

## Japan

**Kiyoshi Yamauchi**, AESJ International Committee, sent the Japan Country Report as of 2015 September 15.<sup>7</sup>

### **Energy Basic Plan**

The revised “Energy Basic Plan” was approved by the Cabinet on April 11, 2014, where it is emphasized that restoration and reconstruction of Fukushima is the starting point of nuclear energy and it is expressed that use of nuclear energy should place first priority on the pursuit of safety enhancement.

It is also stated that nuclear energy is one of the important baseload power contributing to ensure the stability of the energy supply and demand structure and dependency on nuclear power generation will be reduced as much as reasonably possible by energy saving, introduction of renewable energy as well as improvement in thermal efficiency of fossil power.

Concerning nuclear fuel cycle issues, it was stated that the Government will take leadership to find a solution for High Level Radioactive Waste final disposal, will maintain reprocessing and LWR-MOX project in order to assure firm future outlook on energy security and HLRW management, while obtaining understanding and cooperation of municipalities hosting nuclear facilities and international community.

The Ministry of Economy, Trade and Industry (METI), started to discuss how to realize the above energy basic plan, forming two working groups under the Nuclear Subcommittee.

One is “the Rad-waste Working Group”, where the final disposal of high-level waste and TRU is to be discussed. The other is “the Safety enhancement / technology/ human resources Working Group”. Further, “the Energy demand/supply prospectus Subcommittee” was also formulated.

In July 2015, METI decided “The Long Term Energy Demand/Supply Prospectus” based on “The Energy Basic Plan”, receiving the result of the above Subcommittee. The desirable power “best mix” in 2,030 features 20 ~ 22 % of nuclear, down from about 30 % before “the Great earthquake disaster” of 2011, and 22~24% renewable energy, as electric power base, in order to contribute to CO2 reduction of about 26% from 2013.

### **Nuclear Regulatory Authority**

Two of the five current NRA commissioners, Commissioner Kunihiro Shimazaki (seismologist) and Commissioner Kenzo Oshima (former ambassador to the United Nations), expired their tenure of two years in the end of September 2014. The Diet approved two new commissioners in June 2014. The new commissioners are; Professor

Satoru Tanaka of nuclear engineering at Tokyo University, the former Chairman of the Atomic Energy Society of Japan, and Professor Akira Ishiwatari at Tohoku University, the former chairman of the geological society of Japan. They have their term of 5 years. The term of the other NRA commissioners is 5 years for Chairman Shunichi Tanaka (physicist) (till September 2017) and 3 years for Commissioner Toyoshi Fuketa (nuclear engineering) and Commissioner Kayoko.

### **News on Nuclear Facilities**

The new safety regulation for commercial LWRs was enforced in July 2013, and applications for NRA review on conformity with new safety standard for restart were started. Applications as of September 2015 are; 15 sites 25 reactors (15 PWR, 4 ABWR, 6 BWR).

Sendai NPP unit 1 & 2, Takahama NPP Unit 3&4, and Ikata NPP unit 3 obtained design safety approval on conformity with new safety standard from NRA. Kyushu, Kansai and Shikoku Electric Power Company started necessary procedures for restart such as application for operation license, application for construction plan for restart and communication with local government/local communities etc. In September 2015, Sendai unit 1 started commercial operation. This is the first unit to be restarted after the “Great Earthquake” in 2011.

### **Stakeholder Dialogue**

(1) Media has been splitted. One group is still anti-nuclear or deliberate against nuclear, but other group is more positive to keep nuclear from the view point of energy security, macro economics and global warming as far as the safety is assured.

(2) Fukui District Court issued provisional disposition to prevent the restart of Takahama Unit 3&4 on April 14, 2015, stating that the current NRA requirement is not enough and the safety of Takahama Unit 3&4 is not fully assured. Kansai Electric Power Company stated strong objection to this disposition. Chairman Tanaka of NRA also stated that this disposition is based on errors in finding fact. The Cabinet stated that they do not change their policy to proceed to restart the plants as far as the safety is assured.

On April 22, 2015, Kagoshima District Court rejected a request by a group of local anti-nuclear residents for a temporary injunction prohibiting the restart of the Sendai 1&2 of Kyushu Electric Power Company, located in southwestern Japan, due to “no irrationalities” in the NRA new regulatory standards, in the context of the latest scientific findings.

(3) The Nuclear Risk Research Center (NRRC) was formed in the Central Research Institute of Electric Power Industry in October 1, 2014.

