Update on Japan’s Nuclear Sector

Agency for Natural Resources and Energy, METI
April, 2017
Current Situation
& Future Works
on Fukushima-Daiichi NPS
Contaminated Water Management

Impermeable Wall
Frozen-soil Walls

Mountains

Cross-section

Sea

Layers of earth

Reactor Bldg.

Frozen-soil Walls

Impermeable Wall
Robot into Unit 2

Scaffold fallen

(30th Jan. 2017)
Need more technologies

Open Innovation Platform “TEPCO CUUSOO”
(Website: https://tepco.cuusoo.com)

Expertise and Technologies in Decommissioning

In a pursuit to decommission Fukushima Daiichi nuclear power station, TEPCO group is seeking knowledge and expertise of research institutions and firms from across the world.

As the accident has no precedent, we are in need of expertise and advanced technologies from internal and external sources in order to address complicated issues and operations.

We welcome your suggestions. For samples of proposals and submission procedure, click here.
Japan’s Energy Policy after Fukushima accident
Electricity market reform

- Enabling cross-regional coordination of transmission
- Enhancing market competition under the surveillance
- Full liberalization of retail market
- Legal unbundling
Challenges

More competition

- Creating “Base-load market”
- Merit-order on cross-regional transmission

... and social responsibility

Environment and renewables

- “Capacity mechanism” & “Non-fossil credit market”

Decommissioning

- Accounting rule retrofit & a new fund for 1F decom.
Nuclear Power Plants in Japan

In Operation
3 reactors

Passed NRA Review for the Permission for Changes in Reactor Installation
7 reactors

Under NRA Review
16 reactors

already decided to Decommission
15 reactors

As of 4th, Apr, 2017
Fast Reactor Development
## Steps of FR Development

<table>
<thead>
<tr>
<th>Stage</th>
<th>Experimental reactor</th>
<th>Prototype reactor</th>
<th>Demonstration reactor</th>
<th>Commercial reactor</th>
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<tr>
<td>Main purpose</td>
<td>Examining basic tech</td>
<td>Establishing tech For power gen.</td>
<td>Examining economic efficiency</td>
<td>Commercial production</td>
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<tr>
<td>Items to be done</td>
<td>Joyo (1977~)</td>
<td>Monju (1994~)</td>
<td>Domestic reactor</td>
<td>Commercial reactor</td>
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<tr>
<td>Actors</td>
<td>JAEA</td>
<td>JAEA</td>
<td>JAEA Manufacturer Utilities</td>
<td>TBD</td>
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</table>
Main points of the Decision

- Japan will firmly maintain its nuclear fuel cycle policy and R&D of fast reactor (FR)
- The Council on Fast Reactor Development will be established
- New strategy for FR development will be finalized by the end of 2016.
- Reviewing the role of FBR Monju that may lead to possible decommissioning will be finalized by the end of 2016.
New strategy for FR development

- Nuclear fuel cycle policy: firmly maintained

- 4 principles:
  - Domestic resources
  - World's knowledge
  - Cost-efficiency
  - System for the responsibilities

- Alternative methods to Monju

- Roadmap for FR development → around 2018
Revision of Fast Reactor Development Policies

Ministerial Meeting for the Nuclear Energy Policy (Dec. 21, 2016)

Review of the role of Monju

- Technologies and knowledge obtained
- Monju will not restart as a reactor
- Steady and safe decommissioning
- Alternative Functions as:
  - Center for FR development (cold test)
  - Nuclear research
  - HR development
Ministerial Meeting for the Nuclear Energy Policy (Dec. 21, 2016)

Purpose

✓ Working-level, technical discussion toward the formulation of “Strategic Roadmap” (tentative) which identifies the future 10 years works for FR development

Members

✓ METI (ANRE), MEXT, MHI, FEPC (utilities), JAEA

Latest event

✓ March 30th 1st meeting to determine members & topics for review
U.S. – Japan Cooperation
Examples of US-Japan Cooperation

(Industrial Cooperation)
- Manufacturing
- Cooperation in the third country projects
  - Bechtel’s participation to Horizon project in UK
  - Exelon – JAPC cooperation on plant operation

(Decommissioning)
- Fukushima-Daiichi
- Other NPPs (eg. Energy Solution – JAPC cooperation)
- Forums for further cooperation

(G to G Cooperation)
- US-JP Bilateral Commission on Civil Nuclear Cooperation
- R&D cooperation under the Bilateral Committee
  (eg. accident tolerant fuel, seismic analysis, test data exchange...)

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International Workshop on Decommissioning of NPPs

For more optimized decommissioning, First ever international workshop!

WHEN : June 30, 2017

WHERE : Tokyo, JAPAN