

A Democratic Energy-Policy Perspective from India

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Abstract

The subject of India's energy security and the policy debates that surround it are unique in the variety of dimensions they cover. Despite being the fifth largest consumer of electricity, nearly half of India's rural population does not have access to it, which represents a major hurdle in removal of poverty and ensuring a healthy standard of living. A rapidly growing economy further necessitates increased expansion of installed capacity as well as addressing issues such as fluctuations and disturbances in the supply of power. In addition to the domestic policy debate, an ethical responsibility exists internationally to reduce carbon emissions that cause climate change from our energy generation, which is difficult at current levels of dependence on coal as the primary energy source.

In this context, a comprehensive debate on energy options becomes necessary. Nuclear energy, the option that divides opinions the most, suffers from lack of communication between stakeholders and the administration as well as sensational coverage and misinformation. The administrative secrecy that surrounds the cost, safety and waste disposal issues, as well as civil liability in case of an accident, further alienate stakeholders.

Renewable energy sources like wind and solar power suffer from cost and efficiency issues as well, and clearly need administrative involvement to flourish into feasible options. Even an established renewable energy source like Hydro power is a victim of India's controversial history of land acquisition and suppressing local dissent, which creates legal and ethical debates that require a comprehensive study of the concerns and opinions of stakeholders. It can be argued, that such dialogue has been missing in the desired transparency and fluency for a long time, and the realization of its need is often felt *post facto*. This paper gathers such opinions from established experts and critically analyses the factors that shape them.

KEYWORDS- Energy, Hydro-Power, Domestic policy, stakeholders.

Background

“Inter-generational equity and sustainable development have come to be firmly embedded in our constitutional jurisprudence as an integral part of the fundamental rights conferred by Article 21(Right to Life) of the Constitution.” – Supreme Court of India, in a 2013 ruling.

Sustainable development is a concept that, despite the wide ranging applicability and interpretations, has been a part of international discourse for decades. In the 1972 Stockholm declaration, it was stated that *“Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being and he bears a solemn responsibility to protect and improve the environment for present and future generation”*^[9]. India, in the 21st century, is a rising force in International legal and political discourse. Representing over a billion people, India's economic growth provides a framework for other

developing countries facing a multitude of similar issues India has grappled with since its independence in 1947. It is imperative that this growth follows the path of sustainable development that can uplift the present generation to higher standards of living as well as address the issue of acute poverty within the country, “*without compromising the ability of the future generations to meet their own needs*” (Brundtland report/ Our Common Future, 1987).

This dynamic concept has been subject to further discussions over the years, and culminated in the creation of the 8 Millennium Development Goals in the 2000 Millennium Summit at New York. Amongst these goals, which covered a range of pressing issues that needed to be addressed for advancement of human rights, access to energy was conspicuous by its absence. Today, with the creation of the Sustainable Development Goals, access to energy has been incorporated as a global target. SDG Goal 7 is intended to “*ensure access to affordable, reliable, sustainable and modern energy for all*”^[1] According to Ban Ki-moon, “*energy is the golden thread that connects economic growth, increased social equity, and an environment that allows the world to thrive*”. In light of increasing uncertainty over energy insecurity, owing to market fluctuations and regional conflicts, there is an urgent need for each nation to reassess their energy creation and distribution norms. This has been given a push by the establishment of a link between man-made processes and climate change that threatens economies, environment and some of the poorest sections of the world population.

The Indian context

Where India stands in this discourse, and what India’s energy future holds in store are going to affect the global discussion and decision making in the coming years. As noted above, the Indian judiciary has held that sustainable development and inter-generational equity are a fundamental human right. Access to energy forms a critical component in ensuring sustainable development, and the manner in which such access is achieved will determine the inter-generational equity of development.

This paper focuses on the access to electricity, a resource necessary to achieve a fulfilling standard of life and opportunity. It provides a critical assessment of India’s current output, its future energy options and the legal, social and democratic aspects of achieving energy security. India’s energy consumption per capita stands at a minuscule 704Kw/H, compared to China (2328), Brazil (2154) and the rest of the world (2752). Such low levels of consumptions, added to the inefficiency of transmission and distribution, paint a bleak picture of India’s energy security. 20% of the world’s population (1300 million) does not have access to electricity, of which 300 million are in India alone (accounting for 25%) of India’s population.^[15]

