

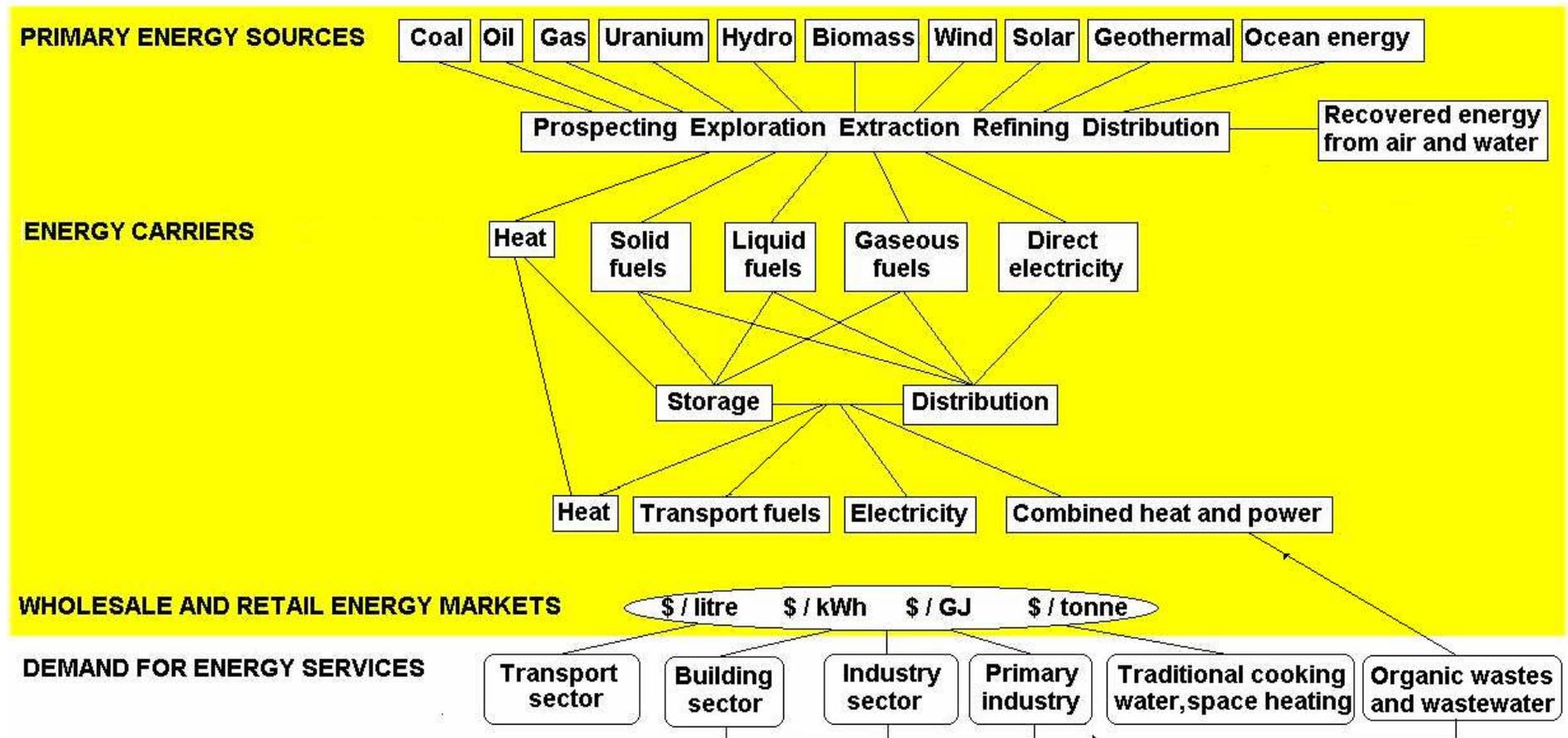


Inter-American meeting of national authorities and experts on energy for sustainable development in the Americas

Expansion and Diversification of Energy Matrix to Ensure Access to Energy and its Availability

