

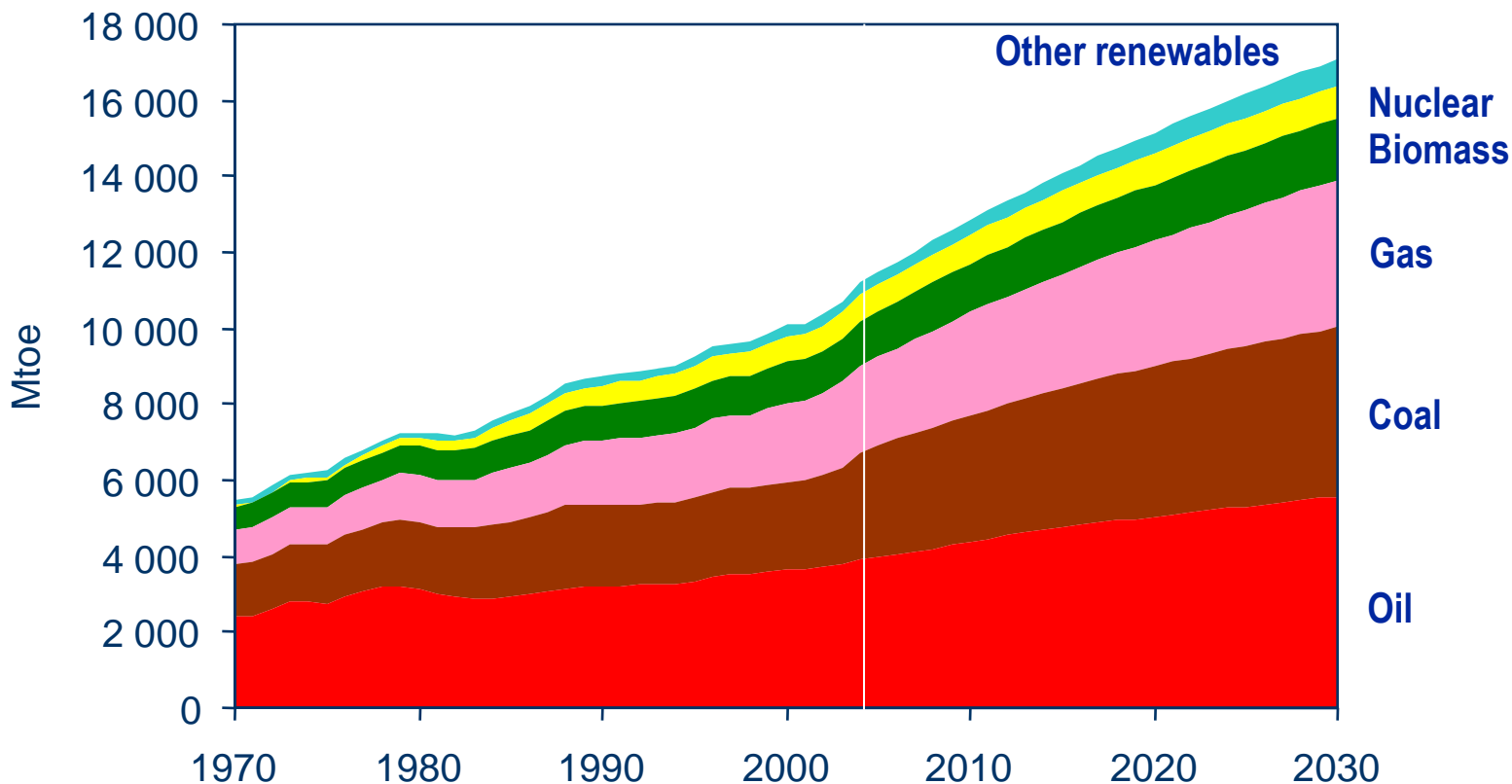
Climate change and the possible role of nuclear power

