Current and Future Market Trends in Nuclear Fuel Supply

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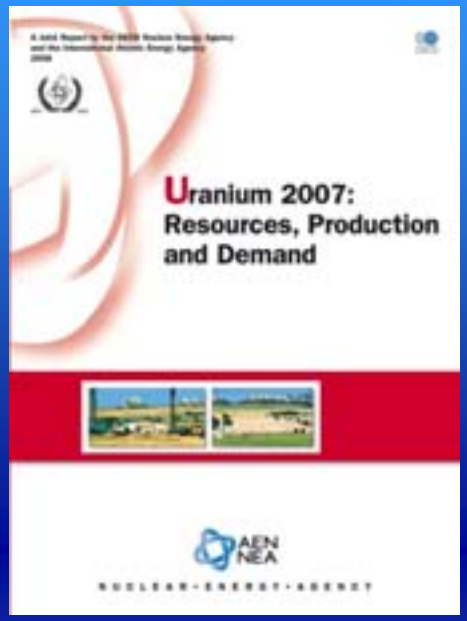
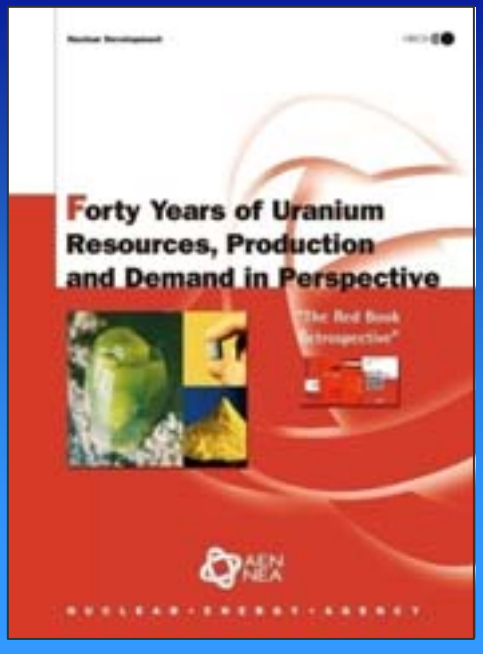

