

Main Points and Policy Package in “Japan’s Nuclear Energy National Plan” (Report by METI’s Nuclear Energy Subcommittee)

Role of the “Nuclear Energy National Plan”

- The Nuclear Energy Subcommittee of the METI Advisory Committee deliberated concrete actions for achieving the basic goals of the Framework for Nuclear Energy Policy (adopted October 2005 by the Cabinet), namely (a) continuing to meet at least 30 to 40% of electricity supply even after 2030 by nuclear power generation, (b) further promoting the nuclear fuel cycle, and (c) aiming at commercializing practical FBR cycle. In August 2006, the subcommittee recommendations were drawn up as a “Nuclear Energy National Plan.”
- It is one part of the New National Energy Strategy, and will be incorporated as part of the Basic Plan on Energy for adoption by the Cabinet by year end.

Five Basic Guidelines for Nuclear Energy Policy

- I. **Establish a firm national strategy and policy framework that does not waver over time.**
- II. **For individual policy measures and time frames, maintain a “strategic flexibility” to adjust to global realities and technology trends.**
- III. **Break down the three-way standoff among government, electric power utilities, and plant makers, to achieve true communication and a shared vision among players. The government must take the first step by indicating the overall direction.**
- IV. **Place importance on policy measures of individual regions along the lines of national strategy.**
- V. **Ensure policy stability by basing strategy decisions on open and even-handed discussions.**

The Current Environment for Nuclear Energy

1. Why is nuclear energy necessary?

- Nuclear energy is a main source of electricity, meeting a third of total electricity supply in Japan (there are currently 55 reactors).
- It is a key to achieving a stable energy supply while addressing environmental issues (no CO₂ generated).
- Japan’s energy self-sufficiency is a mere 4% (less than 20% even when nuclear energy is included). This is the lowest level among major developed nations. Even Japan’s food self-sufficiency is 40%.
- The world faces stiff competition for resources. Energy demands of China and India are rising steeply. (The one-year growth in China’s electricity demand equals the total output of TEPCO (Tokyo Electric Power Company), Mexico or Spain.)
- Trying to replace nuclear energy with new energy sources is unrealistic. (The solar panels for duplicating the output of one reactor (1GW) would fill the entire area of Manhattan Island; wind power would need an area 3.5 times that size.)

2. Around the world, people are starting to take a new look at nuclear energy

- In the U.S., the first new reactor in 30 years is about to be built, and the government is moving toward a policy of spent fuel recycling and fast reactor use (due to a lack of disposal space under once-through policy without recycling).
- UK is also looking to build the first new reactor in 20 years; and Finland is changing its policy.
- Around 20 new reactors each are planned in China, India, and Russia.

Policy Package

1. Building new nuclear power plants in a liberalized electricity market

- Reduce/distribute investment risk inherent in nuclear power plants (since FY 2006)

Introduce an accounting system of accumulating a reserve fund annually toward the cost of treating spent fuel in a second reprocessing plant.

- Reduce/level initial investment and decommissioning costs
 - To level off the depreciation costs of reactor construction, introduce a system allowing reserve funds to be accumulated in advance (since FY 2006).
 - Based on the provision of a new clearance system, etc., consider setting up a reserve fund for decommissioning.

2. Appropriate use of existing nuclear power plants with assuring safety as a key prerequisite

- Change to more effective inspections
(policy revision toward implementation in FY 2008)
 - Gear inspections to characteristics of each plant and operator
 - Adopt inspections applicable to both operating and stopped reactors
- Steadily carry out thoroughgoing measures to deal with aging reactors
(new policy implemented from FY 2006)

3. Deploying strategy for acquiring natural resources

- Forge lasting cooperative relations with Central Asia
On the occasion of the Prime Minister's visit to Kazakhstan in August 2006, negotiation for bilateral agreement on peaceful use of nuclear energy has started, to include joint development of uranium mines, uranium conversion, fuel processing, and introducing nuclear power generation.
- Help finance uranium mine development (newly budgeted for FY 2007)
Provide risk money to back private firms in searching for uranium and acquiring rights and interests [1.3 billion yen newly budgeted for FY 2007]. (Seven-fold rise in uranium price in 6 years.)

4. Promoting nuclear fuel cycle and strategically reinforcing of nuclear industries

- Steady advancement of nuclear fuel cycle
Aug. 2007: Full operation of Rokkasho Reprocessing Plant
By FY 2010: Plutonium utilization in light-water reactors (LWRs) in 16 to 18 reactors
Around FY 2010: New-model centrifuge in Rokkasho Uranium Enrichment Plant
2012: MOX fuel fabrication plant in operation
- Strategic reinforcement of nuclear industries
Boost industries for uranium enrichment and reprocessing, etc., to achieve nuclear energy self-sufficiency in Japan in the face of resource oligopoly and stricter non-proliferation rules.

