

2-3-2010

## Nuclear Renaissance, How Real Is It: What Are the Implications for Global Governance of the Non Proliferation Regime?

Charles Ebinger  
*Energy Security Initiative, Director*

Follow this and additional works at: [https://digitalscholarship.unlv.edu/brookings\\_lectures\\_events](https://digitalscholarship.unlv.edu/brookings_lectures_events)

---

### Repository Citation

Ebinger, C. (2010). Nuclear Renaissance, How Real Is It: What Are the Implications for Global Governance of the Non Proliferation Regime?.

Available at: [https://digitalscholarship.unlv.edu/brookings\\_lectures\\_events/8](https://digitalscholarship.unlv.edu/brookings_lectures_events/8)

This Lecture is protected by copyright and/or related rights. It has been brought to you by Digital Scholarship@UNLV with permission from the rights-holder(s). You are free to use this Lecture in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself.

This Lecture has been accepted for inclusion in Brookings Scholar Lecture Series by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact [digitalscholarship@unlv.edu](mailto:digitalscholarship@unlv.edu).

BROOKINGS



*Brookings Mountain West*

**<http://brookingsmtnwest.unlv.edu>**



# The Nuclear Renaissance

Dr. Charles K. Ebinger  
Director, Energy Security Initiative  
Brookings

# Where We Are

- 436 commercial nuclear power stations in 30 countries
- 372,000 MWe of total capacity
- 15% of world electricity
- 8 countries known to have nuclear weapons capability
- 56 countries operating civilian research reactors
- 30 new reactors under construction
- ~90 new reactors planned
- France, Lithuania, Slovakia and Belgium get over 50% of their electricity from nuclear power
- The United States gets about 20%

# Drivers of the Nuclear Renaissance

- Climate change and local/global emissions legislation
- Growing global energy demand
  - Electric vehicles?
  - Energy-intensive desalination plants for fresh water?
  - Hydrogen-powered vehicle demand?
  - Ageing global energy infrastructure; replace old reactors
- Energy security / security of supply
- Public perception of nuclear safety

# Global Nuclear Activities

## Europe

- Poland, Estonia, Latvia considering joint project with Lithuania
- UK replacement of ageing reactors and new builds
- Finland and France fleet expansions  
Both plants over budget and construction times
- Italy reviving its nuclear program

## **Russia**

- Doubling of nuclear capacity by 2020; also expecting floating power plant by 2012

## **Canada**

- Extending lifetime of existing plants and expanding fleet; possible use of nuclear power for oil sands extraction

## **Southeast Asia**

- Vietnam first plant by 2017; planned programs in Thailand, Indonesia and Philippines; China and Bangladesh to cooperate

## **East Asia**

- Japan and South Korea (fleet expansion): SK looking at pyroprocessing

## **South Asia**

- Pakistan (fleet expansion)

## **Middle East**

- UAE (agreement with S.Korea for 4 reactors by 2020) and Jordan (for use in desalination)

## **Africa**

- South Africa (fleet expansion); Nigeria (2 reactors); Egypt (nuclear power and desalination)

## **China**

- target to increase capacity to 50 GW by 2020

## **India**

- target to increase capacity by 20 – 30 new reactors by 2020; US-India Nuclear Agreement; possible collaboration with South Korea

## **Brazil**

- Plans to build 4 new plants by 2015 and complete a fifth unfinished plant; has 5% of world's uranium reserves

## **Argentina**

- Plans fleet completion and life extension of existing builds and plants, expansion to 4 plants by 2015

## **Chile**

- Considering establishing nuclear power by 2025 to ease reliance on hydropower, natural gas (from Argentina) and coal; much opposition from environmentalists

## **Mexico**

- Considering expanding fleet of 2 plants; one by 2015 and 7 more by 2025; smaller reactors under consideration for desalination



# Major Companies

- GE-Hitachi
- Westinghouse-Toshiba
- Babcock & Wilcox
- Areva
- Mitsubishi Heavy Industries
- Exelon
- China National Nuclear Corporation
- Atomstroyexport (Russia)
- AECL (Canada)

# Critical Issues

- Preventing the spread of enrichment and reprocessing technologies (non-proliferation)  
Brazil, S.Africa, Australia, Canada, Kazakhstan
- Need for a robust nuclear power management system, including nuclear waste
- Nuclear fuel supply guarantees and fuel management : Multilateralization of E/R ?
- Costs: subsidies, financing, operation
- Greater Transport of Nuclear Materials

# NPT Review Conference

- Adaptation of a civilian nuclear power program for weapons purposes
- Proliferation driven by illicit supply networks
- Security concerns related to commercial nuclear operations
- Inadequately secured fissile material
- Institutional deficiencies
- Inadequate enforcement

BROOKINGS



*Brookings Mountain West*

**<http://brookingsmtnwest.unlv.edu>**