



U.S. DEPARTMENT OF
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Nuclear Energy

US-Japan Roundtable On Nuclear Energy Cooperation

***Emerging Markets: The Role of Governments in
Leveling the Playing Field***

February 23, 2011

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Global Demands on Nuclear Energy

Increasing demands on nuclear energy:

- Energy supply/energy security/national security
- Significant source of jobs and economic benefit
- Clean, base-load source of energy to meet climate change goals



Status of Nuclear Power

Worldwide

- 439 nuclear reactors in 29 countries
- Accounts for approximately 14 % of global electricity production
- Over 50 under construction with approximately 50 countries considering nuclear, including approximately 27 in China.

U.S.

- 104 reactors supply 20% of the electricity market, representing 70% of all low carbon energy in the US and largest source of carbon free energy
- 700 million metric tons of carbon avoided each year
- Over 92 percent capacity utilization; only hydroelectric has lower production costs
- 12 COL applications for 20 reactors, plus two ESPs now under NRC review. These are in addition to 4 ESPs the NRC has already issued. 2 COLs are expected late 2011/early 2012 for Vogtle 3 and 4 and V.C. Summer 2 and 3.
- 3 design certifications are expected this year—ABWR, AP-1000, ESBWR
- Since the early 1990s, we added the equivalent of 29 1,000 megawatt units to the grid.



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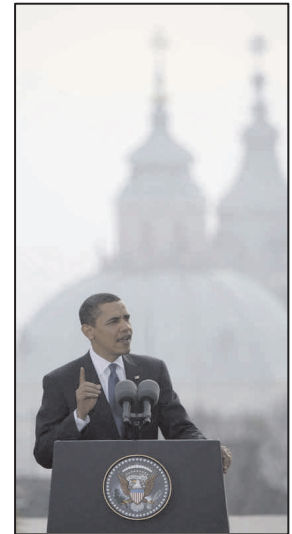
Challenges and Opportunities

“And we should build a new framework for civil nuclear cooperation ... so that countries can access peaceful power without increasing the risks of proliferation.... We must harness the power of nuclear energy on behalf of our efforts to combat climate change, and to advance opportunity for all people.”

President Barack Obama, Prague, Czech Republic, April 7, 2009

“But to create more of these clean energy jobs, we need more production, more efficiency, more incentives. And that means building a new generation of safe, clean nuclear power plants in this country.”

January 27, 2010: President Obama’s State of the Union Speech



“President Obama and I are committed to restarting the nuclear industry in the United States.” Steven Chu, Secretary of Energy
Meeting of the American Nuclear Society
November 16, 2009



CHALLENGES

Expansion Without Increasing Proliferation

- E.g., comprehensive commercially-based fuel services.

Expansion Without Increasing Safety Risks

- E.g., infrastructure development and lessons learned.

Overcoming Barriers to the Expanded Use of Nuclear Energy

- E.g., financial/capital costs, liability, public acceptance



US-Japan: A Unique Partnership

■ Common view of the role of nuclear energy:

- Right to access for peaceful purposes
- Ensures we do not increase proliferation risks as part of expanded access
- Contributes to a reduced global carbon footprint
- Serves as a key element of reliable fuel supply and energy security
- Significant source of jobs and economic prosperity

■ Common view of solutions:

- Role of the commercial nuclear energy, in cooperation with governments, to offer a solution to expansion without increasing proliferation risks through the industry offering reliable, economically competitive front and backend commercial fuel services as an alternative to indigenous development.

