

1 Infrastructure Regulation for Low Carbon Economy

Survey of Key Issues and Concerns

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INTRODUCTION

Infrastructure projects today are the touchstone for realizing India's high growth and development ambitions. However, large infrastructure projects require substantial resources to deliver the big impact in terms of high growth and development. Endeavours such as the ultra mega power projects, dams, highways, airports, and big construction projects typically have long lead times, high costs, and diverse users. Notwithstanding the contentious negative externalities associated with big infrastructure projects, the positive contribution that infrastructure can make to the inclusive growth and sustainable development objectives cannot be understated. Well-designed infrastructure development programmes could play a key role in achieving the Millennium Development Goals (MDG), in particular working towards reducing poverty and ensuring environmental sustainability.¹

A sound and well-planned infrastructure project can meet a variety of economic, social, cultural, and environmental needs.² Thus, from the standpoint of defining a sustainable low carbon trajectory of economic development, it is important not to see large infrastructure projects restrictively as something to be 'contained' for the

benefit of the environment and the society. A judicious mix of choices would need to be exercised to maintain the delicate balance of pursuing economic growth and ensuring a low carbon sustainable development. It is important to also recognize the limitations in the existing approaches that would need to be overcome.

A Policy Consultation Forum of the United Nations Economic and Social Commission for Asia and the Pacific, after an intensive brainstorming on the subject of 'Promoting Sustainable Infrastructure Development' in a meeting held in Seoul, South Korea, in September 2006, concluded that, 'so far, discussions on infrastructure development have been focused mainly on financing issues and engineering aspects in the region. Mainstreaming environmental aspects and incorporating the eco-efficiency concept into various stages of infrastructure development have not been considered as much as they should have been.' Amongst other insightful conclusions of the Forum, the four that seem most relevant in the Indian context are:

- In many cases, decisions for development of infrastructure are dependent on political decisions, which

¹ The unmet demand for social and physical infrastructure to support the delivery of housing, transportation, energy, water services, and food limits economic opportunity and is, therefore, a major barrier to the achievement of MDG. See the *Report of the First Policy Consultation Forum of the Seoul Initiative on Green Growth* on 'Promoting Sustainable Infrastructure Development' under the aegis of the United Nations Economic and Social Commission for Asia and the Pacific, September 2006.

² A 'sustainability' perspective only demands that the economic role and significance of infrastructure should be seen together with the social, cultural, and environmental aspects.

sometimes are not scientifically and environmentally sound.

- The technical expertise of the private sector in development of infrastructure will definitely be beneficial. However, private participation does not automatically guarantee the promotion of sustainable infrastructure. Private participation in infrastructure development needs to be carefully evaluated and scrutinized.
- Strategic Environmental Assessment (SEA) and life cycle assessment, taking into account the long-term impact of infrastructure use, have not been widely applied in infrastructure development in the region.
- There is lack of comprehensive statistical data and valuable information to understand the eco-efficiency levels of existing infrastructure (including long-term environmental impact of usage and life cycle of the infrastructure) and future development plans.

The points raised by the United Nations Commission show that there is a lot to be done as we attempt to align infrastructure projects with the goal of a low carbon economy.

Legal and regulatory reforms are significant drivers for sustainable infrastructure development in India and good governance holds the key to ensuring responsible behaviour. Considering that infrastructure projects are ‘all too apparently a process organized through law and legal techniques,’³ it may be prudent to revisit the prevailing legal provisions and the regulatory mechanisms to provide an enabling framework for low carbon infrastructure development in India. Given that in countries such as India, some of the largest cuts in emissions can come from full adherence to basic efficiency and management parameters; the role of regulation in ensuring compliance becomes important. Effective compliance of legal, policy, and regulatory provisions across sectors can help make projects environmentally sound and ensure substantial development along the low carbon trajectory.

This chapter presents a national cross-sectoral review of the prevailing legal and regulatory initiatives for aligning infrastructure projects with the low carbon economy goal. Through a brief discussion of the role of Courts and litigation, focus is on the challenges in effective administration within the present legal framework, and in this context, discusses how regulation by contract is increasingly becoming important. In this regard, some ways to strengthen project contracts and bid documents

are suggested so that appropriate environmental mitigation and enhancement measures are effectively incorporated. The chapter concludes by highlighting major gaps in the legal and regulatory framework for achieving a low carbon objective and proposes reforms needed to overcome deficiencies.

NATIONAL POLICY AND LEGAL INITIATIVES FOR LOW CARBON INFRASTRUCTURE PROJECTS

Given the many laws, regulations, and policies that exist historically or have come into existence in more recent years, India should be well on her way to a low carbon future. Some of the key legal initiatives and national policies in this regard are briefly discussed below:

NAPCC, Energy-Efficiency Mission, and the Energy Conservation Act, 2001

The National Action Plan on Climate Change (NAPCC) and the Nationally Appropriate Mitigation Action Plan (NAMA) under it are useful starting points to appreciate the emerging regulatory regime for low carbon energy infrastructure in the country. According to NAPCC, India’s vision is ‘to create a prosperous economy that is self-sustaining in terms of its ability to unleash the creative energies of the people and is mindful of responsibilities to both present and future generations.’ NAPCC lays emphasis upon the development and use of new technologies in order to ensure optimal benefits in terms of climate change mitigation and adaptation, energy efficiency, and natural resource conservation. It embodies eight missions, which pertain to *solar energy, energy efficiency, sustainable habitat, water, sustaining the Himalayan ecosystem, Green India, sustainable agriculture, and strategic knowledge for climate change*. The NAPCC is likely to have decisive impacts on businesses through institutional mechanisms such as subsidy restructuring, lucrative opportunities in clean technologies and renewable energy, energy-efficiency benchmarks and certificates, cap-and-trade schemes, etc. India’s Nationally Appropriate Mitigation Action Plan (NAMA) has specified three major missions—energy-efficiency mission, solar mission, and the water mission. In the context of NAMA, the following intervention made by India’s Environment Minister in November 2009 deserves notice:⁴

India has several nationally appropriate mitigation actions (NAMAs) which it is considering to convert to nationally

³ Silbey (1997).

