



# The New Energy Crisis: Climate, Economics, Geopolitics

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# “The New energy Crisis: Climate, Economics and Geopolitics”

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Yves SIMON, C. Pierre ZALESKI**

- Palgrave edition 2009
- “Les nouveaux défis de l'énergie: climat, énergie, géopolitique” (Economica, 2009)



# Summary

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- Energy- Climate
- World Energy Perspectives
- Energy Poverty & Economic development
- The European Energy Ambitions



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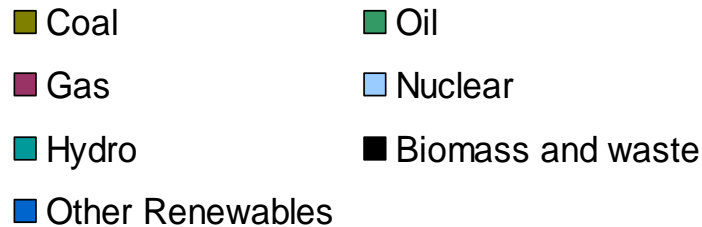
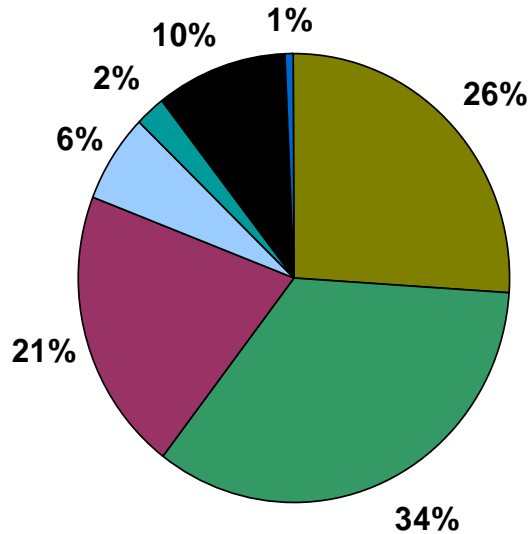
# Energy- Climate

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# World Energy Balance

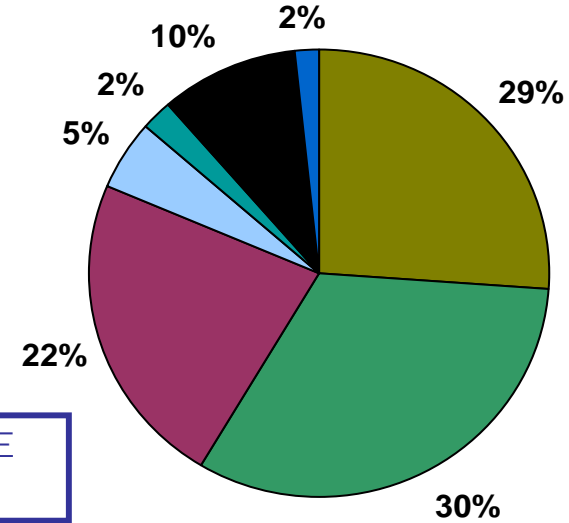
2006

12 Gtoe

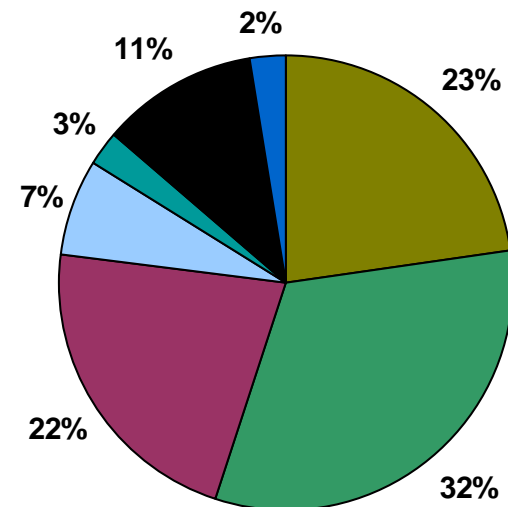


2030

Reference Scenario 17 Gtoe



Alternative Scenario 15 Gtoe



CLIMATE CHANGE  
UNCERTAINTIES



# Energy/ Climate

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- Any energy issue is now closely associated with the global warming issue
- The Stern Review (2006)
- IEA outlook: "The energy future we are creating is unsustainable"
- December 2007: The Alarming IPCC Report
- More and more alarming signals

The growing awareness of global warming and the urgency to act



October 2008  
Update of Climate Change since IPCC 2007  
Stefan Rahmstorf  
Potsdam Institute for Climate Impact  
Research

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1. Rise of CO<sub>2</sub> emissions and concentration higher than expected
2. Temperature rises more than expected
3. Arctic ice loss more rapid than expected
4. Rise of sea level higher than expected
5. Tropical storms more frequent, more violent



# The road to Copenhagen (Dec 2009)

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- More geopolitics than economics
- A single global ETS?
- A floor and a ceiling price for CO<sub>2</sub>?
- Carbon Tax?
- A US-China agreement (coal)?
- Green Fund
- Toward a weak compromise



