

Enclave under Siege

International Norms and Challenges to the Indian Nuclear Complex

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· **Key words** : nuclear energy, norm diffusion, domestic politics, nonproliferation

【ABSTRACT】

This article analyzes the effects of international connections on India's nuclear program; specifically, the use of international norms and resources by domestic actors to influence the Indian nuclear enclave.

These actors are from the Indian executive (pressure from above) as well as civil society (pressure from below). India's self-presentation as a responsible state necessitates compliance with international norms, and concomitant restraints on the nuclear estate from 'above.' Environmentalists, local residents, and their transnational allies seek to make the nuclear complex more accountable, responsive, and transparent by using social media, civil society institutions, and cross-border links. The Indian case suggests that while studying the effects of international connections, analysts should open up the 'black box' of the state. Moreover, analysts must take into account that international connections can be resources for, and not merely restraints on, domestic actors.

I . Introduction

The subfield of security studies has tended to treat nuclear weapons programs as autonomous responses to severe external threats. However, the roles of other external actors—allies, international organizations, and suppliers—are increasingly of interest to scholars. This article analyzes the effects of international connections on India's nuclear program, including both the civilian and military components. Specifically, I examine the use of international norms and resources by domestic actors to put pressure on the Indian nuclear enclave.

There is currently a debate as to whether international assistance restrains or furthers a state's nuclear weapons program. Sung-yeol Choi and Il-soon Hwang claim that the web of international connections created by the operation of a civilian nuclear program can significantly reduce a country's incentives to start a military nuclear program. They cite the case of South Korea as an example.¹⁾ Similarly, the web of connections that bound West German scientists and bureaucrats to their European and international

1) Sungyeol Choi and Il Soon Hwang, "Nonproliferation Drivers from Civil Nuclear Power: South Korea's External Constraints and Internal Beneficiaries," *Annual Review of Political and Military Sociology* 39 (2011).

counterparts served to block movement toward an independent nuclear arsenal.²⁾

Two contrary views in the debate come from Matthew Kroenig and Matthew Fuhrmann who claim that international connections can help countries acquire nuclear weapons. Matthew Fuhrmann claims that all types of nuclear assistance enhanced the success rate of nuclear weapon-seeking countries.³⁾ Kroenig's analysis suggests that only sensitive nuclear assistance was of value to such countries, and other types of nuclear assistance did not have the effect of catalyzing the proliferation of weapons.⁴⁾

The next round in the debate saw a more nuanced take on the effect of international connections. Jacques Hymans showed that only specific types of states—those with developed legal-rational bureaucracies—were able to foster autonomous professionalism in the organizations handling nuclear weapons.⁵⁾ These types of states benefited from international contacts and access to resources, and consequently succeeded in their nuclear weapons endeavors. In contrast, countries with what Hymans terms “neo-patrimonial” governance structures were unable to make use of legal or illicit transfers of nuclear technology and materials to manufacture a working nuclear weapon. He concludes that nuclear assistance catalyzes proliferation only in certain types of states. Alexander Montgomery further extended this argument, claiming that not only did nuclear assistance not contribute to the programs of neo-patrimonial states, it actually impeded them in acquiring a nuclear arsenal.⁶⁾

Further, Gaurav Kampani showed that even states that had acquired a nuclear arsenal in the technical sense (by manufacturing warheads and delivery vehicles) were not true nuclear weapon states, because they lacked

2) Maria Rost Rublee, *Nonproliferation Norms: Why States Choose Nuclear Restraint*, Studies in Security and International Affairs (Athens, GA: University of Georgia Press, 2009).

3) Matthew Fuhrmann, “Exporting Mass Destruction? The Determinants of Dual-Use Trade,” *Journal of Peace Research* 45-2 (2008).

4) Matthew Kroenig, *Exporting the Bomb: Technology Transfer and the Spread of Nuclear Weapons* (Ithaca, NY: Cornell University Press, 2010).

5) Jacques E. C. Hymans, *Achieving Nuclear Ambitions: Scientists, Politicians and Proliferation* (Cambridge, New York: Cambridge University Press, 2012).

6) Alexander H. Montgomery, “Stop Helping Me: When Nuclear Assistance Impedes Nuclear Programs,” in Adam Stulberg and Matthew Fuhrmann (eds.), *The Nuclear Renaissance and International Security* (Stanford, CA: Stanford University Press, 2013).

the strategic planning, technical competence, and organizational capacity to adequately control and manage their nuclear assets. Kampani's contribution broadens the scope of the debate over international connections to include not only the acquisition of an arsenal but its deployment and management.⁷⁾

We note that the internal workings of countries—the type of political system, the freedom given to scientific personnel, civil-military relations, and/or the involvement of civil society in political processes—have come under investigation in the discussion of nuclear proliferation. Scholars have concluded that the net effect of international connections can be determined only by looking at how they are refracted through each country's domestic arrangements.

While this is a positive development, international connections are viewed in this debate solely as (more or less effective) restraints on countries. This article suggests two refinements to the study of the effects of international connections. First, the 'black box of the state' should be opened—i.e., the executive, the nuclear estate, the civil society, and other relevant stakeholders should be investigated separately. Second, international connections should be seen as resources as well as restraints. Attention should be given to the processes by which actors within the state draw upon international connections—both normative and material—in order to win political battles. In this study, these processes are illustrated with examples from the case of India.

The article is organized into four parts. The next section describes the Indian nuclear enclave, its history and components, and the sources of its power. It also provides a brief history of the relationships between the enclave and international actors. Section III shows how India's self-presentation as a responsible state necessitates compliance with international norms, and concomitant restraints on the nuclear estate from 'above.' Section IV highlights the pressures from 'below,' examining in particular the case of the Kudankulam nuclear plant. Environmentalists, local residents, and their transnational allies seek to make the nuclear complex more accountable, responsive, and transparent by using social media, civil society institutions,

7) Gaurav Kampani, "Threats, Institutions, and Nuclear Learning: Behind India's Veil of Nuclear Ambiguity, 1989-1998," *Annual Review of Political and Military Sociology* 39 (2011).

and cross-border links. Section V draws out some theoretical implications and policy predictions.

II. The Indian Nuclear Enclave

The complex of organizations in India dealing with nuclear energy and nuclear weapons is often called a “strategic enclave.” This term was coined by Itty Abraham.⁸⁾ I adopt this term because it draws attention to the connections between the nuclear complex and strategic concerns, and to the enclave characteristics of the complex. I also treat the nuclear enclave as an institution. In this, I follow the definition of institution by W. Richard Scott, as a “multifaceted, durable social structure made up of symbolic elements, social activities, and material resources.”⁹⁾

This section provides a history of the nuclear enclave, describes its main components and their interrelationships, and explains how it came to dominate nuclear decision making.

1. Components

The Atomic Energy Commission (AEC) was set up in 1948, within a year of India’s independence. The AEC is the apex body for nuclear policy. The chairperson of the AEC, a key figure in both civil and military nuclear affairs, is the secretary of the Department of Atomic Energy (DAE) of the Indian government. The prime minister of India has usually been the minister in charge of the DAE. Uniquely among government departments, the DAE is not autonomous, but follows policies that are formulated by the AEC. Once the DAE budget has been approved by the AEC, the approval of the Ministry of Finance is not required.¹⁰⁾

8) Itty Abraham, “Civilian Scientists and Military Technologies: India’s ‘Strategic Enclave,’” *Armed Forces and Society* (1992); Itty Abraham, *The Making of the Indian Nuclear Bomb* (Hyderabad: Orient Longman, 1998).

9) W. Richard Scott, *Institutions and Organizations*, 2nd ed. (Thousand Oaks, CA: Sage, 2001), p. 49.

10) M. V. Ramana, *The Power of Promise: Examining Nuclear Energy in India* (Viking, Kindle Edition, 2012), loc. 937.