Uranium 2007:
Resources, Production
and Demand
NUCLEAR·ENERGY·AGENCY


Forty Years of Uranium
Resources, Production
and Demand in Perspective
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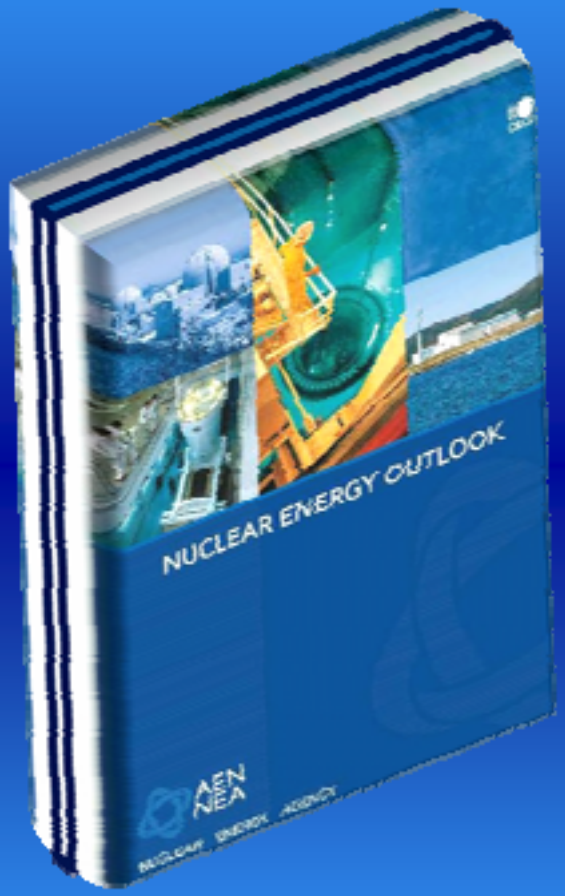
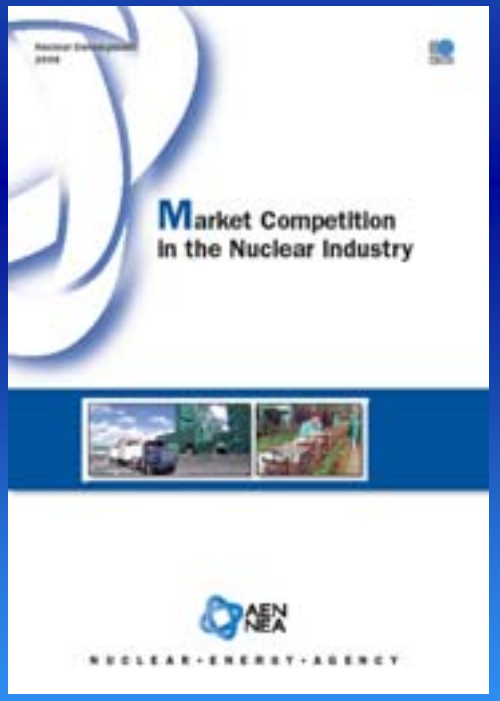
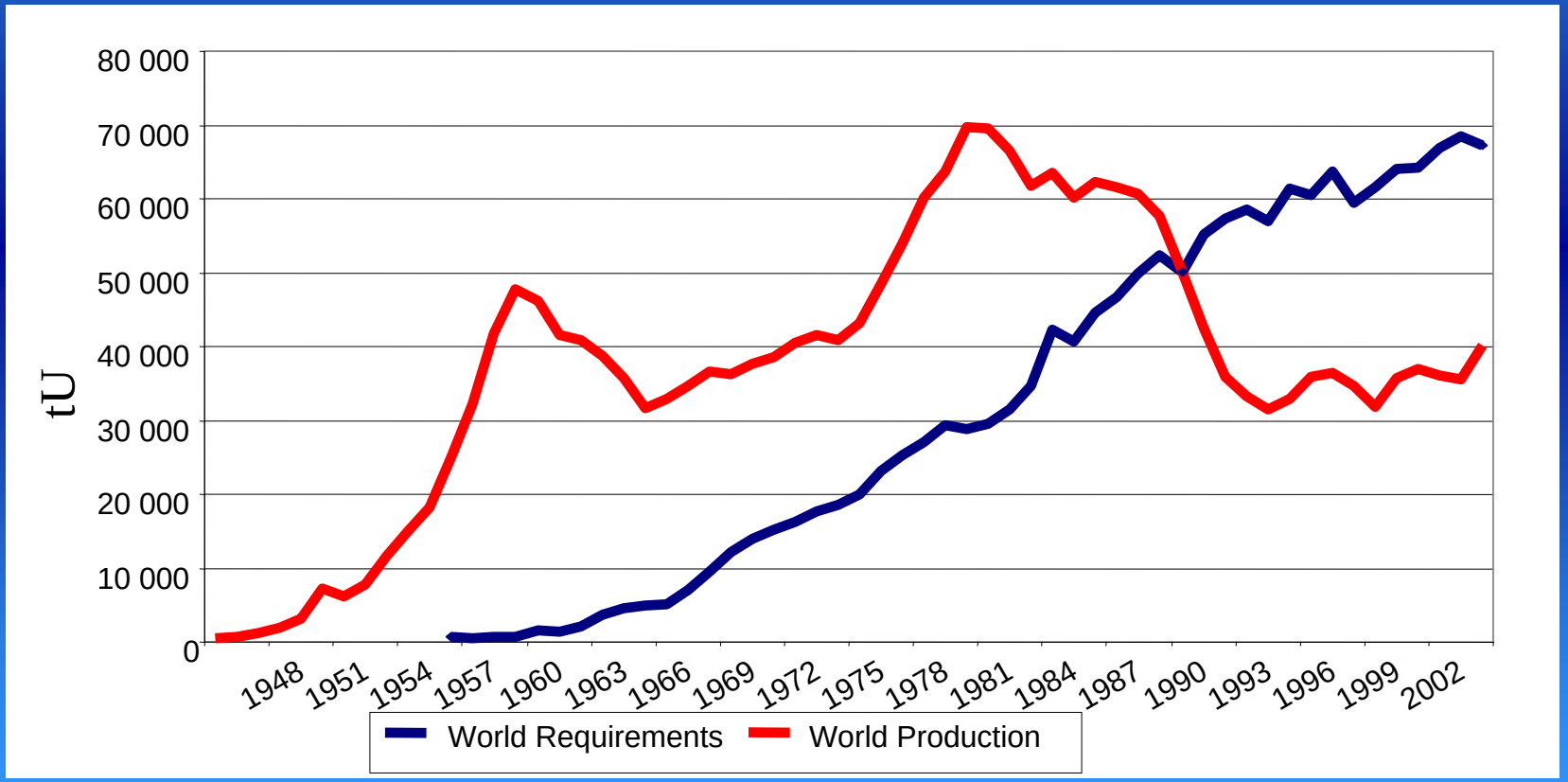
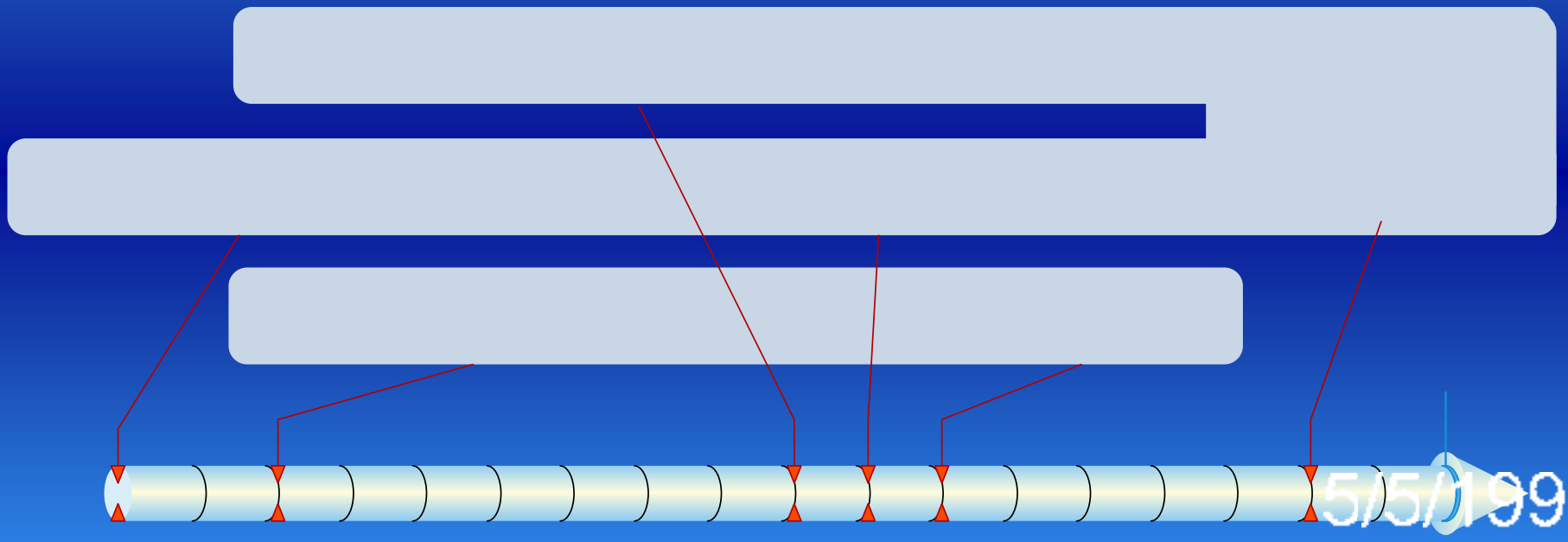

NUCLEAR ENERGY OUTLOOK


Market Competition
in the Nuclear Industry
NUCLEAR·ENERGY·AGENCY

Production (Supply) / Requirements (Demand)



In recent years there has been considerable consolidation in NPP and nuclear fuel markets



2006 Uranium Production (tonnes U)

Major Producer Companies	Production	Share (%)
Cameco	8 249	20.9
Rio Tinto	7 094	18.0
AREVA	5 272	13.4
Kazatomprom	3 699	9.4
TVEL (Atomenergoprom)	3 262	8.3
BHP Billiton	2 868	7.3
Navoi	2 260	5.7
Uranium One	1 000	2.5
Major producers total	**33 704**	**85.5**
Other producers	5 726	14.5
Total	**39 430**	**100.0**

Source: World Nuclear Association.