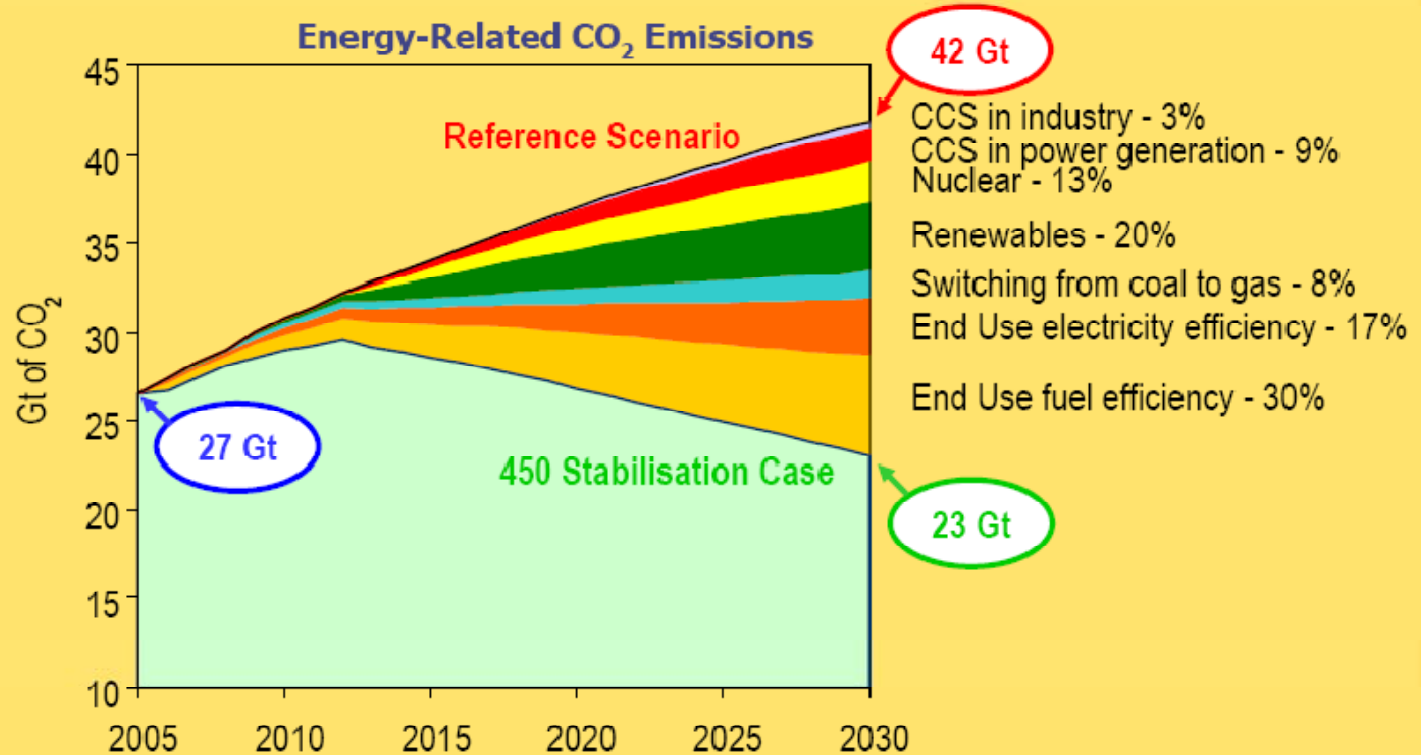
INTERNATIONAL ENERGY AGENCY

WORLD ENERGY OUTLOOK 2007

China and India Insights

© OECD/IEA - 2007

## CO<sub>2</sub> Emissions - 450 Stabilisation Case



**Stabilising greenhouse-gas concentration at 450 ppm would require emissions to be reduced to 23 Gt in 2030**



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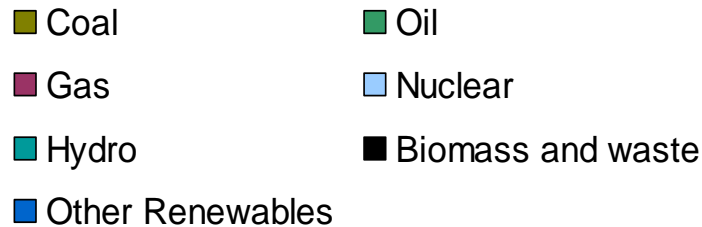
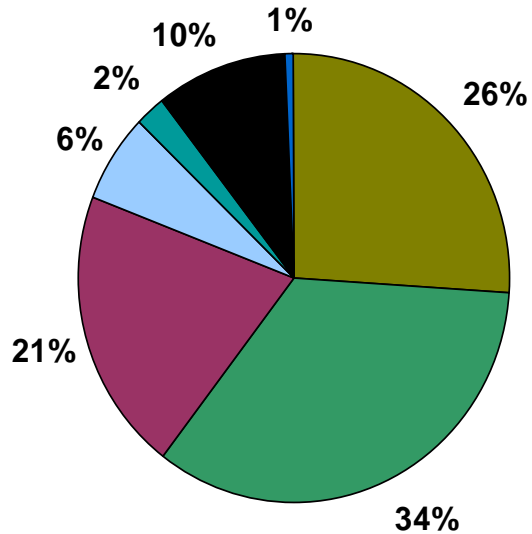
# World Energy Perspectives