The Nuclear Power Corporation of India Limited (NPCIL) is in charge of constructing nuclear reactors and plants for power generation while the Bharat Nabhikiya Vidyut Nigam is in charge of the breeder reactors program. Uranium mining is done by a corporation called Uranium Corporation of India Limited. The Heavy Water Board and the Nuclear Fuel Complex are two of the other major organizations within the nuclear complex. All these bodies are fully owned by the government. The Bhabha Atomic Research Centre (BARC) is a research institution that is also highly influential in policymaking.

The Atomic Energy Regulatory Board (AERB) was constituted in 1983 to oversee the questions of safety in all Indian nuclear facilities, including those serving military purposes. From the start, its independence was doubtful since the body was directly under the AEC. The weapons-related aspects of the nuclear program were kept out of the AERB's purview through informal understandings.¹¹⁾

The various components of the Indian nuclear enclave doubtless have different priorities, budgetary concerns, and relative bargaining power. However, in this analysis they will be grouped together for two reasons. First, little public information is available about the fissures within the nuclear enclave. Second, the enclave so far has been tightly centralized and funded from the same central financial pool, thus giving its components an incentive to work together.

2. Performance

As Hymans points out, India, like Israel, had a nuclear enclave that was autonomous and professional, enabling it to take advantage of international connections.¹²⁾ The nuclear enclave first tasted success in 1956 when India's (and Asia's) first nuclear reactor went critical. The second reactor to attain criticality was CIRUS in 1964. As is well known, this reactor was the product of international collaboration with Canada and the United States. The plutonium produced in this reactor went into the core of the nuclear device tested in 1974 in a so-called peaceful nuclear explosion (PNE). As a

11) R. Ramachandran, "Thwarted Nuclear Ambitions," *Frontline* (21 January 2000).

12) Jacques E. C. Hymans, *op. cit.*, p. 197.

consequence of the PNE, international collaborations with India were terminated to a large extent.

Over the next two decades, the military aspect of the program gradually came to the fore. In 1998, India tested five nuclear devices at the 1974 test site. However, this time the tests were declared to be of weapon designs and India declared itself a nuclear weapon state (NWS). The Nuclear Nonproliferation Treaty (NPT)—a treaty that India has never signed—denies India the NWS designation. Only states that had tested nuclear weapons before 1967 are considered NWSs as per the terms of the treaty.

The characteristics of the nuclear enclave have made it difficult to assess its efficiency, profitability, and performance. However, by its own metrics, the civil nuclear program has underperformed. In 1954 it was announced that the nuclear program would generate 8,000 megawatts (MW) of electricity by 1980. By 1960, the prediction was that there would be 43,500 MW generated by 2000. However, the actually installed capacity amounted to a mere 600 MW in 1980 and 2,720 MW in 2000.¹³ In fact, DAE reactors were among the poorest-performing by global standards—until 2000, thanks to a post-1998 test doubling of the DAE's budget allocation.¹⁴ Supporters of the nuclear enclave have blamed these shortfalls on international sanctions, and lack of access to technology and fissile material (India does not have adequate domestic reserves of uranium).

The Indian economy has been growing at an average of 7.6% percent annually in the decade starting 2000-2001.¹⁵ This has led to a rising demand for energy. Total electricity demand is predicted to grow from the current 150,000 MW to a minimum of 950,000 MW by 2030. By 2050, per capita energy demand would equal the current French or Russian figure of about 6000 W per capita.¹⁶ Nuclear power becomes increasingly attractive in this projection as a secure way to satisfy the demands of a vibrant economy.

13) M. V. Ramana, "The Future of Nuclear Power in India," Center for the Advanced Study of India, University of Pennsylvania (April 2010), available at <<https://casi.sas.upenn.edu/iit/ramana>>.

14) M. V. Ramana, *op. cit.*, 2012, loc. 1361.

15) Jean Dreze and Amartya Sen, *An Uncertain Glory: India and Its Contradictions* (London: Penguin Books, 2013), p. 4.

16) A. P. J. Abdul Kalam and Srijan Pal Singh, "Nuclear Power Is Our Gateway to a Prosperous Future," *Hindu* (6 November 2011), available at <<http://www.thehindu.com/opinion/op-ed/nuclear-power-is-our-gateway-to-a-prosperous-future/article2601471.ece>>.

Equally clear is that foreign enterprises would have to be involved in the effort to increase the nuclear power generated in India since the state-run entities have fallen short. The Indian civil nuclear market is estimated to be around \$150 billion.¹⁷⁾ The size of the market was used to entice the United States to sign a nuclear cooperation agreement with India in 2005. While discussing nuclear cooperation with European diplomats, however, Indian diplomats emphasized the savings in terms of carbon emissions that would be obtained if nuclear replaced coal in India's energy mix.¹⁸⁾

3. *Characteristics*

The nuclear enclave has profited from the inherent *dual-use nature* of nuclear energy. Civilian and military objectives have co-existed in a mutually reinforcing fashion. On the one hand, arguments about the high costs of electricity generated in nuclear power plants were neutralized with subtle references to their strategic/military importance. On the other hand, questions about the appropriateness of nuclear weapons in strategy were deflected by eulogies to atomic power.¹⁹⁾ Ashok Parthasarathi, an adviser to the Indian Prime Minister in the 1970s, claims that he repeatedly brought up the DAE's failures and objected to its plans for future expansion. Another senior adviser, P. N. Haksar explained to him that there were "larger objectives to our nuclear program than nuclear power and those objectives cannot be compromised at any cost."²⁰⁾

The nuclear complex was intentionally *designed as an enclave*, insulated from the larger currents of politics. Scientists successfully created what Robert S. Anderson terms a "laboratory state," in which they were sustained

17) Mathias Williams, "Fukushima Fallout Seeps into India's Troubled Nuclear Push," *Reuters* (18 September 2012), available at <<http://www.reuters.com/article/2012/09/18/us-india-nuclear-idUSBRE88H1B020120918>>.

18) Author's interview with senior nuclear negotiator and former Foreign Secretary, Shyam Saran, New Delhi, 6 December 2010.

19) M. V. Ramana, "More Missiles Than Megawatts," *IEEE Spectrum Online* (July 2007), available at <<http://www.spectrum.ieee.org/jul07/5277/2>>.

20) Suvrat Raju, "Nuclear Electricity Is Not the Answer for India," in Pervez Hoodbhoy (ed.), *Confronting the Bomb: Pakistani and Indian Scientists Speak Out* (Karachi: Oxford University Press, 2013), p. 371.

almost entirely by public funds.²¹⁾ Although they were publicly funded, the institutions of the nuclear complex are shielded from scrutiny from both civil society organizations and other branches of government. Although the Indian polity is the site of contentious battles over many issues, the nuclear issue is not prominent in public debates—mainly as a result of the paucity of information available to the public. Similarly, the nuclear complex has been walled off from the audit and accountability procedures of the otherwise intrusive Indian bureaucracy.

As Abraham points out, *secrecy*, which was initially meant to conceal the dual purposes of the enclave, became a fetish.²²⁾ Precisely because information is concealed, it is viewed as important. After several decades, secrecy has become ingrained in the culture of the organizations in the nuclear complex. Personnel self-censor themselves, even in retirement. Regardless of its value or implications, information is assumed to be secret by default. The nuclear enclave is exempt from the few legal procedures for accountability that do exist in India. For instance, the government proposes to amend the Right to Information Act to exempt agencies from the obligation to divulge information relating to nuclear power plants.²³⁾

4. *Global Sources of Power*

How did this enclave become so powerful? While analysts have attributed the Indian government's nuclear policy choices—such as the decisions to test in 1974 and 1998—to the power of the enclave, they have not explained how the enclave became powerful.²⁴⁾ How was it that, in a normally contentious democracy with scarce resources, the nuclear enclave was able to advance its preferred policies? This question is especially pertinent considering the

21) Robert S. Anderson, *Nucleus and Nation: Scientists, International Networks, and Power in India* (Chicago; London: University of Chicago Press, 2010), p. 532.