UF_6 conversion suppliers with approximate 2007 operating capacity (tU)

Company	Capacity	Share (%)
Cameco	18 500	28.0
Atomenergoprom	15 000	22.7
ConverDyn	15 000	22.7
AREVA (COMURHEX)	14 500	21.9
China National Nuclear Corp. (CNNC)	3 000	4.6
IPEN Brazil	90	0.1
Total	**66 090**	**100.0**

Source: World Nuclear Association.

Major enrichment companies with approximate 2007 market shares (thousand SWU) and %

Company	Market Share	Share (%)
Atomenergoprom	14 500	31.5
US Enrichment Corporation (USEC)	11 000	23.9
AREVA	10 000	21.7
Urenco	8 500	18.5
Japan Nuclear Fuel Ltd (JNFL)	1 000	2.2
China National Nuclear Corp. (CNNC)	1 000	2.2
Total	**46 000**	**100.0**

Approximate 2007 LWR fuel fabrication capacities by company, and % shares

Company	**Capacity** (tHM)	**Share** (%)
AREVA	3 250	31.7
Westinghouse	2 080	20.3
Global Nuclear Fuel	1 950	19.0
TVEL (Atomenergoprom)	800	7.8
Nuclear Fuel Industries (Japan)	534	5.2
Mitsubishi Nuclear Fuel (Japan)	440	4.3
Enusa (Spain)	400	3.9
Korea Nuclear Fuel	400	3.9
China National Nuclear Corp.	200	2.0
Indústrias Nucleares do Brasil	200	2.0
Total	**10 254**	**100.0**

Source: NEA, World Nuclear Association (*estimate).

Radioactive Materials Transport

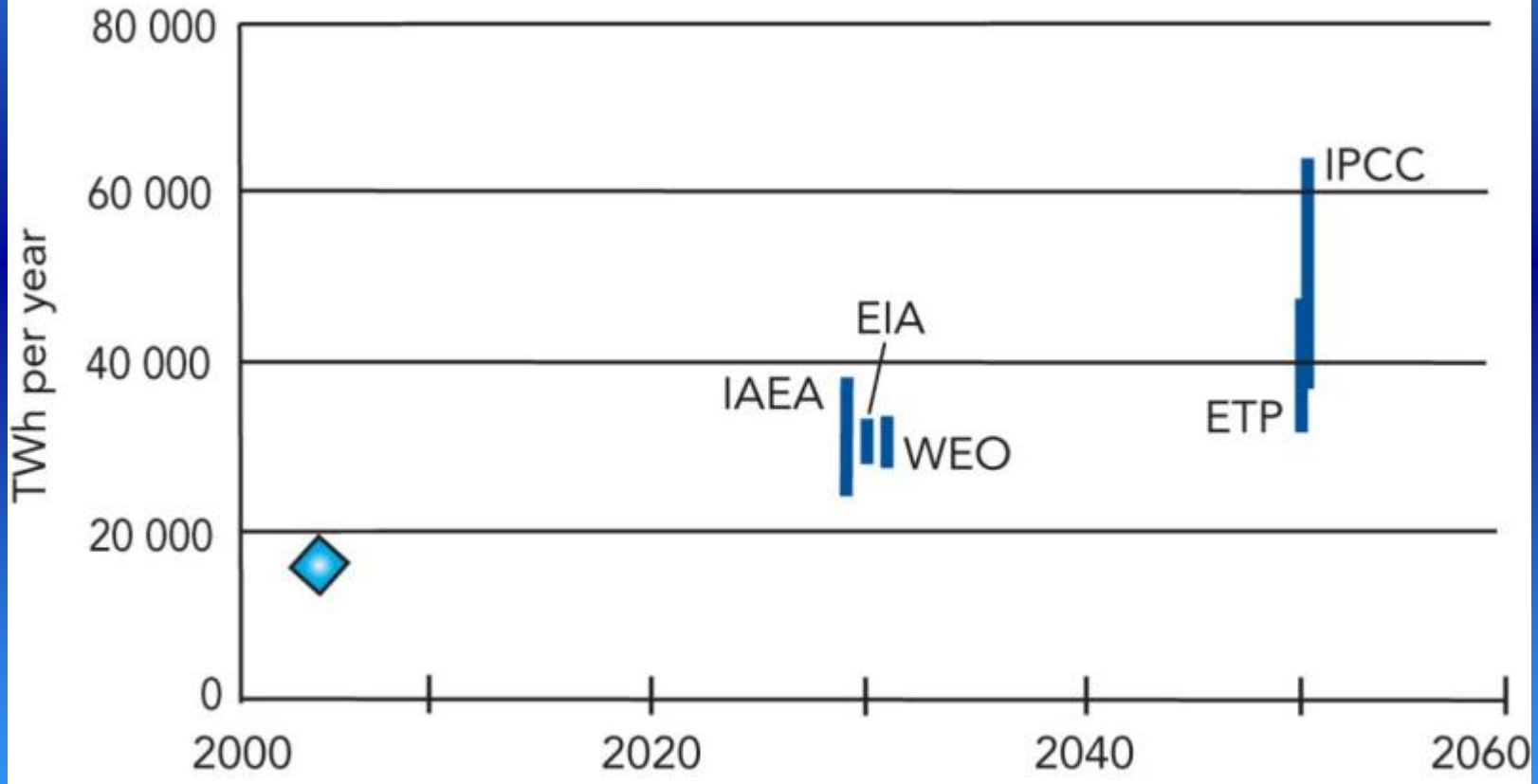
- A global industry, materials transport required
- Ongoing concerns – denial and delays of shipments (e.g. Australian U transport)
- World Nuclear Transport Institute, World Nuclear Association, IAEA all engaged
- Lack of understanding often root cause – global efforts to inform port authorities and shipping companies

NEA Nuclear Energy Outlook (October 2008)

1. Current Status
2. Programmes and Government Policies
3. Projections to 2030
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. Infrastructures Industrial, Manpower and R&D Capability
12. Stakeholder Engagement
13. Advanced Reactors
14. Advanced Fuel Cycles