5. Early commercialization of FBR cycle

- Build a demonstration FBR around 2025 and develop a commercial FBR before 2050.
- Funding of demonstration reactor:
 - In principle, the private sector should contribute an amount equivalent to that for a conventional LWR.
 - Publicly fund the amount exceeding that.
 - Major effort toward demonstration and commercialization (newly budgeted in FY 2007)
For FY 2007, 4 billion yen will be newly budgeted for R&D on FBR cycle realization, aimed at early implementation of a demonstration FBR and related cycle demonstration facilities (joint project with MEXT (Ministry of Education, Culture, Sports, Science and Technology), which is requesting approximately 10 billion yen in budget).
 - Discussions started on smooth transition to demonstration and commercialization (July 2006)
Five-way talks started on FBR demonstration facilities (METI, MEXT, electric power utilities, vendors, JAEA (Japan Atomic Energy Agency)).

7. Supporting for international development of Japan's nuclear industry

Actively supporting for international development of Japan's nuclear industry will:

- Help with worldwide energy crunch and ease global warming.
- Sustain the industry in Japan (technology, human resources).
 - Make clear the government's intention to offer support (Prime Minister visit to Kazakhstan, ministerial letter of support to Chinese Vice President).
 - Cooperate in HR training (enhance safety training program for China and Vietnam).
 - Provide expertise to countries planning to introduce nuclear energy (Vietnam, Indonesia, Kazakhstan) (started FY 2006).

6. Assuring ample technical and human resources to support the next generation

- Public/private sector united development project on next-generation LWR (started in FY 2006)
Development has been started on a next-generation LWR that can compete in world markets, the first united private/public sector national project in 20 years. After 2 years of feasibility studies, actual development is expected to take 7 or 8 years.
- Assist on-site engineer training and skills transfer (started in FY 2006)
Local efforts at on-site engineer training and skills transfer are being supported, affecting more than 20,000 people (Aomori, Fukui, Niigata/Fukushima).
- Create nuclear energy training programs for universities, etc.
(newly budgeted for FY 2007) (joint project with MEXT)
 - (a) Nuclear energy training support program
Develop course materials, invite instructors from industry, etc.
 - (b) Support basic technology fields underlying nuclear energy (materials corrosion, welding, fluids, etc.), where research activities and researchers are lacking in recent years.
 - (c) Provide students with opportunities to experience first hand the realities and appeal of the nuclear industry and research labs.

8. Positive involvement in creating an international framework to uphold both non-proliferation and the expansion of nuclear power generation

Japan is actively cooperating and contributing to create a new international framework, taking maximum advantage of its experience and technology.

- Japan proposed technology for international standardization under the US' Global Nuclear Energy Partnership (GNEP) initiative (September 2006). Japan will send experts and made other specific contributions.
- Japan made proposals in discussions on a Multilateral Mechanism for Reliable Access to Nuclear Fuel (September 2006 IAEA General Conference)

10. Reinforcement of measures for radioactive waste disposal

- Reinforcement of efforts to select candidate site for final disposal of high-level radioactive waste (HLW)
 - Expansion of measures for regional support by the government (currently 210 million yen/year; requesting 1 billion yen/year in FY 2007 budget).
 - Reinforcement of publicity activities, such as symposium (from FY 2006).
- Establishment of the institutional framework for geological disposal of TRU waste (legal revision)
 - Establishment of the institutional framework for geological disposal of TRU waste within the same framework of final disposal of HLW.
 - Establishment of legal framework for radioactive waste returned from overseas.

9. Building trust between government and local communities through detailed communication

■ Build trust between national government and local communities

Create a visible presence in communities where nuclear facilities are sited, dealing sincerely with their particular concerns in meetings at all levels.

- Enhance direct dialog with local residents (in small face-to-face meetings, etc.).
 - Ultimately the responsible persons at the national level should make clear the government's thinking and policy.
- ### ■ Hold detailed hearings and promote awareness
- Direct special attention at groups showing low interest.
 - Make use of outside experts in nuclear energy, etc.
- ### ■ Assist with local community development (started FY 2006)
- a. Provide grants totaling 2.5 billion yen to prefectures where reactors 30 years old and older are located.
 - b. Provide grants totaling 6 billion yen to prefectures accepting nuclear fuel cycle facilities.