22) Itty Abraham, "Science and Secrecy in the Making of the Postcolonial State," *Economic and Political Weekly* (1997).

23) Pallavi Polanki, "How U.P.A. Will Further Weaken R.T.I. with Its Nuclear Safety Bill," *Firstpost* (20 August 2013), available at <<http://www.firstpost.com/politics/how-upa-will-further-weaken-rti-with-its-nuclear-safety-bill-1045767.html>>.

24) George Perkovich, *India's Nuclear Bomb* (New Delhi: Oxford University Press, 1999); Scott Sagan, "Why Do States Build Nuclear Weapons?" *International Security* 21-3 (1996/97).

dismal performance of the institution in generating electricity, as described in the previous section. To fully account for the power of the nuclear complex we must turn to the international realm. Officials—in particular, Homi Bhabha, the founder of India’s atomic energy institutions—were able to draw on powerful international norms such as the separation of civil and military nuclear endeavors, developmentalism, and the veneration of science and scientists.

First, in the 1950s and 1960s, the nuclear industry propagated the norm that it was possible to *separately pursue the civil and military uses* of nuclear power.²⁵⁾ This idea was received warmly by governments—such as India, which had not made up its mind about the military option—because it legitimized their nuclear programs. Although there is no technical difference between tests of explosive devices for peaceful and military purposes, countries insisted on maintaining the PNE nomenclature. By 1974, the Soviet Union had conducted over 120 PNEs while the United States had undertaken 35.²⁶⁾

Second, the economic strategy of *developmentalism* was utilized by the enclave. In the post-colonial world, self-sufficiency through indigenous technology was the preferred strategy of national leaders. The drive toward autonomy, of which political sovereignty was but the first step, was spearheaded by elites committed to programs of technology-driven national development, self-reliance, and a centralized state.²⁷⁾ India was determined not to fall behind—yet again—for lack of technological preparedness. DAE’s stated goal continues to be a fully indigenous fuel cycle, from mining of uranium, to processing, enrichment, and waste disposal.

Third, the *veneration of scientists* and technology helped the enclave. This was a global phenomenon and defining feature of the early Cold War period. Itty Abraham has shown that Bhabha and others promised leaders in New Delhi that the high costs of the nuclear program, and *carte blanche* to run it, were inevitable, inherent to the technology, and would pay dividends in the long run.²⁸⁾

25) M. V. Ramana, *op. cit.*, 2012, loc. 750.

26) Nataraja Sarma and Biswarup Banerjee, *Nuclear Power in India: A Critical History* (New Delhi: Rupa, 2008), p. 6.

27) Charles Bright and Michael Geyer, “For a Unified History of the World in the Twentieth Century,” *Radical History Review* 39 (1987), p. 80.

28) Itty Abraham, *op. cit.*, 1998.

5. *The Nuclear Enclave and International Connections*

Although the Indian nuclear estate became powerful thanks in part to international norms, there were two barriers in accessing international cooperation and scientific knowledge. First, the emphasis placed on indigenouslyness meant that self-sufficiency was prized over efficiency or cost-effectiveness. Second, after the 1974 PNE, India faced economic sanctions and export controls. In fact, India's test triggered a global shift in nuclear norms in the early 1970s toward greater restrictions on the supply of nuclear technology, as exemplified by the formation of the Nuclear Suppliers Group.

This shift did not escape India's notice. Indian diplomats routinely criticized the NPT and export controls on the grounds that they were discriminatory, and intended to freeze India's development. A whole generation of technical experts was trained to regard international restrictions as unjust, to be circumvented through indigenous development.²⁹⁾

Canada ended nuclear cooperation with India in 1976 (although interactions deemed necessary to maintain safety at the plants were exempted from the ban). India needed supplies of heavy water, and found the Soviet Union was willing to step in. The two countries signed a bilateral agreement on heavy water in September 1976, and a full-fledged nuclear cooperation agreement in 1979. In the early 1980s, India and the Soviet Union began talks toward the construction of two reactors of 1000 MW each at Kudankulam in southern India. India requested that the International Atomic Energy Agency (IAEA) enact safeguards at this plant and an agreement to this effect was signed in 1988. However, the Soviet collapse and economic turmoil in India delayed the start of the program, and it was only in 1998 that India resumed negotiations with Russia, which had inherited the bulk of the Soviet nuclear program.³⁰⁾

Following the 1998 tests, the United States government was required as per its nonproliferation legislation to impose economic sanctions on India.

29) Devesh Kapur, "The Domestic Consequences of India's Nuclear Tests," in D. R. Sardesai and Raju G. C. Thomas (eds.), *Nuclear India in the Twenty-First Century* (London: Palgrave, 2002), pp. 247-248.

30) Kapil Patil and G. Balachandran, "Kudankulam Nuclear Power Plant and Civil Nuclear Liability" (New Delhi: Institute for Defense Studies and Analyses, 2012), p. 22.

However, Washington rapidly came to terms with the Indian bomb. Sanctions were speedily lifted in the wake of the post-Cold War and post-9/11 rapprochement with India. In 2005 the United States signed an agreement on civil nuclear cooperation in which India was acknowledged as a “responsible state with advanced nuclear technology.”³¹⁾

This agreement has been widely taken to imply US acceptance of India’s self-declared status as a nuclear weapon state. The declaration was followed by years of intense and patient diplomacy, carried out by Indian and American officials. The objective of this diplomacy was to convince multilateral institutions, including the NSG, to accept India into the framework of the global nuclear order. The US Congress also had to be persuaded of the need to amend the Atomic Energy Act so that American companies could work in the civil nuclear energy sector in India.

III. Pressures from Above: International Norms, ‘Responsible State’ Status, and the Nuclear Enclave

At the end of the Cold War, nonproliferation and export controls became a higher priority for major states, as they feared the diffusion of nuclear technology from the collapsing Soviet Union. Nightmare scenarios began to feature terrorists and rogue states brandishing nuclear weapons. India was acutely aware of the consolidation of these norms and the resultant tightening of institutional arrangements in the nuclear sector. For example, after the PNE ended fuel supply from the United States for the Tarapur reactor, France stepped in as supplier, but this arrangement ended in 1992 when the NSG decided to require full-scope safeguards (on all facilities in the country) in recipient states. China, which was not an NSG member at that time, stepped in as a fuel supplier, but the Chinese also cut off shipments after the 1998 tests.

Post-1998, diplomats focused on the task of establishing India’s credentials as a responsible state and an attractive market for nuclear enterprises. This

31) Office of the Press Secretary, “Joint Statement between President George W. Bush and Prime Minister Manmohan Singh,” Office of the Press Secretary, White House, available at <<http://www.whitehouse.gov/news/releases/2005/07/20050718-6.html>>.

section reveals three ways in which the executive in New Delhi, following international norms and practices, is constraining the nuclear enclave: the separation of civil and military activities; compliance with multilateral conventions and safeguards; and the entry of private corporate actors into a former state monopoly, which necessitates arrangements to limit liability.

1. Separation of Civil and Military Activities

Civilian control of decision making is often mentioned as a unique feature of the Indian nuclear weapons program. This practice is part of the tradition (inherited from the British colonizers) for the Indian military to keep its distance from the political sphere. After India's independence, mindful of the danger of coups in fledgling democracies, Indian leaders reinforced this separation, arguably to a dysfunctional extent. Moreover, the structure of the nuclear program as documented above—the civilian atomic energy program being the sole official program for many decades—made explicit military involvement difficult.

At present, the international community sees civilian control of nuclear assets as safer and more legitimate than military control. To establish its credentials as a responsible holder of nuclear weapons—especially in contrast to neighboring Pakistan where the nuclear program is dominated by the armed forces—India emphasizes the civilian control of nuclear weapons. The Nuclear Command Authority, which was announced in January 2003, vests control of nuclear use in the Political Council headed by the Prime Minister.³² In conjunction with de-mating (separation of warheads and delivery vehicles), this adds up to civilian control of the arsenal.

