

# **Nuclear Energy and Conflicts**

## **– What can nuclear energy deliver?**

**EP Greens/EFA Seminar**

**“Safe and Secure Energy in Europe”**

**Helsinki, 21 September 2006**

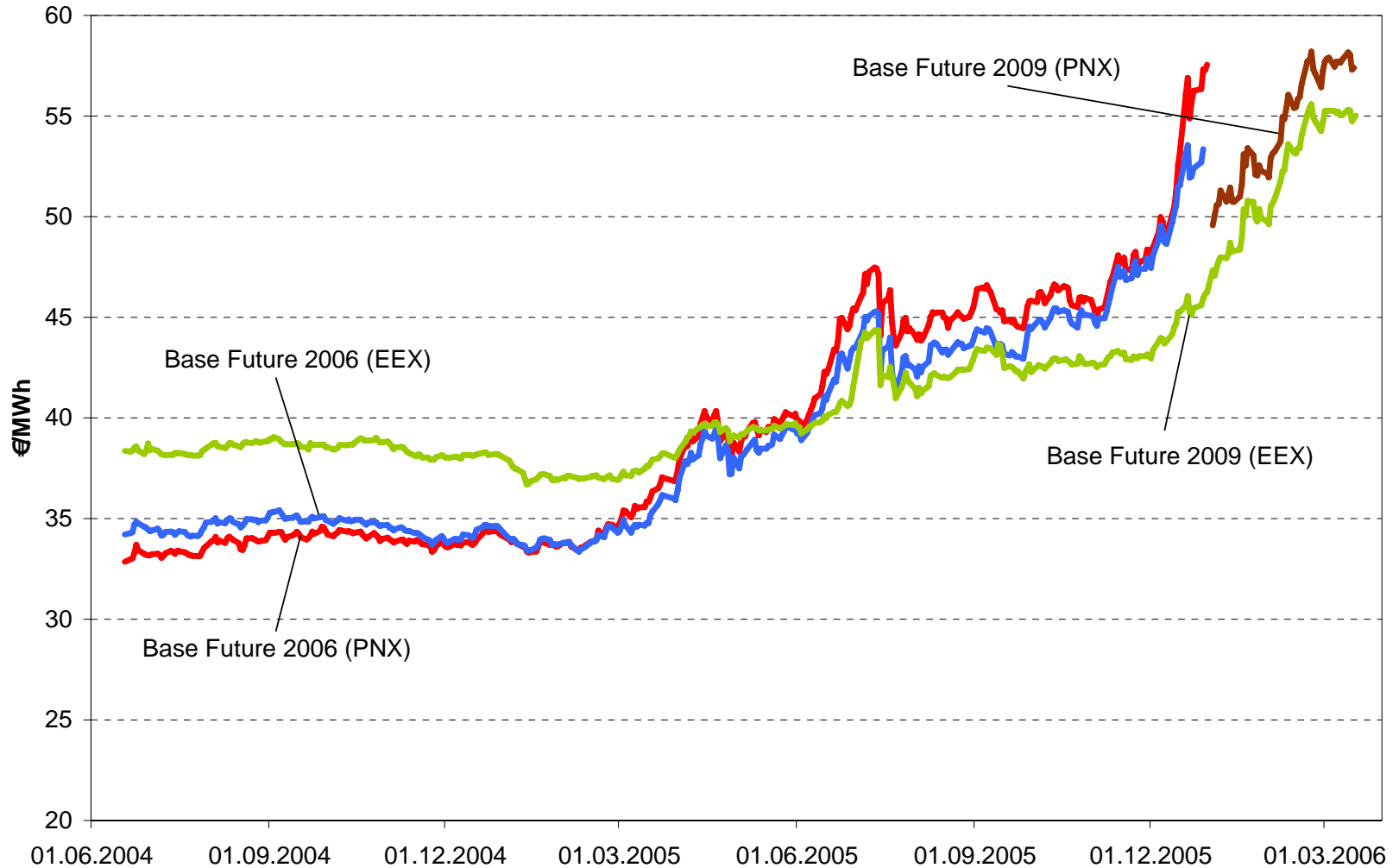
**Dr. Felix Chr. Matthes**

- **Nuclear energy is a reality (in the take-off phase of a new investment cycle)**
- **Serious and manifold risks are related to nuclear power**
- **Nuclear power has low fuel and operational costs and will safeguard low prices**
  - **Who must pay what costs?**
- **Nuclear energy does not rely on finite fossil fuels**
  - **Are there resource limits for nuclear energy?**
- **Nuclear power is a low carbon option**
  - **Is nuclear energy without alternative for ambitious climate targets?**
- **Nuclear Energy increases security of supply**
  - **Really?**