⁴ Intervention made by India’s Environment Minister at the Pre-COP meeting at Copenhagen on 16 November 2009 and available at http://moef.nic.in/downloads/public-information/Intervention_copenhagen.pdf

accountable mitigation outcomes (NAMOs) by indicating specific performance targets in industry, energy, transport, agriculture, buildings, and forestry for the year 2020 and 2030. These NAMOs could be institutionalised through either legislative or executive action and are derived from the National Action Plan on Climate Change and the 11th Five Year Plan document... India will make low carbon sustainable growth a central element of its 12th Plan growth strategy. This will mean taking on commitments to reduce energy to GDP intensity and corresponding emission reduction outcomes for the year 2020.

The above statement should not mean that all the action for energy conservation is to happen in future. Out of three major missions under NAMAs pointed out above, the Energy Efficiency Mission has already made significant progress. A legal catalyst for energy conservation came through in 2001 with the passing of the Energy Conservation Act, 2001 that can play a crucial role in promoting sustainable energy projects. The Act was enacted to provide for efficient use of energy and its conservation. The Act establishes the Bureau of Energy Efficiency (BEE), which holds the power to recommend to the central government the norms for processes and energy consumption standards that are required to be notified.⁵ The BEE has created a panel of certified energy auditors and identified nine designated sectors where energy audits are made mandatory. In 2006, India launched a comprehensive *energy labelling programme* for appliances under the framework of the Energy Conservation Act of 2001.⁶ Another specific initiative and mechanism aimed at energy savings is the Energy Conservation Building Code. The programme is based on actual performance of commercial buildings in optimizing energy demand based on their locations under five climatic zones.⁷ Compliance of the provisions of the Energy Conservation Building Code would invariably result in voluminous energy savings. The Bureau of Energy Efficiency has instituted a panel of experts as well as professionals with a view to build technical capacity for implementation of the code. Other policies and publicly funded programmes on energy conservation

and deployment of renewable energy technologies are presented in Box 1.1.

Regulation and Facilitation of Renewable Energy Infrastructure

There are a range of policies and policy instruments at the state level that has been passed in recent years with the mandate to promote renewable energy projects and initiatives. However, when it comes to the legal framework it is the Electricity Act, 2003 and more specifically, the New Tariff Policy (2006) under the Act—which states that a minimum percentage of energy, as specified by the Regulatory Commission, is to be purchased from renewable energy sources—that alone contains a legally binding obligation requiring the creation, transmission, and deployment of renewable energy to address the country's energy and environmental insecurity.

There are specific provisions pertaining to non-conventional energy sources under the Electricity Act, 2003.⁸ The Act provides that co-generation and generation of electricity from non-conventional sources would be promoted by the State Electricity Regulatory Commissions (SERCs) by providing suitable measures for connectivity with grids and sale of electricity to any person and also by specifying, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee. Such percentage for purchase of power from non-conventional sources should be made applicable for the tariffs to be determined by the SERCs at the earliest.⁹ Progressively, the share of electricity from non-conventional sources would need to be increased as prescribed by SERCs. Considering the fact that it will be some time before non-conventional technologies compete, in terms of cost, with conventional sources, the SERCs may determine appropriate the differential in prices to promote these technologies. Regulatory Commissions, while specifying the terms and conditions for the determination of tariff, shall be guided by the National Electricity Policy (NEP), the Tariff Policy, and

⁵ It also has the power to recommend to the central government the particulars required to be displayed on equipment labels or on appliances and the manner of their display.

⁶ The programme covers refrigerators, fluorescent tube lamps, air-conditioners, and distribution transformers. The programme follows a five-point rating scale, with one star implying low energy efficiency while a five-star rating represent highest energy efficiency transformers.

⁷ The climatic zones being warm and humid, composite, hot and dry, moderate, and cold.

⁸ Sections 3, 4, 61, and 86 (1) of the Electricity Act, 2003.

⁹ Section 6.4 of the Tariff Policy (non-conventional sources of energy generation including co-generation: Pursuant to provisions of section 86 (1)(e) of the Electricity Act, the Appropriate Commission shall fix a minimum percentage for purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariffs. Such percentage for purchase of energy should be made applicable for the tariffs to be determined by the SERCs latest by 1 April 2006.

Box 1.1

Regulatory Efforts in India at Clean Energy and Energy Conservation: An Overview

Over several decades, India has pursued policies and publicly funded programmes that focused on energy conservation and deployment of renewable energy technologies. This has been backed by legislation, regulation, and tariffs arrangements. Some of these are:

1. Reforming Energy Markets (Electricity Act, 2005, Tariff Policy, 2003, Petroleum and Natural Gas Regulatory Board Act, 2006, etc.) involving:
 - removal of entry barriers in exploration, extraction, conversion, transmission, and distribution of primary and secondary energy;
 - institution of price reforms and tax reforms to promote optimal fuel choices;
 - provision of feed in tariffs for renewable energy such as solar, wind, and biomass; and
 - strengthening or introduction of independent regulation.
2. New and Renewable Energy Policy, 2005: The policy promotes adoption of sustainable and renewable energy sources. It also facilitates speedy deployment of renewable technology through indigenous design, development, and manufacturing.
3. Rural Electrification Policy, 2006: The policy promotes renewable energy technologies where grid connectivity is not possible or cost-effective.
4. Biodiesel Purchase Policy: It mandates bio-diesel procurement by petroleum companies.
5. Ethanol Blending of Gasoline: The regulation mandates five per cent blending of ethanol with gasoline from 1 January 2003 in nine states and four union territories.
6. Energy Conservation Act, 2001: The legislation aims to reduce specific energy consumption in different sectors. It set up the specialized BEE in this regard.
7. Energy Conservation Building Code, 2006: This regulatory code is designed to ensure energy efficiency in all buildings with above 500 kVA connected load or air-conditioned floor area over 1,000 square metres.
8. Bachat Lamp Yojana (Efficient Lamps Programme): It is a country-wide programme for replacement of incandescent lamps by CFLs, and using clean development mechanism (CDM) credits to equate the respective purchase prices.
9. 50,000 MW Hydroelectric Initiative, 2003: One hundred and sixty-two new hydro-electricity projects with 50,000 MW potential have been identified.
10. Other Programmes: These include the promotion of solar thermal water heaters, solar PVs, wind power generation, biomass gasifiers, biogas and manure management, fuel cells, and energy recovery from urban wastes and many similar energy saving activities. In addition, the Government of India adopted an Integrated Energy Policy as an overarching framework in 2008.

Source: Ghosh (2009).

promotion of co-generation and generation of electricity from renewable energy sources.¹⁰ Preferential pricing for non-conventional energy resources, therefore, has got a legal mandate.

Regulation by Environment Impact Assessments (EIAs)

One legal instrument that is directly aimed at making projects—especially larger infrastructure projects—environmentally sustainable is the Environment Impact Assessment (EIA) Notification, 2006 passed under the Environment Act of 1986. The EIA, dated 14 September 2006, issued by the Ministry of Environment and Forests,

Government of India (GoI), divides all infrastructure projects or activities requiring prior environmental clearance into two categories, 'A' and 'B'.¹¹ The projects or activities falling under category 'A' require approval from the central government's Ministry of Environment and Forests (MoEF) based on recommendations submitted by an Expert Appraisal Committee (EAC). Projects or activities falling under category 'B' require prior approval of the State Environment Impact Assessment Authority (SEIAA), based on recommendations of a state or union territory level Expert Appraisal Committee (SEAC) before commencing any work on the land except for its acquisitions, which does require prior approval. Pursuant

¹⁰ The Act makes it mandatory to have NEP and the tariff policy based on optimal utilization of resources such as coal, natural gas, nuclear substances or material, hydro, and renewable sources of energy. The Electricity Act also mandates a national policy, permitting stand-alone systems including those based on renewable sources of energy and other non-conventional sources of energy for rural areas.

¹¹ The projects are categorized into 'A' and 'B' on the basis of the potential impact the projects will have spatially on 'human health and natural and man-made resources'.

to applications for environmental clearance for new projects, the EAC and the SEAC at central and state levels respectively, carry out the four stages of *Screening, Scoping, Public Consultation, and Appraisal* prior to environmental clearance of the project.

Some examples of regulation by EIA in different sectors may be seen in Box 1.2 below to appreciate the mechanism of EIA in these sectors in a big way.

The Air Act, 1981—Regulating Emissions

The Air (Prevention and Control of Pollution) Act, 1981 is a comprehensive legislation for prevention, control, and abatement of air pollution especially from ‘industrial plants’ and for this purpose, it creates and empowers a Central Pollution Control Board (CPCB) and the State Pollution Control Boards (SPCBs). Under the Act, no

person shall without the previous consent (‘Consent to Establish’ and ‘Consent to Operate’) of the SPCBs, establish and operate an industrial plant in the designated air pollution control areas. Under the aegis of the Act, The National Ambient Air Quality Programme, initiated by the CPCB in 1984, is operated mainly through the SPCBs. The National Ambient Air Quality Standards (NAAQs) are provided for the three pollutants—sulphur dioxide (SO₂), oxides of nitrogen (NO_x), and suspended particulate matter (SPM)—that are regularly monitored.¹³ A country-wide network of 290 monitoring stations has been established for NAAQs. It may, however, be noted that in most of the states, not all the sanctioned stations are operational.¹⁴ Some of the implementation issues relating to the capacity and management of the CPCBs and the SPCBs are discussed in sections below. Further, it may be

Box 1.2

Regulation by EIAs in Different Sectors: Some Examples

While a booming construction industry, large power projects (including UMPPs) and intensive oil exploration to monetize the hydrocarbon opportunity may be in the socio-economic interest of our nation, they cannot come at an irreversible ecological loss. Here is how ‘Prior Environment Clearance’ is mandated for these projects under the EIA Notification, 2006 passed under the Environment Act, 1986:

Environmental Impact Assessment and the Civil Construction Industry: Prior environment clearance from the MoEF is mandatory for ‘Building and Construction Projects’ and ‘All Townships and Area Development Projects’ that require large civil construction works if they are above threshold limits under the EIA Notification of 2006.¹² When it comes to cement plants, all cement plants with over 1.0 million tonnes per annum production capacity, being ‘Category A’ projects, require clearance at the central level whereas plants with less than that capacity are Category ‘B’ projects with environment clearance required at the state level.

EIA and River Valley Projects and of Thermal Power Plants: All river valley projects which have a capacity of over 50 MW hydroelectric power generation and have over 10,000 ha. of culturable command area need to get clearance from the MoEF at the central level, being Category ‘A’ projects, whereas those having a capacity of over 25MW hydroelectric power generation are Category ‘B’ projects requiring clearance from the state level. When it comes to thermal power projects having a capacity of over 500 MW (in case of coal/lignite/naphtha, and gas-based projects) and over 50 MW (in case of pet coke, diesel, and all other fuels) are category ‘A’ projects, while projects with lesser thresholds are Category ‘B’ projects.