Considering that elected officials are in the main uninterested in nuclear policy—and stymied by the lack of accountability and transparency when they are—civilian control in effect equals control by the scientists and technocrats of the nuclear enclave. Thus, we would expect that the enclave would gain power as India embraces international norms favoring civilian control. However, the international norm is for NWSs to *separate* the civilian and military functions of their facilities. This separation is a challenge for the

32) C. Raja Mohan, "Nuclear Command Authority Comes into Being," *Hindu* (4 January 2003).

Indian nuclear estate.

The firewall between the civilian and military program is of great significance in the Indian case. The NPT imposes specific legal obligations on its signatories not to aid in the diffusion of military nuclear technology. Consequently, the nuclear cooperation agreements that India has signed with the United States, Canada, Germany, and South Korea are premised on the understanding that technical cooperation will be confined to the civil sphere and would take place under IAEA safeguards.

In 2006, following up on the civil nuclear cooperation agreement with the United States, the Indian government designated certain facilities and reactors (at present fourteen out of twenty-two) as military, and outside the purview of multilateral safeguards.³³ The implementation of this separation is, in the first place, a major logistical challenge for the enclave as several of the technical personnel of the AEC work in both civilian and military applications. Moreover, absent the cover of the military program, civilian units will face a more stringent test of efficiency and cost-effectiveness.

One area in which the AEC faces an unprecedented task is that of entering foreign markets as a seller of heavy water reactors. The choice of heavy water reactors for the Indian program was cemented after the post-1974 PNE sanctions. The original choice of the CANDU design heavy water reactor has been explained in two ways. On the one hand, it has been alleged that since fuel rods can be extracted from this type of reactor while it is operating, the design is a good choice for a country that is contemplating a bomb program.³⁴ Moreover, the design produces a large amount of plutonium as a by-product. On the other hand, it is possible that India chose this design because it allows for the use of natural (rather than enriched) uranium.

Whatever may have motivated the initial choice, India is now out of step with the rest of the world in terms of reactor choice. Whether as a vendor or a buyer of nuclear technology, India must now reconsider the costs of having chosen the heavy water route considering that most countries operate light water reactors.

33) Elisabeth Bumiller and Somini Sengupta, "Bush and India Reach Pact That Allows Nuclear Sales," *New York Times* (3 February 2006).

34) Robert J. Einhorn, "Iran's Heavy-Water Reactor: A Plutonium Bomb Factory," Arms Control Association (6 November 2006), available at <http://www.armscontrol.org/pressroom/2006/20061109_Einhorn>.

2. Acceptance of International and Independent Oversight

Membership in multilateral conventions is essential in establishing a responsible state identity. In 2002 India signed the Vienna Convention on the Physical Protection of Nuclear Material. In 2005 it ratified the Vienna Convention on Nuclear Safety. India signed the International Convention for the Suppression of Acts of Nuclear Terrorism in 2006. It has accordingly made changes in its domestic legislation. In 2005 the Parliament passed the Weapons of Mass Destruction and Their Delivery Systems (Prohibition of Unlawful Activities) Act of 2005—commonly known as the WMD Act—which deals with the possession, export, re-export, transfer and other conveyance or trafficking of WMD and their delivery systems, their components, and related technology by Indian and foreign nationals.³⁵⁾ In August 2010, it passed an amendment to the Foreign Trade (Development and Regulation) Act 1992, enabling the imposition of quantitative restrictions and tighter controls for dual-use goods and related technologies. India has requested the IAEA for a peer review of its regulatory system with a special focus on its ability to ensure safety of nuclear power plants, thus acknowledging that its establishments need to be compliant with international standards.³⁶⁾

However, the personnel of the nuclear enclave have long been suspicious of international oversight. A recent study claims: “Although India is very far from being a ‘newcomer state’ as regards nuclear energy, for certain well-known reasons that do not require further elucidation here the negative connotation accorded in some states to the term ‘safeguards’ arguably reaches its zenith in the case of India.”³⁷⁾

35) India Ministry of External Affairs, “On Weapons of Mass Destruction and Their Delivery Systems (Prohibition of Unlawful Activities) Bill 2005 and Visit of Mr. Erik Solheim to India,” Ministry of External Affairs, India (13 May 2005), available at <<http://www.mea.gov.in/media-briefings.htm?dtl/3884/On+Weapons+of+Mass+Destruction+and+their+Delivery+Systems+Pr+hibition+of+Unlawful+Activities+Bill+2005+and+Visit+of+Mr+Erik+Solheim+to+India>>.

36) “India to Ask I.A.E.A. for Review of Nuclear Regulatory Process,” *Times of India* (20 September 2012), available at <<http://www.indianexpress.com/news/india-to-ask-iaea-for-review-of-nuclear-regulatory-process/1005110/>>.

37) Ankush Batra and Paul Nelson, “Safety, Safeguards, and Security in Indian Civil Nuclear Facilities” (College Station, Texas: Texas A&M University, Nuclear Security Science and Policy Institute, 2012), p. 5.

This attitude toward safeguards is clearly demonstrated in the case of the Fast Breeder Reactors (FBRs) in the India-US agreement. Nonproliferation activists were keen to have safeguards imposed on the FBRs because these reactors generate significant amounts of plutonium as a by-product. The demand was successfully opposed by government scientists who were suspicious of international inspections.³⁸⁾ Existing Indian plutonium stockpiles are at present large enough—and enhanced regularly from the non-breeder reactors on the military list—that it was not military necessity that created the demand to designate FBRs as military and not subject to safeguards. Nuclear scientists claimed that both energy and military security would be compromised unless India retained a large space to maneuver by keeping the FBRs out of international safeguards. The then-chairman of the AEC declared himself unwilling to compromise on the issue, even if it meant that the India-US nuclear cooperation agreement would never come to fruition.³⁹⁾

Eventually, the government accepted the decision of the scientists.⁴⁰⁾ American negotiators, under orders from their executive to secure an agreement, were forced to accept the type of civil-military separation that Indian scientists wanted. Although this was a victory for the nuclear enclave, the internal negotiations within India exposed the divergence in priorities between Mumbai (the ‘home’ of the nuclear complex) and the government in New Delhi.⁴¹⁾ Such divergences may not be resolved in favor of the nuclear enclave in the future.

The international norm that requires states to have autonomous regulatory bodies for the nuclear sector creates another issue for the nuclear enclave. Article 8 of the Vienna Convention on Nuclear Safety calls upon signatories to “take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization

38) Raja Menon, “Nuclear Stability, Deterrence and Separation of India’s Civil and Weapon Facilities,” *Strategic Analysis* 29-4 (2005), p. 597. Also author’s telephone interview with nuclear export control expert Seema Gahlaut, 8 June 2011.

39) Pallava Bagla, “Breaking up (a Nuclear Program) Is Hard to Do,” *Science* 311-5762 (2006).

40) T. S. Subramaniam, “‘This Is What We Were Looking For: Kakodkar,’” *Hindu* (10 March 2006).

41) “Left Cannot Stop Government from Talking with IAEA: Karat,” *Hindu* (8 September 2007).

concerned with the promotion or utilization of nuclear energy.”⁴²⁾ The AERB, India’s nuclear regulator does not fulfill the requirement of independent separation. Its independence is so severely in doubt that even the Indian government’s own Comptroller and Auditor-General pointed out in its 2012 report that “the legal status of AERB continued to be that of an authority subordinate to the central government, with powers delegated to it by the latter.”⁴³⁾

Cognizant of the need to fall in line with global practices, the government of India has formulated legislation that would create an independent and autonomous nuclear power regulator, the Nuclear Safety Regulatory Authority of India (NSRA), to oversee the expanding nuclear energy industry. At the time of this writing, the legislation had not been formally introduced in the Indian Parliament. Critics of the nuclear enclave, such as former AERB chairman, A. Gopalakrishnan, have claimed that the NSRA would be “toothless” and represents the “regulatory capture” of the nuclear sector.⁴⁴⁾

3. *Ending of State Monopoly*

As mentioned above, the size of its market for civil nuclear power was a major asset to India as it strove to secure acceptance of its nuclear status. The fear of losing out to competitors drove many foreign countries to accept India’s entry into the nuclear club although it had violated the post-Cold War norm against testing nuclear weapons.