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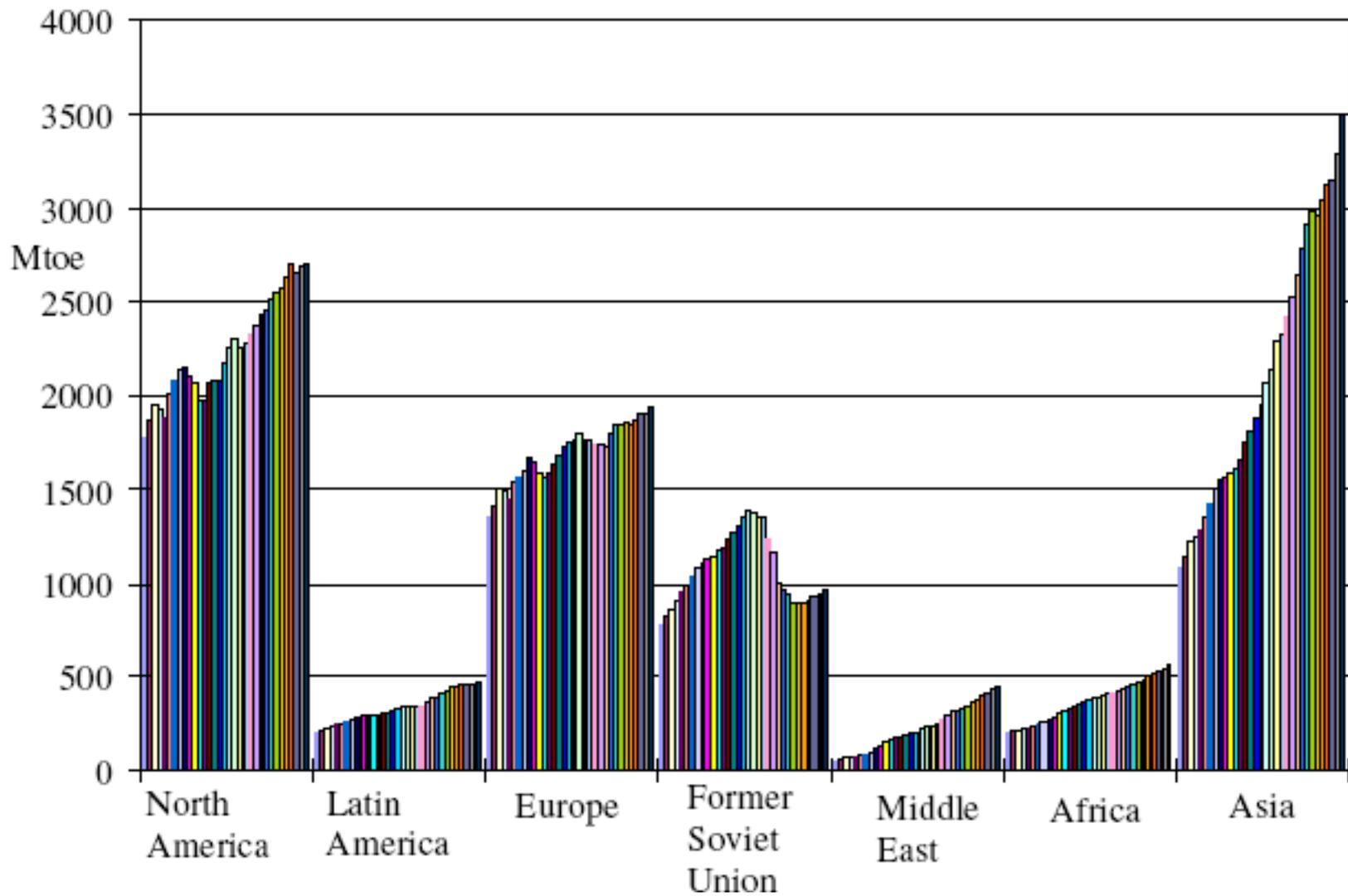
Monday, March 3, 2008
OAS Headquarters
17th and Constitution, N.W., Washington, DC



Source: IPCC AR4, WGiii, 2007

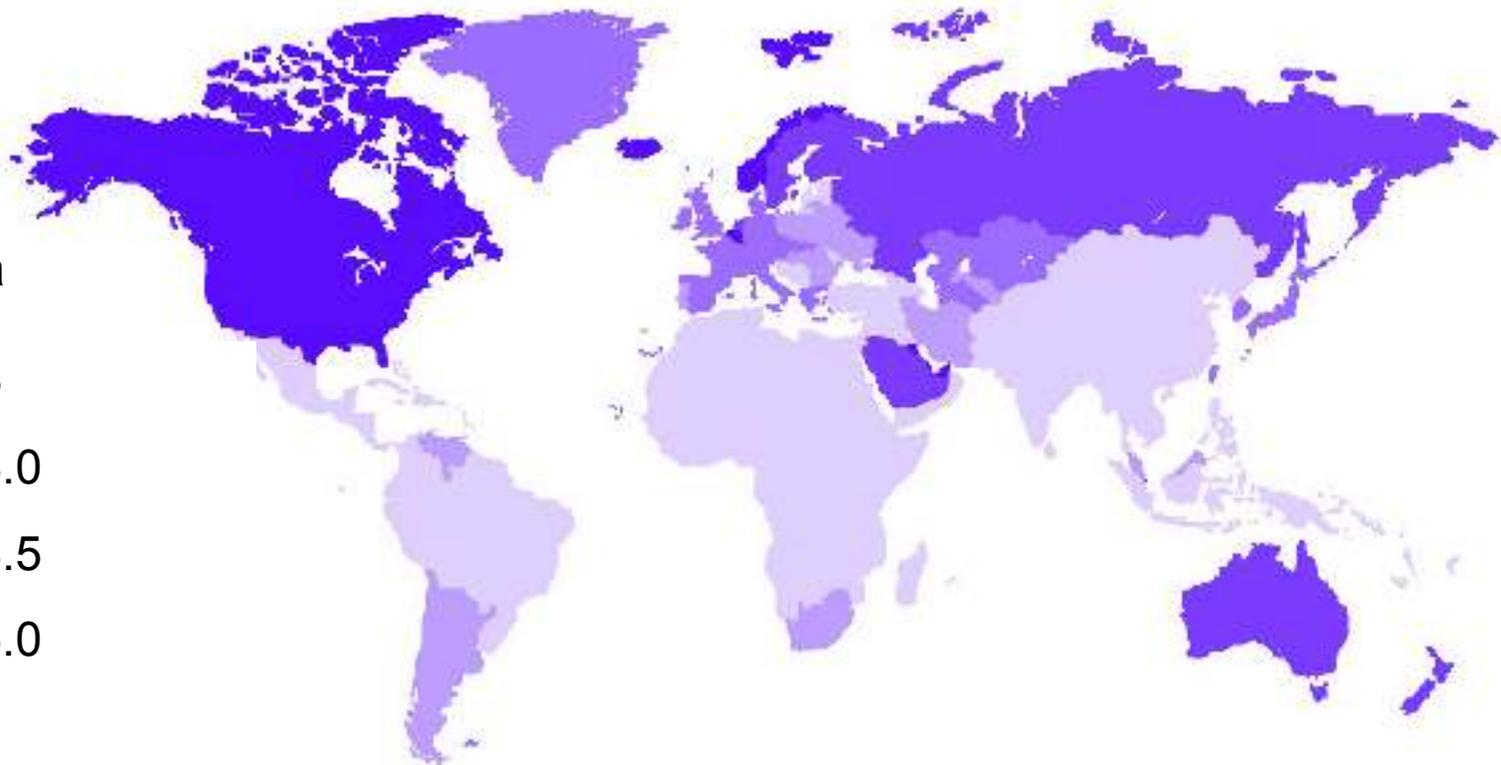


Source: IEA (2004)



Global annual primary energy demand (Mtoe including traditional biomass) for years 1971 to 2003 by region.