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# World Energy Balance

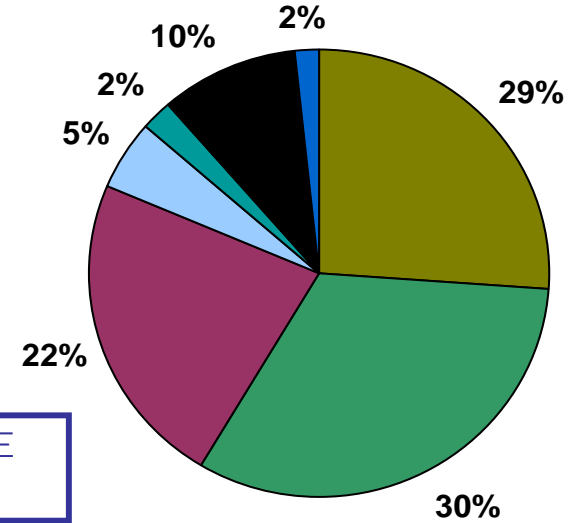
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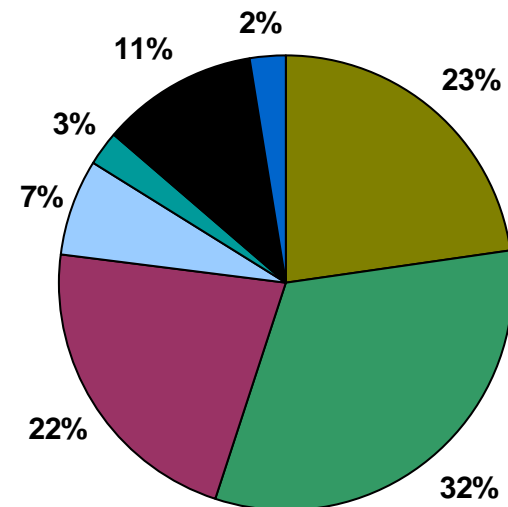


2030

Reference Scenario 17 Gtoe

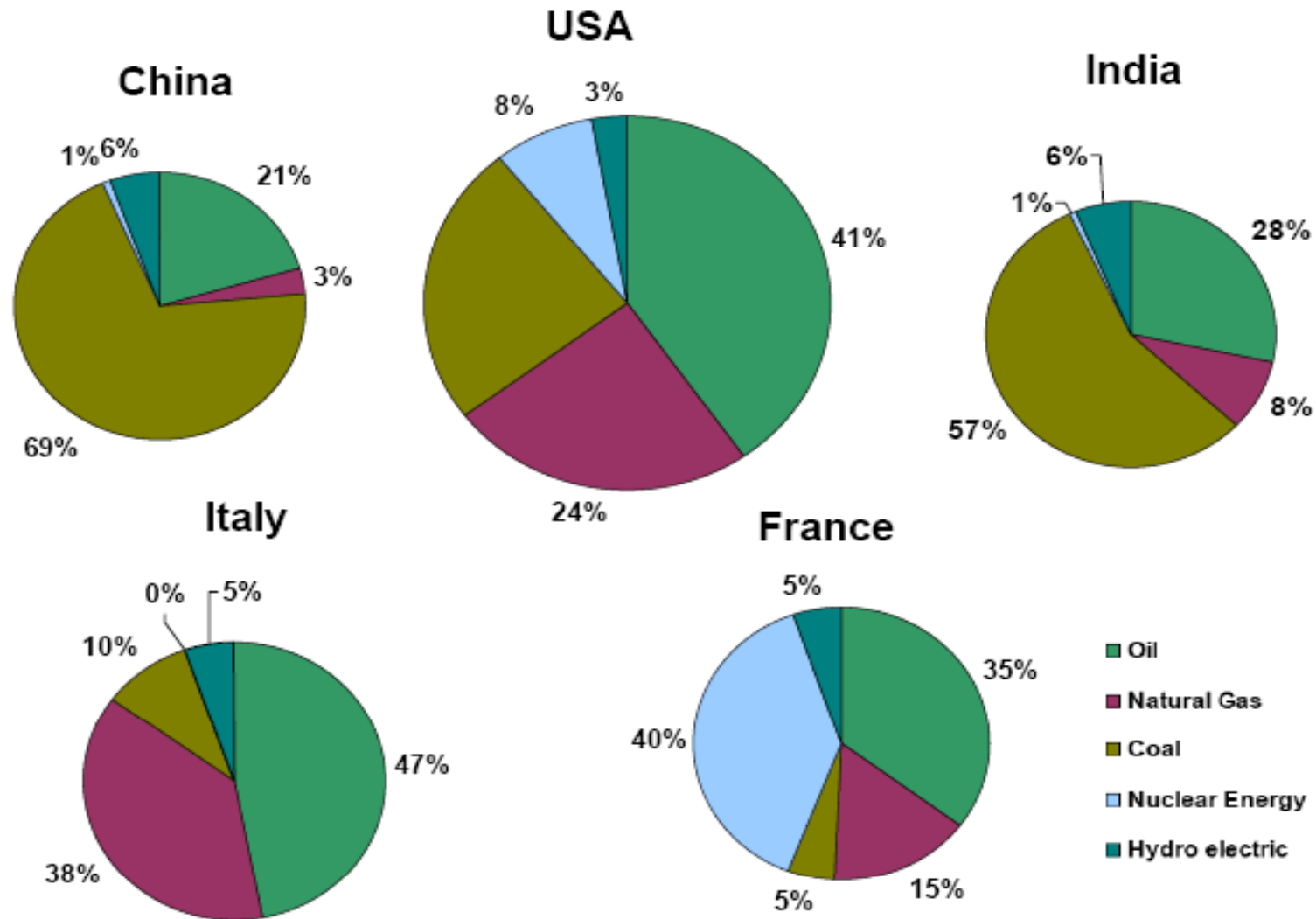


Alternative Scenario 15 Gtoe



CLIMATE CHANGE  
UNCERTAINTIES

# Energy Diversities



Source: World Energy Outlook 2007 – IEA

# USA, China & Europe

	USA	CHINE	UE
Population (million)	297	1 304	459
% of World population	5%	20%	7%
Primary Energy Consumption (million toe)	2 337	1 554	1715
% of World Energy Consumption	22%	15%	16%
Energy consumption / capita (toe)	8	1.1	3.7
Nb. of vehicles (million)	223	13	229*
Foreign oil dependency	50%	50%	77%
Oil imports 2005 (Mbd)	13.5	3.4	13.3



