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Scientific Controversies in India-Case Study of Jaitapur and Kudankulum Nuclear Power Plants

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ABSTRACT

This paper is discussing the two nuclear controversies in India that rose in the wake of potential nuclear accidents. The nuclear civil programs of India are still adopting the top-bottom or the deficit model. In recent years the 'publics' have gained consciousness of the havoc the power plants can cause, in the wake of Fukushima nuclear disaster in Japan. They are trying to create a dialogue with the higher government authorities, but the attempts have not been successful. It is high time that government accepts this reality.

Keywords: Nuclear controversy, Deficit Model, Public Engagement.

I. INTRODUCTION

India had entered the nuclear age in 1948, right after its independence—by establishing the Atomic Energy Commission (AEC) under the chairmanship of Homi J. Bhabha (Anderson, 2010). The Department of Atomic Energy (DAE) came into being on August 3, 1954 under the direct charge of the then Prime Minister Jawaharlal Nehru through a Presidential order (ibid). The era of nuclear science had begun right after the independence—was declared a strategic sector along with the space and defence sector—and from then 'secrecy' has been maintained in this sector—restricted to only technocrats and bureaucrats.

The operations of this sector are neither accessible to the 'publics' of the country, nor are the authorities questionable by the common ones, or the laypersons. The historical evidences of this secrecy can be rooted back to the evolution of AEC, Tata Institute of Fundamental Research (TIFR) and later DAE—which performed research in nuclear sciences for enhancing India's research capabilities. The agenda is also wrapped up in a larger context of nationalism—and hence critically questioning their works arises problems. Hence, it is evident from this excerpt that in the case of nuclear energy—we are still stuck in the deficit model.

II. REVIEW OF LITERATURE

In her report 'Public engagement with science, technology and innovation,' Sheth (2014) discusses how after the introduction of India's new science, technology and innovation (STI) policy, 2013; many government officials talked on how growth and development of a society are linked with how scientifically aware its people are. But we see that the discourse of engagement is disputable and not really happening at the grassroot level.

Also in another paper by Barpujari (2011); she discusses how "public engagement around emerging technologies in India is heavily influenced by the exalted position of science in the policy set up, with S&T not easily accessible for critical engagement, unlike in the West." Hence we can infer that when this is not true for

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new generic technologies; how can the atomic energy sector—which has been a strategic sector from its beginning—be open to the 'publics' and encourage a participation from all the stakeholders.

This study will analyse two such case studies and substantiate the argument given in the paper. Not much literature is available in the context of nuclear controversies in India and the public engagement associated with it. The studies available only talk of an ideal model that what should happen. Hence, this paper will outline the current scenario, where the 'publics' want to engage with the higher authorities, but the latter are resistant to the changes. They still follow the deficit model, and at last the 'publics' themselves have to compromise.

India's, and perhaps Asia's, first nuclear reactor started its operation on January 20, 1957—named Apsara. Thought it was built in India—it had got its assistance and fuel from the United Kingdom (BARC). USA and Canada had also provided assistance to India initially for its first nuclear power plant—but later they terminated it after India's first nuclear explosion in 1974 (Martin, 1996).

The political scenario and the autocracy of the scientists since the independence, did not allow for the 'publics' to question the repercussions of the nuclear technology.

2.1. Nuclear Controversies Internationally

As per the report by Fukushima on the Globe, after a massive earthquake of magnitude 9.0 that hit the northern part of Japan on March 11, 2011; the follow on tsunami triggered the worst nuclear accident, since Chernobyl. The Fukushima Daiichi nuclear power station located in the Pacific Ocean coast received a huge damage due to these natural calamities. On March 12, the leakage of radioactive materials were found and scattered in the nearby environment. After a month, the government had to raise the rate of accident level from level 5 to level 7; the same as Chernobyl.