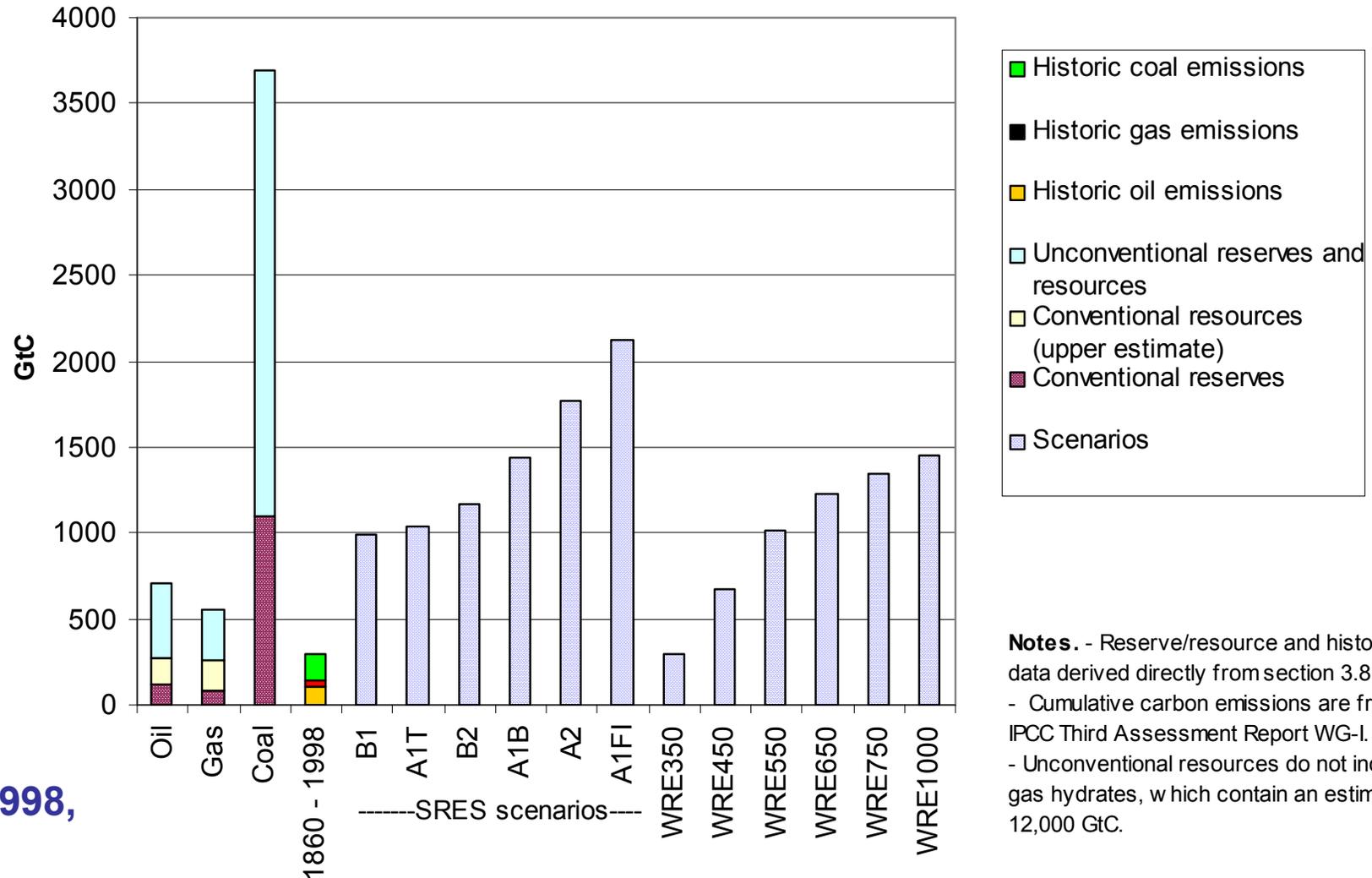
Toe/capita



Global annual energy consumption per capita by region
(toe/capita)

