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India's Nuclear Power Problem

Rising Voices for Technology with Accountability

By Monamie Bhadra

In January 2010, before the nuclear disaster in Fukushima, Japan, and before the anti-nuclear protests in India spread nationwide, Anuradha Talwar was tallying up a demographic survey of the people of Haripur, a rural coastal village in West Bengal. Sitting on a tiled veranda, alternating between using her cell phone and directing the small army of young women sifting through spreadsheets, Talwar was determined to count every man, woman, and child who would lose their homes to accommodate a 10,000 megawatt nuclear reactor complex, the largest on the subcontinent. According to a senior government official, Haripur is an inhospitable environment where "most of the land [has] a high saline content and cannot be used for agriculture."[1] Talwar knows better. The nuclear power complex would in fact evict some two hundred thousand farmers and fishermen. She dismisses the government's claim that Haripur is a barren wasteland by recalling the sumptuous meal of home-grown vegetables and fragrant fish curry that villagers prepared for her the previous evening.

A plump, soft-faced, middle-aged woman with thinning grey hair and sizeable *bindi*, she does not come across as someone who would lead the opposition against the West Bengal state government's attempted land grab. But Talwar, whose surname means "sword" in Bengali, has spent decades fighting for human rights and sustainable development in sectors as diverse as health care, gender equality, labor practices, disaster relief, malnutrition, and starvation. To her and to the villagers in Haripur, nuclear power is nothing special. They are not impressed by the prospects of developing a carbon-free energy system that would mitigate climate change. Nor are they drawn into the debate over the risks and uncertainties of generating nuclear energy. To them, what matters is that livelihoods are in jeopardy.

Similar scenes of resistance are rippling throughout India as the government of Prime Minister Manmohan Singh

◁ A protest against India's nuclear power program, New Dehli, Dec. 8, 2011. *Manish Swarup/AP/Corbis*

undertakes a massive expansion of the nation's nuclear energy program. In communities affected by India's growing nuclear power infrastructure, activists like Talwar are conducting surveys, handing out pamphlets, forming committees, contacting journalists, and staging protests. In some places, including Haripur, resistance to nuclear energy plans has even turned violent.

What is noteworthy about the bourgeoning local activism is how often it differs from the campaigns led by established anti-nuclear groups, who typically focus on the morality of nuclear weapons or the risk of a cataclysmic nuclear power plant accident. Instead, India's new grassroots activists are struggling against the government's nuclear energy plans for a wider variety of reasons, ranging from ingrained distrust of the government due to corruption and lack of accountability, to tangible local concerns such as losing land rights and economic livelihoods. The affected communities, largely comprised of farmers, fisherman, and miners, are essentially concerned with the broad and deep issues of democracy, citizenship, and government responsibility. At its core, the resistance is challenging the distribution of power and how it governs relationships between the state, citizens, and private interests.

A dramatic case in point is the rising furor over the Koodankulam nuclear plant in the state of Tamil Nadu, at the southern tip of India. Protests that intensified after the Fukushima accident forced officials to delay the commissioning of the plant, scheduled to go critical last December. In March, hundreds of protesters from farming and fishing communities, many of them women, converged on the nearby village of Idinthakarai in an effort to halt construction activities at Koodankulam. Led by local resident and long-time anti-nuclear activist S. P. Udaykumar, they organized demonstrations and began a relay fast. In response, authorities placed Idinthakarai under martial law and arrested some two hundred protesters. Reports say that activists were beaten and subjected to religious profiling and open mob violence, while Singh apportioned the blame for the protests against Koodankulam on foreign hands.

The stirring of Indian unrest over a program ostensibly intended to boost India's broad economic fortunes and reduce the nation's contribution to global warming is a cautionary tale of what can go wrong when policies are formulated primarily around technological considerations at the expense of profound concerns related to community well-being, culture, and justice. In undertaking a massive project destined to directly impact the lives of millions of citizens, the Indian lesson shows it is essential that governments bolster democratic institutions and foster a transparent airing of all concerns. These would include questions about whether and how land should be acquired for nuclear infrastructure development, what kinds of compensation and rehabilitation would be due to displaced communities, how the government should recognize tribal identity and sovereignty over resources, and what responsibilities the

government has towards safeguarding the health of communities, such as uranium miners, who are embedded from the very start in the nuclear economy. The debate from the community to the national level should include the question whether nuclear energy is even the right choice for Indian energy security.

Onward Toward Modernity

Indian leaders grasped the significance of harnessing the atom after Independence in 1947. Nuclear technology was a potent sign of all things modern, synonymous with progress, self-reliance, and development. It would catapult India toward parity with the West by supplying the country's farthest reaches with energy as well as further securing its borders with nuclear weapons.