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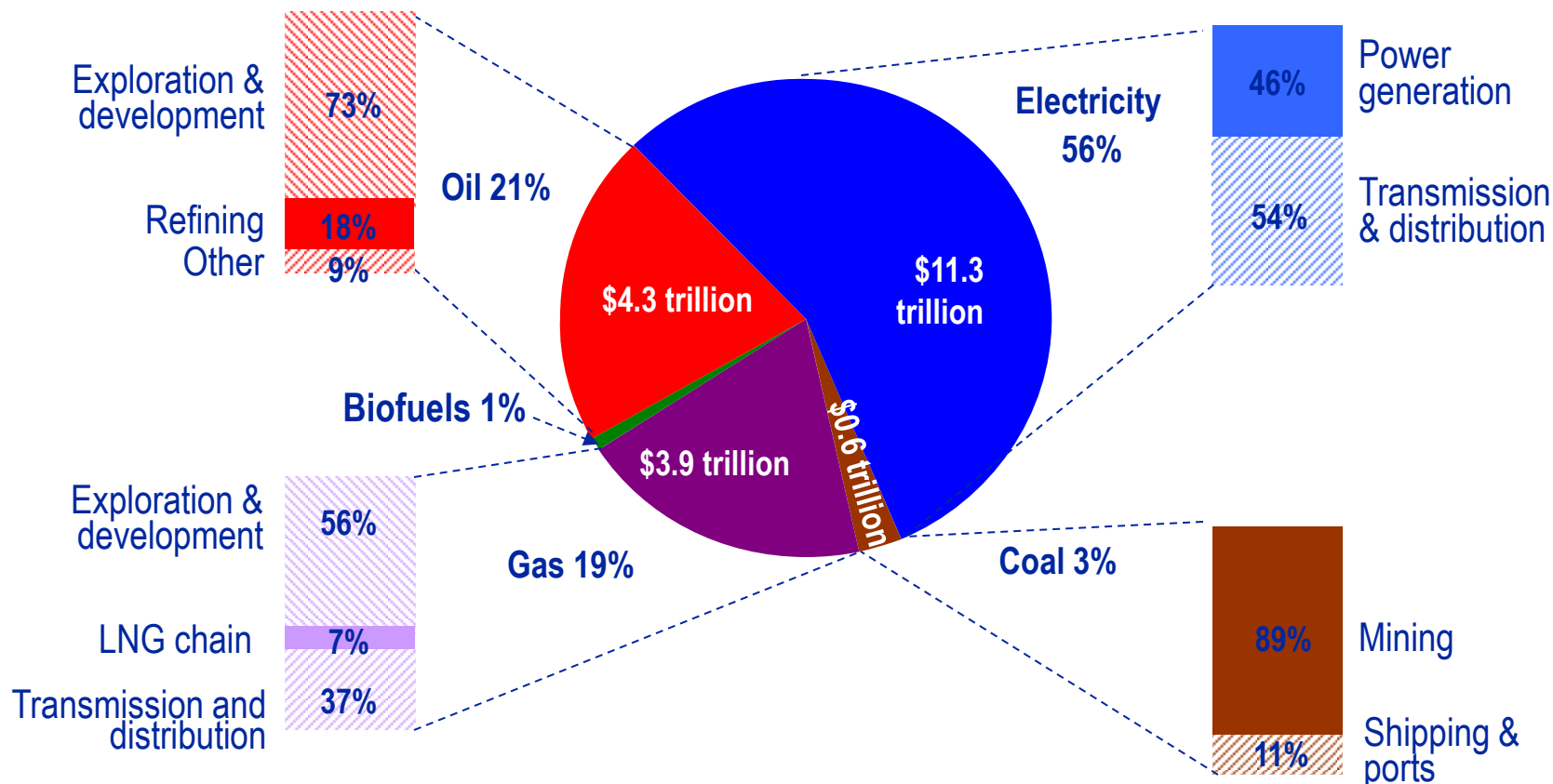
Reference Scenario: World Primary Energy Demand

Source: World Energy Outlook (WEO), 2006



**Global demand grows by more than half over the next quarter of a century,
with coal use rising most in absolute terms**

Reference Scenario: Will the Investment Come?



