

Regulatory Impact Assessment in Indian Electricity Generation Sector



Regulatory Impact Assessment in Indian Electricity Generation Sector

Published by



D-217, Bhaskar Marg, Bani Park, Jaipur 302016, India
Tel: +91.141.2282821, Fax: +91.141.2282485
Email: cuts@cuts.org, Web site: www.cuts-international.org

With the support of



Asian Development Bank

© CUTS, 2015

First published: August 2015

This report has been produced under a project entitled, 'Regulatory Impact Assessment in Indian Electricity Generation Sector' supported by Asian Development Bank (ADB), India Resident Mission, and implemented by CUTS CCIER. However, the views expressed in this report are those of the authors and do not necessarily reflect the position of CUTS. Accordingly, any views and comments on the report may be addressed to the authors.

#1527

Contents

Acknowledgments.....	1
Abbreviations.....	3
Foreword I (<i>Sunil Mitra</i>)	6
Foreword II (<i>Dr. Pramod Deo</i>)	9
Executive Summary.....	12
Introduction.....	18
Part I: Coal Sector in India.....	25
Chapter 1: Overview of the Sector.....	26
Chapter 2: Selection of Legislation.....	30
Chapter 3: Identification of Issues	36
Chapter 4: Validation and Estimation of Costs.....	47
Chapter 5: Alternatives and their Costs and Benefits	62
Chapter 6: Selection of Alternatives	83
Part II: Hydro Sector in India	97
Chapter 1: Overview of the Sector.....	98
Chapter 2: Selection of Legislation.....	102
Chapter 3: Analysis of the Selected Legislation	108
Chapter 4: Validation and Estimation of Costs.....	118
Chapter 5: Development of Alternatives.....	132
Chapter 6: Selection of Alternatives	144
Part III: Solar Sector in India.....	151
Chapter 1: Introduction and Overview of the Sector	152
Chapter 2: Assessment of Costs and Benefits.....	161
Chapter 3: Recommendations and Policy Alternatives.....	177
Conclusion and Way Forward	183
End Notes	189

List of Tables

Table 1: Experience of Private Power Producers.....	13
Table 2: Global Spread of RIA	20
Table 3: Experience of Private Power Producers.....	23
Table 4: Delay in Commissioning of TPPs.....	27
Table 5: Cost Overrun in TPPs	28
Table 6: Comparison of Legislations	34
Table 7: Snapshot of Timelines.....	37
Table 8: Data Set: Power Plants Applying for EC between 2009-14	47
Table 9: Delay in Grant of ToR	48
Table 10: Delay in Grant of EC	49
Table 11: Delay in Constitution of CEAC	54
Table 12: Time Period between Grant of ToR and Public Hearing.....	55
Table 13: Projected Revenue Loss	58
Table 14: Energy Purchased by Rajasthan from other States	58
Table 15: Environment Management Plan Cost	59
Table 16: Estimated Fee Structure for EIA Consultants.....	63
Table 17: Annual Basic Remuneration Cost to Government	68
Table 18: Estimated Annual Basic Remuneration Cost.....	69
Table 19: Annual Basic Remuneration Cost to Government.....	73
Table 20: Details of Officers Undertaking Case Management	74
Table 21: Strength and Remuneration in Impact Assessment Division	76
Table 22: Comparison of Provisions on Performance of EIA Consultants	83

Table 23: Comparison of Provisions on Public Engagement	85
Table 24: Provisions to Check Abuse of Discretion	87
Table 25: Provisions on Technical Support and Capacity Review	88
Table 26: Provisions on Persons Consulted for Assessment of Environment Impacts	89
Table 27: Timely Re-constitution of Regulatory Agencies	90
Table 28: Provision for Ad hoc SEACs	91
Table 29: Submission of Half-yearly Reports	92
Table 30: Guidelines for Issue of Statutory Instruments	93
Table 31: Provision for an Online Information Management System	94
Table 32: Impact Assessment of Existing Provisions	95
Table 33: State of Energy Availability.....	98
Table 34: Comparison of Legislations	106
Table 35: Power Plants Involved in Diversion of Forest Land (2009-2014)	118
Table 36: Data Set for Time Analysis.....	119
Table 37: Compliance with Statutory Time Period	120
Table 38: Review of FAC Minutes	121
Table 39: Applications Pending with DFO	122
Table 40: Delay in Grant Approval for Diversion	124
Table 41: Notional Revenue Loss on Account Delays	125
Table 42: Estimated Revenue Loss to Integrated Kashang II and III Power Plant.....	125
Table: 43: Data Set for Financial Cost Analysis	126
Table 44: CAT Plan Amount	129
Table 45: Snapshot of Select Compensatory Levies.....	130
Table 46: Annual Basic Remuneration Cost on Government.....	134
Table 47: Details of Officers Undertaking Case Management	135
Table 48: Basic Annual Remuneration Cost on Government.....	137
Table 49: Annual Basic Remuneration Cost on Government.....	138

Table 50: Annual Direct Cost on Government	141
Table 51: Accountability of Government Department and Expert Committees.....	144
Table 52: Transparency in Imposition of Compensatory Levies	146
Table 53: Resolving conflict of interest	147
Table 54: Comparison of National Solar Policy with State Solar Policies	155
Table 55: Key Actors in the Indian Solar Market.....	158
Table 56: Share of Costs to Solar Plants.....	162
Table 57: Comparison of NSM and GSSP: Incentives, Opportunities and Hurdles.....	173
Table 58: Broader Recommendations for an Enabling Policy Framework for Solar Energy Development	180

List of Figures

Figure 1: Regulatory Maze Hurts Investment	18
Figure 2: All India Installed Capacity	26
Figure 3: Consent under Air/Water Acts.....	31
Figure 4: Key Steps under EIA Notification	33
Figure 5: Hydro Plant Going through Various Stages.....	101
Figure 6: Process of Land Acquisition	103
Figure 7: Process of Diversion of Forest Land.....	105
Figure 8: Gujarat's Share in Total Solar Installed Capacity in India	165

List of Boxes

Box 1: Key Features of Solar Energy in India.....	159
Box 2: Salient Features of Gujarat State Solar Policy 2014.....	166
Box 3: Debt Instruments for Solar Developers.....	171
Box 4: Comparison of Costs and Experiences under NSM and GSSP	175
Box 5: Government Bonds	178

Acknowledgments

This study is a product of the hard work and dedication of many individuals. A number of stakeholders and experts from diverse backgrounds with interest in regulatory impact assessment of critical legislations affecting electricity generation have contributed to make this study a reality. It greatly benefitted from interactions with *inter alia*, industry, regulators, current and former central and state government officials, civil society representatives, and experts. We acknowledge their valuable inputs.

We express our sincere gratitude to Asian Development Bank (ADB), India Resident Mission for supporting the study. Special thanks to Shannon Cowlin, Energy Specialist, and Nidhi Kapoor, Associate Economic Analyst, ADB for their deep involvement, periodic review of progress of the study, and review of several drafts of the report. We look forward to continuing collaborations with ADB.

This study greatly benefitted from the inputs received from sector experts at the research design meeting for the study. We would like to thank Anoop Rawat, Partner, Shardul Amarchand Mangaldas; Anoop Singh, Associate Professor, Indian Institute of Technology Kanpur; David Zanni, Second Secretary Energy, United States Embassy; Geeta Gouri, Former Member, Competition Commission of India; Karthik Ganeshan, Senior Research Associate, Council on Energy, Environment and Water; Somit Dasgupta, Adviser, then Planning Commission of India; Sugandha Somani, Senior Associate, JSA; Veena Aggarwal, Fellow and Area Convener, The Energy and Resources Institute; and Vidya Sagar Ailawadi, Former Chair, Haryana Electricity Regulatory Commission, for attending the research design meeting and providing continued guidance and support for the study.

Thanks also goes to Malathy Knight, Research Associate, Verité Research, Sri Lanka, and Rajeev Dayal Mathur, Former Executive Director, CUTS International, for reviewing draft versions of the report and providing their valuable inputs and suggestions.

In addition, our sincere gratitude to Sunil Mitra Former Power Secretary, Government of West Bengal & Revenue & Finance Secretary, Government of India, and Pramod Deo, Chairperson, Central Electricity Regulatory Commission, for writing the encouraging Forewords.

We also express our gratitude to Pradeep S Mehta, Secretary General, and Bipul Chatterjee, Executive Director, CUTS International for providing valuable guidance to conduct the study. We extend our thanks to our colleagues at CUTS International: Garima Shrivastava for proofreading and Mukesh Tyagi and layout of the Report, and G C Jain, L N Sharma, and Manish Pareek for financial management.

We acknowledge the contributions of Udai Mehta, Ashwini Kumar Swain, Amol Kulkarni, Sarada Prasanna Das, Ira Sharma, Jyoti Katiyar, and Molshree Bhatnagar, of CUTS International and CUTS Institute of Regulation and Competition, who worked tirelessly to conduct the study and bring this report in its current form.

Words alone cannot convey our sincere gratitude to each and every individual who have contributed in every small way towards bringing out this report. But it is only words that this world thrives on. We express our sincere gratefulness to all such individuals, whether or not named above, without them the publication of this report would not have been possible.

Finally, any error that might have remained in the study is solely our responsibility. Our dedication to this critical area will be sustained by contributing to the current and future discourse on India's regulatory reforms, in general and reforms in electricity generation sector, in particular.

Abbreviations

CAT	Catchment Area Treatment
CEA	Central Electricity Authority
CEAC	Central Expert Appraisal Committee
COMPETE	Competitiveness; One-in, One-out; Measure impacts; Proportionate rules; Exemptions and lighter regimes; Target for burden reduction; Evaluate and enforce
CPCB	Central Pollution Control Board
CSP	Concentrated Solar Power
CSOs	Civil Society Organisations
DFO	Divisional Forest Officer
DISCOMS	Distribution Companies
DPR	Detailed Project Report
EAC	Expert Advisory Committees
EPR	Environment Protection Rules
EPC	Erection Procurement and Construction
EIA	Environment Impact Assessment
EMP	Environment Management Plan
FCA	Forest Conservation Act
FCR	Forest Conservation Rules
FYP	Five Year Plan
GDP	Gross Domestic Product
GEDA	Gujarat Energy Development Agency
GERC	Gujarat Electricity Regulatory Commission
GETCO	Gujarat Energy Transmission Corporation
GoI	Government of India

GPCL	Gujarat Power Corporation Limited
GSSP	Gujarat State Solar Policy
HPPCL	Himachal Pradesh Power Corporation Limited
ICT	Information Communications Technology
IREDA	Indian Renewable Energy Development Agency
FAC	Forest Advisory Committee
IPP	Independent Power Producer
JNNSM	Jawaharlal Nehru National Solar Mission
LAAR	Land Acquisition Rehabilitation and Resettlement
LAAR Act	Land Acquisition Rehabilitation and Resettlement Act, 2013
MNRE	Ministry of New and Renewable Energy
MOEFCC	Ministry of Environment Forests and Climate Change
NABET	National Accreditation Board for Education and Training
NGOs	Non- Government Organisations
NGT	National Green Tribunal
NPV	Net Present Value
NSM	National Solar Mission
NVVN	NTPC Vidyut Vyapar Nigam
NTPC	National Thermal Power Corporation
OECD	Organisation for Economic Cooperation and Development
PPA	Power Purchasing Agreement
QCI	Quality Council of India
RIA	Regulatory Impact Assessment
RPO	Renewable Purchase Obligations
SEAC	State Expert Appraisal Committee
SECI	Solar Energy Corporation of India
SIA	Social Impact Assessment

SEIAA	State-level Environment Impact Assessment Authority
SPCB	State Pollution Control Boards
SPM	Suspended Particulate Matter
ToR	Terms of Reference
TPPs	Thermal Power Plants
TSO	Technical Sector Officers
UNEP	United Nations Environment Programme
UTPCB	Union Territory Pollution Control Board
VGf	Viability Gap Funding

Foreword-I

I remain grateful to CUTS for asking me to write a Foreword to their study focusing on the use of Regulatory Impact Assessment (RIA) as a tool for improving governance in the electricity generation sector in India.

The availability of adequate and quality power has emerged as one of the most important obstacles to India realizing its fuller potential for economic growth. While the sector as a whole has been under regulation for over a decade and a half, there is a need to objectively evaluate regulatory performance and enforce policy correctives that will upscale investments to ensure that increasing access to electricity is backed up by adequate supply. The Regulatory framework was introduced through legislation at the end of the 1990s. This was closely followed by further legislation to delicense electricity generation, unbundle transmission and emphasize open access – considered measures to incentivize private investment in this sector. Both legislative initiatives were seen as significant measures of sector reform. While India’s electricity generation capacity has quadrupled over the last two and a half decades to 255 GW at present of which, the private sector accounts for almost one-third, its present low per capita utilization requires availability to rapidly grow several-fold at a significantly faster rate to support other measures aiming at increasing its economic growth.

Distribution is the critical sector in the power business. This sector required a large financial bail-out in 2003 when the Electricity Act came into effect. A number of States were required to support debt restructuring of defaulting Government-owned utilities through securitization measures and it was expected that a strong regulatory framework would bring greater efficiency to sector performance leading to a rapid increase in private investments in generation to boost increased availability. This expectation has been belied – the combined losses of distribution utilities has grown to over a staggering Rs 200,000 crore and their growing impoverishment has led to shedding load having become the best means of meeting growing demand. It surprises me to learn that electricity is sufficiently available today at short-notice scheduling in the Power Exchanges at prices that are substantially lower than the average pooled power purchase cost of distribution utilities in the country. One would think that India has no shortfalls in availability of electricity in India! The sector has contributed significantly to Banking NPAs and a mere decade after it was financially restructured, it has required another major bail-out of its hugely increased liabilities.

While CUTS has in its study, built a case for RIA for the electricity generation sector, the need for taking a comprehensive policy overview of social development sector performance in India cannot be overstated. The case for evidence based policy making in the country has never been stronger. Data collected under the Socio Economic and Caste Census as recently released by Government reveals several areas of concern. Some of its snippets include: more than half of rural households depend on manual casual labour as their main source of income; around a third of the rural households have no access to irrigation; less than four percent of rural households are graduates; monthly income of the highest earning household member in close to three-fourth of rural households, is less than Rs 5,000; a little less than half of rural households do not have a pucca house; and nearly a third of rural households do not own any phone. The findings of the 2nd Indian Human Development Survey carried out over 2011-12 by NCAER also reveal some quantitative upsides while increasing qualitative weaknesses are suggestively evident.

These findings raise a big question mark on the efficiency and effectiveness of social and development programmes being run by Governments in rural areas over the years, at both Central and State levels. Little progress has been made on critical indicators of employment, housing, and education - crucial to escape the clutches of poverty in rural areas, thus widening the gap between 'Bharat' and 'India'.

RIA is an internationally recognized framework for determining the need for policies, and a scientific, logical guide to designing them, if required. It involves a step-by-step approach comprising problem definition, baseline scenario assessment, development and comparison of alternatives on the basis of their estimated costs and benefits to society, and selection of such alternatives that have the potential to result in highest net benefits to society. RIA is an important element of an evidence-based approach to policy making as it essentially comprises stakeholder engagement in policy making and review.

While the sub-optimal design of policies have held back economic growth, sluggish implementation and compliance with progressive provisions is equally responsible. Here the report breaks new ground. It highlights that statutory time-frames for decision making on environment clearance applications and applications of diversion of forest land have not been historically complied in most cases. The report digs deeper to ascertain causes and finds that capacity constraints, lack of periodic training, and limited mechanisms to fix the accountability of regulatory agencies, are to be blamed. These findings are consistent with literature and experience on regulatory performance across jurisdictions. Merely writing good laws will not enable reforms, unless coupled with adequate mechanisms to ensure implementation, build regulatory capacity, and fix accountability.

The report provides comprehensive legislative and non-legislative suggestions to fix such maladies. Such suggestions can prove useful to make other Governmental initiatives work with greater effectiveness - including the 'Make in India' campaign and the recently launched 'Digital India Programme'.

As is true with any other regulatory provision, merely mandating RIA in law will not lead to its uptake and efficient implementation. Efforts are required to generate demand and build capacity to conduct RIA at the levels of the Union Government, State Governments and Regulatory Agencies.

I am told that CUTS has been presenting the findings and recommendations of this report at various fora including State Governments, the Union Government and various Regulatory Agencies, to generate awareness and the demand for RIA. I call upon the Governments and regulatory agencies to seize such an opportunity to understand the nuances of RIA in finer detail. In addition, given that recommendations under the report are backed by estimates of greater net benefits to society, serious thought must be given to their adoption and implementation. This would require simultaneous efforts from CUTS.

I hope that CUTS will not stop at generating awareness in respect of the utility of RIA, but will also push for its adoption by working with relevant stakeholders and Government agencies. I am happy to note that CUTS has already taken steps in this direction by partnering with international experts on RIA for conducting training and capacity building programmes for Government officials earlier this year. CUTS are also in discussion with State and Central Governments and Regulators to conduct similar exercises in the near future. This is an opportunity that should not be missed. I wish CUTS all the best.

This report has the credit of being the first comprehensive document on the entire process of RIA in respect of existing policies in a particular segment in India and I am confident that it will act as a milestone in generating demand for RIA and result eventually, in the journey for its adoption and institutionalization by Governments. To all who wish to unshackle the regulatory barriers to growth in India, including practitioners, policymakers, lawyers, consultants, think tanks and others, I recommend this report.

Sunil Mitra

Formerly Power Secretary, Government of West Bengal
& Revenue & Finance Secretary, Government of India

Foreword-II

Electricity is a strategic input for any economy, particularly so for an emerging economy like India. Large capacity additions are a must to maintain rapid industrialisation and a high Gross Domestic Product (GDP) growth rate. Since 1990, India's electricity generation capacity has almost quadrupled (from 64 GW in 1990 to 275 GW at present); owing to incremental reforms in the sector as well as growing demand.

India's electricity generation capacity has grown at a CAGR of 10% since April 2009. Central power generation companies added 21%, and state-owned ones the least. Consequently, private sector's share in India's coal-based power generation capacity galloped to 35% as on March 31, 2015, from 7% as on March 31, 2009. Yet, the sector needs much more aggressive and accelerated private sector participation to meet the long term projected demand. Today per capita power consumption is low because large swaths of population are yet to get access to electricity. As access improves demand will escalate.

While there is a consensus on the need for private participation, the sector does not offer an encouraging business environment. Delicensing of power generation under Electricity Act 2003 has no doubt given a boost to investment by private players in above referred generation capacity. But the reality is that private power producers face multiple problems, including need for numerous clearances and meeting onerous regulatory requirements. Recent estimates suggest that power producers have to seek 143 approvals to start a power plant in India. As long as these challenges persist in the sector, private sector participation will not achieve the desired success.

The Government of India has shown keen interest to improve the ease of doing business in India to achieve greater private sector participation in key infrastructure and manufacturing sectors, including electricity. This study undertaken by CUTS International is, therefore, a significant attempt to support Government's intent, with a focus on private participation in electricity generation. The study proposes Regulatory Impact Assessment (RIA) as a tool to improve regulatory governance in the sector, enhance private sector participation and thus improve consumer and producer welfare.

Getting the design right

Regulatory impact assessment (RIA) is an internationally recognised framework for determining the need for policies, and a scientific, logical guide to designing them, if required. It involves a step-by-step approach comprising problem definition, baseline scenario assessment, development and comparison of alternatives on the basis of their estimated costs and benefits on society, and selection of such alternative which has the potential to result in highest net benefits to society. RIA is an important element of an evidence-based approach to policy making, as it essentially comprises stakeholder engagement in policy making and review.

Implementation of RIA improves overall quality of regulatory process, by factoring in relevant expectations of the stakeholders. Rigorous and transparent assessment of costs and benefits also increases the acceptability of regulation among stakeholders. As a result, there is greater clarity and predictability in regulatory process. This is evident from experience of other jurisdictions from adoption of RIA. The One-in, Two-out Policy of UK, which

mandates removal of £2 of costs for imposition of every £1 of costs through policies, has resulted in net reduction of £836 million in costs to business between 2010 and 2013.

Several expert committees have recommended RIA for India, including the then Planning Commission's Working Group on Business Regulatory Framework (2011), Financial Sector Legislative Reforms Commission (2013), Damodaran Committee Report (2013), and Tax Administration Reforms Commission (2015). The Pre-Legislative Consultation Policy issued by the government in 2014 also has some elements of RIA. However, unavailability of evidence of a comprehensive RIA conducted on existing policies in India has been felt for quite some time now. CUTS fills the void through this report.

CUTS has conducted RIAs on critical policies prevailing in one of the most important sectors of the economy, the energy generation sector. The report deals with the critical issues of environment clearance for coal power plants, diversion of forest land for hydel power plants, and financing issues for solar power plants. In process, it presents a comprehensive analysis of factual data and international best practices, concluding with specific recommendations for the respective issues in the sectors selected.

The selection of electricity generation sector and segment-specific issues is timely, given the prevailing economic scenario and importance of the sector towards economic growth. Despite the revised growth estimates being optimistic, growth of 'infrastructure projects under implementation' and 'project announcements' has remained subdued during third quarter of 2015. Government has begun to realise the impediments created by complicated policies, which do not benefit the society, and is moving towards reforming the process. It has recently introduced on-line application and monitoring system for environment clearance applications and requests for diversion of forest lands. While these are the steps in right direction, and expected to improve transparency of the process, other policy level concerns with respect to these issues are likely to remain.

These relate to areas like quality of environment impact assessment reports, public engagement in environment clearance and forest land diversion process, compensatory levies in applications for diversion of forest lands, *et al.* Faithful to RIA methodology, the report comprehensively discusses and compares possible alternatives on the basis of available data, and recommends such alternatives having the potential to result in greatest net benefits to the society.

Ensuring implementation

While sub-optimal designs of policies have held back economic growth, sluggish implementation and compliance with progressive provisions is equally responsible. Here the report breaks new ground. It highlights that statutory time-frames for decision making on environment clearance applications and applications of diversion of forest land have not been historically complied in most cases. The report digs deeper to ascertain causes and finds that capacity constraints, lack of periodic training, and limited mechanisms to fix accountability of regulatory agencies, are to be blamed. These findings are consistent with literature and experience on regulatory performance across jurisdictions. Merely writing good laws will not enable reforms, unless coupled with adequate mechanisms to ensure implementation, build regulatory capacity, and fix accountability.

The report provides comprehensive legislative and non-legislative suggestions to fix such maladies. Such suggestions can prove useful to make other government policies work,

including the ‘Make in India’ campaign, and the recently launched ‘Digital India Programme’.

Adoption of RIA

As is true with any other regulatory provision, merely mandating RIA in law will not lead to its uptake and efficient implementation. Efforts are required to generate demand and build capacity to conduct RIA at the levels of central government, state governments and regulatory agencies.

I am told that CUTS has been presenting findings and recommendations of this report at various forums including state governments, central government and various regulatory agencies, to generate awareness and the demand for RIA. I call upon the governments and regulatory agencies to seize such an opportunity to understand the nuances of RIA in detail. In addition, given that recommendations under the report are backed by estimates of greater net benefits to the society, serious thought must be given on their adoption and implementation. This would require simultaneous efforts from CUTS.

I hope that CUTS would not stop at generating awareness about utility of RIA, but would push for its adoption by working with relevant stakeholders and government agencies. I am happy to note that CUTS has already taken steps in this direction by partnering with international experts on RIA for conducting training and capacity building programmes for government officials, earlier this year. CUTS is also in discussion with state and central governments, and regulatory agencies to conduct similar exercise in near future. This is an opportunity which should not be missed. I wish CUTS all the best.

The logical next step to facilitate adoption of RIA would be to start thinking about its institutionalisation, at various government levels. Should a central body conduct RIA or relevant government departments must take lead. How to ensure coordination within different government agencies and outside, to facilitate seamless transition to a RIA-enabled policy making process, from current scenario. RIA must not be viewed as an additional procedural bottleneck in policy making, but an inseparable and important step. I urge CUTS to take a lead on these issues.

This report has the credit of being first comprehensive document on the entire process of RIA on existing policies in India, and I am confident that it will act as milestone in generating demand for RIA, and in the journey of its adoption and institutionalisation by the government. To all who wish to unshackle the regulatory barriers to growth in India, including practitioners, policymakers, lawyers, consultants, think tanks, and others, I recommend this report.

Dr. Pramod Deo
Chairperson
Central Electricity Regulatory Commission

Executive Summary

Background

In recent years, though the availability of electricity in India has both increased and improved but the demand has consistently outstripped the supply. While India is ranked third in the world in terms of electricity production and consumption, per capita consumption is significantly low and a quarter of the population still do not have access to this basic public service. Many of those who are connected to the electric grid still have to bear with frequent break downs in service delivery. As it has been stressed at global as well as domestic fora, universal access to electricity is a key driver for achieving economic growth and human development goals.

At the same time, electricity is a strategic input for any economy, particularly so for an emerging economy like India. Large doses of electricity are a must to maintain rapid industrialisation and a high Gross Domestic Product (GDP) growth rate. Being one of the world's fastest growing energy markets, India is projected to contribute about one-fifth of the global energy demand, over the next two decades. With a deficit supply, it becomes crucial to come up with efforts to expedite the process of exploring domestic avenues and avoid excessive reliance on external sources to meet our energy requirement.

Since 1990, India's electricity generation capacity has almost quadrupled (from 64 GW in 1990 to 255 GW at present); owing to incremental reforms in the sector as well as growing demand. Although state-owned power producers retain a major foot-print, private investment in capacity addition has been growing in recent years, resulting in one-third of the total generation capacity being operated by private power producers. Yet, the sector needs much more aggressive and accelerated private sector participation to meet the projected demand.

While there is a consensus on the need for private participation, the sector does not offer an encouraging business environment. Private power producers have to face multiple problems, including need for numerous clearances, meeting with onerous regulatory requirements, and unavailability of adequate fuel. Recent estimates suggest that power producers have to seek 143 approvals to start a power plant in India. As long as these challenges persist in the sector, private sector participation will not achieve the desired success.

The need of the hour is to bring in immediate regulatory reforms with an enabling framework that protects both producer and consumer welfare. The Government of India has shown keen interest to improve the ease of doing business in India to achieve greater private sector participation in key infrastructure and manufacturing sectors, including electricity. This study undertaken by CUTS International is a modest attempt to support Government's intent, with a focus on private participation in electricity generation. The study proposes Regulatory Impact Assessment (RIA) as a tool to improve regulatory governance in the sector, enhance private sector participation and thus improve consumer and producer welfare.

Importance of RIA

RIA is an important evaluation tool to ensure optimal regulation and cut the burden of red tape. It provides a detailed and systematic appraisal of the potential or prevailing impacts of a

new or an existing regulation respectively, in order to assess whether the regulation is likely to achieve the desired objectives. The need arises from the fact that regulations generally have numerous impacts and that these are often difficult to foresee without detailed study and consultation with affected parties. Economic approach to the issue of regulation also emphasise the high risk that regulatory costs might exceed benefits. The central purpose of RIA is to ensure that regulation will be welfare-enhancing from the societal viewpoint and that the benefits will exceed the costs.

Timely RIA improves overall quality of regulation, as it undertakes cost-benefit analysis of all possible alternatives of existing/suggested legislation and proposes the regulation with maximum net benefit. It also takes into account the various developmental and societal costs and benefits of regulatory mandates. At the same time, it provides clarity in objectives and facilitates their achievement with costs being outweighed by benefits. Therefore, RIA needs to be an essential element of regulatory decision-making processes.