The government of Jawaharlal Nehru, tapping the nuclear physicist, Homi J. Bhabha, established the country's Atomic Energy Commission (AEC) in 1948 and then the Department of Atomic Energy (DAE) in 1954. From the outset, India's nuclear establishment operated with an obsession for secrecy. The government barred other public and private institutions from studying nuclear issues. The AEC and DAE were, and remain to this day, solely accountable to the prime minister.

After Independence, India decided that nuclear technology should be used to develop weapons for national security rather than to power economic growth. India refused to sign the 1968 Non-Proliferation Treaty (NPT), a pact designed to curb nuclear weapons that has now been joined by 190 nations and in 1974, ten years after neighboring China conducted its first nuclear weapon test, India detonated a nuclear device at the Pokhran Test Range in Rajasthan. It was the first confirmed such test by a nation not serving as a permanent member of the United Nations Security Council, and was followed by another nuclear test in 1998 under the right-wing Bharatiya Janata Party. India's nuclear ambitions, though enhancing its military strength, risked isolating the country in international affairs and the nuclear establishment's culture of secrecy deepened.

India shifted course dramatically after Singh's election in 2004. His government now openly sought foreign assistance to develop nuclear energy, in sharp contrast with India's prior focus on creating a homegrown system that would exploit India's vast thorium reserves. Citing reasons such as combating climate change, galvanizing its innovation economy, and reducing dependence on coal energy, Singh promoted nuclear energy as a major component of India's future energy portfolio.[2]

Political ostracism quickly turned into talk of partnership and new beginnings. The United States saw in India a strategic counterbalance to China, a partner in climate change mitigation, and a necessary foothold in a region characterized by turmoil in Pakistan and Afghanistan. In 2005, Singh and then-U.S. President George

W. Bush initiated the U.S.-India Civil Nuclear Agreement, which was completed and signed in 2008. The bilateral accord for peaceful, civilian nuclear cooperation allows India to pursue nuclear commerce with the Nuclear Suppliers Group, without being required to sign the NPT. In exchange, India ceded oversight of self-identified civilian nuclear energy facilities to the International Atomic Energy Agency. In addition to the United States, nations such as Australia, France, Argentina, Mongolia, Kazakhstan, Russia, the United Kingdom, Canada, and South Korea pledged technological know-how and access to uranium reserves to help India achieve its nuclear energy ambitions.

Currently, nuclear energy provides less than 3 percent of India's electricity needs. Since *Apsara*, India's first nuclear reactor and built from British plans, became operational in 1956, only twenty more reactors have been constructed and they all are operating well below capacity. India's nuclear endeavors have become notorious for cost overruns. Nonetheless, Singh has set his sights high. His target is to increase India's installed capacity more than sevenfold to 35,000 MWe by the year 2022, and to 60,000 MWe by 2032.[3]

India's 1998 nuclear weapons test galvanized the anti-nuclear movement, which has since greeted Singh's plans for developing nuclear energy with deep suspicion. Consisting of middle-class journalists, writers, scientists, and academics, the movement repeats a mantra that warns of the possibilities of nuclear war and of nuclear accidents like Three Mile Island, Chernobyl, and Fukushima. They also question the morality of nuclear weapons, the geopolitical downsides to being a nuclear power, the undemocratic nature of India's nuclear establishment, and the impact of radioactive waste on the environment and public health. The movement sees the need to mobilize political support and scientific expertise in the cause; it conducts its own studies, stages protests, publishes articles, and participates in national and international workshops and conferences.

What these vanguard anti-nuclear activists—not to mention the Indian government—have failed to fully appreciate, but are now rapidly taking seriously, is the stirring of unrest in local communities far removed from expert debates over technical pros and cons. Socio-economic as well as environmental grievances are being voiced in disparate regions of the country, from West Bengal[4] and Tamil Nadu to the states of Haryana[5] and Maharashtra,[6] where new nuclear power plants are planned in primarily fertile farmlands near fishing grounds. Protests are also rising in the historically marginalized tribal communities in the states of Meghalaya and Andhra Pradesh, due to central government's redoubled efforts to open new mines in these regions, believed to contain large reserves of high-grade uranium needed in nuclear technology.

The Case of Haripur

In trying to build nuclear power plants in West Bengal, the state has been confronted by a number of legacies: the history of local Communist rule; a cultural memory of violent resistance to British colonialism; a movement against Special Economic Zones (SEZs) in response to neo-liberal economic policies in the 1990s; and a deep suspicion of the nuclear establishment.