Part I: Nuclear Power's Current Status and Projected Trend
Chapter 3: Projections to 2050

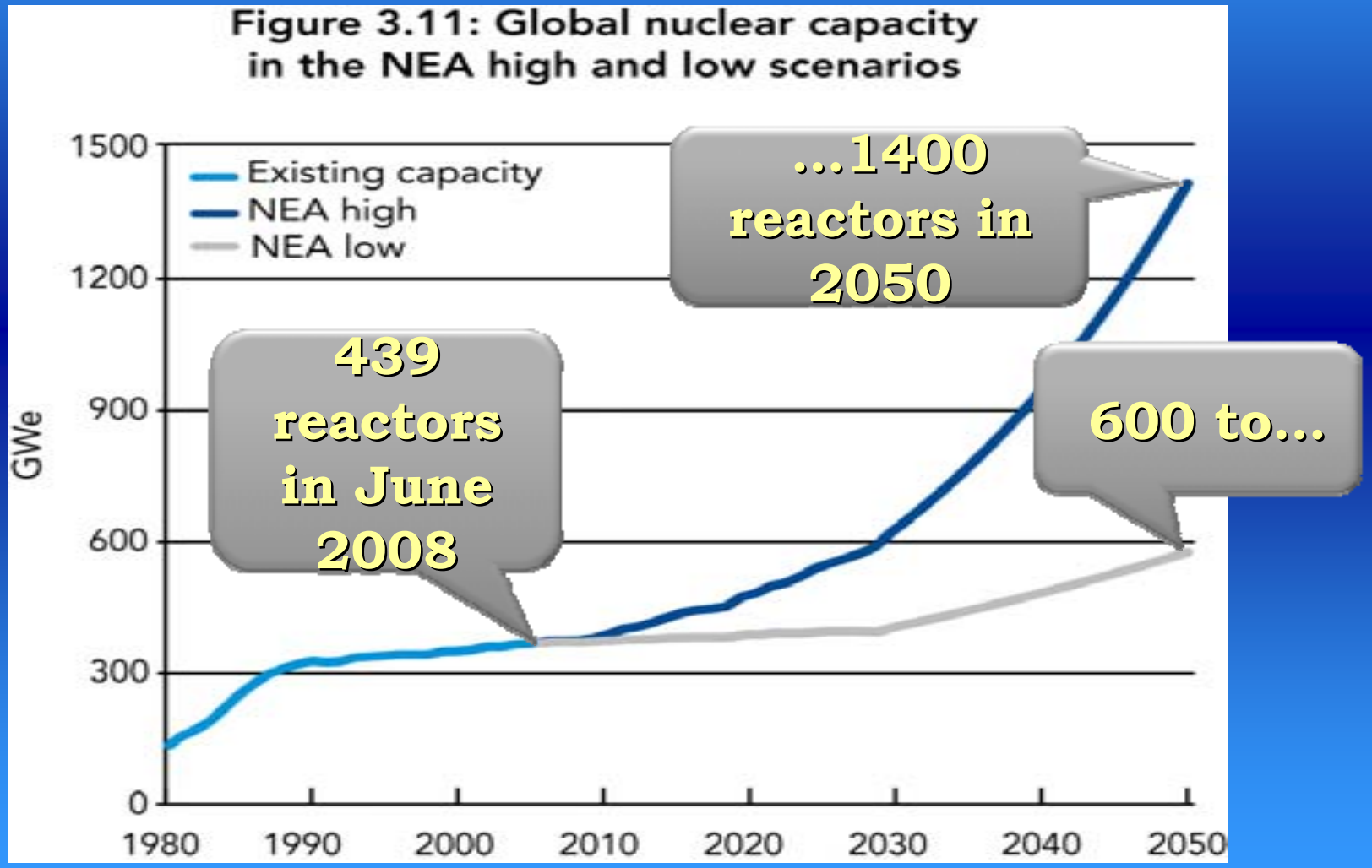
Figure 3.5: Projected increase in electricity demand worldwide



Note: The vertical bars at 2030 and 2050 have been separated for ease of reading.

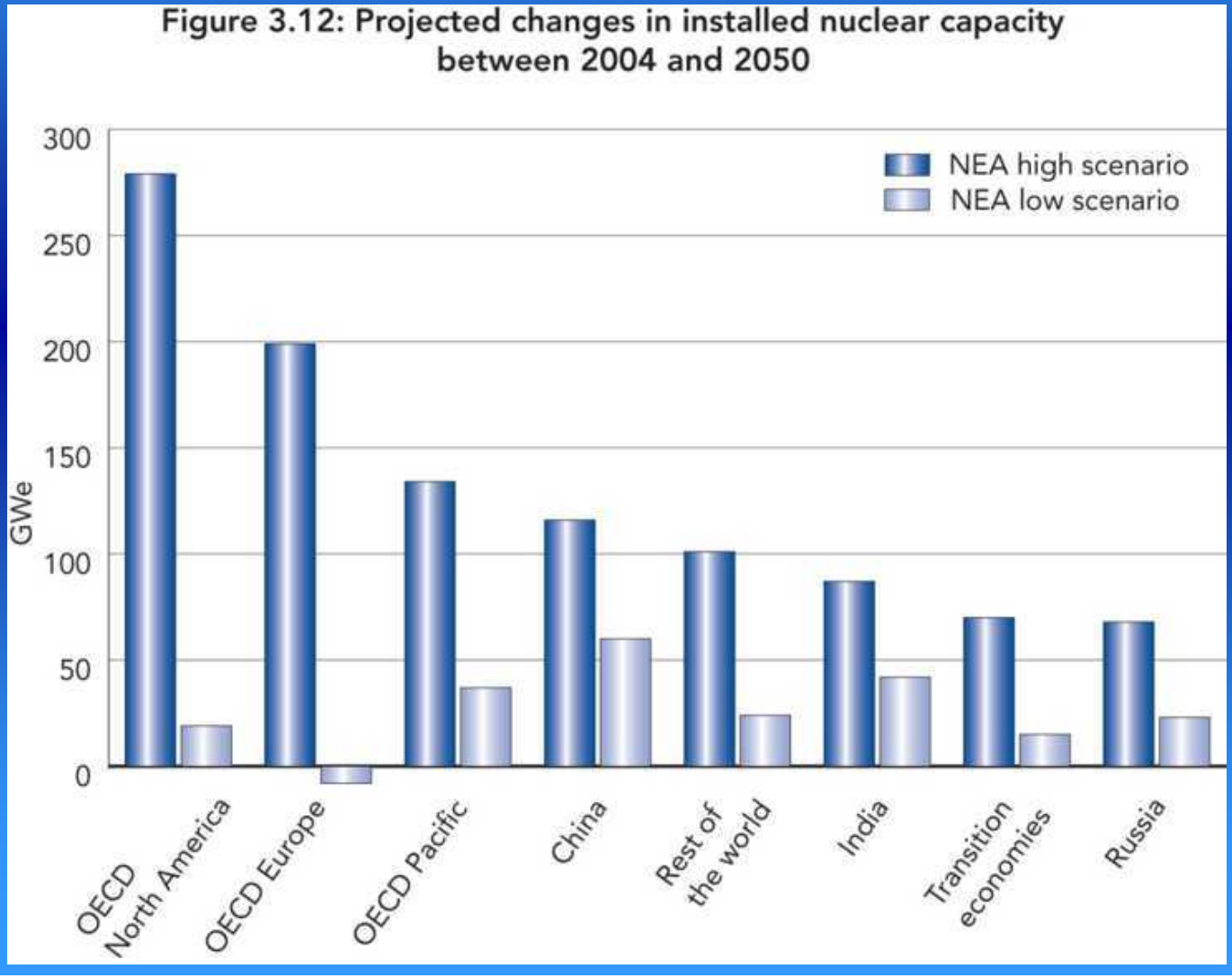
Part I: Nuclear Power's Current Status and Projected Trend
Chapter 3: Projections to 2050