EIA and Offshore and Onshore Oil and Gas Exploration: Offshore and onshore oil and gas exploration, development, and production require clearance from the MoEF. However, exploration surveys (not involving drilling) are exempted from seeking clearance. Further, all oil and gas transportation pipeline (crude and refinery/petrochemical products), passing through national parks/sanctuaries/coral reefs/ecologically sensitive areas including LNG Terminal require clearance from the MoEF. The same applies to petroleum refining industry and petrochemical complexes (industries based on processing of petroleum fractions and natural gas and/or reforming to aromatics).

Source: EIA Notification, 2006.

¹² The projects at the state level requiring an EIA Report are termed Category ‘B1’ projects under the EIA Notification, 2006 and ‘All Townships and Area Development Projects’ covering an area of 50 ha or more and or built up area of 1,50,000 sq. metres or more are termed as ‘B1’ projects.

¹³ The previously existing NAAQS were notified for seven air pollutants, that is, suspended particulate matter (SPM), respirable particulate matter (RPM), sulphur dioxide (SO₂), oxides of nitrogen (NO_x), carbon monoxide (CO), ammonia (NH₃), and lead (Pb).

¹⁴ A Planning Commission Evaluation of 25 SPCBs across the country found out that only in four states—Rajasthan, Orissa, Assam, and Goa—all the NAAQS stations sanctioned by the MoEF are operating. The status of Karnataka and Haryana is extremely poor in this respect. The position of Bihar, Maharashtra, Uttar Pradesh, West Bengal, and Punjab is also not worth the mention. Not one of the stations in any of the north-eastern states is functional where each state is sanctioned with two NAAQS stations. Among other things, the fund constraint of the CPCB in financing the SPCBs to establish and operate the sanctioned stations also accounts for the difference between the number of sanctioned and operating stations.

noted that NAAQS specified under the Air Act, 1981 were introduced to address the local air pollution issues and the associated local negative externalities. Under the 1981 Act, it may be useful to declare other main greenhouse gases such as carbon dioxide and methane as pollutants so as to bring them under their ambit. This may not be that far-fetched if it is realized that ozone, which has global warming implications, is already known to be a part of the revised NAAQS.¹⁵

The National Green Tribunal Act 2010 and Some other recent initiatives of the Government of India

The National Green Tribunal Act 2010 that came into being as a law in June 2010 creates a National Green Tribunal for 'effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources including enforcement of any legal rights relating to environment'. According to the Act 'the Tribunal shall have the jurisdiction over all civil cases where a substantial question relating to environment (including enforcement of any legal right relating to environment) is involved' besides the questions which arise 'out of the implementation' of the specified enactments (Section 14). The law can have far reaching consequences especially as for the first time a national legislation has vested the power in a Tribunal to provide for 'relief and compensation to the victims of pollution and other environmental damage', 'for restitution of property damaged' and 'restitution of environment' (Section 15). Interestingly, the CPCB will also have the power to approach the National Green Tribunal on behalf of the affected persons for grant of relief, compensation or settlement of disputes. How exactly the judicial machinery unfolds under the law would be seen in the coming years but the Tribunal is expected to usher in a new era of responsible and environmentally sound development projects apart from providing for speedier resolution of disputes where 'substantial question relating to environment' gets involved in infrastructure projects.

Before closing this section three of the more important recent initiatives taken by the central government this year specifically for low carbon development in India deserve a quick notice. Firstly, Government of India has

set up an *Expert Group on Low Carbon Strategy for Inclusive Growth* with a specific mandate of developing a roadmap for India for low carbon development. The Group has been asked to recommend prioritized actions in sectors such as Electricity, Transport, Industry, Oil and Gas, Buildings, and Forestry. The Ministry of Environment and Forest, Government of India has made clear that the Group's recommendations will become a central part of India's Twelfth Five Year Plan which will come into effect in 2012.¹⁶ Given the Group's categorical mandate and the role that it can play in shaping the Twelfth Five Year Plan, its recommendations across sectors is likely to evince large scale interest. Second, following the Budget Speech of the Union Finance Minister this year when the idea was mooted for the first time, a clean energy cess on coal, at the rate of Rs 50 per tonne has been announced, which will apply to both domestically produced and imported coal. This money will go into a *National Clean Energy Fund* that will be used for funding research, innovative projects in clean energy technologies, and environmental remedial programmes. The expected earnings from this cess is around USD 500 million for the financial year 2010–11. Finally, India's cabinet also approved the *National Mission on Enhanced Energy Efficiency (NMEEE)* on 24 June, 2010. The Mission includes several new initiatives—the most important being the *Perform, Achieve and Trade (PAT) Mechanism*, which while seeking to cover facilities that account for more than 50 per cent of the nationally used fossil fuels, and helping reduce CO₂ emissions by 25 million tonnes per year by 2014–15, mandates that 700 of the most energy intensive industrial units and power stations in India would reduce their energy consumption by a specified percentage.¹⁷ All of these ambitious initiatives and results expected from them over the next few years can be critical to realizing the roadmap for low carbon development.

ROLE OF COURTS AND LITIGATION: SOME ISSUES AND ASPECTS

It is also useful to briefly see the impact of litigation in the Supreme Court and the High Courts on making infrastructure projects environmentally sound. For some of the leading cases in the Supreme Court, see Box 1.3.

¹⁵ It may be noted that the MoEF has recently announced the notification of the Revised NAAQS, 2009. In this, other new parameters such as ozone, arsenic, nickel, benzene, and benzo (a) Pyrene (BaP) have been included for the first time under NAAQS, based on CPCB/IIT research, World Health Organization guidelines, and EU limits and practices.