The Communist Party of India-Marxist (CPI-M) governed West Bengal from 1977 to 2011. It is a pro-peasant party that favors rural development over industrialization. The neo-liberal policies that brought wealth to technopolises like Bangalore and Chennai sidestepped West Bengal, leaving it impoverished and economically stagnant. West Bengal Chief Minister Buddhadeb Bhattacharya defied the party line and attempted to usher in liberalization and industrialization through strong-arm tactics. In 2006, the state forcibly acquired land—via the colonial Land Acquisitions Act from 1894—in order to establish SEZs. These industrial enclaves bypass bureaucratic red tape and cumbersome legal technicalities, including labor laws, to rapidly create products for export and service markets.

Public uproar ensued. Anger boiled over when the West Bengal government sought to acquire the villages of Singur in 2006, and Nandigram in 2007, for a Tata Nano car plant and a chemical factory, respectively. The villages are located near Haripur in an area with a history of bloody violence around land rights during colonial rule. One morning in January 2007, without warning, the government posted public eviction notices in Nandigram. Thousands of villagers swarmed to the state police department in protest. West Bengal police and CPI-M thugs alike fired on a group of around four thousand villagers. Official estimates say that fourteen people were killed, but villagers place the number in the hundreds. Reports said that countless women and girls were raped, and hundreds of village homes were burnt although atrocities were committed on both sides. In the previous year, the state government suspended democratic rights in Singur amid bloodshed that included the rape and murder of an eighteen-year-old activist.

The SEZ violence, while not directly related to anti-nuclear protests, nevertheless helps illustrate how local political and social dynamics, rather than technological issues alone, have an important influence in the campaign against the government's nuclear energy ambitions. In Nandigram and Singur, community activism was spearheaded by Anuradha Talwar's organization, the West Bengal Agricultural Workers Union, also known by its Bengali acronym, PBKMS. For example, the group pursued an independent fact-finding mission to investigate police atrocities, violence committed by villagers, and Communist party infighting. Earlier, in 2006, PBKMS mobilized six thousand villagers to create a bamboo barricade to prevent scientists, engineers,

and police from entering the village to perform soil tests for the Nuclear Power Corporation of India. Talwar and her colleagues opposed potential human displacement and the lack of transparency concerning its consequences.

From the West Khasi Hills to Jadugoda

Protests against uranium mining have evolved as an integral part of the grassroots movement against India's nuclear energy program. Until the ban on nuclear trade with India was lifted, the lack of sufficient reserves of high-quality uranium was considered the Achilles' heel of India's nuclear program. After the U.S.-India nuclear deal, the central government set its sights on the West Khasi Hills in the state of Meghalaya to open a new uranium mine believed to contain some two hundred and seventy-five thousand tons of uranium. If the project does go through, as many as thirty thousand Khasi *adivasi*, or tribal people, may be displaced, and 351 hectares of land will be acquired from seventy-two villages. The Uranium Corporation of India Limited (UCIL), a public sector arm of the Department of Atomic Energy, built the first open cast uranium mine in Jadugoda in Jharkhand in 1967. (Jharkhand became India's first tribal state in 2000, carved from the state of Bihar.)

The Khasi opposition to uranium mining must be taken in the context of an ambivalent colonial and post-colonial tribal policy. Colonization was a force of economic, political, and cultural transformation that displaced and dispossessed *adivasi* communities. After an early history of violent and brutal repression, the British created protective enclaves for tribal groups, which were adopted by the post-colonial government after Independence, and are governed by the Fifth and Sixth Schedules of the Indian Constitution. The Schedules allow tribal regions to create self-governing, autonomous districts, to give tribes jurisdiction over land use, property inheritance, marriage, and social customs. The Khasis are protected under the Sixth Schedule.

The Khasi Students' Union (KSU), formed in 1978, has a slogan: "We are Khasi by blood, Indian by accident." The KSU's opposition to uranium mining stems partly from its history of xenophobic activities. Alleged KSU members killed a bus-load of non-tribals in 1979. The group has sought to ban non-tribals from the local economy unless they joined *adivasi* business partners. They have opposed the construction of railroads in the fear it would facilitate the influx of outsiders. In opposing uranium mining, the KSU's primary target is the intrusion of foreign technicians, engineers, and cheap labor.[7] A KSU letter written to the state of Meghalaya's chief minister in 2004 stated: "We will not part with even an inch of our ancestral land to the foreigners who we consider our enemies."[8] A member of the Meghalaya People's Human Rights Council presents a more measured but no less alarmist view of the threat mining poses to the Khasi: "The illiterate and semi-literate indigenous Khasi will be forced to move

out of their homes and landholdings to be supplanted by technologically advanced communities from outside the state. The mining township will become like military cantonment prohibited to all local people. This will upset the demographic structure of the areas, and ultimately of the entire state, thus not only rendering us a minority but also reducing us to the level of unwanted outsiders in our own land."[9]

