

**Note on the dialogue between Japan and the PIF Expert Panel on 1 June  
(IAEA Safety Standards relating to justification)**

## **Background**

1. During the intensive dialogue conducted virtually on 1 June 2023, one member of the PIF Expert Panel raised the issue of justification of the planned discharge of ALPS treated water. In doing so, he referred to paragraph 2.11 of IAEA Safety Standards Series No. GSG-8 (Radiation Protection of the Public and the Environment). The paragraph reads as follows:

2.11. For planned exposure situations, justification is the process of determining whether a practice is, overall, beneficial, i.e. whether the expected benefits to individuals and to society from introducing or continuing the practice outweigh the harm (including radiation detriment) resulting from the practice. The benefits apply to individuals and society as a whole, and include benefits to the environment. Radiation detriment may only be a small part of the total harm. Justification thus goes far beyond the scope of radiation protection, and also involves the consideration of economic, societal and environmental factors.

2. The expert asked whether the Government of Japan (GOJ), or the Nuclear Regulation Authority (NRA) specifically, has considered benefit and harm for neighboring countries including PICs resulting from discharge of ALPS treated water in accordance with paragraph 2.11 of GSG-8.

3. At the conclusion of the dialogue on 1 June, the PIF Secretariat requested the Japanese side to provide it with any explanation or documents that Japan may wish to provide regarding the point in question. This note is prepared in response to this request to make clarifications on the position of the GOJ.

4. As explained below, the GOJ considered whether the expected benefits to individuals and to society as a whole outweigh the harm resulting from the practice, in accordance with relevant IAEA Safety Standards including GSG-8. As confirmed by impact assessments performed to the highest international standards, no harm is expected from the discharge, including to PICs. In contrast, there will be considerable societal benefits to reconstruction and rehabilitation of the areas affected by the Great East Japan Earthquake of 2011.

## **Requirement and Process of Justification in the IAEA Safety Standards**

5. The IAEA Safety Standards have three different levels of documents. The IAEA website states the following:

“The Safety Standards consists of three sets of publications: the Safety Fundamentals, the Safety Requirements and the Safety Guides. While the first one of these establishes the fundamental safety objective and principles of protection and safety, the second set out the requirements that must be met to

ensure the protection of people and the environment, both now and in the future. The Safety Guides provide recommendations and guidance on how to comply with the requirements.”

Thus, Safety Guides are subordinate instruments which, while not mandatory *per se*, provide recommendations and guidance on how to implement basic principles and requirements.

6. With regard to justification, at the first level, the Safety Fundamentals (Principle 4) states that “facilities and activities that give rise to radiation risks must yield an overall benefit”. At the second level, the Safety Requirement (Requirement 10 of General Safety Requirements (GSR) Part 3) states that “The government or the regulatory body shall ensure that only justified practices are authorized”. States are required to implement this principle and requirement by referring to recommendations and guidance contained in appropriate Safety Guides.

7. In this connection, GSG-8 “covers the generic application of the requirements given in GSR Part 3 that relate to the protection of the environment and protection of members of the public in planned exposure situations ...”. GSG-8 “does not deal with the application of the requirements in GSR Part 3 to specific types of facility or activity or in specific exposure situations”(paragraph 1.9). Paragraph 1.9 also explicitly identifies GSG-9 (Regulatory Control of Radioactive Discharges to the Environment) as a Safety Guide that is applicable to “Regulatory Control of Radioactive Discharges to the Environment”.

8. Therefore, with regard to justification of the discharge of ALPS treated water, both GSG-8 and GSG-9 are relevant Safety Guides for a planned discharge of radioactive materials.

### **Process of Justification in the Case of ALPS Treated Water Discharge**

9. The GOJ fully considered and observed the process of justification in relation to ALPS treated water discharge in compliance with the relevant paragraphs of the IAEA Safety Standards at all three levels.