Figure 3.11: Global nuclear capacity in the NEA high and low scenarios

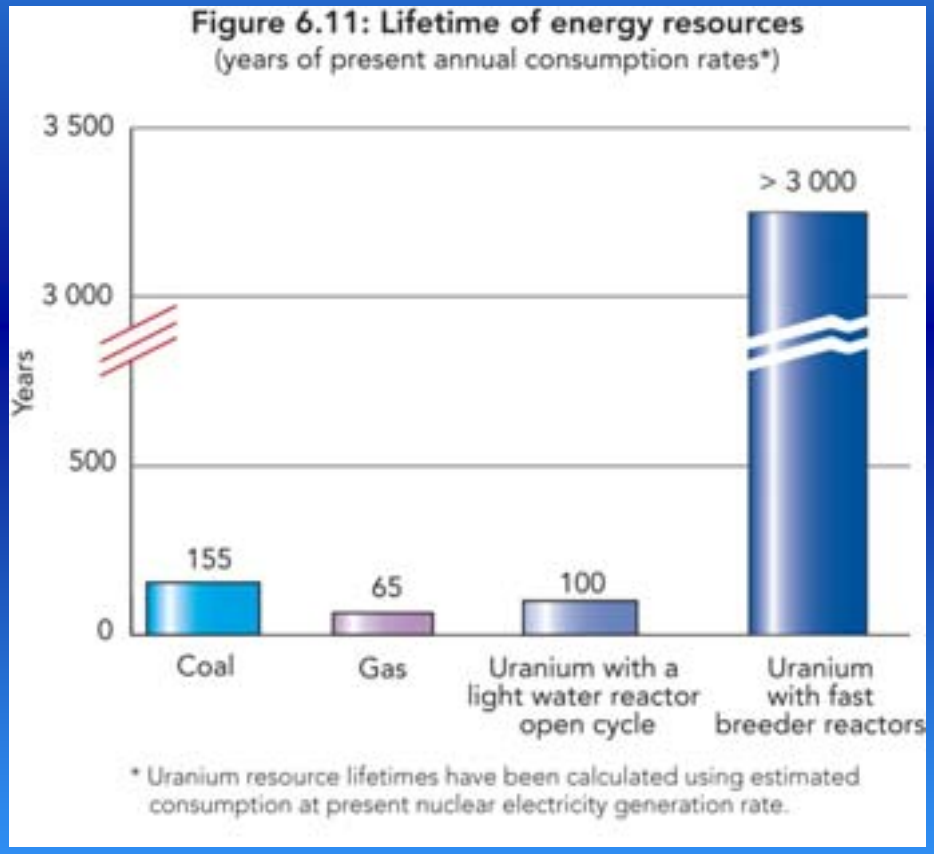


Part I: Nuclear Power's Current Status and Projected Trend
Chapter 3: Projections to 2050

Figure 3.12: Projected changes in installed nuclear capacity between 2004 and 2050