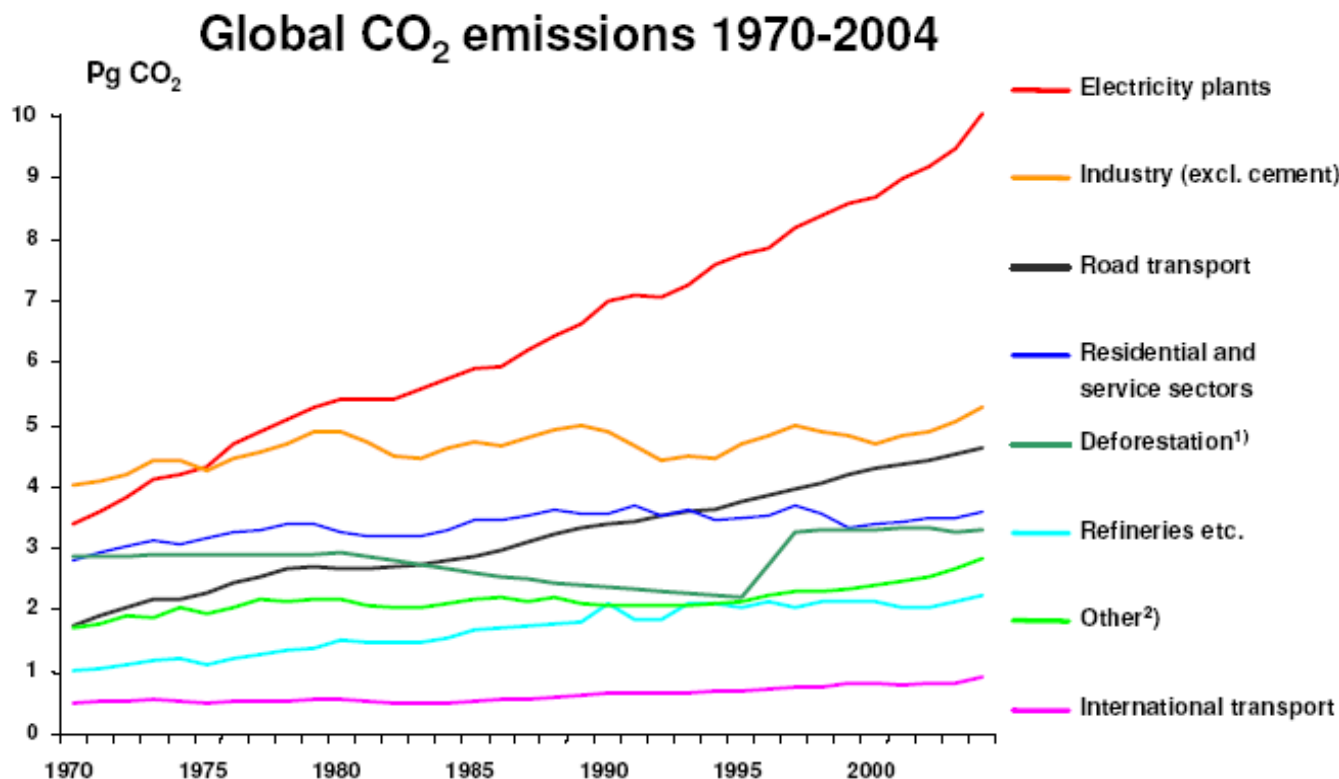
Just over half of all investment needs to 2030 are in developing countries, 18% in China alone

Cumulative Investment in Energy-Supply Infrastructure, 2005-2030 = \$20.2 trillion (in \$2005)