— I.E.: Comprehensive Nuclear Fuel Services/Cradle-to-Grave

■ Historically Strong Governmental Ties and Partnership

■ Japan/US Commercial Partnering



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US-Japan: Key Mechanisms and Opportunities

■ The U.S. and Japan Have Multiple Effective Mechanisms

- Japan/U.S. Joint Nuclear Energy Action Plan
 - Consists of 7 Working Groups
- International Framework for Nuclear Energy Cooperation
 - Japan serves as Co-chair of the Reliable Nuclear Fuel Supply (RNFS) Working Group
 - Hosted Key IFNEC Meetings: Steering Group, RNFSWG
 - U.S. serves as Steering Group Chair and Co-Chair of the Infrastructure Development WG
- Generation IV International Forum
 - Japan serves as Steering Committee Chair; US serves as Vice Chair.
- Major Contributors to the IAEA



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International Framework for Nuclear Energy Cooperation

Participants

- | | |
|-----------------------|--------------------|
| 1. Argentina | 26. Slovenia |
| 2. Armenia | 27. Ukraine |
| 3. Australia | 28. United Kingdom |
| 4. Bulgaria | 29. United States |
| 5. Canada | |
| 6. Estonia | |
| 7. France | |
| 8. Germany | |
| 9. Ghana | |
| 10. Hungary | |
| 11. Italy | |
| 12. Japan | |
| 13. Jordan | |
| 14. Kazakhstan | |
| 15. Kuwait | |
| 16. Republic of Korea | |
| 17. Lithuania | |
| 18. Morocco | |
| 19. Netherlands | |
| 20. Oman | |
| 21. Poland | |
| 22. Romania | |
| 23. Russia | |
| 24. Senegal | |

Observer Organizations

1. International Atomic Energy Agency (IAEA)
2. Generation IV International Forum (GIF)
3. Euratom

Observer Countries

- | | |
|-------------------|-------------|
| 1. Algeria | 26. Tunisia |
| 2. Bahrain | 27. Turkey |
| 3. Bangladesh | 28. Uganda |
| 4. Belgium | 29. UAE |
| 5. Brazil | 30. Vietnam |
| 6. Chile | |
| 7. Czech Republic | |
| 8. Egypt | |
| 9. Finland | |
| 10. Georgia | |
| 11. Greece | |
| 12. Indonesia | |
| 13. Kenya | |
| 14. Latvia | |
| 15. Malaysia | |
| 16. Mexico | |
| 17. Mongolia | |
| 18. Nigeria | |
| 19. Singapore | |
| 20. Slovakia | |
| 21. South Africa | |
| 22. Spain | |
| 23. Sweden | |
| 24. Switzerland | |
| 25. Tanzania | |



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The International Framework for Nuclear Energy Cooperation (IFNEC)



