

# Nuclear Power: Status and Outlook

*CSD-14, New York • 5 May 2006*

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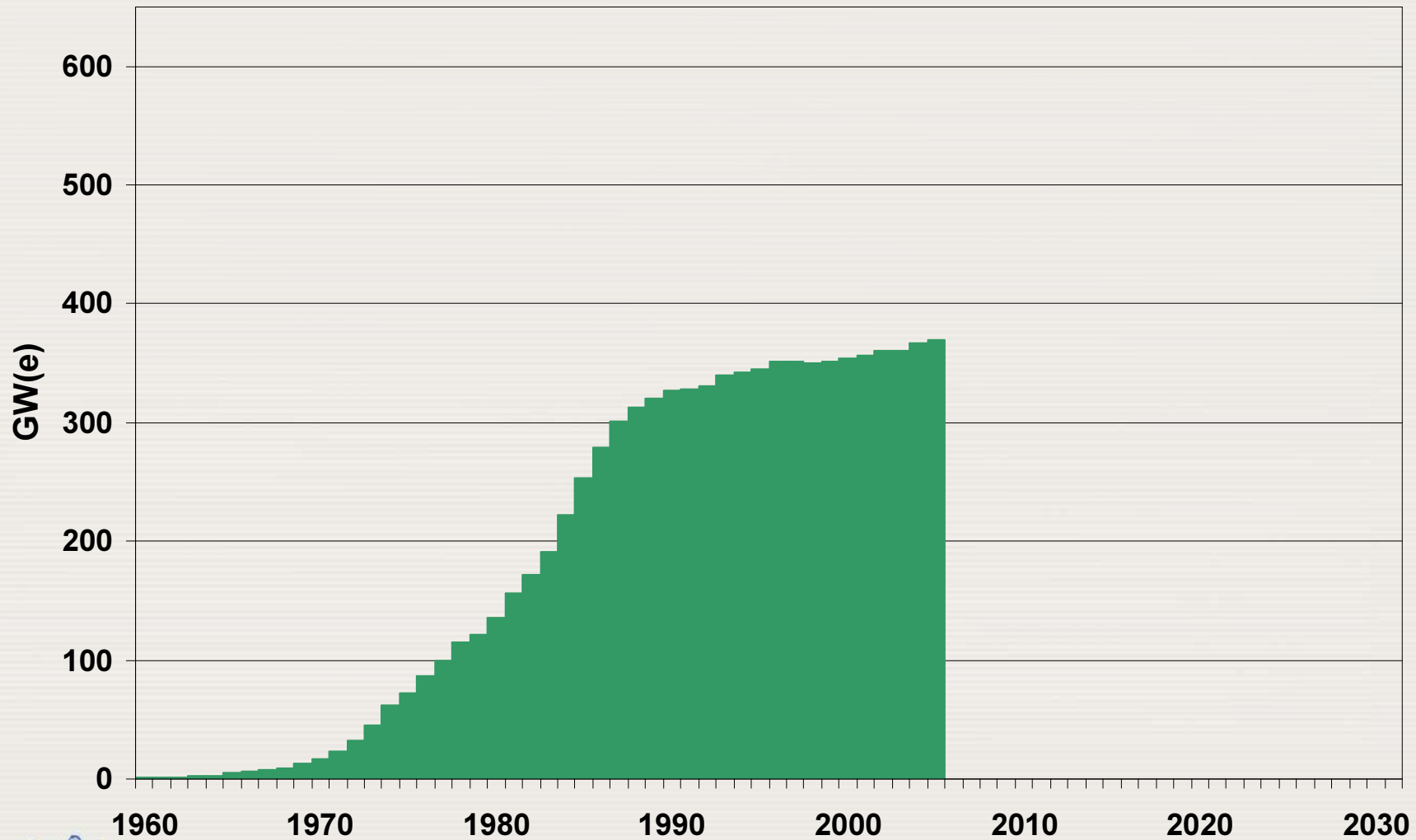
**IAEA**

