

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

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

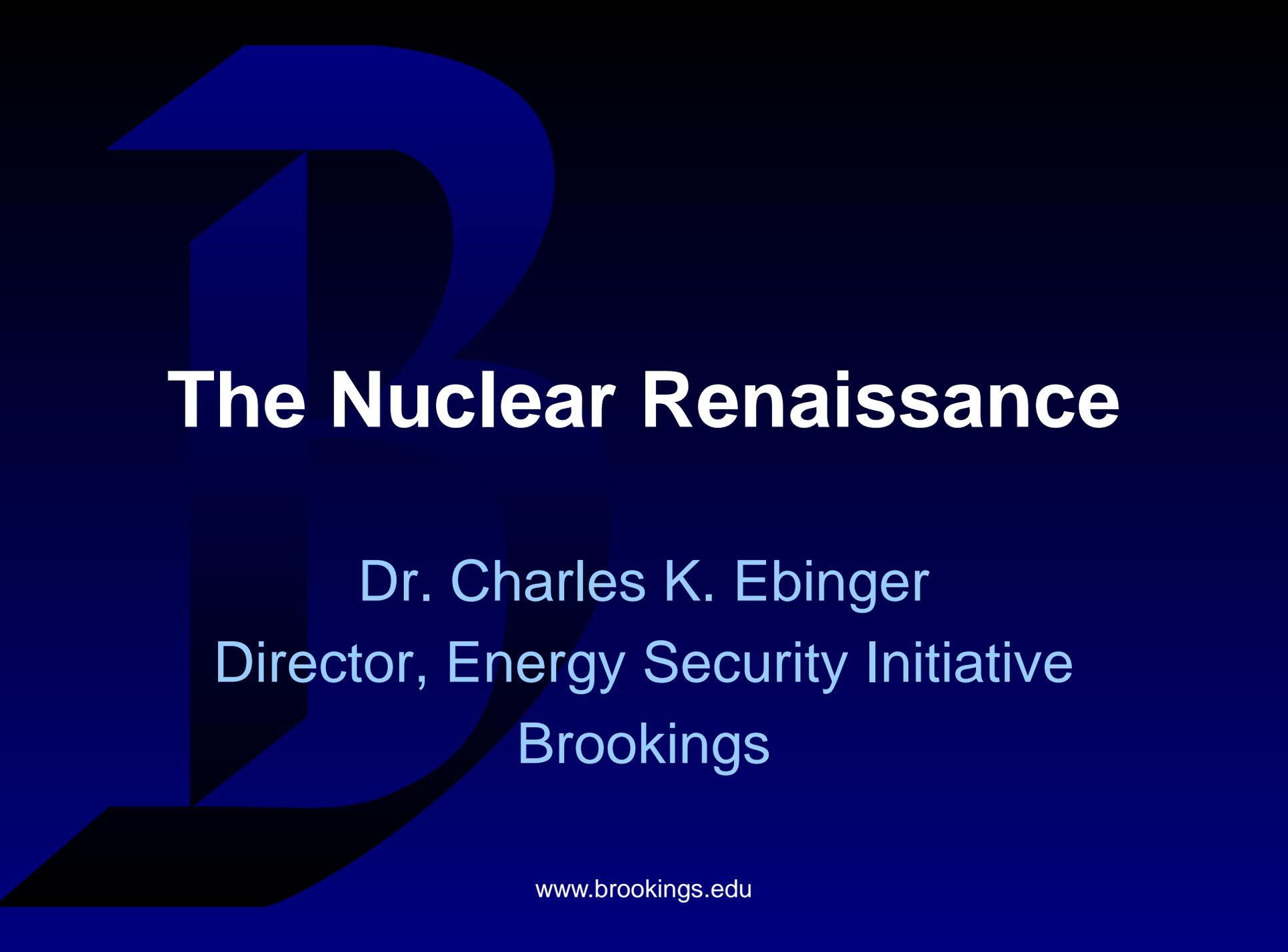
This Lecture is brought to you for free and open access by the Brookings Mountain West at Digital Scholarship@UNLV. It has been accepted for inclusion in Lectures/Events (BMW) by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact digitalscholarship@unlv.edu.

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>