Coal economy

The present energy output is primarily hydrocarbon based. It is an essential but exhaustible resource, and while it has been the fuel of the 20th century, there is a need to shift from hydrocarbons as the primary fuel running our economies to ensure adequate reserves for the future generations. As of 2013, 59% of India’s electricity was generated through coal. A review of existing literature determines why such a level of dependence is unsustainable. It is estimated that at current output ratios, if

India is to continue a growth of 8% in energy output, 3-4 billion tonnes of CO₂ emissions would be created. ^[15]

Estimates by Ministry of Coal (2005a) indicate that the rate of domestic production, expansion of reserves through exploratory surveys and increased efficiency of mining will see the domestic reserves last 30-60 years. This assessment is in contrast to the much longer 200 year timeline that is generally assumed to be the lifetime of domestic coal, however, that estimate assumes full-extraction of all available coal. This is misleading, since technological and economic realities play a role in determination of accessible coal. According to Indian Chamber of Commerce's study this lifetime depends on large investments in the coal sector to improve technology and mapping of extractable reserves and the rate of consumption (especially thermal power plants, which account for 60% of total coal consumption), and the price at which it is consumed. Given the expansion of the power sector, in the absence of such technological investment and economic efficiency might result in the estimated lifespan falling to 40-50 years. ^[7]

As per the same study, the demand for coal imports will have increased to 200 MT by 2017. The CAGR (compound annual growth rate) of coal imports was 15%, of which thermal coal import grew at a rate of about 25% (from 2004 to 2011). The primary consumers of coal in India are – Thermal power, Cement industry, Iron & Steel industry, and the trends in demand for coal are largely determined by the consumption by these industries. Evidently, the coal sector is sensitive to stresses in pricing and international supply as are the industries that rely on it for crucial raw material. Despite having the 5th largest proven coal reserves and a strong correlation with the functioning of key sectors, there are hindrances to increase in production. Expansion of coal mining projects are subject to forestry proposals (179, as of the submission of the report) being approved, as well as long processes of land acquisition. Production is limited even more by the lack of supporting infrastructure- road connectivity to coal mining blocks is often inadequate and railway wagons necessary for long-hauls are affected by shortage of supply. ^[7]

Thus, shortfalls are common, and affect the economy adversely. A study by FICCI concluded that a shortage of 8.5% existed between demand and supply of electricity in 2010-2011. During peak hours, this shortage went up to 9.8% of electricity demanded. While India's electricity consumption has grown at 3.5% per annum for the last 3 decades, this rate is expected to be higher in the future owing to increases in residential and industrial expansion. Such shortfalls result in systemic load-shedding power cuts, and at worst, grid failures. The Northern Grid, which supplies the highest consuming regions in the country, failed in 2001 (January 2nd), costing the industry Rs. 2-2.5 billion, and put most services in the region to a halt. The second blackout in 2012 (July 30th) was the biggest power blackout in history. Such black outs acutely highlight the economic costs of inadequate power supply, and while they are also created due to inefficiencies in transmission, mishandling and power theft, the shortage of electricity generation contributes to the imbalance.

An assessment of the economic costs and the extent to which power shortage, response measures such as back-up supply and production halts that incur capital costs affects businesses. The paper found that 35% Indian manufacturers self-generate electricity, nearly twice as much as those in the U.S. There is also a variability in

power shortage over the course of the year and through peaks and non-peak hours. 75% large firms (500+ employees) use generators compared to 10-20% small firms (>10 employees) with different but significant impacts. While large firms face an increase in capital costs (electricity), their output loss is mitigated but productivity is reduced as well. Smaller firms are in shutdown mode when power is stopped, and hence face wastage and low output issues. In the assumed absence of back up facilities 61% businesses suffered a decline of more than 10%, with less energy intensive sectors like IT facing smaller decline in productivity than crucial high energy intensive sectors such as Iron & Steel. ^[5]

The multi-dimensional environmental impact of increased coal production is also an important factor in the need to reduce reliance on coal as a predominant power source. Studies ^[14]^[6] showed high levels of anion concentration and benzene soluble matter in semi-particulate matter in the mining area and ambient air near open-cast mine. According to another study ^[4] the air quality around *Jharia* had high levels of NO₂ and SO₂ primarily due to mining activities, in addition secondary sources like wind-blown road dust

Shaft mines too carry risks. AMD (Acid Mine Drainage) caused by reactions of sulphur pyrites in mines lead to the creation of toxic sludge, pungent odour and increase in the pH value of water bodies that affects aquatic organisms and drinking water availability. Pollution due to heavy metals (Arsenic, Cadmium, Lead and Zinc) and toxic substances embedded in the rock systems coming in contact with water systems and pollute mine water.