Source: World Energy Outlook (WEO), 2006

Sources of Global CO₂ Emissions

Source: IPCC Fourth Assessment Report



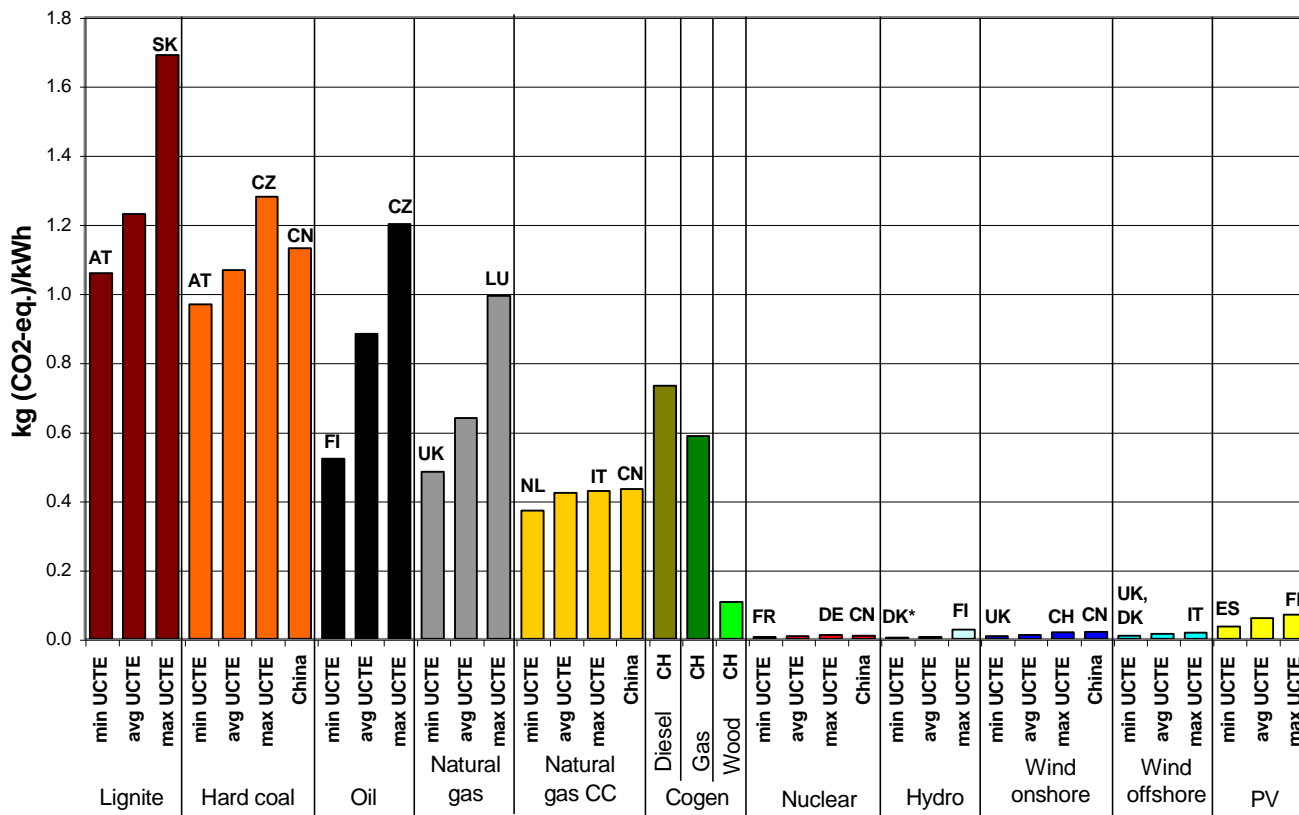
Data sources: IEA; EDGAR 3.2 and FT2000; USGS, FAO, GFED

¹⁾ Including fuel wood at 10% net contribution

For large-scale biomass burning averaged activity data for 1997-2002 were used from GFED, based on satellite data

²⁾ Other domestic surface transport, non-energetic use of fuels, cement production, and venting/flaring of gas from oil production

