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Disposal of nuclear contaminated water of Japan's Fukushima Daiichi Nuclear Power Station

Working paper submitted by China

The peaceful use of nuclear energy is an inalienable right of States parties to the Treaty on the Non-Proliferation of Nuclear Weapons. To promote the implementation of the global development initiative put forward by the Chinese President, Xi Jinping, China attaches great importance to international cooperation in the peaceful uses of nuclear energy, shares technology and experience with other countries, and contributes to the promotion and sustainable development of nuclear energy for the benefit of people of all countries.

Nuclear safety is the lifeline for the development of nuclear energy and the application of nuclear technology. It is not only related to the economic development and social stability of the countries concerned, but may also have serious regional and even global repercussions. All countries should strictly fulfil their national responsibilities for nuclear security and ensure that the peaceful uses of nuclear energy serve the building of a shared future for all on Earth, and not at the expense of the natural environment and human health.

The disposal of nuclear-contaminated water in Fukushima, Japan, is a matter of global concern for the marine environment and public health. There is no precedent for the human-caused discharge into the sea of water contaminated by a nuclear accident, nor are there any universally accepted standards for such disposal. The international community should attach great importance to the issue of the discharge by Japan of nuclear-contaminated water into the sea and jointly urge Japan to dispose of its nuclear-contaminated water in a responsible manner.

First, Japan has failed to justify the legality of its decision to discharge nuclear-contaminated water into the sea. Discharge into the sea is by no means the only option for the disposal of nuclear-contaminated water from Fukushima. The Japanese Government has discussed five disposal options: geosphere injection, discharge into the sea, vapour release, hydrogen release and underground burial. Many experts have also proposed other disposal options, such as long-term storage in newly-built storage tanks and solidifying the wastewater into cement, but Japan has not adequately explored all possible disposal options and insists on choosing that of discharge into the sea, which has the least economic cost, thus spreading the risk of nuclear



contamination across the entire world. Justification is one of the three fundamental principles of international radiation protection, which requires that activities that cause radiation risks must achieve overall benefits, and these benefits must outweigh the risks. The unilateral choice by Japan of the sea discharge option directly contravenes this principle.

Second, Japan has not proved the long-term effectiveness and reliability of its nuclear-contaminated water purification devices. The past operation of the Japanese advanced liquid processing system (ALPS) has demonstrated that radionuclides such as tritium and carbon-14 cannot be effectively removed, and further tests and engineering verification are required to determine whether other radionuclides can be effectively removed. According to data released by Japan itself, some 70 per cent of the ALPS-treated nuclear-contaminated water still fails to meet the discharge standard and needs to be purified again. The performance effectiveness and reliability of ALPS may further decline as the equipment ages during its subsequent long-term operation. In addition to the more than 1.3 million tons of nuclear-contaminated water which already needs to be discharged, the Fukushima Daiichi nuclear power plant will also produce a large amount of nuclear-contaminated water in the future. There are still doubts as to whether the Japanese ALPS can effectively treat a large amount of nuclear-contaminated water with complex components and remain reliable in the long term.

Third, Japan has not proved the authenticity and accuracy of the data on nuclear-contaminated water. In recent years, the Tokyo Electric Power Company (TEPCO) has repeatedly concealed and tampered with nuclear-contaminated water data. The review and assessment conducted by the International Atomic Energy Agency is only based on the data and information unilaterally provided by Japan, and the Agency has only verified a small number of nuclear-contaminated water samples collected by Japan. In the inter-laboratory comparison analysis, which needs to confirm the authenticity of the data and accuracy of the information, the independence and representativeness of the sampling are seriously inadequate. As a result, even if the Agency's review and assessment conclude that the discharge meets the safety standards, this conclusion will still be insufficiently convincing.

Fourth, Japan has not proved that the discharge of nuclear-contaminated water into the sea is harmless to the marine environment or to human health and safety. There are more than 60 kinds of radionuclides in the Fukushima nuclear-contaminated water, many of which have no effective treatment technology. Some long-lived radionuclides may spread with ocean currents, with an unpredictable impact on the marine environment and ecological balance of the maritime areas of neighbouring countries. They may also, through bioconcentration effects, follow the migration of marine organisms and the food chain, posing potential risks to food safety and human health. In the absence of effective measures to ensure that Japan fulfils its commitments, it is even more difficult to rule out the long-term impact of nuclear-contaminated water discharge on the marine environment and human health. If the so-called "treated water" to be discharged is really safe and harmless, why does Japan not dispose of it within its own territory? Why not use it for industrial or agricultural purposes within Japan?

