OECD/NEA Activities Relating to Innovative Nuclear Energy Systems

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COE-INES International Symposium (INES-1)
Tokyo, Japan
November 1, 2004
The OECD Membership

- Australia
- Austria
- Belgium
- Canada
- Czech Republic
- Denmark
- Finland
- France
- Germany
- Greece
- Hungary
- Iceland
- Ireland
- Italy
- Japan
- Korea
- Luxembourg
- Mexico
- Netherlands
- New Zealand
- Norway
- Poland
- Portugal
- Slovak Republic
- Spain
- Sweden
- Switzerland
- Turkey
- United Kingdom
- United States
The NEA Mission

- To assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes.

- To provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy, and to broader OECD policy analyses in areas such as energy and sustainable development.
## Nuclear Energy Today

<table>
<thead>
<tr>
<th></th>
<th>OECD Countries</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Reactors</td>
<td>359</td>
<td>440</td>
</tr>
<tr>
<td>Installed Capacity</td>
<td>304 GWe</td>
<td>362 GWe</td>
</tr>
<tr>
<td>Share of Electricity Supply</td>
<td>23%</td>
<td>~16%</td>
</tr>
</tbody>
</table>

Source: OECD/NEA and IAEA 2004
Nuclear Share in Electricity Generation of OECD Countries in 2002 (%)

The Netherlands: 4.2%
Mexico: 5.5%
Canada: 12.1%
United States: 20.3%
United Kingdom: 24%
Czech Republic: 25%
Finland: 25.6%
Spain: 27.9%
Germany: 29%
Japan: 31.4%
Republic of Korea: 38.7%
Switzerland: 39.5%
Hungary: 39.6%
Sweden: 45.9%
Slovak Republic: 53.9%
Belgium: 57.2%
France: 77.9%

OECD average: ~ 24%

Source: OECD/NEA 2003
MAJOR NEA ACTIVITIES RELEVANT TO ADVANCED REACTOR DEVELOPMENT

- Address Scientific Issues for both Current and Advanced Nuclear Energy Systems
- Maintain a Data Bank of Scientific Data & Computer Codes
- Provide Support for Policy Analyses and Decision Making by Member Governments
- Anticipate Regulatory Implications of a New Generation of Nuclear Energy Systems
- Provide Secretariat Support for Advanced Reactor Research Projects
STUDIES RELATING TO ADVANCED NUCLEAR SYSTEMS TECHNOLOGY

- Innovative Nuclear Reactor Technology (with IEA & IAEA)
- Innovation in Nuclear Technology (2005/6)
- Advanced Nuclear Reactor Safety Issues & Research Needs
- Nuclear Energy Products
- Nuclear Production of Hydrogen
- Advanced Nuclear Fuel Cycle Studies
  - Economic, Environmental & Social Aspects
  - Accelerator – Driven Systems & Fast Reactors in Advanced Fuel Cycles
  - Impact on Waste Management Policies
NEA Data Bank

- 22 member countries
- Agreements with several non-member countries
- Basic nuclear reaction and structure data applicable to current and advanced reactors
- Documented programs in many nuclear disciplines
- Evolution expected to meet developing needs
STUDIES ADDRESSING ECONOMIC & POLICY
CONSIDERATIONS FOR ADVANCED
NUCLEAR SYSTEMS TECHNOLOGY

- Uranium Resources, Production & Demand (Red Book)
- Impact of Licensing Process on Nuclear Energy Competitiveness (2005/6)
- Government & Nuclear Energy
- Society & Nuclear Energy
- External Costs of Nuclear Electricity Generation
- Nuclear Energy Risks & Benefits (2005/6)
- Nuclear Energy in a Sustainable Development Perspective
- Management of Recycled Fissile Materials (2005/6)
STUDIES AND ACTIVITIES ON REGULATORY ISSUES FOR ADVANCED NUCLEAR TECHNOLOGIES

- Nuclear Regulator Industry Forum (RIF 2004)
- NEA Safety and Regulatory Forum (SRF 2005): Joint CNRA/CSNI Forum
GIF
Generation IV International Forum

To foster collaborative R&D aiming at developing future generation nuclear energy systems

8 common goals
- sustainability
- economics
- safety and reliability
- proliferation resistance and physical protection

Euratom joined (7/2003)
## Generation IV Systems

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Spectrum</th>
<th>Fuel cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFR</td>
<td>Sodium Cooled Fast R.</td>
<td>Fast</td>
</tr>
<tr>
<td>LFR</td>
<td>Lead Alloy Cooled R.</td>
<td>Fast</td>
</tr>
<tr>
<td>GFR</td>
<td>Gas Cooled Fast R.</td>
<td>Fast</td>
</tr>
<tr>
<td>VHTR</td>
<td>Very High Temperature R. Thermal</td>
<td>Once-through</td>
</tr>
<tr>
<td>SCWR</td>
<td>Supercritical Water Cooled Th.&amp; F.</td>
<td>Once-t.&amp; Cl.</td>
</tr>
<tr>
<td>MSR</td>
<td>Molten Salt R.</td>
<td>Thermal</td>
</tr>
</tbody>
</table>
NEA Role in GIF

Technical Secretariat for both organizational and substantive tasks (funded through voluntary contributions)

- **Meetings**
  agendas, organization, minutes, follow-up, membership and lists of contacts

- **Documents**
  participation and/or major contribution in drafting reports, integration and editing, distribution, archiving

- **Communication**
  electronic working areas, websites

- **Consensus building and expertise**
  NEA network
GIF Governance Structure

- Policy Group
  - Chair
- Experts Group
  - Chair*
- System Steering Committees
  - Co-Chairs
- Methodology Working Groups
  - Co-Chairs
- Policy Secretariat
  - Policy Director
  - Technical Director*
- Technical Secretariat
  - NEA, Paris

* Technical Director is Chair of the Experts Group

Reports to
- Provides Secretariat for
- Communicates closely with
- Coordinates with
There is Growing Interest & Activity in Advanced Nuclear Systems

A Number of Countries & International Organizations are Involved

Extensive Work will be Needed for Technology R&D and Supporting Economic, Political & Social Analyses

NEA Works with its Member Countries, with Non-Member Countries, and with International Organizations through a Variety of Mechanisms on a Wide Range of Activities of Direct and Indirect Interest for Advanced Nuclear Systems

NEA Looks Forward to the Contributions of COE-INES to the Development of Advanced Nuclear Systems and to Appropriate Opportunities for Interchange and Collaboration