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Taiwan DPP Mission in the U.S.

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A Critique on Hou's Nuclear Plan

Introduction

Given the opposition party's comments concerning Taiwan's nuclear power plants and their proposal to recommission old power plants, Taiwan's environmental agencies have spoken out about the realities of recommissioning nuclear energy, including nuclear waste and disposal, trend of usage, dangers of power plants, and the potential of new nuclear power.

Background

Currently, Taiwan has three nuclear power plants: Chinshan (核一), Kuosheng (核二), and Maanshan (核三), with two reactors per power plant. Among the three, Chinshan and Kuosheng have been decommissioned, while Maanshan is set to go offline in July of 2024 and May of 2025.

Notably, in 2021, when Kuosheng 1, one of the two reactors, was expected to decommission at the end of the year, Taipower announced that the reactor would only operate until June because of a lack of storage in the reactor unit's nuclear waste pool. Subsequently, Kuosheng 1's decommission plan included a construction of a dry storage facility for nuclear waste in New Taipei City. This plan was then disputed by the New Taipei City mayor and government, as they claimed that they did not want their city to become a permanent site for nuclear waste or used fuel.

Nuclear Waste

It's not possible to enjoy nuclear power generation without confronting nuclear waste. Currently, Taiwan is in the process of developing a proper disposal plan, but until the missing 15,770 bundles of high-level nuclear waste from Kuosheng are found, Hou's proposal to create a specific and feasible nuclear waste policy is unrealizable.

Trend of Nuclear Energy

Concerning objectives to transition to net-zero by 2050, Taiwan has taken steps to become less dependent on nuclear power, but even so, Taiwan has never heavily depended on nuclear power to begin with. Now, with nuclear power on the decline, renewable energy, such as wind and solar, increases in domestic total power generation, projecting to generate 20% of total power by 2050.

Taiwan is on the right path towards sustainable energy development via the global net-zero trend. With dozens of RE100-registered companies headquartered in Taiwan and hundreds of other MNC's stationed in the country in light of a global restructuring of the supply chain, Taiwan can securely establish an anchor for itself in the international space.

Dangers of Nuclear Plants

Hou You Yi, the chairman of the New Taipei Nuclear Safety Supervision Committee, shouldn't have shyed even further away from his original opposition towards more nuclear power generation in New Taipei City. His claims now to recommission old nuclear power plants overlooks dozens of safety concerns, such as pipeline corrosion, furnace decomposition, ageing parts, outdated technology, seismic safety (further requiring physical assessment and reinforcements), etc., all of which can be harmful to the power plant employees and residents in the area.

New Nuclear Power

The concept of new nuclear power is not entirely new. However, the assumption that it is more environmentally viable to replace the current reactors with small modular reactors (SMR) and nuclear fission lacks practical considerations.

Small modular reactors have not yet been realized practically, much less commercially. Former US Nuclear Regulatory Commission Chairman, Allison MacFarlane, highlighted the fact that a SMR generates 30 times more nuclear waste than a conventional nuclear power plant as it uses high-purity, low enriched uranium (HALEU) fuel rods. Such fuel rods have a higher concentration of uranium, specifically, 20 percent more than the 5 percent uranium fuel rods in traditional nuclear power plants.

Moreover, in a study published by the Proceedings of the National Academy of Sciences, SMR's relatively higher uranium-concentration also "increase the volume of nuclear waste in need of management and disposal, by factors of 2 to 30 for the reactors in our case study," said lead author Lindsay Krall, a former MacArthur Postdoctoral Fellow at Stanford University's Center for International Security and Cooperation (CISAC). Not only does the volume in nuclear waste increase against that of a conventional nuclear power plant, but so also does the radiotoxicity. In the same study by CSIAC, "the radiotoxicity of plutonium in spent fuels discharged from [SMR] would be at least 50 percent higher than the plutonium in conventional spent fuel per unit energy extracted."

It's a contentious debate on whether small modular reactors are a better source of nuclear power than a conventional nuclear plant because of its cost to generate power, management of waste, and its lack of practicality thus far.

Conclusion

The subject of nuclear energy and power plants has remained a source of contention in Taiwan over the past decades. Safety concerns have notably impacted marginalized (indigenous) communities, and with the global goal of attaining net-zero emissions by 2050, conversations around nuclear energy are more vital than ever.

As such, it should be made clear that Taiwan has always and will continue to see low dependence on nuclear energy; and the current administration abides by its stance to make Taiwan nuclear-free. The DPP will continue pursuing policies to phase out Taiwan's nuclear power by 2025, while maintaining shut reactors in the case of an emergency.

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