Focus of the Report

To demonstrate the usefulness of RIA, the study has taken up the case of electricity generation. Electricity is one of the economic sectors that require greater private participation. Moreover, the sector has one of the longest experience of independent regulation. During the past decade, regulation in the sector has been evolving with adoption of market principles, while the sector has been subject to other state regulations, making it a complex case for private sector participation. As electricity access will remain a key driver of India’s economic growth and availability of the resource is falling short of demand, prioritised electricity generation has been taken up as a case study to apply the RIA tool.

Drawing on a preliminary stakeholder consultation, we have selected three technologies that are projected to be key contributors to future electricity generation capacity addition in India. In each case, we have taken up one state and one of the most onerous regulatory concerns (identified on the basis of desk research and consultation with private power producers) to analyse the experience of private power producers in detail (see Table 1 for the technologies, states and regulatory issue selected for study).

Table 1: Experience of Private Power Producers

Technologies	State	Regulatory Concern
Coal	Rajasthan	Environmental Clearance
Hydro	Himachal Pradesh	Land acquisition
Solar	Gujarat	Finance

The main goal of this study is to identify and analyse the specific costs and benefits of the selected regulations for power producers and suggest alternative regulations having the potential of resulting in maximum net benefits, thus easing the business conditions for power producers without adding unreasonable transaction costs for the state and compromising consumers’ welfare. In case of solar energy, as there is no specific regulation with direct impact on the technology, we have analysed the policy framework, and the costs and benefits thereof, to suggest policy alternatives.

Environmental Clearance for coal fired Power Plants

At around 60 percent of the total installed capacity, the contribution of coal-fired power plants in national electricity generation is significant and will continue to remain as such, should we intend to meet our rapidly growing energy demand.

Significant time and cost overruns have been observed in the recent past in commissioning of coal based power plants owing to operational as well as regulatory reasons. Delays in decision-making on environment clearance applications seem to significantly contribute to regulatory reasons for time and cost overruns. Consequently, this study reviews the process of environment clearances under Environment Impact Assessment (EIA) Notification, 2006 (EIA Notification) for coal fired power plants in the state of Rajasthan.

The study finds that during the last five years, around 70 percent of the environment clearances granted to coal based power plants in Rajasthan, did not meet the statutory time period, as prescribed in the EIA Notification, causing delay in commissioning of power plants. The notional revenue loss on account of delay in commissioning was estimated up to Rs 186.73 crore and cost overruns of up to Rs 816 crore, have been estimated. In addition, significant compliance costs are being imposed on coal-based power plants, on a one-time and recurring basis. Further, absence of effective monitoring and a feedback mechanism raises concerns in relation to justification and utility of such costs.

The study highlights that key reasons for delays in decision making on environment clearance applications, include:

- Inefficiency of EIA consultants resulting in sub-optimal EIA reports
- Absence of public engagement in decision making
- Abuse of discretion by regulatory authorities
- Limited technical and manpower capacity of regulatory authorities and
- Lack of evidence based decision-making

The study makes recommendations to address each of the above and other issues that delay decision-making on environment clearance applications. The recommendations include:

- Regulation and supervision of EIA consultants by Ministry of Environment, Forests and Climate Change (MOEFCC)
- Public engagement throughout the environment clearance process i.e. from development of Terms of Reference (ToR) up to decision-making
- Reasoned decision making, greater transparency and disclosures in decisions and annual reports of regulatory agencies and
- Submission of compliance reports to Expert Advisory Committees (EACs)

In addition, the study suggests guidelines for issue of statutory instruments (such as, circulars, notifications etc.) and institutionalisation of impact assessment processes for existing and proposed regulations. Periodic capacity review and capacity building of regulatory agencies has also been recommended. The study estimates costs that would need to be incurred, should these recommendations be adopted, and highlights that benefits in terms of greater transparency, quick decision-making, earlier commissioning of power plants, and timely access to electricity, are expected to outweigh such costs.

Land Acquisition for Hydro Power Development

Given the environmental concerns and fuel scarcity in coal sector, hydro power emerges as a suitable alternative for Indian electricity demand that can be commissioned in a large scale. India is endowed with economically exploitable and viable hydro power potential assessed to be about 84 GW; out of which only 40.8 GW has been tapped (as of 30.11.2014). In this, private sector contribution has been less than 7 percent. In addition, India has a good potential for small, mini and micro-scale hydroelectric projects. Moreover, being a clean and reliable source of electricity, hydro power development is an issue of strategic importance for India. Tapping this potential, to meet the growing energy demand, will equally require private sector participation.

While hydro power development has long been under state control and lately opened up for private sector participation, it has not taken off well owing to the onerous regulatory requirements pertaining to various clearances. Drawing on stakeholder consultation, this study looks into requirements to acquire forest land for hydro projects by analysing the provisions under the Forest (Conservation) Act, 1980 (FCA) and the Forest (Conservation) Rules, 2003, (FCR) as it has been implemented in Himachal Pradesh.

The study identifies several reasons, under both legislations that cause potential delay in decision-making and unreasonable compensatory levies. These include:

- Absence of accountability provisions with respect to functioning of expert committees could result in delay in decision-making
- Absence of statutory requirements for periodic capacity review of government agencies
- Absence of statutory provisions requiring consistency in statutory policies resulting in uncertainties
- Ambiguity and frequent changes in policies governing hydro power plants
- Absence of statutory provisions requiring expert committees and Ministry of Environment Forests and Climate Change (MOEFCC) to provide reasons for their advice/decisions might result in imposition of unreasonable cost
- Absence of statutory grievance redressal provision with respect to levies imposed for project proponents
- Statutory provisions resulting in conflict of interest and distortion of competition might result in imposition of unreasonable costs on private sector project proponents
- Absence of clarity in scope of 'forest land' and 'reserved forest' under the Act and
- Sub-optimal provisions regarding constitution and functioning of FAC and REC under the FCR might result in unreasonable costs on project proponents.

On the basis of data analysis and stakeholder consultations, the study identifies unreasonable time over-runs and financial costs on hydro power producers in Himachal Pradesh, arising from certain provisions and issues in FCA and FCR. The study estimates a notional loss of up to Rs 8 lakh/hour for delay in decision-making, which goes up to Rs 182 crore on a yearly basis. In addition, the one-time financial levy imposed on hydro plants as a result of unpredictable change in government regulation, was estimated to be as high as Rs 75 crore. These unreasonable time and financial cost over-runs, at times, have resulted in stalling of allotted projects. Consequently, Himachal Pradesh has not received any new investment in hydro power, and power producers are shifting towards North-eastern states.

The study suggests alternatives/modifications to existing legislations to reduce these time and monetary costs for hydro power producers, so that a greater producer and consumer welfare and higher net benefit could be achieved. The recommendations are focussed on the following areas:

- Improving accountability of government departments and expert committees
- Improving transparency in imposition of compensatory levies and
- Resolving conflict of interests and competition distortionary provisions

In addition, the study also recommends statutory provisions: 1) requiring periodic capacity review at all levels of government involved in forest clearance process; 2) prohibiting retrospective operations of statutory instruments; 3) requiring mandatory periodic consultations amongst central and state government departments; 4) requiring periodic review of impact of existing provisions; and 5) to undertake impact assessment while issue of statutory instruments.

Finance Concerns in Solar Energy Development

There is a growing consensus on solar energy as a best fit solution for many of India's power problems. Subsequently, India is poised to achieve solar generation capacity of 100 GW by 2022. Meeting this ambitious target would require high investments, estimated to be over US\$100bn, over the next seven years, which is beyond state capacity. As expressed by the government, there is a greater need of private sector participation to achieve India's solar ambitions. But, does India offer the enabling regulatory framework for required level of private sector participation?

Being an emergent contributor to India's energy mix, promotion of solar energy is directed by a set of policy guidelines from both the central and state governments. The existing policies have sought to spur private players' participation with several incentives. Yet, solar power developers face several challenges. The study finds that the major challenge for developers is limited access and high cost of debt for solar projects. It is estimated that inferior term debts are responsible for raising the solar power price by 28 percent in India compared to the US and Europe. In addition, challenges like access to land, lack of on-time grid connectivity, revenue reliability and policy instability have contributed to high cost of solar power as well as heightened the challenge in accessing debt.

In this study, we looked into the National Solar Mission (NSM) and Gujarat State Solar Policy (GSSP) to analyse how the policy frameworks address these challenges and the costs and benefits involved in the process. The study concludes that GSSP offers a better policy framework, justifying a greater private participation in the state, by addressing the externalities. The state policy offers a preferential tariff that is favoured by developers over the capital subsidy offered, under the NSM. The state policy also offers ready use infrastructure facility (including land and grid connectivity), which is not ensured under the national policy. Gujarat also has a stable policy and government commitment for technology promotion. In addition, the Gujarat Electricity Regulatory Commission has proactively ensured timely payment of solar dues, resulting in revenue reliability for the developers. In case of NSM, the experience varies across states depending on performance of diverse government agencies.

However, both the national policy and the state policy do not make any direct effort to improve debt conditions and developers' access to finance. Based on stakeholder consultation and our analysis, the report makes recommendations to consolidate the policy framework for solar development at national-level and ease private sector participation in the process. Some of the key recommendations are provided below:

- Enforcement of Renewable Purchase Obligations and timely payment of solar dues are important to ensure revenue reliability for solar developers. Our estimates suggest at least five percent reduction in solar power price if the producers receive their payment on time and thus, avoid additional interest on their debt
- Provision for a dedicated funding agency for solar projects, with a mandate to provide low interest and long term debt. The Government can provide concessional finance to solar developers by raising money through a domestic issue of bonds and directly on-lend the proceeds to solar projects. If the government finances solar projects through the proposed dedicated funding agency at a rate of minimum margin charged by sector-focussed public financing agencies, the estimated benefit will be about 10 percent reduction in solar power price, without any additional transaction cost for the state
- Provision for timely access to grid and evacuation facility will allow the projects to generate revenue immediately after deployment. If any project has to wait for six months after completion to get grid connectivity, it may lose revenue of up to INR 4.2 million per 1 MW capacity, while paying interest on the debt and
- By making land acquisition easier, the state may help the project developers to reduce their risk and improve bankability of the project. In addition, the government may consider exempting duties on land acquisition for solar projects, which will benefit the developers by at least Rs 0.21 million per 1 MW capacity. It will not affect existing state revenue as most of the solar projects use lands that are otherwise unutilised and therefore not traded.

In addition to providing relevant recommendations for the selected generation technologies, this report offers important lessons for institutionalisation and conduct of *ex-post* RIA.

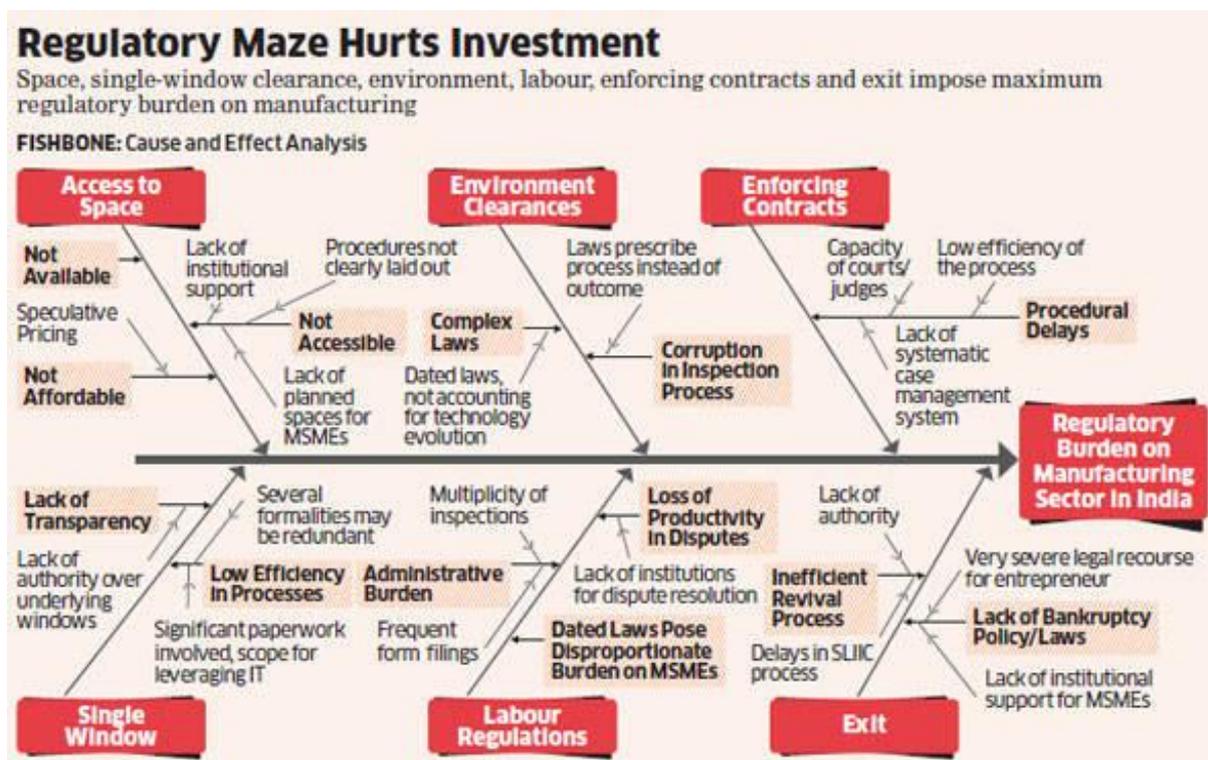
- The first step for conducting an RIA is to identify the problem that needs to be addressed and select the relevant legislation. Data collection and analysis are most critical aspects of RIA
- Consultations with different stakeholders, and keeping a healthy stakeholder mix, is important to comprehensively capture alternative perspectives, ensure unbiased and impartial assessment, and prevent regulatory capture
- While recommending cost-effective alternatives is necessary, ensuring that benefits of the alternatives are expected to outweigh the costs, is much more important for sustainable improvement in regulatory governance and
- There is no one-size-fits all RIA model and the RIA process has to be customised on the basis of ground realities, and availability of information.

Introduction

Background

The origin of the term 'red tape' lies in an old British Indian practice of tying all files with red tape while being carted on mules and donkeys from Delhi to the summer capital Shimla. This is perhaps an apocryphal story, nevertheless revealing. While the British left India, the system got much worse than the hardy animals that carried the files to the hills.¹ The then Prime Minister Manmohan Singh had called for unleashing animal spirits to spur growth, promising ad nauseam to create transparency and cut down corruption. That could be done only when irrational regulatory barriers are removed (Figure 1).

Figure 1²



Regulation refers to ‘controlling human or societal behaviour by rules or regulations or alternatively a rule or order issued by an executive authority or regulatory agency of a government and having the force of law’.³ Regulation covers all the activities of private or public behaviour that might be detrimental to societal or governmental interest but its scope varies across countries. It could be operationally defined as the taxes and subsidies of all sorts as well as explicit legislative and administrative controls over rates, entry, and other facets of economic activity.⁴ The rules laid down by regulation are supported by penalties or incentives designed to ensure compliance.

The processes of domestic reforms in India are on-going. However, the producer profile in various sectors has undergone a significant change with private firms co-existing with government firms in many sectors, which were previously government monopolies (for

example, electricity, telecommunications, coal, etc.). The consensus among decision-makers has been that independent regulation is required in such sectors to guarantee a level playing field. As a result, independent regulators have been constituted in various sectors, starting with electricity and telecommunications, and the number is still on the rise.

However, the consensual nature of decision-making in the Indian democracy has also implied that changes in the direction of greater independence and better targeting of market failures have been slow so given the regulatory framework is still complicated. Gradual changes are being ushered in to reduce the level of complexity but elements of such complexity (multiplicity of regulations, out-dated regulations, absence of review of regulations, etc.) still remain.⁵

Need and Importance of Regulatory Impact Assessment

Given what is mentioned above, there is a need in India to launch regulatory reforms in order to address the complexities through Regulatory Impact Assessment (RIA) initiated by the government directly and/or in partnership with Civil Society Organisations (CSOs), research institutions, etc., designed for optimal regulation and indeed cut the burden of red tape. It is possible that several existing and potential statutes and regulations of the Central and State Governments, and regulators, might unduly constrain increase in public welfare by restricting or undermining competition, imposing huge and unneeded enforcement and compliance costs and resulting in less-than expected benefits.

Therefore, a review of such statutes and regulations (primary and secondary legislations) based on estimation of associated costs and benefits with the objectives of infusing both static and dynamic efficiency into the system (keeping in mind enhanced consumer and producer welfare as a major outcome), needs to be undertaken. Structurally, RIA is a process of asking the right questions in a structured format to support a wider and more transparent policy debate; systematically and consistently examining selected potential impacts arising from government action or non-action and communicating the information to decision-makers and stakeholders.

RIA tool was first introduced in the US in mid-1970, under Regan's administration. Following the neoliberal doctrine, he discerned that the legislators and government officials, when left to them, will produce statutes that do not concur with public interest.⁶ Thus, in order to reduce the burdens of existing and future regulations, increase agency accountability for regulatory actions, provide for presidential oversight of the regulatory process, minimise duplication and conflict of regulations, and ensure well-reasoned regulations, the then President of the US issued the Executive Order 12291 in 1981.⁷ Section 3 of the said order stated that each agency shall, in connection with every major rule, prepare, and to the extent permitted by law consider, a Regulatory Impact Assessment. Among other things, the Order provided that, to the extent the law permits, "regulatory action shall not be undertaken unless the potential benefits to society from the regulation outweigh the potential costs to the society".⁸

Further, Organisation for Economic Cooperation and Development (OECD), European and many other countries joined the suit and by the mid-90s 20 out of the 28 OECD countries implemented RIA. The complex institutions, lack of capacity and lack of political will for long kept the emerging economies away from adopting RIA. But the previous decade saw a huge recognition of this tool in both developed and emerging economies. The Planning

Commission of India’s Working Group on Business Regulatory Framework constituted in the context of preparation of 12th Five Year Plan in its report entitled ‘Towards Optimal Business Regulatory Governance in India’⁹, has also recommended the need to adopt RIA to improve the quality of business regulatory governance in India.

Table 2 provides a brief snapshot of ‘Global Spread’ of RIA.

Table 2: Global Spread of RIA¹⁰

Mid 1970’s	1985	Mid 1990’s	2000	2007	2008	2013	2014
US-Reagan administration introduced RIA	Mexico formed Economic Deregulation Unit (UDE) for regulatory reform	20 out of 28 OECD countries implemented RIA	Few new OECD countries started adopting RIA	South Africa issued RIA guidelines	Australia adopted RIA	Greece implemented competition impact assessment	China launched anti-trust review

In systematically planning for and designing a programme for regulatory change, it is advisable to supplement RIA with ‘competition impact assessment’ of proposed and existing policies, statutes and regulations, so as to ensure a level playing field for all investors.

A major objective of RIA is to provide a detailed appraisal of impacts of existing and new regulations (primary and secondary legislations) so as to facilitate assessment of whether the regulation has achieved or is likely to achieve the desired objectives. All producer and consumer welfare benefits or losses or hidden costs associated with a regulation, whether direct or indirect, including compliance and enforcement costs are taken into account by RIA. The use of RIA as a tool for anticipating the impact of a potential regulation or reviewing the quality of existing ones has been promoted by countries in the European Union (EU) , integrating and replacing previous single-sector type of assessments, as well as by the OECD among its member countries, including Korea and Ireland. In the United Kingdom, RIAs have, for many years, been a key tool in helping to improve the quality of regulation and reduce unnecessary burden on businesses.

RIA can be used to examine and measures the likely benefits, costs and effects of new or changed regulations and policies. It provides decision-makers with valuable empirical data and a comprehensive framework in which they can assess their options and the possible consequences of their decisions.¹¹ It can also be used as an evidence-based framework supported by empirical findings to assess the quality of existing regulation and suggest the most optimal alternatives.¹²

Benefits of RIA

Implementation of RIA improves overall regulatory quality. As the tool emphasises on undertaking cost-benefit assessment of all possible alternatives of existing/proposed legislation and proposes the regulation with maximum net benefit (most profitable course of action), thus reduce the administrative burden. For instance, in 2013 a UK Government campaign to cut EU red tape suggested to implement COMPETE principles –

Competitiveness, One-in, One-out, Measure impacts, Proportionate rules, Exemptions and lighter regimes, Target for burden reduction, Evaluate and Enforce- to enable business to COMPETE, grow, and create jobs. Just after applying these principles on ten regulations UK businesses saved around £100mn a year and banking one-off savings to firms of another £40mn.¹³

One of the key benefits of RIA is that it provides clarity in objectives and facilitates achievement of same with costs outweighing in benefits. While, the process to undertake RIA takes a long-term perspective and while in short-term it might seem to impose greater costs but in longer term it ensures higher benefits. Further, undertaking RIA is a costly affair but it is unavoidable and experience suggests results in massive improvement in quality of regulatory governance.

Process of RIA

RIA is initiated by identification of issue in the market, which needs regulation. In case no prior regulation exists on the issue, regulatory proposals are developed on the basis of the stakeholder interaction, availability of data in public domain, and experience of comparable jurisdictions. This is followed by assessment of costs and benefits of regulatory proposals and selection of the proposal, which has the potential to result in maximum net benefit.

In case prior regulations exist on the issue, a critical review of key regulations is necessary to identify sub-optimal provisions and issues remained unaddressed in such regulations. This includes assessment of costs imposed by the regulation on stakeholders. This is followed by development of regulatory alternatives and prediction of their costs and benefits. Data analysis and stakeholder engagement is key in assessment of costs and benefits of existing and proposed regulatory provisions. This is followed by comparison of regulatory options and selection of the alternative, which has the potential to result in maximum net benefit. This process is being followed in the report, owing to existence of prior regulations on the issues being covered.

Motivation or Rationale of the Report

Owing to rapid industrialisation and population growth, the rise in India's energy demand is at its peak. Emerging as one of the world's fastest growing energy markets, due to rapid economic expansion, India is projected to be the second-largest contributor to the increase in global energy demand by 2035, accounting for 18 percent of the rise in global energy consumption.¹⁴ A significant part of this future energy will be consumed in form of electricity and that makes enhancement of electricity generation capacity an important economic policy matter.

Over the last two decades, as an effect of economic liberalisation as well as a response to growing demand, electricity generation capacity in India has almost quadrupled (from 64 GW in 1990 to 255 GW at present)¹⁵. Although both state-owned and private companies are significant players in India's electricity generation, private investment in capacity addition has been growing in recent years. At present, private players account for about one-third of the generation capacity in the country. Meeting India's growing energy demand would require much more aggressive and accelerated private sector participation in electricity generation.

However, private participation in Indian electricity has been mired with multiple problems, including need for multiple clearances, meeting with onerous regulatory requirements, lack of finance and unavailability of adequate fuel. Private power producers are required to get 143 approvals to start a power plant in India: 90 clearances during construction and another 53 while starting operations. Apart from this, they are also required to file 1,982 compliance reports and about half of them attract imprisonment for failure.¹⁶ This clearly shows that India is far from providing a conducive and enabling regulatory framework to enhance private participation in the sector.

To encourage and foster private participation in electricity generation, India needs to bring in immediate regulatory reforms with an enabling framework while protecting consumers' welfare. The current government at the centre has shown keen interest to improve the ease of doing business in India, so that a greater participation of private players could be achieved in all infrastructures and manufacturing sectors, including electricity.

This study undertaken by CUTS International is first of its kind in-depth RIA assessment in India and is a modest attempt to support government's intent on private participation in electricity generation. In this report, a case for RIA has been made as a tool for regulatory check and better regulatory governance in the sector. Demonstrating the use and effectiveness of the tool, through detailed case studies, the report claims that on time RIA could improve regulatory decision-making, ensure adoption of cost effective regulations, and thus, facilitate greater participation from the private sector.

In the following section, the case selections and approach undertaken in the study are being discussed.

Research Methodology

With the objective to demonstrate the effectiveness and usefulness of RIA as a tool for improvement in regulatory governance and ease of doing business for private sector, the study has taken a case study approach. The case of electricity generation primarily has been taken for two reasons: first, it is one of the economic sectors that require greater private participation; second, electricity sector has been the first mover in deregulation and has more than a decade of experience in independent regulation. During the past decade, regulation in the sector has been in constant flux with adoption of market principles, while the sector has been subject to other state regulations, making it a complex case for private sector participation. Considering the fact that electricity access will remain a key driver for India's economic aspirations and it is one of the important indicators in ease of doing business, electricity generation has been prioritised to demonstrate effectiveness and utility of RIA tool.

Within electricity generation, the study prioritises three technologies that are projected to be the key contributor to India's future electricity generation capacity addition. In each case, we have taken up one state (selected on the basis of intensity of engagement by Independent Power Producers (IPPs) and number of on-going projects in the relevant sub-sector) and one of the most onerous regulatory concerns to analyse the experience of private power producers in details (please see Table 3 for the technologies, states and regulatory issue selected for study). The technologies, regulatory concerns and states were selected on the basis of desk research and preliminary consultation with relevant stakeholders including power producers,

government officials and subject experts. The selection and further analysis has also been drawn on our past work and experience in the sector.

Table 3: Experience of Private Power Producers

Technology	State	Regulatory Concern
Coal	Rajasthan	Environmental Clearance
Hydro	Himachal Pradesh	Acquisition of Forest Land
Solar	Gujarat	Finance

In each case, we have taken a tailored approach for data collection and analysis, but largely drawn on the RIA tool, to analyse the costs and benefits of key existing regulations. The main goal of this study was to identify and analyse the specific costs and benefits of the selected regulations (primary and secondary legislations and policies) for private power producers and suggest an alternative regulation, potential of achieving greater net benefits that eases the business conditions for power producers without compromising consumers' welfare. Wherever possible, we have also identified additional developmental benefits of alternative regulation that mitigates transaction cost on the State.

It is also important to mention that in this study, no attempt has been made to question the relevance of certain regulatory provisions (such as should the 60 day period for granting certain clearances needs to be lessened or not) but whether such provisions are being complied with or not has been analysed. On the basis of such analysis, we have suggested appropriate legislative changes to improve compliance with legislative provisions.

The remainder of this report is organised as follows: detailed application of RIA on three sub-sectors i.e. coal, hydro and solar, followed by the concluding/way forward summarising the key findings with recommendations. The Chapters begin with an assessment of state of sector and issue covered, identification and the critical analysis of key regulation governing the issue, assessment of costs on stakeholders of existing provisions, and conclude with development and recommendation of the regulatory alternatives, having the potential to achieving greater net benefits.

Part I:

Coal Sector in India

Chapter 1

An Overview of the Sector

1. The Energy Deficit

During October 2014, the country experienced an energy deficit of 4.3 percent, with actual availability of 87,268mn Units (MU), as against the demand of 91,189 MU. The peak deficit experienced in October 2014 was 4.5 percent. The deficit has increased by 0.8 percent during the previous one year. The situation might exacerbate, if one reviews the abysmal state of capacity addition in power generation. As against the target of 2,490 Mega Watt (MW) during October 2014, the capacity addition during the period was meagre 600 MW.¹⁷

In light of ever-evolving infrastructure and energy needs, the prevailing scenario presents a huge challenge. Immediate steps are required to ensure increase in power generation capacity in the country, and addressing any unjustified impediments that prevent such capacity addition.

