

# Global Oil Outlook

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DISCLOSURES AND ANALYST CERTIFICATIONS ARE LOCATED IN APPENDIX 1.

A Passion to Perform.

# New Energy Dynamics

...from the Covers of *The Economist* magazine

What does the past tell us about the future?



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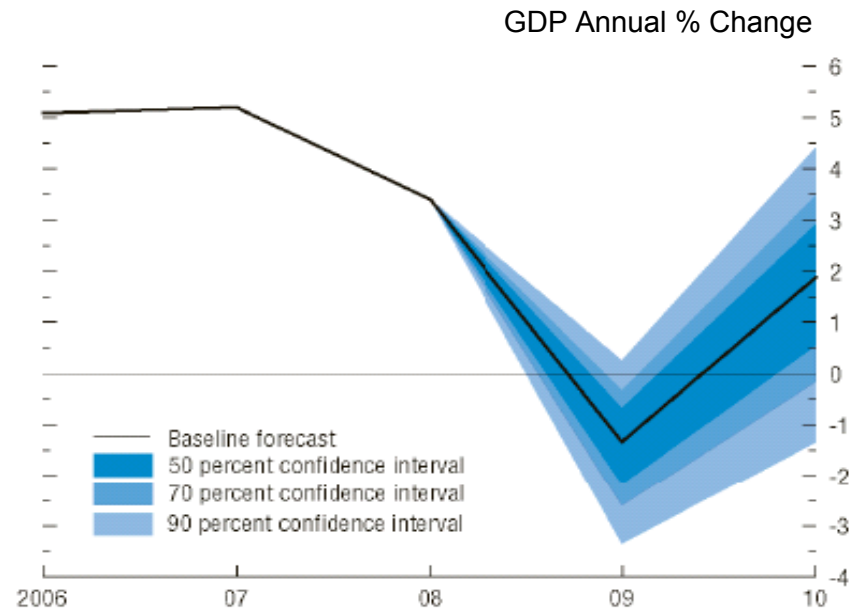
# World on the Edge

If the emerging market economies stumble, world GDP could sink



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## How Low Could Economy Go?



Source: International Monetary Fund, April 22, 2009

# World Economic Outlook from Deutsche Bank

## World economy in deep recession

Overall, we see the risks of insufficient action on the financial front rising, and with them the risks that the global economy will be mired in a prolonged period of sluggish growth.

y-o-y % change	2007	2008	2009E	2010E	Weights
US	2.0	1.1	-3.9	0.6	20.4
Euro Area	2.6	0.7	-3.4	0.3	23.0
Japan	2.1	-0.7	-8.7	-1.9	6.2
Other OECD	2.4	0.5	-2.0	1.5	7.1
<b>OECD</b>	<b>2.3%</b>	<b>0.7%</b>	<b>-4.0%</b>	<b>0.3%</b>	<b>56.7</b>
China	11.9	9.0	7.0	6.6	12.0
Other Asia (1)	6.2	4.6	0.0	4.3	11.6
EMEA (2)	6.6	4.3	-1.8	3.7	8.9
Latin America	5.4	4.2	-1.3	2.9	6.2
FSU (3)	8.0	4.5	-4.2	3.0	4.6
<b>Non-OECD</b>	<b>7.9%</b>	<b>5.7%</b>	<b>0.9%</b>	<b>4.5%</b>	<b>43.3</b>
<b>World</b>	<b>4.7</b>	<b>2.8</b>	<b>-1.9</b>	<b>2.0</b>	<b>100.0</b>

(1) Non-OECD Asia ex-China, (2) E. Europe, Mid-East, Africa, (3) Former Soviet Union