Post this incident, Germany decided to 'phase-out' nuclear energy by 2022 (Clean Energy Wire, 2015). Many citizens across the globe now are not favouring the use of nuclear energy, in its either form. They have become highly critical of this technology, knowing the aftermath and havoc it can cause after a nuclear accident breaks out.

2.2 Nuclear Controversies in India

Soon after the Fukushima controversy took off globally as a large political discourse, the Indians too evoked consciousness on the issues of nuclear technology.

Citizens have been subjected to an optimistic notion of nuclear technology since its beginning. But in the aftermath of the nuclear controversies caused by Jaitapur and Kudankulum Nuclear Plants—we can see a shift from the public understanding to public engagement model. The recent Fukushima nuclear disaster has only stirred the agitation among the public, which is now demanding a complete shut-down of these plants.

The first case is 'Jaitapur Power Plant, Maharashtra'—On 6 December, 2010 an agreement was signed between India and France for a 9,900 MW nuclear power project, which is supposed to be the biggest in the world till date. The first unit of the project was to be commissioned in 2017-18 (Zee News, 2010). It ran into troubles after few environmentalists and civil society groups questioned the clearances by the Ministry of Environment and Forests (MoEF).

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The second case is of 'Kudankulum Power Plant, Tamil Nadu'—It was initiated in 1988 during the Rajiv Gandhi government in co-ordination with Soviet (Russia). Due to several factors rising from political and economic crisis, the project has been put on hold, since first the Soviet broke and then US had posed some objections (The Hindu, 2016). But soon after its first small operation in 2004; protests were begun by the locals and later the civil society over the construction of the plant.

III. RESEARCH FRAMEWORK

The methodology is based purely on the secondary literature available in the related area as scarcely studies have been done in this context. A primary survey can be taken up only after having an understanding of the current scenario.

We will understand these two case studies using the framework of Public Engagement with Science and Technology.

According to the model proposed by Zilig and Tomkins, 2011—"Public engagement refers to intentional, meaningful intentions that provide opportunities for mutual learning between scientists and members of the public." The model depicts how a set of inputs and resources are deployed by scientists and practitioners into a set of activities with involved participants in order to achieve outcomes, or changes in knowledge, attitudes, affect, behavior, etc. at different time scales (ibid).

Using this framework, let us have a look at the two cases.

3.1. Jaitapur Power Plant, Maharashtra

Jaitapur is in the Ratnagiri district, in an ecologically diverse Konkan region of Maharashtra.

3.1.1. Participants

The participants in favour of the project were:

- **Union Ministry of Environment and Forests (MoEF)**: Under Jairam Ramesh, it gave a green signal to the project, alongwith 35 conditions and safeguards.
- **National Environmental Engineering Research Institute (NEERI)**: Gave an approval, through its environmental impact assessment report.

There were various 'publics' who raised their voices against the project:

- **Civil Society Groups:** Groups like, 'Konkan Bachao Samiti' and 'Janahit Seva Samity' protested openly, raising concerns over the radiological safety of the nuclear plant and its impact on the environment.
- **Jamshedji Tata Centre for Disaster Management, Tata Institute of Social Sciences (TISS):** Submitted a report that the plant will be a disaster for the region, if allowed to built.
- **Political Parties:** Since Congress was the ruling party at centre and even as the state government, opposition parties like BJP and Shiv Sena accused the state government of sanctioning the project under an international pressure.
- **Local People:** Mass protests were carried out.
- **Public Interest Litigation (PIL):** It was filed against the government's civil nuclear program at the Supreme Court.

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3.1.2. Activities

- TISS report mentioned that the project, which required 968 hectares of land of five villages; having a huge negative impact on the social and environmental development of the villages and the Konkan region.
- When the government officials visited the village MADHBAN in late 2009 and early 2010 for cheques they offered as compensations for land acquisitions, the villagers refused it and even denied any co-operation from their side in the activities.
- Since 2009, the locals and environmentalists have been protesting against the sanctioning of the project. 72 people had been arrested in January 2010. Shiv Sena again launched agitations against the project in 2014.