In light of the Fukushima Daiichi Nuclear Power Station Accident, it is vital to continually strive for even higher levels of safety and it will be necessary for nuclear utilities to go further than simply meeting regulatory requirements and to pursue sustained commitment to reduce nuclear risk. To reduce risk, it is necessary to implement appropriate measures to counter disasters and mitigate the results. It is also important to predict the progression and behavior of accidents. The NRRC is aimed for research and development of the comprehensive risk assessment utilizing PRA and other probabilistic approach. Ikata unit 3 of Shikoku Electric Power Company has been selected as a pilot plant.

Dr. George Apostolakis, the former NRC Commissioner is the Head and Dr. Richard A. Meserve, the former NRC Chairman is the Executive Advisor. Dr. Apostolakis started to see CEOs of Electric Power Companies and visited plant sites in order to convince them of the importance of Risk Informed Management.

On September 2, 2015, the first Symposium by NRRC was held. “What is Risk Informed Management“, “What is expected for the NRRC“ were discussed. Presenters were from the NRA, Local Government, Masmedia, Julist ans so forth.

AESJ issued a position paper on “the necessity of the safety review of the nuclear plants based on the scientific and rational perspectives and information sharing“ on November 11, 2014. This position paper is coming from the concern that the current regulatory review process requires too much resources and time.

#### **Recent status of Fukushima Daiichi NPP on-site restoration (topics in 2014-2015)**

##### **(1) Fukushima Daiichi D&D Engineering Company**

The Fukushima Daiichi Decontamination and Decommissioning (D&D) Engineering Company was established in April 2014 by Tokyo Electric Power Company. The company has responsibility for the decommissioning and cleanup of Fukushima Daiichi NPS. The mission is to decontaminate, decommission and cleanup the Fukushima Daiichi NPS with the greatest degree of expertise, safety, and efficiency; with the greatest possible regard for the environment and those who live in it.

##### **(2) Nuclear Damage Compensation and Decommissioning Facilitation Corporation (NDF)**

Nuclear Damage Compensation Facilitation Corporation was reformulated as NDF in August 2014 to include national supporting function for decommission and contaminated water removal.

It is expected that technical strategy making and judgement by NDF, site operation by TEPCO, and technology development by International Research Institute for Nuclear Decommissioning (IRID) should work together. IRID was established in August 2013.

(3) “The Intermediate and Long Term Road Map for Fukushima Decommissioning and Contaminated Water Removal” originally issued on December 2011, revised on June 2013, was revised again on June 2015, reflecting the progress of the recovery work at the site, comments from the Fukushima Council, and the strategic study of NDF.

Major points are as follows;

- Emphasis on risk reduction rather than speed
- Explicit schedule of near time frame
- Transparency
- Strengthen the command chain
- Final target of decommissioning (30-40 years later) is kept the same.

(4) Groundwater Bypass

Fukushima Daiichi D&D Engineering Company started the groundwater bypass operation at Fukushima Daiichi NPS. Pump up of groundwater started in April 2014 and water drain operation started May 2014. Groundwater is pumped up before entering the site, is stored in storage tanks for detection of radioactivity, and will be drained to the sea if radioactivity is below the operation target level. The target **10** radioactivity level of groundwater to be drained is under 1 Bq/l for  $^{134}\text{Cs}$  and  $^{137}\text{Cs}$ , under 5 Bq/l for beta emitters, under 1500 Bq/l for tritium.

Concerning the water in the buildings, the amount of radioactive materials will be reduced to half in 2018 and treatment of the water will be completed in 2020.

(5) Unit 1-3: cleanup operation

Preparation work such as decontamination and investigation of leaked portion in the core region has been started using robots in order to be prepared for the removal of fuel debris. Earliest time to start to remove fuel debris is expected in 2021.

(6) Unit 1-4: fuel assembly removal from spent fuel pool

At the time of the earthquake disaster, unit 4 was in periodic inspection, and all the assemblies were discharged from the core and stored in the spent fuel pool. The operation of fuel assembly removal from the spent fuel pool was started in November 2013 in preparation for unit 4 decommissioning and was already completed.

AS for unit 1-3, preparation work such as decontamination and removal of demolition waste in the spent fuel pits has been started in order to remove spent fuel in the pool. In unit 1, dismantling of building cover has been started and spent fuel assembly removal is expected to start early in 2021. In unit 2, fuel assembly removal is expected to start in 2020.

In unit 3, demolition waste has almost removed and spent fuel assembly is expected to start early in 2018.