*IFNEC EXECUTIVE COMMITTEE
DEAD SEA, JORDAN
November 4, 2010*



المملكة الأردنية الهاشمية
The Hashemite Kingdom of Jordan

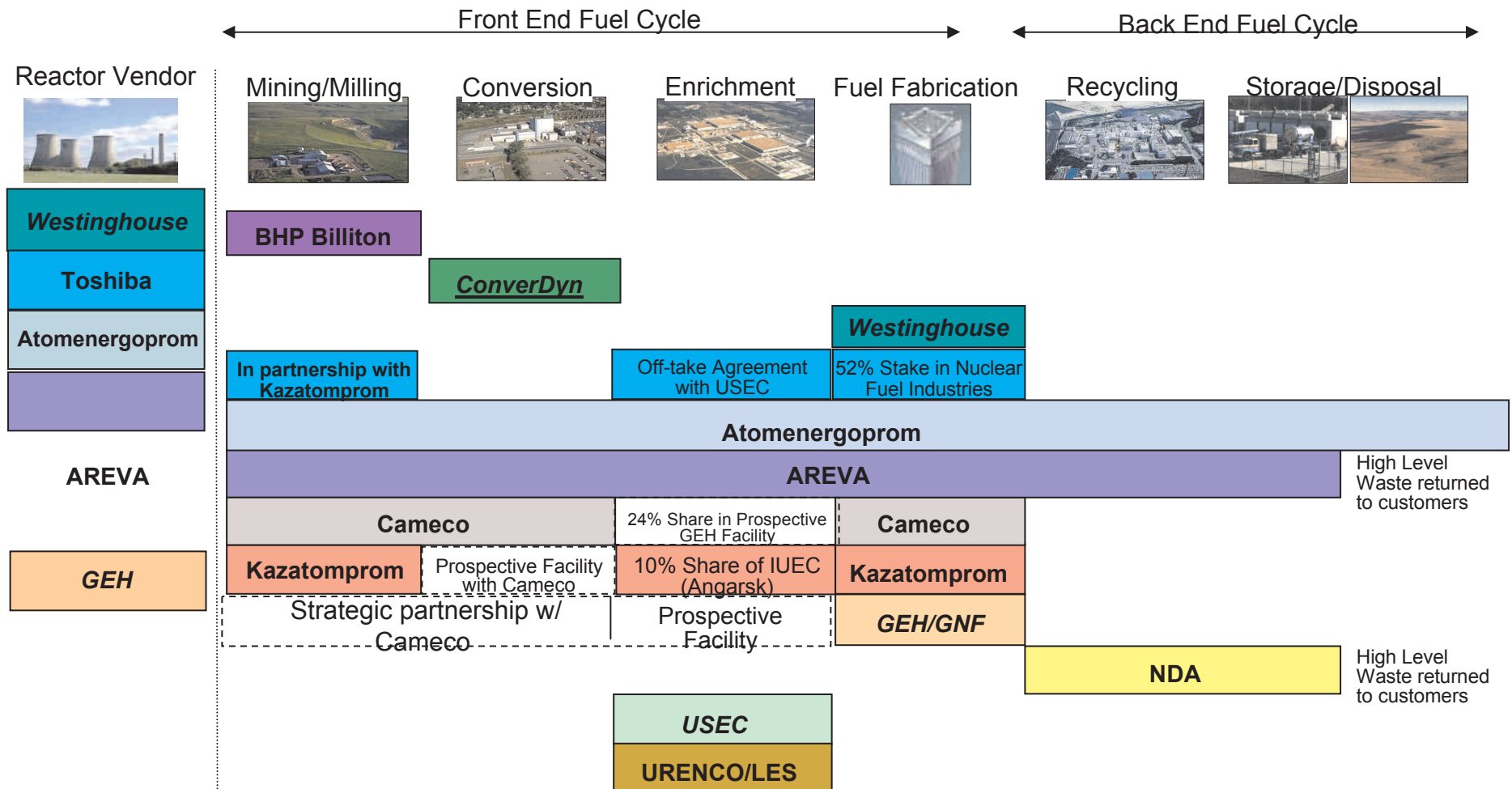




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Snapshot of Global Nuclear Fuel Service Industry



Please note: only companies with export businesses are shown, and only the companies with the largest uranium mining output is represented.



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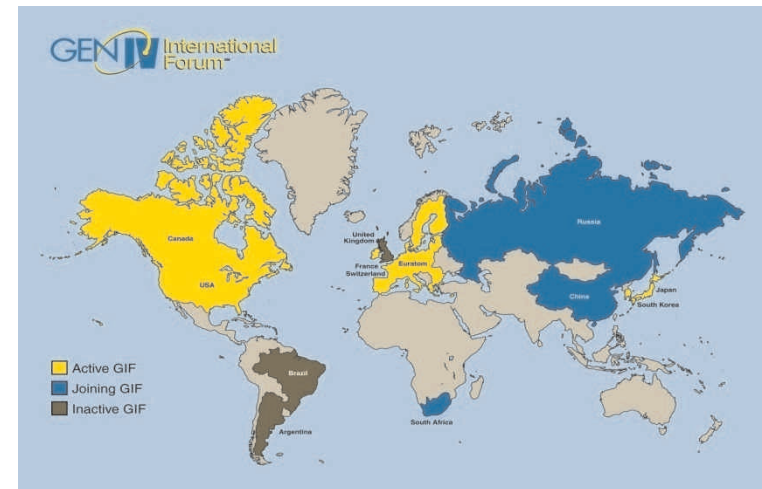
Cradle-to-Grave/Comprehensive Nuclear Fuel Services (CTG/CFS) Conceptual Description