Legal challenges in further reliance on coal

Right to Life-

Right to Life (Article 21). The interpretation of this article has been expanded by various Supreme Court rulings such as *Bandhua Mukti Morcha v. Union of India and others*, and *Maneka Gandhi v. Union of India*. While the objective of the right is to ensure procedure established by law is followed by the state in depriving anyone of their right to live, the aforementioned cases and several others, have expanded the definition of life as being one not merely of animal existence, but a life that can be meaningful and dignified. The environmental impacts of coal mining and the associated health and habitat risks underlined above present a threat to the people living in the adjoining areas as well as those operating the mines.

Forest Rights Act (2006)-

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006. Coal mining expansion project in Chhattisgarh, for instance, hit road blocks with FRA 2006 where 20 Gram Sabhas came out in protest over the allocation of 12 coal blocks in the state. This Act provides that local Gram Sabhas must give their consent to forest land been cleared for project development, without which the clearing process cannot be started. The stated purpose of the FRA is as follows: “(a) to empower and strengthen local self-governance, (b) to address the livelihood security of the people, leading to poverty alleviation and pro-poor growth, and (c) to address the issue of conservation and management of natural resources and conservation governance of India.”

SPLITTING ATOMS:

A discussion on Nuclear energy in the Indian context must include the mention of several underlying factors that provide the context to the present-day discourse. These factors have roots in both social debates on ethics as well as clear legal frameworks, both domestic and international.

Firstly, since the development of nuclear weapons in the Manhattan project during WW2, applications of nuclear energy have been inextricably linked to military purposes. An expansive non-proliferation regime exists today, with only a handful of countries non-signatories to the NPT (Non-Proliferation Treaty). While India has always maintained its military nuclear program is for 'peaceful purposes' and has made a commitment to the no-first-use policy, nuclear deterrence remains a key element in the military and political thinking. Even in civil society discussions, an abiding memory of Pokhran-II tests and the sanctions that followed remain, years after India has separated its civilian and military programs under international guidelines.

Second, the nuclear industry worldwide has a unique liability structure. Unlike most industries where the 'polluter pays principle' can be applied relatively simply, nuclear industry since its inception has had 'operator liability' at the core of its functioning. There are objective reasons both in support and against such a structure, and India's Civil Liability for Nuclear Damages Act (2010) straddles this line.^[12]

The industrial disaster at Bhopal (1984), known as the Bhopal Gas Tragedy, has had a lasting impact in the minds of the civil society as well as legal practitioners. The extent of the human loss and the long gestation period of a meaningful settlement for the victims of the disaster have shaped the responses to environmental and industrial liability laws in the country. Nuclear power plant accidents are low incidence- high risk by nature, and therefore evoke memories of Bhopal and its aftermath, should the worst case scenario occur. In addition, events such as those in Fukushima (Japan, 2011) and Chernobyl (Ukraine, former U.S.S.R, 1986) have highlighted the lack of any international cohesion in dealing with incidents that may have trans-boundary liability.^[12]

The atomic bombings of Hiroshima and Nagasaki in 1945 have prompted debates about the ethics of nuclear power. Exposure to radiation in case of an accident and the necessity of separating nuclear waste from the biosphere for a very long duration are at the forefront of this debate. In India, the nuclear industry finds itself in a different ecosystem than the one it had grown accustomed to since the Pokhran-I tests. The first tests under operation Smiling Buddha had led to the creation of the Nuclear Supplier's Group, an agency to check the proliferation of nuclear weapons, effectively halting civilian nuclear trade. This embargo was not lifted until NSG's 2008 India-specific waiver. This puts India in a unique position globally, of being the only non-NPT & non-CTBT (Comprehensive Test Ban Treaty) signatory nation that is free to conduct trade in civilian nuclear technology with other NSG members. This unique legal position has been attributed to India's "impeccable record at non-proliferation" and "steps that India has taken voluntarily as a contributing partner in the non-proliferation regime". The entire process of Indo-U.S nuclear deal represents a series of exhaustive international legal and political debates, with criticism, support and reservations expressed amongst stakeholders. From the U.S' amendment of its Atomic

Energy Act of 1954 to India's stipulated separation of nuclear facilities on grounds of civilian and military applications and agreement to India-IAEA safeguards, the deal represents the culmination of legal processes in a democratic and transparent manner, to the extent that the Manmohan Singh-led UPA (United Progressive Alliance) called for a confidence vote in the Indian Parliament after the Left-wing parties withdrew their support to the coalition govt.