## Outlook

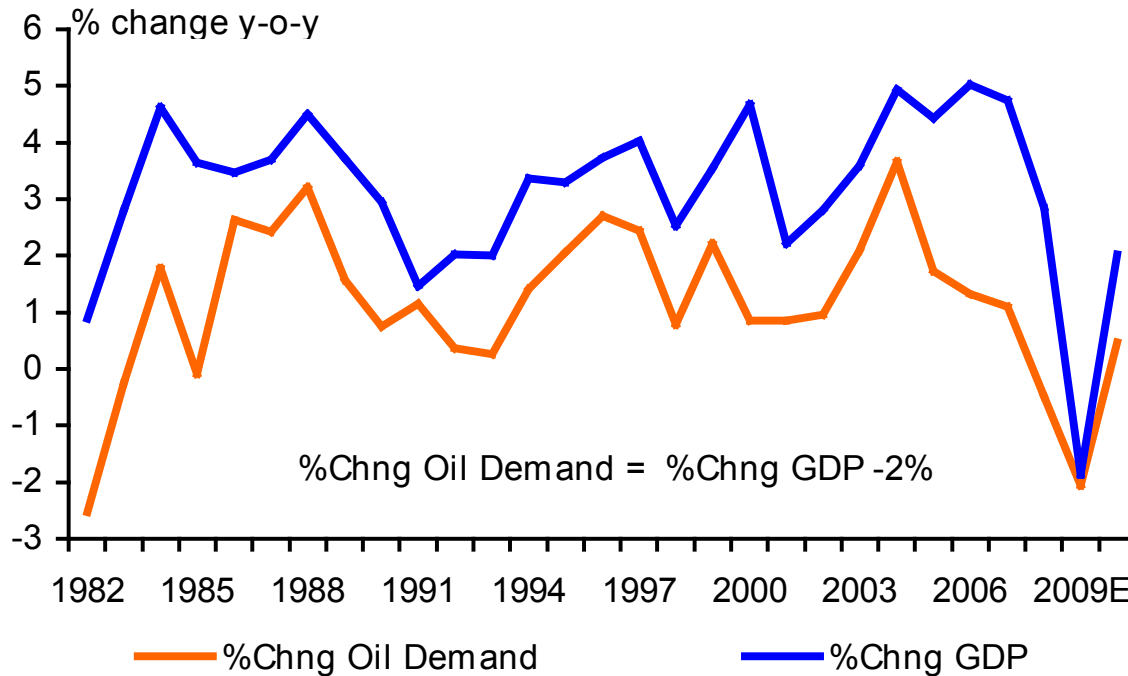
- Although we consider the economic outlook sketched above to be the most likely outcome, we see it subject to a much higher degree of uncertainty than usual. Risks are big and lie both on the up and downside. Whether the baseline or the risk scenarios materialize will in our view depend critically on the success of the stabilisation policies undertaken in the US.
- Base on our research of previous financial crises, and especially the Great Depression of the early 1930s, we conclude that recovery basically depends on four factors successfully coming together: (1) monetary easing; (2) fiscal easing; (3) bank restructuring; and (4) a boost to confidence. At present, the US appears closest to fulfilling all four of these conditions.
- But downside risks to the baseline scenario are significant as well. Most importantly, failure of the bank restructuring program in the US could induce a renewed tightening of credit conditions, leading to a deeper and more extended economic slump at the global level.

# World Slowdown Impacts Oil

## What does a global recession mean for oil demand?

World oil demand grows at about 2% less than global GDP.