International Atomic Energy Agency

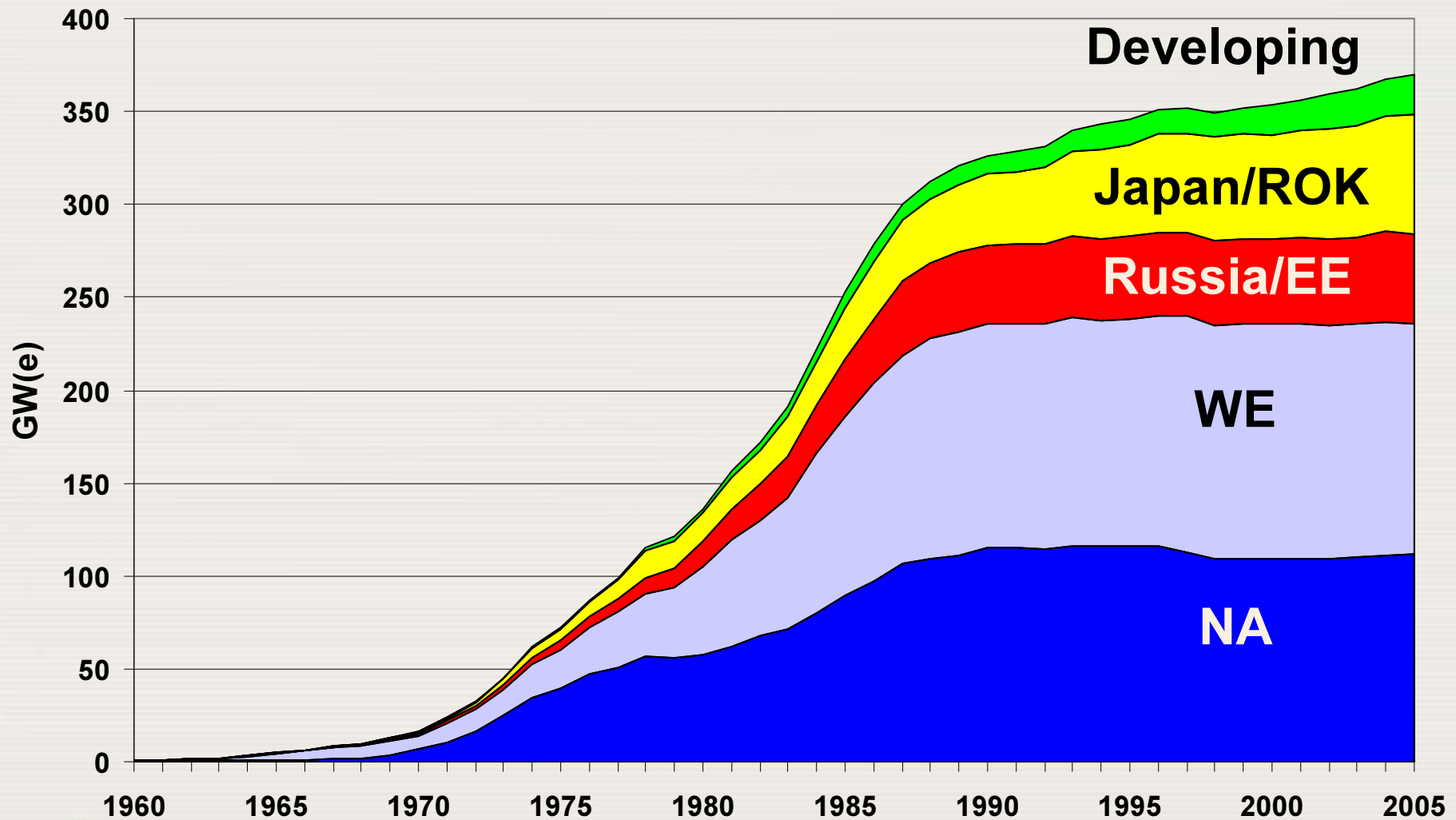
# Three take-aways

- Rising expectations
- One size does not fit all
- “It’s the economics!”

