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World Energy Outlook Strategic Challenges

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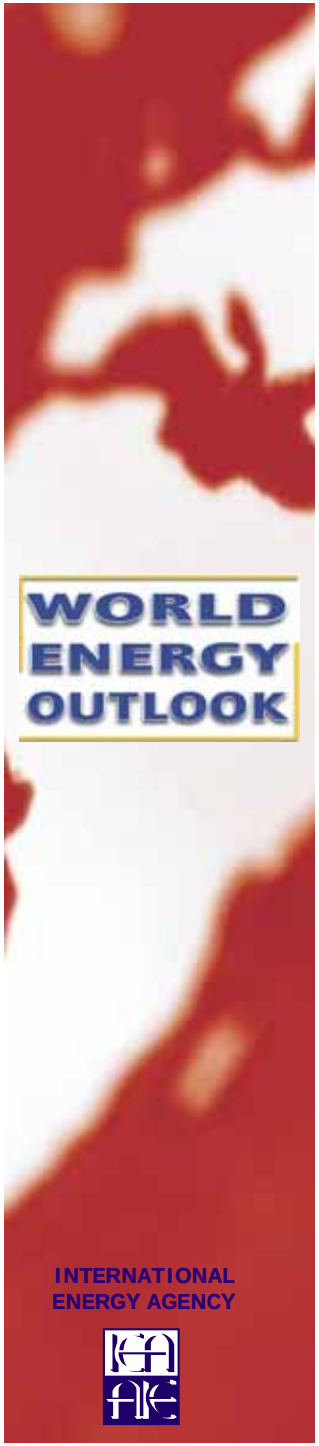
International Energy Agency



Energy Trends & Strategic Challenges Reference Scenario

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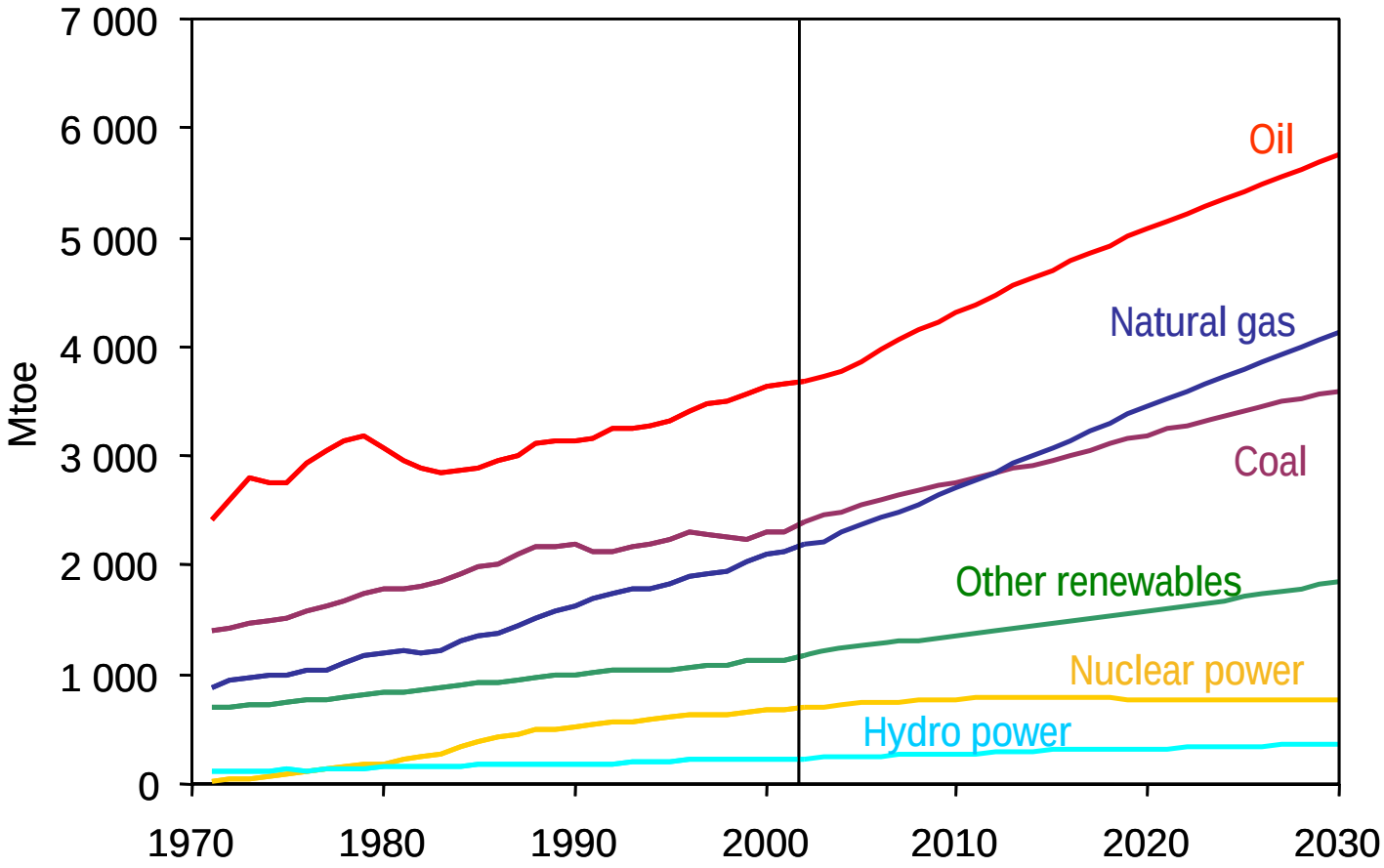
World Primary Energy Demand



Fossil fuels account for almost 90 % of the growth in energy demand between now and 2030

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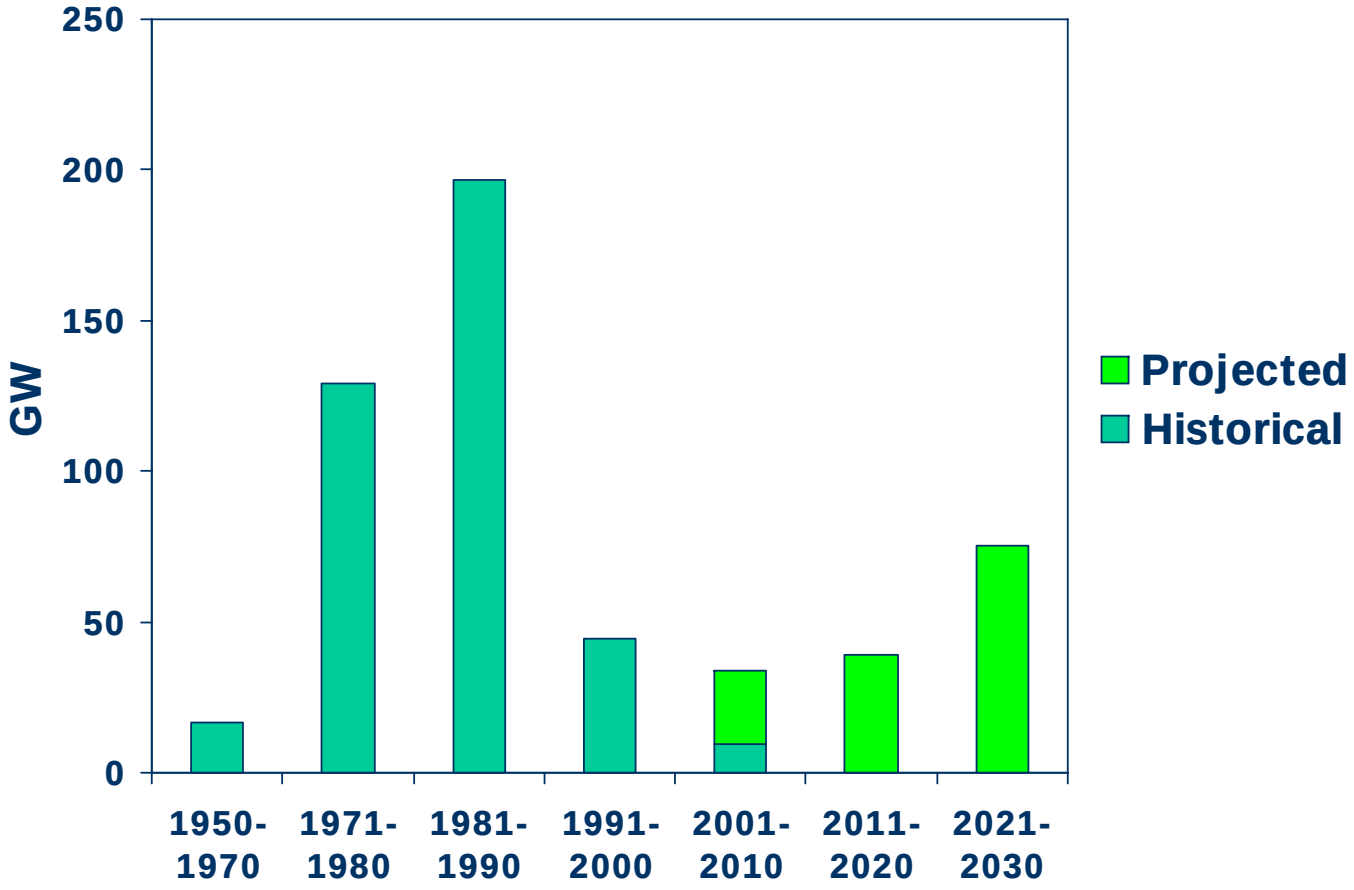
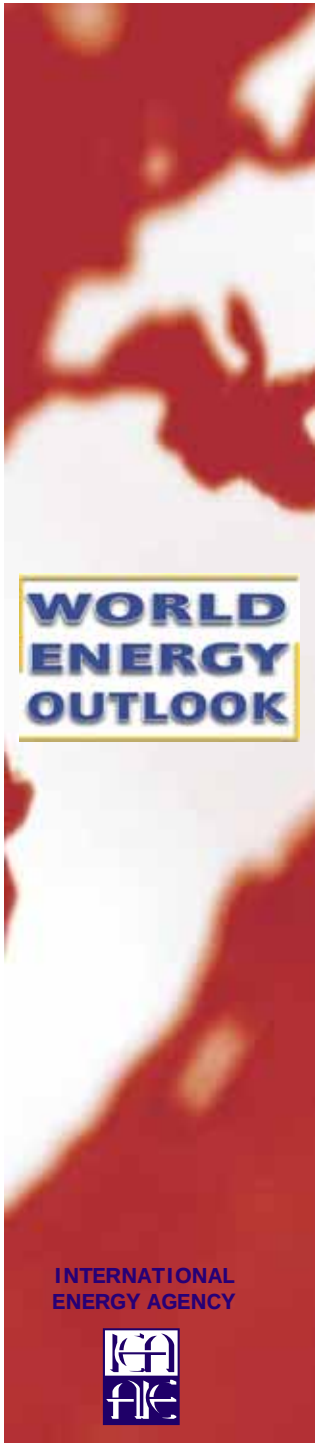
World Nuclear Capacity Additions