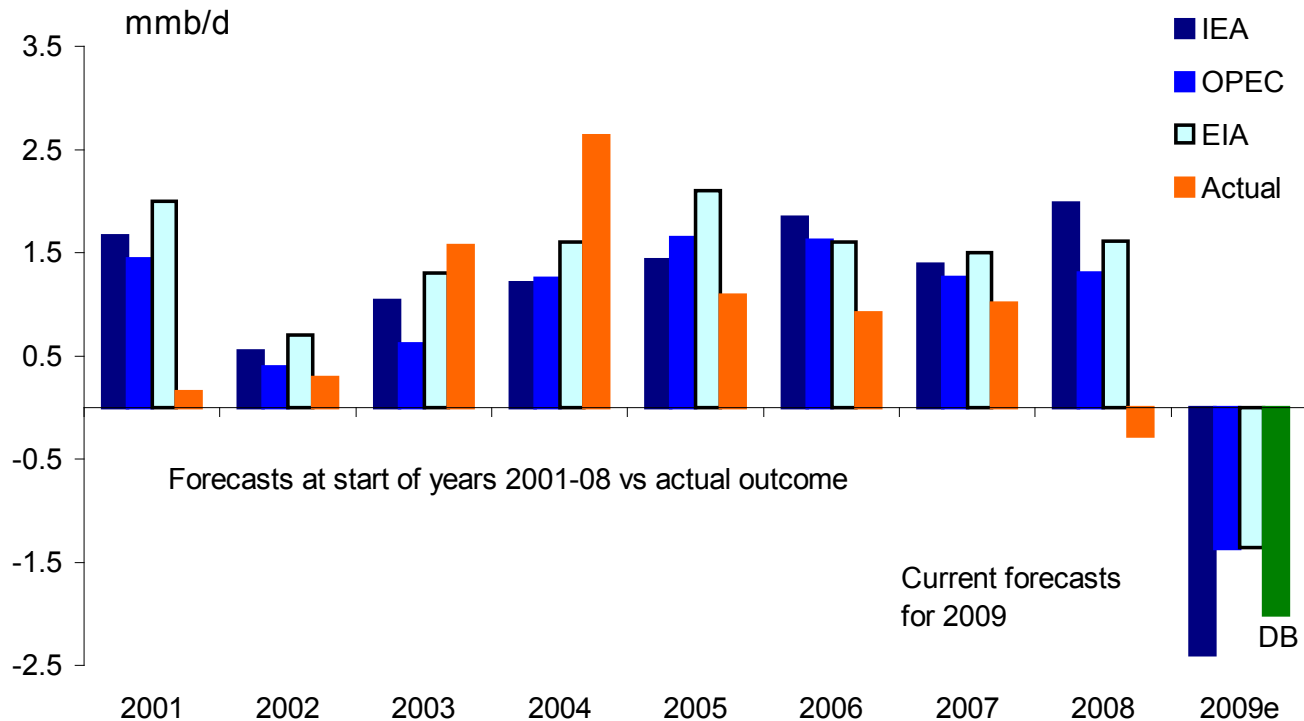
If global GDP is down 2% in 2009, oil demand could fall by 4%, or potentially more than 3mmb/d.



Source: IEA, IMF, DB Global Markets Research

# Global Oil Demand Under Attack

Since 2005 global oil demand forecasts have been too optimistic



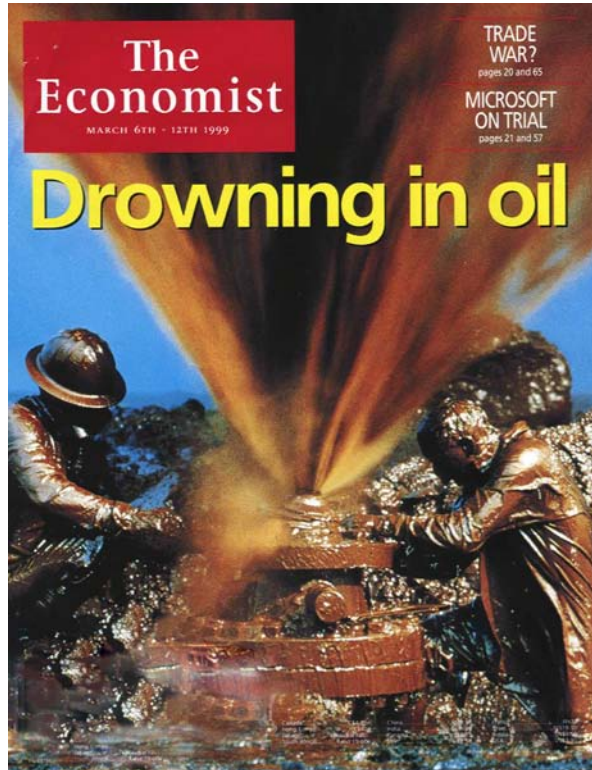
Source: IEA, OPEC, DOE/EIA, DB Global Markets Research

## Outlook

- We believe estimates from the OPEC and the EIA for global oil demand are still excessively optimistic.
- We believe global oil demand will slump significantly in 2009.