Fifth, Japan has failed to fulfil its international obligations. Under general international law, the United Nations Convention on the Law of the Sea and other provisions, Japan has the obligation to protect and preserve the marine environment. In dealing with nuclear-contaminated water, Japan must take all necessary measures to ensure that any activities under its jurisdiction or control do not cause pollution damage to other countries and their environment, and must ensure that the resulting pollution does not extend beyond the areas where it exercises its sovereign rights. Japan is also obliged to take all measures to avoid environmental pollution, to notify

and fully consult with countries that may be affected, to assess and monitor environmental impacts, to guarantee transparency of information, and to engage in international cooperation. The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (the London Convention) prohibits the dumping of radioactive waste into the sea from human-made structures at sea, and Japan's practice of discharging nuclear-contaminated water into the sea through submarine pipelines is in breach of the relevant regulations.

Sixth, Japan has not demonstrated the integrity of its monitoring programme. The country's current monitoring arrangements for the discharge of nuclear-contaminated water into the sea are not sufficiently comprehensive to determine, in the first place, whether or not the discharge meets the required standard, which may lead to the direct discharge into the sea of substandard nuclear-contaminated water. China maintains that the Agency should take the lead in establishing, at the earliest possible date, an independent and effective long-term international monitoring mechanism with the full participation of third-party laboratories such as those of countries neighbouring Japan. Japan must fully cooperate with this Agency-led long-term monitoring international mechanism and the follow-up review and assessment tasks, and continuously perform such tasks as the monitoring of the long-term reliability of ALPS, the monitoring of nuclear-contaminated water sources and the environment, and radiological environmental impact assessments. It should circulate credible data and information in a timely and transparent manner to neighbouring countries and other interested countries and accept inspection queries. Until such time as a long-term monitoring mechanism is set in place, Japan should not commence discharging into the sea; if at any time abnormalities are found in the data of discharged nuclear-contaminated water, Japan must immediately stop discharging it into the sea.

Seventh, Japan should not confuse the nuclear-contaminated water resulting from the nuclear accident with wastewater from the normal operation of nuclear power plants around the world. The two are completely different in nature and cannot be placed on the same footing. First, the sources are different, the types of radionuclides are different, and the degree of difficulty in their respective treatment is different. The nuclear-contaminated water from the Fukushima Daiichi nuclear power plant in Japan comes from the cooling water injected into the molten damaged core after the accident and the groundwater and rainwater that seeped into the reactor. It contains all kinds of radionuclides that were present in the molten core, which makes it very difficult to treat. By contrast, the wastewater generated from the normal operation of nuclear power plants primarily comes from the drainage of process water, surface water and so forth, which is discharged in an organized manner in strict compliance with international standards, employing the best available treatment technology and following strict monitoring of compliance with the standards; the emission level of the discharge is well below the specified control value. What China opposes is the discharge of nuclear-contaminated water into the sea; it has never opposed the normal operation of nuclear power plants.

Eighth, Japan should not make use of the comprehensive assessment report on the disposal of nuclear-contaminated water in Fukushima as a sort of "lucky charm" or "free pass" for the Japanese plan to discharge nuclear-contaminated water into the sea. The Government of Japan only requested the review from the Agency after it had unilaterally decided to discharge the water into the sea, and the mandate of the Agency's technical work group was limited to the review and assessment of one option, namely, discharge into the sea, without consideration of other disposal options. The Agency's comprehensive assessment report does not examine the justification and legitimacy of the Japanese sea discharge plan, nor does it assess the effectiveness and long-term reliability of the nuclear-contaminated water purification

device. Its conclusions are limited and one-sided and cannot address the concerns of the international community.

Ninth, in order to protect the only planet on which all humankind depends for its survival, and the life and health of all its people, Japan should fully respond to the concerns of the international community, including China, fulfil its moral responsibilities and obligations under international law, stop pressing ahead with its plan to discharge nuclear-contaminated water into the sea, and communicate fully with its neighbouring countries in a sincere manner. It must ensure that the nuclear-contaminated water is disposed of in a scientific, safe and transparent manner and is subject to rigorous international supervision.