Under current policies, projected capacity additions will be a third of the additions over the past thirty years



Challenge 1: Security of Supply

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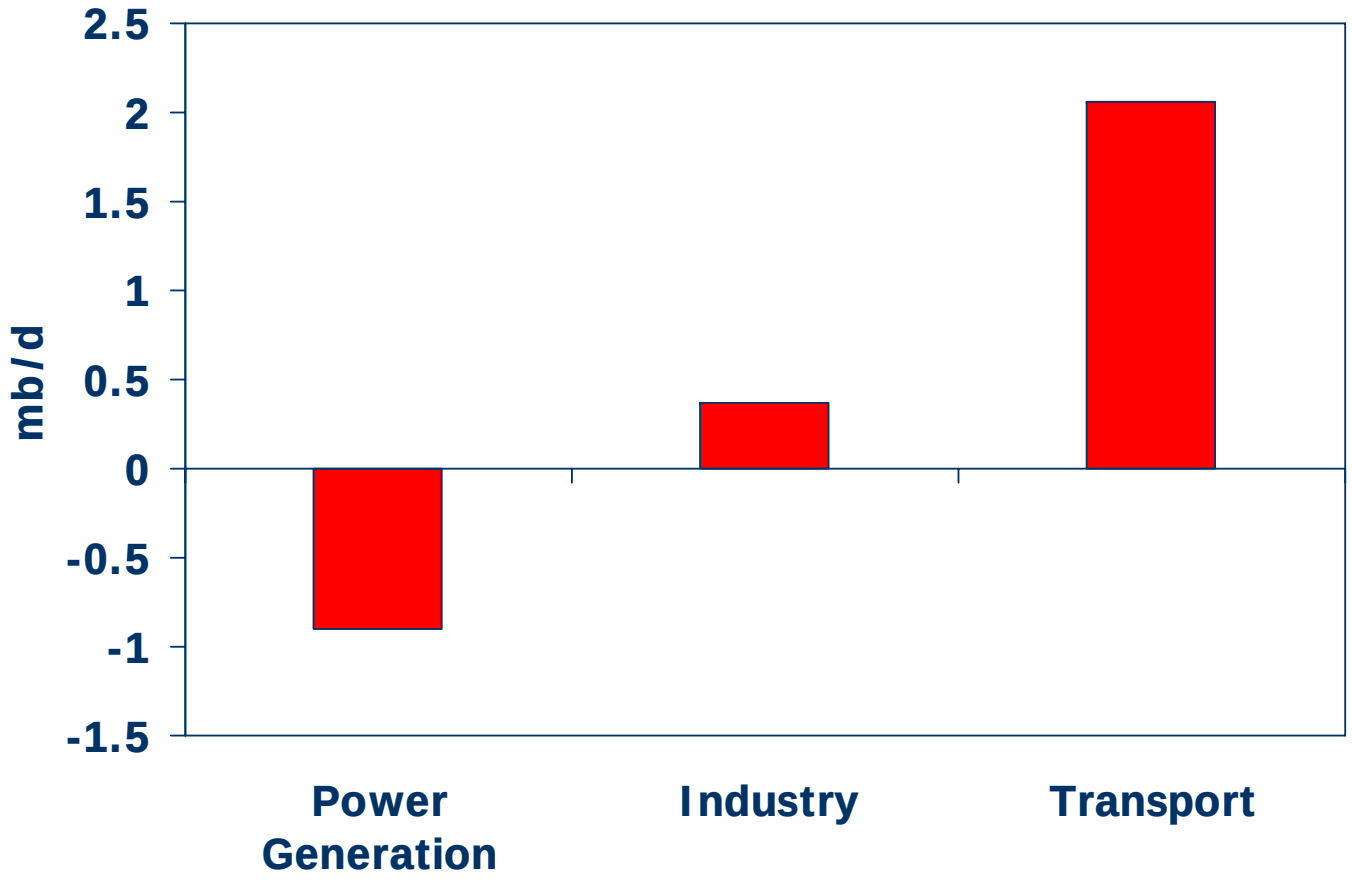
OECD Oil Demand Growth by Sector, 1999-2005



In the OECD, the transport sector accounted for almost all the oil demand growth

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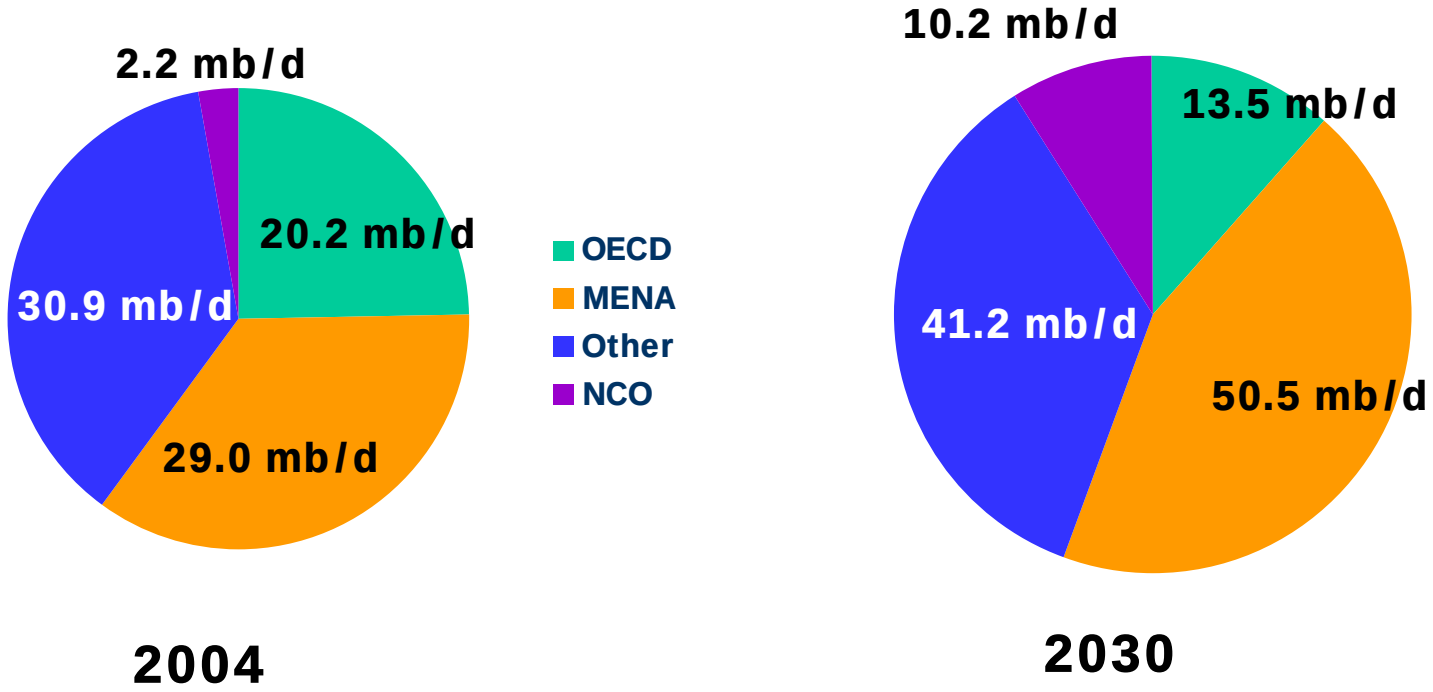
World Oil Production Shifts Away from OECD