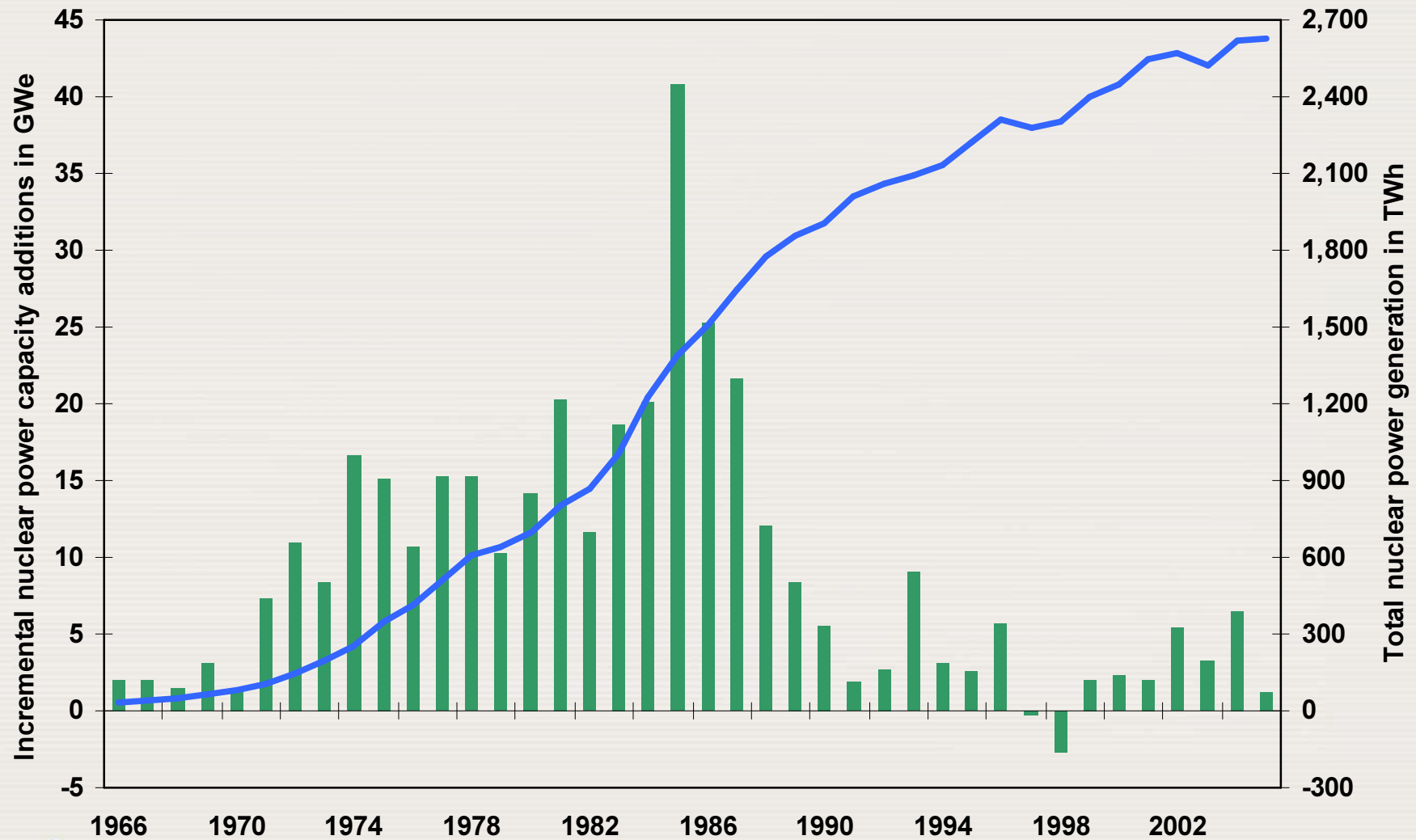
# Global nuclear capacity (1960-2005)



