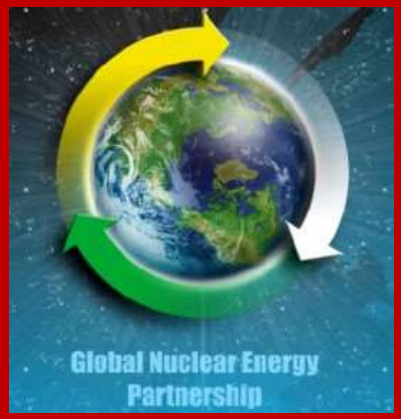
# The Global Nuclear Energy Partnership (GNEP)

## that you've never heard of.




**"One fact remained inexplicable---that of the compass"**

**—Henry Lawson in "Journey to the Center of the Earth" by Jules Verne.**

# GNEP: The Beginning

**2006: U.S. Secretary of Energy Bodman announced a proposal to form an international partnership to promote:**

***The use of nuclear power.**

***Closing the nuclear fuel cycle to reduce waste and the risk of nuclear proliferation.**

# Goals of GNEP

**To achieve these goals, GNEP sought to develop new chemical reprocessing technologies in countries that were already possessing nuclear energy programs.**

# Goals of GNEP

**The new technologies were to avoid producing additional pure plutonium from SNF: allow the plutonium to remain with uranium and the fission products.**

# Goals of GNEP

**The new SNF separation approaches would be coupled with new fuel fabrication technologies to create fuel for fast-neutron reactors to burn MOX fuel.**

**Under GNEP, SNF would be returned to the fuel supplier and recycled using a process that does not produce pure, separated plutonium.**

# GNEP Partners and Observers

## GNEP Partners

(As of October 1, 2008)

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

## GNEP Observers

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

## Candidate Partner and Observer Countries

1. Algeria
2. Argentina
3. Bahrain *
4. Bangladesh
5. Belgium
6. Brazil
7. Czech Republic
8. Egypt
9. Finland
10. Georgia
11. Germany
12. Greece
13. Kuwait
14. Latvia
15. Malaysia
16. Mexico
17. Netherlands
18. Nigeria
19. Slovakia
20. South Africa
21. Spain
22. Sweden
23. Switzerland
24. Tanzania
25. Tunisia
26. Turkey
27. United Arab Emirates
28. Vietnam

* Invited as an observer until a comprehensive safeguards agreement is brought into force.

For more info: www.gneppartnership.org

# More MOX than the demand

**Nowhere was the use of plutonium in MOX fuels keeping up with the rate of chemical reprocessing of SNF.**

**In Japan, local government discouraged the use of MOX fuel.**

**In France, the number of reactors using MOX was not kept pace with reprocessing.**

# Problems with GNEP

**Canada was reluctant to join GNEP because they did not want to accept spent nuclear fuel.**

**Australia was reluctant as well; did not want to accept spent nuclear fuel but they wanted the right to enrich U in the future.**

# Problems with GNEP

South Africa declined to join; feared that GNEP could impede plans to enrich U and sell reactor fuel in the international market.

India declined because they feared that GNEP would hinder their ability to enrich U and reprocess spent fuel to meet the nonproliferation requirement.

# Divide and Conquer

**Critics of GNEP claim that it would divide the world into "haves" and "have nots"**

**"Fuel supplier nations" who would provide enriched U and take back spent fuel for chemical reprocessing.**

**"User nations" who operate or will operate nuclear power plants, but will not enrich U or chemically reprocess spent fuel.**

# Lack of support

**"Members of U.S. Congress remain unenthusiastic about GNEP"**

**Concerns that the program will encourage nuclear proliferation and will waste money on "excessively ambitious and unachievable technologies."**

# Too soon, too expensive?

**U.S. DOE envisioned both an operating commercial-scale reprocessing plant and fast reactor by 2020 (or sooner).**

**There were, however, fears about the plans for the U.S. to chemically reprocess spent fuel and proliferation (history repeats itself).**

# Too soon, too expensive?

**Congressional Budget Office concluded that chemically reprocessing spent fuel would likely cost billions of dollars more than a long-term geological repository.**

**For FY 2008 Congress allocated only $181 million for Bush's Advanced Fuel Cycle Initiative which funded GNEP ($395 million was requested).**

# GNEP abandoned by the U.S.

**In 2009, DOE stated that the U.S. would no longer pursue GNEP as its near-term domestic approach for investigating options for SNF management.**

# GNEP became IFNEC

**In 2010, the GNEP was renamed the International Framework for Nuclear Energy Cooperation. IFNEC is now an international partnership with 34 partner countries, and 31 observer countries.**

IFNEC
INTERNATIONAL FRAMEWORK FOR NUCLEAR ENERGY COOPERATION

# IFNEC members

## 34 Participant countries

- Argentina
- Armenia
- Australia
- Bahrain
- Bulgaria
- Canada
- China
- Estonia
- France
- Germany
- Ghana
- Hungary
- Italy
- Japan
- Jordan
- Kazakhstan
- Kenya
- Korea
- Kuwait
- Lithuania
- Morocco
- Netherlands
- Niger
- Oman
- Poland
- Romania
- Russia
- Senegal
- Sierra Leone
- Slovenia
- Ukraine
- United Arab Emirates
- United Kingdom
- United States

## 31 Observer countries

- Algeria
- Bangladesh
- Belgium
- Brazil
- Chile
- Czech Republic
- Egypt
- Finland
- Georgia
- Greece
- Indonesia
- Latvia
- Malaysia
- Mexico
- Moldova
- Mongolia
- Nigeria
- Philippines
- Qatar
- Saudi Arabia
- Singapore
- Slovak Republic
- South Africa
- Spain
- Sweden
- Switzerland
- Tanzania
- Tunisia
- Turkey
- Uganda
- Viet Nam

NEA NUCLEAR ENERGY AGENCY

GEN IV International Forum

IAEA International Atomic Energy Agency

# IFNEC

**"The International Framework for Nuclear Energy Cooperation provides a forum for cooperation among participating states to explore mutually beneficial approaches to ensure the use of nuclear energy for peaceful purposes proceeds in a manner that is efficient and meets the highest standards of safety, security and non-proliferation."**

# IFNEC

**“Participating states would not give up any rights and voluntarily engage to share the effort and gain the benefits of economical, peaceful nuclear energy.”**

**https://www.ifnec.org/ifnec/jcms/j_6/home**

# Pop Quiz (5 points)

**It is year 2043, and history is repeating itself. A GNEP-like organization is being formed with the same goals as in 2006, and you are in charge of it! Based on all that you have learned in NPRE 442, make one recommendation that might help the new organization succeed.**

# Class Assignment 10

**Read Chapters 8 and 10.**