2. Coal-based Power Generation

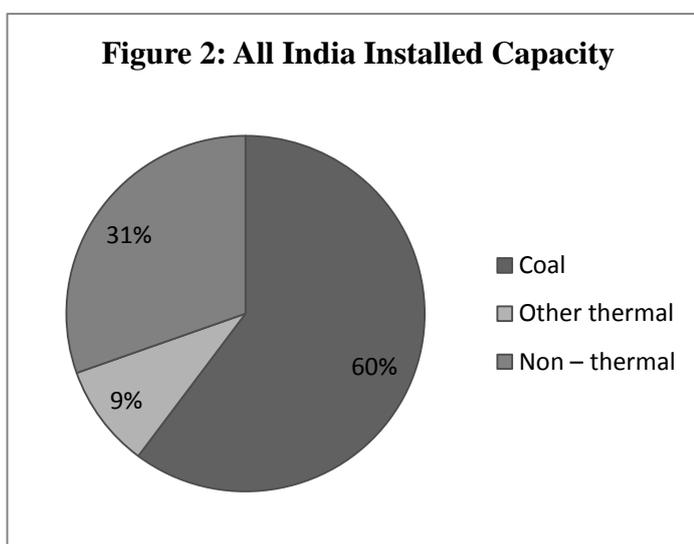
2.1 Installed capacity

As on September 30, 2014, the all India installed power generation capacity was 2,54,049.49 MW. Thermal power plants contributed most to this, with a generation capacity of 1,76,778.59 MW, or approximately 70 percent. The installed capacity of coal based power plants was 1,52,970.89 MW, around 86.53 percent of thermal power generation capacity.¹⁸

The total capacity addition targeted during the 12th Five Year Plan (FYP) is 88,537 MW, of which thermal capacity addition is expected to be around 72,340 MW, or approximately 82 percent.¹⁹ Consequently, the emphasis on increasing the thermal power generation capacity is expected to continue.

2.2 Power generation

Not surprisingly, thermal power is the highest contributor to country's power generation as well. The all India power generation for the month of September 2014 was 85.81bn Units (BU), of which 65.99 BU (approximately 77 percent)²⁰ was generated through thermal power. Thermal power has consistently made substantial contribution to the country's power generation. During the first six months of the current fiscal, the total electricity generation of the country was 531.83 BU, of which thermal power contributed to 430.87 BU (approximately 81 percent)²¹, and this trend is expected to continue. This is evident from the fact that during September 2014, the solitary capacity addition, of 660 MW,²² took place in thermal power



sector. However, one must note that this was below the targeted capacity addition for the mentioned period, being 1,395 MW.²³

Consequently, the challenges in thermal based capacity addition, and especially coal-based power production, need to be identified and addressed, on an urgent basis.

3. Power generation in Rajasthan

The northern region²⁴ of the country has been facing acute energy shortage. During September 2014, the demand for energy in the region was around 29,337 MU, while the supply was limited to 26,934 MU, approximately 8.2 percent less. This is significantly less than the national average for energy deficit, which is approximately 4.1 percent. Rajasthan is amongst the worst hit states, having suffered from around 714 MW of peak shortage of power supply during September 2014, second only to Uttar Pradesh.²⁵ The Central Electricity Authority (CEA) has anticipated that during fiscal 2014-15, Rajasthan would require 62,540 MU of energy as against an anticipated availability of 57,197 MU, resulting in deficit of 5,343 MU (8.5 percent).²⁶ With the increase in temperatures, it is expected that there would be an increase in the electricity demand, including the peak demand in Rajasthan.²⁷

The State of Rajasthan is promoting renewable energy, with hydro power-based power generation at 1,638.39 MW and power generation from other renewable sources at 3,640.15 MW, as on September 30, 2014.²⁸ However, this is far cry from the existing and targeted coal based capacity generation. The total installed capacity of coal based power plants in Rajasthan is 8,784.72 MW, of which public sector accounts for 5,654.72 MW (around 64.35 percent), and the remaining being generated by private sector.²⁹ The State also has a policy for promotion of private sector investment for setting up of power generation projects.³⁰

During the past two years, several coal-based thermal power plants (TPPs) have been commissioned in Rajasthan, and by January 2015, at least one more plant is expected to be commissioned.³¹ Consequently, coal-based power plants are expected to continue to lead in power generation in Rajasthan. See Table 4 for details.

Table 4: Delay in Commissioning of TPPs

Power Plant	Owner	Unit	Capacity (MW)	Original Commissioning Schedule	Actual Commissioning Date
Chhabra TPP	Rajasthan <i>Rajya Vidyut Utpadan Nigam</i> Limited (RRVUNL)	U1	250	November 2008	October 2009
		U2	250	February 2009	May 2010
		U3	250	June 2013	September 2013
		U4	250	January 2014	June 2014
Kota TPP	RRVUNL	U7	195	February 2009	August 2009
Suratgarh TPP-IV	RRVUNL	U6	250	September 2008	August 2009
Jallipa-Kapurdi TPP	Rajasthan/Raj West Power Limited (JSW)	U1	135	September 2009	October 2009
		U2	135	November 2009	July 2010
		U5	135	July 2010	February 2013
Kalisindh TPP	RRVUNL	U1	600	December 2013	May 2014

Source: Central Electricity Authority, Monthly Report on Broad Status of Thermal Power Projects in the Country, November 2014, available at http://www.cea.nic.in/reports/proj_mon/broad_status.pdf, accessed on January 02, 2015

As is evident from Table 4, significant number of power plants have missed their original commissioning schedule. The reasons for delay in commissioning could be operational as well as regulatory in nature, as revealed during stakeholder consultations during this project. Operational reasons include delays in obtaining coal linkages, hindrances in transportation of coal, interruption in execution of erection, procurement and construction (EPC) contracts, and failure to achieve financial closure of projects, amongst others.³² Regulatory reasons include delays in obtaining environment, pollution, and related clearances, compliance with conditions precedent to the clearances, diversion of forest land, land acquisition, *et al.*

The time overrun in commissioning of power plants typically results in cost overrun.³³ See Table 5 for details.

Table 5: Cost Overrun in TPPs

Power Plant	Original estimated cost (Rs. crores)	Latest estimated cost (Rs. crore)
Kalisindh TPP (U1, U2)	4,600*	7,723
Chhabra TPP (U3, U4)	2,200	3,033

* The estimated cost at the time of grant of environment clearance increased to Rs5,416 crore.
Source: Central Electricity Authority, Monthly Report on Broad Status of Thermal Power Projects in the Country, November 2014, available at http://www.cea.nic.in/reports/proj_mon/broad_status.pdf, accessed on January 02, 2015

While operational issues are *inter-se* developer and contractor/vendors, being governed by agreements between parties involved, government (at central, state or local level) is one of the stakeholders in regulatory issues, which are governed by policies and statutes in place. Different policies have different objectives, importance of which could not be understated. For instance, policies governing environmental clearances have been formulated with the objective of the protecting environment and ensuring sustainable development. Time and cost overrun in commissioning of coal-based power plants has the potential to adversely impact consumers of electricity. A balance must be achieved to ensure that while policies and statutes achieve their intended objective, they do not unintentionally result in keeping the state energy deprived.

4. Environmental Issues in Coal-based Power Generation

Coal based power generation has been perennially criticised for its adverse impact on environment. Utilisation of coal with high ash content and low calorific value adversely affects the general aesthetics of environment in terms of land use, leads to air, soil and water degradation, and can also result in health hazards. In addition, fly ash, a byproduct of burnt coal is a potential radioactive air pollutant and modifies radiation exposure.³⁴ Pollutants like oxides of carbon, nitrogen, sulphur, mercury³⁵ and suspended particulate matter (SPM) are also emitted from the thermal power plants, which adversely impact human health and natural environment.

Emissions of mercury from thermal power plants are a subject of increasing concern because of its toxicity, volatility, persistence, long range transport in the atmosphere.³⁶ Mercury is a neurotoxin and exhibits adverse health effects.³⁷ In 2011-2012, emissions from Indian coal plants resulted in 80,000 to 115,000 premature deaths and more than 20mn asthma cases from exposure to total particle pollution (PM10).³⁸ According to estimates, annual mortality

associated with coal electricity generation in India is about 60,000 people calculated as about 650 deaths per year with 92 coal burning power plants in India.³⁹

In Rajasthan as well, poor quality of coal (with 30-40 percent ash) is main cause of air pollution, reduction in ground water quality, and land degradation.⁴⁰ Shortage in electrical energy has led to growth of captive power generation using diesel generator sets which has led to greater emissions.⁴¹

Owing to the unique topography of the state, the SPM emitted by power plants remain in the atmosphere for a considerable period of time, and are carried to long distances with air, potentially resulting in adverse environment and health impacts, in far off areas as well. Moreover, thermal power plants require ground water for generation of steam and cooling purposes. Effluents are also required to be discharged in water bodies. Usage of water, being a scarce resource in Rajasthan, ought to be regulated, controlled, and treatment of waste water needs to be ensured. Consequently, air and water pollution have become critical areas of concern in relation to thermal power plants in Rajasthan. Despite the above, coal based thermal power remains the major source of power in state⁴², at present, as well as for a reasonable future, to meet its energy requirements.

Consequently, a review of the impact of environment laws on coal-based power production in Rajasthan is necessary. The review must investigate if the provisions of the relevant legislations are intelligently drafted, and are efficiently implemented, to address the adverse impact of coal based power production on various stakeholders, without hindering the energy needs of the State. A balance needs to be achieved wherein coal based power plants continue to meet the energy requirements of Rajasthan, with their adverse impact on environment, efficiently managed and adequately addressed. It is pertinent to ensure that policies governing operation of power plants and managing environment in the state, achieve this end, and are adequately tailored, if they are currently not.

This project intends to conduct such review, in form of assessment of costs and benefits of provisions of select environment related legislations on specific stakeholders, and suggest alternatives, having the potential of achieving higher net benefits. The actionable recommendations will be in form of legislative and non-legislative alternatives to selected environment related legislation, impacting coal based power production in the state of Rajasthan, to achieve the delicate balance of sustainable development.

This Chapter provided an overview of coal-based power generation in Rajasthan, its importance, and related environmental issues. The following Chapter describes relevant environment related legislations in operation in India, with the object of identifying the most relevant legislation for undertaking impact assessment.

Chapter 2

Selection of Legislation

1. Background

India has plethora of legislations in relation to environment protection. The Constitution of India itself, under Article 48A requires the State to make endeavour to protect and improve the environment of the country. Further, protection and improvement of natural environment is fundamental duty of every citizen of the country.⁴³

The key environment protection related legislations in India find their root in the Stockholm Declaration of 1972, which recommended steps for protection and improvement of human environment.⁴⁴ The primary legislations in relation to environment protection include the Water (Prevention and Control of Pollution) Act, 1974 (Water Act), the Air (Prevention and Control of Pollution) Act, 1981 (Air Act), and the Environment (Protection) Act, 1986 (EPA). These are accompanied by respective rules, regulations and notifications issued by central as well as state governments, such as the Hazardous Wastes (Management and Handling) Rules, 1989. Other legislations include the Forest (Conservation) Act, 1980, Public Liability Insurance Act, 1991, and the National Green Tribunal Act, 2010. The government has also issued a National Environment Policy, 2006, with the objective of mainstreaming environmental concerns in all developmental activities.⁴⁵

In addition, the Government of Rajasthan, in its Power Sector Reforms Policy Statement, 1999, stressed on the need of environment impact assessment and taking into account environmental impacts of power generation and supply.⁴⁶

2. Brief description of key legislations

This section provides a brief description of key environment related legislations in India, including the process enshrined in the legislations to which industries, including coal-based power producers, are subject to.

2.1. The Water Act

The Water Act was enacted to prevent and control water pollution and maintain/restore wholesomeness of water. It established Central Pollution Control Board (Central Board) and authorised state governments to establish State Pollution Control Boards (State Board).

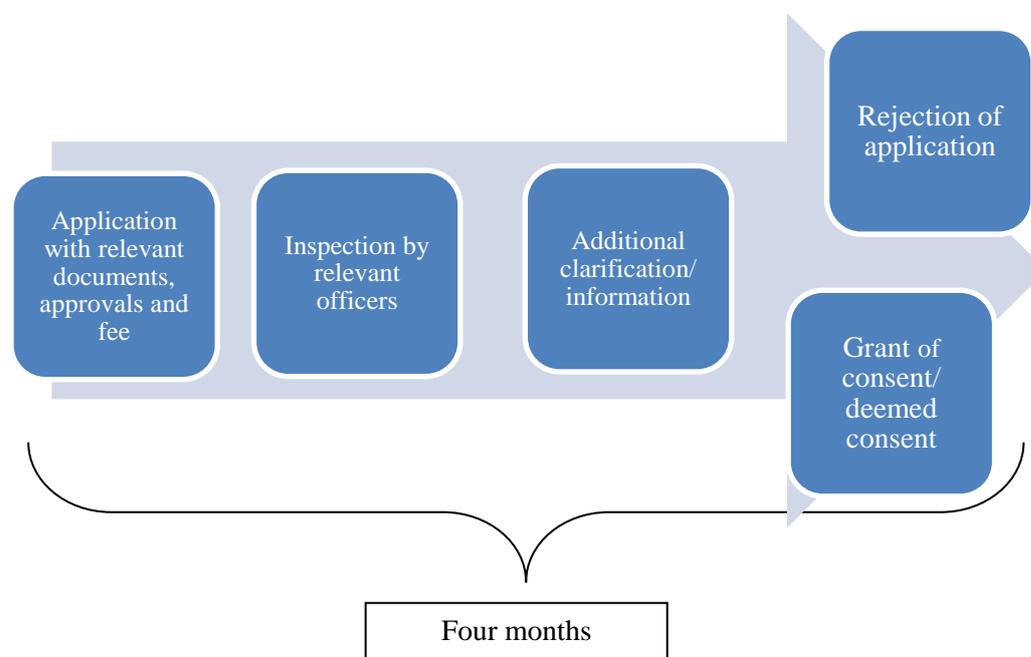
The Water Act prohibits any person from establishing any industry (including power plants), operation or process, or any treatment and disposal system, which is likely to discharge sewage or trade effluent, without previous consent of the State Board.⁴⁷ The consent, unless given or refused earlier, is deemed to have been given unconditionally on the expiry of a period of four months of the making of an application, complete in all respects, to the State Board.⁴⁸ Appeal from order of the State Board is allowed within 30 days of the order to an authority constituted by state government in this regard.⁴⁹ The Water Act authorises central and state governments to make rules to carry out their respective functions under the Water Act.⁵⁰

2.2. The Air Act

The Air Act provides for the prevention, control and abatement of air pollution.⁵¹ It authorises the Central and State Boards, established under the Water Act, to take appropriate actions in this regard.⁵² Under the provisions of the Air Act, no person is authorised to establish or operate any industrial plant (including a power plant) in a pollution control area, without the previous consent of the State Board.⁵³ The State Board is required to make a reasoned order within four months of application.⁵⁴ The central and state governments are authorised to make rules under Air Act, to carry out their respective functions under the Air Act.⁵⁵

For a diagrammatic representation of the process of granting consent under the Air Act and Water Act, see Figure 3.

Figure 3: Consent under Air/Water Acts



2.3. The Environment (Protection) Act

The EPA authorises the Central Government to take measures to protect and improve the environment, including laying down standards for environment quality and emission,⁵⁶ and make rules to regulate environment pollution.⁵⁷ Further, the EPA provides for penalties in case of contravention of provisions of EPA, rules, directions, and orders made there under.⁵⁸ Where an offence has been committed by any Department of Government, the head of the department is deemed guilty of such offence and is liable to be proceeded against and punished accordingly, subject to certain knowledge exceptions.⁵⁹

The Environment (Protection) Rules, 1986 (EPR), notified by the Central Government, set out the standards for emissions or discharge of environmental pollutants.⁶⁰ The EPR has also defined factors that the central government can take into consideration while prohibiting or restricting the location of industries.⁶¹

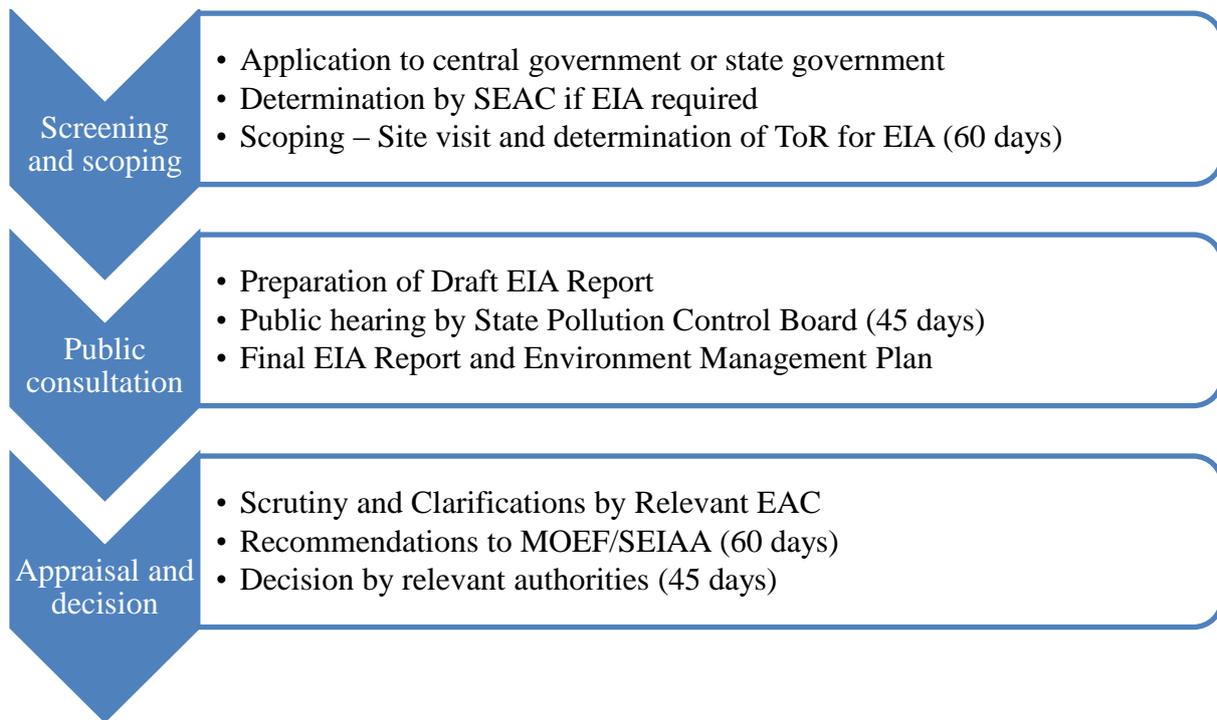
2.4. The Environment Impact Assessment Notification, 2006 (EIA Notification)

The EIA Notification was issued under the EPR by the central government. It provides for prior environmental clearance from the central government or the State-level Environment Impact Assessment Authority (SEIAA), as the case might be, for specified projects or activities, or on their expansion or modernisation, based on their potential impacts on environment.⁶² A SEIAA is an authority constituted by the central government to consider the applications for clearance at state-level. Expert Appraisal Committees (EAC), at central (Central Expert Appraisal Committee, or CEAC) and state-level (State Expert Appraisal Committee, or SEAC), are also created, under the EIA Notification, to screen, scope and appraise the projects.⁶³

For considering applications requesting environment clearance, the EIA Notification segregates applicants in two categories, 'A' and 'B', usually on the basis of size, and consequently the potential impact of such project on the environment. While 'A' category applications are considered by the central government, 'B' category applications are considered by the SEIAA. During the screening process, on the basis of applicable guidelines, if the SEAC determines that EIA is not necessary, such applications are classified as 'B2' and the remaining applications, subject to EIA, are categorised as 'B1'. Coals based power plants with capacity of 500 MW and above are covered under 'A' category, and those below the threshold, are covered under 'B' category.⁶⁴ Power plants with capacity up to 5 MW are categorised, under 'B2' category.⁶⁵

The decision-making process includes grant of Terms of Reference (ToR) by relevant EAC to undertake environment impact assessment, preparation of an environment impact assessment (EIA report) by the applicant through a public consultation, and submission of the EIA report for processing of clearance. The relevant regulatory authority (central government or SEIAA) is required to convey its decision within 105 days of receipt of the final EIA report.⁶⁶ The relevant central government body processing environment clearance (EC) is the MOEFCC. Further, industries are required to submit half yearly compliance reports with respect to status of compliance with conditions, under the clearance.⁶⁷ For a diagrammatic representation of the process of environment clearance, under the EIA Notification, see Figure 4.

Figure 4: Key Steps under EIA Notification



3. Selection of Legislation for Impact Assessment

3.1. Indicators for comparison

As indicated above, industries, including power plants, require consents for establishment and operation, under the provisions of Air Act and Water Act, and environment clearance, under the provisions of EIA Notification. In addition, compliance with conditions of consents/clearances, as the case might be, is required, during the operation of power plant. Thus, these are the most critical legislations in relation to environment protection. This was ratified during stakeholder consultations undertaken for the project.

This project envisages assessing impact of provisions of singular legislation. Consequently, costs and benefits of such legislation (amongst Air Act, Water Act and EIA Notification) must be assessed, which has the potential to impose maximum net costs on concerned stakeholders; i.e. power producers. This would necessitate comparison of potential costs and benefits of legislations under consideration. This was validated during the consultations with experts during the research design meeting for the project.

Literature on assessment and comparison of cost of doing business, suggests comparison of relevant legislations on the basis of three broad indicators, vis. time, costs, and procedures.⁶⁸ Time includes average time to obtain the approval, costs include fees paid to the regulatory authorities and compliance costs, and procedures include documentation and authorities involved in granting of clearance.

In this backdrop, and upon suitable modification of relevant factors for the purpose of this project, following indicators have been developed for comparison of selected legislations:

- Approvals: Number of approvals required
- Costs: Fees paid to regulatory authorities and amount required to be statutorily set aside to address environmental concerns
- Time: Statutory time period within which the clearance is required to be granted
- Documentation: Documentation required to obtain clearance and report compliance with conditions under clearances
- Procedures: Authorities involved in processing the clearance and
- Conditions: Conditions precedent (such as, requirement of other approvals) and subsequent (such as, installation of effluent treatment plants, etc.) to the approvals

3.2. Comparison of legislations

On the basis of indicators developed above, the comparison of EIA Notification with Air Act/ Water Act is set out in Table 6. For ease of comparison, each of the indicators has been assigned equal weightage i. e. of 1 point. Scoring has been done on the basis of perceived burden of the indicator on power producers, ascertained on the basis of literature review, analysis of sample approvals, and stakeholder and expert consultations.

Table 6: Comparison of Legislations

S. no	Indicators	EIA Notification	Score	Air/Water Act	Score
1	Approvals	One (environment clearance)	0	Two (consent to establish and consent to operate)	1
2	Cost	One time and recurring environment management cost	1	Nominal fee and compliance cost	0
3	Time period	60 days for grant of ToR (from the date of filing of application). 45 days for conduct of public consultation (from the date of filing application in this regard) and 105 days for grant of clearance (from the date of filing final EIA report)	1	Four months (from the date of filing of application)	0
4	Documents	Initial application in prescribed form with pre-feasibility report, 15 hard copies of draft EIA report, 20 hard copies of final EIA report, environment management plan	1	Application in prescribed form with relevant documents, feasibility report	0
5	Procedure	• Three step procedure, i.e. finalisation of ToR (scoping), public	1	One step procedure and Authority involved is the State Board	0

S. no	Indicators	EIA Notification	Score	Air/Water Act	Score
		consultation, and decision-making (appraisal) • Authorities involved include relevant EAC and central government/SEIAA			
6	Additional conditions	Conditions precedent include other approvals (such as from the Airport Authority of India). Stringent conditions, including continuous reporting requirements, subsequent to grant of clearance	1	Conditions precedent include other approvals, (such as environment clearance and approval for hazardous waste management). Stringent conditions, including continuous reporting requirements, subsequent to grant of clearance	1
7	Total score		5		2

The comparison suggests that EIA Notification potentially imposes greater burden on power producers, when compared with burden imposed by Air Act and Water Act.

Cumbersome process of environment and delay in grant of environment clearance under EIA Notification has been a matter of concern for power producers.⁶⁹ As on November 20, 2014, 326 proposals of environment clearance are pending.⁷⁰ Consequently, assessment of costs and benefits of provisions under the EIA Notification is necessary. This approach and findings were validated by the experts and stakeholders attending the research design meeting for the project.

This Chapter provided justification for selection of EIA Notification for conduct of impact assessment. The following Chapter discusses provisions of EIA Notification in detail, and highlight potential sub-optimal provisions and issues that might have been remained unaddressed by the EIA Notification.

Chapter 3

Identification of Issues

1. Background

The EIA Notification has been identified for assessment of costs and benefits under this project. EIA is a study to predict costs and benefits of a proposed development project, principally on environment, and compare different alternatives to identify the one which has the potential to result in achieving maximum benefit to the environment at minimum costs to the project proponent. By considering project's impact on environment and planning mitigation measures, EIA aims to protect environment, with optimum utilisation of resources, thus saving the cost and time of the project.⁷¹ Consequently, the objective of EIA Notification is to ensure sustainable development, i.e. ensure protection of environment, without adversely impacting the developmental needs of the economy.⁷²

The EIA Notification aims to achieve this objective by regulating the entry/establishment of industries (including power plants) through clearance mechanism, and ensuring management of potential adverse impact on environment, through the monitoring mechanism, by imposing conditions on operation and ensuring their compliance.

Neither the clearance mechanism nor the monitoring mechanism comes without costs. Various stakeholders, such as industry, government, public, environment, etc. are subjected to direct and indirect, monetary as well as non-monetary costs, in belief that net benefits of such clearance and monitoring mechanism outweigh the costs. Consequently, it is essential that the system works efficiently and stakeholders are subjected to only such costs that are envisaged and any additional burden is avoided. Any such additional cost has the potential to disrupt the delicate balance between the industry needs and environment, putting the objective of sustainable development in jeopardy.

The following sections undertake a critical review of provisions of the EIA Notification to identify potential statutory loopholes in the clearance and monitoring mechanism, as provided under the EIA Notification, and identify critical issues that might have been overlooked by the EIA Notification, having the possibility to impose unintended costs on stakeholders. Each section concludes with an issue statement on the basis of such theoretical analysis, and review of existing literature, highlighting the sub-optimal provision, or absence of provision, in the EIA Notification.

2. The Clearance Mechanism

The EIA Notification prescribes various timelines within which prescribed processes in relation to environment clearance are required to be completed. For a snapshot for timelines of key processes, see Table 7.

Table 7: Snapshot of Timelines

S. no	Authority	Function	Timeline
1	CEAC/SEAC	Scoping and finalisation of ToR	60 days of receipt of Form 1, failing, which ToR suggested by applicant would be deemed as final
2	SPCB	Conduct of public hearing	45 days of request from applicant, failing which the regulatory authority shall engage another public agency
3	CEAC/SEAC	Completion of appraisal	60 days of receipt of final EIA report
4	MoEF/SEIAA	Final decision	45 days of receipt of recommendations of CEAC/SEAC, failing which applicant may proceed in terms of the final recommendations of the CEAC/SEAC

While strict timelines are provided under the EIA Notification for the environment clearance process, it must be ensured that such timelines are religiously complied with. Delay in providing environment clearance could result in delay in commissioning of the projects for the industry, resulting in notional loss of revenue, and for the consumers it could result in delay in access to electricity. Time overruns could also lead to cost overruns thereby potentially escalating the cost passed on to the consumers.⁷³

A review of key provisions of EIA Notification highlights several issues, which could potentially lead to non-compliance with the time period mentioned above, resulting in delay in arriving at a decision on the clearance application. These are discussed below.