- **Total costs of a major nuclear accident**
  - **2,000 to 5,000 bn €/accident in Germany**
  - **5...7% and 20% of state budget of Ukraine and Belarus in the mid-1990ies**
- **Mandatory insurance/liability for nuclear disasters**
  - **USA 10 bn €**
  - **Germany 2.5 bn €**
  - **Japan 500 mln €**
  - **France 92 mln €**
  - **Slovakia 47 mln €**
- **Back end costs**
- **And the electricity prices (in liberalized markets)?**

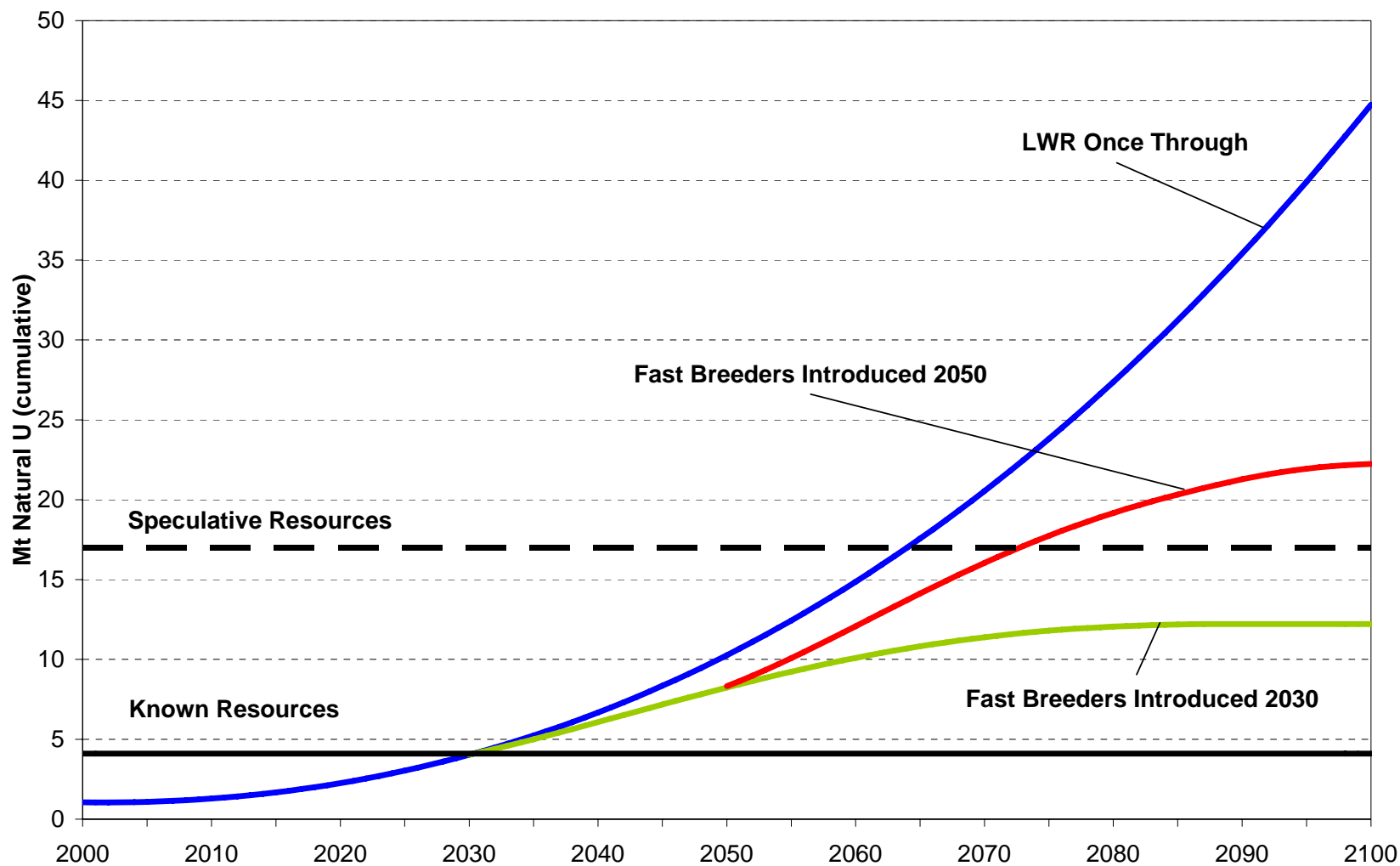
# Power prices in DE und FR

## Energy mix makes no difference

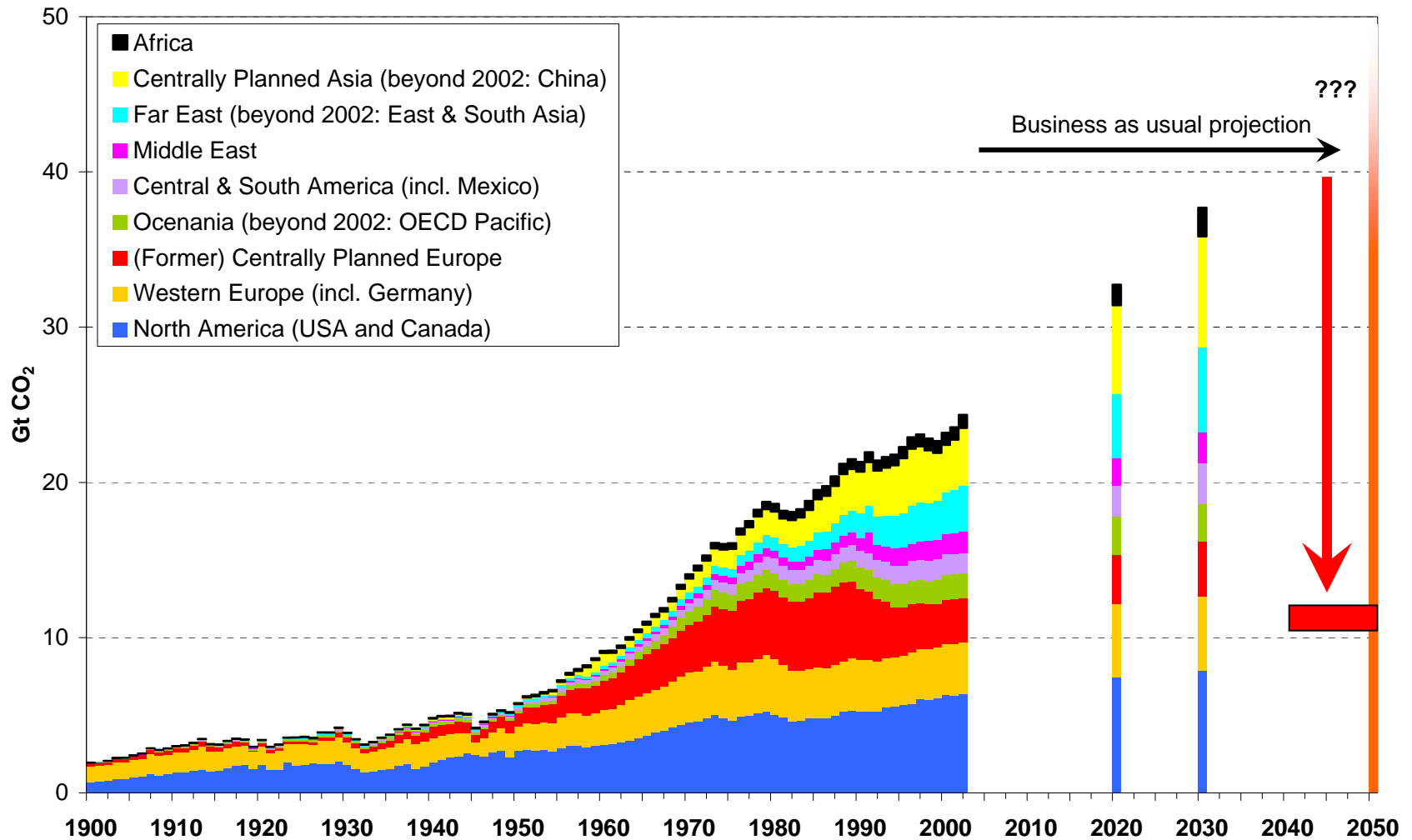


# Nuclear fuel resources outlook

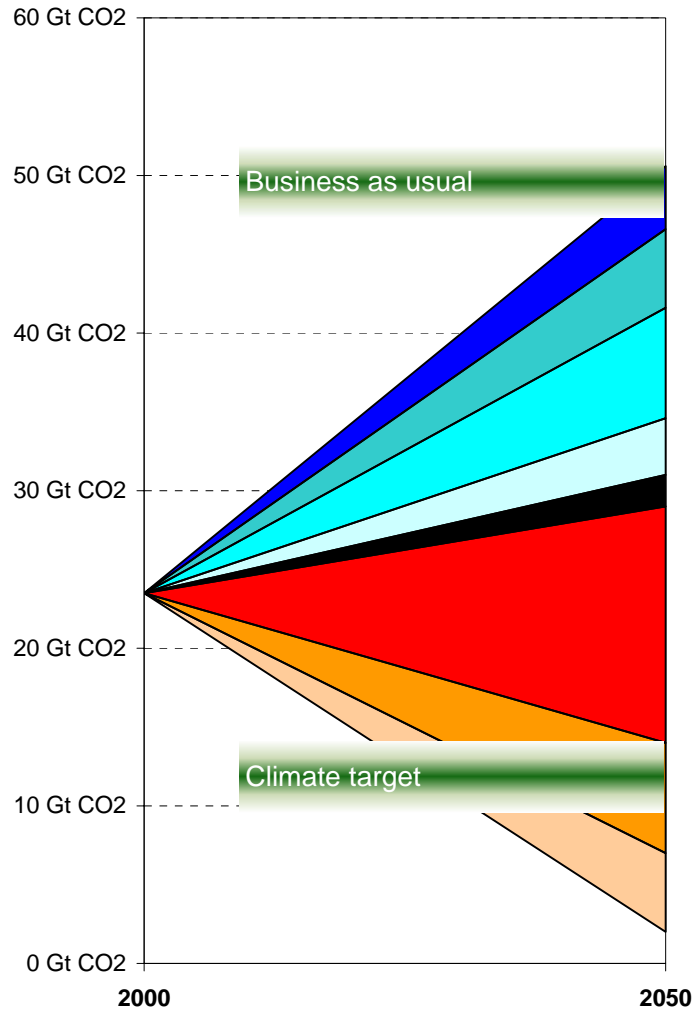
## Breeder and plutonium



# The climate challenge: filling a gap of 25 ... 40 Gt CO<sub>2</sub> by 2050 (1)



# The climate challenge: filling a gap of 25 ... 40 Gt CO<sub>2</sub> by 2050 (2)



- Energy efficiency in buildings
- Energy and material efficiency in industry
- Energy efficiency in transport sector
- Energy efficiency in power generation
- Fuel switch from coal to gas
- Renewable energies
  - Electricity
  - Heat
  - Motor fuels
- Carbon capture and sequestration
- 3 x Nuclear