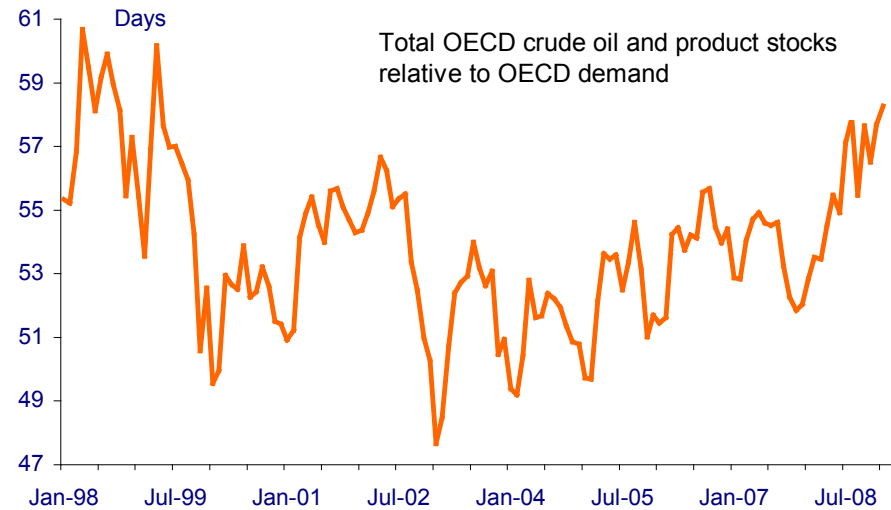
# Drowning in Oil AGAIN?

When it seemed like oil would be cheap forever



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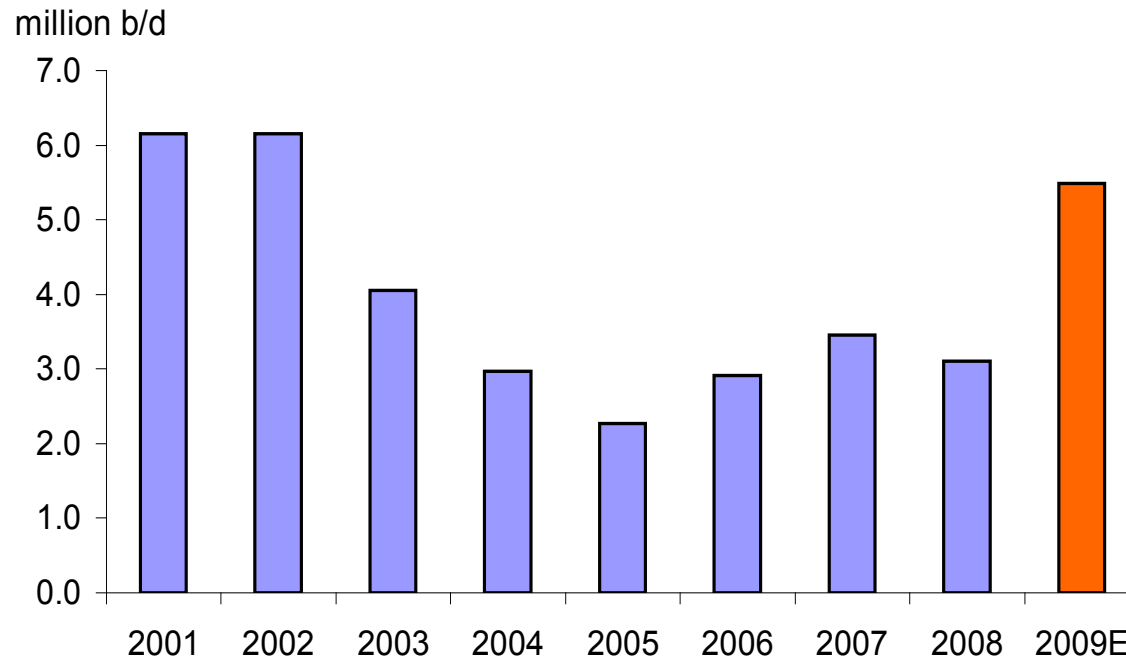
## OECD Inventory Cover