¹⁶ A note of Ministry of Environment and Forests, Government of India titled *India: Taking on Climate Change-Post Copenhagen Domestic Actions*, 30 June 2010 and available at www.moef.nic.in

¹⁷ Ibid.

Box 1.3

Supreme Court of India Handles Environmentally Hazardous Projects: Some Leading Cases

- In *M.C. Mehta v. Union of India*,¹⁸ the Apex Court directed shifting/relocation of 168 industries identified as hazardous and large industries operating in Delhi to other towns of NCR as per the master plan of 2001.
- In *M.C. Mehta v. Union of India*,¹⁹ the Court passed several directions for preventing air pollution in Delhi. While reaffirming the need for the public transport system to run on CNG, it directed the phasing out of diesel buses in a time-bound manner.
- In *M.C. Mehta v. Union of India*,²⁰ the Hon'ble Court took note of the environmental pollution due to stone-crushing activities in and around Delhi, Faridabad, and Ballabhgarh complexes and directed for relocating of such units within six months.
- In *Vineet Kumar Mathur v. Union of India*,²¹ intervention of the Court was sought to prevent pollution of river Gomti in UP due to discharge of effluents from the distillery of Mohan Meakins Ltd. The Court directed the removal of deficiencies in the effluent treatment plant as well as imposed a fine of Rs 5 lakh on the company.
- In *S. Jagannath v. Union of India*,²² the Court held that the shrimp industry is to be permitted only after passing a strict environment test.
- In *Vellore Citizens' Welfare Forum v. Union of India*, the Court dealt with the problem of pollution being caused by enormous discharge of untreated effluents by tanneries in the state of Tamil Nadu and also imposed a fine of Rs 10,000 on the polluting industries.
- In *Indian Council for Enviro Legal Action v. Union of India*,²³ the Court directed closure of industries in Bichhari village in Udaipur (Rajasthan), discharging highly toxic effluents leading to soil and water pollution and also directed for the removal of the sludge, etc. The Court observed that 'Enactment of law but tolerating its infringement is worse than not enacting the law at all.'
- In *M.C. Mehta v. Union of India*,²⁴ (*Calcutta Tanners Case*) the Court directed for the shifting/relocating the tanneries in question causing pollution.

The Efficacy of Litigation as a Mechanism for Controlling Pollution from Projects

Notwithstanding some major verdicts and interventions by the higher courts in leading pollution cases, a Planning Commission Study evaluating SPCBs in 2002 found out that there was a growing disillusionment among these boards with the efficacy of litigation as a control mechanism. The study observed as follows:

Non-installation of abatement mechanisms by the polluting units is a direct consequence of the absence of any effective punitive and deterrent mechanism in case of non-compliance. First, the SPCBs do not have the power to impose on-the-spot-fines on persistently non-complying units. In the absence of such power, the State Boards will have to either hope for the non-complying unit to abide by their directions or file a case with the Court of Justice against the said unit and wait for the court verdict. The Court is entitled to impose stringent punishments ranging from imprisonment of 18 months to 6 years plus fine. Courts are generally busy with day-day criminal and civil cases and may keep environmental cases pending for years together. '... The growing disillusionment with the efficacy

of litigation as a control mechanism felt by some of the State Boards, especially those of Madhya Pradesh, Tamil Nadu, Punjab, Orissa and Gujarat is evidenced by the negligible number of environmental cases filed by them... it is clear that the cumulative number of cases filed by the State Boards like those of Assam, Punjab, Maharashtra, Gujarat, Kerala, Karnataka and Tamil Nadu was far less than the number of non-complying industrial units. Some State Boards complain that when the cases are finally decided, the verdicts often go against them, for the Courts are said to be reluctant to award 18 months of imprisonment to the recalcitrant units.

It is here that the National Green Tribunal can play a major role in the years ahead. The Tribunal can help decongest the already burdened regular courts. This congestion has been the principal reason for the disillusionment with the Pollution Control Boards (PCBs). Besides, there is a clear lesson in the above that the SPCBs need to be empowered to impose environmental civil penalties (discussed in some detail in the last section below) so that the resort to criminal prosecution—and hence regular criminal cases—declines in future.

¹⁸ Reported in Supreme Court Cases and available at (1996) 4 SCC 750.

¹⁹ Reported in Supreme Court Cases and available at (2002) 4 SCC 356.

²⁰ Reported in Supreme Court Cases and available at (1992) 3 SCC 256.

²¹ Reported in Supreme Court Cases and available at (1996) 7 SCC 714.

²² Reported in Supreme Court Cases and available at (1997) 2 SCC 87.

²³ Reported in Supreme Court Cases and available at (1996) 3 SCC 212.

²⁴ Reported in Supreme Court Cases and available at (1997) 2 SCC 411.