Global oil production climbs from 82 mb/d in 2004 to 115 mb/d in 2030; OECD share falls from 25% to 12%

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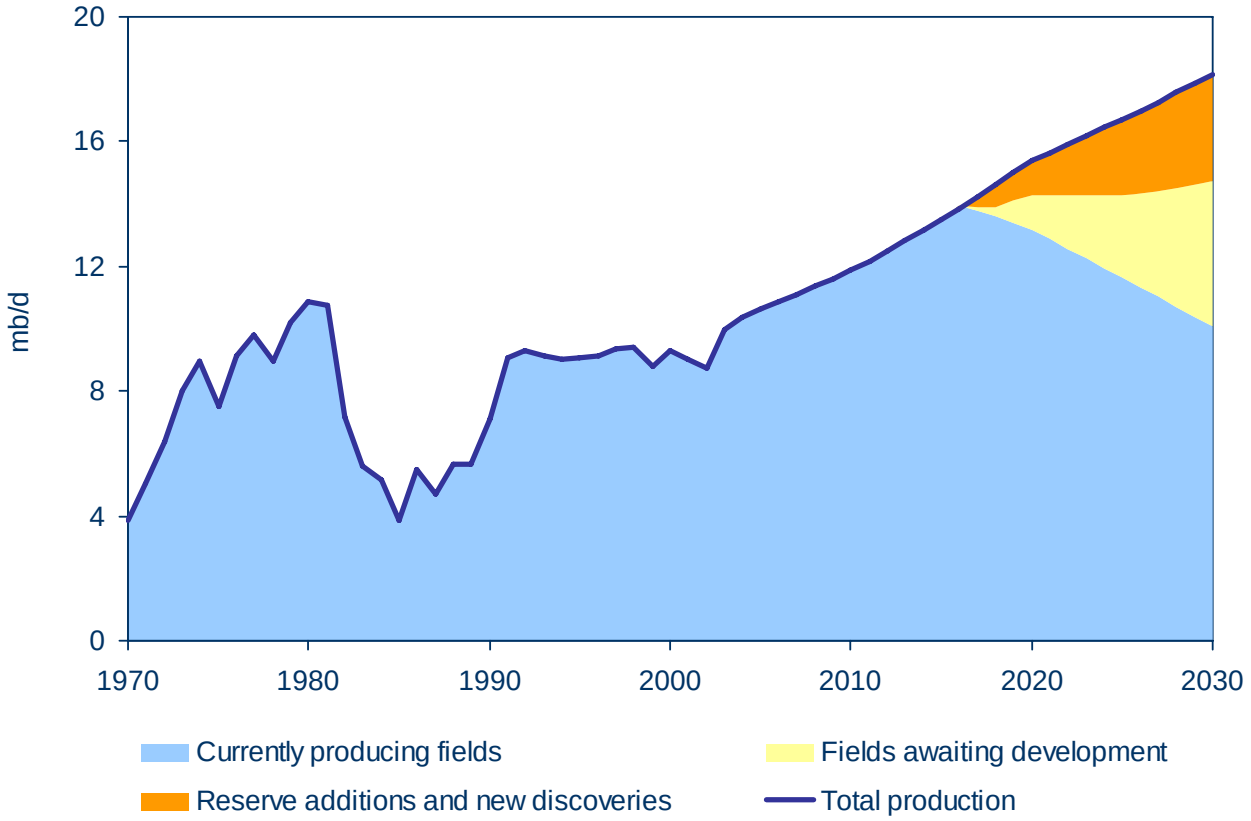
Saudi Arabia's Oil Production by Source in the Reference Scenario



Based on its reserves and global demand trends, Saudi oil production is projected to reach 18 mb/d in 2030

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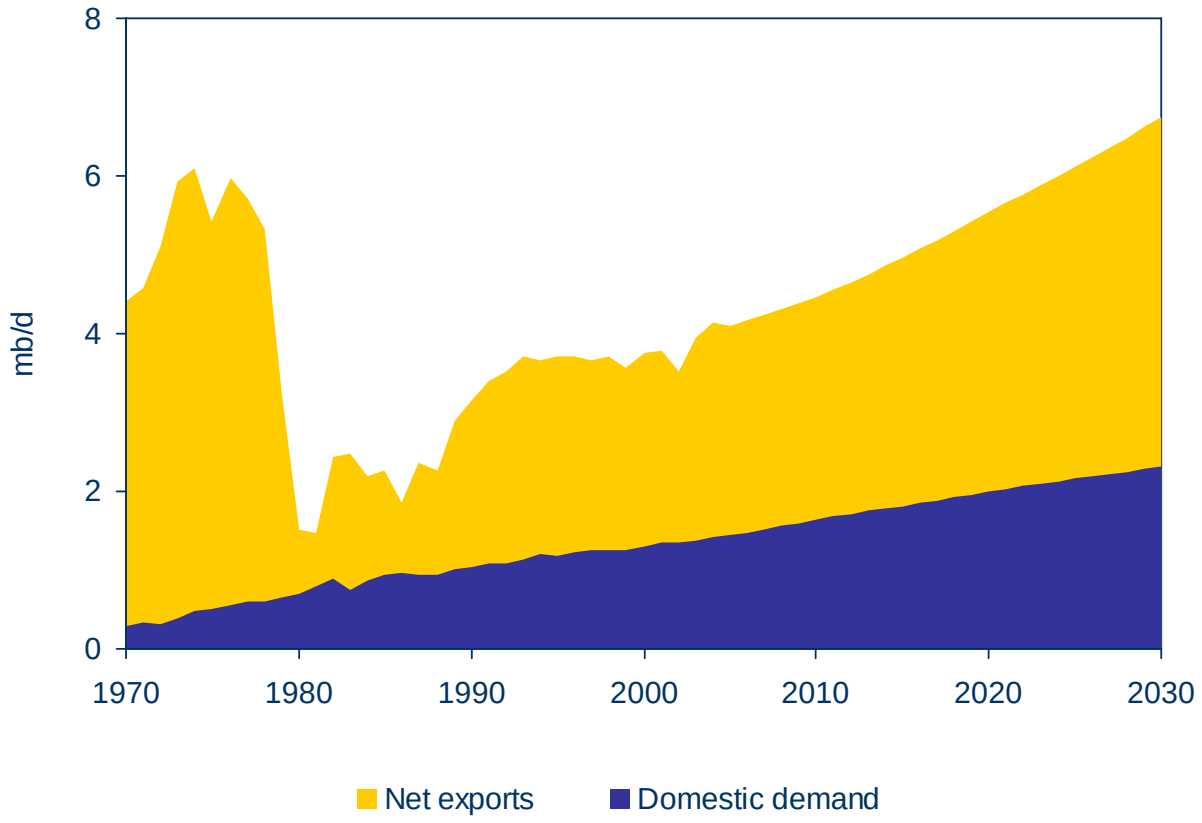
Iran's Oil Balance in the Reference Scenario



Iran oil production reaches 6.8 mb/d in 2030, but exports increase less rapidly due to strong growth in domestic demand

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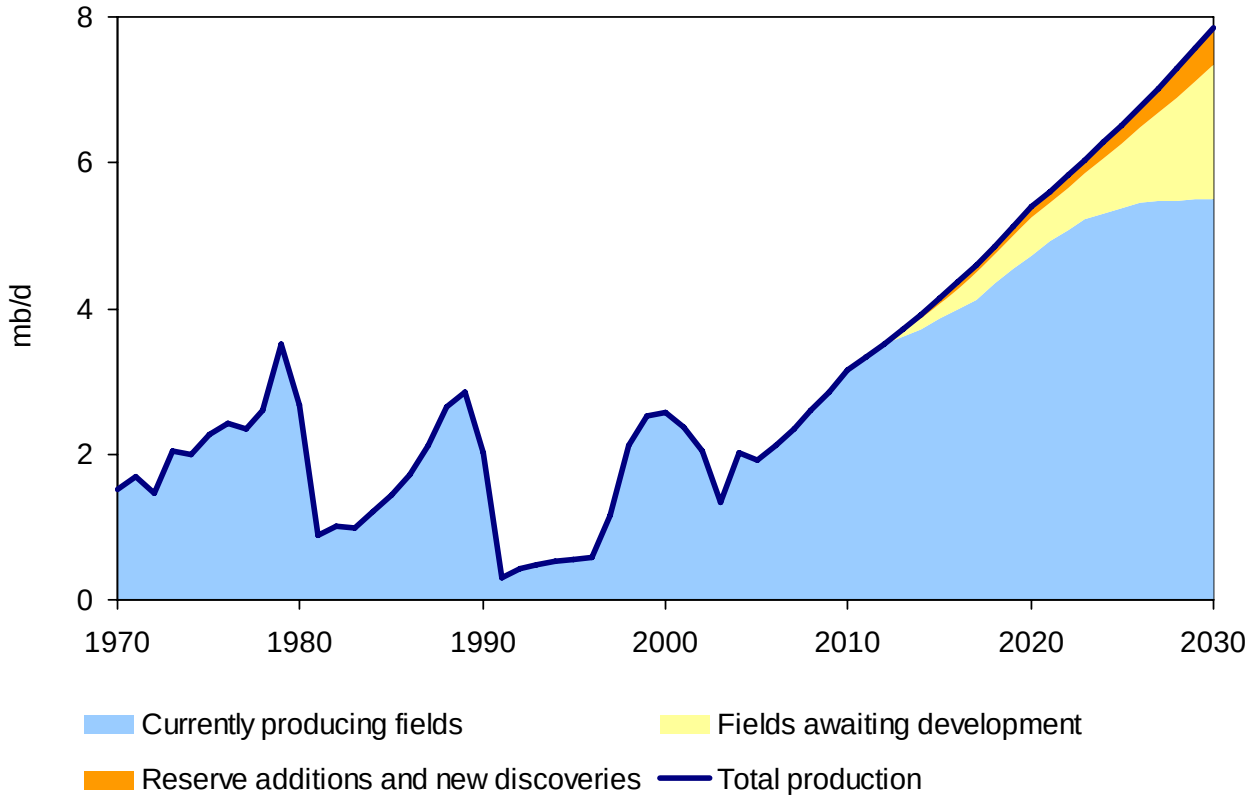
Oil Production Outlook in Iraq in the Reference Scenario



