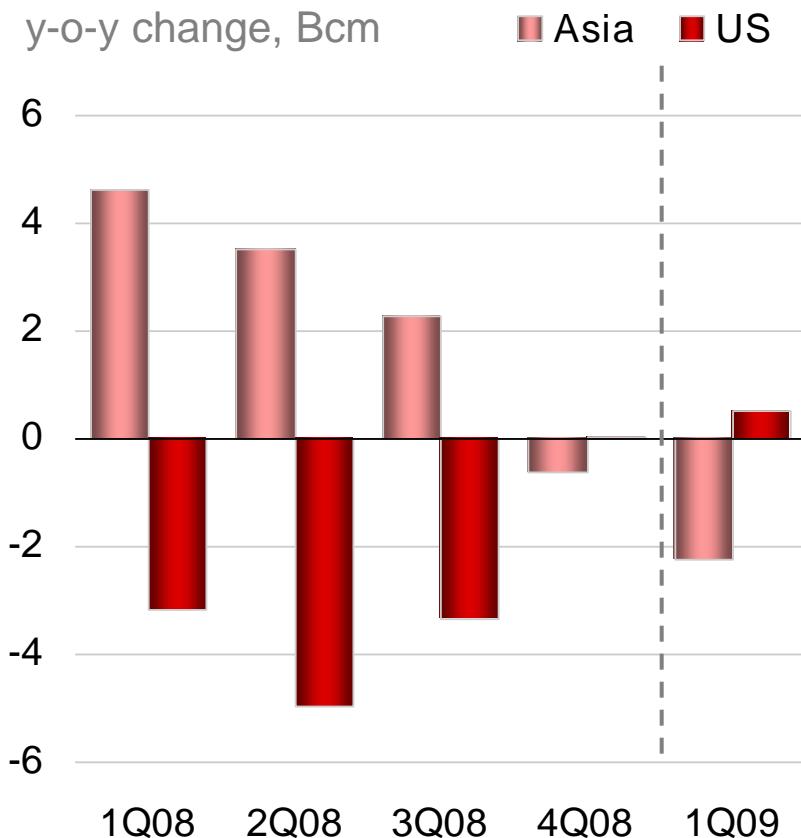


# Atlantic Basin LNG\*

By importer



Switching between markets



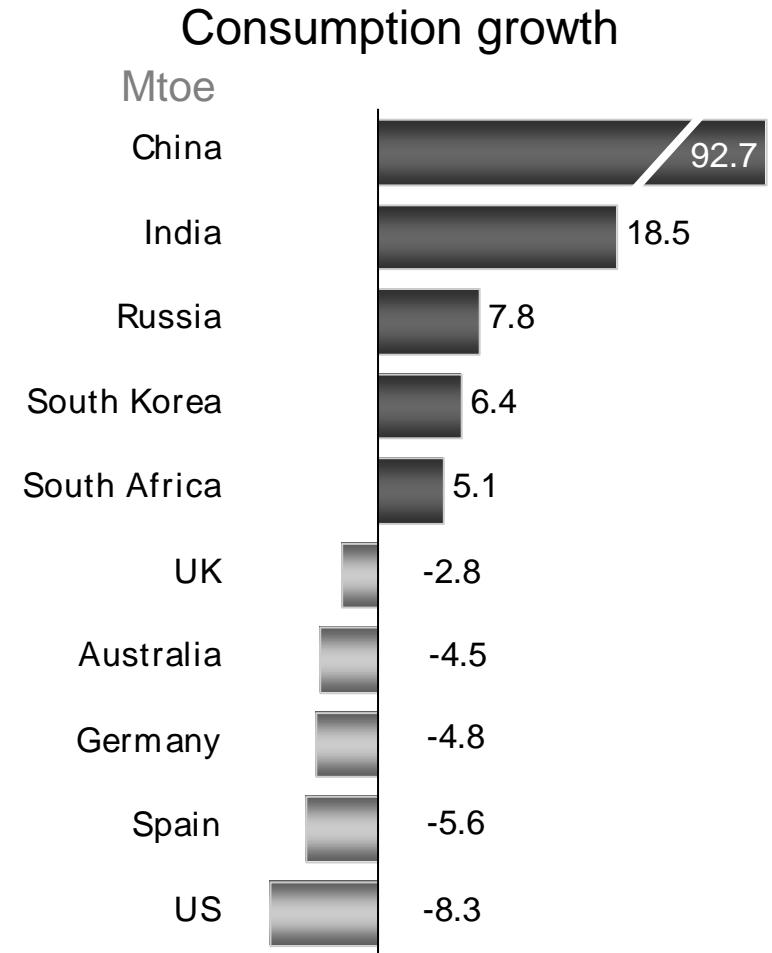
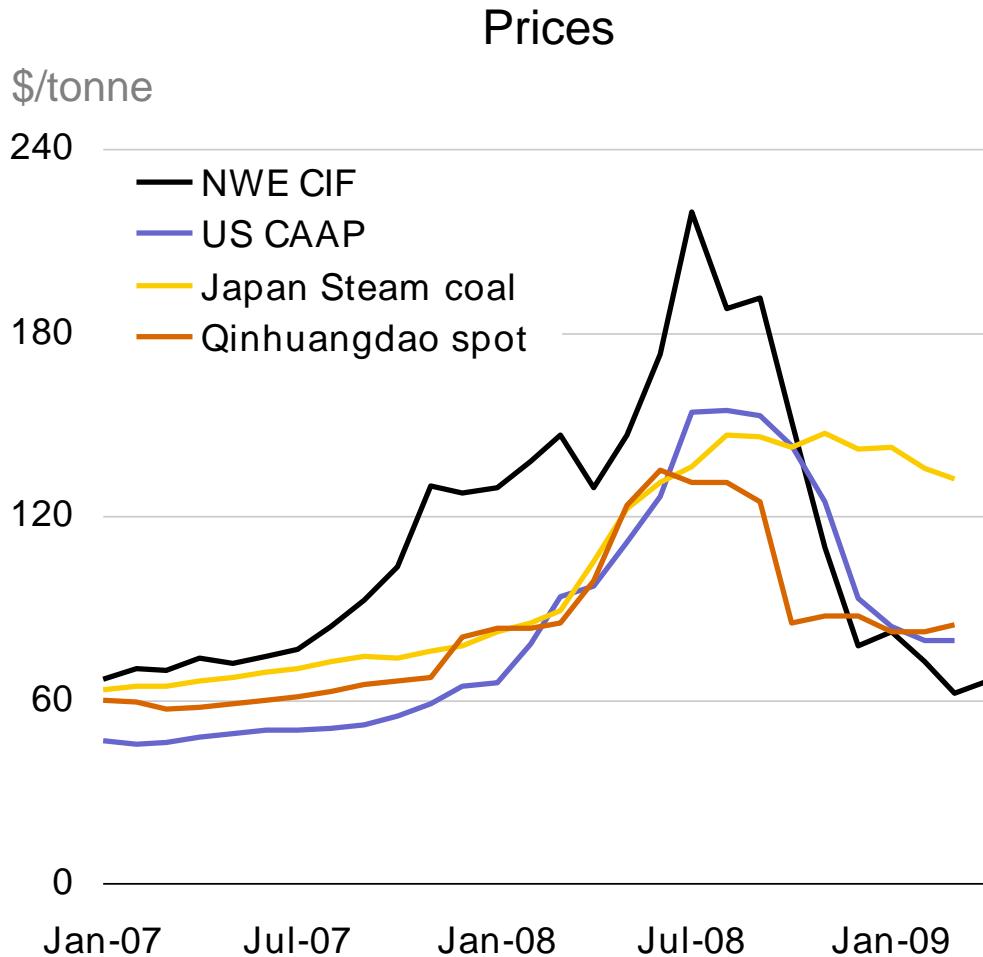
\* LNG from Algeria, Belgium, Egypt, Nigeria, Norway, Trinidad and Equatorial Guinea

Sources: Includes annual data from Ceditaz and quarterly figures from Waterborne LNG

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# Coal Prices and Consumption Growth



