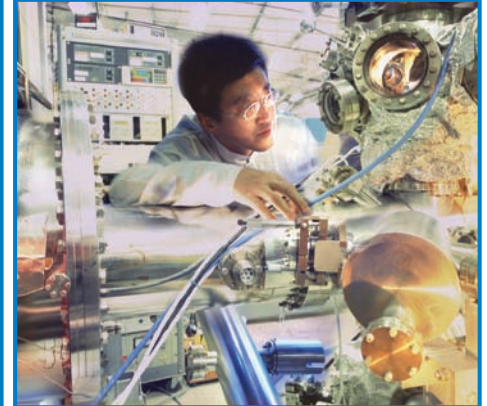


# International Nuclear Energy Research Initiative

The U.S. Department of Energy's Office of Nuclear Energy

*The Department of Energy is working to promote bilateral and multilateral research with other nations.*



- The International Nuclear Energy Research Initiative (I-NERI) is a key research and development (R&D) mechanism for implementing cooperative work.

- The U.S. Department of Energy (DOE) Office of Nuclear Energy (NE) is coordinating wide-range discussions among governments, industry, and the research community worldwide on basic research and mission-specific applied R&D that is relevant to U.S. technology needs.

- Through I-NERI agreements with other countries with developed nuclear infrastructure, the United States is pursuing international collaborations in the:

- – Generation IV Nuclear Energy Systems Initiative (Gen IV),
- – Global Nuclear Energy Partnership–Advanced Fuel Cycle Initiative (GNEP-AFCI), and
- – Nuclear Hydrogen Initiative (NHI).

- The Generation IV Technology Roadmap identifies near-term reactor concepts being investigated by the international research community that have relevancy to U.S. technology needs. These International Near-Term Deployment (INTD) concepts identified by Nuclear Energy Advisory Committee and the Generation IV International Forum (GIF) allow the United States to engage the international community in bilateral fashion beyond the six Gen IV concepts. International, cost-shared R&D enhances the Department's ability to leverage its limited research funding with nuclear technology research funding from other countries, while also providing the United States greater credibility and influence in international activities associated with the application of nuclear technologies. The Department currently has in place bilateral I-NERI

Bottom Right Photo Courtesy of Peter Ginter

agreements with France, the Republic of Korea, Organization for Economic Co-operation and Development Nuclear Energy Agency, European Union, Canada, Brazil, and Japan. Negotiations to establish new bilateral agreements are underway with the Republic of South Africa and the United Kingdom.

## Scientific and Engineering R&D

The goal of the I-NERI program is to conduct innovative scientific and engineering R&D in cooperation with other countries to address the key issues affecting the future of nuclear energy and its global deployment by improving cost performance, enhancing safety, and increasing proliferation resistance of future nuclear energy systems. In accomplishing this primary goal, the following objectives have been established for the I-NERI program:

- Developing advanced concepts and scientific breakthroughs in nuclear energy and reactor technology to address and overcome the principal technical and scientific obstacles to the expanded use of nuclear energy worldwide.
- Promoting bilateral and multilateral collaboration with international agencies and research organizations to improve development of nuclear energy.
- Promoting and maintaining nuclear science, engineering, and education infrastructure to meet future technical challenges.

## Research Areas

- Advanced reactor systems that improve safety, economics, and proliferation resistance, such as the Very High Temperature Reactor, the Gas-Cooled Fast Reactor, and the Sodium-Cooled Fast Reactor technologies.
- Advanced fuel cycle technologies for transmutation and Gen IV reactors that are cleaner, more efficient, less waste-intensive, and more proliferation resistant.
- Advanced energy systems and enabling technologies for hydrogen production. Specific research areas are defined as part of each cooperative agreement based on mutually agreed-upon research needs and priorities.

## Cost-Sharing Approach

I-NERI provides an effective means for international collaboration on a leveraged, cost-shared basis. Actual cost-share amounts are determined for each jointly selected project. The program is designed to achieve a 50-50 funding contribution with each partner country, while exercising flexibility toward developing countries.

The network of international partnerships established through the I-NERI bilateral agreements results in well-coordinated and cost-effective R&D.

## Background and Organization

DOE established I-NERI following the 1999 report *Powerful Partnerships: The Federal Role in International Cooperation on Energy Innovation*, published by the President's Committee of Advisors on Science and Technology (PCAST). Bilateral I-NERI agreements are established under existing or new "umbrella" agreements between the United States and collaborating countries.

I-NERI is fully integrated into the Gen IV, AFCEI, and NHI programs. It is a principal tool for conducting advanced nuclear R&D at a fully internationalized level. This integration makes all of NE's advanced nuclear R&D available for international collaboration on a cost-shared basis.

## Planned Program Accomplishments

### FY 2008

- Continue bilateral research on projects initiated in FY 2006 through FY 2007 with France, the Republic of Korea, Canada, and Japan.
- Complete projects initiated in FY 2005 with Japan.
- Initiate new cooperative research under existing R&D programs.

### FY 2009

- Continue collaboration on existing projects.
- Initiate new cooperative research under existing R&D programs.