2.1. Absence of regulation of EIA consultants in clearance process

The environment clearance process requires applicants to prepare detailed documents, such as pre-feasibility report, draft and final EIA reports, environment management plan, *et al.* Owing to technical nature of these documents, specific skill set and expertise is required to prepare them. EIA consultant organisations provide such expert services to the applicants.

In order to ensure that only competent organisations prepare such EIA reports, the National Accreditation Board for Education and Training (NABET) and Quality Council of India (QCI) have issued a Scheme for Accreditation of EIA Consultant Organisations (Accreditation Scheme).⁷⁴ This scheme was formulated upon realisation that EIA reports do not measure up to the desired quality, owing to lack of competence of consultants carrying out EIAs; sub-optimal quality of data used; tendency to follow ‘cut and paste’ method; and conflict of interest as consultants work on behalf of project proponents. The government provided authenticity to such Accreditation Scheme, pursuant to an Office Memorandum dated 02 December 2009, pursuant to which, only such EIA reports, which are prepared by consultants accredited by NABET/QCI are considered by the government.⁷⁵

However, concerns have remained in relation to incomplete and inadequate assessment in the EIA studies.⁷⁶ Research indicates that significant issues, such as health, have been historically ignored in the EIA studies.⁷⁷

Other than the Accreditation Scheme, there is no regulation of EIA consultants. The EIA Notification, in its Appendix III, provides for a generic structure of the EIA report. It requires providing disclosure in relation to the consultants, and the name of consultant is required to be shown along with the project proponent in the minutes of the EACs.⁷⁸ However, failing a comprehensive regulatory regime for EIA consultants, these seem to be inadequate to ensure quality services from EIA consultants.⁷⁹

Consequently, lack of statutory provisions to regulate EIA consultants might result in submission of sub-optimal documents with incorrect or inadequate information. This potentially increases the time taken in decision-making, as the regulatory agencies (EACs, central government and SEIAA, collectively) would presumably require correct and complete information, potentially resulting in delay in the clearance process.

Issue: Absence of statutory provisions for regulation of external EIA consultants

2.2. Absence of accountability mechanisms for regulatory agencies

As mentioned in table 7 above, the EIA Notification requires relevant regulatory agencies to perform the assigned tasks within prescribed time frame. However, it is silent on consequences in case of the timelines are not adhered to. There is no statutory requirement to provide justification for delay. In addition, the regulatory agencies have unrestricted discretion to make the environment clearance condition upon any condition, as they deem fit. They are not statutory required to provide any reasons with respect to imposition of such conditions.⁸⁰

The issue of unbridled discretion exacerbates in case of EACs. The EACs are independent, expert, but non-permanent advisory bodies⁸¹, provided with wide powers. The EIA Notification provides that in case the SEIAA/MOEFCC, as the case might be, disagrees with recommendations of the relevant EAC, it will request such EAC to reconsider its recommendations, while providing reasons for its disagreement.⁸² Further, in case SEIAA/MOEFCC is not able to arrive at a decision within the statutory time limit mentioned in EIA Notification, the decision of relevant EAC is considered as final. All this seems to be provided without any accountability provisions for the EACs.

It must be noted that section 15 of EPA provides that whoever fails to comply with or contravenes provisions of the EPA, or rules made or directions issued thereunder, should be punishable with imprisonment for a term, which might extend to five years or fine which might extend to one lakh rupees, or with both, but no minimum punishment is prescribed. It is also not clear if such provisions are applicable against regulatory agencies (EACs, SEIAAs, or MOEFCC), in case of non-compliance with statutory time limits mentioned under the EIA Notification.

Section 17 of the EPA mentions that when an offence under EPA is committed by a department of the government, the head of department shall be deemed guilty of the offence. It seems that section 17 is limited to offences under EPA and does not cover contraventions and non-compliance with the rules and notifications made under EPA. Section 24 further dilutes the effect of penal provisions under EPA by exempting punishment under EPA where an act or omission constitutes an offence punishable under EPA and also under any other Act.

Consequently, there exists little accountability with respect to functioning of either the EACs or the regulatory authorities (SEIAAs, MOEFCC); in case decision is not made within the

specified time limit, or in case of imposition of unjustifiable or unnecessary conditions. The authorities are not statutorily required to provide reasons for delays in their decisions, neither does any clear grievance redressal mechanism exist in case the application is stuck with either at EAC or the regulatory authority. While, under the provisions of EPA, the central government might require any person, officer, state government or other authority to furnish any reports, returns, statistics, accounts, and other information,⁸³ there is no statutory obligation on the central government to ensure submission of any such report, thereby, resulting in diluted accountability provisions.

Absence of accountability provisions have the potential to result in delays in the decision making and imposition of unreasonable conditions precedent for grant of environment clearance, thereby resulting in delays in clearance mechanism.

Issue: Absence of statutory provisions fixing accountability of regulatory authorities

2.3. Absence of statutory provisions mandating review of capacity of, and technical support to, regulatory agencies

While it is reasonable to expect that the applications for environment clearances would increase with time, absence of statutory mechanisms to ensure review of capacity and technical support to regulatory agencies might result in delay in processing of applications. Experts have also suggested the government to provide resources, build capacity and reform institutions for better implementation of regulations.⁸⁴ Several studies in developing countries have identified resource and capacity constraints as significant hindrances in timely and effective implementation of EIA regulations.⁸⁵

Issue: Absence of statutory provisions mandating review of capacity of regulatory authorities

2.4. Delay in constitution of regulatory agencies

Four regulatory agencies are involved in the environment clearance process. These are MOEFCC, SEIAA, and the two expert advisory committees, CEAC and SEAC. While it is reasonable to expect that MOEFCC would be present at all times, same might not be the case with other authorities.

2.4.1. SEIAA

The regulatory authority empowered to grant clearance under EIA Notification at the state-level is the State Environment Impact Assessment Authority. The SEIAA consists of three members, viz. a Chairman; a professional/expert fulfilling the requisite eligibility criteria; and a member-secretary, being serving officer of the concerned State government. The Chairman and the other non-official member have a fixed term of three years.⁸⁶

Under Item 3 of the EIA Notification, a state government is required to forward names of members and the Chairman for SEIAA to the central government, and the central government is required to constitute the SEIAA, within thirty days of the date of receipt of the names.⁸⁷ Item 4 of the EIA Notification provides that in the absence of a duly constituted SEIAA, a project required to be considered by the SEIAA shall be considered by the MOEFCC.⁸⁸ This could result in clubbing of project proposals received at state and central-government level, at MOEFCC, potentially delaying the decision-making process.

Consequently, existence of a SEIAA at all times is absolutely essential to ensure that the processing of applications for clearances at state-level continues without any hindrance. While the central government is under a statutory obligation to constitute SEIAA within thirty days after receipt of names from the state government, no similar statutory time limit has been provided within, which a state government must forward the names to the central government. Consequently, there could be a situation wherein term of existing members of SEIAA has ended, without reconstitution of the SEIAA. In case of delay in constitution of SEIAA, the process of considering applications for environment clearance could be interrupted, thereby resulting in delays.

Issue: Absence of a statutory time limit within which state government is required to forward names to the central government for constitution of SEIAA

2.4.2. Expert Advisory Committees

Item 5 of the EIA Notification provides that the CEAC and SEAC shall be reconstituted after every three years. However, there is no statutory provision to ensure existence of CEAC and SEAC at all times. Consequently, there might be situations wherein term of existing members of a CEAC/SEAC has concluded, without reconstitution of such CEAC/SEAC. This could result in unnecessary interruptions in processing of applications for environment clearance, thereby resulting in delays.

Issue: Absence of a statutory provisions ensuring existence of CEAC/SEAC at all times.

2.5. Sub-optimal public consultation process

The EIA Notification envisages public consultation at the conclusion of scoping stage, through public hearing (to be conducted by SPCBs) and obtaining responses of other concerned persons. This process seems to suffer from several lacunae having the potential to delay the decision-making process. Some such deficiencies are discussed in this sub-section.

2.5.1. Lack of accountability of public agencies in the public hearing process

The EIA Notification provides that the SPCBs are required to conduct public hearing and forward the proceedings to the regulatory authority concerned within 45 days of request of the applicant. In case the relevant SPCB does not comply with the requisite time limit, the regulatory authority is required to engage another public agency, to complete the process within a further period of forty five days.⁸⁹ There is no statutory provision fixing accountability on SPCB/public agency on failure to comply with requisite time limit.

The EIA Notification also mentions that if the SPCB reports to the regulatory authority that owing to the local situation, it is not possible to conduct the public hearing in a manner, which will enable the views of the concerned local persons to be freely expressed, the regulatory authority might decide to do away with public hearing.⁹⁰

However, such provision seems to be discretionary in nature and there seems to be lack of statutory obligation on the part of SPCBs to mandatorily provide any explanation for their inability to conduct public hearing with the statutorily mandated period.

Lack of such accountability mechanisms might result in delay in public hearing process, consequently delaying the clearance process.

Issue: Absence of accountability on part of public agencies in the public hearing process

2.5.2. *Lack of clarity on persons consulted for assessment of environmental impacts*

As mentioned earlier, the EIA Notification envisages taking into account concerns of the following two categories of persons while assessing environmental impacts of projects:

- local affected persons – by conducting public hearing at the site or in its close proximity and
- others who have plausible stake in the environmental impacts of the projects – by obtaining their responses in writing

While taking into account concerns of these persons is absolutely essential, it must be ensured that concerns of ‘only’ these categories of persons are taken into account and not others.⁹¹ The EIA Notification does not define the terms ‘local affected persons’ and ‘others who have plausible stake in the environmental impacts of the projects’ making it difficult to ascertain the identity of persons taking part in public hearing and providing responses in writing. This results in a possibility of persons representing vested interests or not having any stake in environmental impact, being made party to the environment clearance procedure. This has the potential to delay the clearance process, as the project proponent is required to address the concerns of public consulted.

Issue: Absence of definition for the terms ‘local affected persons’ and ‘persons having plausible stake in the environmental impacts’

2.5.3. *Delayed and discontinuous public engagement*

As mentioned earlier, the public consultation under the EIA Notification is envisaged after the scoping stage, i.e. post submission of Form 1, draft ToR for the EIA study, and related documents by the applicant; finalisation of ToR by the relevant EAC; and preparation of draft EIA report by the applicant. While a sub-group of the EAC might undertake a site visit during the scoping process, but the same is allowed only in exceptional circumstances.⁹² After completion of the public consultation, the applicant is required to address all the material environmental concerns expressed during this process, and make appropriate changes in the draft EIA report and the Environment Management Plan (EMP). The final EIA report, so prepared, is required to be submitted by the applicant to the concerned regulatory authority for appraisal.⁹³ No public consultation is envisaged in the appraisal stage.

It seems that the public is consulted quite late in the environment clearance process.⁹⁴ Consequently, it will be understandable if it takes time to assess and evaluate the positive and negative impacts of the project. Moreover, it seems the engagement remains limited and perfunctory.⁹⁵ The public has no opportunity to ascertain if its concerns are adequately addressed by the applicant and there seems to be no process to redress grievance of public, if any remains, subsequent to revision of the EIA report and the EMP. In such scenario, approaching a judicial forum remains the sole option before public.⁹⁶ Judicial authorities usually have the power to pass an injunction against the approval process, thereby delaying the decision-making.

The best practices for public consultation comprise public engagement throughout the clearance process.⁹⁷ For instance, in European Union (EU), the public is given early and effective opportunities to participate in the environmental decision-making procedures and, for that purpose, is entitled to express comments and opinions when all options are open to the competent authority before the decision on the request for consent is taken. The public is informed of the request for consent; the fact that the project is subject to an EIA procedure;

details of the competent authorities responsible for taking the decision, those from which relevant information could be obtained, those to which comments or questions can be submitted, details of the time schedule for transmitting comments or questions; the nature of possible decisions or, where there is one, the draft decision; an indication of the availability of the information gathered from the applicant; an indication of the times and places at which, and the means by which, the relevant information would be made available; and details of the arrangements for public participation. In addition, members of the public concerned, having sufficient interest in the project, have access to a review procedure before a court of law or another independent and impartial body to challenge the substantive or procedural legality of decisions, and acts or omissions subject to the public participation process.⁹⁸

Limited and discontinuous public participation might result in public approaching judicial forums for redress of grievance, having the potential to delay the clearance process.

Issue: Sub-optimal provisions with respect to with public participation resulting in ineffective participation

2.6. Provision for only one State Expert Appraisal Committee for one state

As per Item 5 of the EIA Notification, EACs and SEACs are required to meet at least once every month. Further, the Central government might, with prior concurrence of the concerned state governments/union territory, constitute one SEAC for more than one State/Union Territory for reasons of administrative convenience and cost.

While this could suit situations wherein the flow of applications from one state is limited, and the SEAC could be well placed to adequately handle applications from other state/Union Territory as well, there might be situations of overflow of applications from one state, resulting SEAC facing challenges to screen all the applications in one meeting. As there is no provision of constituting more than one SEAC for one state, the remaining applications would have to be considered by the lone SEAC in the forthcoming meetings in subsequent months. This could result in unnecessary interruptions and delays in processing of applications for environment clearance.

Issue: Absence of a statutory provision empowering constitution of more than one SEAC for one state

2.7. Linkage of environment clearance with other factors

In the past, the government has been linking grant of environment clearances for coal based power plants, amongst other plants, to various other factors, such as availability of coal, and status of environment and forest clearances for coal intended to be sourced from a coal mine.

In terms of a circular dated 1 November 2010, issued by the MOEFCC, it was decided that proposals relating to thermal power projects, amongst others, which are largely dependent on availability of coal as raw material, will be considered only after firm coal linkage is available and the status of environment and forest clearance of coal sourced i.e. the linked coal mine/ coal block, is known. In case of projects based on imported coal, a copy of firm memorandum of understanding (MoU) signed between the coal supplier and project proponent was made pre-requisite. Further, all such proposals pending at MOEFCC/CEACs or SEIAAs/SEACs at that time were deferred and delisted till the status of environment and

forest clearance of the coal supply source for Indian coal or the MOU for imported coal was established and furnished.⁹⁹

The aforementioned procedure came in force with immediate effect (from the date of issue of circular). Presumably, the project proponents were not given any prior notice regarding the circular neither were granted any opportunity to ensure compliance with the revised procedure, which would have been possible if the circular, would have come into effect from a future date. Such an action has the potential to have critical adverse consequences in terms of delay in granting the environment clearances, imposition of additional costs, and inflating the estimated project cost.

Pursuant to circular dated 19 April 2012, the MOEFCC clarified that details of coal quality parameters, specifically (i) calorific value; (ii) sulphur content; and (iii) ash content, would need to be provided by the project proponents. In case of change in coal parameters based on which EIA is prepared, it would be necessary to refer the project back to MOEFCC to revisit environment clearance granted. The circular further mentioned that environment clearance would be issued only after stage-I forest clearance for linked mine has been issued.¹⁰⁰ This circular presumably made the environment clearance process more cumbersome, time consuming and costly. Further, it possibly increased uncertainty in the process, having made stage-I forest clearance of linked mine pre-requisite to the environment clearance of power plant. However, it must be noted that the pre-condition of stage-I forest clearance was later relaxed for ultra-mega power projects wherein the coal blocks did not fall inviolate areas.¹⁰¹

It was further clarified in the MOEFCC circular dated February 05, 2013 that it would be necessary to provide information regarding the port for the import of coal, its capacity for coal handling, transportation of coal from port to the thermal power plant by road or rail and railway rolling stock availability etc. If it is proposed to establish port, jetty or any other coal handling facility, as also construction of road/laying of railway line, etc., the same need to be covered under the EIA/EMP report of thermal power plant.¹⁰² Relevance of such additional information in an application with respect to environment clearance for a power plant is doubtful. Further, provision for such detailed information has the potential to further complicate and delay the process, and impose additional costs on the project proponent.

Linking environment clearance for coal based power plants with other factors such as forest clearance for coal mine, MoU, details of port etc., without a clear objective and adequate explanation, has the potential to make the environment clearance process cumbersome, time consuming and consequently costly. The time and cost incurred might rise significantly if such conditions are imposed, without any prior notice. This might be a result of lack of statutory provisions in EIA Notification to prevent abuse of discretion by the MOEFCC, and absence of requirement to describe objective and rationale for such conditions.

Issue: Absence of statutory provisions preventing linkage of environment clearance with other factors without adequate justification and prior notice

2.8. Absence of effective information management system

The EIA Notification envisages applicant to undertake collection and analysis of data and submission of same via various documents, including the initial application form, pre-feasibility report, and the EIA report. However, the EIA Notification provides no indication on availability of relevant baseline data. This makes the task of data collection and analysis tedious and time consuming. Moreover, the applicants become dependent on EIA consultants.

Experts have called creation of an environmental clearance information system to conduct a countrywide baseline mapping of environmental quality parameters (air, water, land use, meteorology, soil, biodiversity, social factors).¹⁰³ Availability of adequate baseline data is expected to reduce the time taken in preparation of EIA reports and appraisal of projects.

Issue: Absence of statutory provisions with respect to effective information management system

2.9. Lack of provisions with respect to regional and cumulative EIA

The EIA Notification envisages EIAs of individual projects. While information is required to be provided with respect to cumulative effects due to proximity to other existing or planned projects with similar effects¹⁰⁴, requirement of comprehensive cumulative or a regional impact assessment is absent. Experts are of the opinion that there is an urgent need to not only strengthen the impact assessments for individual projects, but also undertake regional impact and carrying capacity assessments beforehand. Clearance to individual projects should be given only in the light of recommendations of these studies, and the scale should be tempered on the basis of cumulative impact assessments.¹⁰⁵

There might be situations wherein emissions from individual plants are miniscule; however, cumulative emissions are high, and vice versa, making cumulative and regional impact assessments necessary. Statutory provisions for such EIAs would also result in creation of regional data banks, thereby cutting down the time taken to prepare EIA reports and conduct of assessments by regulatory authorities.

Issue: Absence of statutory provisions with respect to regional and cumulative EIAs

3. The monitoring mechanism

As mentioned earlier, typically, the project proponents are required to comply with certain conditions under the terms and conditions of environment clearances. These include implementation of environment management plans, *et al.* Compliance with such conditions impose direct and indirect monetary costs on project proponents, such as power producers. Compliance with conditions under the clearances is monitored by government bodies, at different levels.

At the central-level, monitoring of cleared projects is undertaken by the regional offices of the MOEFCC, with assistance from the Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCB). The primary objective of such a procedure is to ensure adequacy of the suggested safeguards and also to undertake mid-course corrections required, if any. The monitoring procedure includes field visits of officers and expert teams from the MOEFCC and/ or its Regional Offices to collect and analyse performance data of development projects. In case of substantial deviations are noticed from the stipulated conditions, the matter is taken up with the concerned state government. In addition, changes in scope of project are identified to check whether review of clearance decision is called for or not.¹⁰⁶ At the state-level, monitoring compliance with conditions of clearance seems to be a function of the SPCB. Such monitoring mechanism is designed on the basis of authority granted to the government under the EPA and the EPR.

Monitoring is necessary to ensure that conditions imposed under the clearances are complied with and ascertaining their impact on the ground. Despite having such significance, the EIA Notification puts limited emphasis on monitoring. This section reviews relevant provisions with respect to monitoring in EIA Notification, and highlights their potentially sub-optimal nature.

3.1. Absence of feedback mechanism to the regulatory authorities in relation to conditions imposed

In order to ensure compliance with conditions subject to which the clearance is granted, under the provisions of the EIA Notification, after the grant of clearance, the project management is required to submit half-yearly compliance reports in respect of terms and conditions, under the environment clearances to MoEF/SEIAA, as the case might be.¹⁰⁷ As per Item 8(4) of the EIA Notification, the compliance reports submitted by the project management are also regarded as public documents.

However, there is no statutory provision to report to the EACs if the conditions imposed by them are complied with or not (except in cases of extension or expansion of the project), reasons for non-compliance, and feasibility or practicability of the conditions. Further, there is no review if the conditions imposed actually help in addressing environmental concerns, or some better alternatives exist.

It must be recalled that EACs are the expert bodies reviewing the applications in detail, and the regulatory authorities are generally expected to conform to the recommendations of EACs. However, there seems to be no statutorily mandated feedback mechanism in relation to compliance with condition of the clearance to EACs. EIA follow-Up is an international best practice to determine outcomes of EIA and incorporating feedback in EIA process.¹⁰⁸

Experts also opine that monitoring of environmental parameters is a sporadic event rather than a continuous process. Collection of data on environmental impacts and non-compliance is reactive and ad hoc as it is mostly done by affected communities, and the data does not have any role in influencing future regulatory decisions.¹⁰⁹

This might result in imposition of sub-optimal or un-compliable conditions under the environment clearance, potentially resulting in increase in cost of developers, which would eventually be passed on to the consumers. Already, reports suggest that a large number of conditions are subjective and could not be evaluated for compliance.¹¹⁰ This situation needs to be fixed and addressed at the earliest.

Issue: Absence of statutory feedback mechanism in relation to nature of compliance to EACs

3.2. Absence of accountability of monitoring agencies

While EPA and EPR authorise SPCBs to monitor compliance with conditions, the EIA Notification does not fix accountability of such monitoring agencies in case of failure to undertake the requisite functions. Experts have raised concerns in relation to irregular monitoring of compliance with conditions under clearance.¹¹¹

Irregular and sub-optimal monitoring, owing to lack of statutory requisition to explain such performance, has the potential to impose unreasonable costs on project proponents, which is eventually passed on to consumers.

Issue: Absence of statutorily mandated accountability provisions for monitoring agencies

3.3. Absence of statutory provisions to undertake periodic capacity review of monitoring agencies

With time, while the number of environment clearances has significantly increased, there is no statutory provision to review the technical and manpower capacity of the monitoring agencies to undertake monitoring of all such project getting environment clearances. Several experts have highlighted the limited monitoring capacity of SPCBs.¹¹² Concerns have also been raised in relation to qualifications of officers manning the monitoring agencies.¹¹³

Limited technical and manpower capacity has the potential of continuous implementation of sub-optimal and unfeasible conditions on the project projects, resulting in imposition of unreasonable costs on project proponents, including the power producers, which is eventually passed on to consumers.

Issue: Absence of statutory provisions to undertake periodic capacity review of monitoring agencies

This Chapter attempted to identify critical sub-optimal provisions in the EIA Notification, and issues, which remain unaddressed under the EIA Notification, having the potential to delay the decision-making or impose unreasonable conditions on project proponents.

The following Chapter validates the sub-optimal nature of provisions identified and other issues highlighted, on the basis of data collection and analysis in relation to implementation of EIA Notification for coal-based power producers in the State of Rajasthan.

Validation and Estimation of Costs

1. Background

Subsequent to identification of potential sub-optimal provisions, and issues remaining unaddressed under the EIA Notification, on the basis of literature review and desk research, the next step in the impact assessment process is validation of deficient nature of such provisions and issues by testing the implementation of EIA Notification, on the ground.

To this end, collection and analysis of publicly available data, and qualitative assessment on the basis of stakeholder consultations was undertaken. The stakeholders included power producers, government representatives, members of expert advisory committees, experts, consultants, civil society organisations, *et al.*

1.1. Data set

In order to collect data/ relevant information to assess impact of existing provisions of the EIA Notification and issues remaining uncovered under the EIA Notification, survey of publicly available data was undertaken. During the five-year period from 2009-2014, according to publicly available information,¹¹⁴ 11 coal-based power plants based in Rajasthan have been involved in the process of obtaining environment clearances. These include public sector, private sector, and captive power plants. See Table 8 for details.

Table 8: Data Set: Power Plants Applying for EC between 2009-14

S. no.	Company	Location	Stage	Year
A. Ministry of Environment, Forests and Climate Change (Approving Authority)¹¹⁵				
1.	Adani Power Rajasthan Limited (Adani Rajasthan)	Kawai	ToR	2009
			EC	2011
			EC (amendment)	2014
2.	Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL)	Banswara (U1, U2)	ToR	2011
			ToR (extension)	2014
		Suratgarh (U7, U8)	ToR	2009
			EC	2012
		Kalisindh (U1, U2)	EC	2009
		Kalisindh(U3, U4)	ToR	2013
		Chhabra (U5, U6)	EC	2012
3.	Shree Cement*	Ajmer	ToR	2010
			EC	2010
		Pali	EC	2012
		Jhunjhunu	EC	2009
B. Rajasthan EIA Authority (approving authority)¹¹⁶				
1.	JK Cement*	Mangrol	EC	2013
2.	Banswara Syntex*	Banswara	EC	2010
*captive power plants				

The data set for these 11 power plants include applications made, ToR and EC received, minutes of Central Environment Appraisal Committee (CEAC) meetings, compliance and monitoring reports filed etc. during the period from 2009-2014. On the basis of expert guidance received at the research design meeting for the project, such data set was considered optimal for the project, considering the scope of the study and time period of the project. Consequently, the five-year period from 2009-2014 is considered review period, under the project.

In addition to analysing available data in relation to the aforesaid power plants, qualitative and quantitative information was also collected through consultations with different categories of stakeholders, viz. power producers, MOEFCC, members of CEAC, Rajasthan SEAC, Rajasthan SEAC Secretariat, experts, EIA consultants, *et al.*

The following sections test the sub-optimal nature of provisions identified in the Chapter above, by reviewing their implementation on ground. In addition, other issues identified on the basis of stakeholder interactions, which impact efficient implementation of EIA Notification, consequently putting additional burden on the stakeholders, have also been discussed. The sections also undertake a theoretical estimation of additional costs on the stakeholders owing to existence of sub-optimal provisions, absence of optimal provisions, and implementation bottlenecks, identified during the stakeholder consultations.

2. Clearance mechanism

Non-compliance with the statutory time limits will be an evidence of sub-optimal nature of clearance process, potentially resulting in imposition of unintended costs on stakeholders.

2.1. Grant of ToR

An assessment of data set provided in Table 9 above reveals that six ToRs were granted during the period 2009-14. To recall, the statutory time period for grant of ToR is 60 days from the date of filing of Form 1 application. Table 9 reveals that in none of these six cases, was the ToR issued within the statutory period of 60 days.

Table 9: Delay in Grant of ToR

S. no.	Company	Plant	Year	Delay (days)	Specific findings*
1	Adani Rajasthan	Kawai	2009	307	Time taken to provide relevant information to CEAC was around 300 days
2	RVUNL	Banswara (U1, U2)	2011	129	Time taken to consider the application in CEAC meeting was 132 days
			2014	35	Time taken to grant ToR after CEAC meeting was 63 days
		Suratgarh (U7, U8)	2009	80	Time taken to consider the application in CEAC meeting was 103 days
		Kalisindh (U3, U4)	2013	140	Time taken to consider the application in CEAC meeting was 119 days. Time taken to grant ToR post CEAC meeting was 81 days
3	Shree cement	Ajmer	2010	24	Time taken to grant ToR after CEAC meeting was 48 days

* The specific findings are on the basis of information available in public domain

As can be noticed, in five out of six cases, the CEAC was unable to consider the application within a reasonable period of time, resulting in unnecessary delays. Even after considering of application by CEAC, substantial time lapse can be noticed in some cases prior to issue of ToR.