Since the Indo-U.S deal, India has signed deals for civilian nuclear components with the Russian Federation and France. India is growing to become a major market in the nuclear industry, and with the involvement of foreign suppliers and international agreements comes the issue of nuclear liability. The highly debated Civil Liability for Nuclear Damage Act, 2010 was created to provide for civil liability in the event of nuclear accident and the swift deployment of compensation to the victims of such a disaster. The legal context of this Act, and why it is unique is as follows: ^[12]

Evolution of the CLNDA:

The evolution of the nuclear liability channelling as it exists today began in the U.S with the Price-Anderson Industries Indemnity Act of 1957. As a high-risk, low-incidence operation, the nuclear energy business was not feasible for private industry due to complications that arose from ascertaining the true extent of damages, proving damages and verifying the amount of insurance premiums. In order to circumvent the risk to individual suppliers, the notion of operator liability was adopted. Under Price-Anderson Act, the operators would bear the strict liability (no-fault) for damages in a nuclear accident. This liability would be limited over time and the guarantee of maximum possible amount in insurance with feasible premiums would be sought by the operator to cover the compensation cost. ^[12]

The legal channelling of liability to the operator follows the same principle. This was said to ensure that the operators (who would be in control of the components supplied by manufacturers) would adhere to strict quality and process implementations as well as shield the suppliers from action by victims. Also, the process of securing damages would be expedited considerably by channelling the liability to a single operator rather than a host of suppliers, and compensation would not be delayed to the plaintiffs.

The nuclear liability framework prevalent today were further evolved at the Paris convention and the Vienna convention. These conventions may be directly adhered to, or adopted as principles on which domestic liability laws are based in countries engaging in civilian nuclear commerce.

There are several legal issues in terms of jurisdiction and adoption of such a liability framework. Many countries with significant nuclear programs are not signatories to both conventions, and neither of the conventions address a scenario of liability arising out of trans-boundary damages of a nuclear accident and the framework in which the plaintiffs in the affected country can seek damages from the operators in the host county. The accident at Chernobyl, where a large fallout affected several nations other than the erstwhile Soviet Republics, was mired in legal ineffectiveness as the USSR was not a signatory to Paris or Vienna conventions and would not submit to ruling by the International Court of Justice, which is based on consent. Amendments have been made to the Paris convention, and the nature as well as the amount of liability extensively altered. These changes are yet to be fully in force, however. ^[12]

Current Status of the CLNDA:

India's role in international nuclear liability discourse is unique. The Civil Liability for Nuclear Damages Act has proved controversial on predominantly two grounds-

The threshold of liability has been limited to \$330 million. As mentioned before, the catastrophic events at Bhopal form a vivid memory and comparisons with the \$1 billion in damages that was received in compensation (which too has been deemed insufficient compared to the scale of the damage) render the \$330 million threshold low for the dangers a possible nuclear accident poses. This has been the subject of much debate and scrutiny and controversy both in the Indian Parliament as well as the media.

Internationally, India's stance on the inclusion of supplier liability (a principle that has been added to the original bill through several rounds of parliamentary debate and deliberation) presents a triumph of civil society and unions' participation in the discourse, and has run afoul of the major nuclear suppliers U.S, Russia and France. Concerns about the incentive to the suppliers for maintaining the highest quality standards in light of their exclusion from the liability framework led to the addition of the supplier liability clause. This has been met by unanimous opposition by the U.S, Russia and France. Japan is currently the only other nation that has actively taken up supplier liability as an issue, following the Fukushima incident. Their criticism stems from the primary beneficiaries of the current liability framework, the suppliers, escaping punitive action whereas the government and the people will bear a significant portion of the damages arising from the event.^[10]

The Indian approach to liability laws, as well as the entire process of the Indo-US nuclear deal and the NSG waiver, have highlighted the importance and effectiveness of a democratic legal framework for policy making. Several issues remain with diplomatic correspondence with the major nuclear suppliers to compel them to adhere to the principal of supplier liability, as well as address the criticism of the insufficient amount of operator liability, which in turn will be borne by the larger public (as the operator will be NPCIL, a govt. agency).^[11]

RENEWABLE SOURCES OF ENERGY:

India's energy distribution across the country's landscape covers a myriad of geography and population. Of the millions of households not connected to the grid, and therefore with little to no feasible way of accessing electricity, most lie in sparsely populated and geographically cut off regions where installing and maintaining power lines is not feasible. In the quest of providing safe and affordable access to electricity to these households through distributed networks, renewable energy systems offer the best opportunity. The domestic discussion and international cooperation on climate change at various stages (MDG's, SDG's and Kyoto Protocol etc.) highlight the need for a shift to inclusive growth and sustainable consumption, both of which, proponents argue, renewable energy may provide. As an alternative to the hydrocarbon economy, renewable energy systems offer a low-carbon or 'cleaner' energy source over their lifetime.