Limited Judicial Review on Large Infrastructure Projects

The impact of intervention of the Supreme Court of India and the High Courts on large infrastructure projects can be seen with reference to cases on river valley projects, thermal power plants, mining projects, railway projects, tourism infrastructure, and roads and highways. Over the last two decades, a large number of public interest petitions got filed to challenge large infrastructure projects primarily including dams, power, and mining projects. The grounds for challenge included adverse environmental impacts,²⁵ safety aspects,²⁶ inadequate Environment Impact Assessment and Environment Management Plan,²⁷ extraneous considerations,²⁸ forced displacement²⁹ and inadequate resettlement, and rehabilitation measures³⁰ arising therefrom.³¹

In their litigation against large infrastructure projects, the Courts have generally not ordered the scrapping of any project or any significant restructuring of a project in the face of such challenges.³² Courts have tended to take the view that considerations of environmental impacts of a project or economic and financial considerations raised technical issues and policy matters, which are best left with the expert authorities of the executive.³³ For example, in the well-known *Sardar Sarovar Project Case*, the Court made it clear as follows:

There are three stages with regard to the undertaking of an infrastructural project. One is conception or planning, second is decision to undertake the project and the third is the execution of the project. The conception and the decision to undertake a project is to be regarded as a policy decision. While there is always a need for such projects not being unduly delayed, it is at the same time expected that as thorough a study as is possible will be undertaken

before a decision is taken to start a project. Once such a considered decision is taken, the proper execution of the same should be taken expeditiously. It is for the Government to decide how to do its job. When it has put a system in place for the execution of a project and such a system cannot be said to be arbitrary, then the only role which a Court may have to play is to see that the system works in the manner it was envisaged.³⁴

It will not be out of place to mention here that in practice, the vast majority of issues in the context of infrastructure projects is handled through non-judicial legal means. Although projects are initiated in multiple sectors and in large numbers, litigation has only been pursued in a handful of situations. Environmental and other rights issues are more often resolved by contracts and legislative or executive action. We have looked at some of the key legislative or executive action on infrastructure regulation for low carbon economy in the section above. Let's cast a close eye on regulation by contract in the section below.

REGULATION BY CONTRACT FOR A LOW CARBON FUTURE

The centrality of contracts in infrastructure projects should not come as a surprise because 'contracts form the framework for project viability and control the allocation of risks.'³⁵ Project companies responsible for carrying out projects 'are founded upon a series of contracts, which unites various parties in a vertical chain from input supplier to output purchaser.'³⁶ Even though contracts play an enormous role in carrying out projects, its use and application for aligning projects with the goals of a low carbon economy has been limited for various reasons discussed below.

²⁵ *The Society for Protection of Silent Valley v. Union of India* (Unreported).

²⁶ *Tehri Bandh Virodhi Sangharsh Samiti v. State of UP*, 1992 SUPP (1) SCC 44.

²⁷ *The Goa Foundation and Anr. v. The Konkan Railway Corporation and Others*, AIR 1992 BOM 471.

²⁸ *Centre for Public Interest Litigation v. Union of India*, 78(1999) DLT 389.

²⁹ See for instance *Tehri Bandh Virodhi Sangharsh Samiti v. State of UP*, 1992 SUPP (1) SCC 44.

³⁰ See for instance *Karajan Jalasay Yojana Assargrasth Shakhar Ane Sangharsh Samiti v. Gujarat* AIR 1987 SC 532.

³¹ Most of the challenges to such projects have been mainly because all such projects require acquisition of substantial areas of land and consequential displacement of a large number of people. This also entails substantial impact on the environment and ecology of the regions. This is because large infrastructure projects will invariably have large impacts and due to the scale of grievances, these cases merit special attention.

³² *Tehri Bandh Virodhi Sangharsh Samiti v. State of UP* (1992) Supp. (1) SCC 44; *Narmada Bachao Andolan v. Union of India* AIR 2000 SC 3751.

³³ Upadhyay (2007).

³⁴ *Narmada Bachao Andolan v. Union of India* AIR 2000 SC 3751 at Para 223.

³⁵ Hoffman (2001).

³⁶ Esty (2004).

A review of the World Bank-aided projects of the National Highway Authority of India (NHAI) and Public Works Department (PWD) found out that:

Contractors do not integrate environment management into each of their activities. During the field visits undertaken under this review, there was also no convincing evidence that the environment provisions included in the Indian Roads Congress (IRC) guidelines and the Ministry of Road Transport and Highways (MoRTH) specifications are being followed. Some initiatives such as the specific environmental management plan (EMP) mitigation measures are taken because of contract requirements. There is almost no voluntary adoption of good environmental management practices among contractors. Thus, the obligations under Contract become the main tool and the only way to ensure that good practices are implemented on the ground.³⁷

As said above, since the obligations under Contract become the main tool and the only way to ensure that good practices are implemented on the ground, it is instructive to see the nature of obligations that typically exists in infrastructure contracts today. A typical Concession Contract for any project says that the Concessionaire shall *'comply with all Applicable Permits and Applicable Laws in the performance of the Concessionaire's obligations* under the Agreement including those being performed by any of the Contractors'. Further, 'The Concessionaire shall, at all times, afford access to the Site to the authorized governmental agency having jurisdiction over the project, including those concerned with safety, security or environmental protection to inspect and to investigate any matter within their authority ...'. On the other hand, the *Agency/Owner of the project shall 'assist the Concessionaire to get necessary statutory clearances as regards environmental and other clearances* from various government departments.' Take another random example. In the Oil and Gas sector, there is the 'Production Sharing Contract' (PSC) wherein both the government and the contractor recognize that petroleum operations will cause some impact on the environment in the Contract Area. Accordingly, a typical PSC also stipulates that *'in performance of the Contract, the Contractor shall conduct its petroleum operations with due regard to concerns with respect to protection of the environment and conservation of natural resources'*. Likewise, in a FIDIC- (that is, an acronym for the International Institute for Consulting Engineers) based construction contract for a large dam, there is the provision that the *'Contractor shall take all reasonable steps to protect the environment on*

and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.'

