The OECD Nuclear Energy Agency (NEA)

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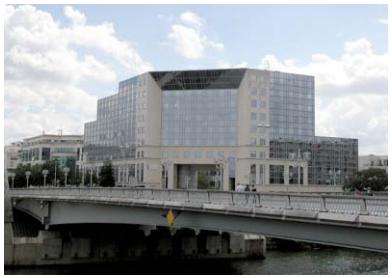
OECD/NEA Membership

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

OECD and NEA member
OECD member, not NEA
NEA member, not OECD



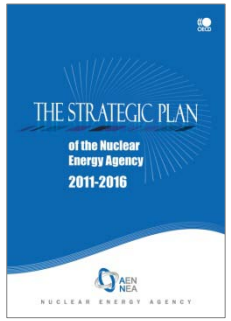
The NEA Mission

- 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.

NEA Strategic Plan: 2011-2016

The Strategic Plan covers:



- **The mission of the NEA** (mission statement, strategies, priorities, activities and operations).
- **NEA activities by sector** (goals and means of achievement).
- **Governance** (roles of the Steering Committee for Nuclear Energy and the standing technical committees; cross-cutting activities).
- **Interactions** (within the OECD family, with the IAEA, other international bodies, industry, stakeholders and non-member countries).

NEA Basic Facts and Figures

Governing body: the Steering Committee for Nuclear Energy

31 member countries (24 in the Data Bank)
= 90% of global nuclear electricity generating capacity.

55 years of international service.

7 standing technical committees (including nuclear development, economics, safety, regulation…).

21 international joint projects funded by participants (17 in the safety area, and others in radiological protection and radioactive waste management).

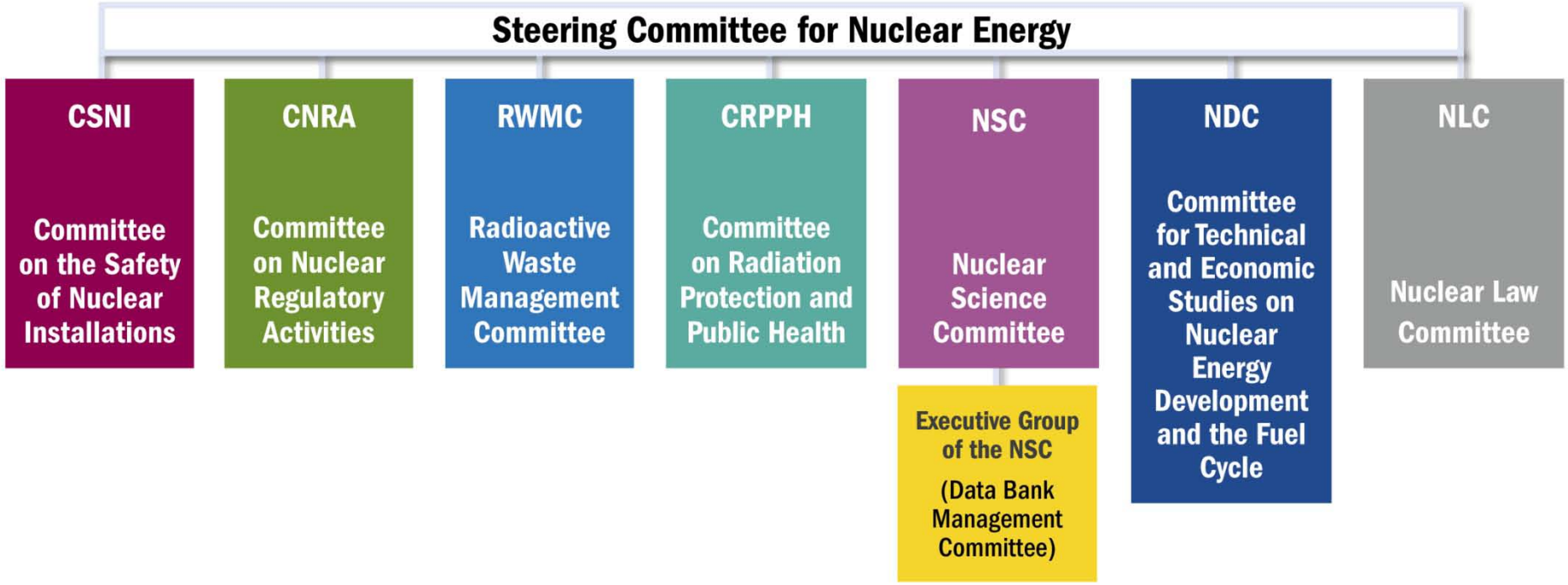
71 working parties and expert groups.

+ Technical Secretariat of the Generation IV International Forum (GIF) and the **Multinational Design Evaluation Programme (MDEP).**

NEA Co-operation and Interactions

- International Energy Agency (IEA): OECD family,
- International Atomic Energy Agency (IAEA): agreement,
- European Commission (EC): full participant,
- China: Joint Declaration under preparation,
- India: expert invitations,
- Ad hoc observers (national governments),
- Industry input to selected studies.

