



## **Resurgence of Nuclear Power: Role of Nuclear in China's Energy and Climate Goals**

**Speakers: Dr. Nandakumar Janardhanan | Dr. Vaibhav Chaturvedi**

**Chair: Mr. M.V. Rappai**

**Date: 7 March, 2018**

**Time: 3:00 pm**

**Seminar Room, ICS**

This presentation was given by two speakers: Dr. Nandakumar Janardhana and Dr. Vaibhav Chaturvedi. The first speaker Dr. Nandakumar Janardhana stated that the talk was based on the backdrop of publication of the book 'Resurgence of Nuclear Power: Challenges and Opportunities for Asia', which has been co-edited by the speaker. The talk was divided into four parts. The first part dealt with China's current energy scenario, the second dealt with its climate impacts and China's low carbon energy strategy. The third part of the talk went on to discuss the place of nuclear in China's energy mix and finally the fourth discussed the cost aspect. Dr. Janardhana began by highlighting the fact that there was an increasing interest in China to use coal as the main source of energy as it was heavily used for the steel industry. However, China has been gradually making a shift towards the use of oil as source of fuel. China was an oil exporter until the beginning of the 1990's, but it became a net importer by 1993 then by 2003 it became the second largest oil consumer and then by 2017 it became the largest oil importer. He then stated that the majority of China's energy needs are met by fossil fuel such as oil, gas and coal which are responsible for emissions in China, which also makes China the largest emitter in the Asian region. Dr. Janardhana also pointed out that the current trends indicate that China's emission levels are going to increase at least for the next ten years. The air pollution emanating from China is however not just a problem for China but also a concern for other countries e.g. the US had expressed concerns over the issue of Chinese pollution entering the Northern Hemisphere and altering the weather patterns there.

Dr. Janardhana then argued that against this backdrop, China has begun pondering on the question of how it can meet its economic goals whilst at the same time maintaining a low carbon emission, which

would imply China reducing its dependency upon fossil fuel. However, reduction of fossil fuels could in turn impede or hinder China's economic goals. He nevertheless, stated that China being a developing country need not follow the path taken by the developed countries but rather take advantage of better technologies and follow the path of low carbon emission.

He further highlighted that, China has also committed in many international forums such as in 2009 Copenhagen Summit as well as in the 2015 Paris Agreement, that it will limit its carbon emission. However, even though China has taken certain steps domestically to meet these commitments, they have not met the global expectations. China in 2014 came up with an energy development strategy action plan and this plan states that a cap needs to be put on the primary energy consumption, with the maximum consumption until 2020 being less than 4.8 billion tons coal equivalent. Along with this, China has also promised to optimize the energy infrastructure in the country in a way that improves its efficiency and to promote other non-fossil fuel energy. This promise raises the importance of nuclear energy. China currently has 39 working nuclear reactors, but the share of electricity it contributes is just about 3.5% to 4%. However, the share has been in a growing trend since 1997, with China also having plans to build more reactors. Dr. Janardhana, claimed that China has already started the construction of more nuclear reactors from 2015. Along with the 39 existing reactors, China has also planned 39 more reactors and around 179 more nuclear reactors are proposed which would make China by 2030 the country with the largest fleet of nuclear reactors. However, the Chinese nuclear sector is not only focusing within its borders but also looking for the promotion of Chinese nuclear reactors in other countries as well.

The next speaker Dr. Vaibhav Chaturvedi, began his talk by stating that energy has become very important not just domestically but also in international geopolitics. His talk mostly focused on the cost aspect of nuclear energy. He stated that it was important to talk about the cost of nuclear energy because the investors will place their bets on the winning technology. Dr. Chaturvedi then stated that the first part of the cost is the construction cost, also called the capital cost. The second part is the operating cost including the fuel cost and it is here where nuclear energy is most cost effective than most of the other sources. Third is the cost of externalities, such as nuclear accidents and their management. Lastly, he pointed out that nuclear energy also comes with a storage cost. He then went on to illustrate the history of the development of nuclear costs. He stated that the estimated cost of construction of nuclear reactors has increased at a rapid pace. However, the costs have resulted in the newer power plants being much safer than the older power plants. He then went on to state that it is also very difficult to estimate the real cost or the market cost of nuclear energy.

*Report prepared by Sanjeevan Pradhan, Research Assistant, Institute of Chinese Studies, New Delhi.*

## **About the Speakers**

Dr. Nandakumar Janardhanan teaches in the Energy Studies Programme of Jawaharlal Nehru University (JNU), New Delhi, India. He specialises in energy and climate policy. The areas of his work include nuclear power, energy security and geopolitics, climate policy, low-carbon development and renewable energy. He has worked with several policy think tanks and research organizations of international repute. He has been associated with the Institute of Chinese Studies (India) as Adjunct Fellow since 2013. Dr. Janardhanan has co-edited the book on ‘Resurgence of Nuclear Power: Opportunities and Challenges for Asia’ published by Springer.

Dr. Vaibhav Chaturvedi is a Research Fellow with the Council on Energy, Environment and Water (CEEW), New Delhi. He specialises on energy and climate issues. Vaibhav holds a Doctorate in Economics from the Indian Institute of Management, Ahmedabad and has completed a Post-Doctoral work at the Joint Global Change Research Institute of Pacific Northwest National Laboratory (USA). Dr. Chaturvedi contributed a Chapter on the ‘Cost of Nuclear Energy’ in the book ‘Resurgence of Nuclear Power: Opportunities and Challenges for Asia’ published by Springer.

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