India has set ambitious targets for the growth of renewable energy in its total output, and the relative success of these targets is primarily due to the policy framework put in place by the govt. at the centre and the state level. However some remain, and need

addressing if the sector is to attain its potential and fulfil the aspirations of millions of households that still do not have access to electricity.

Democratic approaches to industry expansion:

At the forefront of effective governance is transparency and communication. Transparency and the access to information are enshrined as a legal right under the RTI Act, 2005. However, like many development projects in the country, the renewable energy industry has also experienced shortfalls in accountability and exercise of procedure domestically.

According to a study by TERI, the National Clean Energy Fund has been criticized for inconsistencies in the process of final project approvals. Whereas the funds should have gone into R&D of new technologies to improve output, it has been utilized as a cover for shortfalls in project implementation at both the state and central level ministries. Created by levying Rs. 50/ton on domestic and imported coal, the fund has strayed from its stated purpose on various occasions and such an ambiguity has led to lack of participation by private enterprises.^[14]

The subject of land acquisition has always being an evocative one that has led to widespread debate and criticism of the process and rationale of the practice under eminent domain. Legally, it has caught the limelight in public discourse over its democratic credentials and the fairness of relief and rehabilitation to those from whom the land has/is to be acquired. The origins of the land acquisition process in India can be traced back to the Land Acquisition Act of 1894 (under British rule) which sanctioned land acquisition for 'public purposes', though the requirements of a project falling under 'public purpose' were never clarified. This process did not involve adequate compensation, relief & rehabilitation of those displaced, prior consent of those whose land was being acquired or even a significant amount of stake in the project being undertaken. Some of the famous people's movements were borne out of the lack of democratic approach of such acquisition, especially in hydro power projects such as the Tehri Dam and the Sardar Sarovar Dam. Such a situation is counterproductive to both the local communities as well as the project developers as large scale demonstrations by people exercising their right to freedom of speech to preserve their right to a dignified life, delayed projects and acted as a deterrent to many others looking to invest in such projects in the future. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 was structured to address these issues but has since been both lauded and criticized heavily. While the Act improves upon the requirement of consent and the clear defining of the 'public purpose', there are exemptions for electricity, mining and SEZ projects which render its effectiveness limited. In addition, while the rehabilitation and resettlement criteria have been improved, the compensation stipulated to be paid under the act still remains a subject of debate. The stated 4*Market price compensation is seen as inadequate, as the market prices before the commencement of the project would be low, ad a need is felt to increase this proportion substantially. Renewable energy systems such as PV solar panels, wind turbines (5-6 acres for 1 MW) and hydropower projects are essentially land intensive, and further require legal and institutional frameworks for their unopposed and acceptable implementations.^[17]

International stakeholder discourse:

Internationally, the political and legal discourse has seen India play a more prominent role over the years. As the second largest nation in the world (population terms) and a high vulnerability to the outcomes of climate change, India has a large stake in negotiations that seek to halt and reverse global warming. On the other hand, as a developing country with hundreds of millions still struggling with poverty, India has a responsibility to its people and deliver them the benefits of economic development that have been accrued to a disproportionately low percentage of the population since independence. Historically, focus on climate change and commitment has been at odds with rampant economic growth, and thus India stands opposite to developed countries in climate change negotiations in the channelling of and ownership of responsibility. India's recent economic growth and relative success in bringing the benefits of a democratic, market oriented approach has made it a de facto leader amongst other developing nations and an increased responsibility now falls on India to negotiate terms that are favourable terms for the global south. India's participation and rallying of the G-77 nations during the UNFCCC Berlin, bought forth a positive response opposed to the OPEC's stance, and helped establish the 'Berlin mandate'. However, India has continuously rejected emission cut proposals for developing countries, and has also impeded negotiations which seemed to favour the developed nations' lobbying, such as in response to the Clean Development Mechanism (CDM). Thus, the representation of its people's best interests has often put India at loggerheads as well as in a position of cooperation with other countries in the global climate discourse. Energy security, a matter of national importance to every country in the world, has played a huge role in shaping the civil society discussions as well as media coverage in India, and would continue to do so in the foreseeable future. ^[8]

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