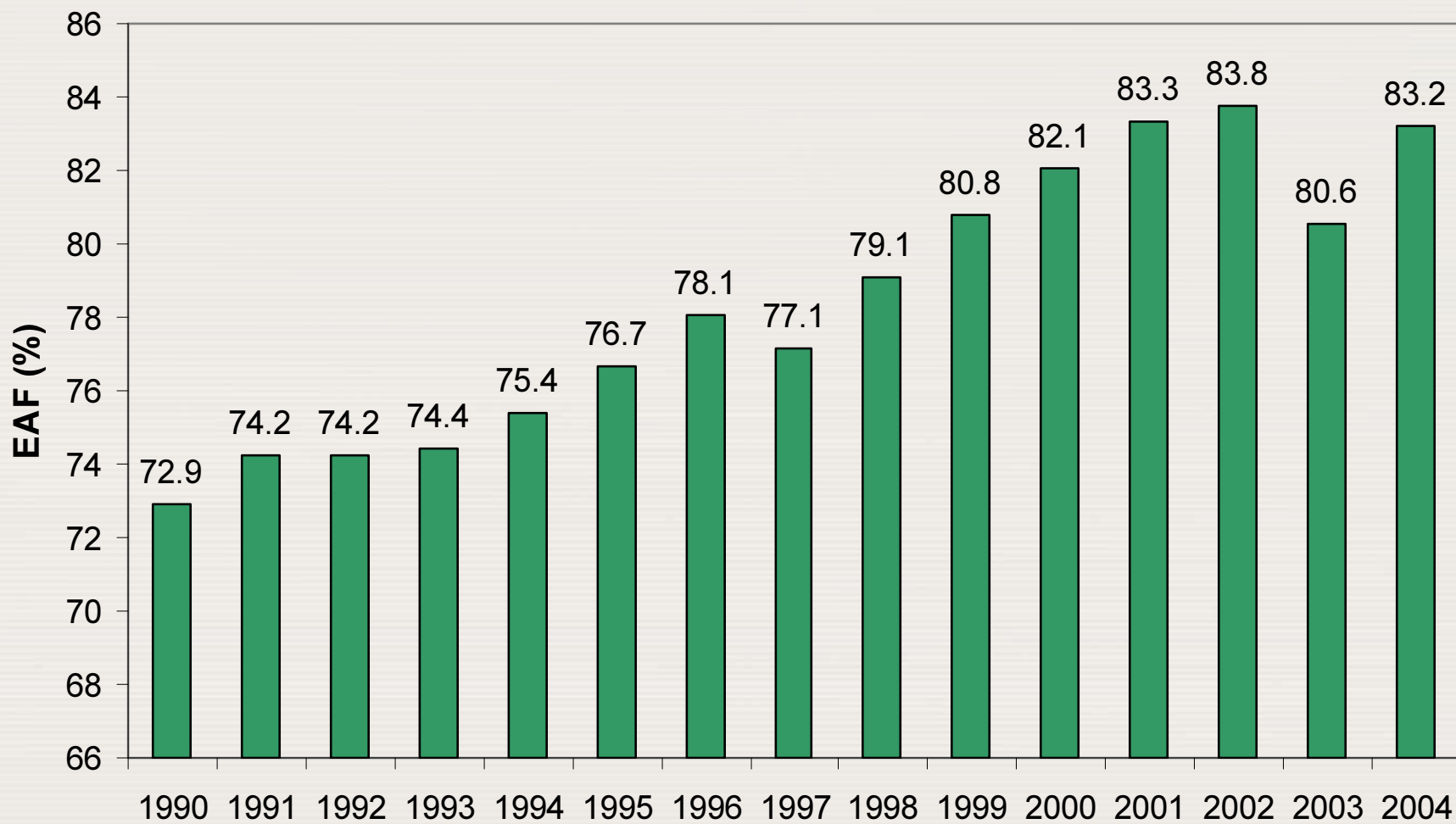
# Regional nuclear capacity (1960-2005)