## European Standards for China

➤ Vehicles

641

➤ Gas oil and gasoline consumption

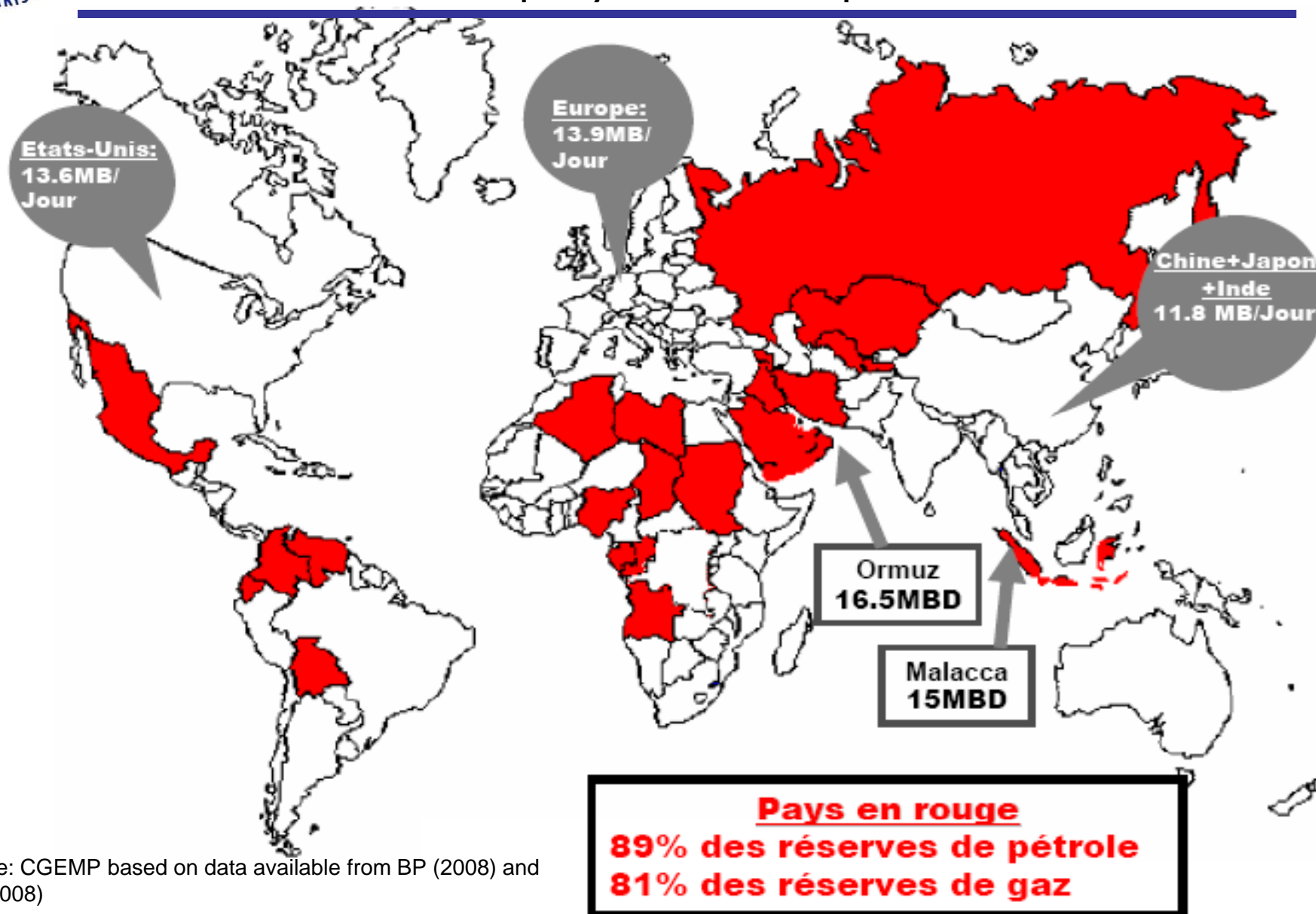
17Mb/d

# World Reserves of Fossil Fuels (2009)

	Oil	Gas	Coal
Reserves	<b>170,8 Gt</b>	<b>185 000 Gm<sup>3</sup></b>	<b>826 Gt</b>
Ratio Reserves/ Production (in years)			
2009	<b>42</b>	<b>60,4</b>	<b>122</b>
1973	<b>31</b>	<b>48,6</b>	<b>na</b>
Reserves Concentration	<b>OPEC = 76%</b>	<b>OPEC = 48,7%</b>  <b>Russia</b> <b>Iran 53 %</b> <b>Qatar</b>	<b>US = 29%</b> <b>Russia = 19%</b> <b>China = 14%</b> <b>India = 7%</b> <b>Australia = 9%</b>