Source: IEA, DB Global Markets Research

# OPEC Spare Production Re-Building

As OPEC cuts quotas, spare capacity increases



Source: IEA, DB Global Markets Research

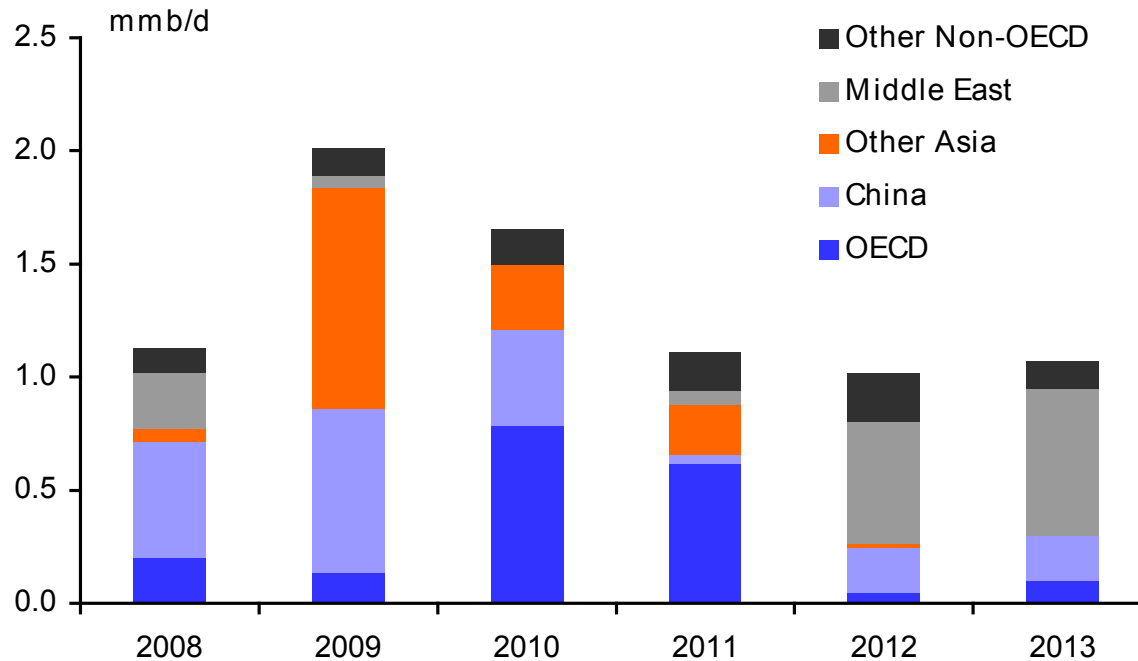
## Outlook

- The lack of spare OPEC production capacity played a strong role in the run-up in oil prices in 2003-08; this is reversing in 2009-10.



# Refinery Capacity Additions

Distillation capacity rising faster than demand in 2009 and 2010



Source: IEA, DB Global Markets Research

## Outlook

- The lack of spare refining capacity played a strong role in the run-up in oil prices in 2007-08; this is reversing in 2009-10.