Greenhouse gas emissions of selected energy chains

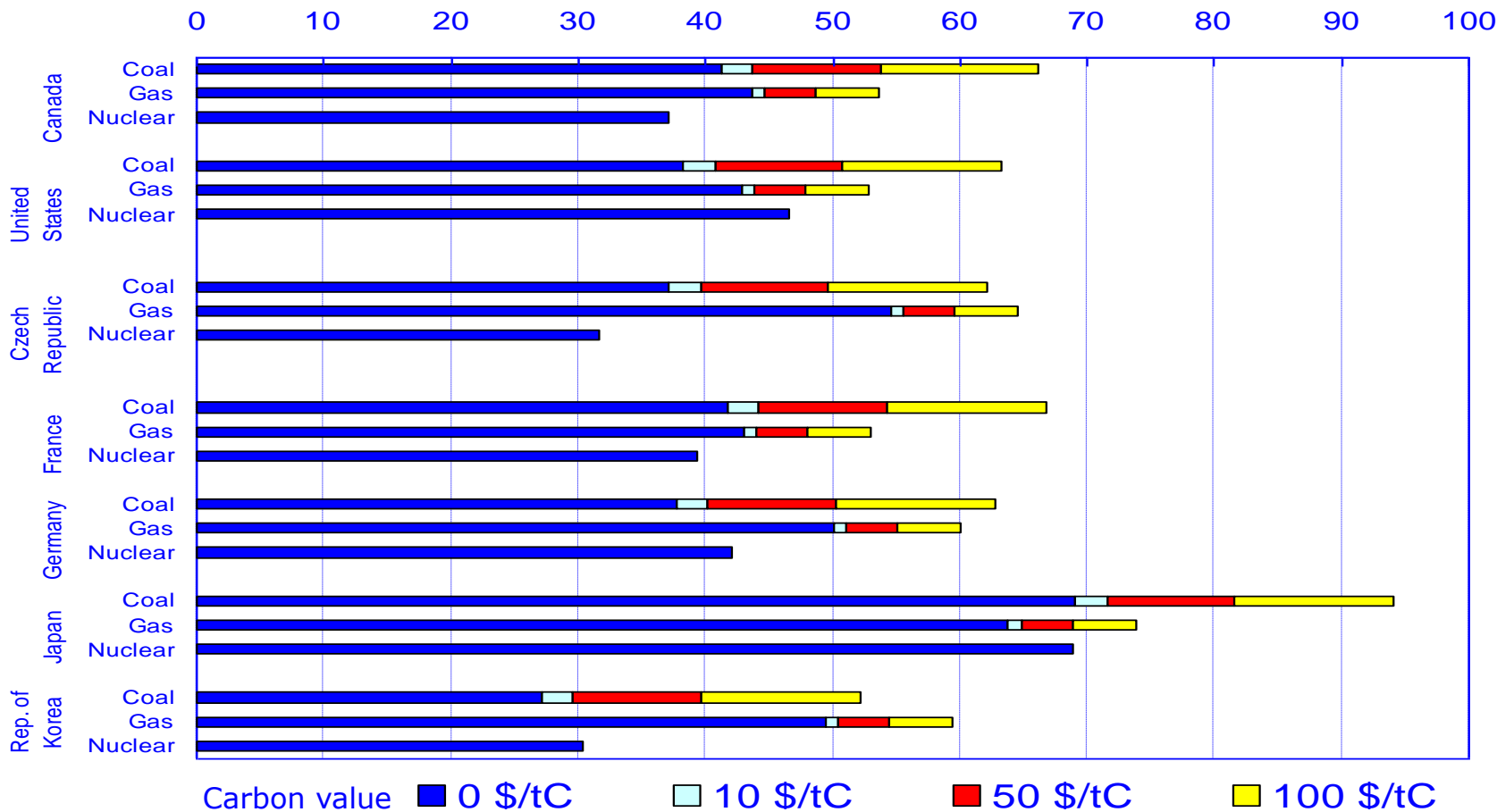


Source: Risks and Benefits of Nuclear Energy, 2007

Nuclear Energy Today

- ~ 16% of world electricity generated by nuclear (23% in OECD countries) – 2006 Data
- 439 power plants in 31 countries or economies (346 in 17 OECD countries) – 2008 Data
 - ❖ Existing power plants are very competitive
 - ❖ Increasing load factors
 - ❖ Upgrading of plant capacities
 - ❖ Low cost of lifetime extension
- But only 6% of Global Primary Energy Demand