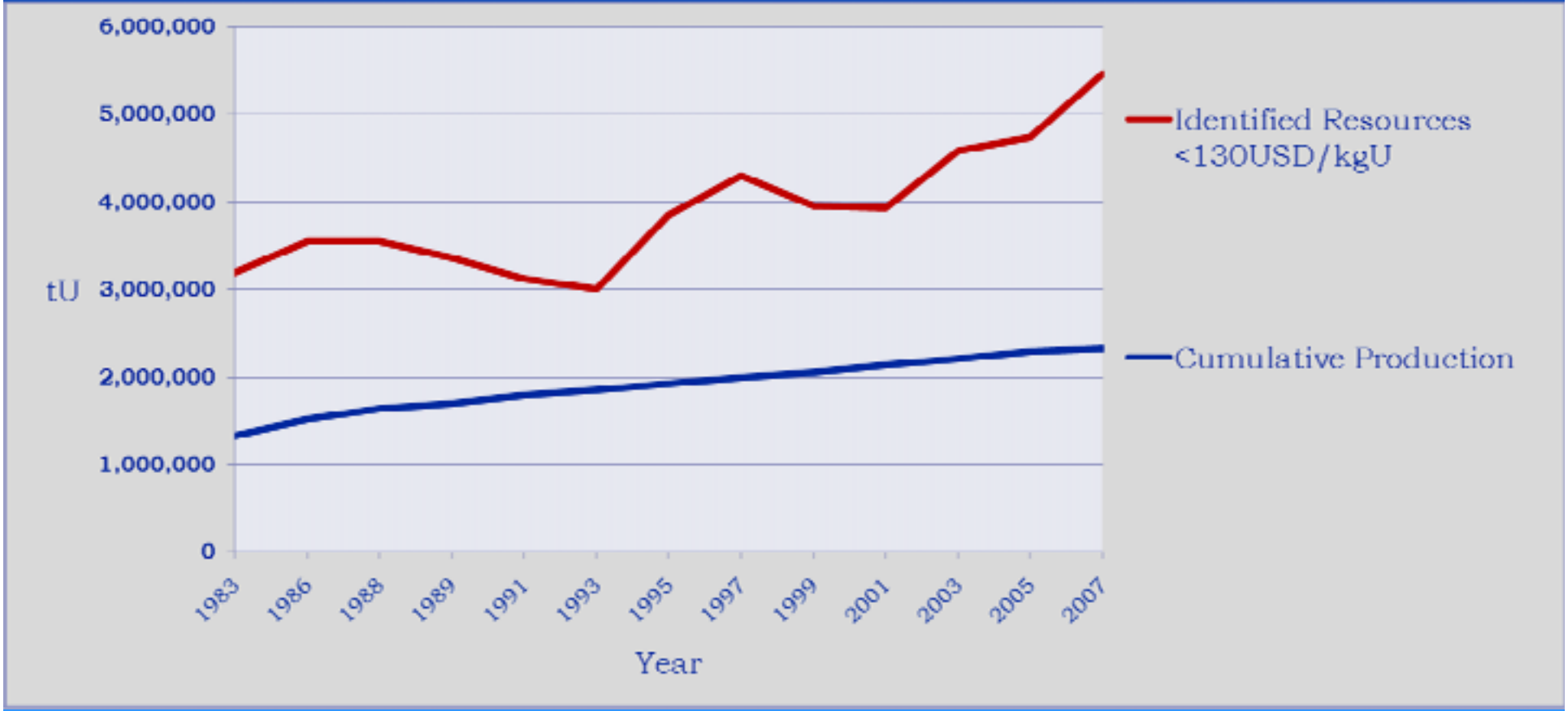


1 400 reactors in 2050?



Vast resources of virtually CO_2-free energy

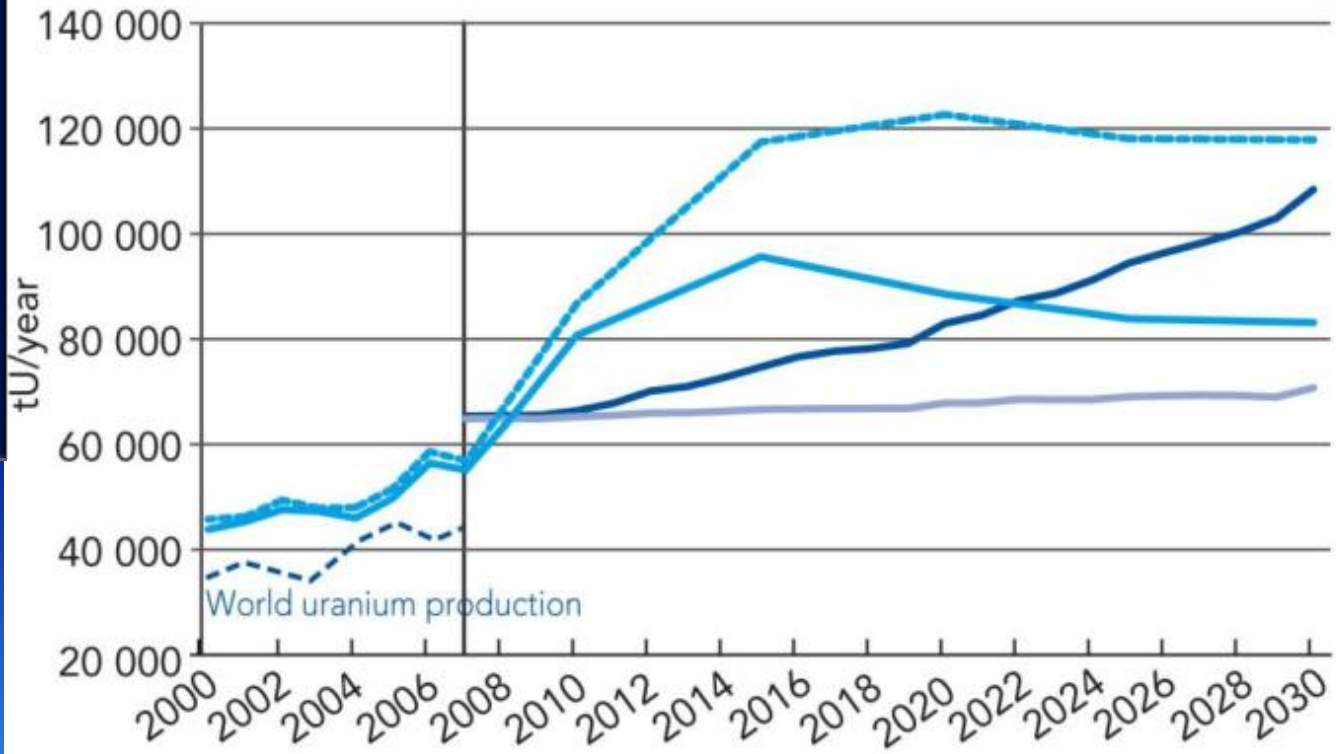
Resources figures vary with price, exploration activity and mining - they are what is currently known and are *not* the total mineable uranium available



Part II: The Potential Benefits of Nuclear Power

Chapter 5: Uranium Resources and Security of Supply

Figure 5.4: Annual world uranium production capacity and NEA projected world uranium reactor requirements,* 2007 to 2030