# Oiloholics for the Long Term?

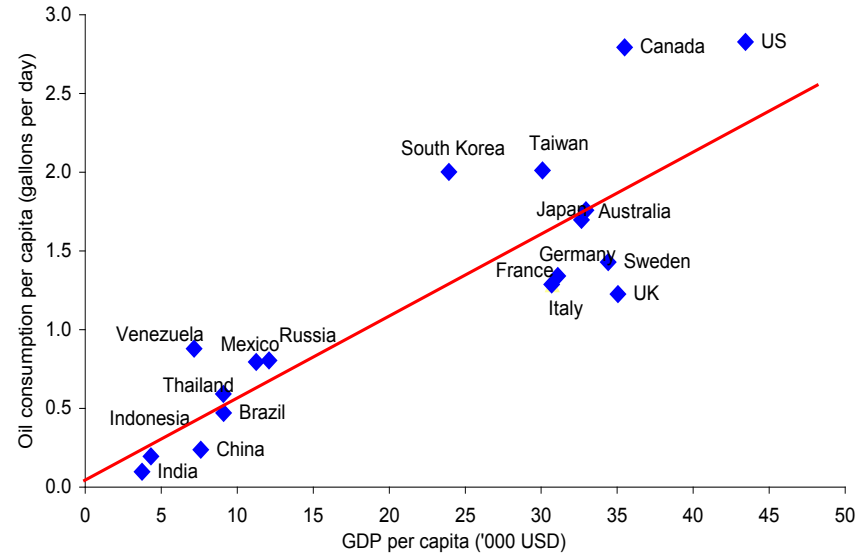
A theme that does not go away easily

Twenty five years ago, South Korea and Taiwan were where China and India are now.



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Per Capita Oil Consumption Relative to GDP



Source: IMF, IEA DB Global Markets Research

## Outlook

- One third of the world's population is just entering the middle class and want the oil-consuming lifestyle that goes with that.

# End of the Oil Age

# Coming Soon?

## Not enough of a good thing?

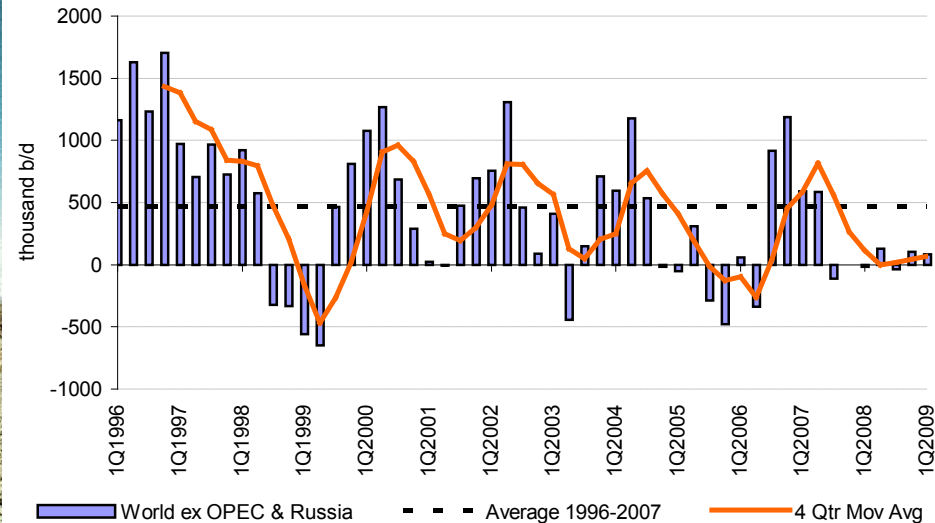
Some analysts think that non-OPEC oil production will peak within the next few years.



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### Non-OPEC Supply ex-Russia



Source: IEA, Deutsche Bankl

# Trouble with Russia's Economy

## Russian production declines for the first time in a decade

Putin's policies in his first term worked but in his second term were a disaster for oil output.



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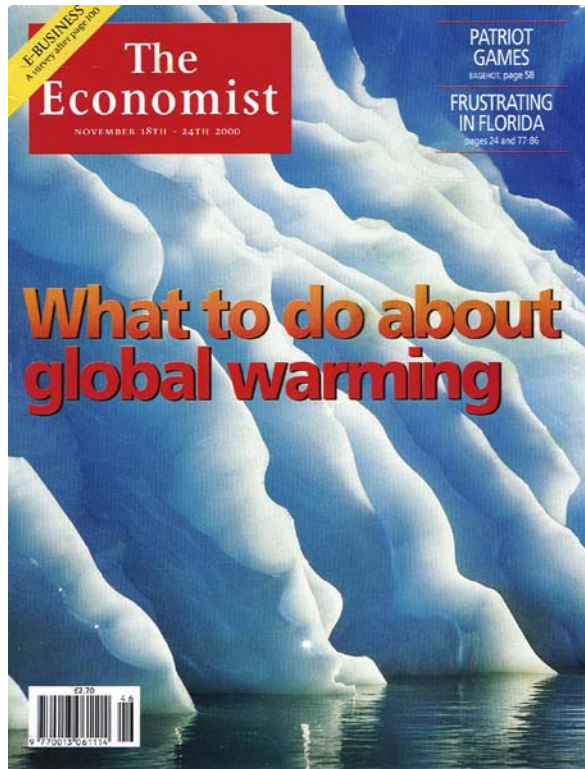