The first challenge that the nuclear enclave faces as a result of the entry of foreign players is the loss of its monopoly, as foreign corporations would be supplying fuel, equipment, designs, or other products and services. Initially private companies are likely to be allowed to enter the nuclear sector only as partners of NPCIL.⁴⁵⁾ This would mean that India’s nuclear organizations will

42) International Atomic Energy Agency, Convention on Nuclear Safety, INFCIRC/449, 5 July 1994.

43) M. V. Ramana, “Flunking Atomic Audits: C.A.G. Reports and Nuclear Power,” *Economic and Political Weekly* 47-39 (2012), p. 10.

44) A. Gopalakrishnan, “A Nuclear Regulator without Teeth,” *Hindu* (16 September 2011).

45) Suvrat Raju and M. V. Ramana, “The Other Side of Nuclear Liability,” *Economic and Political Weekly* 45-16 (2010), p. 53.

have to adjust, at least partially, to the administrative, legal, and management practices of other countries and of the corporate environment—giving up the secrecy and insulation from accountability and evaluation they had enjoyed for decades.

The second challenge stems from the fact that the entry of private corporate actors requires modification of the regulatory environment. Current global practices codify the notion of legal responsibility for nuclear accidents. Once the government is forced to identify the parties liable for paying compensation in case of an accident, it opens up a Pandora's box for the nuclear enclave, particularly in terms of transparency.

The Nuclear Liability Act, passed by Parliament in 2010, attempted to reconcile the imperative to follow global norms in terms of liability with due consideration of the Indian context. While most provisions of the Act are based on international conventions, supplier liability—for damages caused due to faulty equipment leading to an accident—was a sticking point. Most countries with nuclear reactors have capped supplier liability. South Korea is among the few exceptions, imposing liability on suppliers in case their negligence can be proven.

After the disastrous 1984 industrial accident at the Union Carbide plant in Bhopal, the Indian public is leery of granting immunity of any kind to foreign suppliers. The proposed nuclear liability legislation was criticized for restricting liability in the case of an accident to the *operator* (at this time, NPCIL) while exempting the *supplier* from responsibility for damages. The operator liability was also thought to be pegged too low. After heated debates in Parliament, a final Act was passed with a slightly higher operator liability. More importantly, the Act included clauses 17(b) and 46 that enabled the seeking of damage compensation from suppliers.⁴⁶⁾

Foreign suppliers have strenuously objected to the expanded concept of supplier liability in the Indian law.⁴⁷⁾ They predict that the higher insurance

46) A. Gopalakrishnan, "Why the Nuclear Liability Rules Need to Be Modified," *Daily News and Analysis* (5 December 2011), available at <http://www.dnaindia.com/analysis/comment_why-the-nuclear-liability-rules-need-to-be-modified_1621411>.

47) Mohit Abraham and M. P. Ram Mohan, "Don't Waver Now on Nuclear Liability," *Hindu* (20 September 2013), available at <<http://www.thehindu.com/opinion/lead/dont-waver-now-on-nuclear-liability/article5147177.ece>>.

they would be forced to carry to do business in India would make the pricing of nuclear power uneconomical.⁴⁸⁾

They also cite international norms, and claim that the Indian law is at variance with global norms, including the IAEA-sponsored Convention on Supplementary Compensation, which puts the liability burden on the operator.⁴⁹⁾ India committed to adhere to the Convention, which gives nuclear operators access to an insurance pool in the event of an accident, at the insistence of the United States during the negotiations on the nuclear deal. The Indian government has attempted to assuage these fears by passing the Civil Liability for Nuclear Damage Rules 2011, effectively limiting the liability on foreign suppliers and imposing time constraints on claimants seeking compensation.⁵⁰⁾

IV. Pressures from Below: Civil Society, Transnational Actors, and International Norms

As India began to sign nuclear cooperation agreements and invite foreign economic entities into the domestic power sector, the dormant anti-nuclear movement was rejuvenated. This section discusses the use of international norms by anti-nuclear protestors—specifically at the Kudankulam Nuclear Power Plant (KNPP). It begins with a brief overview of the movement against the KNPP.

48) Anirban Bhaumik, “Nuke Liability a Sticking Point in Deal on K.N.P.P. Unit,” *Deccan Herald* (29 September 2013), available at <<http://www.deccanherald.com/content/360200/nuke-liability-sticking-point-deal.html>>.

49) Teresita C. Schaffer and Howard Schaffer, “India: The Long Road to Nuclear Trade,” *South Asia Hand* (5 July 2013), available at <<http://southasiahand.com/india-u-s-relations/india-the-long-road-to-nuclear-trade/>>; Jaideep Prabhu, “India’s Nuclear Millstone,” *Daily News and Analysis* (5 October 2013), available at <<http://www.dnaindia.com/analysis/1898532/standpoint-india-s-nuclear-millstone>>.

50) Uttara Choudhury, “Nuclear Thaw: Westinghouse to Build Nuclear Power Plant in Gujarat,” *Firstpost* (14 June 2012), available at <<http://www.firstpost.com/world/nuclear-thaw-westinghouse-to-build-nuclear-power-plant-in-gujarat-342987.html>>.

1. *The Agitation at the KNPP*

Overall, the anti-nuclear movement in India—whether opposing weapons or civilian use—has been a relative failure. This is mainly the outcome of the institutional design of the nuclear enclave as described above. Protestors also failed to challenge the dominance of the official discourse, which was strengthened by international norms.⁵¹⁾ However, the agitation against the KNPP was relatively successful, although the plant began to generate electricity in October 2013 in spite of local protests. The anti-KNPP agitation is being followed with interest as other nuclear power plants are being envisaged in other regions of India: Jaitapur—which would be the world’s largest nuclear park if and when completed—and Mithi Viridi on the western coast, and Kovvada on the eastern coast.

As mentioned above, the KNPP was initiated between the erstwhile Soviet Union and the Indian government in the late 1980s. By 2007, when a new memorandum was signed, the project for the construction of four reactors at Kudankulam became part of the effort to revive the Indo-Russian strategic partnership.⁵²⁾ Although the equipment, machinery and design are Russian, NPCIL will construct, own and operate the KNPP.

Kudankulam (sometimes spelled Koodankulam) is located at the southernmost tip of India in the state of Tamil Nadu, on the Bay of Bengal. The economy of the neighboring villages is based on fishing and cottage industry. Tamil Nadu is one of the fastest-growing parts of India: in 2011-2012, its gross state domestic product grew at 9.3% as compared to the national average of 6.5%.⁵³⁾ Southern India does not have large coal reserves, nor does its terrain favor hydro-electric power. Therefore, it is a power-starved region. The gap between demand and supply of power in Tamil Nadu is estimated at 4000 MW.⁵⁴⁾

51) Srirupa Roy, “Nuclear Frames: Official Nationalism, the Nuclear Bomb and the Anti-Nuclear Movement in India,” in M. V. Ramana and C. Rammanohar Reddy (eds.), *Prisoners of the Nuclear Dream* (Hyderabad: Orient Longman, 2003).

52) Vladimir Isachenkov, “India, Russia Cement Nuclear Ties,” *Washington Post* (25 January 2007).

53) T. Ramakrishnan, “Tamil Nadu Records 9.30 Percent Growth Rate,” *Hindu* (12 June 2012), available at <<http://www.thehindu.com/news/states/tamil-nadu/article3516433.ece>>.

54) B. Sivakumar, “2001-2011: How Tamil Nadu Lost the Power Race,” *Times of India* (19 October 2012), available at <http://articles.timesofindia.indiatimes.com/2012-10-19/chennai/34583327_1_udangudi-wind-power-hydro-electric-projects>.