2.2. Grant of environment clearance

An assessment of Table 9 above reveals that 10 environment clearances were granted during the 2009-14 period. To recall, the statutory time period for grant of clearance is 105 days from the date of final EIA report. Table 10 reveals that in seven of the 10 cases, statutory time period was not met.

Table 10: Delay in Grant of EC

S. No.	Company	Plant	Year	Delay (days)	Specific Findings***
1.	Adani Rajasthan	Kawai	2014*	129	Time taken to provide relevant information was 124 days, and time taken to review the application was 110 days
2.	Rajasthan Rajya Vidyut Utpadan Nagam (RRVUNL)	Suratgarh (U7, U8)	2012	40	Time taken to grant clearance after submission of information at CEAC meeting was 99 days. However, the CEAC minutes mention submission of inadequate information
		Kalisindh (U1, U2)	2009	330	Time taken to provide further information was 195 days after which 240 days were taken to grant EC
		Chhabra (U5, U6)	2012	40	Time taken to grant clearance after submission of information at CEAC meeting was 99 days. However, the CEAC minutes mention submission of inadequate information
3.	Shree Cement	Pali	2012**	116	Time taken by CEAC to provide recommendation was 98 days and by MoEF to grant clearance was 122 days
4.	JK Cement	Mangrol	2013**	36	Time taken by SEAC, Rajasthan, to provide recommendation was 93 days
5.	Banswara Syntex	Banswara	2010**	62	Time taken by SEAC, Rajasthan, to provide recommendation was 113 days
<p>* extension of environment clearance¹¹⁷ ** captive power plants ***the specific findings are on the basis of information available in public domain</p>					

As can be noticed, in at least five of the seven cases, CEAC/SEAC or the regulatory authority (MOEFCC/SEIAA), as the case might be, were unable to process the applications within a reasonable period of time.

Consequently, the proposition developed in the earlier chapter that despite statutory time limit under the EIA Notification to make a decision with respect to grant of ToR and environment clearance, delays could happen, stands validated.

3. Possible Reasons for Delay in Clearance Process

Subsequent to establishing the fact of delays in the clearance process, one should examine if the delays could be attributed to the sub-optimal provisions, or absence of provisions, under the EIA Notification, as identified in the previous Chapter (Section 2 of Chapter 3).

3.1. Absence of regulation of EIA consultants in clearance process

As discussed earlier, power producers engage EIA consultants to procure requisite information and prepare forms and EIA reports. At times, these reports are incomplete or incorrect in nature, forcing the EACs to provide exhaustive comments, to incorporate the same time is required, resulting in delays.

For instance, with respect to the Suratgarh plant of RRVUNL, the CEAC, in its meeting dated 06 September 2010, observed¹¹⁸:

“The Committee observed that the TORs prescribed were not fulfilled and the proposal is premature for taking a decision. It was also observed that some of the responses made in response to issues raised during the public hearing were improper and inadequate”.

With respect to the same plant, and for the plant in Chhabra, in its meeting dated 04 July, 2011, the CEAC observed:¹¹⁹

“The committee further noted that the EIA/EMP Report submitted for appraisal has not addressed adequately the contents of the ToR prescribed such as a primary survey of flora and fauna; Hydro-geological study; CSR action plan etc. which were required to be formulated while applying for environmental clearance. The Committee therefore decided that the project proponent may address point-wise compliance of the ToR and shall come back with full details. Accordingly the proposal was deferred for re-consideration at a later stage”.

In addition, in meeting on December 05, 2013, with respect to the environment application for the Shree Cement project, the CEAC observed:¹²⁰

“The Committee felt that the calculations for ash generation appeared to be incorrect and hence shall be re-calculated. The Form-I shall also be revised accordingly. Further, the details of the existing and proposed fuel also need to be submitted”.

The NGT has also quashed environment clearances granted on basis of inadequate EIAs.¹²¹ In addition, during the stakeholder consultations, it was mentioned that there have been instances of EIA consultants replicating data of a region in a report of a different region, submission of incorrect or incomplete information, *et al.*

Under the current arrangement of accreditation through NABET, while NABET has the right to cancel or suspend accreditation on non-compliance with conditions of accreditation, violation of code of conduct, etc. these provisions do not seem to be adequate deterrent from submission of false or misleading information on the part of EIA consultants.

One of the reasons could be that incentives of EIA consultants, being paid by project proponents, are linked to various milestones in process of grant of environment clearance.¹²²

This leads to conflict of interest between the role of EIA consultants and the interests of project proponents. This was also validated during stakeholder consultations.

Under the current scheme of accreditation, the EIA consultants are required to avoid/or declare any conflict of interest that might affect the work to be carried out. However, it was revealed during stakeholder consultations that such provisions seem to be sub-optimal and the consultants continue to work with the intention of getting clearance, often through submission of incomplete and incorrect information. Consequently, it seems that guidelines for accreditation for EIA Consultants, issued by NABET and QCI¹²³ are not adequate deterrent, absent regulation of EIA Consultants under the EIA Notification.¹²⁴

3.2. Absence of accountability mechanisms for regulatory agencies

As mentioned earlier, a glance at tables 9 and 10 above reveal that in significant number of cases, relevant EACs were unable to comply with the statutory time limits for recommendation of grant of ToRs and ECs. Similarly, Rajasthan SEIAA/ MOEFCC were unable to comply with timeline for grant of ToRs and environment clearance. However, surprisingly, a random survey of issued ToRs and clearances shows that while these reveal the dates of meetings of different authorities, there is no explanation for delays.

In addition, the regulatory authorities are not statutory bound to provide reasons for the conditions, which are imposed under the ToR of the environment clearances. A review of publicly available documents shows that the conditions, while standard, are listed under the relevant documents, without reasonable explanation. It was revealed during stakeholder consultations that often, the regulatory agencies end up imposing unreasonable preconditions to clearance, compliance with which require time, resulting in delays in the clearance process.

For instance, the CEAC, in its meeting on 07 March 2011, while discussing the Kawai Plant of Adani Power Rajasthan Limited, noted:¹²⁵

“The Committee taking note of presence of Scheduled species in the study area even though there are no wildlife sanctuary, national parks etc. within 15 Km, decided that the project proponent shall prepare a conservation plan for wild life protection in consultation with the Office of the concerned Chief Wildlife Warden for implementation before commissioning of the plant”.

The NGT has often reprimanded the EACs for adopting casual approach in imposing conditions in environment clearance.¹²⁶ In addition, during the stakeholder consultations, it was revealed that in one of the matters, CEAC confused *Gram Sabha* with *Gram Panchayat*, and mandated the power producer to take consent from the wrong body. This resulted in delay in the clearance process.

Further, it was revealed during the stakeholder consultations that at times, EACs tend to revisit the issues of site selection during the appraisal process to seek additional studies, which result in huge delays for the project. Pursuant to a circular dated 07 October 2014, the MOEFCC advised EACs to consider the proposals comprehensively at the scoping stage itself. The circular further states that in rare cases where, during the appraisal process some new facts come to the notice of EACs and it becomes inevitable to go for additional studies from the proponent beyond the ToR, EACs were required to unambiguously reflect the same in the minutes of the meeting with complete justification.¹²⁷

Much of the above seems to be a direct consequence of a complete lack of accountability provisions under the EIA Notification with respect to the EACs, MOEFCC and the SEIAA. Lack of accountability of regulatory agencies has been one of the reasons for delay in decision-making. This is despite the fact that regulatory authorities have adequate operational independence, while they might be dependent on government financially. As stated earlier, the EACs comprise of independent members, and seem to function without any interference from the respective governments. The compensation to EAC members and the respective Secretariats' officers is paid by the government. Other regulatory agencies are government departments or are attached to government departments, and consequently might not be free from government interference. While some reforms have been initiated through issuance of circulars, a comprehensive restructuring might not be possible unless the statutory provisions enshrined in the EIA Notification are revised.

3.3. Absence of statutory provisions mandating review of capacity of, and technical support to, regulatory agencies

3.3.1. MOEFCC/ SEIAA

For administrative convenience and efficiency, work at MoEFCC has been divided into different divisions. Administration of EIA Notification is undertaken by the Impact Assessment division (IA division).¹²⁸ The application and relevant documents in relation to the environment clearance are initially scrutinised by technical staff of IA division, prior to placing it before relevant CEAC.¹²⁹ Further, if any clarification is required from the project proponent by the CEAC, the IA division communicates such clarifications to the applicant. In case of minor clarifications, the IA division takes a decision on the basis of responses provided.¹³⁰ Besides EC process, other functions of the IA division include follow-up of litigations related to EC and other issues, conducting various studies,¹³¹ and preparation and issuance of notifications on amendments.

A 2001 review of capacity of the IA division commented, *“it seems that the number of technical staff in each of the section is woefully inadequate. The Division also lacks its own legal cell with qualified legal experts. The sector-specific Sections have formed Environment Appraisal Committee as per EIA Notification for appraisal and EC related decision-making. However, the section has to provide the infrastructure support to the EC process and also engage and respond to any opposition related to any particular EC decision including legal actions.”*¹³² The review recommended that the IA division must comprise of a technical cell under each section, panel of independent reviewers, and an environment appraisal committee. It also recommended training of officers of the division.

While it seems that with time, some modifications have been made to enhance the capacity of IA division, comprehensive restructuring remains absent. This was validated during stakeholder consultations wherein it was mentioned that huge capacity constraints still remain in the IA division. It was mentioned that the increase in workload of the IA division is not merely on account of increased number of applications for environment clearances but other factors as well, such as surge in litigations against MOEFCC, resulting in preparation of affidavits by officers of the IA division. In addition, it was revealed during the stakeholder consultations that pursuant to promulgation of the Right to Information Act, 2005, officers in the IA division are also required to prepare appropriate responses to the information requests. The inflow of applications under the RTI Act has been steadily increasing.

Further, the government has recently moved to an online submission system for TOR/ EC proposals. The official memorandum dated June 06, 2014, in this regard, states that the IA division needs to be fully prepared for the same, as the ToR and EC applications have to be examined within five and fifteen days, respectively, by the Member Secretary concerned, before being placed before the concerned CEAC. The Member Secretary and the Secretariat to the CEAC is part of the IA division of MOEFCC.¹³³ While the online system is expected to streamline environment clearance process, implementation bottlenecks in form of capacity constrain might hinder achievement of objectives.

The situation of SEIAAs is no different. While these are independent bodies constituted to deal with environment applications, sans adequate capacity and technical assistance, there are instance galore of sub-optimal performance.

Consequently, it seems that the MOEFCC/SEIAAs are grappling with inadequate resources to deal with environment clearance applications. This is resulting in inability of these agencies to comply with the statutory time limits mentioned in the EIA Notification. It must be noted that the financial allocation to the MOEFCC during the annual budgets has been steadily decreasing. During fiscal 2014, the total allocation was around Rs1,890 crore, which was reduced to around Rs1,384 crore (budgeted estimates) in next fiscal. This budgeted allocation has been further reduced to around Rs1,230 crore for fiscal 2016.¹³⁴ Interestingly, the total budgetary allocation for education and training for environment related matters has remained constant at around Rs110 crore for fiscal 2015 and fiscal 2016. During the same period, the budgetary allocation for CPCB reduced from around Rs81 crore to around Rs72 cr. and for EIA Programme reduced from around Rs3.78 crore to Rs2.10 crore (a reduction of around 44 percent).¹³⁵ Absent a statutory provision in the EIA Notification requiring periodic review of the technical capacity of the agencies, the delays might continue.

3.3.2. EACs

Capacity related concerns have been highlighted in past in relation to EACs. There have allegations that the members of EACs had no experience in environment issues.¹³⁶ In addition, the members of CEACs/SEACs are part-time in nature, and get a token honorarium of approximately Rs3,000 for a day of sitting, in addition to travel allowance.¹³⁷ The honorarium is paid only for the day of meeting and not for the days of travel to-and-from the meeting location. As revealed during the stakeholder consultations, this is paltry when compared to the daily honorarium offered to the EAC members in their usual profession. Consequently, while monetary compensation might not be the primary objective, but its insufficiency contributes little motivation on the part of EAC members to attend the meetings and comply with the statutory time period mentioned in the EIA Notification.

While the CEAC is supported by IA division MOEFCC, capacity constraints of which have been discussed earlier, the SEACs are usually supported by dedicated Secretariats.¹³⁸ The Secretariat receives applications, undertakes initial review, and places the applications before SEACs. SEAC Secretariats are manned by a Secretary, who is usually a Senior Environmental Engineer, and few Technical Sector Officers (TSO), who are usually sector experts involved in initial review of applications. During the stakeholder consultations, it was mentioned that while three TSO positions (building, mining, and industry) have been sanctioned for SEAC Rajasthan, one position (industry) remained vacant for a considerable period of time. In addition, the TSOs are paid a paltry monthly basic remuneration of around Rs25,000, which is not commensurate to services expected from TSOs. In addition, the monthly basic remuneration paid to Secretary (SEAC) is estimated to be around

Rs1,00,000,¹³⁹ but limited staff is assigned to it. Consequently, under-staffed EACs and respective Secretariats, having limited incentives to work, result in delaying the clearance process.

This is evident from a review of minutes of CEAC meetings, which suggest that minutes of the immediately prior CEAC meeting are often not finalised by the date of next CEAC meeting, resulting in postponement in their confirmation. As a result, no further action is possible on the minutes, resulting in delays in making recommendations to MOEFCC/SEIAA, and decision- making on application for environment clearance.

Consequently, absence of statutory provisions under the EIA Notification requiring periodic review of incentives, capacity and technical support to the EACs, MOEFCC/SEIAA might be delaying the clearance process.

3.4. Delay in constitution of regulatory agencies

A review of minutes of meetings of CEAC of thermal power and coal mine projects¹⁴⁰ during the 2009-2014 period reveal that it has had regular meetings on a monthly basis, except for the following months:

Table 11: Delay in Constitution of CEAC

S. no	Year	Months	Reason¹⁴¹
1	2010	May, June	Reconstitution of the committee ¹⁴²
2	2013	June, July, August	Reconstitution of the committee

Consequently, pending reconstitution of the relevant CEAC, applications got stuck, resulting in avoidable delays. This seems to be practice in Rajasthan SEAC as well, as at least one stakeholder mentioned that its application for clearance was stuck with SEAC for quite some time, as the SEAC had not been reconstituted.

It was also mentioned during the stakeholder consultations that Rajasthan SEAC was not reconstituted, till the time of stakeholder consultation. In addition, one must note that the Rajasthan SEIAA has not granted any clearances after May 2014.¹⁴³ This might also be on account of delay in reconstitution of Rajasthan SEIAA.

Consequently, it seems that delay in constitution of regulatory agencies is contributing to delay in processing of clearance applications.

3.5. Sub-optimal public consultation process

As discussed during previous chapter, the public consultation process, as enshrined under the EIA Notification, seems sub-optimal owing to various potential infirmities. A review of the process on the basis of evidence collection is discussed herein below:

3.5.1. Lack of accountability of public agencies in public hearing process

As mentioned earlier, public agencies like SPCBs have a significant role in the public hearing process, and they are required to complete the public hearing within the time period prescribed in the EIA Notification. It was revealed during stakeholder consultations that the

project proponent is required to pay a fixed amount/fee to the State Pollution Control Boards (SPCBs), in order to conduct public hearing. The fee is dependent on the size and complexity of the project and typically ranges between Rs1-10 lakhs, as revealed during stakeholder consultations.¹⁴⁴

A random review of dates mentioned under the environment clearances granted during the project period reveals huge time difference between grant of ToR and conduct of public hearing. See Table 12 for details.

Table 12: Time Period between Grant of ToR and Public Hearing

Project proponent	Location	Time period (days)
RRVUNL	Chhabra	66
	Suratgarh	196
Adani Power Rajasthan Limited	Kawai	48
Shree Cement	Ajmer	160
JK Cement	Mangrol	137

While the responsibility of SPCBs commences on receipt of application by the project proponent for the public hearing, as evident from the table above, substantial time lapse is usually noticed between the grant of ToR and conduct of public hearing. A lack of explanation on the part of the SPCBs complicates the situation and makes ascertaining cause of delay difficult.

However, it could be reasonably deduced that absence of statutory provisions fixing accountability on the part of SPCBs could be one of the reasons for delay in the public hearing, resulting in procrastinating the environment clearance process.

3.5.2. Lack of clarity on persons consulted for assessment of environment impacts

It was revealed during stakeholder consultations that at times, persons not having genuine interest, or having vested interest, end up making objections and delaying the process. At times, even the concerns raised by affected persons are outside the scope of public consultation process.¹⁴⁵ Absence statutory provisions clearing defining the persons eligible to participate in the process, the delays might continue.

3.5.3. Delayed and discontinuous public engagement

The stakeholder consultations revealed that the public consultation happens quite late in the clearance process.¹⁴⁶ Neither the project proponent, nor the public have a formal opportunity to interact, explain their position, and sort of differences, if any, subsequent to the revision of the final EIA report. At times, this results in disgruntled public representatives approaching judicial authorities, resulting in delays in decision-making on the application for environment clearance.

3.6. Provision for only one State Expert Appraisal Committee for one state

It was mentioned during the stakeholder consultations that at times, on account of overflow of applications, it was not possible to place all such applications before the forthcoming SEAC meeting. Consequently, some of the applications were placed during the subsequent SEAC meetings, resulting in delays in the clearance process.

3.7. Linkage of environment clearance with other factors

As mentioned in the previous Chapter, linkage of environment clearance with other factors such as coal linkage, clearances of coal mine, and details to port etc., without any adequate explanation have the potential to impose additional cost and delay the environment clearance process.

This was validated during the stakeholder consultations wherein it was mentioned that the pre-condition of coal linkage and other related clearances is a major factor in delay of environment clearance process. It was further mentioned that while the power producer is agreeing to comply with conditions under environment clearance for coal based power plants, the environment clearance for coal mine is separate process altogether, wherein the power producer has, in most cases, little control, and thus it is not in a position to ensure compliance with the conditions mentioned under the clearance for mine. It thus makes little sense for linking the two environment clearances. Even if there is an acceptable logic to link the environment clearance with other factors, it must be ensured that the adversely affected parties are given adequate advance notice and time to prepare for compliance with change in conditions.

Consequently, it seems that the linkage of environment clearance of coal-based plant could be a result of absence of statutory provisions to check discretion on the part of the statutory authorities, and lack of condition precedent to use the discretion.

In addition, the government has often been criticised of making changes to EIA Notification, which have either been piecemeal and in the nature of ‘tinkering with the clauses’, or have resulted in sweeping changes without any theoretical or empirical basis regarding their positive environmental and social outcomes.¹⁴⁷ This also seems to be a result of unchecked discretion provided to the government, under the statute.

3.8. Absence of effective information management system

It was revealed during stakeholder consultations that one of the biggest challenges faced in conducting EIA is availability of reliable baseline data. Data collection and analysis takes up significant time in preparation of relevant documents and the EIA report. During the appraisal process as well, absence of a data repository makes it difficult for the regulatory agencies to ascertain the correctness and adequacy of data and information submitted.

Consequently, lack of effective information management system results in delay in decision-making on applications made for environment clearances.

3.9. Lack of provisions with respect to regional and cumulative EIA

During the stakeholder consultations it was felt that lack of statutory provisions mandating consideration of cumulative impacts of other projects in region hinder the effectiveness of EIA. Focus on individual EIAs alone results in sub-optimal appraisal process, as well. Statutory requirements with respect to regional and cumulative EIAs are expected to reduce the time and efforts in preparation and appraisal of individual EIAs and thus avoidance of delays in decision-making on individual applications.

4. Notional cost of delay in clearance process

The delay in grant of environment clearance could result in delay in start of construction and consequently commissioning of the power plant.¹⁴⁸ As the plant would start generating electricity from a later date, this could result in notional loss of revenue, and the consumers being deprived of the electricity for a longer period of time.

4.1. Kalisindh TPP Unit 1

As mentioned earlier, the Kalisindh TPP Unit 1 is owned by RRVUNL. It achieved its commercial operation date on 07 May 2014. Consequently, it is expected to operate for 329 days during the financial year 2014-15.¹⁴⁹ Its aggregate revenue requirement from sale of power during this period has been estimated at Rs1,706.57 crore.¹⁵⁰

As discussed in table 10 above, the grant of environment clearance for Kalisindh Unit 1 was subject to inordinate delays. Literature as well as stakeholder consultations have established a positive correlation between delays in grant of statutory clearances and delay in commercial operation.¹⁵¹ Thus, it could be reasonably assumed that save for delay in grant of environment clearance; Kalisindh Unit 1 could have operated for entire period of 365 days during the financial year 2014-15, i.e. additional 36 days. Consequently, the notional loss of revenue for RRVUNL from Kalisindh Unit 1 during financial year 2014-15 could be expected to be around Rs186.73 crore.

In addition, it must be noted that original estimated cost of Kalisindh TPP (Unit 1 and 2) was Rs4,600 crore.¹⁵² The environment clearance letter estimated an escalated project of Rs5,416 crore.¹⁵³ The causal relation between delay in grant of statutory clearance and cost overrun has been established in literature¹⁵⁴, and was also validated during stakeholder consultations. Consequently, the cost overrun of Rs816 crore could be substantially attributed to delay in grant of environment clearance.

4.2. Other power plants

It seems that other than Kalisindh TPP Unit 1, none of the power plants under consideration during the review operation has achieved commercial operation. Consequently, the notional revenue loss could be projected on the basis of rate of sale of power in the past from existing plants of the relevant power producer at the same location, and projected power production could be estimated on the basis of past performance of existing plants of the relevant power producer at the same location.

Consequently, the projected loss of revenue to select power plants is estimated in Table 13

Table 13: Projected Revenue Loss

Power plant	Projected capacity addition* (Kw)	Estimated plant load factor (%age)**	Projected capacity utilisation (Kw)	Estimated rate of sale of power (Rs Kwh) ***	Projected revenue loss on commissioning (Rs in lakhs)****
Suratgarh U7, U8	13,20,000	71.61	9,45,252	4.09	38.66
Chhabra U5, U6	13,20,000	63.22	8,34,504	2.89	24.12

** To the existing facilities of RRVUNL at the same location
**PLF is estimated to be equal to PLF for the fiscal 2013-14. For details, see, Performance Indices at Glance of Suratgarh Super Thermal Power Station, at <http://www.rvunl.com/SuratgarhSTPS.html>, and Operation Parameters of Chhabra Thermal Power Project, at <http://www.rvunl.com/ChhabraTPS.html>, accessed on 10 December 2014
***Central Electricity Authority, Rate of sale of power for the year 2012-13, Executive Summary, Power Sector, October 2014, available on http://www.cea.nic.in/reports/monthly/executive_rep/oct14.pdf, accessed on November 24, 2014. The rates are rate of sale of power from existing facilities of the power producer to which capacity addition is envisaged.
****Projected capacity addition X rate of sale of power. Consequently, the projected revenue loss is on hourly basis.*

In order to meet power deficits, states indulge in inter-se exchange of power. Table 14 provides details in relation to net power purchased by state of Rajasthan during select years of the review period.

Table 14: Energy Purchased by Rajasthan from other States

Financial Year	Net energy purchased (MU)
2009-10	3,183.3
2010-11	4,586.7
2011-12	1,117.8

Source: Load Generation Balance Reports of respective years

The power was procured by Rajasthan to meet the shortage in available power. It could be reasonably assumed that in case the power projects were commissioned as per schedule, to a limited extent, the requirement to purchase power from other states might not have arisen.

5. Monitoring Mechanism

As mentioned earlier, clearance and monitoring mechanisms are the means to achieve sustainable development under EIA Notification. Monetary and non-monetary costs are imposed on industry through terms and conditions of the environment clearance and the monitoring mechanism must ensure that the costs imposed address and manage the adverse effect on environment. In addition, an optimal monitoring mechanism must be linked to clearance mechanism to ensure that regulatory authorities imposing conditions are aware of the feasibility, status of compliance and impact of conditions, and only such costs are imposed, which can result in commensurate benefits.

A snapshot of environment management plan (EMP) costs imposed on select coal based power plants under consideration for the study, is provided in the Table 15.

Table 15: Environment Management Plan Cost

S. no.	Company	Plant	Year	EMP cost	
				Capital cost (Rs. cr.)	Recurring yearly cost (Rs. cr.)
1	Adani Rajasthan	Kawai	2011	28	5.6
2	RVUNL	Suratgarh	2012	31.70	6.33
		Kalisindh (old)	2009		255**
		Kalisindh (new)*	2013		33**
		Chhabra	2012	31.70	6.33
3	Shree Cement	Ajmer	2010	5	1
		Pali	2012	60	0.50
		Jhunjhunu	2009	31	0.50
4	JK Cement	Mangrol	2013	8.53	0.31
5	Banswara Syntex	Banswara	2010		3**
* ToR (proposed)					
** Total EMP cost					

As evident from the table above, substantial costs are imposed on the power producers to address and manage the potential damage done on the environment. In addition, the clearance is subject to various other conditions, such as, installation and maintenance of pollution control equipment, sewage treatment plant, ambient air quality monitoring system, *et al.* These conditions are generally segregated as ‘general’ and ‘specific’ in nature. As per stakeholder consultations, this resulted in ambiguity regarding applications of the conditions. Pursuant to a circular dated 07 October 2014, the MOEFCC has instructed phase-wise (pre-construction; construction; post-constructions; entire life of the project) categorisation of conditions.¹⁵⁵

The sub-sections below attempt to validate the sub-optimal nature of provisions and issues identified in the EIA Notification, in the previous Chapter.

5.1. Feedback mechanism to the regulatory authorities in relation to the conditions imposed

As discussed earlier, it is imperative that authorities imposing costs (i.e. EACs, MOEFCC and Rajasthan SEIAA) are aware of status of their compliance, impact, and if better alternatives exist. However, it was revealed during stakeholder consultations that the EACs, who undertake an in-depth appraisal of the environment clearance application, play no role in the monitoring mechanism. Neither any feedback mechanism exists in relation to the feasibility and practicability of the conditions imposed by EACs.

Consequently, at times, extraneous and irrelevant conditions are imposed.¹⁵⁶ It was revealed during stakeholder consultations that significant technological upgradation might have rendered some of the conditions usually imposed under environment clearance, less relevant. This seems to be a result of absence of statutory provisions in the EIA Notification requiring feedback in relation to feasibility, compliance, and impact of conditions.

5.2. Absence of accountability of monitoring agencies

It was revealed during stakeholder consultations that while the regional offices of MOEFCC and SCPBs are required to undertake effective periodic monitoring, more often than not, it remains a perfunctory and superficial exercise. A random survey of compliance reports of plants under consideration for the project also reveals that usually the monitoring reports are devoid of significant and relevant details.

This seems to be a result of absence of strict accountability provisions for monitoring agencies.

5.3. Absence of statutory provisions to undertake periodic capacity review of monitoring agencies

The stakeholder consultations revealed that while the workload of monitoring agencies have increased many times, their technical and manpower capacity has faced neglect. It is necessary to ensure that monitoring agencies are equipped with adequate capacity to perform the assigned tasks. Absence of statutory provisions mandating periodic capacity review seems to have made significant contribution to lack of upgradation in capacity of monitoring agencies.

