

IAE's Expertise Covers a Wide Range of Technology Fields

Global Environment

< Research Themes >

- Analysis of energy supply-demand structures, CO2 reduction potential, energy system cost, etc.
- Mid- to Long-term energy perspectives
- Support for the development of international standards (CCS)
- Participation in IEA/EGRD

< Expertise and International Partners >

- Long-term and integrated analytical evaluation of energy systems using IEA models (GRAPE, TIMES-Japan)
- IEA, IIASA, International collaboration on integrated assessment models

Renewables, Thermal Energy and Electric Power System

< Research Themes >

- Research on solutions to issues related to the massive introduction of renewable energies
- Development, demonstration and study on energy storage technologies, such as thermal energy storage, and compressed air energy storage
- Business model development for local energy supply
- Convening Advanced Power Network Study Group
- Convening Society of Solar Thermal Energy and Energy Storage

< Expertise and International Partners >

- Thermal system analysis and evaluation
- Technical knowledge and know-how related to the planning, design and operation of electric power system

Nuclear Energy

< Research Themes >

- Contribution to 1F accident analysis (Japan-US cooperation, OECD/NEA)
- Research on SMRs and next-generation reactors
- Support for IAEA safety standards, survey of safety systems in other countries
- Research on promoting measures, improving efficiency, and developing human resources related to decommissioning
- Convening Decommissioning Study Committee

< Expertise and International Partners >

- Thermal-hydraulic analysis (SAMPSON code, CFD)
- Safety regulatory systems (IAEA, etc.)
- Radioactivity inventory assessment
- IAEA, NEA, MIT, DOE Institutes

Energy Technologies Supporting S+3Es

- Safety
- Energy Security
- Economic Efficiency
- Environment

Hydrogen

< Research Themes >

- Hydrogen as an energy carrier: Analysis of hydrogen demand, Analysis of economic and environmental performance, etc.
- Hydrogen as a means of energy storage: Hydrogen utilization for effective use of renewable energy, Power to gas, etc.
- Individual technological fields: Water electrolysis, Hydrogen power generation, Hydrogen liquefaction, etc.
- Convening Zero-emission Hydrogen Vision Study Group

< Expertise and International Partners >

- Scenario analysis and formulation
- System cost evaluation from hydrogen production and utilization
- SINTEF (Foundation for Industrial and Technical Research in Norway)
- IMDEA (Madrid Institute for Advanced Studies)

Circular Carbon

< Research Themes >

- Evaluation of carbon capture, transport, utilization and storage
- Analysis of carbon recycling energy system based on carbon-free fuel from renewable energy
- Study on potential of innovative technologies for low-carbon society
- Roadmap for low-carbon and energy-efficient thermal power generation
- Research on decarbonization of oil refineries
- Research on waste-to-energy technology
- Convening the Society of Anthropogenic Carbon Cycle Technology

< Expertise and International Partners >

- Computational Fluid Dynamics; Process Design; C1 Chemistry
- CSIRO (Australia's National Science Agency)

(As of April, 2026)