Sources: Includes data from McCloskey and Platts

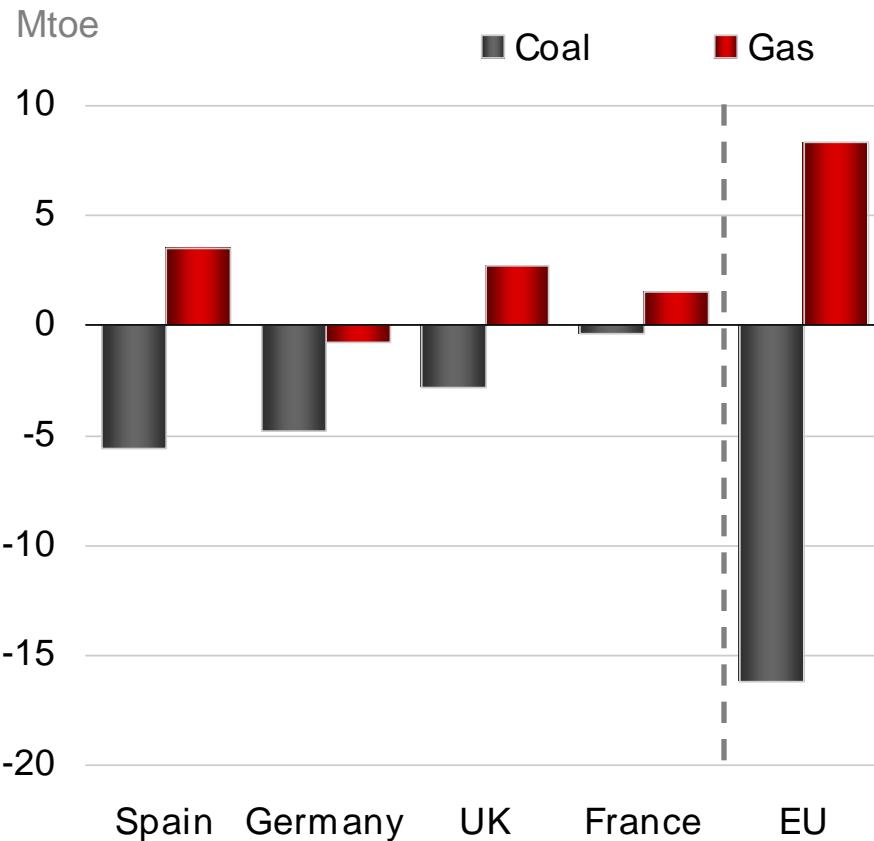
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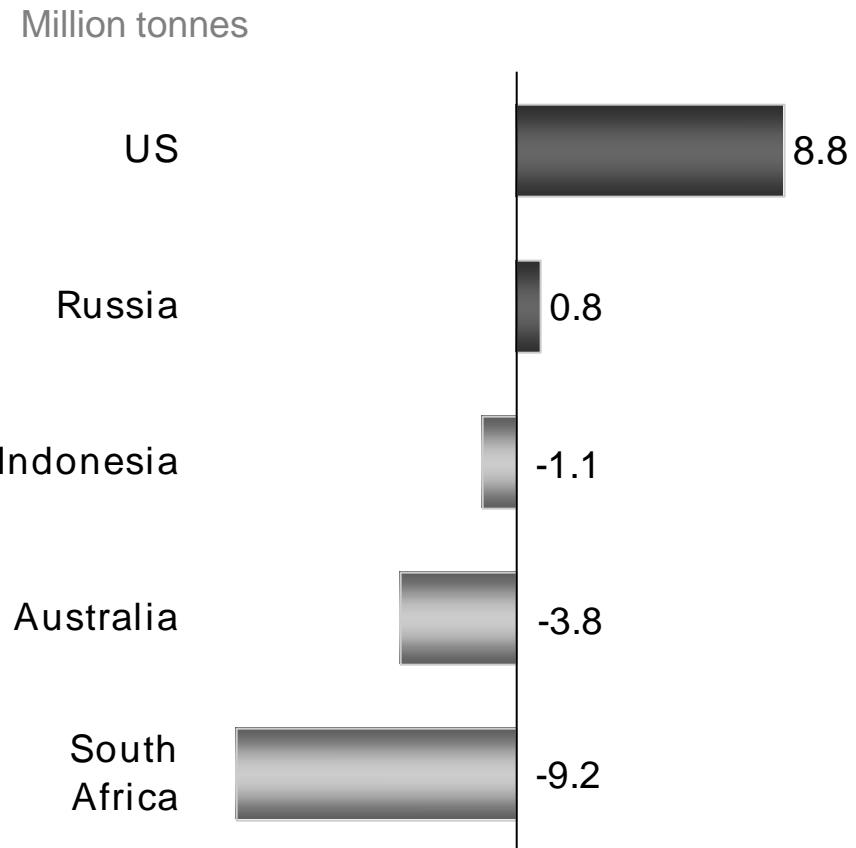