- The Russian government's policy of hostility to its own oil entrepreneurs, growing disdain for foreign capital, and desire to maximize taxes regardless of the impact on capital investment brought an end to the growth in production that characterized President's Putin's first term (2000-2004).
- Although "peak oil" proponents are citing the development as proof that global production is faltering because of geological constraints, we see the situation as offering strong evidence that oil production problems are being driven more by "above the ground" problems.

Source: IEA, DB Global Markets Research

# What to Do About Global

Europe was way ahead of the US curve on this topic



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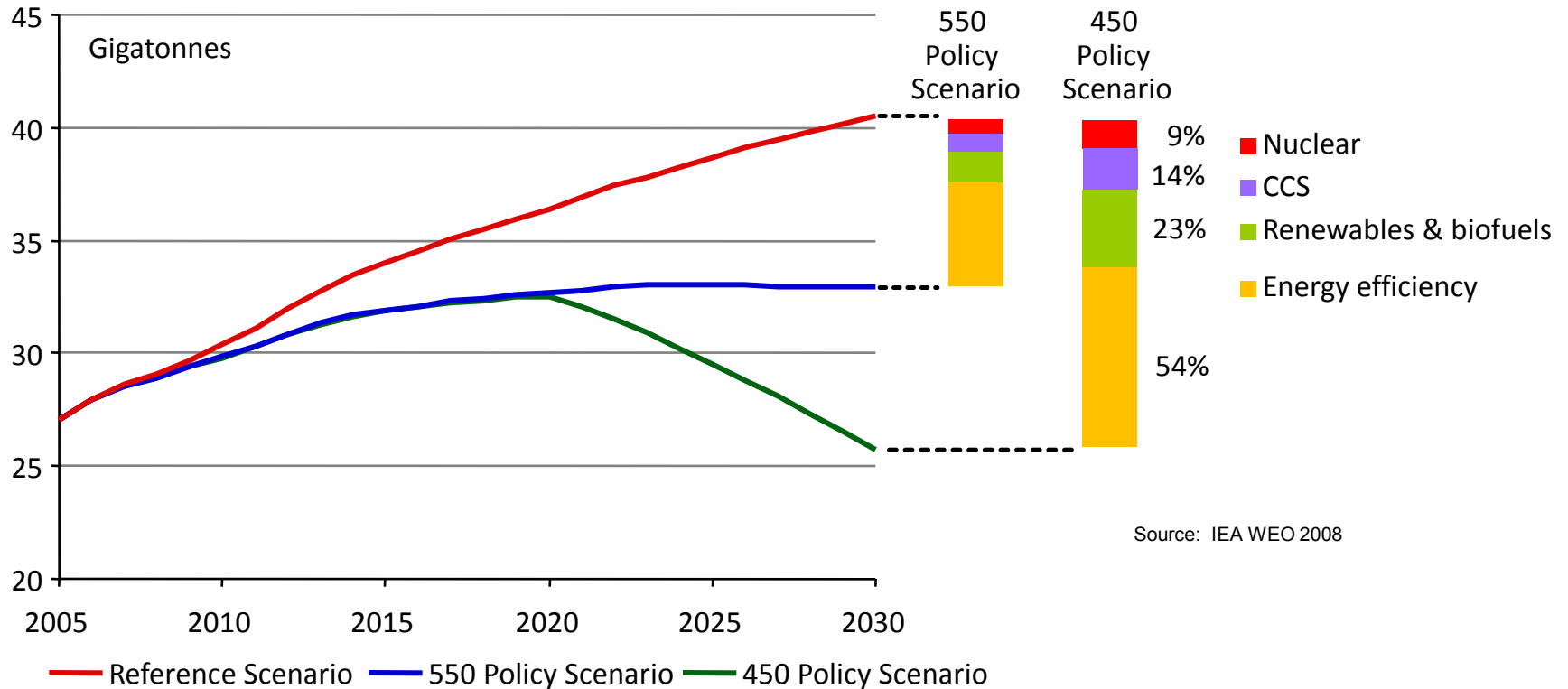
## Dealing with climate change got delayed

- There were still a lot of climate skeptics in 2000 when this cover was published.
- The Bush administration thought US voters would never accept the pain, and the June 2008 debate in the US Senate supported this contention.
- Al Gore had not yet won the Nobel Prize.