The approval of the KNPP, slated to produce 2000 MW of power, was welcomed by industry associations and urban residents. The neighboring states of Karnataka and Kerala also expect to receive electricity from the KNPP. It was opposed by the majority of local residents. Unlike in the West, the primary concern of area residents is not the danger of a nuclear accident—although that is a source of anxiety—but the potential harm done to the natural environment upon which they depend for their livelihoods. The KNPP is alleged to generate immense quantities of superheated water and radioactive effluents, which would be discharged into the Bay of Bengal, raising the water temperature and killing fish and other sea life.⁵⁵⁾

The Chief Minister of Tamil Nadu, J. Jayalalitha (sometimes spelled Jayalalithaa) initially backed the anti-KNPP agitation.⁵⁶⁾ At that time, her party was contesting the by-election to the state legislature from the Sankarankovil constituency of which Kudankulam is a part. Following her party's victory in the election, Jayalalitha changed her tune and approved the construction of the plant.⁵⁷⁾ The villagers around the plant intensified their agitation, which is as yet ongoing.

2. International Norms: Safety and Local Consent

Marginalized groups routinely use international norms to propel their governments into preferred policies. For instance, the Ainu in Japan draw on international conventions that recognize and promote the preservation of indigenous groups.⁵⁸⁾ Governments that violate human rights norms are

55) Manju Menon and M. V. Ramana, "Koodankulam Goes Nuclear," *Himal* (August 2007).

56) "Jayalalitha Blames Centre for Kudankulam Nuclear Plant Impasse," *Economic Times* (19 October 2011), available at <http://articles.economictimes.indiatimes.com/2011-10-19/news/30297740_1_centre-power-plant-kudankulam>.

57) "Jayalalitha's U-Turn: Approves Kudankulam Nuclear Plant," *IBN Live* (19 March 2012), available at <<http://ibnlive.in.com/news/jayalalithaas-uturn-approves-kudankulam-nuclear-plant/240659-37.html>>.

58) Erik Larson, Zachary Johnson, and Monique Murphy, "Emerging Indigenous Governance: Ainu Rights at the Intersection of Global Norms and Domestic Institutions," *Alternatives: Global, Local, Political* 33-1 (2008).

confronted by protestors who invoke international agreements.⁵⁹⁾

The international norms in the nuclear sphere that were developed from the mid-1980s onward were based on the inter-related concepts of safety and local consent. While complete safety is impossible in any industrial process, the nuclear case was seen as a special one because of the invisible and intergenerational effects of radiation in the case of accidental leakage. Therefore, local communities—rather than faraway national governments—were best placed to decide whether nuclear power plants should be situated in their backyards.

It was also acknowledged that precisely because radiation did not respect national borders, national authorities had a responsibility to the international community—and in particular to neighboring countries—to share information about the safety of their installations and the disposal of radioactive byproducts. The fallout of the Chernobyl accident was the impetus for the consolidation of this norm. Civil society enthusiasts write: “What began as isolated protests in 1970s Western Europe has effectively toppled the technocratic-economic duopoly that the nuclear and petro industries once had on the world’s energy policy.”⁶⁰⁾

The anti-KNPP activists are drawing on these norms. Hiroshima Day was used as an occasion of protest against nuclear power as it revealed the damage due to radiation. When it was revealed that a Rosatom subsidiary that had supplied components to the KKNP-1 was under investigation for fraud and safety violations, activists called on the Indian government to invite an IAEA expert team to investigate the issues which this scandal has thrown up.⁶¹⁾

59) Thomas Risse-Kappen and Steve C. Ropp, “International Human Rights Norms and Domestic Change: Conclusions,” in Thomas Risse-Kappen, Steve C. Ropp, and Kathryn Sikkink (eds.), *The Power of Human Rights: International Norms and Domestic Change* (Cambridge: Cambridge University Press, 1999).

60) Helmut Anheier, Mary Kaldor, and Marlies Glasius, “The Global Civil Society Yearbook: Lessons and Insights 2001-2011,” in Mary Kaldor, Henrietta L. Moore, and Sabine Selchow (eds.), *Global Civil Society 2012: Ten Years of Critical Reflection* (Houndmills, Basingstoke, UK: Palgrave Macmillan, 2012), p. 10.

61) A. Gopalakrishnan, “Resolve Koodankulam Issues,” *New Indian Express* (19 April 2013), available at <<http://newindianexpress.com/opinion/Resolve-Koodankulam-issues/2013/04/19/article1551164.ece>>.

3. *International/Domestic Norms: Democracy*

In legitimizing its nuclear program, India has highlighted its democratic form of government. Democracy is a characteristic of the state unit and simultaneously an international norm. Democracy makes it harder for the government to crack down on anti-nuclear activism. Since 2009, when the protests in Kudankulam gathered steam, the Tamil Nadu and national authorities have been carrying out low-intensity campaigns against protestors—mainly by registering cases against them for violating curfews (restrictions on assembly).⁶²⁾

However, the anti-KNPP movement is still alive and its leaders are free. Public opinion, even among the urban middle-class that would benefit from increased electricity generation (as reflected in the leading newspaper in the region, *The Hindu*) is sympathetic to the protestors. India's former representative to the IAEA, T. P. Sreenivasan, recently came out against nuclear power plants in a major speech in Washington D.C.⁶³⁾

The media have been faithfully recording the protests. Another democratic institution that was utilized by the protestors was the judiciary. In 2012 a petition was filed in the High Court in the capital of Tamil Nadu to stay operations at KNPP. After they lost the case, the protestors approached India's Supreme Court—however, in May 2013 the Court ruled that the project should go ahead.⁶⁴⁾

A citizens' tribunal, the Shah Committee, was established to investigate the issue. The committee recommended that the cases against activists be dismissed, and that the public safety and site evaluation reports and the

62) Raminder Kaur, "Nuclear Power Vs. People Power," *Bulletin of the Atomic Scientists* (9 July 2012), available at <<http://thebulletin.org/nuclear-power-vs-people-power>>.

63) T. P. Sreenivasan, "Does Nuclear Power Have a Future in India?" *Indian Express* (13 June 2013), available at <<http://www.indianexpress.com/news/does-nuclear-power-have-a-future-in-india-/1128678/0>>.

64) Pallava Bagla, "Kudankulam Case: Supreme Court Likely to Deliver Verdict on Operationalisation of Plant," *NDTV* (6 May 2013), available at <<http://www.ndtv.com/article/cheat-sheet/kudankulam-case-supreme-court-likely-to-deliver-verdict-on-operationalisation-of-plant-363080>>.

liability agreement with Russia be made public.⁶⁵ Eminent citizens have protested both the construction of the plant itself and the government's actions against the protestors.⁶⁶ They have been reminding the government that in a democracy, public opinion must be paramount.⁶⁷

4. *Transnational Allies and Resources*

Transnational alliances between domestic actors who are attempting to change their government's policy, and international actors who support the cause, are among the most-studied topics in international relations and sociology.⁶⁸ Transnational allies can help domestic actors to enforce the international norms of safety and local consent.

There are two ways in which domestic social movements use allies. In the 'boomerang' model described by Margaret Keck and Kathryn Sikkink, protestors bypass the state and reach out to international allies to pressure the government from outside.⁶⁹ There is also the 'faute de mieux' model described by Inger Weibust, in which domestic actors use the international process because they understand that internal pressure will not work on the government.⁷⁰

In the case of the anti-KNPP movement Weibust's model appears to be most

65) "Human Rights Violated in Kudankulam: Report," *NDTV* (4 June 2012), available at <<http://www.ndtv.com/article/south/human-rights-violated-in-kudankulam-report-222208>>.

66) "Eminent Citizens' Statement on Koodankulam," *South Asia Citizens Web* (30 January 2013), available at <<http://www.sacw.net/article3618.html>>.