10. In regard to justification, similar to Paragraph 2.11 in GSG-8, paragraph 2.2 of GSG-9 provides recommendations and guidance on how to implement the principles and requirements in relation to regulatory control of radioactive discharges to the environment such as ALPS treated water discharge. It states that “[f]or a facility or activity to be authorized, it is required to be demonstrated that the introduction of that practice will produce a positive net benefit (i.e. the expected benefits to individuals and to society from the practice outweigh the harm, including radiation detriment)”. Further, paragraph 2.3 of GSG-9 states that “[j]ustification applies to the overall practice and not to individual aspects of the practice, such as discharges”. The GOJ understands that discharge of ALPS treated water corresponds to “individual aspects”, and decommissioning of Fukushima Daiichi Nuclear Power Station (FDNPS) corresponds to “the overall practice”.

2.2. For a facility or activity to be authorized, it is required to be demonstrated that the introduction of that practice will produce a positive net benefit (i.e. the expected benefits to individuals and to

society from the practice outweigh the harm, including radiation detriment). Decisions regarding justification should be taken at a sufficiently high governmental level to enable all the considerations that may be related to the benefits and detriments to be taken into account. Any decision on justification should always involve consideration of the radiation doses expected either to be incurred or to be averted or reduced, according to the circumstances. The radiation dose to the public is only one of the factors involved in the justification process. Many other factors, well beyond radiation protection considerations, will need to be considered in determining whether a practice is justified.

2.3. Justification applies to the overall practice and not to individual aspects of the practice, such as discharges, which can be authorized or exempted from the requirement for an authorization only if the practice as a whole is already regarded as justified.

11. Therefore, with regard to the discharge of the ALPS treated water into the sea, the GOJ is of the view that a decision on justification should be made for the overall decommissioning process of FDNPS, which includes the discharge of the ALPS treated water into the sea. It is to be noted that the IAEA Review Team stated in 2020 that “the proposed objective of completing the disposition of the ALPS treated water by the time of the end of the decommissioning work is aligned with current international good practices”.<sup>1</sup>

12. In this framework, the GOJ examined benefits and harm of decommissioning as a whole. With respect to the benefits, the GOJ concluded that ALPS treated water discharges are essential to reconstruction and rehabilitation of the areas affected by the Great East Japan Earthquake of 2011. This is described in “Basic Policy on handling of ALPS treated water at the Tokyo Electric Power Company Holdings’ Fukushima Daiichi Nuclear Power Station”<sup>2</sup> issued by the Council of Ministers for Decommissioning, Contaminated Water, and Treated Water in April 2021. With respect to harms, when the GOJ adopted the Basic Policy, the GOJ was of the view that it is highly unlikely that any discharge would have a negative impact on people or the environment. That view has been confirmed by impact assessments performed to the highest international standards.

### **Process of review of the safety related aspects**

13. After the Basic Policy was adopted, the NRA as an independent regulator conducted thorough review of TEPCO’s discharge plan, which was prepared on the basis of the Basic Policy, fully taking into account the

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<sup>1</sup> IAEA Follow-up Review of Progress Made on Management of ALPS Treated Water and the Report of the Subcommittee on Handling of ALPS treated water at TEPCO’s Fukushima Daiichi Nuclear Power Station, 2 April 2020, p.20. (Available at: <https://www.iaea.org/sites/default/files/20/04/review-report-020420.pdf>)

<sup>2</sup> Available at: [https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/bp\\_alps.pdf](https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/bp_alps.pdf)

relevant IAEA Safety Standards. As a result, the NRA confirmed that the impact both on humans and the environment would be minimal and that there would be no measurable transboundary impact<sup>34</sup>.