Oil production in Iraq is expected to reach around 3 mb/d in 2010 and 8 mb/d in 2030, provided that stability and security are restored

Proven Natural Gas Reserves

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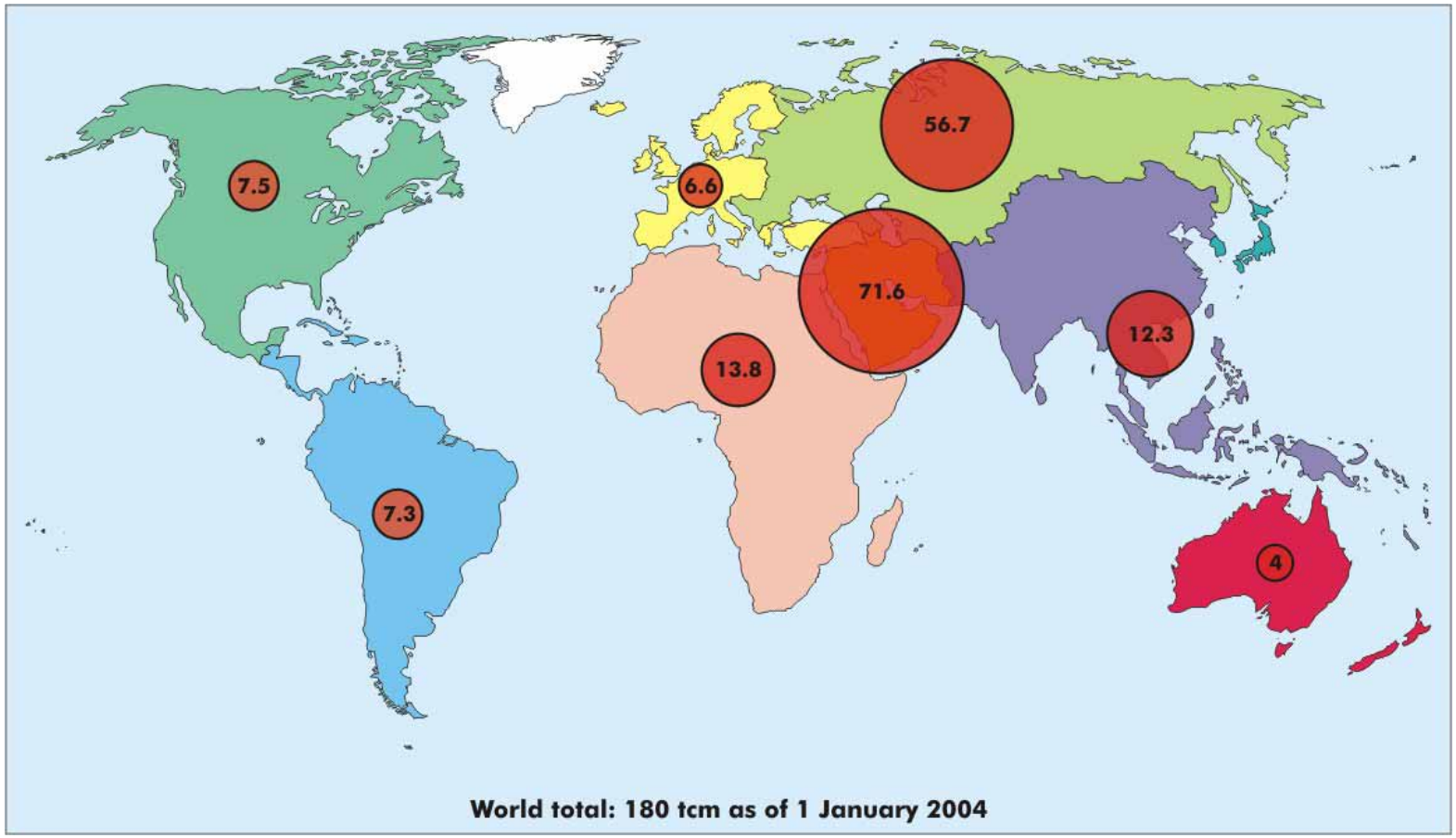

Gas reserves, concentrated in the Middle East & the transition economies, are equal to 66 years of current production

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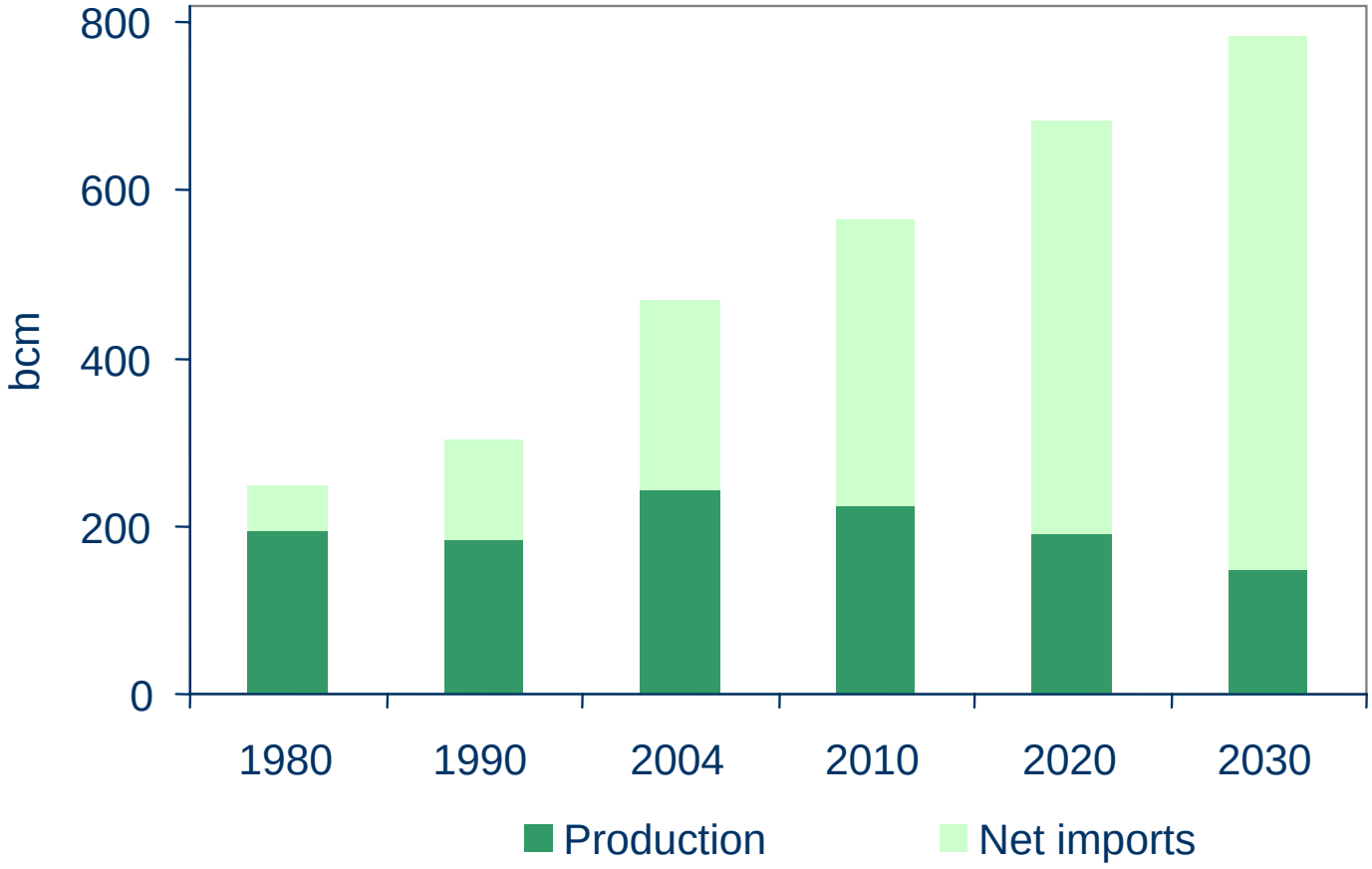
EU Gas Supply Balance