Making Contract Clauses More Specific, More Important, and More Integral

If environmental issues are to be woven more closely in the Contracts, they would need to be made *more specific, more important, and more integral*. Some suggestions on these lines are outlined below:

- The nature of contract clauses typically shows that there are overall references to applicable laws as a standard practice. The EMP as a whole, but more significantly the mitigation measures and monitoring requirements' tables could be specifically incorporated say, under the Conditions of Particular Application (COPA) in a FIDIC-based contract. Cross-references from the EMP cost table to the Bill of Quantities (BoQ) could also be made and similar cross-references from the EMP could be provided in the Drawings Volume of the bid documents, if the drawings are included in the EMP. In this manner, the EMP could be integrated with the Contract, the Technical Specifications, the Bill of Quantities, and the Drawings that together form the bid documents for a project.
- The tremendous pressure on the contractors to meet deadlines of the project together with the fact that enforcement of legal requirements or guidelines is weak, leaves little room for adoption of good management practices. In this context, a World Bank review team felt that linking the contractor's environmental performance with their payments is possibly the only solution. It also noted that some implementing agencies have tried this approach [for example, the Third National Highway Project (THNP), Package IV D] with a creditable degree of success. Given the above, linking contractors' payments with environmental performance could be formalized and implemented across projects and sectors.³⁸
- The incorporation in Contract and Bid documents of some of the good practices being adopted today for similar projects is also one approach that could be taken forward. For example, bidders for India's

³⁷ Sandhu et al. (2006).

³⁸ The World Bank review team, however, felt that 'this should only be done in extreme cases and should not be misused by the client. The triggers for holding back or delaying payments to contractors due to non-performance on environment and social issues have to be clearly laid out.' See Sandhu et al. (2006).

Ultra Mega Power-generation Projects (UMPPs), which are evaluated on the basis of tariff, have opted for super critical boilers with commercial finance. This could be made mandatory for all thermal power projects in future.

- To the best knowledge of the author, there are no major examples from projects across sectors where an evaluation of anticipated/unanticipated environmental impacts, an evaluation of the EMP or its implementation in the execution and completion of the project has been carried out. This needs to be made mandatory under the Contract and Bid documents if environmental considerations are to be mainstreamed in the entire project cycle.
- Finally, 'Project Financing' can also serve as a driver for ensuring responsible industrial behaviour for low carbon economy. Lenders can specifically mandate adherence to best practices and norms on socially inclusive and environmentally sound practices as conditions precedent to financial closure and can tie up these at various stages with the 'pre- and post-loan triggers'. They may make sure that through such conditions, adherence to such best practices and norms is diligently observed by the project proponent for the project's entire life-cycle. The standards and guidelines of the multilateral donor institutions such as the World Bank and the Asian Development Bank (ADB) on project financing for infrastructure projects may also provide useful guidance to the lenders in this regard.

SUB-OPTIMAL FRAMEWORK POINTING TO LEGAL AND REGULATORY REFORMS FOR A LOW CARBON FUTURE

The policies and regulations produced by governments for a low carbon future in the context of infrastructure projects are only as good as the government that issues them. It is thus critical to look beyond the policy statements and legal commitments as to how they translate into practice. From the discussion in the preceding sections above, it is evident that there are gaps in the legal and regulatory framework as well as challenges in implementation and compliance of the provisions. Legal and regulatory reforms are imperative for providing the desired framework for achieving low carbon infrastructure development, as well as ensuring effective compliance and implementation of the environmental protection mechanisms.

The sections above present the laws, policies, and regulations put in place for promoting energy conservation and renewable energy. However, *the lack of single window clearance for Renewable Energy (RE) projects* is a major problem. There is a multitude of clearances that may be needed both at the central and state level and the developer loses valuable time and resources obtaining all the clearances. The costs involved in this make some of the smaller projects unviable. This is partly due to the fact that while India has a dedicated Union Ministry for renewable energy, most states have different policies regarding RE projects. It is also that the *states are in varying stages of preparedness* in terms of developing robust law, policy, and institutional mechanisms to promote renewable energy. Notwithstanding the set of various policies, the RE sector is also constrained by *implementation capacity of the nodal agencies*. It is necessary to enhance the capability of states, especially in the implementation of renewable energy programmes. In addition to all of the above, there is a felt need for hard data on effective harnessing of the potential of renewable energy from all possible sources. For example, in the case of hydro-energy, there are hardly any databanks available on water flow from small streams and rivulets. This implies a huge risk for the project to be borne by the project developer alone.

One final point in regard to the regulatory framework for renewable energy projects may be made here. Today, with the exception of the Electricity Act, 2003 and more specifically, the New Tariff Policy, 2006 under the Act, which states that a minimum percentage of energy, as specified by the Regulatory Commission, is to be purchased from RE sources, there is no legally binding obligation facilitating the creation, transmission, and deployment of renewable energy to address the country's energy and environmental insecurity. India still does not have a Renewable Energy policy or a national law on the subject. However, there has been a draft policy statement on new and renewable energy in circulation since 2005 under which an exclusive and comprehensive policy on renewable energy has been proposed, aimed at raising renewable energy capacity to 100,000 MW by 2050, but so far the policy is far from implementation.³⁹ In this context, the World Institute for Sustainable Energy, located in Pune, also rightly points out that 'although the power of appropriate legislation to bring about change is amply demonstrated by the Electricity Act, 2003—thus setting in motion a process of reform in the power sector—the Act addresses issues related to renewable power only marginally...