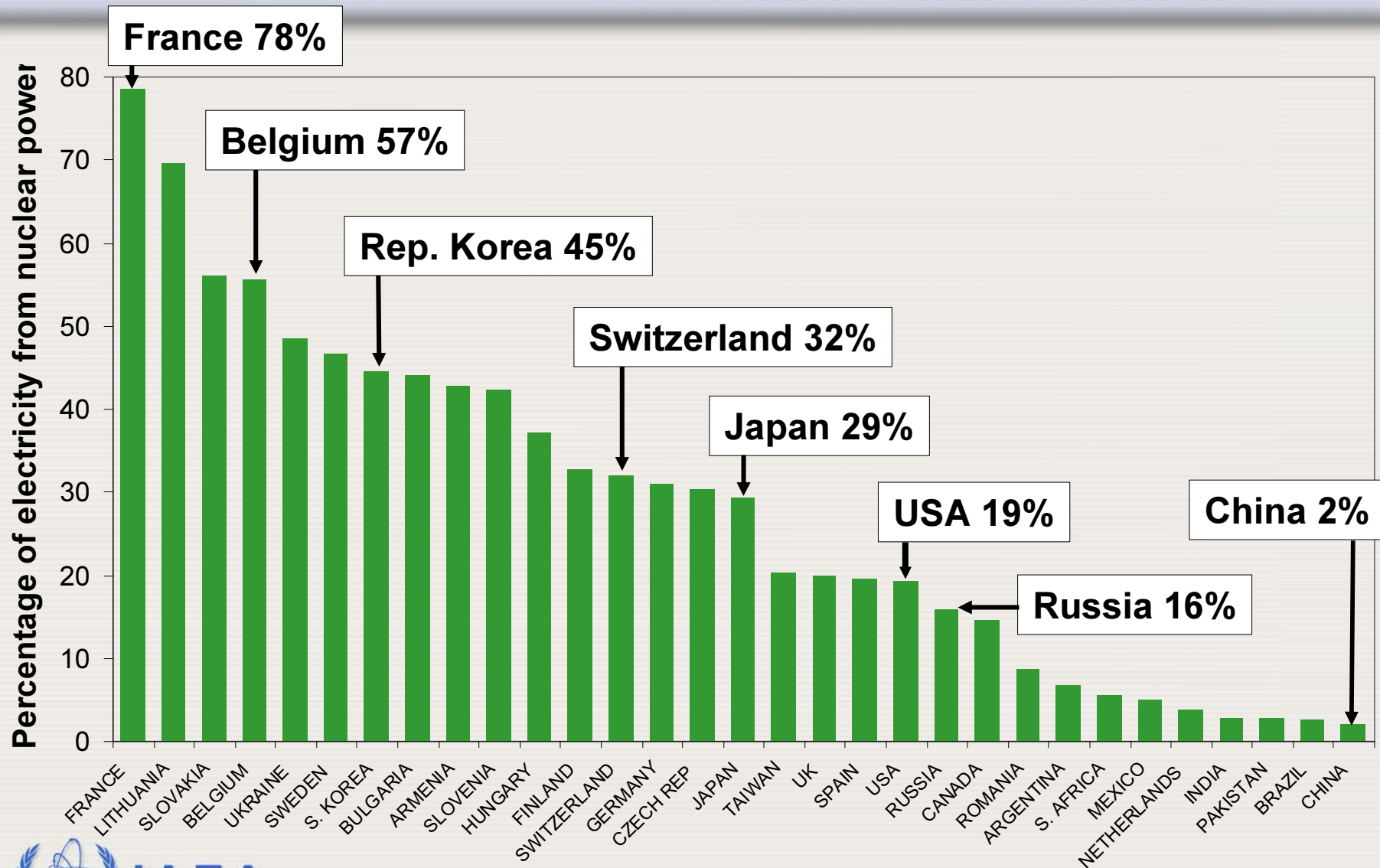
# New capacity and generation growth



# Energy availability factor

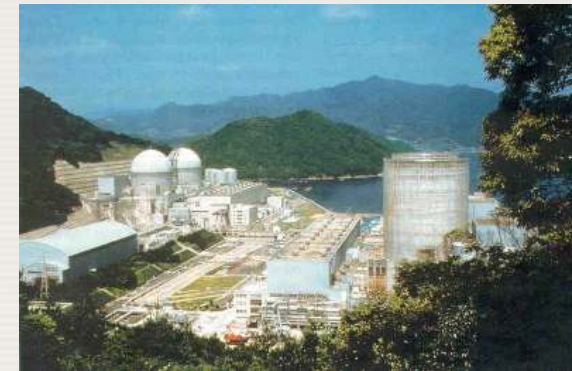


# Nuclear share of electricity (2005)

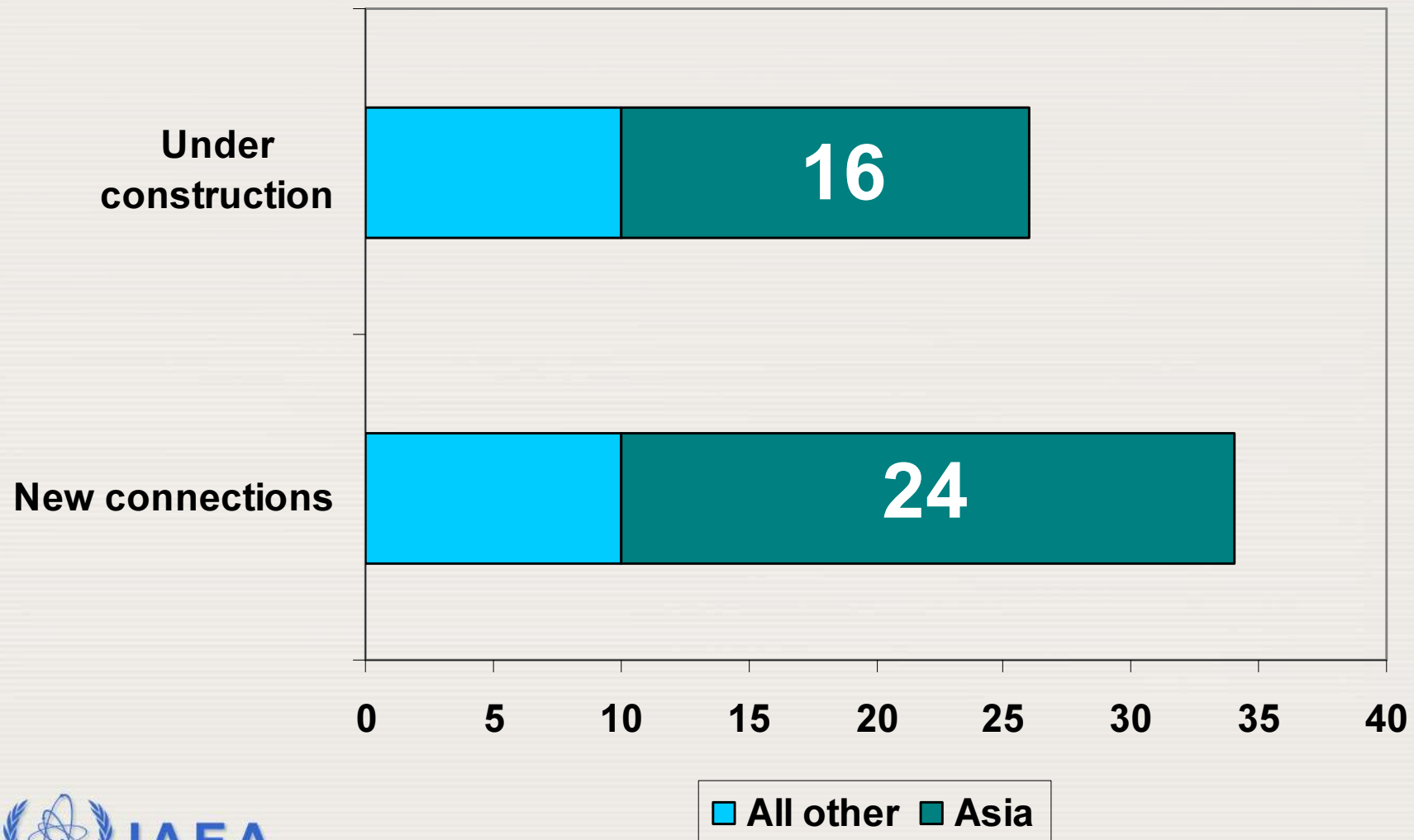


# Current status

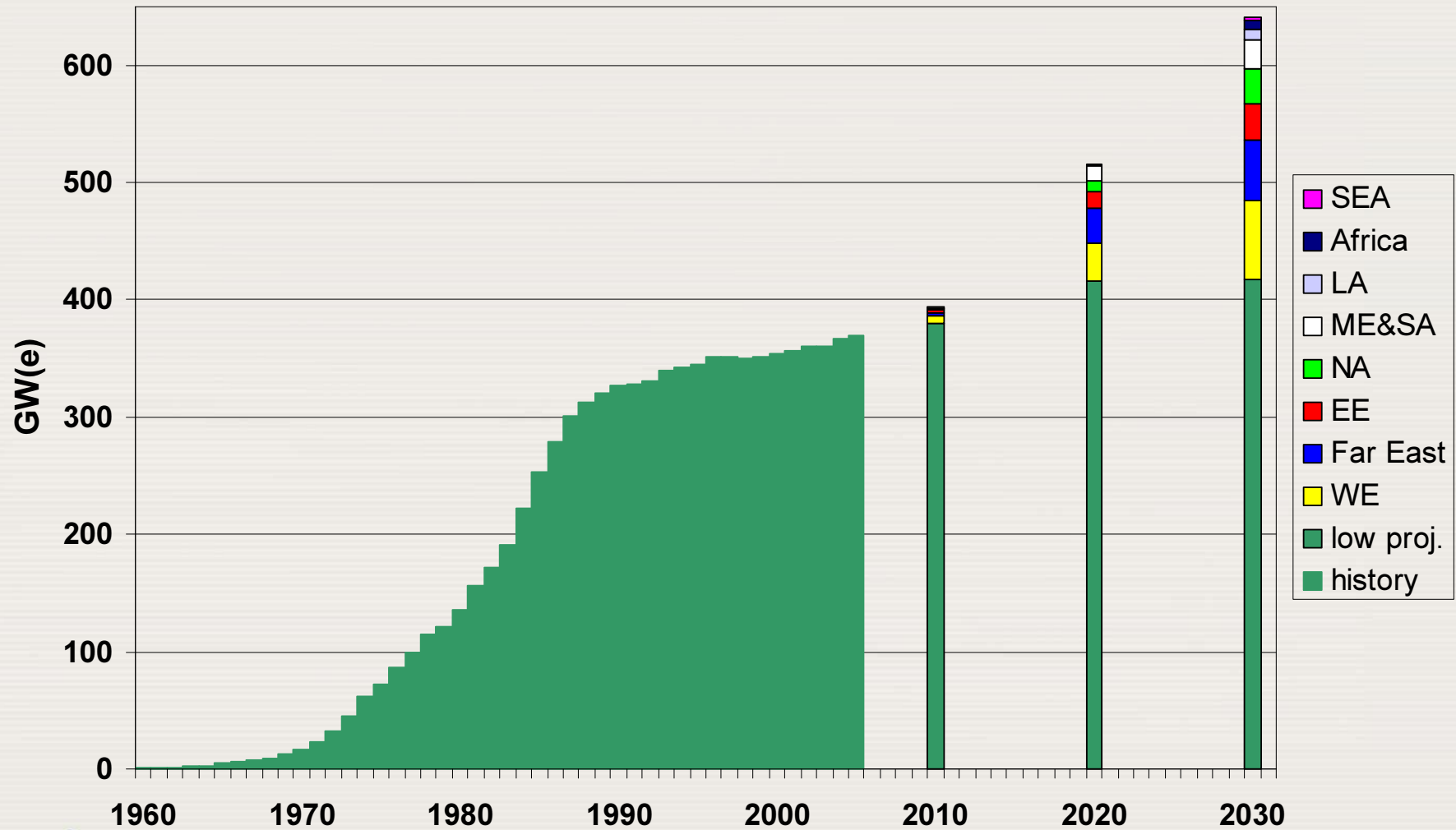
- 443 nuclear power plants
- 26 under construction
- USA 104
- France 59
- Japan 56 (1)
- Russia 31 (4)



# Expansion centered in Asia



# Rising expectations



# Rising expectations

- A good and lengthening track record
- Growing energy needs
- Security of supply
- Plans for expansion in a number of countries
- New environmental constraints

# One size does not fit all

- Countries differ with respect to
  - energy demand growth
  - alternatives
  - financing options
  - weighing/preferences
    - accident risks (nuclear, mining, oil spills, LNG...), cheap electricity, air pollution, jobs, import dependence, climate change
- All countries use a mix. All are different.

# India

- Nuclear now 2.8% of electricity
- 8 reactors under construction
- 10-fold growth planned 2002-2022 (10%)
- 100-fold growth planned 2002-2052 (26%)
  - = 9.2% per year
  - Global growth 1970-2004 = 9.2% per year
- Not party to the NPT, but recent US-India deal

# China

- Huge energy growth
- 3 reactors under construction
- 5-6 fold growth planned by 2020
  - 4% of electricity
- NPT member, potential Asian supplier



# Russia

- 31 reactors
- 4 under construction
- aspiring 'full fuel cycle services' provider



