China floating nuclear power plants in South China Sea

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By

Prof. Pankaj Jha

China has been toying with the idea of developing floating nuclear power plants for its islands in East Sea and South China Sea. This idea germinated after it was felt that in order to sustain better radar and signals interception facility in the islands controlled by China, given the fact that power consumption is critical issue in many of these islands. The power is also required for military installations and quarters of the military person are located in those islands but the idea which took shape in late 2016 was primarily aimed at looking for alternative power supply. The prototype of two nuclear power reactors are already ready and are available for deployment. The power reactors 60

megawatt and are of 30,000 tonne. The 2 power reactors are under trial phases in Bohai Seas and it is possible that China might deploy 3 floating nuclear reactors in South China Sea by the year 2025.

There have been reports that there has been nuclear incident within China in the year 2021 when in Guangdong province Taishan nuclear power plant and leakage of radioactive material thereby contaminating the near by areas . In this context there has been lot of tensions between the EDF Group of France and the Chinese government as the French group held 30% of the shares in that plant. China has undermined that incident and therefore there has been resistance within the highest military echelons related to deployment of floating nuclear power reactor. One of the major proponents of floating nuclear power plant has been Russia which has planned a floating nuclear power reactor to open Arctic sea route and thereby facilitating navigation as well as exploitation of the resources of the Arctic.

However, deployment of floating nuclear reactors for the purposes of sustaining habitation in far of islands and oil rigs which are being developed by China's national nuclear corporation has its own challenges. Russia, about 10 years back, was also trying to sell these floating nuclear power plants which were the nuclear core retrieved from retired nuclear submarines and placed on ships to act as a nuclear power plants and many countries such as Nigeria and few African countries.These countries have expressed interest in that. However, the Russia could not deliver those nuclear power plants to those customers because its own developmental phase was very slow and it could only develop its first floating nuclear power plant which was proposed to be developed at the cost of 170 million U.S. dollars and was finished in the year 2018 with a substantial price escalation over and above the actual price.

Following Russia's experimentation, China has also expressed desire to develop it but interactions at the different levels between China and Russia showcases that these nuclear power plants require security, stability and extreme maintenance from sea water corrosion and other effects. The problem with the nuclear power plants developed by China is primarily related to connecting the required infrastructure to the grid and thereby to the floating nuclear power plant, and the challenge of keeping the core cool because sea water will be detrimental for cooling the power plant. One important aspect for China is that these nuclear power plants can provide power requirements to more than 100,000 people and desalinate water enough for 60,000 people. But this kind of capacity is not required as the population in many of these islands controlled by China are much less than 5000 people. The second aspect is that despite land reclamation by China many of these islands are low lying islands and even if the nuclear power plant is stationed on a ship, the problem is related to extreme land scarcity and challenges in maintenance of these floating nuclear power plants. Very recently there has been lot of debate with regard to releasing of contaminated water into the sea from the meltdown of the Fukushima nuclear power plant. Many Pacific island countries have strongly reacted against this and

with the development of the nuclear power plant by China and positioning them in Chinese controlled islands in South China Sea will open a number of issues.The resistance would come from international environmental groups .

Organizations such as Greenpeace and many other international NGOs are strongly against this initiative. Any attempt by China to deploy its two full fledged floating nuclear power plants in South China Sea islands would be met with strong international resistance as these are seen as strategic sea lanes of communication. Furthermore, India and US as well as Japan and Australia are going to resist this initiative as it will impact the safety and security of the trade cargo and also open a number of issues with regard to a possible meltdown of the reactor and the contamination of the marine life. Within China also coastal communities living in Hainan islands and nearby areas are strongly resisting it because they believe that in case of any contamination the 3rd largest fish resources area of South China Sea will be out of bounds in case of any contamination or radiation leak.

Few of the former Chinese generals are of the view that in case of any accident the strategic utility of these islands will be completely decimated because China will lose its soldiers and military personnel because of radiation effects and also China will have to abandon those islands because of these kinds of challenges. The better option would be to connect these islands through an electricity grid drawn from the mainland China or creating solar power grids and thereby explore possibilities for connecting these far of islands.

China itself has been writing a lot with regard to floating nuclear power plant and its utility but the incident of release of radioactive waste from Taishan nuclear power plant in China has brought to the fore the challenges of utilising nuclear power infrangible regions and environmentally sensitive locations. It has been also learnt that civil population from China is not willing to stay in these islands which do not have any recreational facilities and have very limited interactions with the mainland China. In fact exposure to radiation both in air and water would lead to internal bleeding and death of exposed person. The 3rd aspect which has been discussed within China is that the radioactive material and its exposure might sustain itself for many years and therefore how to take care of these challenges has been discussed. China has also been discussing the possibility of working with the Russian nuclear physicists to develop better stable nuclear reactors. So far, Russia has refused to share any technology and necessary skills related to developing nuclear power plants which are on floating ships. The resistance is also coming from the provincial party leaders within China as they believe that any accident in Bohai Sea and in South China Sea would affect the livelihood of coastal communities which are dependent on marine life in South China Sea and would create long term challenges. The reported two completely developed reactors are now located in Shandong province and are ongoing trials.The problem faced are interrupting supply and issue of stable core reactor.

The impact on other claimants in South China Sea would be primarily from the point of more militarisation of these islands and development of more composite facilities which will be detrimental for Vietnam and Philippines as China will be definitely developing night landing capacities in select islands and undertake operations of surveillance and

reconnaissance on a wider spectrum and far off islands. Second aspect is related to self sustainment of many of these islands which means relatively less reliance on mainland China for weekly supplies.The 3rd aspect is related to creating larger security net both for protection of the island and the floating nuclear power plant. Lastly, the contamination of nearby waters and effect on the fisheries yield at an annual level.

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Prof. Pankaj Jha
Pankaj Jha is faculty with Jindal School of International Affairs, O P Jindal Global University, Sonepat. He can be reached at pankajstrategic[at]gmail.com