Source: BP, 2004

There is enough fossil fuel to fill the greenhouse much further than we want

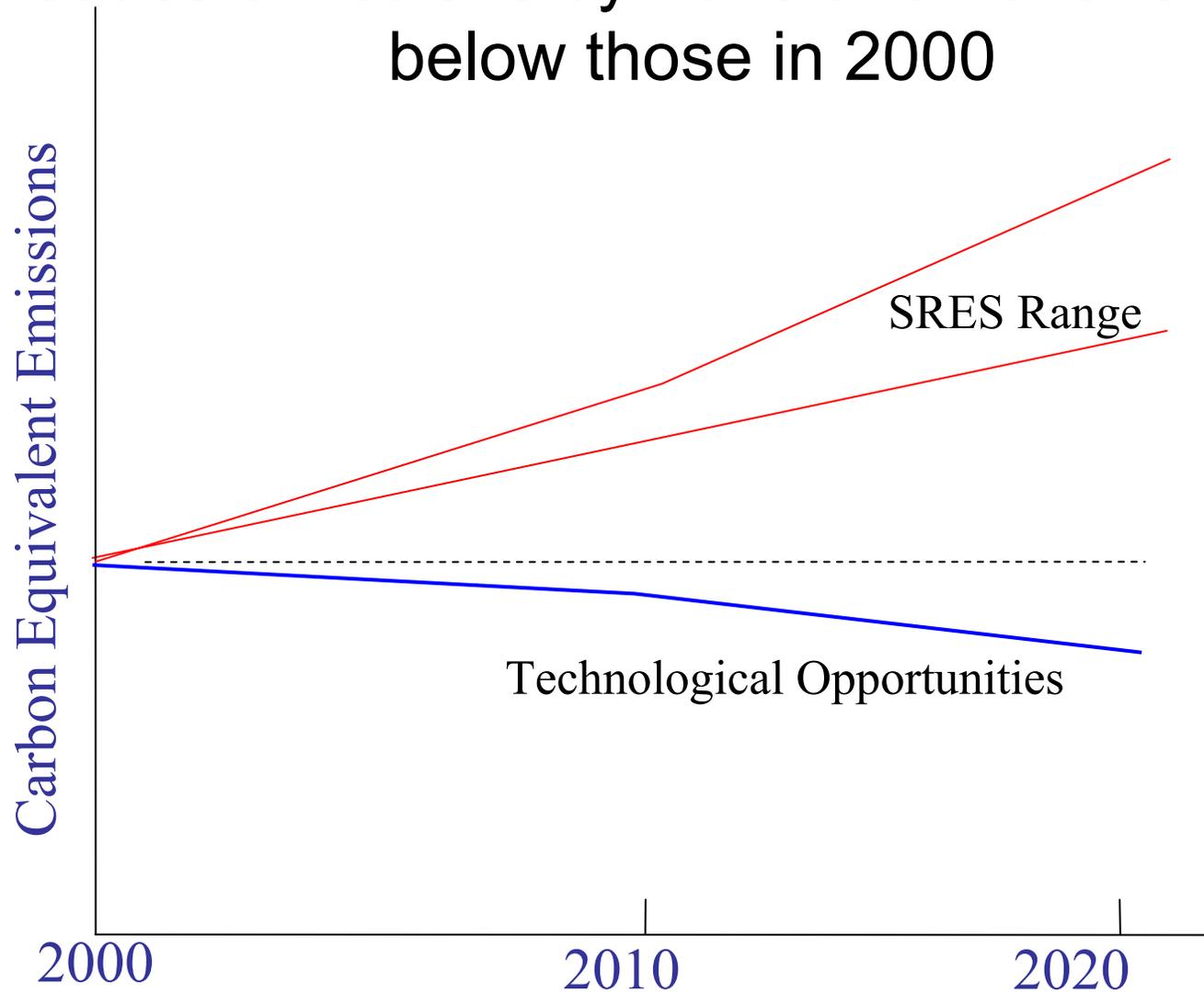


Notes. - Reserve/resource and historic use data derived directly from section 3.8.1.
 - Cumulative carbon emissions are from the IPCC Third Assessment Report WG-I.
 - Unconventional resources do not include gas hydrates, which contain an estimated 12,000 GtC.

IPCC 1998,
BONN,
IPCC TAR

Technology improvements have the potential to reduce emissions by 2010 and 2020 to levels below those in 2000

IPCC 98
BONN,
IPCC
TAR



Long-term technical potential renewable and nuclear energy supply

	Long-term Technical Potential (EJ/yr)
Hydro	>130
Geothermal	>20
Wind	>130
Ocean	>20
Solar	>2600
Biomass	>1300
Total Renewable	>4200