6. Possible impact of Supreme Court order of cancellation of coal blocks

Subsequent to allegations of lack of transparency in procedure for allocation of coal blocks and crony capitalism, and protracted litigation in this regard, the Supreme Court of India recently cancelled the allocation of 214 coal blocks made during last 20 years. Of the 214 coal blocks cancelled, 36 had started production, and consequently were supplying coals to coal-based industries, including power plants. Of such 36 power plants, two (Parsa east and Kanta Basan) were owned by RRVUNL, a Rajasthan-government owned power plant under review in the project.¹⁵⁷ Coal was supplied from these coal mines to Chhabra and Kalisindh plants of RRVUNL.¹⁵⁸ While the Supreme Court has allowed production up to March 31, 2015, one is not clear about the current and future state of operations of such linked coal-based power plants.

The Supreme Court in its order has also imposed an additional levy of Rs295 per tonne of coal mined since inception by the block allottees, which was to be deposited by December 31, 2014, and estimates suggest that RRVUNL will have to pay a penalty of Rs44 crore.¹⁵⁹ It could be reasonably expected that this additional cost will be passed on to the consumers.¹⁶⁰

Pursuant to the Supreme Court order, the government has decided to allocate the cancelled coal blocks to successful bidders pursuant to the Coal Mines (Special Provisions) Bill, 2014 (Coal Mines Bill).¹⁶¹ The Coal Mines Bill provides for allocation by way of public auction by competitive bidding, upon payment of fees. Government companies that carry on coal mining operations in India are eligible bidders. While the Coal Mines Bill authorises central government to allot cancelled coal mine to a government company, which has been awarded a power project on the basis of competitive bids for tariff from such coal mine, in accordance with such rules as may be prescribed by the central government¹⁶² and governs the treatment of rights and obligations of prior allottees of coal mines, and rights *inter-se* prior allottees and subsequent allottees,¹⁶³ it is not certain if RRVUNL will be re-allocated its existing, or any other, coal blocks.

The aggregate coal output from the coal blocks owned by RRVUNL up to March 2014 was 0.59 million metric tonne, and was projected to be around 5.50mn tonne during the financial year 2014-15. The estimated aggregate geological reserve of these coal blocks is around 360mn tonne.¹⁶⁴ Consequently, uncertainty persists if RRVUNL will have access to such coal reserve in future. Such uncertainty is expected to adversely impact the existing operation and expansion/ future plans of RRVUNL, which will in turn negatively affect the access and cost of electricity to its existing and potential consumers.

This Chapter validated the assumptions with respect to sub-optimal provisions, and issues not dealt with, under the EIA Notification as made under the previous Chapter. The Chapter also highlighted the costs imposed on the power producers, as a result of such sub-optimal provisions and ignored issues.

The next Chapter suggests some statutory alternatives to these sub-optimal provisions, and provisions to address issues not covered. In addition, the following Chapter will also highlight costs and benefits of such proposed alternatives.

Alternatives and their Costs and Benefits

1. Background

The previous Chapter identified sub-optimal provisions in EIA Notification, issues remaining uncovered, and costs imposed on various stakeholders as a result sub-optimal execution of EIA Notification.

This Chapter attempts to provide alternatives to certain existing deficient provisions of the EIA Notification, and also suggest certain new provisions to ensure that the purpose of EIA Notification is achieved. The alternatives have been designed, and their impacts have been estimated, on the basis of in-depth research stakeholder consultations. Wherever possible, estimated costs and benefits have been quantified. In remaining cases, qualitative information has been analysed for estimation and comparison of impact.

2. Regulation of EIA consultants

At present, EIA consultants are not regulated under EIA Notification. Self-regulation in form of Accreditation with NABET prevails. While there are some legislative provisions requiring disclosure of consultants, it does not tantamount to regulation.¹⁶⁵

2.1. Alternative 1: Detailed regulation of EIA consultants under EIA Notification

It is proposed that the EIA consultants must be regulated directly by MOEFCC through the EIA Notification. The EIA Notification should provide detailed eligibility criteria for EIA consultants, and persons complying with such criteria might apply for certificate of registration with the MOEFCC for functioning as EIA consultants. The registration could be on payment of registration fee, and subject to renewal on a periodic basis, on payment of renewal fee. The registration should be granted within a reasonable time frame (preferably, not more than the time taken accreditation under the current regime). The consultants would certify compliance with minimum standards of service at all times, and submit annual reports with the MOEFCC, in electronic format, highlighting the adverse comments of EACs or MOEFCC on documents prepared by consultants. Continued compliance with conditions of performance will be a precondition for renewal. Contravention with minimum standards laid down under the EIA Notification, without reasonable explanation by EIA consultants, would attract penalties, including suspension and cancellation of certificate of registration by the MOEFCC.

The EIA Notification would also lay down a detailed code of conduct for the EIA consultants and the consultants would have to submit a detailed clause wise compliance report with provisions of such code. The code will have detailed provisions on disclosure and management of conflict of interest. The code will also require consultants to make a declaration about correctness and relevance of the information submitted to the regulatory agencies.¹⁶⁶

2.1.1. Potential costs of alternative 1 to government

It is expected that MOEFCC will need to be equipped to deal with applications for grant and renewal certificate of registration from prospective consultants. To recall, IA division in MOEFCC deals with all matters relating to environment clearance.¹⁶⁷ Currently, there are six sectors¹⁶⁸ within the scope of IA division and the total strength of the IA division is around 20 individuals.¹⁶⁹ Consequently, around 3 individuals are assigned per sector.

EIA consultants could make applications for registration to undertake EIA in one or more sectors. Consequently, officers managing relevant sectors in the IA division will be required to deal with registration applications of EIA consultants as well.

Assuming adequacy of current capacity in IA division to undertake currently assigned tasks, it is proposed that one additional officer be posted in each of the sector-teams to deal with application and renewal process of EIA consultants. Such officer will also be responsible for assessment of compliance with minimum standards under EIA Notification, undertaking and managing monitoring and supervision of EIA consultants, and review of annual reports filed by consultants.

The basic annual remuneration of a senior technical officer in the IA division is estimated to be around Rs10,00,000.¹⁷⁰ Consequently, the annual basic remuneration cost to MOEFCC for six additional officers would be around Rs60,00,000 (excluding additional incentives). In addition, expenses would need to be incurred to set up technological and physical infrastructure.

As on November 07, 2014, 171 organisations¹⁷¹ are accredited with NABET/QCI under its Accreditation Scheme. Consequently, manpower of six officers seems adequate to review the applications, evaluate eligibility, examine annual reports, assess non-compliance and recommend adverse action. As mentioned earlier, currently consultants are required to get accreditation under the NABET/QCI Accreditation Scheme, which is valid for a period of three years. Similarly, under the proposed registration process with MOEFCC, the certificate could be made subject to renewal after a period of three years.

Estimated annual basic remuneration cost to government: Rs60,00,000 (excluding other incentives)

Additional costs: One-time ICT and physical infrastructure cost to the government

2.1.2. Potential costs of alternative 1 to EIA consultants

Under the Accreditation Scheme, the estimated fees structure of EIA consultants is detailed in Table 16.

Table 16: Estimated Fee Structure for EIA Consultants

Fee	Amount in 2011 (Rs)
One time application fee	30,000
Annual document review fee	30,000
Annual office assessment fee	60,000
Annual fee for analysis of office assessment and preparation of final report	22,500

Fee	Amount in 2011 (Rs)
Annual accreditation fee	20,000
Annual fee for sectors accredited	18,000
Miscellaneous (travel, boarding and lodging)	19,500
Total Average Annual Fee	2,00,000

With an annual inflation of around 10 percent, the estimated average fee per EIA consultant is projected to be around Rs3,00,000 per consultant. Consequently, the total annual fee collected from around 170 consultants would be approximately around Rs5 crore.

If the current cost structure is retained and the registration process moves from NABET/QCI to MOEFCC, the cost burden on EIA consultants would remain the same. The government would collect fees from EIA consultants and to that extent NABET/QCI will be at loss.

While the registration cost for EIA consultants is expected to remain constant, their cost of compliance with the directions issued by MOEFCC is expected to go up. This is on account of the requirements to submit periodic reports with MOEFCC and possibility of penalties in case of any contravention of standards. The costs will also increase as EIA consultants would be required to submit report of compliance with the mandatory code of conduct.

Estimated increase in direct costs to EIA consultants: Nil

Additional cost: Increase in compliance costs

2.1.3. Potential benefits of alternative 1 to power producers and consumers

Legal sanctity to the EIA consultant registration scheme and regulatory review of EIA consultants is expected to put performance pressure on EIA consultants. Such legal sanctity will also put an end to the speculation that the Accreditation Scheme developed by QCI, an organisation promoted jointly by industry associations, is inadequate to regulate the standards of services by consultants (which are also engaged by industry), and is not able to address the conflict of interest between consultants and industry.

Consequently, it is expected that registration and monitoring of EIA consultants by MOEFCC will result in improvement of performance of EIA consultants, and submission of correct and complete information. This is expected to ensure compliance with the statutory time period provided for the grant of environment clearance. This is expected to result in prevention of potential loss of revenue to the power producers and access to electricity in a timely manner by the consumers.

Estimated benefits to power producers and consumers: Significant

2.1.4. Potential benefits of alternative 1 to government

The expected additional cost to MOEFCC in setting up a registration mechanism, in form of employee and infrastructure cost, is expected to be outweighed by the fee collected from EIA consultants on an annual basis.

Estimated benefits to government: Significant

2.1.5. Potential benefits of alternative 1 to environment/ society

As alternative 2 is expected to reduce the tendency in EIA consultants to submit incorrect or incomplete information in requisite documents, it is expected to improve the quality of assessment and appraisal process. With correct information at hand, it is expected that the conditions and costs imposed on power producers would be proportionate to the potential damage to the environment, and adequate measures could be suggested for addressing and mitigating such damage.

Estimated benefits to environment/society: Significant

2.2. Alternative 2: Assignment of EIA consultants to projects by an independent panel

It is proposed that the EIA Notification provide for constitution of a panel of experts for assignment of EIA consultants to projects, on a random basis.¹⁷² The project proponents will file an application with the panel for assignment of an EIA consultant, after receipt of which the panel will call for bids from accredited EIA consultants. It would scrutinise the bids received and will assign such EIA consultant to the project, which seems most suitable on the basis of scope of work, expertise and experience of EIA consultant, relationship between EIA consultant and project proponent, etc. The fees to EIA consultant would be paid out of a corpus with the panel, built from the annual fee paid by project proponents. Consequently, there would be no direct relationship between the EIA consultant and the project proponent, ruling out any possibility of conflict of interest.

The panel would need to comprise independent experts on EIA in different sectors, having the capacity to ascertain the expertise of consultants, rule out any conflict of interest between the consultants and project proponents and assign projects to the consultants, by following the principle of 'right person for the right job'. In order to avoid conflict of interests, EIA consultants having financial, management or any other linkages with the applicant must not be allocated the project. Further, any EIA consultant, which has advised the applicant in immediately preceding three years must not be allocated the project. In addition, there should be strict prohibition against making of other payments by project proponents to EIA consultants.

At present, the sector specific CEACs are expected to comprise sector specific experts, and it could be reasonably presumed that optimal CEAC members would possess the expertise and capability of assigning EIA consultants to projects. As CEACs review category 'A' projects from all the states, it is expected that they would have the expertise to take into account state specific considerations, as well. Consequently, it is proposed that the CEACs be assigned with the additional task of appraising the applications from project proponents for assignment of EIA consultants, evaluating the capabilities of EIA consultants, and allocating EIA consultants to the projects. This would also assist such CEACs to evaluate if the consultants have been successful in effectively discharging their duties to the best of their abilities, while undertaking the appraisal process for environment clearance.

The accreditation, monitoring and supervision of EIA consultants, under this alternative will be retained with NABET/QCI.

2.2.1. Potential costs of alternative 2 to government

At present, there are seven CEACs comprising an average of 12 members. Each CEAC is required to meet at least once a month, and as revealed during stakeholder consultations, the members are paid around Rs3,000 per sitting, along with travel and other allowances.

Consequently, the basic annual cost for the government in relation to CEACs comes to around Rs35,00,000. The CEACs are supported by the IA division of the MOEFCC.

To entrust CEACs with the responsibility of scrutinising applications from project proponents and EIA consultants for allotment of projects, the CEACs would have to be adequately compensated. It is proposed that the CEACs function in the same manner for processing the applications for allocation of projects, as it assesses applications for environment clearance. It will meet on a monthly basis in this regard. Accordingly, assuming the adequacy of current compensation structure, it is proposed that the same be doubled to compensate CEACs members to carry out their additional responsibilities.

In order to provide additional support to the CEACs in processing the applications for allocation of projects, it is proposed that one additional officer per sector in the IA division be allocated. The total direct annual cost for six such officers comes to be approximately Rs60,00,000 (see Alternate 1 above for details), in addition to related infrastructure and technological costs.

Estimated annual basic remuneration cost to government: Rs1 crore (excluding other incentives)

Additional costs: One-time ICT and physical infrastructure cost to the government

2.2.2. Potential costs of alternative 2 to power producers

Currently, the remuneration paid to the EIA consultants is governed by the contract between power producers and EIA consultants. As revealed during stakeholder consultations, the fees charge by EIA consultants varies with size and complexity of the project, and could be around Rs1 crore.

The idea under alternative 2 is to break the direct link between EIA consultant and project proponents. The project proponent will be required to deposit a lump sum fee with the government, who would then make the payment to the EIA consultant, on the basis of terms and conditions of the bid. However, it is expected that the burden on power producers is expected to neither increase, nor decrease.

Estimated costs to power producers: Nil

2.2.3. Potential benefits of alternative 2 to power producers and consumers

As revealed during stakeholder consultations, usually, the current arrangements between project proponents mandate payments on achievement of milestones, such as submission of EIA reports, presentation at EAC meetings, *et al.* Consequently, the EIA consultants are tempted to submit relevant documents and EIA reports to the regulatory authorities at, and achieve relevant milestones, at the earliest, often resulting in sub-optimal quality. Moreover, the stakeholder consultations also revealed that often, project proponents also push EIA consultants to obtain clearance within minimum time possible. This, at times, result in submission of incomplete and incorrect information, which results in delays in decision-making.

Alternative 2 severs the direct link between EIA consultants and project proponents, and removes the conflict of interest. Consequently, it is expected that the quality of reports and information would submitted to regulatory authorities would improve, which is expected to result in reduction of time taken during the clearance process and compliance with the

statutory timelines. This is expected to prevent delay in commissioning of power projects and notional loss of revenue to the power producers.

As a result of alternative 2, with compliance in statutory time limit in the clearance process, it is expected that the power plants would be commissioned within the projected schedule, resulting in access to electricity by consumers, without delays.

Estimated benefits to power producers and consumers: Significant

2.2.4. Potential benefits of alternative 2 to environment/society

As alternative 2 is expected to reduce the tendency in EIA consultants to submit incorrect or incomplete information in requisite documents, it is expected to improve the quality of assessment and appraisal process. With correct information at hand, it is expected that the conditions and costs imposed on power producers would be proportionate to the potential damage to the environment, and adequate measures could be suggested for addressing and managing such damage.

Estimated benefits to environment/ society: Significant

3. Ineffective public engagement

As discussed in previous Chapters, delayed and discontinuous public engagement often results in ineffective EIA, relevant persons remaining discontent, and approaching judicial forums. At times, this results in delays in the decision-making process.

3.1. Alternative 1: Engagement with public throughout the process of environment clearance

In order to facilitate public engagement, the following changes are proposed in the procedure for environment clearance:

- The draft terms of reference prepared by the project proponents would be published online for public comments, for the time it is subject to review by the EACs. The EACs would be required to take into account the comments provided by public, and in its recommendation, summarise the comments received and provided its generic response to the same. During the presentation made by project proponent to the EACs, the EACs could invite some public representatives, from amongst those who have provided comments on the ToR.
- The updated EIA report as submitted by the project proponent would be published online for public comments, for the time it is subject to review by the EACs. The EACs would be required to take into account the comments provided by public, and in its recommendation, summarise the comments received and provided its generic response to the same. During the presentation made by project proponent to the EACs, the EACs could invite some public representatives, from amongst those who have provided comments on the draft EIA report, during public hearing or separately in writing and
- Comments on ToR and the EIA report would be considered only from such persons who could justify their interest in the project. Non-governmental institutions working in the area of environment would be generally considered within the scope of 'interested persons'.

To clarify, alternative 1 does not change the current practice of public consultation after scoping stage. It also does not propose to change statutory timelines for environment clearance procedure, however envisages a comprehensive public engagement process. A multi-staged public participation in environment clearance process is an international best practice,¹⁷³ and experts have recommended the same for India.¹⁷⁴

3.1.1. Potential costs of alternative 1 to government

Alternative 1 envisages EAC to scrutinise and provide generic responses to public comments received on the ToR and the revised EIA report, without any revision to the statutory time frame. In order to facilitate compliance with alternative 1, the EACs would require strong support from their respective secretariats. Consequently, it is suggested that two technical officers per EAC be deputed at Secretariat level to support relevant EACs to carry out the functions mentioned in alternative 1. Such officer would be responsible to compile the comments received from public, prepare draft summary, and prepare generic response on the basis of directions received from the EAC.

Annual basic remuneration of one such officer is estimated to be Rs10,00,000. In addition, significant investment in technological infrastructure would be needed to ensure compliance with alternative 1. Table 17 provides a snapshot of the average annual remuneration cost to government:

Table 17: Annual Basic Remuneration Cost to Government

Regulatory agency	Additional positions	Total basic remuneration cost
MOEFCC	12 (two for each sector team at MOEFCC)	1,20,00,000
State governments/ UTs	70 (two for each state SEAC/UTEAC)	7,00,00,000
Total	82	8,20,00,000

Estimated annual basic remuneration cost to government: Rs8.20 crore

Additional costs: One time physical and ICT infrastructure cost

3.1.2. Potential benefits of alternative 1 to power producers and consumers

Alternative 1 intends to achieve effective EIA with adequate public participation without extending the time limits. As a result, it is expected that the number of persons aggrieved by the EIA process will reduce, which is expected to reduce the possibility of approaching judicial forums to obtain injunctions against the process. This is expected to aid in timely decision making and commissioning of project without delay. This is expected to result in reduction of notional revenue loss to power producers, timely commissioning of projects and access to electricity by consumers in timely manner, at reasonable cost.

Estimated benefits to power producers and consumers: Significant

3.1.3. Potential benefits of alternative 1 to environment and interested persons

As the alternative 1 provides an opportunity to interested persons to remain engaged with the EIA process from beginning to conclusion, it is expected to improve the quality of EIA and consequently the decision-making. It is expected that impact on local community and

environment would be adequately ascertained and adequate mitigating measures would be proposed, should clearance be granted.

Estimated benefits to environment and interested persons: Significant

3.2. Alternative 2: A grievance redressal cell for ‘interested persons’

As discussed in the earlier chapters, one of the major criticisms in the present public consultation process is absence of a grievance redressal mechanism for interested persons, should they remain discontented after revision of the EIA report, subsequent to the public consultation stage.

Consequently, it is proposed that a statutorily mandated grievance redressal cell be set up in environment departments of each of the states, and in the MOEFCC at the central level. Such cell would be authorised to hear complaints from the interested persons if they are of the opinion that their concerns/comments have not been taken into account while revision of the EIA report.

The grievance redressal cell would be manned by an adjudicatory officer having sufficient expertise in legal and environmental matters, and would be provided secretarial support by environment departments at state and central level. The cell would operate on arms’ length from the section in the department dealing with environment clearance. It would be required to provide its decision within a time bound manner, while following principles of natural justice, and providing opportunity of hearing to parties involved in the matter. The decision of grievance redressal cell would be binding on the project proponent and appeals from the cell would lie to NGT.

3.2.1. Potential costs of alternative 2 to government

Alternative 2 proposes establishment of grievance redressal cell manned by an adjudicatory officer. The adjudicatory officer would perform judicial functions, and is required to possess legal expertise. Consequently, it is suggested that such officer be compensated with a scale applicable to high court judges.

In addition, as the grievance redressal cell will have to function in a time bound manner, it would be supported by relevant environment departments at central and state level. The functions of such environment departments would include putting in place, and efficient management of, case management system. Consequently, it is suggested that two dedicated officers be deputed in the relevant environment departments to provide relevant support to the cell. Basic remuneration of one technical officer can be estimated to be around Rs6,00,000 per annum

Table 18 aggregates the basic remuneration cost to set up environment clearance cell at central level and in the state of Rajasthan.

Table18: Estimated Annual Basic Remuneration Cost (Rs)

Adjudicatory Officers (36)	4,32,00,000
Technical Officers (72)	4,32,00,000
Total	8,64,00,000

Estimated annual basic remuneration cost to government: Rs8.64 crore

Additional costs: One time physical and ICT infrastructure costs

3.2.2. Potential benefits of alternative 2 to power producers and consumers

By putting in place a statutory grievance redressal mechanism, which is expected to function in a time-bound manner, the alternative 2 removes the possibility of disgruntled public approaching judicial forums to get their grievance redressed. This is expected to substantially reduce the scope of passing of injunction order against the clearance process. This will reduce delays and aid in achieving commissioning of the project on time, thus preventing notional revenue loss to power producers. The consumers will also be benefitted by getting access to electricity on time, at reasonable costs.

Estimated benefits to power producers and consumers: Significant

3.2.3. Potential benefits of alternative 2 to society and environment

Alternative 2 provides an additional opportunity of hearing to interested persons and thus they would be in a position to better represent the interest of affected communities and environment. As the proceedings before the adjudicating authority are expected to be conducted in a time-bound manner, the grievance of interested persons are expected to be redressed at the earliest. Consequently, it is expected that alternative 2 will aid in conducting effective EIA by ensuring adequate consideration of impacts of the project on environment and interested persons, and developing suitable mitigating measures, should the clearance be granted.

Estimated benefits to society and environment: Significant

4. Accountability Mechanisms for Regulatory Agencies

As mentioned in previous sections, absence of accountability mechanisms for regulatory agencies (MOEFCC, SEIAA, EACs, SPCBs/UTPCBs, regional offices of MOEFCC) result in sub-optimal performance of such agencies, such as imposition of unreasonable conditions, and inordinate delays in the clearance process.

4.1. Alternative 1: Additional obligations on regulatory agencies in EIA Notification

It is proposed that the regulatory agencies be statutory obligated to provide reasons in writing for not being able to comply with statutory timelines. The number of matters dealt with the regulatory agency, matters in which the timelines were not met, reasons for non-compliance, and measures proposed to prevent future failures would be disclosed in an annual report.

In addition, where the regulatory agency is required to provide recommendations/decisions, the reasons for non-compliance with statutory timelines will also be required to be mentioned in the relevant recommendation/decision. The relevant recommendation/decision must also have detailed explanation on the conditions subject to which the recommendation/decision is issued.

Further, where a regulatory agency (SPCB etc.) is unable to perform its statutory obligations, it must provide reasoned explanation for such inability.

This is consistent with international best practice. In EU, the decision to grant consent is required to incorporate, at least, the reasoned conclusion; any environmental conditions attached to the decision, a description of any features of the project and/or measures

envisaged to avoid, prevent or reduce and, if possible, offset significant adverse effects on the environment as well as, where appropriate, monitoring measures. The decision to refuse consent shall state the main reasons for the refusal. Moreover, when a decision to grant or refuse development consent has been taken, the competent authority is required to promptly inform the public, the content of the decision and any conditions attached thereto; the main reasons and considerations on which the decision is based, including information about the public participation process. This also includes the summary of the results of the consultations and the information gathered by the relevant authorities and how those results have been incorporated or otherwise addressed.¹⁷⁵

Also, the United Nations Environment Programme (UNEP) Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters, which advocate affordable, effective and timely access to environmental information held by public authorities.¹⁷⁶

4.1.1. Potential costs of alternative 1 on central government

As discussed earlier, the MOEFCC has two basic obligations under the EIA Notification, viz. processing environment clearances through IA division, and monitoring of compliance with conditions through regional offices. Alternative 1 requires disclosure with respect to these functions in the annual report of MOEFCC, amongst other sources.

While the MOEFCC currently publishes an annual report, it does not seem to be comprehensive in nature.¹⁷⁷ The Annual Report provides details of clearances granted in the year, but no information is provided in relation to compliance with the statutory time limit. Limited information is provided in relation to monitoring of conditions.

As it deals with clearance related matters, the IA division at MOEFCC would be best placed to provide relevant information for the annual report in relation to number of matters dealt with by MOEFCC and CEACs, number of matters in which statutory time limit was not met by relevant statutory agency, reasons for such non-compliance and measures adopted to prevent such non-compliance in future. It would also be in a position to ensure that environment clearance letters provide rationale and justification for conditions imposed under such clearance. As the IA division provides secretarial support to CEACs, it could also ensure that recommendations of CEACs are backed by adequate rationale and justification.

The task of providing adequate reasons in each of the recommendation/decision and collection and tabulation of data for disclosure under annual report is expected to require reasonable time and efforts. Consequently, it is proposed that one officer per sector be deputed in the IA division to ensure compliance with alternative 1. The total annual basic remuneration for six such officers comes to be approximately Rs60,00,000. In addition, related infrastructure and technological costs would have to be incurred.

The regional offices of MOEFCC would be best placed to provide reasons for lack of periodic monitoring and sub-optimal monitoring of conditions. Disclosure on this would have to be placed on websites of regional office, and annual report of MOEFCC. This would require investment of reasonable time and efforts. Consequently, it is proposed that a senior technical officer per regional office be deputed to undertake functions proposed under alternative 1. The total annual basic remuneration for one such officer would be around Rs8,00,000. In addition, related infrastructure and technological costs would have to be incurred.

Estimated annual basic remuneration cost to government (MOEFCC head office): Rs60,00,000 (excluding other incentives)

Estimated annual basic remuneration cost at 10 regional offices: Rs80,00,000 (excluding other incentives)

Additional costs: One-time ICT and physical infrastructure cost to the government

4.1.2. Potential cost of alternative 1 to state governments/UTs

Alternative 1 also requires state-level agencies involved in environment clearance process (SEIAA and SEACs) to provide rationale for their respective decision/recommendation, as the case may be. As discussed in the earlier Chapter, the SEIAA and SEACs are provided secretarial support in Rajasthan by SEAC secretariat, attached with department of environment. Consequently, it would be best placed to ensure that relevant agencies provide rationale for their respective recommendation/decision, as the case might be, and the reasons for delays, if any, in the respective recommendation/decision.

At present, the RPCB prepares an annual report, but it has limited information on environment clearances granted and compliance with statutory time limits. It can be reasonably assumed that SEAC secretariat provides relevant information in relation to environment clearances, for disclosure in annual report. It seems to be best placed to provide information in relation to number of matters dealt with during a year by the SEACs and SEIAA, number of matters in which statutory time limit was not met, and the measures to prevent such non-compliance in future.

The task of providing adequate reasons in each of the recommendation/decision and collection and tabulation of data for disclosure under annual report is expected to require reasonable time and efforts. Consequently, it is proposed that two senior technical officers at the SEAC secretariat be deputed to ensure compliance with alternative 1. The total basic annual cost for one such officer is estimated to be approximately Rs12,00,000,¹⁷⁸ in addition to related infrastructure and technological costs.

Estimated annual basic remuneration cost to 35 state governments/UTs: Rs8.4 crore (excluding other incentives)

Additional costs: One-time ICT and physical infrastructure cost to state governments/UTs

4.1.3. Potential costs of alternative 1 to SPCBs/UTPCBs

The SPCBs have two primary functions under the EIA Notification viz. conducting the public hearing process, and monitoring compliance after grant of clearance.