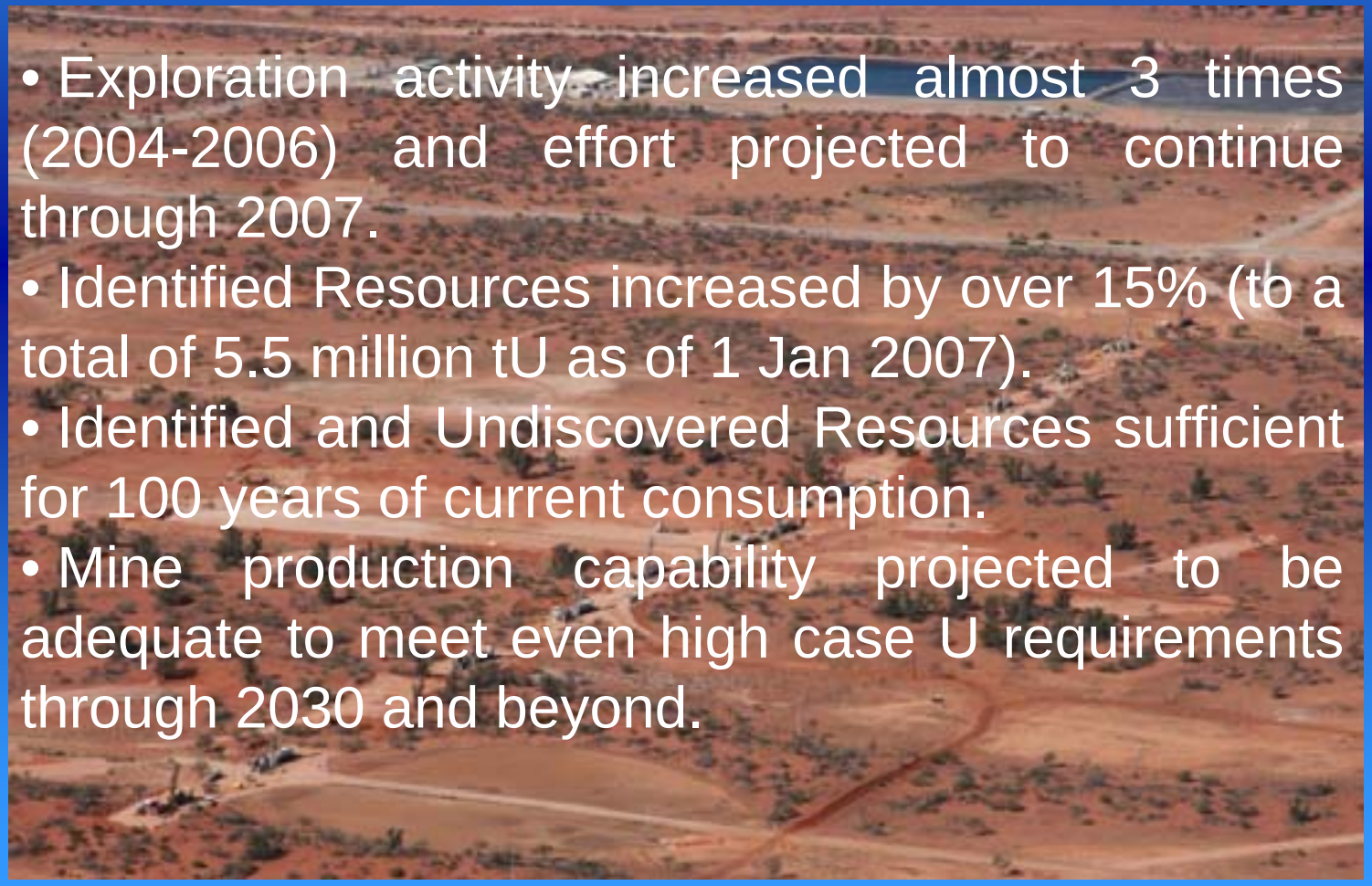
Existing, committed, planned and prospective production capability.
Existing and committed production capability.
NEA world uranium reactor requirements – high case.
NEA world uranium reactor requirements – low case.

* Includes all existing, committed, planned and prospective production centres supported by reasonably assured and inferred resources recoverable at a cost of <USD 80/kgU.

History tells us that

- High prices triggered exploration in the 1970s that led to discoveries that continue to provide fuel for nuclear power plants.
- Over 2.3 million tU have been mined since 1965 but resources have not declined – they have increased!
- Low prices for ~20 years (early 1980s to early 2000s) – little incentive to explore.
- Now that the price has increased and stimulated exploration, new discoveries can be expected, just as in the past.