**2100 Total Energy
Demand for SRES
scenario range:
515-2737 EJ/yr**

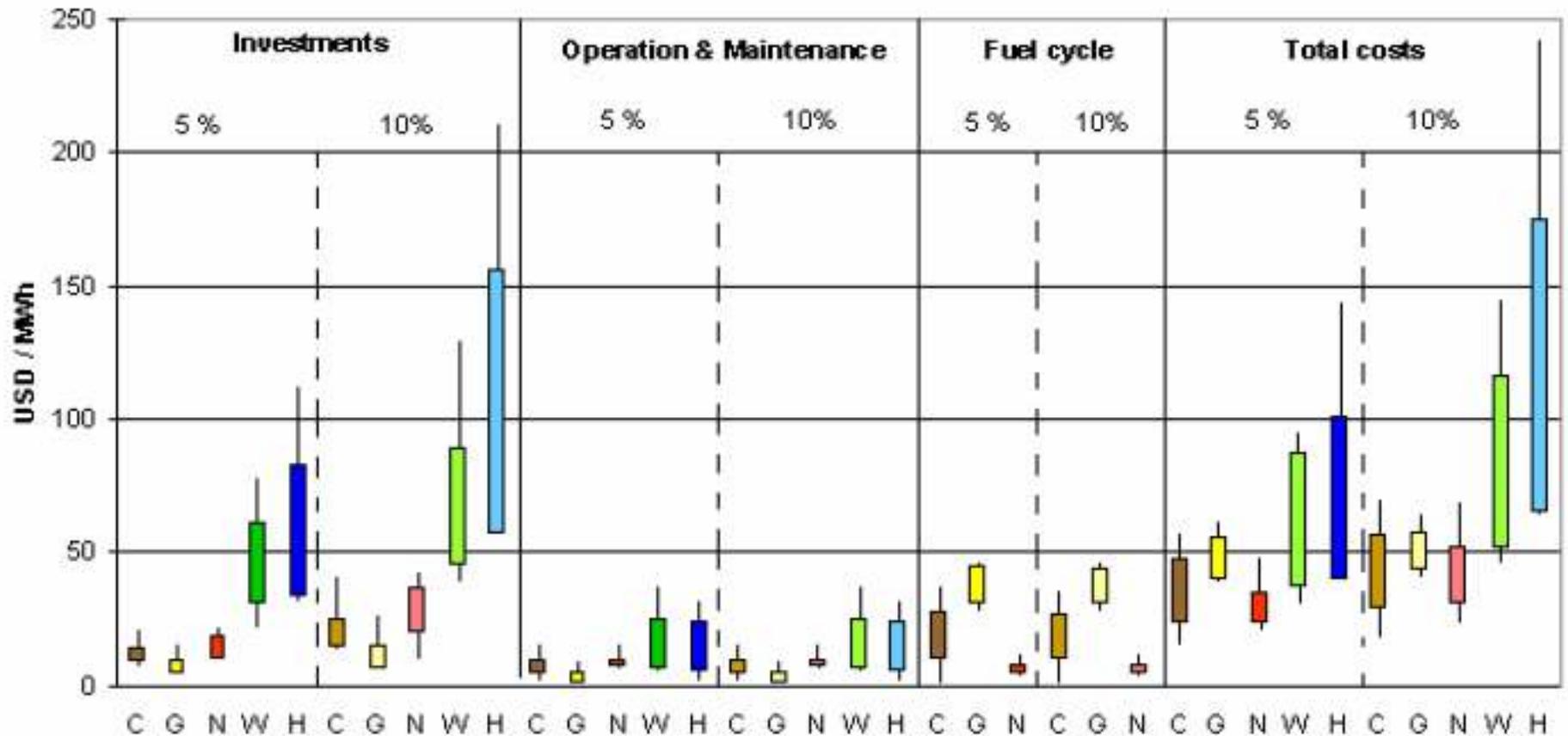
Nuclear total: 7700- 462000 EJ

>> average 77-4620 EJ/yr over next 100 years

Source: Nakicenovics et al, IPCC,2000

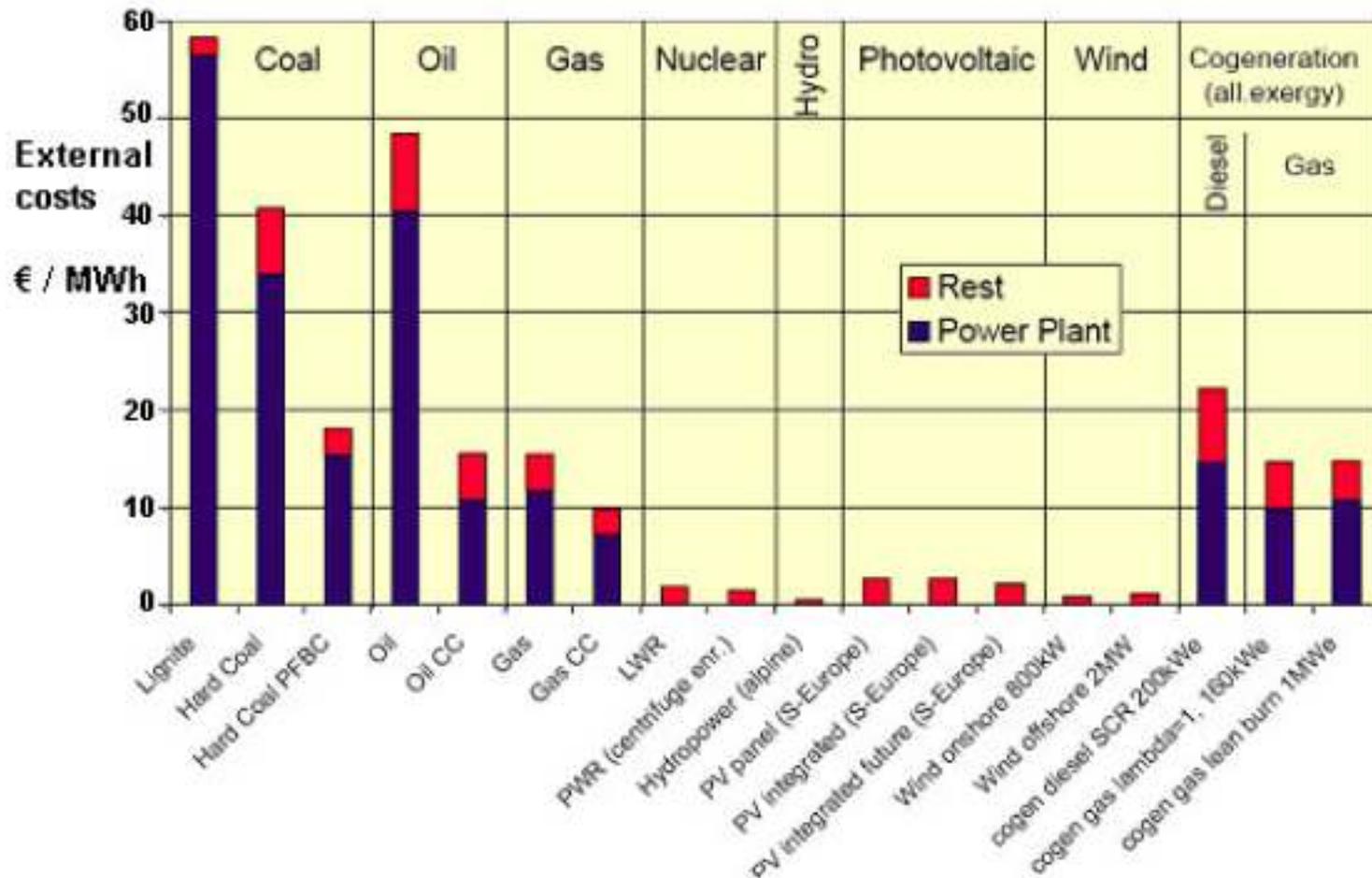
Source: IEA/NEA (2005)