Alternative 1 requires SPCBs to provide detailed explanation in case it is not able to conduct public hearing. It is also required to provide reasons for non-compliance with statutory time limits mentioned in the EIA Notification. Similar disclosures, along with preventive measures are required to be disclosed in annual report.

If the SPCBs are not able to conduct effective and periodic monitoring, they are required to report the same along with reasons on their websites, and to the respective state governments. In addition, disclosure to this effect is required in the annual reports.

Assuming the adequacy of current capacity and compensation structure of the Rajasthan SPCB, it is suggested that two assistant environmental engineers (one each for public hearing

and monitoring) be deputed to undertake the functions suggested under alternative 1. The current annual basic remuneration of an assistant environmental engineer is estimated to be around Rs8,00,000.¹⁷⁹ In addition, adequate technological and physical infrastructure would be required to undertake activities suggested under the proposed alternative.

Estimated annual basic remuneration cost to 35 SPCBs/UTPCBs: Rs5.6 crore (excluding other incentives)

Additional cost: One-time ICT and physical infrastructure cost to the SPCB

Table 19: Annual Basic Remuneration Cost to Government

Government agency	Annual basic remuneration cost (Rs)
MOEFCC head office	60,00,000
10 regional offices	80,00,000
State governments/UTPCB	8,40,00,000
SPCB/UTPCB	5,60,00,000
Total	15,40,00,000

4.1.4. Potential benefits of alternative 1 to power producers and consumers

It is expected that public disclosure of rationale of conditions under approval and non-compliance with statutory time frame is expected to result in imposition of reasonable conditions and nudge compliance with statutory time limits mentioned under EIA Notification. Compliance with statutory time frame under EIA Notification will ensure commissioning of power projects on time and prevention of notional revenue loss of revenue.

It is also expected to prevent cost overrun and access to electricity by consumers in a timely manner, at reasonable cost.

Estimated benefits to power producers and consumers: Significant

4.1.5. Potential benefits of alternative 1 to society and environment

It is expected that public disclosure of rationale of conditions under approval and non-compliance with statutory time frame is expected to result in imposition of conditions and costs proportional to the expected damage to environment.

Estimated benefits to society and environment: Significant

4.2. Alternative 2: Grievance redressal of project proponents at NGT

Under section 16(i) of the National Green Tribunal Act, 2010, any person aggrieved by an order refusing to grant environment clearance for carrying out any activity or process under the EPA, has an opportunity to file an appeal to the NGT. An appeal can also be filed against an order granting environment clearance in the area in which any industries, operations or processes are not allowed to be carried out or carried out subject to certain safeguards under the EPA.¹⁸⁰

However, it is not clear if an appeal can be preferred in case of the following conditions:

- Non-compliance with the provisions of the EIA Notification setting out statutory time period, such as for clearance and public hearing
- Imposition of unreasonable or unjustifiable conditions and
- Non-performance of statutory obligations, such as periodic monitoring of conditions

This is despite section 19 of the NGT Act authorising NGT to pass an order requiring any person to cease and desist from committing or causing any violation of specified enactments, including EPA. Consequently, while it seems that NGT has the authority to prevent non-compliance with statutory provisions and take action if such non-compliance has occurred, it has hitherto not used such power.

It is thus suggested that an unambiguous provision be inserted, under the EIA Notification providing an opportunity to project proponents to file an application at the NGT in case the statutory time period under the EIA Notification has passed but the regulatory agencies have not completed the requisite activity. Opportunity to file an application must also be provided should the proponent feel aggrieved by the conditions imposed in environment clearance and consider them. In addition, given that NGT has the power to impose costs while disposing of applications and appeals under the NGT Act,¹⁸¹ it must be clarified that it has the power to impose costs on relevant agencies in case the statutory time period is not complied with, conditions imposed are unjustifiable or unreasonable, and in case of non-performance

Corresponding provisions should be inserted in the EIA Notification to ensure consistency and clarity in the arrangement, along with a provision specifying liability of government departments, in terms of fines, in case of non-compliance with provisions of the EIA Notification. Access to justice is an international best practice and is one of the core principles of UNEP Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters.¹⁸² Experts have also suggested that project proponents deserve a right of appeal against decision to grant or refuse clearances.¹⁸³

4.2.1. Potential costs of alternative 2 on the government

Alternative 2 provides additional grounds to approach NGT. Consequently, the number of matters filed at NGT is expected to increase. Consequently, the government will be required to invest additional human and infrastructure resources at NGT to deal with the increased case flow.

At present, NGT has five benches in the country. Case load is usually managed by officers mentioned in Table 20¹⁸⁴

Table 20: Details of Officers Undertaking Case Management

Officer	Basic remuneration in 2014 (Yearly)
Deputy Registrar	6,00,000
Assistant Registrar	6,00,000
Section Officer	4,80,000
Assistant (Judicial)	4,80,000
Total	21,60,000

It is proposed that in order to handle increase in the case flow, one officer of every category mentioned above be deputed at each of the benches of the NGT. In addition, investment would be required in physical and technological infrastructure to ensure efficient case load management.

Estimated annual basic remuneration cost to government: Rs1.08 crore for five NGT benches (excluding other incentives)

Additional costs: One-time ICT and physical infrastructure cost to the government

4.2.2. Benefits of alternative 2 on power producers and consumers

The possibility of challenging conditions under clearance and delay in clearance procedure at NGT is expected to result in imposition of reasonable conditions, and reduction in time taken by the regulatory agencies to arrive at a decision. In addition, the possibility of imposition of files by the NGT in case of unsatisfactory explanation of delay or imposition of unreasonable/unjustifiable condition is expected to have a similar impact.

Consequently, it is expected that decisions on clearances will be made within the statutory time period, and would be subject to reasonable costs. This is expected to result in commissioning of project sans delays, and access to electricity by consumers in a timely manner, at reasonable price.

Potential benefits to power producers and consumers: Significant

5. Statutory provisions mandating capacity review and technical support to regulatory agencies

As discussed in earlier sections, absence of statutory provisions mandating capacity review and technical support to regulatory agencies (MOEFCC, SEIAA, EACs, regional offices of MOEFCC, and PCBs) has resulted in severe constraints at such agencies which contribute in a substantial manner in delays in the clearance process, imposition of unreasonable conditions, and lack of effective monitoring and supervision mechanism.

In order to ensure that the regulatory agencies have adequate capacity and are provided technical support to undertake respective functions in the clearance process, it is proposed that a provision be inserted in EIA Notification which requires undertaking a periodic review of infrastructure, technical and manpower capacity requirement of the regulatory agencies by an independent consultant, and requiring government to ensure that adequate support is in place to undertake the requisite obligations.

This section estimates the costs required to be incurred by the government as on date, to improve the capacity and technical support to relevant government agencies (and not to cost to undertake a review).

5.1. MOEFCC

The MOEFCC is tasked with processing clearances and monitoring compliance with conditions. The current estimated manpower in the Impact Assessment (IA) division in MOEFCC is explained in Table 21.¹⁸⁵

Table 21: Strength and Remuneration in IA Division*Amount in Rupees*

Designation	Number (2014)	Annual basic remuneration (2013)¹⁸⁶	Estimated basic annual remuneration(2014)
Scientist F	7	56,28,000	62,16,000
Scientist E	1	8,04,000	8,88,000
Scientist D	4	32,16,000	35,52,000
Scientist C	3	14,07,600	15,84,000
Scientific Officer	1	4,69,200	5,28,000
Section Officer	4	18,76,800	21,12,000
Total	20		1,48,80,000

Consequently, the current basic annual remuneration burden in IA division, comprising of 20 officers is around Rs1.5 crore. With the IA division managing six sectors, around three officers are currently allocated to each sector. As discussed earlier, in addition to dealing with environment applications, such officers are required to deal with enquiries under the RTI Act, matters being contested in various courts, and various other miscellaneous functions.

Accordingly, it is suggested that the manpower strength in IA division be doubled. This would also require investment in physical and technological infrastructure.

The environment section at the regional offices of MOEFCC is usually manned by a director, two deputy directors and a research assistant.¹⁸⁷ Average annual basic salary per person can be reasonably estimated to be around Rs8,00,000. At present, there are six regional offices to monitoring conditions of compliance throughout the country. Given the current capacity and tasks at hand, the regional offices seem to be extremely ill equipped.

Consequently, it is suggested that the manpower strength at the regional offices be doubled, requiring yearly investment per regional office of Rs32,00,000. This would also require investment in physical and technological infrastructure.

Estimated annual basic remuneration cost on government (MOEFCC head office): INR 1.5 cr. (excluding other incentives)

Estimated annual basic remuneration cost at 10 regional offices: Rs3.2 cr. (excluding other incentives)

Additional costs: One-time infrastructure and technological cost

5.2. EACs

As discussed previously, the members of CEAC and SEAC draw a token remuneration of Rs3,000 for a day of sitting, exclusive of travel allowance. In addition, the EAC members are expected to review the reports submitted by project proponents and prepare their comments.

It would be reasonable to assume that the average monthly remuneration of EAC members in their respective institutions would be around Rs1,00,000. In light of this, and additional preparation for the meeting which EAC members are required to undertake, it is suggested that the remuneration be increased to around Rs7,000 per day of meeting.

Estimated annual basic remuneration cost for 420 EAC members¹⁸⁸ for 12 meetings: INR 2.02 crore (excluding travel and other incentives)

5.3. PCBs

The state pollution control boards are required to undertake public hearing under the EIA Notification. It is also required to conduct monitoring of compliance with conditions, in coordination with central pollution control board. Experts have raised concerns about capacity limitations of pollution control boards from time to time, and recommended increasing incentives to PCBs for effective monitoring. Consequently, an in-depth capacity review of pollution control boards and technical and manpower capacity up gradation is necessary.

Estimated additional annual cost on PCBs: Significant

It is expected that a comprehensive restructuring of technical and manpower capacity of various regulatory agencies involved in the clearance process would aid in conduct of functions by respective agencies in timely and effective manner. This would improve the quality of EIA, and would also result in avoidance of time and cost overruns. Increased capacity will also result efficient review of environment clearance applications, and optimal monitoring of compliance with conditions. This is expected to benefit all the stakeholders, including power producers, consumers, environment and society.

6. Clarity on persons consulted for assessment of environment impacts

As discussed in previous Chapters, the EIA Notification does not provide clear description about the persons to be consulted during public consultation process for assessment of impacts of project. Consequently, at times, interests of affected persons remain unrepresented and persons with vested interests end up gaining limelight.

Consequently, it is proposed that EIA Notification requires persons providing comments in writing on environment aspects of project explain their ‘plausible stake’ in the project. The public agencies would be in a position to disregard the comments provided by persons not having genuine stake in the project, subject to providing reasonable justification for such exclusion. Non-governmental organisations and community-based organisations working in the area of environment would be generally considered within the scope of persons having ‘plausible stake’ in the project. This is consistent with the international best practice, in this regard.¹⁸⁹

In addition, to ensure that only ‘locally affected persons’ participate in the public hearing, it is proposed that the EIA Notification allows SPCB/public agencies to ascertain the identity and residence of relevant persons through nationally recognised identity cards (such as *aadhar* card, election commission identification card, ration card, as the case may be). Experts have also recommended practices to ensure that only genuine local participation is allowed during public participation.¹⁹⁰

6.1. Potential costs of proposed alternative to SPCBs/UTPCBs

The proposed alternative requires the SPCBs/UTPCBs to ensure that concerns of only relevant persons are taken into account. Consequently, the SPCB would be required to review

the ‘plausible stake’ of persons providing comments in writing. In addition, it would be required to check the veracity of persons claiming to be ‘locally affected’.

Assuming the adequacy of current capacity and compensation structure of the Rajasthan SPCB, it is suggested that one assistant environmental engineer be deputed to undertake the functions suggested under the proposed alternative. The current annual basic remuneration of an assistant environmental engineer is estimated to be around Rs8,00,000.¹⁹¹ In addition, adequate technological and physical infrastructure would be required to undertake activities suggested under the proposed alternative.

Estimated annual basic remuneration cost to 35 SPCBs/UTPCBs: Rs2.80 crore (excluding other incentives)

Additional costs: One time physical and ICT infrastructure costs

6.2. Potential benefits of proposed alternative to power producers and consumers

It is estimated that clarity on persons consulted for public engagement would result in taking into account concerns of only genuine persons and thus aid in completion of public hearing in timely manner. This is expected to aid in timely commissioning of the project, and consequently prevention of notional revenue loss to the project proponents. This is also expected to result in timely access to electricity for the consumers, and at a reasonable price.

Estimated benefits of proposed alternative to power producers and consumers: Significant

6.3. Potential benefits of proposed alternative to society and environment

It is estimated that clarity on persons consulted for public engagement would result in taking into account concerns of only genuine persons and thus aid in better representation of project affected persons, by weeding out of persons with vested interests. This is expected to aid in imposition of costs/conditions proportional to the expected damage.

Estimated benefits of proposed alternative to society and environment: Significant

7. Statutory provisions for timely constitution of regulatory agencies

As discussed in previous sections, delay in constitution of regulatory agencies like SEAC, CEAC and SEIAA result in delays in processing of applications, which have the potential to impose costs on project proponents, including power producers.

Consequently, it is suggested that provisions ensuring re-constitution of regulatory authorities, before expiry of term of members of such authority, be enshrined in the EIA Notification. For instance, an amendment could be made in Item 3(5) of the EIA Notification requiring the concerned state government or Union Territory to forward the names of the members and chairperson of SEIAA, *at least thirty days prior to expiry of the term of existing members and chairperson*. Similarly, an amendment could be made in Item 5(c) of the EIA Notification requiring concerned central and state governments to ensure continuity in CEAC and SEAC meetings, respectively, through reconstituting them before the end of term of members of previous committee.

7.1. Potential costs of the proposed alternatives to the government

At present, the relevant governments initiate the process of reconstitution of concerned agencies either on or after the expiration of term of members of earlier committees. The proposed alternative requires the concerned governments to initiate this process mandatorily in advance of conclusion of term of existing members. Consequently, while the process itself is not expected to impose additional costs on the government, however, as it is expected to be initiated while the existing committees are functional, it might impose some additional burden on the officers at the state (SEAC secretariat) and central government (MOEFCC).

It is estimated that appointment of one additional officer at the state and central government to ensure timely reconstitution of relevant regulatory agency, would be sufficient. The total annual basic remuneration for one such officer could reasonably be estimated to be Rs6,00,000.

Estimated annual basic remuneration cost to government (36 officers): INR 2.16 cr. (excluding other incentives)

7.2. Potential benefits of proposed alternative to power producers and consumers

Timely constitution of regulatory agencies is expected to ensure timely processing of clearance applications, resulting in avoidance of delays. This is expected to aid in timely commissioning of power projects, prevention of notional revenue losses to the power producers, and ensuring access to electricity to consumers in a timely manner, at reasonable price.

Estimated benefits to power producers and consumers: Significant

7.3. Potential benefits of proposed alternative to society and environment

Timely constitution of regulatory agencies is expected to ensure adequate consideration of environment and societal concerns. This is expected to aid in imposition of proportional costs/ conditions should a clearance be given.

Estimated benefits to society and environment: Significant

8. Provision for ad hoc State Expert Appraisal Committees for a state

As discussed in previous chapters, provision for one SEAC for a state has the potential to result in delays in clearance process in a situation of overflow of applications. Consequently, it is proposed that an enabling provision be inserted in the EIA Notification empowering state governments to constitute ad hoc SEACs to manage with application overflow. Such ad hoc SEACs could be wound up once the overflow is reduced and situation returns to normal.

Constitution of ad-hoc SEAC is expected to impose financial burden on the relevant state government. At present, daily allowance of a SEAC member is expected to be around INR 3,000, excluding travelling and other reimbursements.¹⁹² The members of the ad-hoc SEAC would have to be accordingly compensated.

However, it could be reasonably presumed that constitution of an ad-hoc SEAC in case of application overflow is expected to avoid delays in clearance process as the applications are not expected to get stuck at the SEAC level. Consequently, it is expected that the power

projects would be commissioned on time, avoiding revenue loss to power producers. This will also benefit the consumers who would have timely access to electricity, at reasonable price.

In addition, the SEAC would be able to invest greater time and efforts and adequately understand the environment and societal concerns involved. Thus, it is expected that costs/conditions proportional to the expected environmental damage would be imposed.

9. Statutory requirement to submit half-yearly reports to the EACs

As mentioned earlier, stakeholder consultations revealed that there was lack of statutory feedback mechanism to the agencies involved in grant of environment clearance, in relation to compliance with the conditions subject to which the clearance is granted. Consequently, knowledge gap seems to persist with respect to the feasibility, practicality, and impact of the conditions imposed.

Consequently, it is suggested that a provision be inserted in Item 10 of the EIA Notification requiring submission of a soft copy of the half-yearly compliance reports to the SEAC and CEAC, via their Secretariats.

It is expected that a review of compliance status and impact of conditions imposed on project proponents would aid EACs in taking an informed decision regarding the relevance of conditions to be imposed on the power producers. This is expected to result in retention of only relevant conditions subject to which clearance is granted and consequently grant of clearance in a timely manner and reduction in costs of compliance with the conditions subject to which the clearance is granted. This is also expected to result in imposition of proportional costs, reduction of pass-on costs to consumers and access to electricity in a timely manner.

10. Absence of guidance for issuing statutory instruments resulting in linkage of environment clearance with other factors

As discussed in preceding Chapters, the issue of linkage of environment clearance with other factors stems from the unbridled discretion provided to the regulatory authorities, without any checks and balances.

Consequently, it is proposed that a statutory provision be inserted in the EPA to provide that any rules, circulars, notifications etc. issued under the EPA must be clear about their objective, and lucidly explain the rationale and intended impact of the relevant statutory instrument. The draft statutory instruments must be published for public comments, and the government must provide its response to the suggestions provided by the public. Public consultation and participation in development of legislations relating to environment matters has been recommended by UNEP.¹⁹³

Such provision will impose significant costs on the government, and might result in delay in issuance of statutory instruments. The government will have to put in greater efforts while introducing rules, circulars, notifications etc. under the FCA, and provide adequate justification. However, the suggested alternative will introduce clarity and certainty regarding intent and object of statutory instruments. Power producers will be better placed to understand the government intent and make relevant amendments to their respective plans and policies. This will prevent imposition of any unintended costs on the power producers,

and consequently the consumers. Enhanced transparency would also aid society to be in a better position to understand the rationale of the statutory instruments, and provide relevant inputs in its formation. In addition, it is proposed that a statutory requirement be include in EPA that all statutory instruments (circulars/ notifications/ guidelines *et al*) issued under EPA will come into effect from a specified future date. If no such date is specified, the relevant instrument would come into effect 30 days after the date of issue of such statutory instrument. An express prohibition could be included in the statute against issue of statutory instruments from a retrospective date. While such provision would require better planning and coordination at government's end, it is expected that it will enable the stakeholders, such as project proponents, to make suitable adjustments, to their financial projections and future plans, to adjust to the change in applicable laws, and ensure compliance with the same. In effect, it is expected that this will ease and streamline the financial burden passed on to the consumers.

11. Development of effective information management system

As discussed in the earlier chapters, absence of a reliable baseline data results in consumption of excessive time and efforts for preparation of EIA report, and delays in scoping and appraisal process.

Consequently, it is suggested that a statutory requirement be inserted in the EIA Notification obliging government to develop and maintain an online information management system. The government would be required to keep the database updated with relevant data and information. The database could be accessible to public on payment of fee, which would contribute in meeting the operating expenses of maintaining the database.

Existence of such information management system is expected to reduce the time taken in the clearance process, and submission of correct and complete information for assessment of impacts. Consequently, it is expected to benefit all the stakeholders in clearance process.

12. Absence of impact assessment of existing provisions resulting in lack of provisions with respect to regional and cumulative EIA

As discussed in previous Chapters, the EIA Notification, while have limited provisions about considering cumulative impact, does comprehensively deal with regional and cumulative EIA. This is despite the fact that regional and cumulative EIAs have the potential to result in greater benefits to all the stakeholders in the clearance process, when compared with individual EIAs.¹⁹⁴

Thus, it is proposed that a statutory requirement be included in the EIA Notification to undertake a periodic review of impact of its provisions, and ensure that the cost of such provisions on the stakeholders is outweighed by their benefits, and ascertaining if better alternatives exist, which have the potential to result in greater net benefits to stakeholders.

While undertaking periodic impact assessment of provisions of EIA Notification is expected to imposed substantial costs on the government, its benefits i.e.; ensuring existence of only relevant and most optimal provisions in the statute, is expected to keep costs imposed on stakeholders low, which is expected to benefit power producers, consumers, society and environment.

To conclude, this Chapter proposed alternatives to certain existing provisions of EIA Notification, and proposed certain additional provisions in the EIA Notification, and estimated costs and benefits thereof. The following Chapter would compare such estimated costs and benefits, and recommend most optimal alternatives with the objective of achieving the objective of sustainable development.

Chapter 6

Selection of Alternatives

1. Background

The previous Chapter suggested statutory alternatives to sub-optimal provisions of EIA Notification and estimated costs and benefits thereof, to various stakeholders. It also suggested additional provisions to EIA Notification and EPA to cover the issues remaining hitherto unaddressed by these statutes.

The following sections attempt to undertake a comparison of costs and benefits of relevant provisions of EIA Notification, if any (no change scenario), with alternatives suggested, on the basis of comparison of costs and benefits to relevant stakeholders, and recommend the most optimal alternative.

2. Sub-optimal Performance of EIA Consultants

Table 22 compares the existing provisions under EIA Notification on performance of EIA consultants, with suggested alternatives.

Table 22: Comparison of Provisions on Performance of EIA Consultants

Issue	Existing provisions/no change	Alternative 1	Alternative 2
Description	<ul style="list-style-type: none"> • No direct regulation or supervision of EIA consultants by MOEFCC, save limited disclosure requirements. • Accreditation with NABET/QCI. 	<ul style="list-style-type: none"> • Registration of EIA consultants with MOEFCC. • Direct regulation and supervision by MOEFCC. • Accreditation with NABET/QCI done away with. 	<ul style="list-style-type: none"> • Allotment of EIA consultants to projects by independent panel. • No direct regulation and supervision by MOEFCC. • Accreditation with NABET/QCI continues.
Estimated impact on government		<p><i>Increase in costs</i></p> <ul style="list-style-type: none"> • Annual basic remuneration cost – Rs 60,00,000 (excluding other incentives) • Physical and ICT infrastructure costs 	<p><i>Increase in costs</i></p> <ul style="list-style-type: none"> • Annual basic remuneration cost – Rs1 crore (excluding other incentives) • Physical and ICT infrastructure costs

Issue	Existing provisions/no change	Alternative 1	Alternative 2
		<i>Increase in benefits</i> <ul style="list-style-type: none"> • Average annual fee from EIA consultants (consolidated): Rs5 crore 	
Estimated impact on EIA consultants	<i>Costs</i> <ul style="list-style-type: none"> • Average annual fee paid to NABET/QCI (consolidated): Rs 5crore <i>Benefits</i> <ul style="list-style-type: none"> • Fee for EIA received from project proponents 	<i>No change in direct costs</i> <ul style="list-style-type: none"> • Annual fee to be paid to MOEFCC. No change expected in the amount <i>Increase in compliance costs</i> <i>No change in benefits</i> <ul style="list-style-type: none"> • No change expected in fee for EIA 	<i>No change in cost</i> <ul style="list-style-type: none"> • No change in payment to NABET/QCI. <i>No change in benefits</i> <ul style="list-style-type: none"> • Lump sum EIA fee from MOEFCC. Average amount is not expected to reduce.
Estimated impact on project proponents/consumers	<i>Costs</i> <ul style="list-style-type: none"> • Fee to EIA consultant up to Rs1crore. 	<i>No change in costs</i> <ul style="list-style-type: none"> • No change in fee to EIA consultant. <i>Increase in benefits</i> <ul style="list-style-type: none"> • Improvement expected in quality of reports, and consequent reduction in delays, owing to improved regulation and supervision. 	<i>No change in costs</i> <ul style="list-style-type: none"> • Lump sum fee to be paid to MOEFCC. No change expected in average amount. <i>Increase in benefits</i> <ul style="list-style-type: none"> • Improvement expected in quality of reports, and consequent reduction in delays, owing to reduced conflict of interest.
Estimated impact on society/environment		<i>Increase in benefits</i> <ul style="list-style-type: none"> • Improvement expected in quality of reports taking into account relevant concerns, owing to improved regulation and supervision 	<i>Increase in benefits</i> <ul style="list-style-type: none"> • Improvement expected in quality of reports, taking into account relevant concerns, owing to reduced conflict of interest.

The aforesaid comparison assumes that benefit of government regulation and supervision would exceed benefits from reduction in conflict of interest.

2.1. Selection of alternative

Following deductions could be made from aforesaid comparison of existing and proposed provisions on regulation of EIA consultants:

- *Government* – Net benefits expected under alternative 1, however, net loss expected under alternative 2, when compared with no-change scenario.
- *Project proponents/ consumers/ society/ environment* – Increase in benefit is expected to be greater under alternative 1 as it could be reasonably assumed that tightening of regulation and supervision of EIA consultants, would exceed benefits from reduction in conflict of interest (alternative 2), when compared with no-change scenario.

Recommendation – Alternative 1 i.e. registration of EIA consultants with MOEFCC and consequent regulation and supervision of EIA consultants by MOEFCC.

3. Ineffective Public Engagement

Table 23 compares the existing provisions under EIA Notification on public engagement with suggested alternatives.

Table 23: Comparison of Provisions on Public Engagement

Issue	Existing Provisions/no change	Alternative 1	Alternative 2
Description	<ul style="list-style-type: none"> • Public consultation after scoping stage 	<p><i>Addition to current provisions</i></p> <ul style="list-style-type: none"> • Draft ToR subject to from interested public, and possibility of representation at EAC meeting • Updated draft of EIA report subject to comments from interested public, and possibility of representation at EAC meeting 	<p><i>Addition to current provisions</i></p> <ul style="list-style-type: none"> • Grievance redressal cell for interested public, after public consultation
Estimated impact on government	<p><i>Benefits</i></p> <ul style="list-style-type: none"> • SPCBs receive fee from project proponent 	<p><i>Increase in costs</i></p> <ul style="list-style-type: none"> • Annual basic remuneration cost - INR 8.20 crore (excluding other incentives) • Physical and ICT infrastructure costs 	<p><i>Increase in costs</i></p> <ul style="list-style-type: none"> • Annual basic remuneration cost – Rs8.64 crore (excluding other incentives) • Physical and ICT infrastructure costs

Issue	Existing Provisions/no change	Alternative 1	Alternative 2
		<i>No change expected in benefits</i>	<i>No change expected in benefits</i>
Estimated impact on project proponents/ consumers	<i>Costs</i> <ul style="list-style-type: none"> • Fee to be paid to SPCBs 	<i>No change expected in costs</i> <i>Increase in benefits</i> <ul style="list-style-type: none"> • Improvement expected in quality of reports, and consequent reduction in delays, owing to continuous public engagement. 	<i>No change expected in costs</i> <i>Increase in benefits</i> <ul style="list-style-type: none"> • Improvement expected in quality of reports, and consequent reduction in disgruntled public, and thus reduction in delays, owing to presence of a grievance redressal mechanism for interested public.
Estimated impact on society/ environment		<i>Increase in benefits</i> <ul style="list-style-type: none"> • Improvement expected in quality of reports taking into account relevant concerns, owing to continuous public engagement 	<i>Increase in benefits</i> <ul style="list-style-type: none"> • Improvement expected in quality of reports, taking into account relevant concerns, owing to presence of a grievance redressal mechanism.