Source: BP Statistical Review World Energy 2009

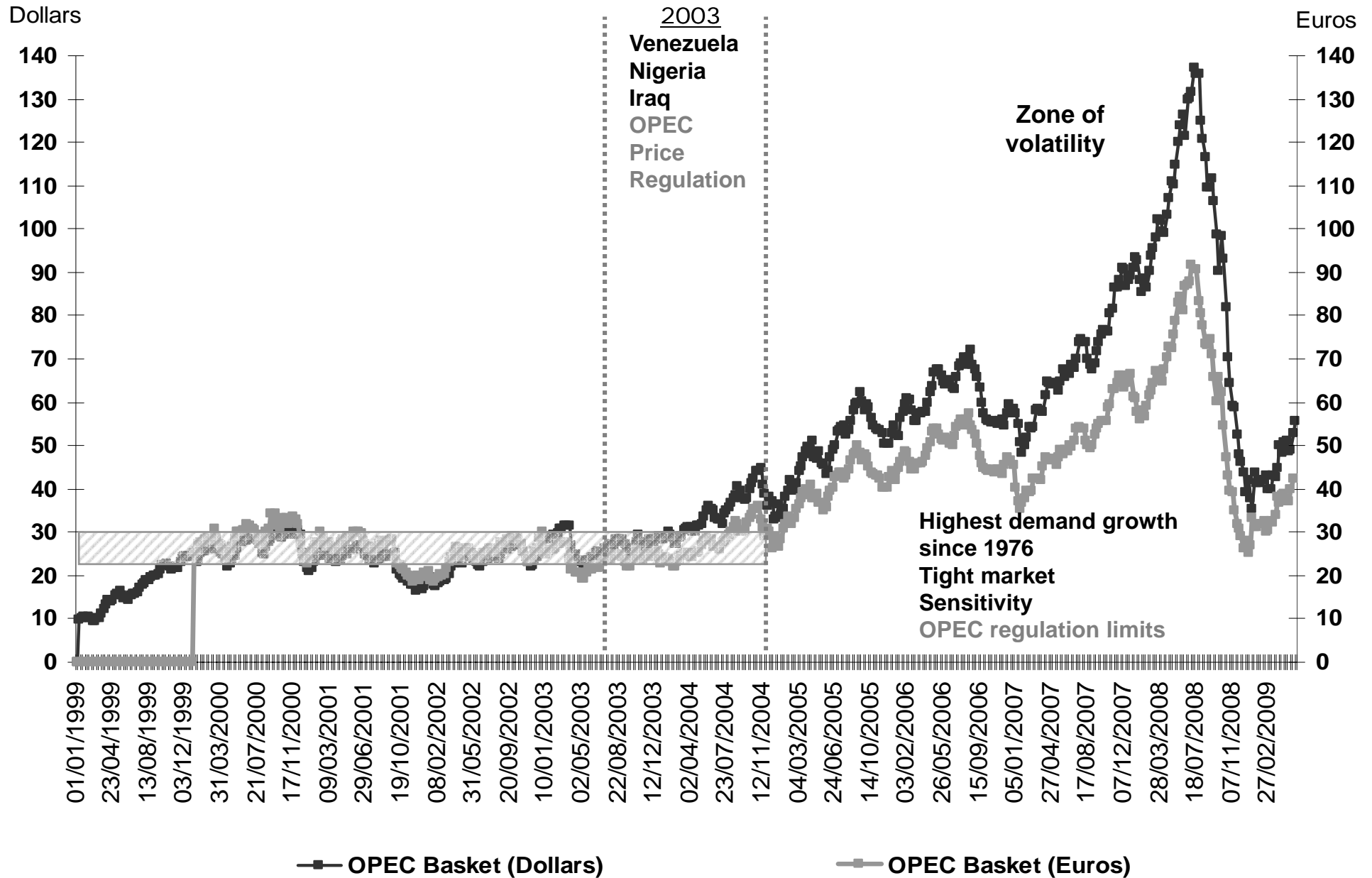
# Concentration des réserves sur les pays « à risque »