- A CTG/CFS approach is one that provides comprehensive, reliable and commercially-based services on a global basis.
- Under the CTG/CFS concept, suppliers would provide a range of options for fuel supply, used fuel management, and ultimate disposal services.
- The CTG/CFS approach would provide a competitive economic advantage over indigenous development of enrichment and reprocessing and would remove some of the burdens associated with the interim storage and the final disposal of used fuel or/and high level radioactive wastes.
- CTG/CFS is intended to be a flexible and tailored approach that recognizes and accommodates the unique requirements of the specific users and service providers.
- CTG/CFS represents a new framework for civil nuclear cooperation in the pursuit of abundant carbon-free energy sources.

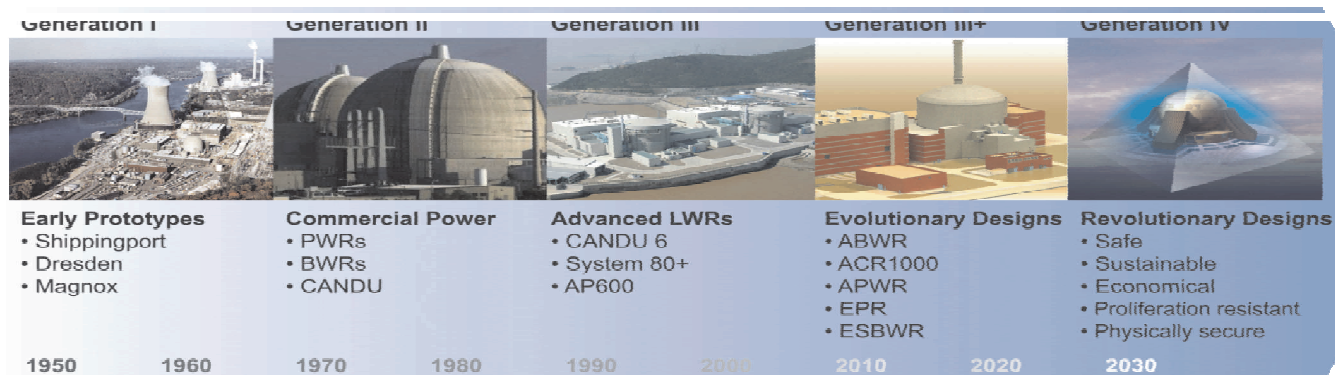


Generation IV International Forum (GIF)

- Advanced designs offer improvements in waste management, performance, economics, and sustainability.
- Six advanced reactor concepts are being developed.
- Investment of 10 nations in collaborative R&D is over \$100M per year.
- U.S. interest focused on high temperature gas cooled and sodium fast reactors.



Generations of Nuclear Energy





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Global Liability: Convention on Supplementary Compensation (CSC)

- Ensures certain basic principles of nuclear liability law are incorporated into participating countries' domestic law
- Promotes a common approach on compensation, the definition of nuclear damage, and the jurisdiction of courts
- Addresses uncertainty about potential legal liability
- Addresses a significant impediment to U.S. nuclear suppliers participating in commercial nuclear projects outside of the United States.
- Provides the legal certainty necessary for undertaking civil nuclear projects and, in the unlikely event of a nuclear incident, prompt and meaningful compensation with a minimum of litigation



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Conclusion

- **Japan and the U.S. are uniquely positioned to effectively address some of the most pressing issues facing our world**
 - Energy security; climate change; economic prosperity
- **U.S./Japan government/industry partnering will be key**
- **Japan/U.S. partnership very strong, with an opportunity to strengthen even further.**