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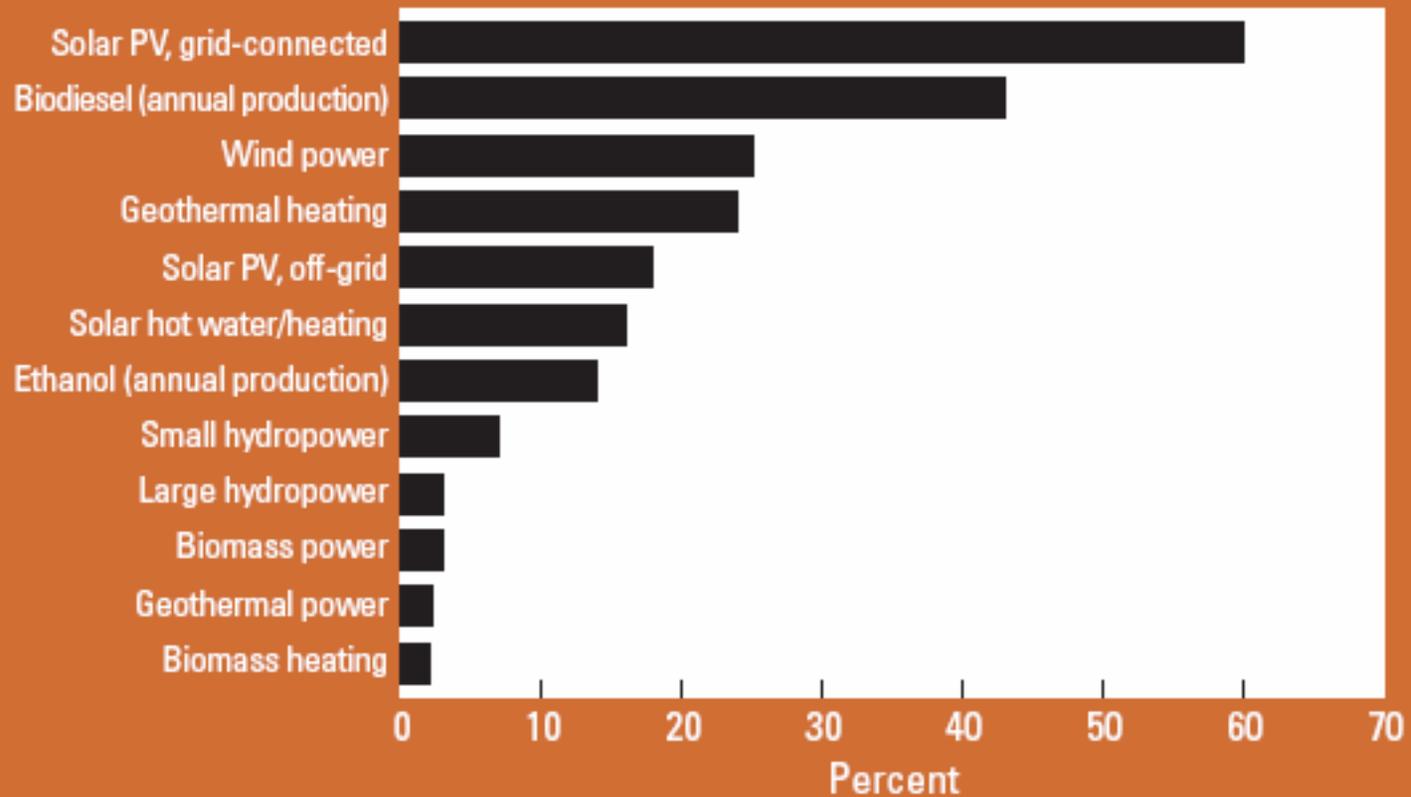
Projected power-generating levelized costs for actual and planned coal (C), gas (G) nuclear (N), wind (W) and hydro (H) power plants with assumed capital interest rates of 5 or 10%. Notes: Bars depict 10 and 90 percentiles and lines extend to show minimum and maximum estimates. Source: IEA/NEA (2005)