Rising demand – mainly for power generation – and declining output will cause net imports to surge

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Challenge 2: Carbon Dioxide Emissions

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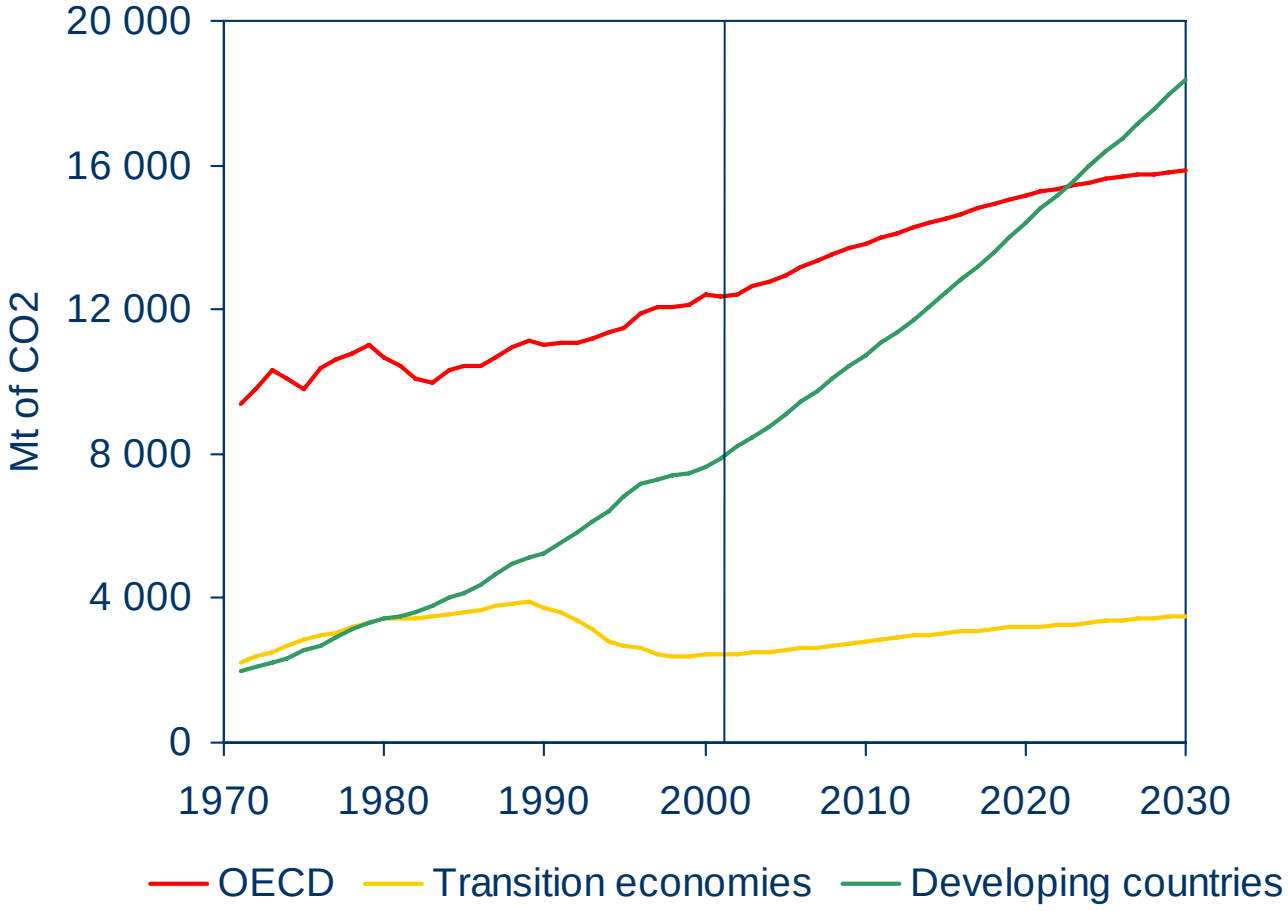
World Energy-Related CO_2 Emissions



Global emissions grow 50 % between now and 2030, and developing countries' emissions will overtake OECD's in the 2020s

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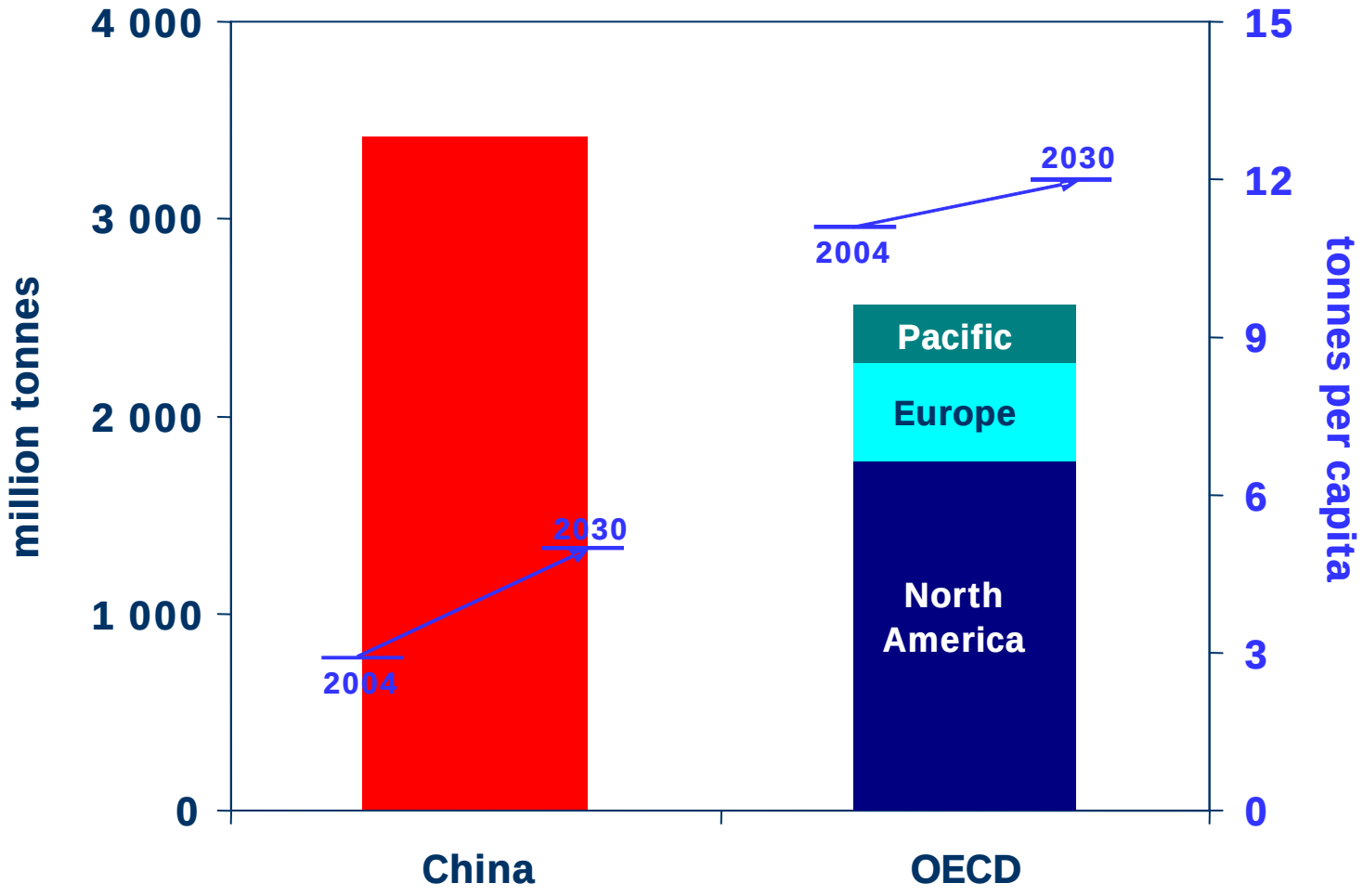
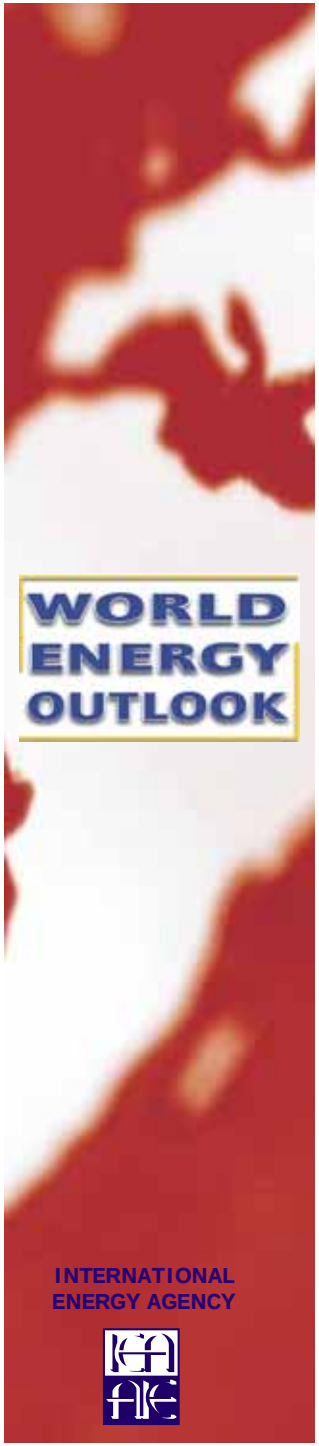
CO_2 Increase, 2004-2030