NEA Committees



Integrated NEA Fukushima Actions for Safety Enhancements (INFASE)

- **3 standing technical committees:**
  - ✓ Committee on Nuclear Regulatory Activities (CNRA),
  - ✓ Committee on the Safety of Nuclear Installations (CSNI),
  - ✓ Committee on Radiation Protection and Public Health (CRPPH).
- **9 areas being examined:**

  Accident management and progression; Crisis communications; Reassessment of defence-in-depth; Methodologies for defining and assessing initiating events and design-basis criteria; Reassessment of operating experience; Balancing deterministic and probabilistic approaches to regulatory decision making; Regulatory infrastructure; Radiological protection (RP); and RP aspects of decontamination and recovery.
- **Comprehensive report** on follow-up actions and recommendations to be published, summer 2013.

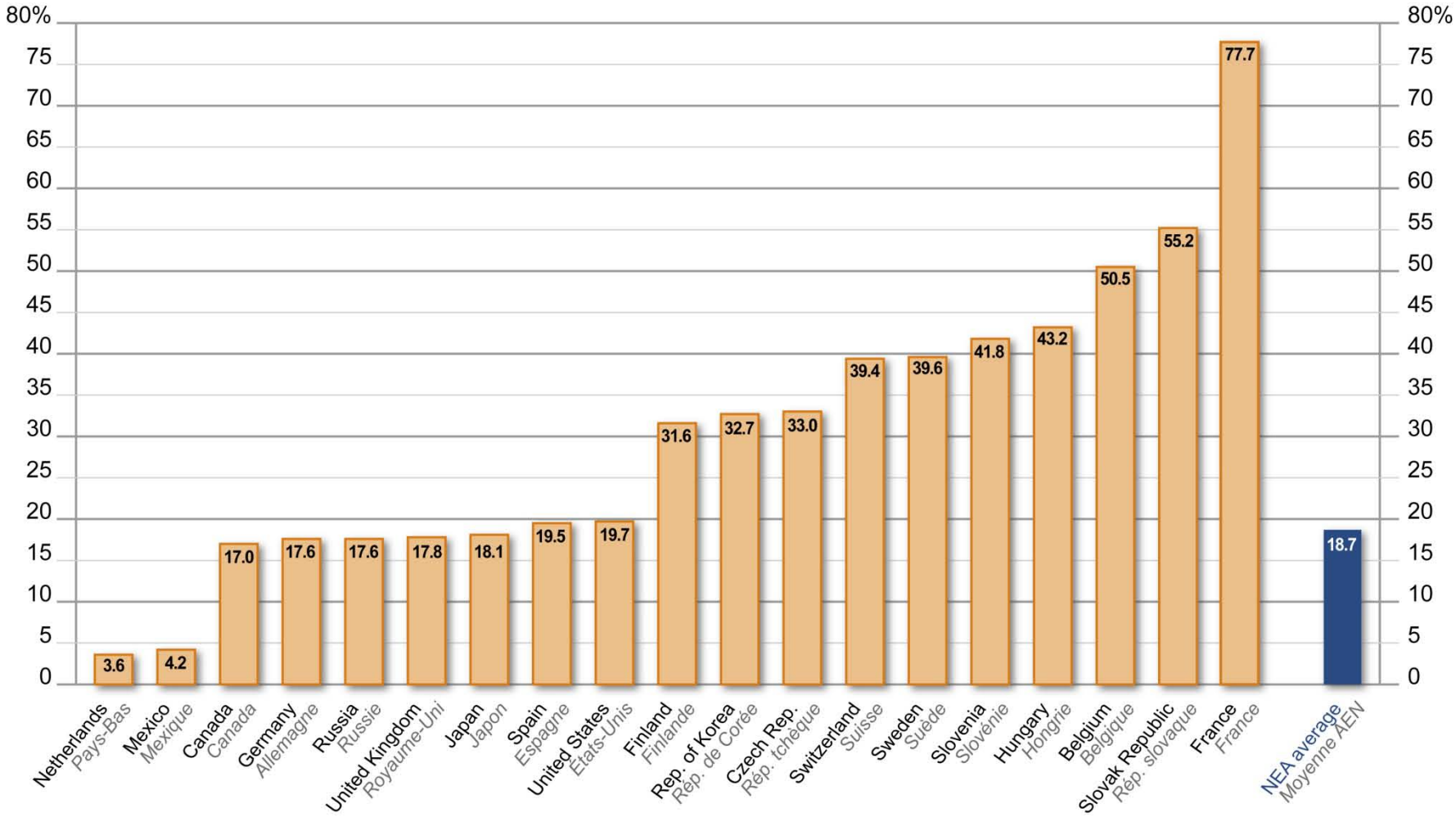
Impacts on Energy Policies

- **Public opinion** significantly affected by the Fukushima Daiichi accident.
- **Political decisions** by some countries to shut down their nuclear reactors: Germany.
  To phase out gradually: Belgium, Switzerland.
  Not to proceed: Italy.
- **Most countries confirmed their nuclear plans** including: China, India, Indonesia, Belarus, Bulgaria, Czech Republic, Canada, Rep. of Korea, Finland, France, Lithuania, Poland, Russia, Slovak Republic, UAE, US, UK, Vietnam, Turkey…
- **Three- to four-year delay** in the implementation of new programmes.