14. The GOJ also asked the IAEA to conduct reviews of TEPCO's plan as well as the work of the NRA. The IAEA has been conducting these reviews against all the relevant IAEA Safety Standards. Most recently, in May 2023, the IAEA issued a review report stating that its findings "provide confidence in TEPCO's capability for undertaking accurate and precise measurements related to the discharge of ALPS treated water. Furthermore, based on the observations of the IAEA, TEPCO has demonstrated that they have a sustainable and robust analytical system in place to support the ongoing technical needs at FDNPS during the discharge of ALPS treated water". The IAEA is expected to release a comprehensive report which contains results of the reviews.

### **Meanings of Benefit and Harm in GSG-8 and GSG-9**

15. During the dialogue, one PIF expert, referring to paragraph 2.11 of GSG-8, stated that there needs to be benefit to other countries like PICs brought by the discharge of ALPS treated water, because the harm from the discharge is not zero. On this point, the GOJ is of the view that paragraph 2.11 does not require benefit to each individual country within the scope of review. Rather, the question is whether the planned activity will result in benefit to society overall, and whether the benefit will outweigh any harm.

16. As stated above, the GOJ is of the view that further progress in decommissioning of FDNPS, including in the handling of ALPS treated water, is materially beneficial to the people of Japan and not harmful to the people of any other country.

17. As TEPCO's radiological environmental impact assessment (REIA) demonstrates, the impact on humans (a representative person) within the exposure assessment area (range of 10 km × 10 km around the FDNPS) would be about one-thousandth of the radiation dose received from a single dental X-ray. The closest PIC, the Republic of Palau, is over 3,000 kilometers from the discharge site, far beyond any area in which an impact of the discharge could be felt. The REIA also takes into account the effect of bioaccumulation and

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<sup>3</sup> Executive Summary of TEPCO's Radiological Environmental Impact Assessment (REIA) report states " (1) in the case of discharge of ALPS treated water from the seabed approximately 1km offshore from the FDNPS, the foreseeable radiological impact on the people who are most likely to be affected in the vicinity of the discharge point is minimal, specifically, the exposure level is assessed to be approximately 1/500,000 to 1/30,000 of Japanese safety standard set according to the international guidelines; (2) the exposure level on plants and animals inhabiting the 10km x 10km sea area around the FDNPS is only about 1/30,000,000 to 1/1,000,000 of the lower limit of the exposure range proposed by ICRP as the threshold at and below which reference marine biota is not expected to suffer deleterious effects from exposure (derived consideration reference level); and (3) the impact on areas far from the discharge point (transboundary impact) was evaluated to be undetectably low."

(REIA is available at the following site from Page 264:

<https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>)

<sup>4</sup> The NRA's confirmation is detailed in "Review Results Document on the Application for Approval to Amend the Implementation Plan pertaining to Specified Nuclear Facility (Installation of ALPS Treated Water Discharge Facility) of Tokyo Electric Power Company Holdings Fukushima Daiichi Nuclear Power Station", dated 22 July 2022. (Available at: <https://www.nra.go.jp/data/000399110.pdf>)

long-term accumulation, further assuring the absence of harm to any PIC given the distance from the discharge site. Furthermore, the model range for simulating tritium diffusion of the REIA is 490 km x 270 km. Even within the model range, the impact is evaluated to be minimal, with the highest result evaluated at the model boundary being 0.00026 Bq/L. In other words, the maximum annual average tritium concentration at the boundary of the calculation domain in the simulation is significantly lower than the natural background concentrations of tritium in seawater (about 0.1 to 1 Bq/L), and is expected to become even lower by further dispersion outside the boundary. The IAEA supports the GOJ's position on this point in its report published in April 2023<sup>5</sup>.

18. The GOJ fully understands the concerns of neighboring countries including the PICs. It is with this recognition that the GOJ has committed to be fully accountable and has responded to these concerns.

19. To this end, the GOJ would be happy to continue to respond to any question to address concerns of the PIF Members and their people.

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<sup>5</sup> See IAEA report (page 24) (available at: <https://www.iaea.org/sites/default/files/report-4-review-mission-tepco-and-meti.pdf>)