Other Khasi complaints derive from the rhetoric of identity politics. Khasis question why *adivasis* should be sacrificed for the greater good of India, an entity they see as a colonizing force. Why should the Khasis, activists ask, be forced to forfeit their rights to their land, subject themselves to grave health hazards, and face displacement to make room for uranium mines that will supply fuel for remote nuclear plants and a national nuclear weapons program? Furthermore, uranium mining exposes fault lines within Meghalaya, pitting landowners who want uranium mining for jobs and economic growth, against villagers who refuse to relinquish commonly-owned land, to which they have cultural, economic, and emotional attachments.

The Jharkhand Organization Against Radiation (JOAR) in Jadugoda frames its grievances quite differently. Although almost all of the Jadugoda uranium miners belong to the Santhal and Ho tribes, JOAR does not pitch the struggle in terms of identity politics, but as a shared experience of suffering related to health and occupational hazards. Those working and living in Jadugoda want to be seen as "radiated bodies" suffering at the hands of the nuclear economy. A villager tells a reporter from *Tehelka* magazine, "We have seen too many deaths due to cancer and tuberculosis, too many deformed children, too many miscarriages among women. Too much sorrow. Our lives are governed by radiation. There is no escape from it."[10]

The origins of uranium mining in Jadugoda are murky. No one seems to know exactly how land in the village, protected under the Fifth Schedule, was transferred from the state to central government. Anecdotal accounts are infused with a sense of betrayal, loss of autonomy, and intrusion. Radiation awareness came gradually, only when people began to notice that "rashes, deformities on fellow beings, cows were born without tails, fish with unknown skin diseases were being discovered, small animals, including mice, monkeys and rabbits were disappearing from the area."[11]

Activists established JOAR in 1979, more than a decade after the first local uranium mine was opened. The group stepped up its campaign in 1996 when the UCIL, with the help of the district police and paramilitary forces, razed thirty homes near Jadugoda to build a third tailing dam.[12] JOAR stages rallies, sit-ins and marches, and calls attention to its cause in national and international forums. Shriprakash Prakash's 1999 documentary, *Buddha Weeps in Jadugoda*—a title that mocks the codename for India's first nuclear test, "Smiling Buddha"—explores the devastating impact of uranium mining on local villagers.

JOAR also attempts to seek recourse through legal and scientific institutions. It has tried to produce policy-relevant science data through health surveys and studies that tested the effects of low-level radiation. None of its efforts, however, met the scientific rigor expected for epidemiological surveys, and as a result have not been taken seriously by UCIL. For example, in 1988, UCIL and the state conducted their own health surveys, but did not see enough evidence to establish a connection between leached uranium and adverse health and environmental impacts.[13] The UCIL maintains that it has always followed proper, scientific protocols in monitoring uranium mining operations. In response to the accusations of health hazards, the UCIL chairman said, "Cancer in this region is not beyond the national average. Illnesses are largely due to malnutrition and an unhealthy lifestyle."[14] JOAR also filed a public interest lawsuit, accusing the DAE and UCIL of dumping nuclear waste from hospitals and other nuclear facilities into Jadugoda's tailing ponds. The UCIL and DAE denied the charges and the case was dismissed.[15]

UCIL, in turn, accuses JOAR of working against national interests, spreading misinformation, and inciting fear.[16] Its behavior illustrates the monumental task that organizations like JOAR face in contesting the government's nuclear policies. UCIL held public hearings in 2004, 2005, and 2009 about opening new uranium mines in the Jadugoda area but the hearings were carefully staged. The UCIL was accused of providing villagers with placards that read, "We will die later of alpha, beta, gamma, but we are dying everyday of hunger," and "We are not afraid of pollution; those who give us food, clothing, and shelter are our own people."[17] A video captured and posted on YouTube purports to show paramilitary forces flanking a UCIL official during a hearing in December 2005. The official threatened in Hindi that the hearing was only for listening and not for speaking, and anyone caught voicing their opinions would face severe penalties.[18]

Democracy and Citizenship

The Indian government's handling of its nuclear energy plans highlights the flaws in Indian democracy and the deep distrust that citizens have for government institutions. Cases such as Haripur, Khasi Hills, and Jadugoda underscore the need for robust and responsive democratic institutions, such as courts of law and other policy instruments, to mediate the relationship between the government and citizens. Citizenship is fundamentally about the social contract between an individual and the state, with the implicit understanding that power over individuals will not be exercised arbitrarily. A social contract implies certain rights for an individual and a government responsible for protecting those rights. Citizens should have recourse through institutional channels and have sufficient trust in such institutions that a fair and impartial judgment will be passed. In India, the terms of the social contract seem up for grabs and,

increasingly, the only language understood by both parties is one of public protest, whether through peaceful civil disobedience or violence.