3.1.3. Outcomes

- Protests were unfortunately not heard off. The state government in 2010 itself slammed such protests by claiming that the project was a clean way to meet the power deficit in the state.
- Since France is the most nuclear-dependent country in the world, getting 78% of its electricity generation through nuclear power; it was urged that it can help India.
- The former president of India, A.P.J. Abdul Kalam in 2011, soon after the Japanese tragedy had said that India should learn from that calamity and review all the planned nuclear projects in the country.
- On November 2010, regulatory bodies of India and France met on EPR issues and got environmental clearances. Recently, in January 2016 EDF (France) and NPCIL (India) signed a MoU to build 6 reactors.
- Local people fear danger of earthquakes since Jaitapur is a seismically sensitive area.
- NPCIL declared that 1.5-2% of the net profit from the plant will be spent on that area. Development projects would be decided by the people and NPC would provide funds to ensure development of these areas.

3.2. Kudankulum Power Plant, Tamil Nadu

Kudankulum is situated 25 Km north-east of Kanyakumari in Tamil Nadu. It is also a location for windmills for generating power.

3.2.1. Participants

- An **NGO** 'Nuclear Nature and Society' has been an active participant since 1990s in the protests against the state government.
- **Anti-nuclear activists** and **People's Movement Against Nuclear Energy** have been demanding the closure of the project.
- **Locals** soon joined the anti-Kudankulam movement.

3.2.2. Activities

- The power plant was being set-up without sharing the Environmental Impact Assessment (EIA), Site Evaluation and Safety Analysis reports with the 'publics.'
- No public hearing was conducted for the construction of the first two reactors—following the same old deficit model.
- Locals were misled by false promises from the government such as 10,000 jobs and water from Pechiparai dam in Kanyakumari district—and lot of development of the region.

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- But soon after the Tamil Nadu Government declared the area between 2-5 Km as a 'sterilization zone', the locals feared their displacement. And not only this, 1 million people live within the 30 Km radius of the plant, which means in case of a nuclear accident—they will not be able to evacuate the place.
- Even if there was no disaster, still the radioactive elements would toxicate the air, only adding to the miseries of the villagers.
- The fishermen posed threat—since the nuclear wastes were going to be dumped into the sea, having a severe impact on fish production.

3.2.3. Outcomes

- Many bureaucrats and political leaders gave a false assurance that no nuclear disaster would take place in the plant.
- Because of the severe protests by the environmentalists and the locals, the project was put on hold, but in 2004 a small port got operational in Kudankulum for transportation of reactors.
- A MoU was signed in 2007 between India and Russia to promote nuclear energy.
- In July 2013, one unit of the plant started its operation—providing 1000 MW to the southern power-grid.
- Second unit will be in operation soon.

IV. CONCLUSION

We can infer some conclusions from the observations made:

- India is still adapting the 'deficit model.' No transparency is there in the government's initiatives even regarding its civil nuclear program.
- Till recent years the 'publics' were unaware of the circumstances of these measures taken by the government, and used to get duped easily. But when now they want to actively participate as a stakeholder—the higher authorities are not encouraging this participation.
- The protests, as observed in both the cases; go in vain. Ultimately the decisions are made unanimously by the bureaucrats and technocrats only.
- Public engagement model is quite a failure in the context of nuclear energy in India.
- Another important aspect, the "villagers" in both these cases are the 'victims' of the decisions. Hence we may also conclude that—the government generally targets the most vulnerable 'publics.'

Therefore, through this paper we get an outline of why a public engagement with science and technology is an important aspect of the society. Though as a nation we are trying to emerge as a superpower, competing with the global north; without these critical insights of technology, unlike the West, India might straggle. It is all possible, with authoritative partake of formal bodies. But unfortunately, India has a very long way to go in this direction.

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