FLOATING NUCLEAR POWER PLANTS: SITE AND SUPPORT FACILITY PLAN FOR THE NORDIC COUNTRIES

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This research examines the feasibility of implementing floating nuclear power plants (FNPPs) in the Nordic region, utilizing small modular reactors (SMRs) As the demand for energy rises, especially in remote and off-grid locations, FNPPs present a versatile and scalable option for industries and island communities where expanding the grid is not feasible. FNPPs can deliver dependable electricity and heat enhancing offshore activities, resource extraction, and sustainable manufacturing, thereby decreasing dependence on fossil fuels and improving energy security. They can also contribute to the growing hydrogen economy, especially in areas targeting the production of green hydrogen for export. This study focuses on site selection and the required supporting infrastructure. FNNPs could be located in remote areas where conventional NPPs cannot reach. Nordic countries' existing maritime infrastructure, including shipyards and maintenance capabilities, could be operational and support centers. Furthermore, integrating FNPPs into current transportation and supply systems is essential for effective deployment and movement based on changing energy needs. Waste management is an additional significant aspect. While Sweden has a functioning geological repository, other Nordic nations must formulate storage plans involving regional collaboration and temporary solutions to guarantee long-term sustainability. This study aims to provide recommendations and guidelines for the incorporation of FNPPs into the Nordic energy framework, highlighting the need for decentralized energy access, resilience in industry, and a sustainable, low-carbon future for remote and isolated areas.

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