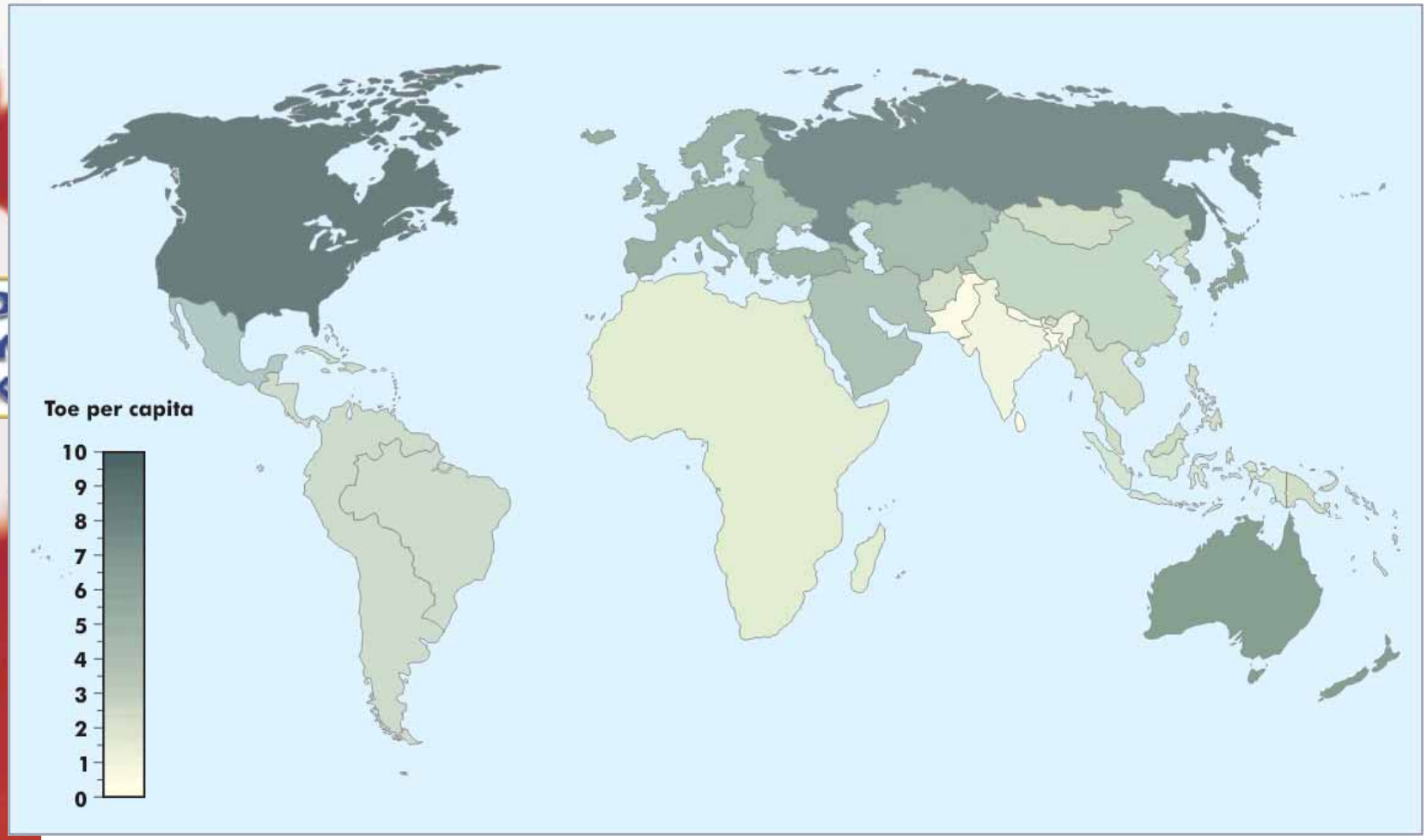


OECD CO_2 additions equal to only three quarters of Chinese CO_2 rise, but OECD emissions per capita still two times higher in 2030



Challenge 3: Energy and Poverty

Per Capita Primary Energy Use, 2030



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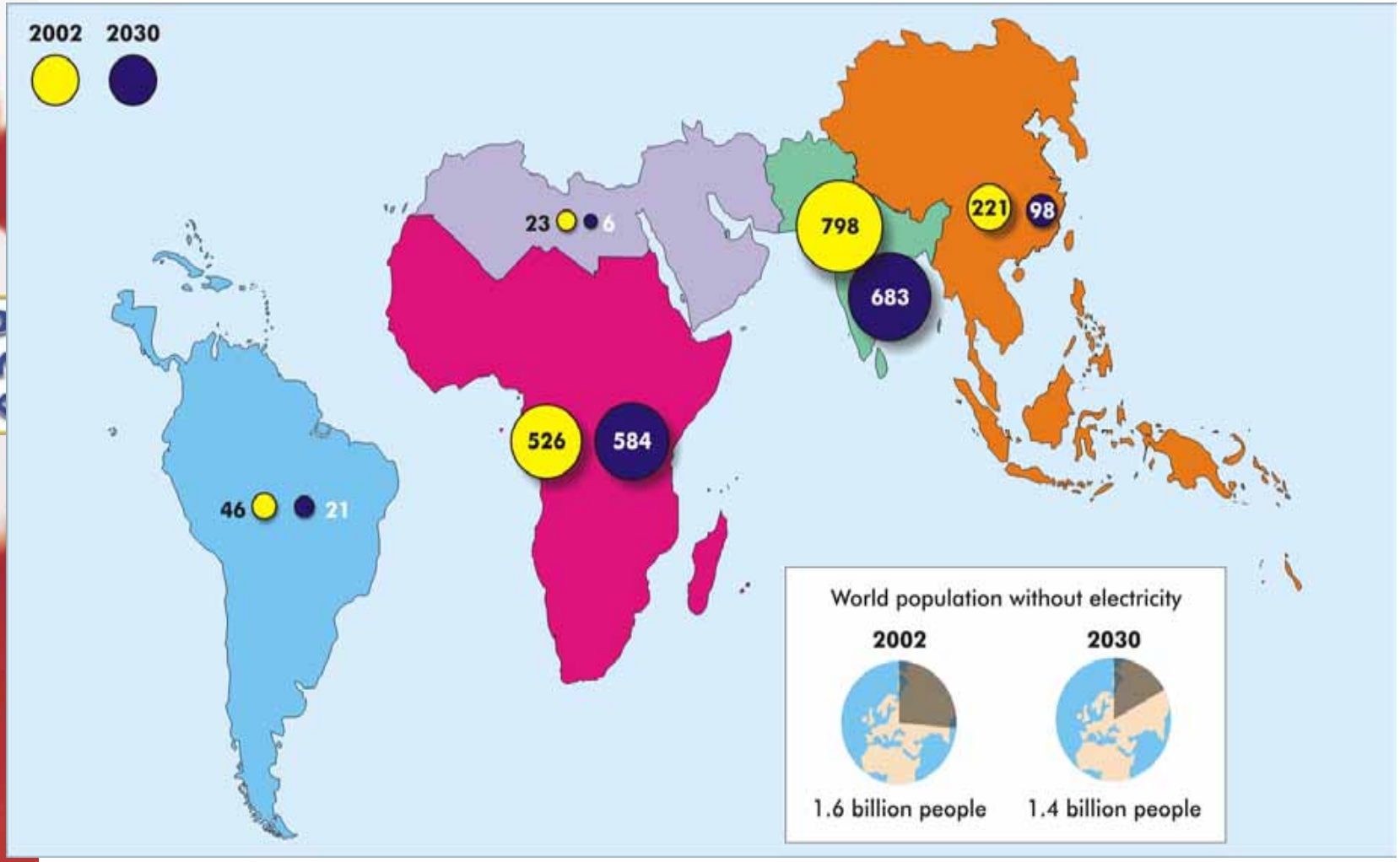
Per capita energy use remains much lower in developing countries

Electricity Deprivation



In 2030, if no new policies are implemented, there will still be 1.4 billion people without electricity

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World Alternative Policy Scenario

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Key Policies in Alternative Scenario for European Union