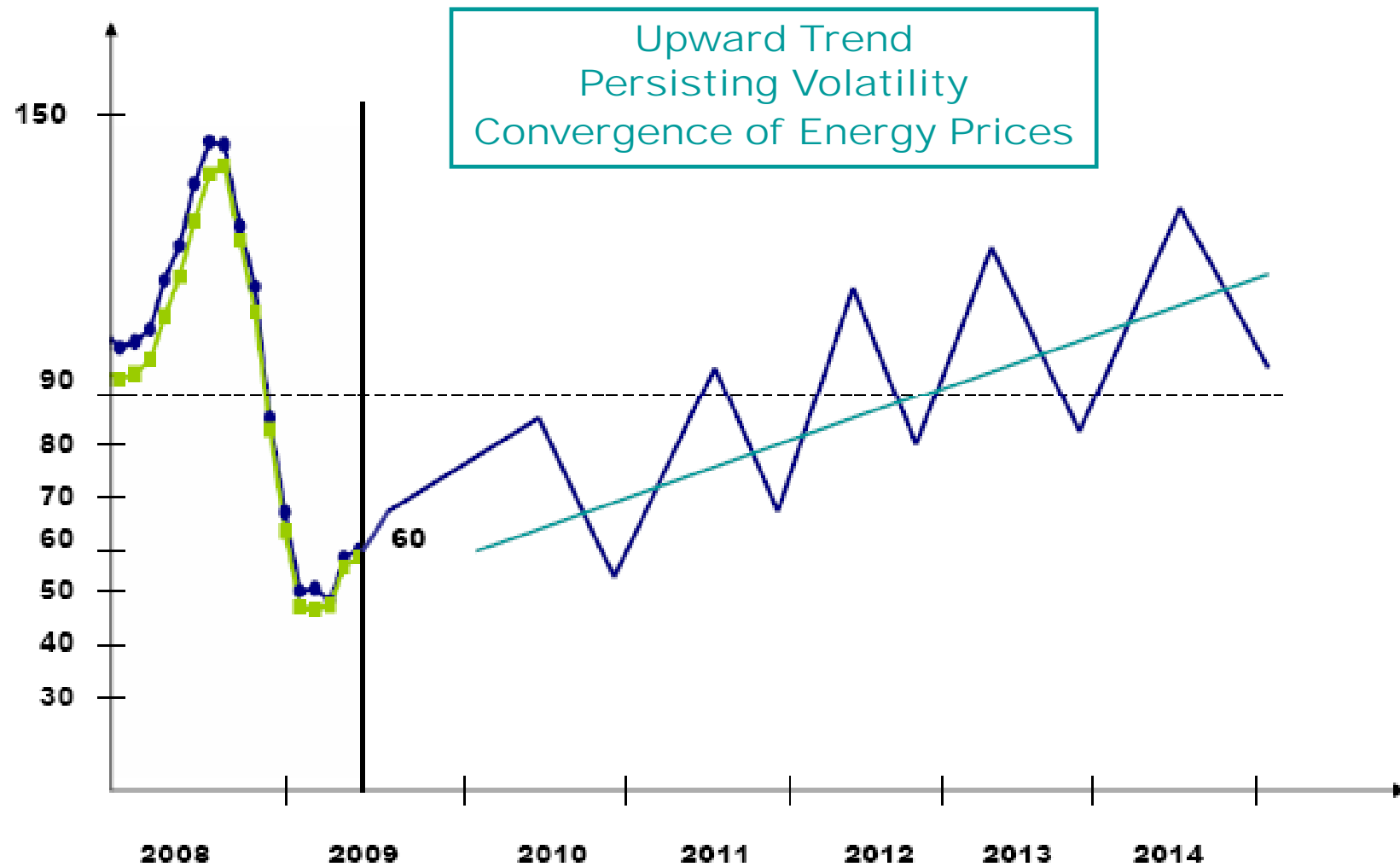
Source: CGEMP based on data available from BP (2008) and IEA (2008)