Uranium 2007: Resources Production and Demand

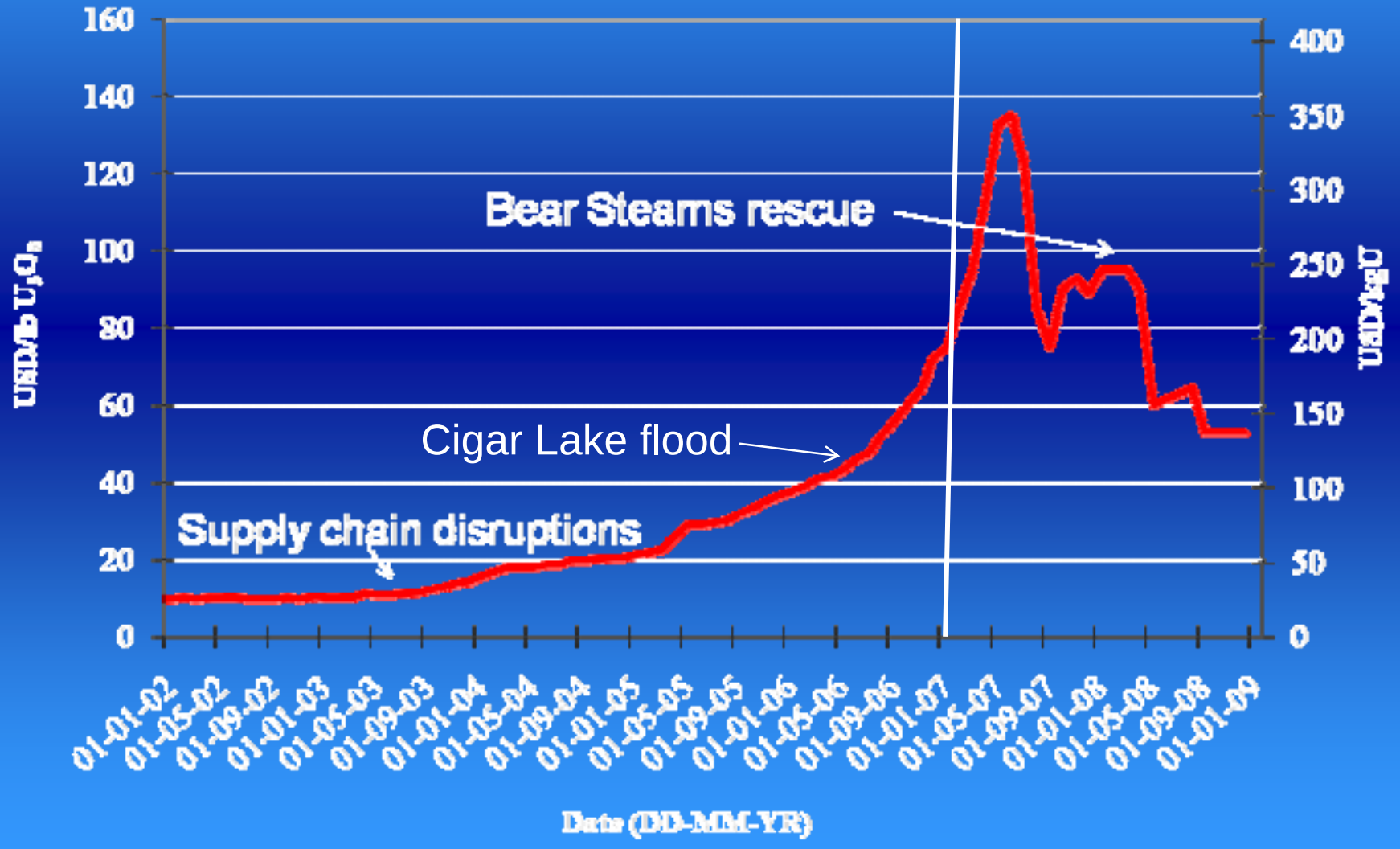


- Exploration activity increased almost 3 times (2004-2006) and effort projected to continue through 2007.
- Identified Resources increased by over 15% (to a total of 5.5 million tU as of 1 Jan 2007).
- Identified and Undiscovered Resources sufficient for 100 years of current consumption.
- Mine production capability projected to be adequate to meet even high case U requirements through 2030 and beyond.

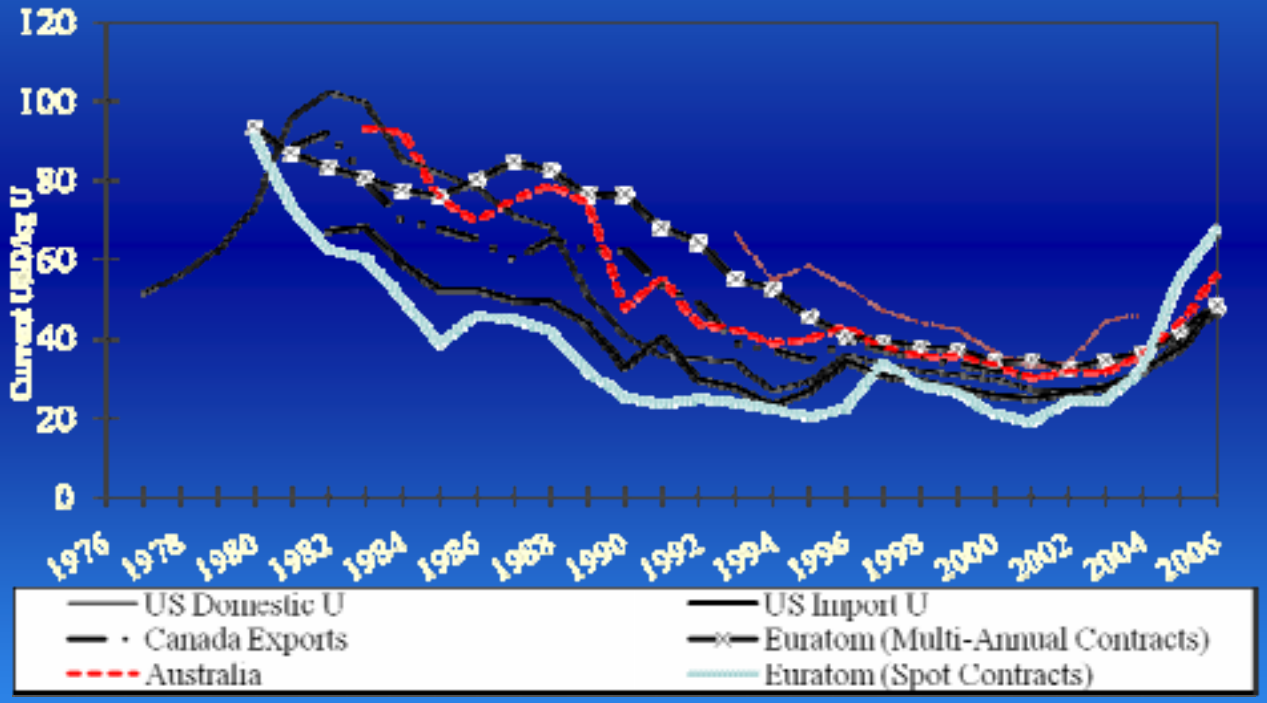
BUT!

- Production capability is not production.
- Production declined slightly between 2004 and 2006, but increased by about 5% in 2007 and about 7% in 2008.
- Needs to increase by 2X to meet projected demand.
- Strong market conditions required to bring necessary investment.

Uranium Spot Price (2002-2008)



Contract Uranium Price Indicators



31 Dec 08 Long-term Price: 182 USD/kg

Uranium Mine Development Barriers and Uncertainties

- Market not transparent
- Public acceptance
- Regulatory requirements
- Government initiatives
- Market Turmoil

Front End Market Development to 2020

- The nuclear market will be shaped by decisions to build and the success of NPP vendors winning orders – market shares may shift to new market leaders.
- Conversion and enrichment capacities are tight but adequate to meet current market requirements to 2013 and are poised to expand with appropriate market signals - can do so in the time required to support nuclear energy growth.
- Length of time required to develop uranium mines in key jurisdictions remains an issue.
- New opportunities will arise, provided that the market remains strong.
- Nuclear fuel costs could rise, at least in the near-term (small impact on NPP electrical generating costs).