Institutional and Structural Impacts

- Establishment of **new, independent regulatory bodies** (Japan, Korea).
- **Safety evaluations/stress tests** carried out worldwide.
- Immediate **safety enhancements** adopted (reinforced capacities to ensure backup electricity supplies in the face of extreme external events), at a cost.
- Other safety enhancements being examined (greater emphasis on cost-benefit analyses in the North American context) and incorporated in new designs (MDEP, GIF).
- **Crisis communication and emergency preparedness** plans being reviewed.

Nuclear Power Share of Total Electricity Production in NEA Countries (2011)



NEA Joint Projects

- **Nuclear safety research** and experimental data (thermal-hydraulics, fuel behaviour, severe accidents).
  - ✓ Benchmark Study of the Accident at the Fukushima Daiichi Nuclear Power Station (BSAF) Project.
  - ✓ Hydrogen Mitigation Experiments for Reactor Safety (HYMERES) Project.
- **Nuclear safety databases** (fire, common-cause failures).
- **Nuclear science** (thermodynamics of advanced fuels).
- **Radioactive waste management** (thermochemical database).
- **Radiological protection** (occupational exposure).

Multinational Design Evaluation Programme (MDEP)

- Initiative by national safety authorities to leverage their resources and knowledge for **new reactor design reviews**.
- Independent project among **12 countries** (Canada, China, Finland, France, India, Japan, Korea, Russia, South Africa, the United Arab Emirates, the United Kingdom and the United States) :
  - ✓ NEA secretariat support.
  - ✓ IAEA participates.
  - ✓ Co-ordination with the CNRA through the Working Group on the Regulation of New Reactors.
- Recently expanded membership (India; UAE associate member).
- Assess **Fukushima-related topics** through the design-specific working groups.

Generation IV International Forum (GIF)

- **Charter signed in July 2001** for 10 years, extended indefinitely in 2011. Currently 13 signatories (3 non-active status).
- **NEA Technical Secretariat**.
- **Goals:** improve sustainability (including effective fuel utilisation and minimisation of waste), economics, safety and reliability, proliferation resistance and physical protection.
- Intergovernmental Framework Agreement signed in February 2005, in force for Canada, China, Euratom, France, Japan, Korea, Russia, South Africa, Switzerland, United States. Depositary is the OECD Secretary-General.
- Systems Arrangements:

  SFR: China, Euratom, France, Korea, Japan, Russia, United States (4 Project Arrangements effective).

  SCWR: Canada, Euratom, Japan, Russia (2 Project Arrangements effective).

  GFR: Euratom, France, Japan, Switzerland (1 Project Arrangement effective).

  VHTR: China, Euratom, France, Korea, Japan, Switzerland, United States (3 Project Arrangements effective).

Electricity System Costs and Effects: *Nuclear Energy and Renewables*

- Analysis of **six technologies**: nuclear, coal, gas, onshore wind, offshore wind and solar.
- **Including the system costs of renewables at the level of the electricity grid increases the total costs of electricity supply by up to one-third,** depending on country, technology and penetration levels (grid-level system costs for dispatchable technologies are <USD 3 per MWh, up to USD 40 per MWh for onshore wind, USD 45 per MWh for offshore wind and USD 80 per MWh for solar).
- **Not accounting for system costs means adding implicit subsidies to already sizeable explicit subsidies for renewables**. As long as this situation continues, dispatchable technologies will increasingly not be replaced as they reach the end of their operating lifetimes, thereby **weakening security of supply**.
- In systems that currently use nuclear energy, the introduction of renewables will likely to lead to **an increase in overall carbon emissions** due to the use of higher carbon-emitting technologies as backup.

NEA Goals for 2013: Highlights

- Issue the comprehensive report on NEA follow-up **actions and recommendations in response to the Fukushima Daiichi accident**.
- Prepare the framework for **international research** related to the decommissioning of Fukushima Daiichi units 1 to 4.
- Continue providing member country governments with the information and analyses they need to make **informed energy policy decisions**.
- Integrate Russia in the NEA membership, and reach out to China, to work towards **mutually beneficial exchanges of** information, **experience and best practices**.
- Explore opportunities for **reinforced collaboration between the NEA Data Bank and US institutions**, especially in the context of recent Russian membership.

Factors for the Future of Nuclear Power

- Public/political opinion.
- Safety record.
- Financial/economic crisis:
  - ✓ Electricity demand;
  - ✓ Availability of financial resources.
- Framework for investments, security of supply.
- Limitation of CO_2 emissions.
- Competitiveness of alternative sources.
- Stability of safety regulations – MDEP.
- Managing nuclear construction according to schedule/budget.