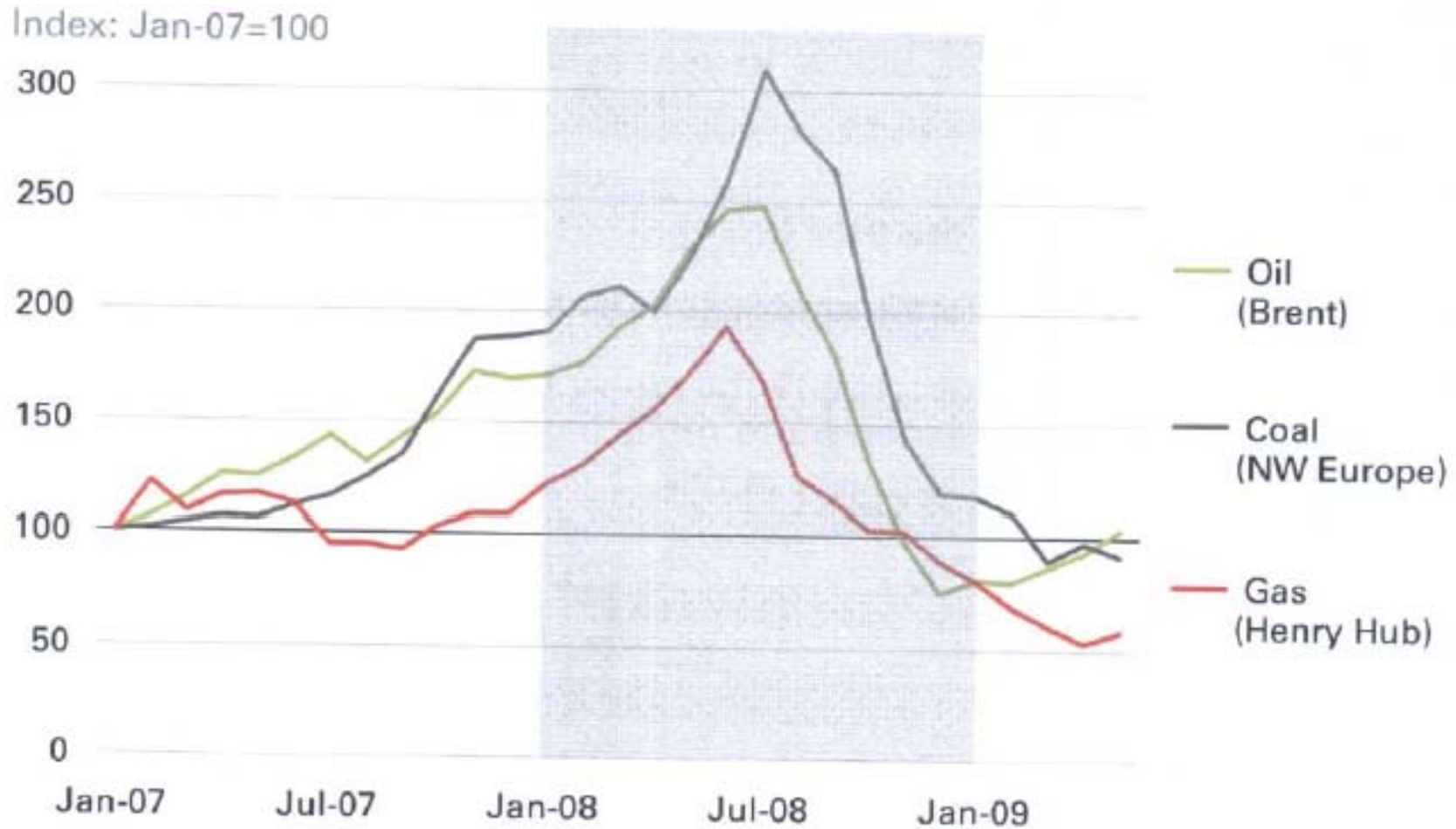
# Oil Price



# What Price for Oil?



# Energy Prices



Source: BP Statistical Review of World Energy June 2009



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# Energy Poverty & Economic development

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# Energy Poverty

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- 1.6 Billion people = no access to modern energy fuel (oil products & electricity)
- Most of these people rely on biomass (wood- dung) => deforestation - health
- Part of the world "over-energized" - Rest of the world "under-energized"
- Climate change vulnerability

# Countries most at risk from climate-related threats

Drought	Flood	Storm	Coastal 1m <sup>a</sup>	Coastal 5m <sup>a</sup>	Agriculture
Malawi	Bangladesh	Philippines	All low-lying Island States	All low-lying Island States	Sudan
Ethiopia	China	Bangladesh	Viet Nam	Netherlands	Senegal
Zimbabwe	India	Madagascar	Egypt	Japan	Zimbabwe
India	Cambodia	Viet Nam	Tunisia	Bangladesh	Mali
Mozambique	Mozambique	Moldova <sup>b</sup>	Indonesia	Philippines	Zambia
Niger	Laos	Mongolia <sup>b</sup>	Mauritania	Egypt	Morocco
Mauritania	Pakistan	Haiti	China	Brazil	Niger
Eritrea	Sri Lanka	Samoa	Mexico	Venezuela	India
Sudan	Thailand	Tonga	Myanmar	Senegal	Malawi
Chad	Viet Nam	China	Bangladesh	Fiji	Algeria
Kenya	Benin	Honduras	Senegal	Viet Nam	Ethiopia
Iran	Rwanda	Fiji	Libya	Denmark	Pakistan

Note: The typology is based on both absolute effects (that is, total number of people affected) and relative effects (that is, the number affected as a share of GDP). a. Meters above the sea level. b. Winter storms.

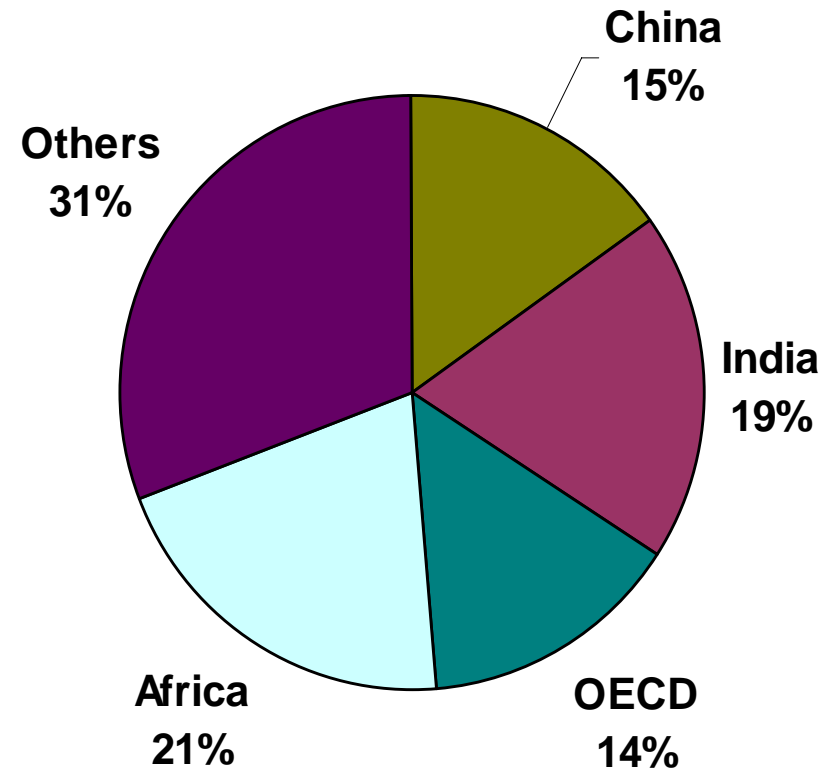
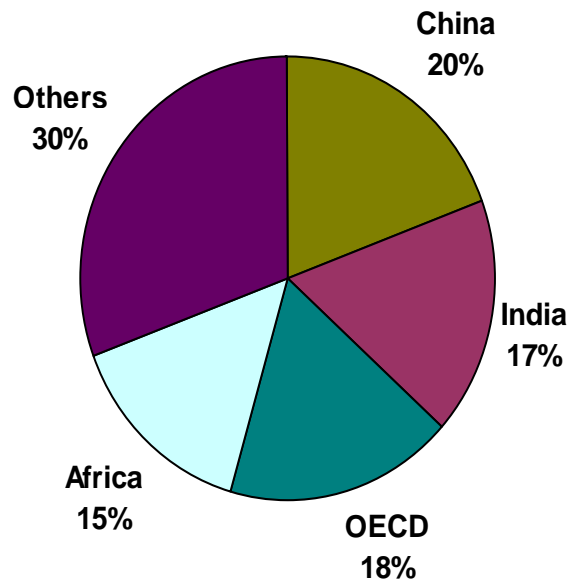
Source: World Bank group (2008d)