³⁹ The Draft Policy Statement is available at www.newenergyindia.org

Although the government is committed to promoting the use of renewable energy sources, the commitment is not backed by legislation; and it has remained confined to articulation of policy.⁴⁰ It is also pertinent to note here that unlike the Electricity Act of 2003 that confines itself to generation, transition, and distribution of electricity, a new renewable energy law would necessarily address energy production from renewables in a holistic manner. The need for a national law is also there given that states in India are differently placed in terms of evolving legal and regulatory frameworks for renewable energy. An agreed national binding framework shall thus help encounter the problems due to existence of several state-level policies. The absence of a National Renewable Energy Policy or a National Law on the subject is especially glaring in the context of the fact that legislation for renewable energy has turned out to be a successful instrument in changing the process towards sustainable development in countries such as China, Taiwan, Australia, and Germany.⁴¹

The *efficacy and state of implementation* of some of the laws and regulations has been open to question. For example, under the Environment Impact Assessment Notification, 2006, the handing over of the responsibility of granting clearance to a large number of projects to the state governments without checks and counter-checks is questioned on the ground that in many instances, the state government is directly involved in seeking investments for the projects and this may potentially conflict with the need for independent environmental assessment of these projects. Exemption of a large number of projects falling under the specified thresholds from EIA has also been seriously questioned in the recent past. The EIA process also fails to differentiate high impact projects from others. Its 2006 Notification continues to be in a state of flux.⁴² In order to tighten and monitor the environmental clearance conditions laid down for companies, the MoEF recently constituted a special supervising committee, which 'will adopt a holistic approach to critically examine the issues

pertaining to monitoring of environmental clearance issued under the Environment Impact Assessment (EIA) Notification, 2006.⁴³

When it comes to implementation of legislations such as the Air Act of 1981, discussed above, there are again some deep-seated problems. Most SPCBs in the country will find it difficult to produce even a handful of cases where the violators of the standards under the Act have been successfully prosecuted. A Planning Commission evaluation of the 25 SPCBs in the country in 2002 found out that the State Boards are generally dominated by non-technical members. Availability of staff for monitoring a certain number of polluting industrial units is variable. The field formations of State Pollution Control Boards (SPCBs) are not commensurate with the task at hand.⁴⁴ The study also found that non-installation of abatement mechanisms by the polluting units is a direct consequence of the absence of any effective punitive and deterrent mechanism in case of non-compliance. SPCBs, being understaffed, is thus a big part of the problem, but a larger legal problem is that the Air Act, 1981 and in fact all the environmental legislations and regulations in India are currently underpinned only by the use or threat of criminal sanctions. Yet, *criminal prosecution is too rigid an approach* to be used for all but the most serious offences. It focuses on achieving punishment rather than prevention, and requires more stringent procedural safeguards, which undermine regulatory efficiency. The problems in pursuing criminal prosecution of environmental offenders also give rise to reluctance on the part of regulatory agencies to pursue more difficult cases.

There is increasing recognition of the benefits of *employing civil penalties* as part of an effective system of regulation. In other countries, environmental regulatory agencies have the power to impose civil penalties for breaches of environmental regulation, as an additional tool to criminal enforcement, which can then be reserved for intentional non-compliance with the law. Civil

⁴⁰ The Institute adds: 'The barriers to the development of renewable energy run across a wide spectrum. Comprehensive legislation aimed at removing these barriers and accelerating the development of renewable energy technologies is thus necessary.' See <http://www.wisein.org>

⁴¹ Another forceful approach is to include renewable energy in sectoral laws like in building codes. For example, UK's building regulations concentrate on energy conservation. In other countries, such as Greece or Israel, there are requirements that new housing should have solar collectors for water heating. See for some such examples, Godfrey (ed.) 2004.

⁴² In a proposed set of controversial amendments to the 2006 EIA notification, the centre was considering doing away with the need to seek additional clearance for expansion and modernization, whereby a project authority would be given a 'self-certification option'.

⁴³ *Committee to Monitor Environmental Clearance for Companies*, 28 December 2009, *Indian Express*.

⁴⁴ Planning Commission (2002). This study was taken up at the instance of Planning Commission, with a primary objective of understanding the functioning of the SPCBs and their efficacy in controlling water and air pollution, finding out the efficacy of functional tools employed by them in carrying out their objectives and identifying the constraints to their effective functioning.

penalties can be imposed at the discretion of a regulatory agency for an amount which reflects the circumstances of the regulatory breach, including any financial profits gained from such a breach. They can be used as an alternative rather than a replacement for criminal prosecution, but without the same degree of moral condemnation or administrative burden as the latter. The legal basis for such an approach as the 'Polluter Pays Principle' has been repeatedly held by the Supreme Court of India as part of the law of the land. It is important that amendments be introduced in the pollution legislation, including the 1981 Air Act, to provide for specific legal provisions for imposition of environmental damages/environmental civil liability.

It is also noteworthy that while there are environmental, pollution prevention, and forest conservation laws for two–three decades now in India, the regulatory framework has little support, specifically for low carbon projects. Thus, for example, Compensatory Afforestation is only for diversion of forest land for a project under the Forest (Conservation) Act, 1980 but there is no mandate for such compensatory afforestation even when large-scale diversion of revenue land is involved for mega projects. Another example is that there are no incentives for installation of Common Effluent Treatment Plants

(CETPs), and in most high profile projects where CETPs have come through, they have come only under Court Orders. Besides, there are growing reports of legal and foreign exchange bottlenecks that prevent full realization of registered CDM projects suggesting revisiting of Taxation and Foreign Exchange Rules to strategically facilitate such projects.

Finally, economic instruments such as *economic taxes* on energy inefficient/polluting vehicles, tax credits for energy-efficient buildings, differential taxation for appliances, and creation of markets for energy-saving certificates among large firms can all help in achieving energy efficiency gains. Notably, the MoEF had recently requested the Madras School of Economics (MSE) to recommend proposals for eco-taxes on polluting inputs and outputs. One of the main recommendations of the report that followed was that there was no legal obstacle to levying eco-taxes and that they can be part of the budget.⁴⁵ The MSE also made it clear that the tax departments have the information base and capability to levy such eco-taxes. Both from the standpoint of legal validity and administrative viability, eco-tax could be explored and introduced. Policies and regulations need to reflect and support such approaches more before time runs out.

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