Power generation

- Renewable energy directive
- CHP directive
- Extension of reactor useful lifetime

Transport sector

- Prolongation and tightening of Voluntary Agreement with car manufacturers
- Biofuels target

Residential and commercial sectors

- Energy performance in buildings directive
- Energy labelling

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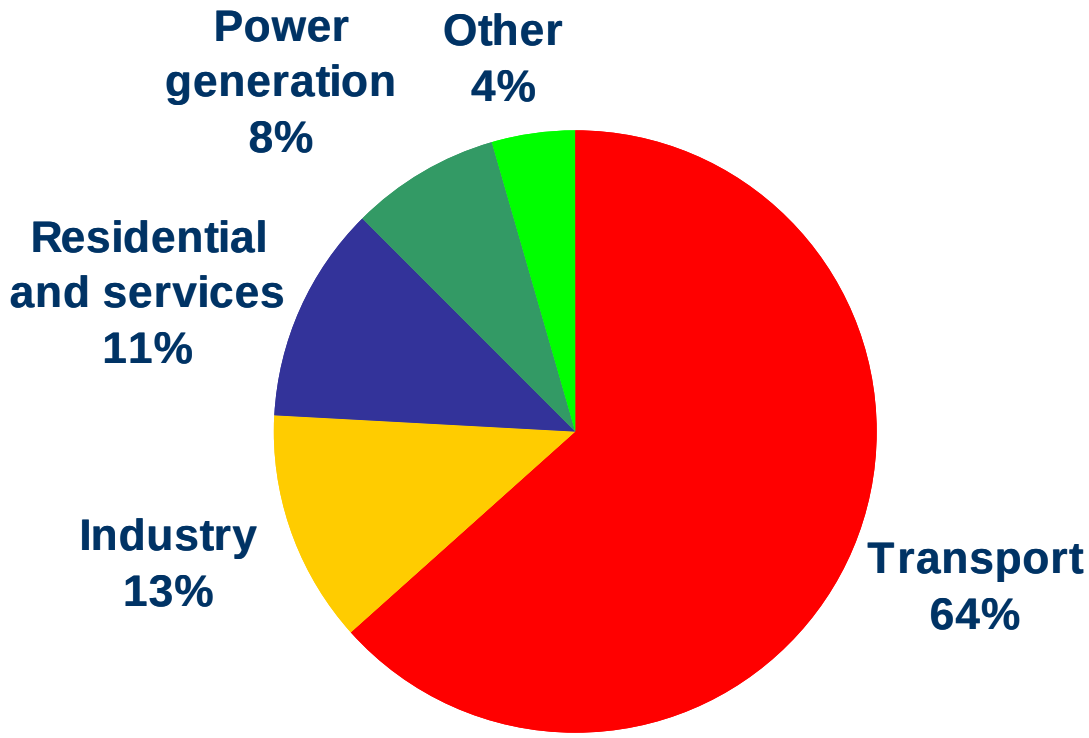
Reduction in Oil Demand in the Alternative vs. Reference Scenario, 2030



Oil savings = 12.8 mb/d

Oil savings in 2030 would be equivalent to the combined current production of Saudi Arabia, UAE and Nigeria

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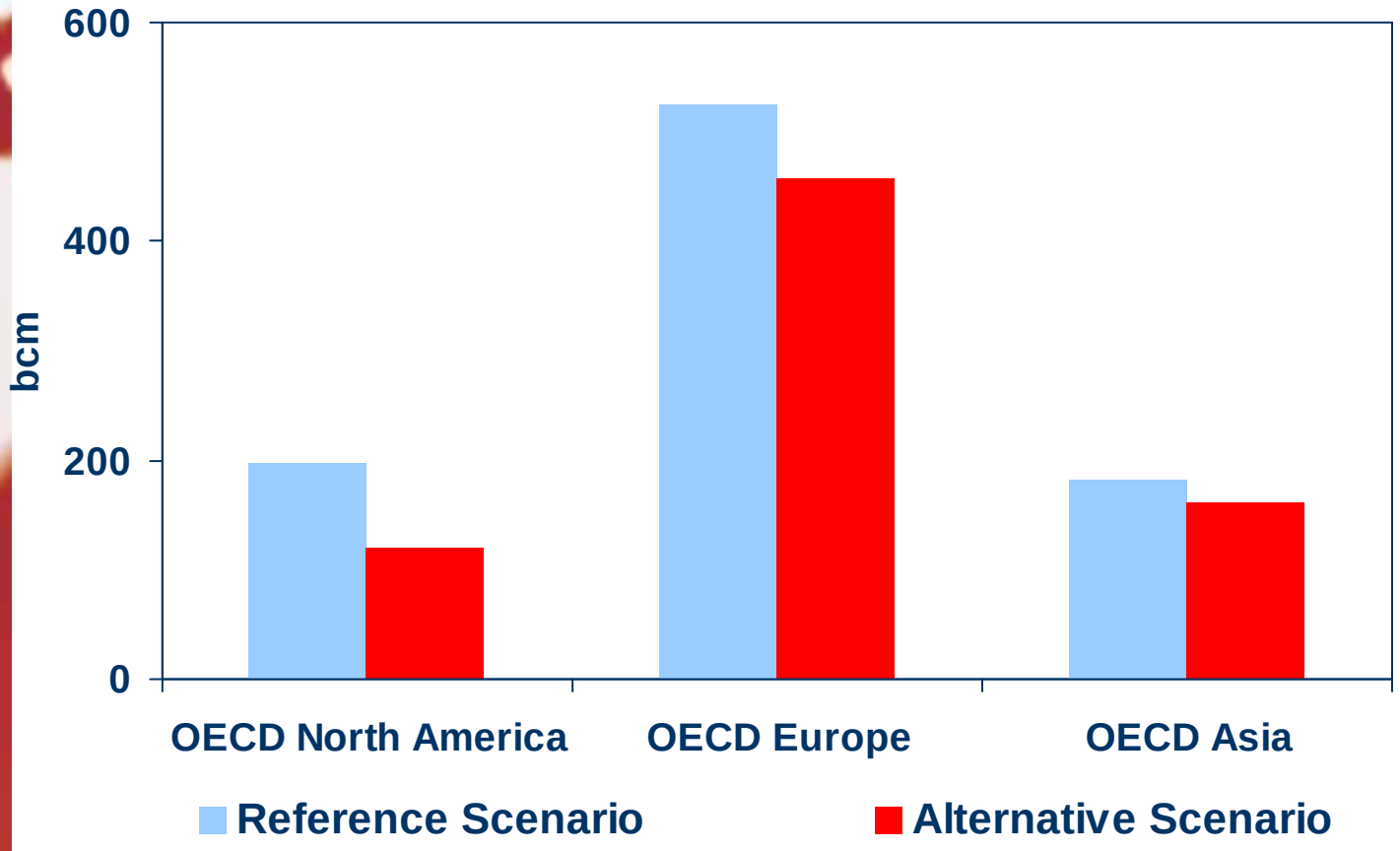
Net Gas Imports in the Alternative & Reference Scenarios, 2030



Net gas imports are lower in all major importing regions

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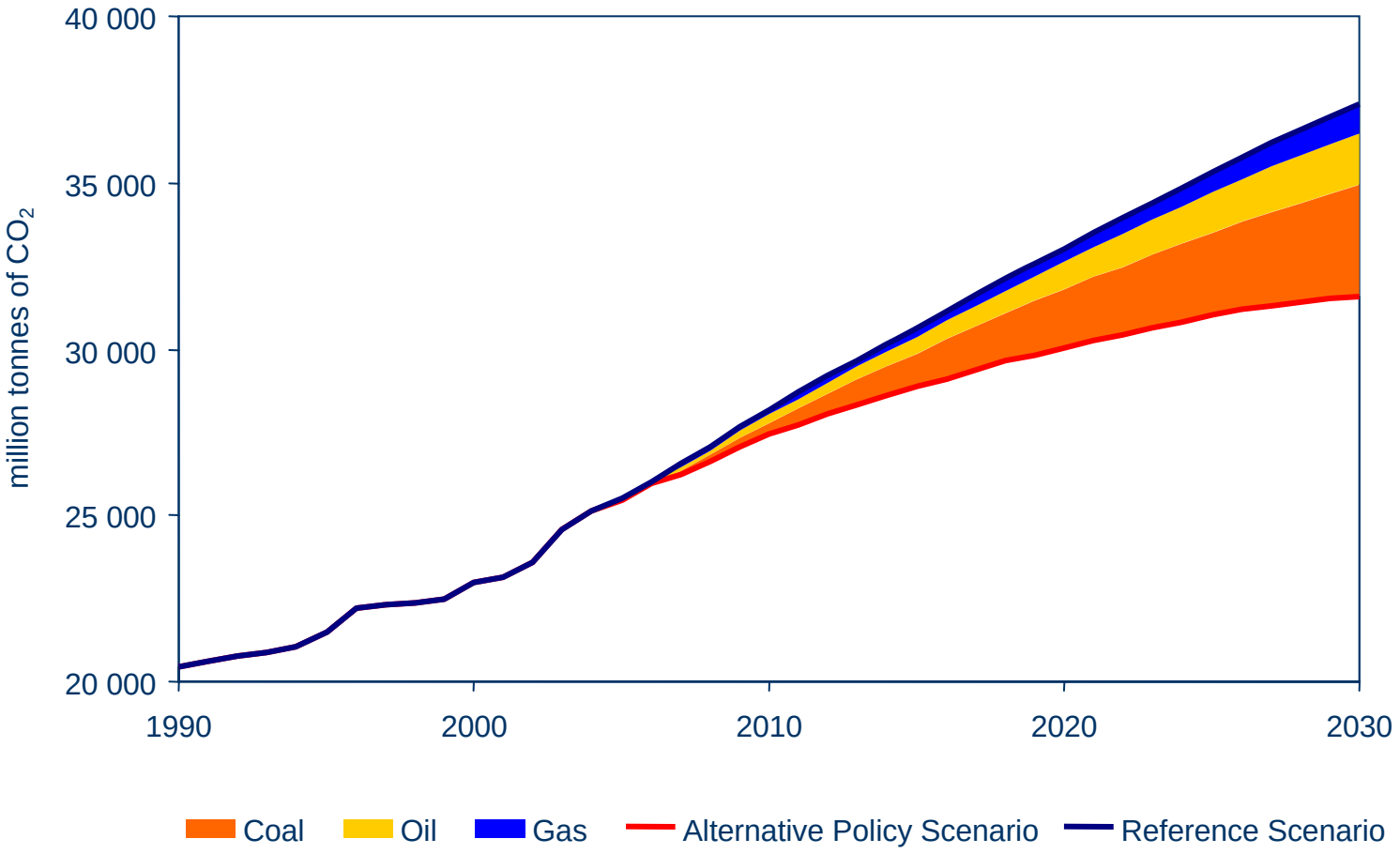
Global Energy-Related CO_2 Emissions in the Reference and Alternative Policy Scenarios