Source: EU, 2005



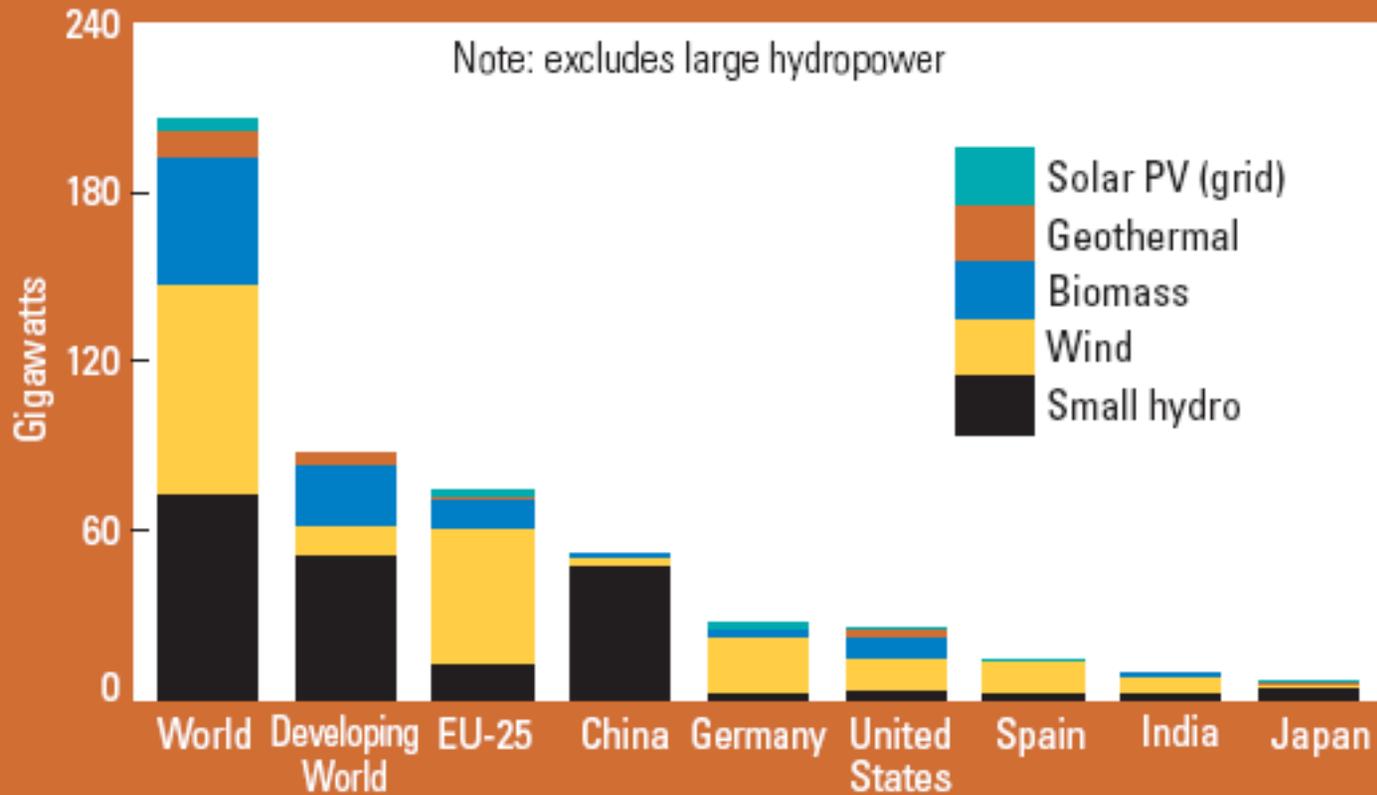
External costs (/MWh) of present and more advanced electricity systems associated with emissions from the operation of the power plant and the rest of the fuel supply chain (EU, 2005). “Rest” is the external cost related to the fuel cycle. (1 = 1.3 US\$ approximately).