# Coal in the European Union

## Gas and coal consumption growth



## Changes in EU coal imports by source



Sources: Includes data from Eurostat

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# Global Ethanol Production

Mtoe

40

US

Brazil

ROW

30

20

10

0

2000

2001

2002

2003

2004

2005

2006

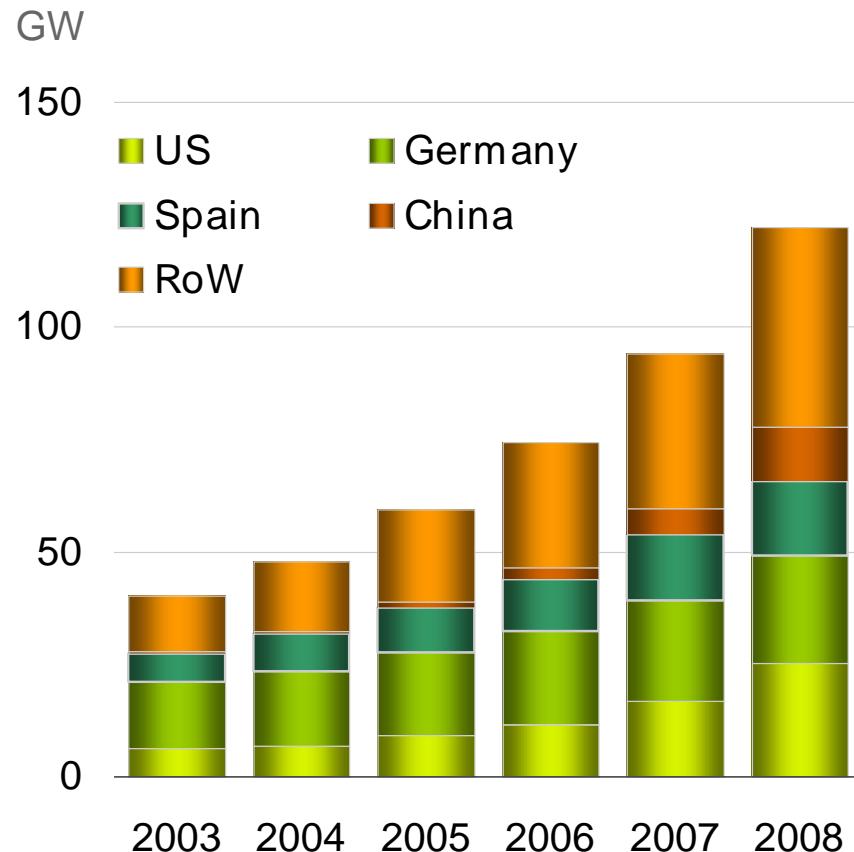
2007

2008

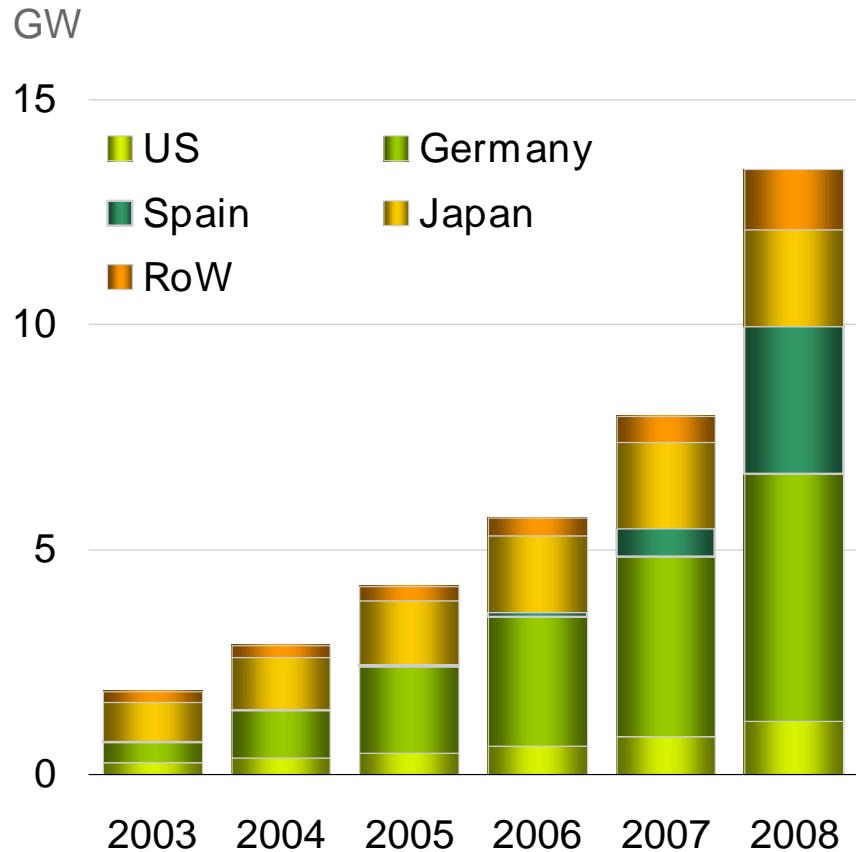


# Renewable Energy

Wind capacity



Solar PV capacity



Sources: Includes data from BTM Consult, IEA, EPIA and EurObserver

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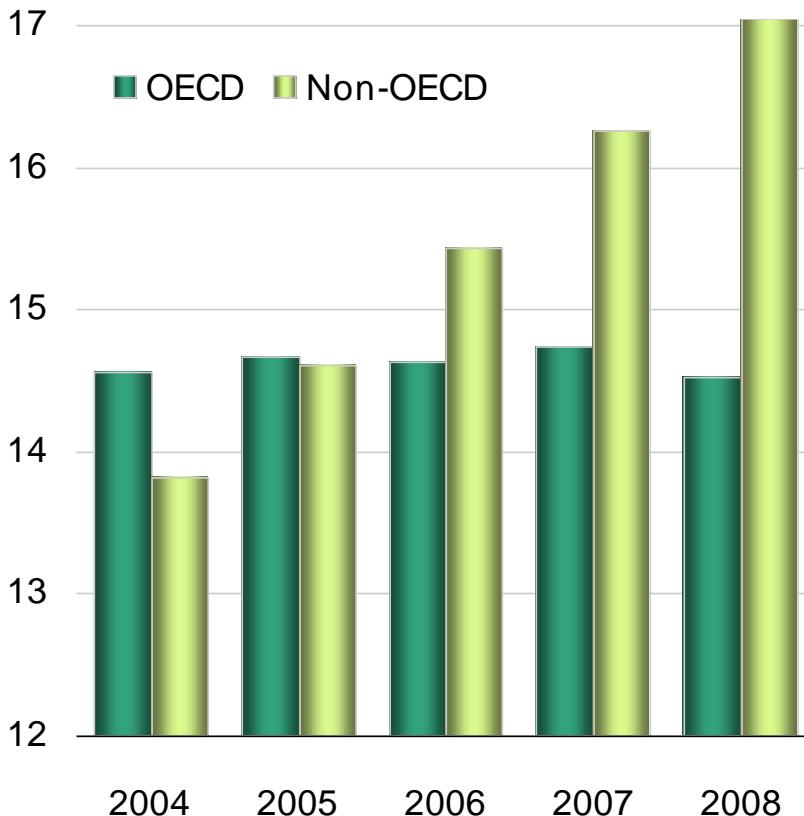
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# CO<sub>2</sub> Emissions and Prices

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

Billion tonnes of CO<sub>2</sub>



## EU Emissions Trading Scheme

€/tonne of CO<sub>2</sub> equivalent



Source: Includes prices from European Climate Exchange

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# GDP, Population and Primary Energy Consumption



**GDP**

Trillion, 2000\$

35    OECD

Non-OECD

30

25

20

15

10

5

0

2002    2004    2006    2008

**Population**

Billion

6    OECD

Non-OECD

5

4

3

2

1

0

2002    2004    2006    2008

**Primary energy**

Billion toe

6    OECD

Non-OECD

5

4

3

2

1

0

2002    2004    2006    2008

Source: Includes data from Oxford Economics and US DOE

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# Conclusion

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- 2008: Rapid market adjustment
- Non-OECD: The future is here
- Volatility: Unavoidable in our industry?

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## Volatility and Structural Change

Q & A