# Round-the-world tour cont.

- Japan
- Republic of Korea
- Eastern Europe
  - Bulgaria
  - Ukraine
  - Romania
  - Poland
  - others



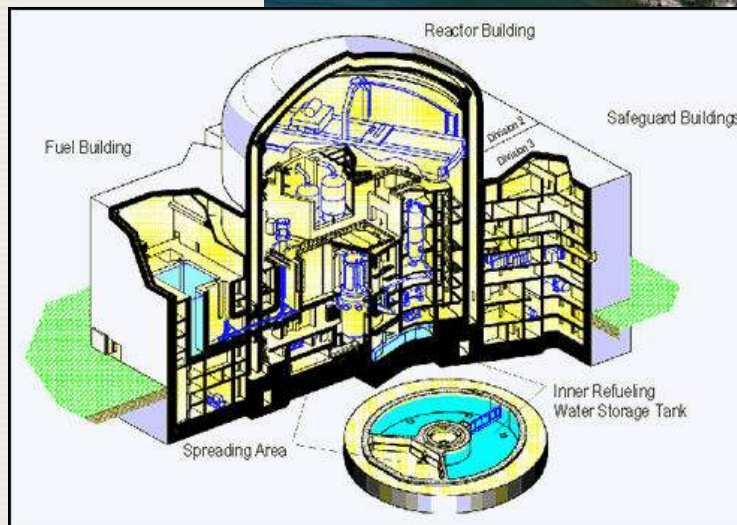
# Western Europe

- Western Europe
  - prohibition countries
    - Austria, Italy, Denmark, Ireland
  - phase-out countries
    - Sweden, Germany, Belgium



# Western Europe cont.

- Western Europe
  - expansion countries
    - Finland, France
  - others
    - UK, Spain, Switzerland



# USA

- 19% of electricity
- Last connection: 1996
- Last construction start: 1977
- 75% of fleet has, is seeking, or plans to seek 20-year license renewals
- New energy legislation
  - Production tax credit, regulatory insurance
- 4 COLs expected by NRC by end of 2007

# Round-the-world tour cont.

- Canada
- Latin America
  - Argentina
  - Brazil
  - Mexico
- Africa
  - South Africa

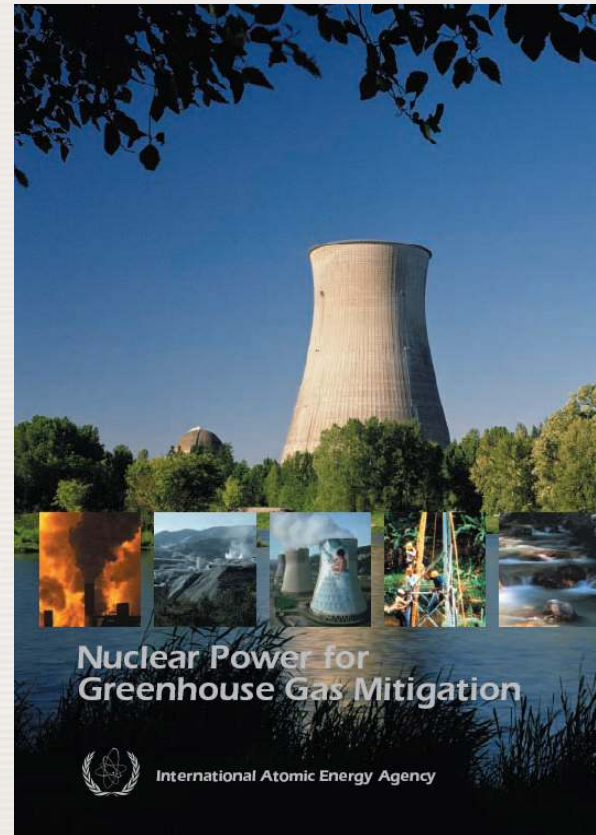


# Round-the-world tour cont.

- Iran
  - Bushehr-1



- Indonesia, Vietnam, ...



# “It’s the economics”

- Nuclear is expensive to build, cheap to run
- New nuclear most attractive where
  - energy demand growth in rapid
  - alternative resources are scarce
  - energy supply security a priority
  - reducing air pollution and GHGs a priority
  - financing can look longer-term
  - low financial risk premium

# IAEA



*...atoms for peace.*