Impact of carbon values on generation costs at 10% [USD/MWh]



Source: Projected Costs of Generating Electricity (EGC), 2005

Uranium production 2004

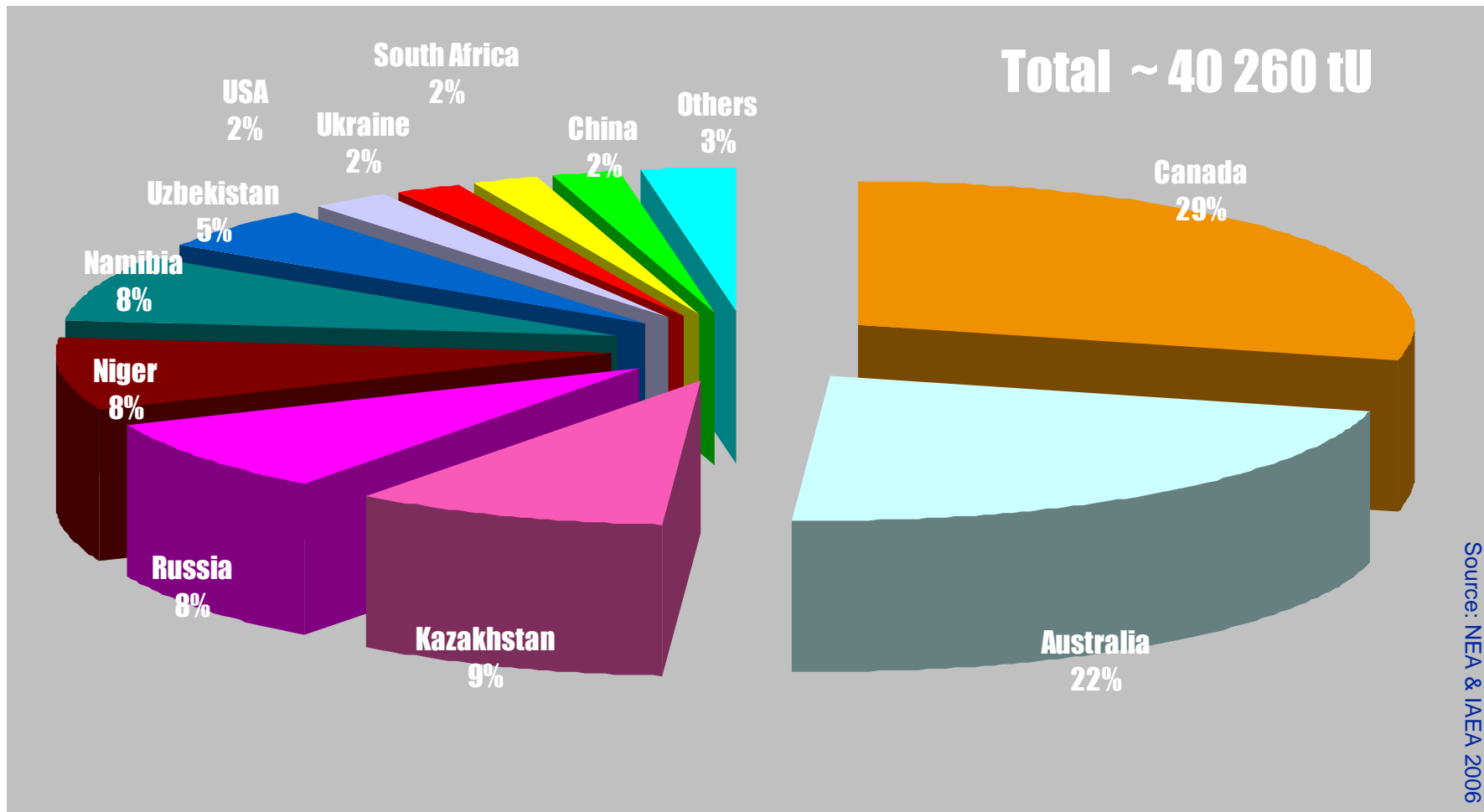


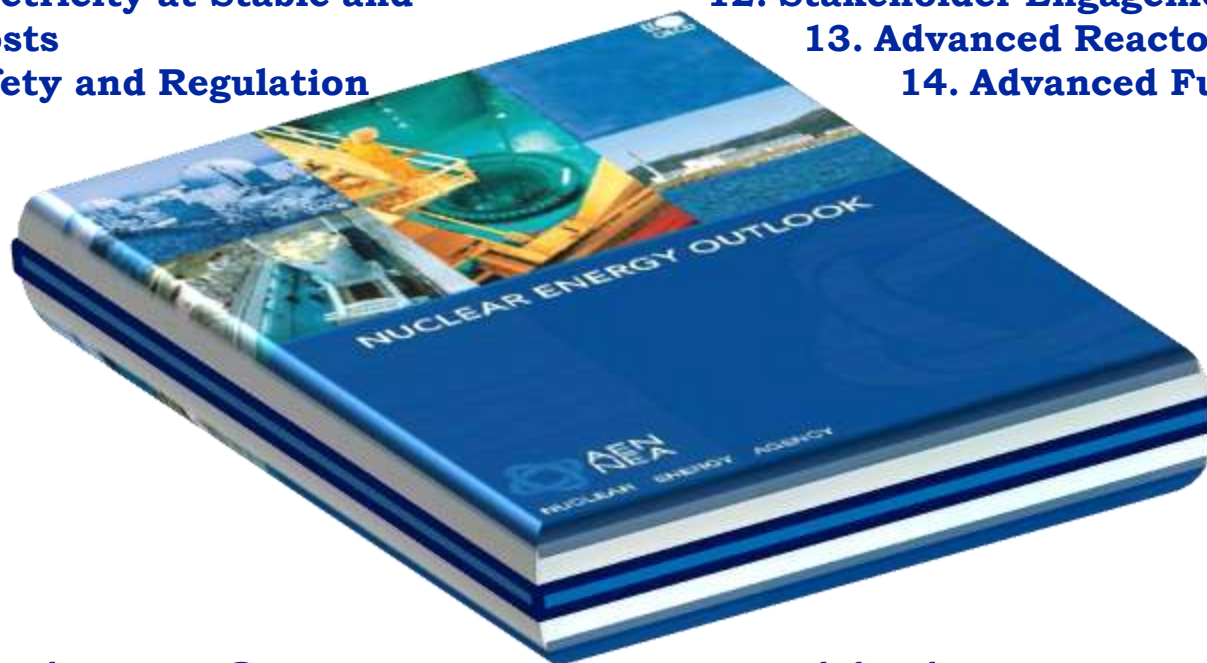
Table 1 – Lifetime of uranium resources (years)

Technology	Identified resources ~5.5 MtU	Total conventional resources ~16.0 MtU	Total conventional resources plus phosphates up to 38 MtU
LWRs once through	100	300	700
Progressive introduction of FBRs*	> 3 000	> 9 000	> 21 000

* Here it is assumed that the progressive introduction of fast breeder reactors (FBRs) multiplies by > 30 the amount of electricity generated by 1 tonne of uranium.

The Nuclear Energy Outlook

1. Current Status
2. Programmes and Government Policies
3. Projections to 2050
4. Environmental Impacts of Energy Use and Power Production
5. Uranium Resources and Security of Supply
6. Providing Electricity at Stable and Affordable Costs
7. Managing Safety and Regulation
8. Radioactive Waste Management and Decommissioning
9. Non-proliferation and Security
10. Legal Frameworks
11. Infrastructure: Industrial, Manpower and R&D Capability
12. Stakeholder Engagement
13. Advanced Reactors
14. Advanced Fuel Cycles



The facts are all here...

Conclusions

- Our energy problems are serious. Power plants are the biggest and fastest growing GHG contributor.
- USD 5 trillion of investment is needed in power plants. Most will go into coal and gas unless governments act.
- Nuclear electricity is virtually CO₂ free.
- Today's reactors can make a big contribution. Fast reactors could provide a vast amount of CO₂-free energy.