Opposition to the Haripur nuclear power plant is part of an older, violent struggle against land acquisition in West Bengal and its newest manifestation, the SEZs. For the villagers of Haripur, citizenship, in the sense of having rights to property, land, and fair treatment by the law, is not automatic but something to be fought for, violently if necessary. Violence is understood as part of a common political repertoire by both sides. The West Bengal state, for its part, with its eventual capitulation to the violent protests against SEZs, implicitly views the use of force as an acceptable (but not desirable) form of voicing grievances.

In contrast, the KSU's fight against the decision to begin uranium mining in the West Khasi Hills enlists the politics of identity, and to an unsettling degree, of xenophobia, to reject the conventions of Indian citizenship. The most fundamental question of power raised by the KSU is who gets to decide who lives where. Khasi suspicion of "mainland" India stems from decades of policies that controlled and developed tribal regions in ways that damaged or destroyed communities. Khasis see economic development in general, and uranium mining in particular, as a ploy for further marginalization. Protecting Khasi identity and culture in a way that does not engender violent identity politics and allows the benefits of economic development to come to the region in a sustainable and socially just manner will require the coordination of policies in a host of areas beyond the narrow field of nuclear energy. Policies such as land use, tribal development, and rehabilitation of displaced people.

The struggle of JOAR to receive national and international recognition for the health and environmental damage experienced by the *adivasi* community is a story about knowledge: about who has it and whether it counts, and how it can be turned into policy-relevant knowledge. JOAR and the people of Jadugoda attempted several times to speak to the government and UCIL on their terms—in terms of science and law—and thus employ the tools granted to them through citizenship. But at every turn, they were prevented from entering the corridors of power and expertise because those were precisely the two qualities they did not possess. For the people of Jadugoda, the power, secrecy, and absolute unaccountability of the nuclear establishment closed down any options of dialogue.

Just, Sustainable, Feasible

More than 412 million Indians have no access to electricity, and 668 million depend on biomass for cooking[19] but it remains to be seen whether nuclear energy will help alleviate poverty. The concerns that Indian citizens have about nuclear energy, however, cannot be addressed solely by nuclear energy policy. A myriad of other policies

and accompanying institutions must also be involved in the process. Yet, the Indian government has aggressively pursued a nuclear future without sufficient deliberation about how to create an energy development strategy that goes beyond the narrow scope of technological tools and economic growth.

India's checkered history with development projects, such as its building of large dams, shows that the state tends to equate public debate with automatic opposition to any development plan the government puts forth. This approach sets up false and unhelpful dichotomies between progress and tradition, modernity and backwardness, science and superstition, government and citizens. In this stark view, victims and villains are easily created in the public consciousness. The *adivasi*, women, forest-dwellers and fishermen become the heroic defenders of culture and tradition; state officials, entrepreneurs, and the affluent elite are scorned as the agents of a neo-colonial order. The stories from Haripur, Khasi Hills, and Jadugoda, however, resist easy classification or stereotyping. Political mobilizations against Indian nuclear energy plans are diverse and throng with competing motivations and values.

With the demand for low-carbon energy sources in the fight against global climate change, India's nuclear establishment sees itself as a major player in de-carbonization efforts. It likes to claim that the world, especially the South, is on the cusp of a nuclear renaissance. But, due to public distrust, the activities of India's anti-nuclear movement, and technological breakdowns in other sectors, the establishment is having an increasingly difficult time communicating its message. In the wake of Fukushima, Indian nuclear officials are portrayed as laughably out of touch when they go on record stating that the nuclear disaster in Japan was "purely a chemical reaction and not a nuclear emergency" and that "there was no nuclear accident or incident."[20]

The Indian government would be wise to reconsider its vision of nuclear energy so that it does not seem limited to simply getting its technology right. Creating robust policy debates across domains such as solar and wind power will benefit India's energy development as a whole. Sociological and anthropological perspectives must be integrated into policy discussions. Advancing the principles of democracy such as citizenship rights and government accountability will promote critical thinking about maximizing the public good beyond a simple cost-benefit analysis of market economics. That is the best approach, if India is to have a nuclear energy program that is socially just, environmentally sustainable, and economically feasible.

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