In 2030, CO_2 emissions are 16 % lower than in the Reference Scenario, but are still more than 50 % higher than 1990

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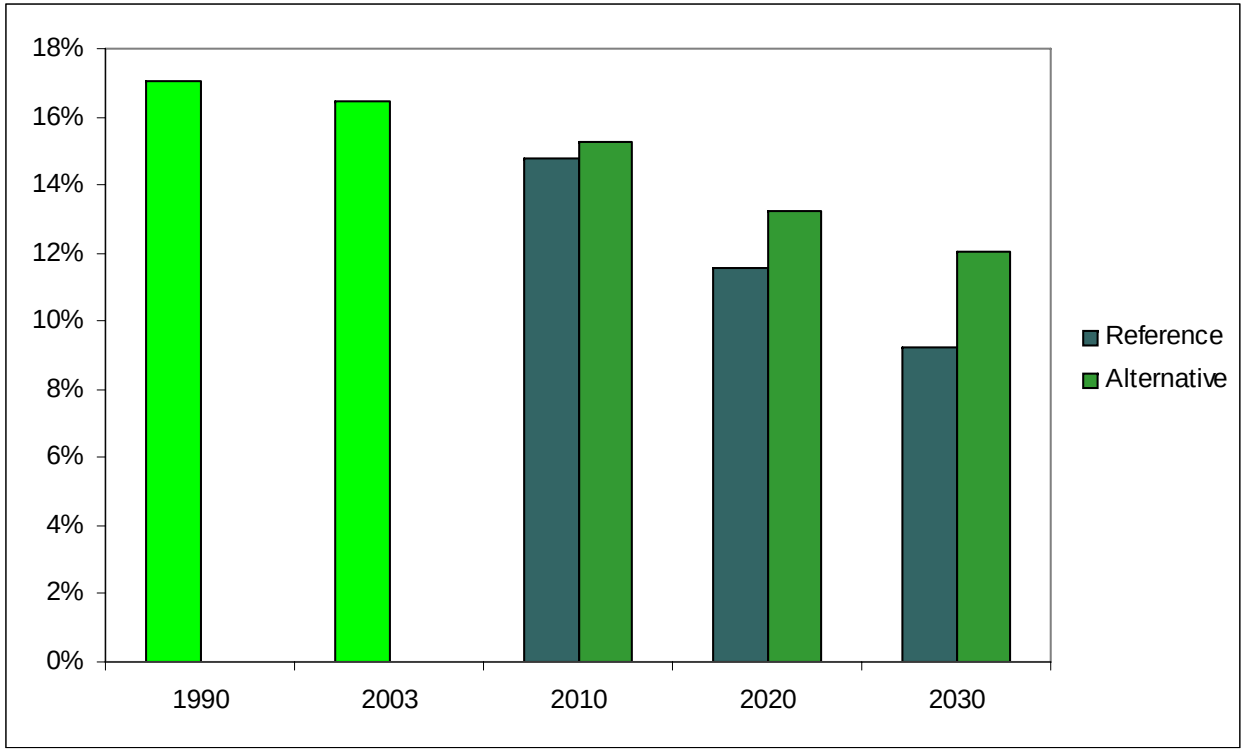
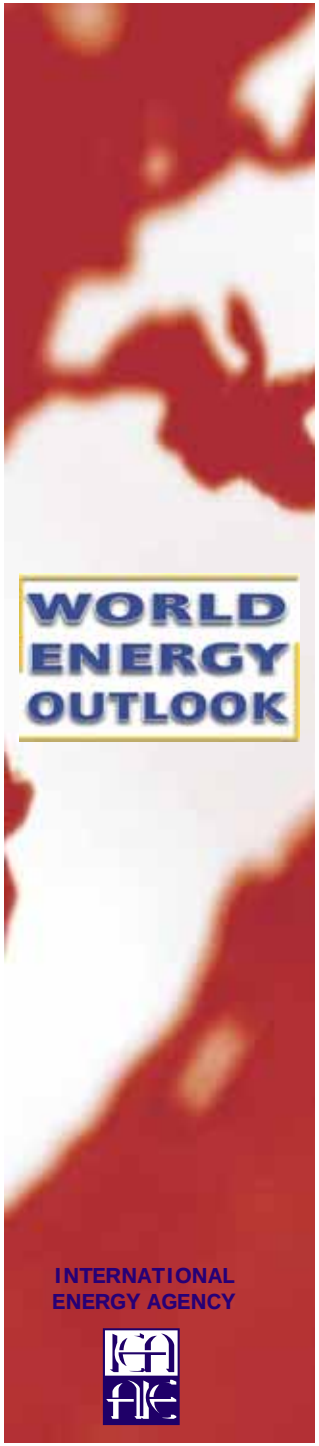
Share of Nuclear Power in World Electricity Generation

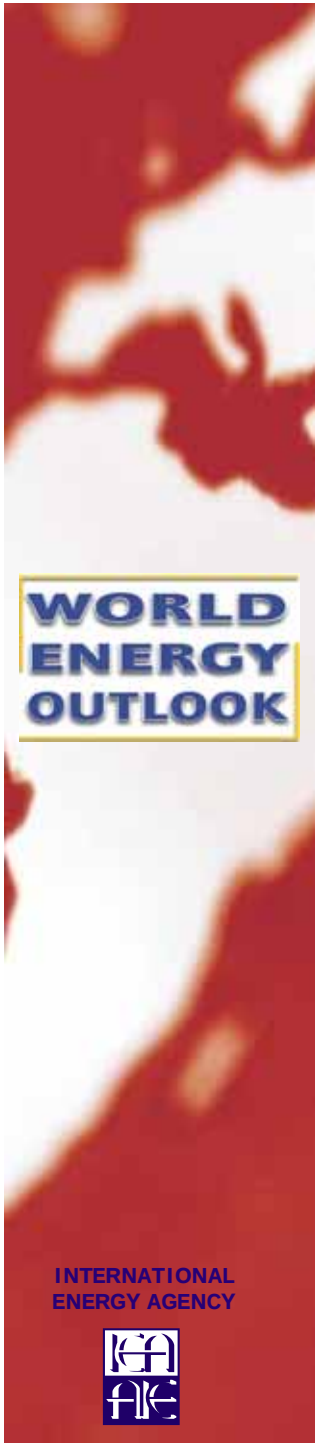


Policies going beyond the Alternative Scenario will be needed to maintain or increase the share of nuclear power



Summary & Conclusions

- Projected market trends raise serious concerns
  - Increased risk for energy security
  - Rising environmental concerns
  - Persistent energy poverty
- More vigorous policies would curb rate of increase in energy demand and emission significantly
- Nuclear power can largely contribute toward meeting these challenges
- Urgent and decisive government action needed



WEO 2006: Preliminary plan

- World Alternative Policy Scenario
  - a “tool for change”
  - Deepening and broadening the analysis
- Impact of high energy prices
  - Impact of high oil, gas and electricity prices on energy demand and macro economy
  - Focus on developing Asia
- Role for Nuclear
  - Availability of uranium and costs
  - Nuclear investments in competitive markets
- Energy Investment Prospects
  - Requirements vs. projects and plans
- Energy and Development
  - Focus on unsustainable use of biomass