67) Madhusree Mukherjee, "Nuclear Power: Incompatible with Democracy?" *Dianuke.org* (3 October 2013), available at <<http://www.dianuke.org/nuclear-power-incompatible-with-democracy/>>.

68) Matthew Evangelista, *Unarmed Forces: The Transnational Movement to End the Cold War* (Ithaca: Cornell University Press, 1999); Thomas Risse-Kappen, *Bringing Transnational Relations Back In* (Cambridge: Cambridge University Press, 1995); Sanjeev Khagram, James V. Riker, and Kathryn Sikkink, *Restructuring World Politics: Transnational Social Movements, Networks, and Norms (Social Movements, Protest, and Contention)* (Minneapolis: University of Minnesota Press, 2002).

69) Margaret Keck and Kathryn Sikkink, *Activists Beyond Borders: Advocacy Networks in Political Economy* (Ithaca: Cornell University Press, 1998).

70) Raul Pacheco-Vega, Inger Weibust, and Jonathan Fox, "Lessons from the Citizen Submissions to Enforcement Matters to the North American Commission for Environmental Cooperation," in Ismael Aguilar Barajas *et al.* (eds.), *Senderos De Integracion Silenciosa En America Del Norte* (Mexico City: El Colegio de Mexico, 2010), p. 178.

appropriate. Activists find that the traditional political channels are blocked. The leading nongovernmental organization (NGO) in the protest is the People's Movement Against Nuclear Energy (PMANE), which was founded in 2003. The leader of PMANE, S. P. Udayakumar (holder of a PhD in Political Science from the University of Hawaii), claims that the refusal of traditional politicians to engage with the concerns of the people around Kudankulam created a space for activists such as himself.⁷¹⁾

In poorer countries like India, the role of international connections is particularly important. Protest movements against state-sponsored large hydro-electric dam projects achieved a degree of success, in part thanks to alliances between Indian campaigners and international actors.⁷²⁾ These international actors included foreign governments sympathetic to the causes, international financial institutions such as the World Bank which were undergoing their own evolution in favor of participatory mechanisms, and influential NGOs such as Greenpeace. The alliances between these foreign actors and Indian civil society leaders were based on a common understanding that global solidarity was imperative in a globalizing world, and that issues of governance and resources impacted people around the world irrespective of borders.

Greenpeace India sees its role as coordinating and networking protestors against nuclear power plants in other parts of India as well as abroad. For instance, Greenpeace India has been trying to publicize the allegations of corruption against Russian suppliers to the KNPP. It is also able to provide technical support to the agitation. Greenpeace India created an online petition calling for supplier liability when the Indian Parliament was debating the Liability Bill, and then again when rules were enacted that would dilute the intent of the bill.⁷³⁾

Anti-nuclear activists around the world are publicizing the anti-KNPP

71) Meera Srinivasan, "'We Are a Headache for the Establishment'," *Hindu* (2 December 2012), available at <<http://www.thehindu.com/news/national/we-are-a-headache-for-the-establishment/article4154427.ece>>.

72) Ajay Gandhi, "Developing Compliance and Resistance: The State, Transnational Social Movements and Tribal Peoples Contesting India's Narmada Project," *Global Networks* 3-4 (2003); Sanjeev Khagram, *Dams and Development: Transnational Struggles for Water and Power* (Ithaca: Cornell University Press, 2004).

73) Author interview with Karuna Raina, Greenpeace India, 17 July 2013.

agitation and drumming up support for the protestors.⁷⁴⁾ Using social media, the activists who are virtually imprisoned in the small fishing village of Idinthakkarai (close to the power plant), have been sending out messages calling for support and bringing the public up to date on developments in the area.⁷⁵⁾

The movement is also being supported by activists in neighboring countries. Sri Lanka, which is likely to encounter radioactive fallout in case of an accident, has seen protests against the plant. The convener of the Sri Lankan organization Greens4Change stressed solidarity among the marginalized communities in both nations, predicting that the KNPP would endanger the “fisher, agriculture and trade communities.”⁷⁶⁾

Unable to confront the protests with maximum force, the government has resorted to accusations of a ‘foreign hand,’ accusing PMANE and other anti-KNPP NGOs of receiving funds from abroad to organize their agitations.⁷⁷⁾ Critics point out that the government is open to foreign funds being used for pro-nuclear causes, such as the 2012 World Nuclear Association’s nuclear energy promotion symposium in New Delhi, which was attended by top government scientists.⁷⁸⁾ Greenpeace India placed a large advertisement in newspapers on India’s Independence Day in 2012 satirically asking readers to “spot the foreign hand.”⁷⁹⁾

74) Nuclear Information and Research Service, “The Largest, Most Important, Anti-Nuclear Protest You Don’t Know About Is in Southern India,” *Nuclear Information and Research Service* (11 September 2012), available at <<http://www.nirs.org/international/asia/kudankulam2.html>>.

75) Junichi Sato, “Hope from Fukushima” (11 March 2013), available at <<http://www.greenpeace.org/india/en/Blog/Campaign-blogs/hope-from-fukushima/blog/44270/>>.

76) “Protests against Kudankulam Nuclear Power Plant” (6 March 2012), available at <<http://www.mirror.lk/news/5722-protests-against-kudankulam-nuclear-power-plant>>.

77) “All Safety Aspects of Kudankulam Nuclear Power Project Will Be Taken Care Of: Narayanasamy,” *Times of India* (9 December 2012), available at <http://articles.timesofindia.indiatimes.com/2012-12-09/india/35704682_1_knpp-first-unit-kudankulam-nuclear-power-project>.

78) Pranay Sharma *et al.*, “Thy Foreign, Lying Hand, Great Anarch,” *Outlook* (12 March 2012), available at <<http://www.outlookindia.com/article.aspx?280120>>.

79) Greenpeace India, “Greenpeace: Can You Spot the Foreign Hand?” (13 August 2012), available at <<http://www.greenpeace.org/india/en/news/Greenpeace-Can-you-spot-the-foreign-hand/>>.

The nuclear enclave and the government are also using international norms and resources to buttress their positions on the KNPP. In its judgment of May 2013, the Supreme Court of India, while giving a green light to the Kudankulam project, referred to the project's compliance with internationally-recognized methods, as well as the need to keep up with other nuclear powers: "Nuclear energy is now considered in India as a sustainable source of energy and India cannot afford to be a nuclear isolated nation, when most of the developed countries consider it as a major source of energy for their economic growth."⁸⁰⁾

Former President of India, A. P. J. Abdul Kalam—also one of the developers of the Indian nuclear bomb—is a key voice in support of nuclear energy. In 2011 he and Srijan Pal Singh wrote on the topic of international norms: "We should be careful not to be carried away by the barrage of anti-nuclear news often being generated by many of the same nations that are enjoying the maximum benefits from it. The economically developed world has a well-trained habit of presenting their success in a distorted context to misguide emerging nations like India, which are a potential challenge to their neo-age proxy-imperial economic subjugation. What is needed for our India, we Indians have to decide."⁸¹⁾ The prime minister, in an interview to the prestigious journal *Science* claimed that "The atomic energy program has got into difficulties because [...] NGOs, mostly I think based in the United States, don't appreciate the need for our country to increase the energy supply."⁸²⁾

5. *The Fukushima Tragedy and Its Uses*

Top experts on civil society, Helmut Anheier, Mary Kaldor, and Marlies Glasius define global civil society as "the medium through which the consciousness and perceptions of risk are shaped and new methods of

80) Utkarsh Anand, "Supreme Court Gives Green Signal to Kudankulam Nuclear Plant, Says It Is Safe," *Indian Express* (6 May 2013), available at <<http://www.indianexpress.com/news/supreme-court-gives-green-signal-to-kudankulam-nuclear-plant-says-it-is-safe/1112082/>>.