Costs	R&D	Policy

# **Nuclear power in an (ambitious) climate strategy**

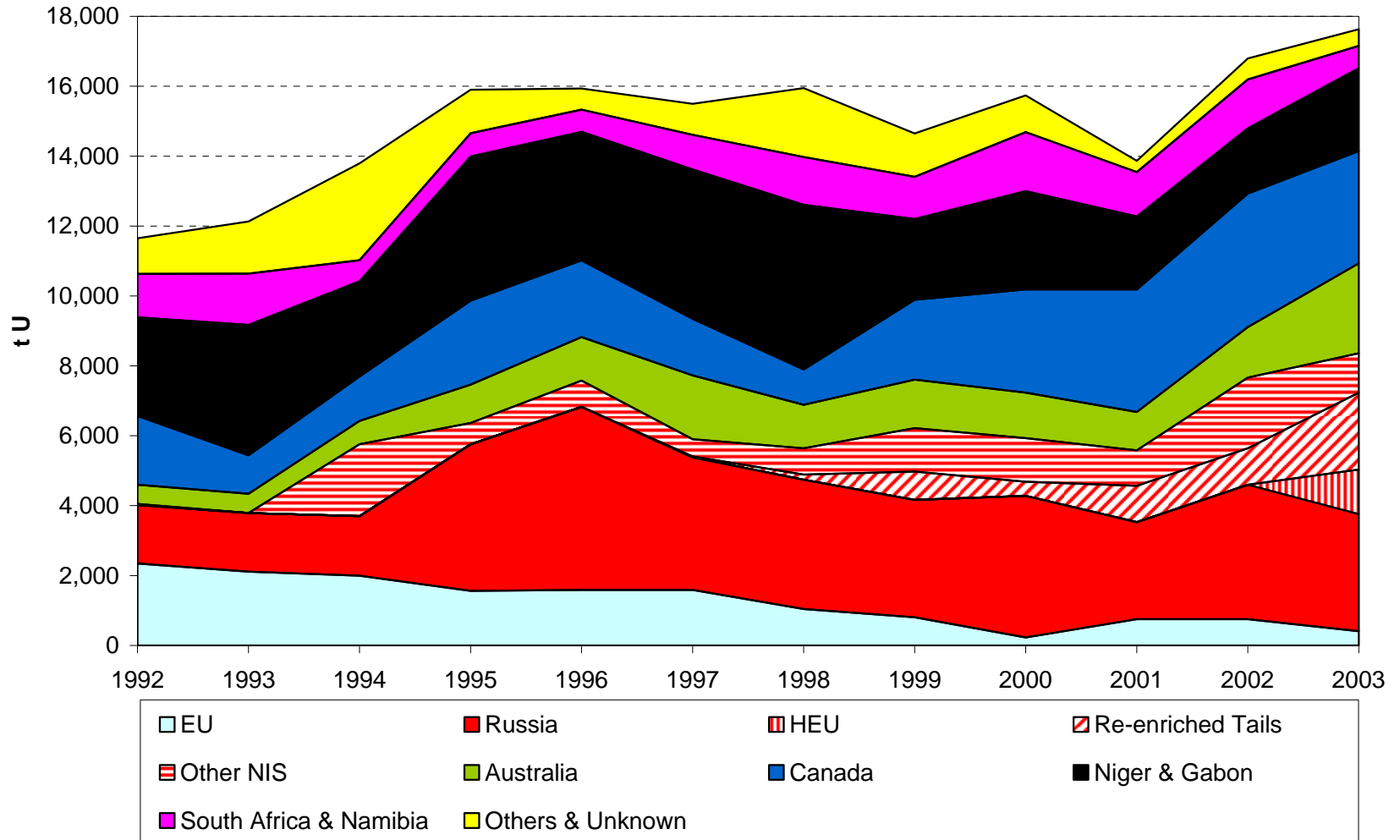
- **Implications of a 5 Gt CO<sub>2</sub> contribution for the time horizon of 2050**
  - **annual commissioning of 25 GW (including replacement)**
  - **annual Plutonium production 560 t (proliferation)**
  - **supply of nuclear fuel would have to rely on speculative (undiscovered) resources -> re-entry of breeder technology and reprocessing (~ 50 new reprocessing plants worldwide)**
  - **equivalent of 14 Yucca Mountain projects**
  - **heavy investments in the total technological chain**
  - **promises of new technologies?**
  - **cost reductions?**

## Nuclear in an (ambitious) climate strategy – Reminder

- **No other technology in the emission abatement portfolio shows a comparable mobilization potential. If one or more disastrous accidents in nuclear facilities (including enrichment, reprocessing and disposal facilities) were to occur, the acceptance for the nuclear track would be lost within a very short space of time. This could be disastrous for climate policy if it was intended that nuclear power deliver a significant contribution to emission reduction.**

# Security of Supply

## Uranium Supplies to the EU-15



- Nuclear power is not indispensable for (ambitious) climate strategies.
- A significant contribution of nuclear power to ambitious emission reduction targets would raise new risks in new dimensions. The nuclear track could create an obstructive potential (infrastructures, flexibility of the scheme, etc.).
- The key question on nuclear is on the alternative options. A sufficient potential exists. An overall risk-minimization strategy is possible.
- The economic assessment must consider the externalities (not only for carbon ...) and hidden costs as well as price building mechanisms in liberalized markets.
- Nuclear fuels are no domestic energy sources for the EU (if one believes that energy imports are a major problem).
- In the framework of the necessary and fundamental transformation of the global energy system, a climate strategy without nuclear power makes for a probably more innovative and more robust strategy.

**Thank you  
very much**

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