Figure 3. Average Annual Growth Rates of Renewable Energy Capacity, 2002–2006



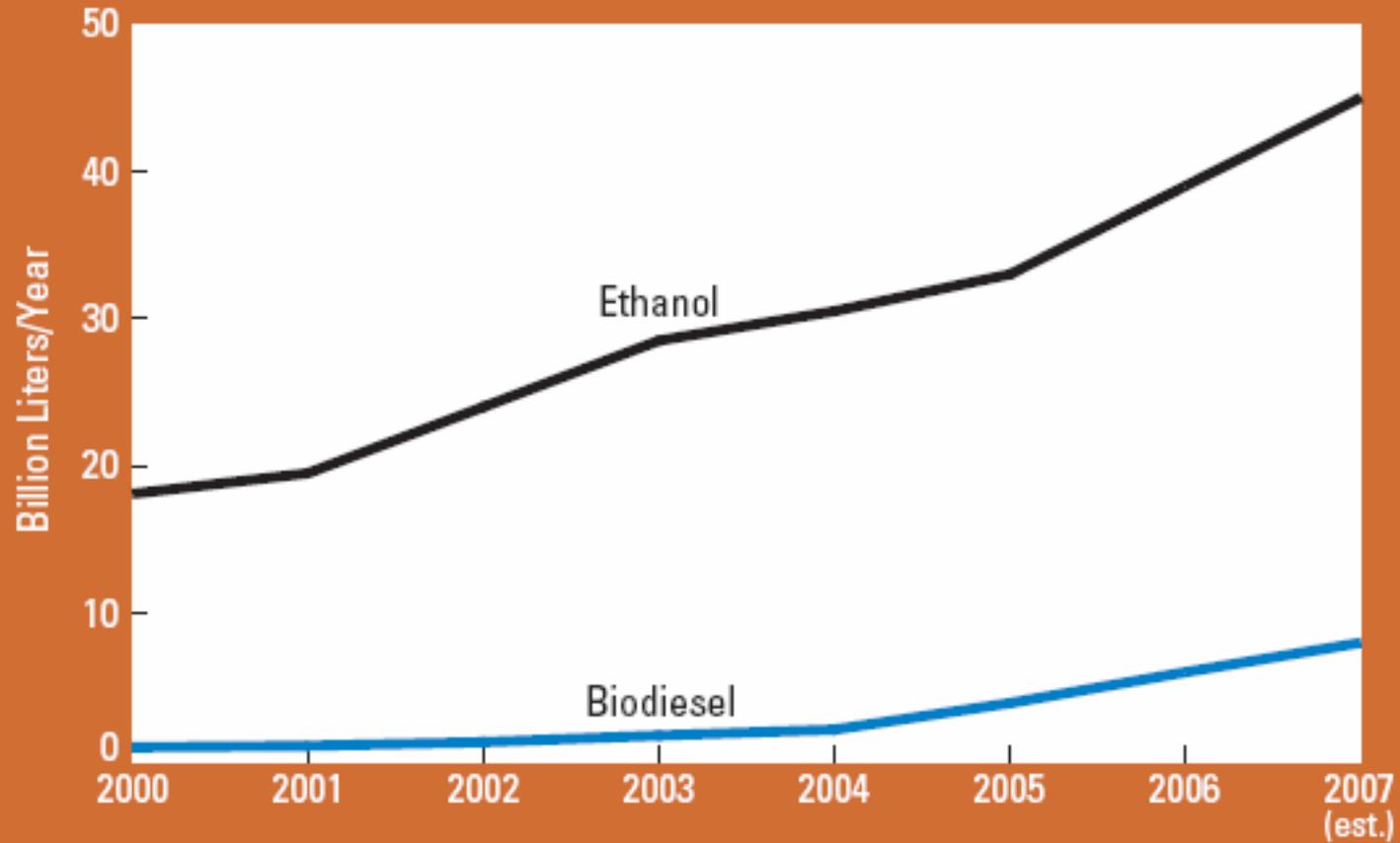
Source: REN 21, 2007

Figure 7. Renewable Power Capacities, Developing World, EU, and Top Six Countries, 2006



Source: REN 21, 2007

Figure 10. Ethanol and Biodiesel Production, 2000–2007



Source: REN 21, 2007

Figure 1. Renewable Energy Share of Global Final Energy Consumption, 2006

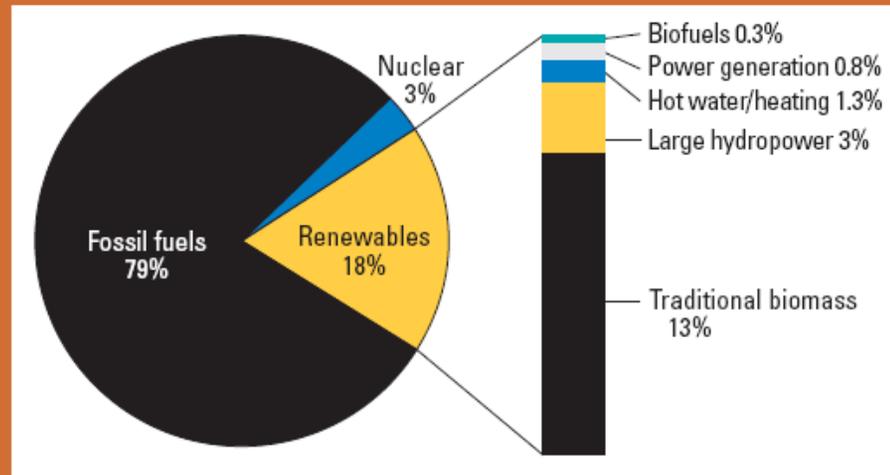
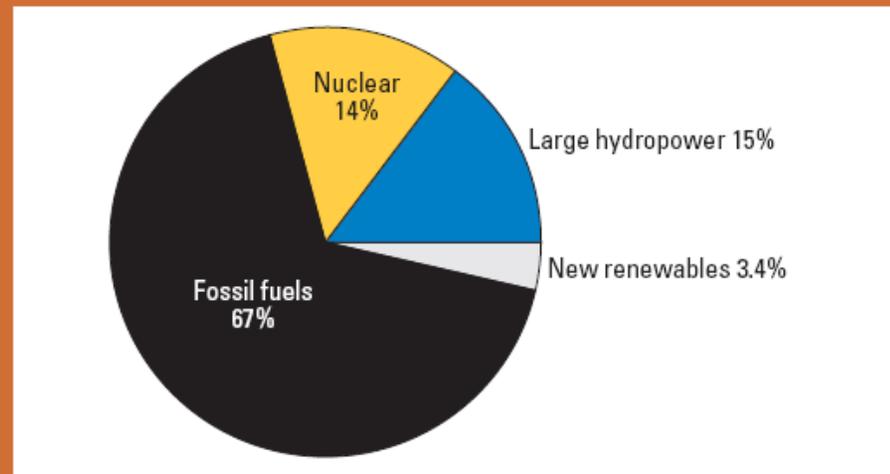


Figure 2. Share of Global Electricity from Renewable Energy, 2006



**Source: REN
21, 2007**

CONCLUSIONS (1)

- By mid-2007, at least 140 publicly traded renewable energy companies worldwide (or renewable energy divisions of major companies) each had a market capitalization greater than \$40 million.
- The estimated total market capitalization of these companies and divisions in mid-2007 was more than \$100 billion.
- Several renewable energy companies went through high profile IPOs, generating market capitalization above or near \$1 billion during 2006/2007.

CONCLUSIONS (2)

- Altogether, clean-energy companies raised about \$10 billion in 2006 via public stock markets, almost double the 2005 amount
- The period 2006/2007 saw accelerating investments in manufacturing plants for wind turbines, wind turbine components, conventional solar PV, thin-film solar PV, and concentrating solar thermal power plant components, along with continued rapid investment in conventional biofuels production plants in a few countries
- In the ethanol industry, the United States dominated, with 130 operating ethanol plants and production capacity of 26 billion liters/year by 2007, a 60 percent increase over 2005. Brazil continued its ethanol expansion plans, begun in 2005, which now would more than double production by adding 22 billion liters/year of new sugar plantations and ethanol production capacity by 2012. Total investment required in Brazil during 2006–2012 may exceed \$15 billion.

CONCLUSIONS (3)

- Even so we still need much more investments, policies and human capacity to adequately mitigate climate change through renewables
- Lack of information and poor understanding of the potential of renewable energy has triggered oppositions, some asking for moratorium on biofuels production and use



THANK YOU VERY MUCH

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