Source: DB Global Markets Research

# Reductions In Energy-Related CO2 Emissions

## International Energy Agency's climate-policy scenarios



## Outlook

- While technological progress is needed to achieve some emissions reductions, efficiency gains and deployment of existing low-carbon energy account for most of the savings.
- The scale of effort required is substantial.

# Getting Rid of CO2 Is Not Going To Be Easy

Amount needed is 8 gigatonnes for the 550 ppm case, and 15 gigatonnes for the 450 ppm case.

Some scientists are saying 350 ppm or less is required to avoid an upset.

## What it takes to offset one gigatonne of CO2

Today's Technology	Actions that Provide 1 Gigaton / Year Mitigation of Carbon Dioxide
Coal-Fired Power Plants	Build 320 "zero-emission" 500-MW coal-fired power plants (in lieu of coal-fired plants without CO <sub>2</sub> capture and storage) (73% CF)
Geologic Sequestration	Install 1,000 sequestration sites like Norway's Sleipner project (1 MtCO <sub>2</sub> /year)
Nuclear	Build 130 new nuclear power plants, each 1 GW in size (in lieu of new coal-fired power plants without CO <sub>2</sub> capture and storage) (90% CF)
Electricity from Landfill Gas	Install 7,700 "typical" landfill gas electricity projects (typical size being 3 MW projects at non-regulated landfills) that collect landfill methane emissions and use them as fuel for electric generation
Efficiency	Deploy 290 million new cars at 40 miles per gallon (mpg) instead of new cars at 20 mpg (12,000 miles per year)
Wind Energy	Install 170,000 wind turbines (1.5 MW each, operating at 0.45 capacity factor) in lieu of coal-fired power plants without CO <sub>2</sub> capture and storage
Solar Photovoltaics	Install 1.7 million acres of solar photovoltaics to supplant coal-fired power plants without CO <sub>2</sub> capture and storage (assuming 10% cell DC efficiency, 1700 kWhr/m <sup>2</sup> solar radiance, and 90% DC-AC conversion efficiency)
Biomass Fuels from Plantations	Convert to biomass crop production a barren area about 5.4 times the total land area of Iowa (c. 200 million acres)
CO <sub>2</sub> Storage in New Forest	Convert to new forest a barren area about 2.5 times the total land area of the State of Washington (over 100 million acres... assumes Douglas Fir on Pacific Coast)

Source: DOE Climate Change Technology Program, <http://www.climatechange.gov/stratplan/final/index.htm>

# Adam Sieminski

Chief Energy Economist for Deutsche Bank, working with the Bank's global commodities research and trading units.

Drawing on extensive industry, government and academic sources, Mr. Sieminski forecasts energy market trends and writes on a variety of topics involving energy economics, climate change, politics and commodity prices. From 1998 to 2005 he served as the energy strategist for Deutsche Bank's global oil & gas equity team. Mr. Sieminski was the senior energy analyst for NatWest Securities in the US during 1988-1997, covering the major US international integrated oil companies. He received both his undergraduate degree in Civil Engineering and a masters in Public Administration from Cornell University.

He has been president of the US Association for Energy Economics and the National Association of Petroleum Investment Analysts. He is a member of the US National Petroleum Council, an advisory group to the US Secretary of Energy, and helped author the NPC's Global Oil and Gas Study: *The Hard Truths*. He also acts as a senior advisor for the Center for Strategic and International Studies in Washington and is an advisory board member of the Global Energy and Environment Initiative at Johns Hopkins / SAIS. He is a member of the London, New York and Washington investment professional societies, and holds the Chartered Financial Analyst (CFA) designation.





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