JAEA Study on System Flow of Alternative Fuel / Service Supply
26 January 2009

Nuclear Nonproliferation Science and Technology Center (NPSTC)
Japan Atomic Energy Agency (JAEA)
Procurement of Nuclear Fuels / Services from Market

Nuclear Front-end Market

Supplier State C
- Enrichment Facility

Supplier State B
- Conversion Facility

Supplier State A
- Uranium Mine

Supplier State D
- Reconversion Facility
- Fuel Fabrication Facility

Procurement of nuclear fuels and services
Each suppliers state governments coordinate with their domestic suppliers on supply capacity information of nuclear material and services.

Each supplier state government register the gathered information to the IAEA voluntarily.

By enhancing the transparency of the whole front-end market, reducing the possibility of supply failure.
### Example: Supply Capacity Registration of State X in the year of 20XX

<table>
<thead>
<tr>
<th>Registration Level</th>
<th>Areas of Registration</th>
<th>Uranium Concentrate (U\textsubscript{3}O\textsubscript{8})</th>
<th>Conversion Service</th>
<th>Enrichment Service</th>
<th>Low Enriched Uranium (LEU) (UF\textsubscript{6} or UO\textsubscript{2})</th>
<th>Fuel Fabrication Service (inc. re-conversion)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Natural Uranium (UF\textsubscript{6})</td>
<td>&lt;Capacity: 5,000tU/y&gt;</td>
<td>&lt;Capacity: 10,000tSWU/y&gt;</td>
<td>&lt;Capacity: BWR 500tU/y PWR 1,000tU/y&gt;</td>
<td></td>
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<tr>
<td>Level 1</td>
<td>Not exporting but has the will to cooperate. Quantity would be limited and considerable time would be needed.</td>
<td>U\textsubscript{3}O\textsubscript{8} 200~300tU (12 months)</td>
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<tr>
<td>Level 2</td>
<td>Exporting and has the will to cooperate as much /soon as it can.</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>UF\textsubscript{6} 30~50tU (9 months)</td>
<td>----</td>
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<tr>
<td>Level 3</td>
<td>Exporting and has the will to cooperate through reserve/supply capacity in a short period of time.</td>
<td>----</td>
<td>100tU (3 months)</td>
<td>200tSWU (3 months)</td>
<td>UO\textsubscript{2}: 30tU (1 month)</td>
<td>BWR: 20tU PWR: 50tU (6~9 months)</td>
</tr>
</tbody>
</table>
Alternative Supplies in the more Transparent Market as a result of Japanese Proposal

Supplier State A
- Uranium Mine
- Uranium Concentrate ($U_3O_8$)

Supplier State B
- Conversion Facility

Supplier State C
- Enrichment Facility

Supplier State D
- Reconversion Facility
- Fuel Fabrication Facility
- Fuel Assembly

IAEA

Consumer State

Increasing LEU production through tails assay adjustment

Low Enriched UF$_6$

Increasing fuel assembly production through raising facility's operation factor

Registration of supply capacity of nuclear material/services Based on Japanese proposal

Information of supply capacity

Alternative Supplies
Thank you for your Attention