81) A. P. J. Kalam and Srijan Pal Singh, *op. cit.*

82) Manmohan Singh, Pallava Bagla, and Richard Stone, "India's Scholar-Prime Minister Aims for Inclusive Development," *Science* 335 (2012).

protection are promoted.” According to these experts, this aspect of global civil society was clearly demonstrated in the changes across the world on nuclear power policy after the earthquake and subsequent damage to the Fukushima plant in Japan in March 2011.⁸³⁾

After Fukushima, there was a drop worldwide in the percentage of people willing to support nuclear energy for their countries.⁸⁴⁾ German protestors used graphic images of the aftermath of the tsunami to argue that nuclear power was never going to be safe enough, and Berlin eventually agreed, closing down aging reactors and voting to pull the plug on all nuclear power by 2022. The protests against the restarting of nuclear power plants in Japan have been dubbed the Hydrangea Revolution.⁸⁵⁾

Within days of the damage to the Fukushima reactors becoming evident, India and other countries announced new safety checks on existing plants and greater scrutiny of existing plants.⁸⁶⁾ However, construction at the KNPP continued. The public protests in India against nuclear power have used the Fukushima tragedy to publicize the inherent risks of nuclear energy. If a technologically advanced and wealthy nation like Japan is unable to safely harness the power of the atom, they argue, can it be done under Indian conditions?⁸⁷⁾ Fukushima was especially impactful to the people living around the KNPP because of the visual impact of watching the events on television. The sea and the tsunami were familiar to the people of the coast.⁸⁸⁾

83) Helmut Anheier, Mary Kaldor, and Marlies Glasius, *op. cit.*, p. 10.

84) Richard Black, “Nuclear Power ‘Gets Little Public Support Worldwide,’” *BBC* (25 November 2011), available at <<http://www.bbc.co.uk/news/science-environment-15864806>>

85) Lucy Carey, “Spirit of Social Protest Blooms in Japan’s Hydrangea Revolution,” *Asian Global Impact Magazine* (12 July 2012), available at <<http://www.agimag.co.uk/spirit-of-social-protest-blooms-in-japans-hydrangea-revolution/>>.

86) M. M. K. Sardana, “Impact of Accident at Fukushima on Nuclear Energy Programmes of India and China” (New Delhi: Institute for Studies in Industrial Development, 2012).

87) Sudha Ramachandran, “Japan’s Nuclear Disaster Spooks India,” *Asia Times* (17 March 2011), available at <http://www.atimes.com/atimes/South_Asia/MC17Df02.html>; Mathias Williams, *op. cit.*

88) Author’s interview with Karuna Raina, Greenpeace India, 17 July 2013.

V. Implications for Theory and Practice

This section summarizes the lessons for the study of nuclear energy and proliferation from the investigation of the Indian case. It also addresses issues of interest to policymakers.

1. Implications for Theory

Before extrapolating from the Indian case, it is useful to ask whether the case is a unique one. In many respects Indian democracy is unusually vibrant—particularly when it comes to media reportage—and the contentiousness of its polity provides an opportunity for dissension. This leads us to wonder if similar effects of international norms could be observed in countries with more authoritarian regimes, such as Iran. However, as the discussion above has attempted to show, the nuclear enclave has more or less successfully shielded itself from the intrusions of democracy. Thus, India's democratic status does not make much of a difference to the nuclear enclave. Although India is certainly not a neo-patrimonial state as described by Jacques Hymans, it incorporates various levels of political development in its functioning. Therefore, the Indian case is actually relevant to many types of polities.

Two limitations of the analysis—due to lack of data—must be mentioned here. This analysis has not taken into consideration the response of the nuclear enclave to a changing global environment. Just as the enclave drew strength from self-sufficiency in the 1950s, it may be strengthened by the emphasis on public-private partnerships in the infrastructure sector today. In addition, the analysis has excluded India's military scientific organizations, such as the powerful Defence Research and Development Organisation (DRDO) from the definition of the nuclear enclave.

The main lesson that can be drawn from the discussion of this case is that scholars must be attentive to the differential impacts of international connections on actors within the state—including within the government itself. In the Indian case this approach helps us to recognize that the nuclear enclave is facing pressures from above, i.e., the executive branch of the government, as well as from below—civil society. In addition, the

international environment provides not only allies and material resources, but also serves as a repository of norms that domestic actors can access. Domestic actors wield international norms to win internal debates, acquire greater resources and then go on to consolidate their power. Eventually, the norm becomes internalized in the functioning of the institutions to the extent that it is taken for granted and not questioned.

However, this does not mean that the global environment is determinative. As I have shown in the case study of Kudankulam, a local election in Tamil Nadu affected the fate of the KNPP project. Similarly, in the case of the nuclear liability legislation, the memory of the Bhopal industrial disaster—renewed by a court verdict that was handed down in the period that the Liability Bill was being debated in Parliament—forced the inclusion of a clause imposing supplier liability. It is fair to conclude, then, that global forces are being refracted through national, provincial and grassroots political structures.

2. Implications for Policy

The nuclear enclave is likely to continue its dominance. Despite the forces challenging them, its personnel continue to be the only ones with the politico-technical expertise required to run nuclear institutions. Nuclear scientists also enjoy a high degree of popular legitimacy and approval, in part because they are viewed as having achieved Indian nuclear capability in the face of international sanctions and controls. Politicians need scientific approval to legitimize decisions. During the negotiations with the United States on the nuclear deal, scientists made an unprecedented appearance in the national discourse. Their declared support for the deal—in particular the affirmation that it would not damage India's military deterrent capability—was a *sine qua non* for selling the deal to the public.⁸⁹⁾ During the anti-KNPP agitation, the government did send top nuclear scientists to visit the villages around the reactor, but their dismissal of the fears of the population was widely

89) Karthika Sasikumar and Gilles Verniers, "The India-U.S. Nuclear Cooperation Agreement: Explaining the Contentious Indian Debate," *Asian Survey* 53-4 (2013), p. 697.

perceived as arrogant and unfounded.⁹⁰⁾

In the long run, the nuclear enclave will need to both reform its organizational culture and build new alliances if it wishes to retain its dominance. So far, Indian scientists in general and nuclear scientists in particular have not been adequately active in playing the role that is expected of them in a democracy.⁹¹⁾ As Monamie Bhadra writes: “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.”⁹²⁾ It is vital for the international community as a whole to engage Indian nuclear scientists and technocrats intellectually and build bridges on technical topics and collaborations that are possible in this new era where India is being invited into the nuclear club.

The more Indian scientists and technologists are drawn into the commercial and scientific nuclear mainstream, the more likely they are to champion international norms in domestic debates. As we have seen, the nuclear enclave already benefits from entrenched institutional power and its members are in positions to change the institutional norms.

Finally, what implications can be drawn from the study of the Indian case for the world’s approach to countries of proliferation concern such as Iran? The analysis in this article suggests that it is important to avoid the tendency to treat the country, or even the government, as a monolith. In Iran, for instance, there are probably factions within the government and the nuclear scientific community that would benefit from international norms such as safety inspections or separation of civilian and military nuclear programs. These factions should be identified and integrated into diplomatic planning.

90) Sunita Narain, “Protests and Leadership,” *Business Standard* (14 January 2013), available at <http://www.business-standard.com/article/opinion/sunita-narain-protests-and-leadership-113011400049_1.html>.

91) Sunita Narain, “Indian Scientists: Missing in Action,” *Business Standard* (14 March 2011), available at <http://www.business-standard.com/article/opinion/sunita-narain-indian-scientists-missing-in-action-111031400104_1.html>.

92) Monamie Bhadra, “India’s Nuclear Power Problem,” *Cairo Review of Global Affairs* (Spring 2012), available at <<http://www.aucegypt.edu/GAPP/CairoReview/Pages/articleDetails.aspx?aid=167>>.

VI. Conclusion

The nuclear enclave in India is under siege from above (the government in New Delhi) as well as from below (civil society organizations in sites where nuclear plants are planned). In both cases, the enclave faces constraints that are motivated or justified with reference to international norms. While it is in no danger of losing its dominance, the challenges faced by the nuclear enclave are stronger thanks to the use of international norms by those who wish to restrain it.

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