# The Demographic Shift

2009  
6.8 Billion

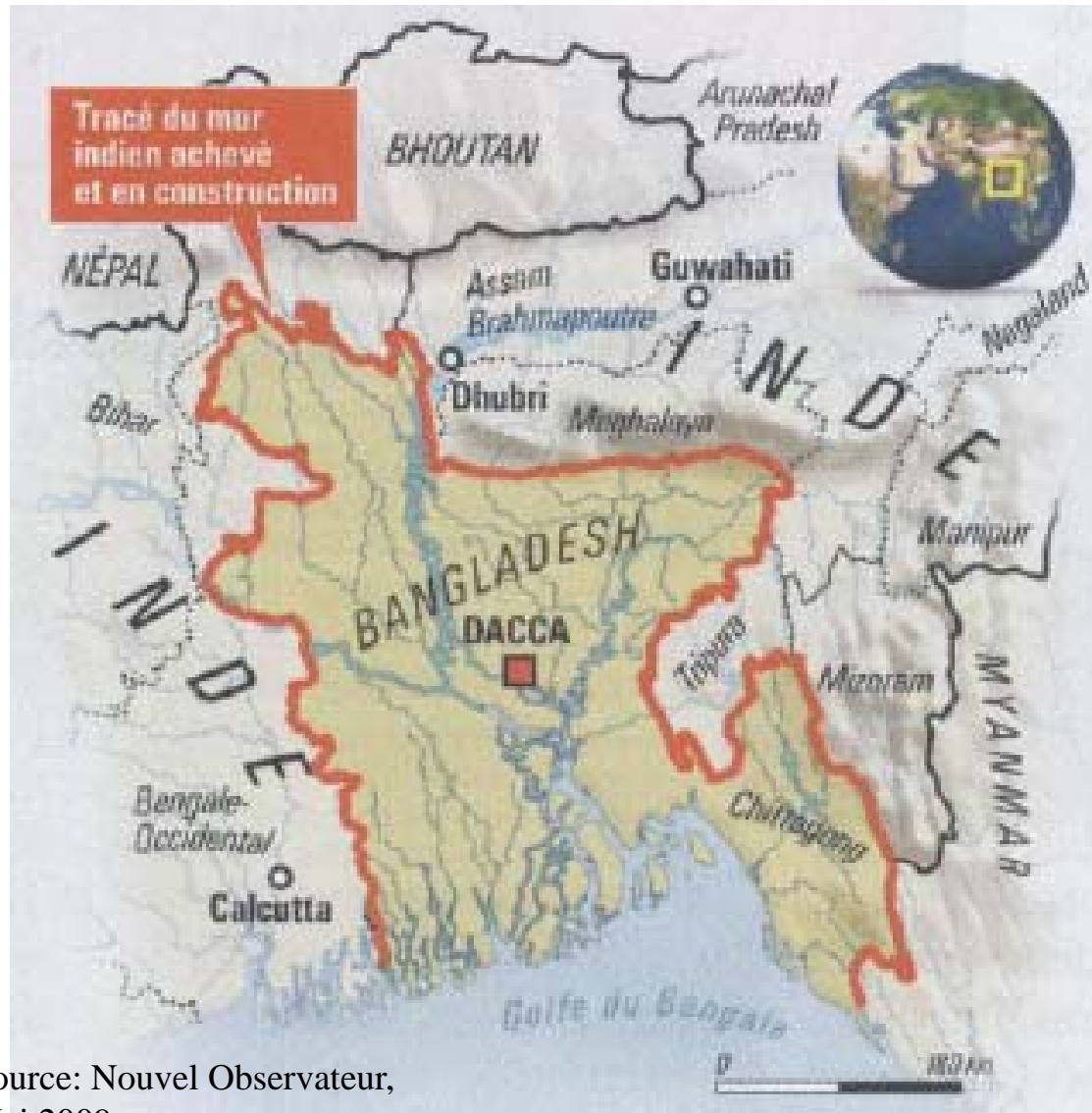
+ 2.6

2050  
9.4 Billion



Source: Population Reference Bureau, 2009

# LE CAS DU BANGLADESH



Population: 158,6  
millions  
PIB/habitant: 390 \$

Source: Nouvel Observateur,  
Mai 2009



# Energy and Economic development

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- Improving energy efficiencies
- Access to water and electricity
- Clean Development Mechanism
- Combining electricity with Information & Communication Technologies & Micro- credit
- Marshall Plan or violence



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# The European Energy Ambitions

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# The European Energy Vision

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- Reduction of GHG emissions (- 20 %)
  - Improvement of energy efficiency (+ 20 %)
  - Diversification of energy balances (20 % renewables)
  - Diversification of energy suppliers
  - Security of energy supply (oil – gas - power)
  - From pure market competition to the “Policy Trilemma”: competitiveness – sustainability – security of supply
- What Impact on Demand ?



# Conclusion

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- Action
- Adaptation
- Prices
- What did you do today ?