3.1. Selection of alternative

Following deductions could be made from aforesaid comparison of existing and proposed provisions on regulation of EIA consultants:

- *Government:* Both alternatives are expected to impose costs on government, when compared with no change scenario.
- *Project proponents/consumers/society/environment:* Both alternatives are expected to improve the quality of EIA and thus reduce delays and efficiently address the concerns of affected persons. However, it could be reasonably assumed that benefits of public engagement throughout the environment clearance process (alternative 1) would exceed the benefits of a grievance redressal mechanism (alternative 2), when compared with no change scenario.

Recommendation: Alternative 1 i.e. continuous public engagement throughout the environment clearance process.

4. Abuse of Discretion by Regulatory Agencies

Table 24 compares the existing provisions under EIA Notification on checking abuse of discretion by regulatory agencies, with suggested alternatives.

Table 24: Provisions to Check Abuse of Discretion

Issue	Existing provisions/No change	Alternative 1	Alternative 2
Description	<ul style="list-style-type: none"> No specific provision to check abuse of discretion 	<ul style="list-style-type: none"> Disclosures by relevant regulatory agencies in recommendations/decisions. Disclosures by regulatory agencies in annual report. Reasoned explanation by relevant regulatory agencies for inability/delays in performance. 	<ul style="list-style-type: none"> Grievance redressal of project proponents at NGT, in case of delays; imposition of unreasonable conditions; and non-performance of statutory obligations.
Estimated impact on government		<i>Increase in costs</i> <ul style="list-style-type: none"> Estimated annual basic remuneration cost: INR 15.40 crore Physical and ICT infrastructure costs 	<i>Increase in costs</i> <ul style="list-style-type: none"> Annual basic remuneration cost: Rs1.08 crore Physical and ICT infrastructure costs
Estimated impact on project proponents/consumers	<i>Costs</i> <ul style="list-style-type: none"> Inordinate delays and imposition of unreasonable costs 	<i>Reduction in costs</i> <ul style="list-style-type: none"> Improvement expected in environment governance, and consequent reduction in delays and imposition of unreasonable costs, owing to increase in public disclosure. 	<i>Reduction in costs</i> <ul style="list-style-type: none"> Improvement expected in environment governance, and consequent reduction in delays and imposition of unreasonable costs, owing to presence of a grievance redressal mechanism.
Estimated impact on society/environment	<i>Costs</i> <ul style="list-style-type: none"> Imposition of disproportionate costs 	<i>Reasonable reduction in costs</i> <ul style="list-style-type: none"> Improvement is expected in quality of environment clearance process, and consequent imposition of proportionate costs on stakeholders, owing to increase in public disclosure. 	No change

4.1. Selection of alternative

Following deductions could be made from aforesaid comparison of existing and proposed provisions to check abuse of discretion:

- *Government* – The costs imposed by public disclosure at all levels (alternative 1) is expected to be higher than the cost imposed by grievance redressal of project proponents at NGT (alternative 2), when compared with no change scenario.
- *Project proponents/ consumers* – Both the alternatives are expected to improve the quality of environment governance and consequent reduction in delays and imposition of unreasonable costs, when compared with no change scenario.
- *Society/environment* – Greater public disclosure at all levels (alternative 1) is expected to result in imposition of costs proportional to potential damage of the project, hence is expected to reasonably increase the benefit to society/ environment. As alternative 2 provides additional grounds to approach NGT to project proponents only, no benefit is expected to society/ environment.

Recommendation – Alternative 1 i.e. public disclosure at all levels, while imposes costs on the government, is expected to improve environment governance, by benefitting all categories of stakeholders.

5. Capacity review and technical support to regulatory agencies

Table 25 compares the existing provisions under EIA Notification on capacity review and technical support to regulatory agencies, with suggested alternatives.

Table 25: Provisions on Technical Support and Capacity Review

Issue	Existing provision/ No change	Proposed alternative
Description	<ul style="list-style-type: none"> • No specific provision to periodically review capacity and technical support to regulatory agencies 	<ul style="list-style-type: none"> • Specific statutory obligation for periodic independent review of capacity and technical support to regulatory agencies at all levels
Estimated impact on government		<p><i>Increase in costs</i></p> <ul style="list-style-type: none"> • Annual quantifiable basic remuneration cost: Rs6.72 crore (excluding other incentives) • Increase in annual basic remuneration cost to state pollution control boards • Physical and ICT infrastructure costs
Estimated impact on project proponents/ consumers	<p><i>Costs</i></p> <ul style="list-style-type: none"> • Inordinate delays and imposition of unreasonable costs, and sub-optimal monitoring 	<p><i>Reduction in costs</i></p> <ul style="list-style-type: none"> • Improvement expected in environment clearance and monitoring process, and consequent reduction in delays and imposition of unreasonable costs, owing to increased technical and manpower capacity

Issue	Existing provision/ No change	Proposed alternative
Estimated impact on society/ environment	<p><i>Costs</i></p> <ul style="list-style-type: none"> Imposition of disproportionate costs, and sub-optimal monitoring 	<p><i>Reduction in costs</i></p> <ul style="list-style-type: none"> Improvement is expected in quality of environment clearance and monitoring process, and consequent imposition of proportionate costs on stakeholders, owing to increased technical and manpower capacity.

5.1. Selection of alternative

Following deductions could be made from aforesaid comparison of existing and proposed provisions to in relation to review of capacity and technical support:

- Government* – The costs imposed by review of capacity and technical support (proposed alternative) are higher than the cost imposed by no change scenario.
- Project proponents/consumers/society/environment* – Increase in capacity and technical support (proposed alternative) is expected to improve the environment governance and monitoring process, resulting in reduction in delays, rationalisation of conditions and imposition of proportional costs, when compared with no change scenario.

Recommendation – Proposed alternative i.e. periodic review of capacity and technical support.

6. Clarity on persons consulted for assessment of environment impacts

Table 26 compares the existing provisions under EIA Notification on persons consulted for assessment of environment impacts, with suggested alternatives.

Table 26: Provisions on Persons Consulted for Assessment of Environment Impacts

Issue	Existing provision/No change	Proposed alternative
Description	<ul style="list-style-type: none"> No clear description about persons to be consulted during public consultation process 	<ul style="list-style-type: none"> Persons providing comments in writing on environment aspects of project required to explain their 'plausible stake' in the project. Power to SPCBs to ascertain identity and residence of 'locally affected persons'
Estimated impact on government		<p><i>Increase in costs</i></p> <ul style="list-style-type: none"> Estimated annual basic remuneration cost: Rs2.80 crore (excluding other incentives) Physical and ICT infrastructure costs
Estimated impact on project proponents/consumers	<p><i>Costs:</i></p> <ul style="list-style-type: none"> Consultation with persons having vested interest 	<p><i>Reduction in costs</i></p> <ul style="list-style-type: none"> Improvement expected in quality of EIA process, and consequent reduction in delays and imposition of unreasonable costs, owing to public consultation with genuine stakeholders

Issue	Existing provision/No change	Proposed alternative
Estimated impact on society/ environment	<p><i>Costs:</i></p> <ul style="list-style-type: none"> • Persons with genuine interest remain unrepresented 	<p><i>Increase in benefits</i></p> <ul style="list-style-type: none"> • Improvement is expected in quality of EIA process, and consequent imposition of proportionate costs, owing to effective representation of genuine stakeholders only.

6.1. Selection of alternative

Following deductions could be made from aforesaid comparison of existing and proposed provisions to in relation to review of capacity and technical support:

- *Government* – The costs imposed by scrutinising veracity of public (proposed alternative) on the SPCBs/ local agencies are higher than the cost imposed by no change scenario.
- *Project proponents/ consumers/ society/ environment* – Possibility to consider comments from genuine stakeholders only (proposed alternative) is expected to improve the EIA process, resulting in reduction in delays, rationalisation of conditions and imposition of proportional costs, owing to better representation of relevant stakeholders, when compared with no change scenario.

Recommendation: Proposed alternative i.e. ascertaining authenticity of public involved in consultation process.

7. Provisions for timely re-constitution of regulatory agencies

Table 27 compares the existing provisions under EIA Notification on re-constitution of regulatory agencies, with suggested alternatives.

Table 27: Timely Re-constitution of Regulatory Agencies

Issue	Existing provision/ No change	Proposed alternative
Description	<ul style="list-style-type: none"> • In the absence of a SEIAA/ SEAC, the application is considered by MOEFCC/CEAC, as the case may be 	<ul style="list-style-type: none"> • Specific provision to ensure timely re-constitution of regulatory agencies
Estimated impact on government	<p><i>Costs</i></p> <ul style="list-style-type: none"> • Extra efforts required by MOEFCC/CEAC 	<p><i>Increase in costs</i></p> <ul style="list-style-type: none"> • Estimated annual basic remuneration cost: Rs.16 crore (excluding other incentives) • Physical and ICT infrastructure costs
Estimated impact on project proponents/ consumers	<p><i>Costs</i></p> <ul style="list-style-type: none"> • Delays in environment clearance process 	<p><i>Reduction in costs</i></p> <ul style="list-style-type: none"> • Improvement expected in environment clearance process, and consequent reduction in delays, owing to timely re-constitution of regulatory agencies

Issue	Existing provision/ No change	Proposed alternative
Estimated impact on society/ environment	<p><i>Costs</i></p> <ul style="list-style-type: none"> Inadequate consideration of impact by central authorities, owing to limited time 	<p><i>Reduction in costs</i></p> <ul style="list-style-type: none"> Improvement is expected in environment clearance process, and timely consideration of relevant concerns, owing to timely re-constitution of regulatory agencies

7.1. Selection of alternative

Following deductions could be made from aforesaid comparison of existing and proposed provisions to in relation to review of capacity and technical support:

- Government:* The costs imposed to ensure timely constitution of regulatory agencies is higher than the cost imposed by no change scenario.
- Project proponents/consumers/society/environment:* Timely constitution of regulatory agencies (proposed alternative) is expected to improve the environment clearance process, resulting in reduction in delays, and early consideration of concerns of relevant stakeholders, when compared with no change scenario.

Recommendation: Proposed alternative i.e. statutory provision for timely constitution of regulatory agencies.

8. Provisions for ad hoc SEAC

Table 28 compares the existing provisions under EIA Notification on ad-hoc SEAC for state, with suggested alternatives.

Table 28: Provision for Ad hoc SEACs

Issue	Existing provision/No change	Proposed alternative
Description	<ul style="list-style-type: none"> No provision relating to ad-hoc SEAC for states 	<ul style="list-style-type: none"> Specific provision to ensure constitution of ad hoc SEAC for states
Estimated impact on government		<p><i>Increase in costs</i></p> <ul style="list-style-type: none"> Depends on number of meetings of ad-hoc SEAC
Estimated impact on project proponents/ consumers	<p><i>Costs</i></p> <ul style="list-style-type: none"> Delays due to overflow of applications 	<p><i>Reduction in costs</i></p> <ul style="list-style-type: none"> Improvement expected in environment clearance process, and consequent reduction in delays, owing to existence of ad-hoc SEAC in case of overflow of applications
Estimated impact on society/ environment	<p><i>Costs</i></p> <ul style="list-style-type: none"> Inadequate consideration of concerns due to overflow of applications 	<p><i>Reduction in costs</i></p> <ul style="list-style-type: none"> Improvement is expected in environment clearance process, and timely and adequate consideration of relevant concerns, owing to existence of ad hoc SEAC in case of overflow of applications

8.1. Selection of alternative

Following deductions could be made from aforesaid comparison of existing and proposed provisions in relation to review of capacity and technical support:

- *Government* – The costs imposed to ensure constitution of ad-hoc SEACs are expected to be higher than the cost imposed by no change scenario.
- *Project proponents/ consumers/society/ environment* – Existence of ad hoc SEACs (proposed alternative) is expected to improve the environment clearance process, resulting in reduction in delays, and early consideration of concerns of relevant stakeholders, when compared with no change scenario.

Recommendation: Proposed alternative i.e. statutory provision for ad hoc SEACs

9. Statutory requirement to submit half yearly reports to the EAC

Table 29 compares the existing provisions under EIA Notification for submission of half year reports, with suggested alternatives.

Table 29: Submission of Half-yearly Reports

Issue	Existing provision/ No change	Proposed alternative
Description	<ul style="list-style-type: none"> • Submission of half yearly reports to MOEFCC/ SEIAA 	<ul style="list-style-type: none"> • Specific provision to submit half yearly reports to EACs
Estimated impact on government		No change
Estimated impact on project proponents/ consumers		<p><i>Increase in benefits</i></p> <ul style="list-style-type: none"> • Improvement expected in environment clearance process, and consequent reduction in imposition of unreasonable costs, owing to EACs becoming aware of status of compliance of conditions, feasibility of conditions, and their impact on ground.
Estimated impact on society/ environment		<p><i>Increase in benefits</i></p> <ul style="list-style-type: none"> • Improvement expected in environment clearance process, and consequent imposition of proportionate costs, owing to EACs becoming aware of status of compliance of conditions, feasibility of conditions, and their impact on ground.

9.1. Selection of alternative

When compared with no change scenario, the proposed alternative does not impose additional costs on the stakeholders but is provide relevant information for appraisal of applications for environment clearance. This is expected to improve the quality of EIA process. Consequently, the proposed alternative of submission of half yearly reports to EACs is recommended.

10. Guidelines for issue of statutory instruments

Table 30 compares the existing provisions under EPA for guidelines for issue of statutory instruments, with suggested alternatives.

Table 30: Guidelines for Issue of Statutory Instruments

Issue	Existing provision/ No change	Proposed alternative
Description	<ul style="list-style-type: none"> • No provision 	Draft statutory instruments to <ul style="list-style-type: none"> • clearly set out their objectives • estimate costs and benefits to relevant stakeholders • be published for public comments, and response must be provided to public comments • come into effect from a specified date in future
Estimated impact on government		<i>Increase in costs:</i> <ul style="list-style-type: none"> • Increase in investment in form of time, efforts and expertise, consequently increasing the costs.
Estimated impact on project proponents/ consumers		<i>Increase in benefits</i> <ul style="list-style-type: none"> • Improvement expected in environment clearance and EIA process, and consequent reduction delays and in imposition of unreasonable costs, owing to clarity on objectives, impact of statutory instruments, and increase in transparency and predictability in the environment governance process
Estimated impact on society/ environment		<i>Increase in benefits</i> <ul style="list-style-type: none"> • Improvement expected in environment clearance and EIA process, and consequently, imposition of proportionate costs, owing to clarity on objectives, impact of statutory instruments, and transparency in the environment governance process

10.1. Selection of alternative

When compared with no change scenario, while the improvement in transparency, predictability and governance is proposed alternative is expected to impose cost on government, the consequent benefit on relevant stakeholders i.e. project proponents, consumers, society and environment, of such improved environment governance are expected to outweigh the costs. Consequently, the adoption of proposed alternative is recommended.

11. Development of effective information management system

Table 31 compares the existing provisions under EIA Notification for information management system, with suggested alternatives.

Table 31: Provision for an Online Information Management System

Issue	Existing provision/ no change	Proposed Alternative
Description	<ul style="list-style-type: none"> No provision 	<ul style="list-style-type: none"> A statutory requirement obliging government to develop and maintain an online information management system (IMS). The database could be accessible to public on payment of fee -99
Estimated impact on government		<p><i>Increase in costs</i></p> <ul style="list-style-type: none"> Time, efforts and expertise would be required to develop and maintain IMS, consequently increasing the costs. <p><i>Increase in benefits</i></p> <ul style="list-style-type: none"> The received for accessing the baseline is expected to partially offset the costs. Reduced efforts in appraisal phase, owing to availability of quality data
Estimated impact on project proponents/ consumers		<p><i>Increase in benefits</i></p> <ul style="list-style-type: none"> While the project proponents currently pay various agencies to access baseline data, the quality is often not reliable. With the government developed IMS, reliable and quality data would be available resulting in improvement in quality of EIA, reducing delays and imposition of unreasonable costs
Estimated impact on society/ environment		<p><i>Increase in benefits</i></p> <ul style="list-style-type: none"> Improvement expected in the EIA process with the availability of reliable data, and consequently, imposition of proportionate environment management costs on relevant stakeholders

11.1. Selection of alternative

Following deductions could be made from aforesaid comparison of existing and proposed provisions to in relation to IMS:

- Government:** While the government would also be benefitted by existence of IMS, the cost of IMS is expected to exceed the benefits, consequently, resulting in a net loss scenario when compared with no change in statutory provisions.
- Project proponents/ consumers/ society/ environment:** Existence of quality and reliable data will improve the environment governance and EIA process, resulting in benefits to project proponents, when compared with the no-change scenario.

Recommendation – Proposed alternative i.e. statutory provision for development and maintenance of IMS.

12. Provisions for Impact Assessment of Existing Provisions

Table 32 compares the existing provisions under EIA Notification for impact assessment of existing provisions, with suggested alternatives.

Table 32: Impact Assessment of Existing Provisions

Issue	Existing Provision/No change	Proposed Alternative
Description	<ul style="list-style-type: none"> No provision 	<ul style="list-style-type: none"> A statutory requirement requiring impact assessment of existing provisions, such as, project specific EIAs
Estimated Impact on Government		<p><i>Increase in costs</i></p> <ul style="list-style-type: none"> Time, efforts and expertise would be required to undertake impact assessment, consequently increasing the costs
Estimated impact on project proponents/ consumers		<p><i>Increase in benefits</i></p> <ul style="list-style-type: none"> Existence of only relevant provisions in the law is expected to improve the quality of EIA process, and reduce delays and costs
Estimated impact on society/environment		<p><i>Increase in benefits</i></p> <ul style="list-style-type: none"> Existence of only relevant provisions in the law is expected to improve the quality of EIA process, and ensure imposition of proportionate costs

12.1. Selection of alternative

While statutory provisions in relation to impact assessment of existing provisions, is expected to impose cost on government, however, benefits of such provisions on other stakeholders, in form of improved environment government, are expected to outweigh the costs, when compared with no change scenario. Hence, the proposed alternative is recommended.

Part II

Hydro Sector in India

Chapter 1

Overview of the Sector

1. Introduction

India is a country with more than 1.2bn people accounting for more than 17percent of world’s population and it’s on the increase on a daily basis. It is the seventh largest country in the world with total land area of 3,287,263 sq. kilometres. India faces a formidable challenge in providing adequate energy supplies to users at a reasonable cost. In the last six decades, India’s energy use has increased 16 times and the installed electricity capacity by approximately 84 times.¹⁹⁵

In recent years, India’s energy consumption has been increasing at a relatively fast rate due to population growth and economic development. With an economy projected to grow at 8-9 percent per annum, rapid urbanisation and improving standards of living for millions of Indian households, the demand is likely to grow significantly. India ranks sixth in the world in terms of energy demand accounting for 3.5 percent of world commercial energy demand.

Although, the commercial energy consumption has grown rapidly over the last two decades, a large part of India's population does not have access to it.¹⁹⁶ In a May 2014 report, India's Central Electricity Authority anticipated, for 2014-15 fiscal year a base load energy deficit and peaking shortage to be 5.1 percent and 2 percent respectively. India also expects all the regions except the western region to face energy shortage up to a maximum of 17.4 percent in North-eastern region.

Table 33: State of Energy Availability

Region	Energy			Peak Power		
	Requirement (MU)	Availability (MU)	Surplus (+) Deficit (-)	Demand (MU)	Supply (MU)	Surplus (+) Deficit (-)
Northern	328,944	318,837	-3.1%	47,570	46,899	-1.4%
Western	288,062	289,029	+0.3%	45,980	52,652	+14.5%
Southern	298,180	260,366	-12.7%	41,677	32,423	-22.2%
North-Eastern	14,823	12,248	-17.4%	2,543	2215	-12.9%
Eastern	118,663	114,677	-3.4%	17,608	17,782	+1.0%
All India	10,48,672	9,95,157	-5.1%	147,815	144,788	-2.0*

Source: http://www.cea.nic.in/reports/yearly/lgbr_report.pdf

The current development profile and trends in generation capacity addition in India have resulted in the following aspects:

- **Skewed development pattern between different generation technologies:** India’s energy basket has a mix of all the resources available including renewables. The dominance of coal in the energy mix is likely to continue in foreseeable future. Approximately, 54 percent of the total installed electricity generation capacity is coal

based. Other renewables, such as wind, geothermal, solar, and hydro-electricity represent a 2 percent share of the Indian fuel mix. Nuclear holds a one percent share.

- **Sustainable low carbon development:** While India is considering a low carbon strategy and actively considering focussing on Energy Efficient Renovation and Modernisation (EE R&M), the low carbon strategy could be fostered further with a higher thrust on green capacity additions via hydropower development. The Government of India has increased financial allocation, along with other non-financial support, to prioritise hydropower development and increase capacity addition. Accordingly, in the 11th Five Year Plan, the target for hydropower capacity addition was placed at 16.5 GW, which was almost half of the total installed capacity then. However, the achievement, at around 5400 MW, was well short of the target.¹⁹⁷ The same trend of achievement falling short of target by far could be observed in the previous plan periods too. Various factors, such as environmental concerns, land acquisition problems, long clearance and approval procedures, capability of developers, etc. have contributed to the slow pace of hydropower development in the past. These issues have been compounded as hydropower development has largely remained under the ambit of state governments (water being a state-specific subject) with varying policies (for example, upfront premium, royalty power, land acquisition policy, etc.) adopted by the states.

2. Role of Renewables in Sustainable Development

The increase in global energy demand as a result of population and economic growth in developing countries coupled with huge demand from developed countries is well documented. According to the statistics from International Energy Agency (IEA), the documented values show that the total global primary energy supply in 2009 was 12,150 Mtoe up from 6,111 Mtoe in 1973, indicating an almost 100 percent increase. The global energy supply is still dominated by fossil fuel (coal, natural gas, and oil): fossil fuel contributes around 80 percent of the 2009 total mix as compared to about 87 percent in 1973.¹⁹⁸ The contribution from other fuel sources is quite minimal. The mix from biofuels and waste (about 10 percent) is basically derived from biomass solid-fuel sources mainly for provision of domestic thermal energy requirements; a predominant source of energy in less developed regions of the world such as sub-Saharan Africa.

The energy review study by the British Petroleum shows that in 2011, the global primary energy consumption grew by 2.5 percent; natural gas consumption grew by 2.2 percent; and oil consumption grew by 0.7 percent. Coal alone growth by 5.4 percent and was noted as the fossil fuel to grow above the global average.¹⁹⁹ Coal in 2011 was accounted for 30.3 percent of global energy consumption and was quoted as having the highest share since 1969.²⁰⁰ Considering the environmental consequences of fossil fuel energy systems, the global over dependency on fossil fuels paints a gloomy picture on the earth's environmental system. Further, the over dependency on fossil fuels exerts pressure on the limited energy resources, which might seriously affect global economy in the future due to shortage. Therefore, it is important to ensure that energy is extracted, converted, and utilised sustainably. The term 'sustainable energy' is most of the time applied when one wants to describe energy that is not associated with significant environmental damage (and climate change) and whose current generation does not compromise on the potential of future generations to meet their energy needs. The transition to sustainable energy resources provides an opportunity to address multiple environmental, economic, and development needs of the country and the world at

large. Currently, one of the issues confronting the world is the challenge of achieving a truly sustainable energy system.²⁰¹

In 2002, renewable energy in India accounted for only 3 percent of the country's installed capacity at 3,497 MW, in the last 10 years; it has risen to 12 percent. Amongst renewable energy technologies, wind is the most dominant with 70 percent of the share followed by small-hydro power with 13 percent. Most of the country's grid-connected installed renewable energy capacity – over 91 percent – exists across just eight states, Tamil Nadu, Gujarat, Karnataka, Maharashtra, Rajasthan, Andhra Pradesh, Uttar Pradesh and Himachal Pradesh. In 2012, actual electricity generation from different renewable energy technologies stood at 46.04bn units, accounting for 5.76 percent of the total electricity generation, half of this generated from wind energy. Among the states, Tamil Nadu, Karnataka, Maharashtra, Gujarat and Rajasthan account for nearly 80 percent of the total electricity generation from renewable energy technologies. Among other renewable energy technologies, solar power has the greatest potential and a long way to go, given the abundance of incident radiation on the Indian mainland. Currently, solar energy accounts for only 4 percent of the total renewable energy installed, with the Government of India under Jawaharlal National Solar Mission (JNNSM) seeking to increase capacity addition up to 20 GW by 2022.²⁰²

To accelerate growth in the hydropower sector and to bridge the gap between the actual and planned capacity addition, the private sector is being seen as an important stakeholder. The hydropower sector was opened up for private sector participation in 1991. Subsequently, over the years, to facilitate projects through PPP/JV mode, some states have nominated a state nodal agency with an option of equity investment by the state government. However, from 1991 to 2012, the private sector has contributed to about 11.5 percent of the hydropower capacity addition. So far, only about 2700 MW has been commissioned through the private route, which constitutes less than 7 percent of the total installed hydropower capacity. Though private participation in the hydropower sector has gained momentum in the recent past, it still faces impediments in the execution of projects across various stages of the project implementation cycle. The central and state governments need to create an enabling investment climate for increasing private participation by addressing issues related to safeguards, land acquisition, evacuation, law and order problems, technical challenges and non-appreciation of the risks involved in project development.²⁰³

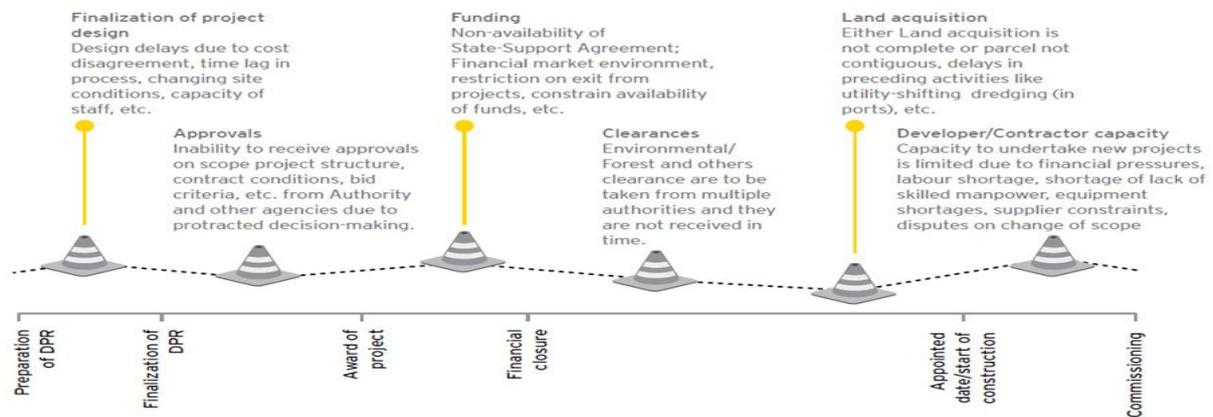
3. Power production in Himachal Pradesh and Challenges

Himachal Pradesh is blessed with abundant water resources in its five major rivers i.e. Chenab, Ravi, Beas, Sutlej and Yamuna, which emanate from western Himalayas and flow through the state. These snow-fed rivers and their tributaries carry copious discharge all the year round which could be exploited for power generation. All the river basins and valleys are connected by roads, other communication network and strong base of other social infrastructure like health and education etc. The power generation potential of the state is 20,386 MW, which is about 25 percent of the total hydel potential of the country, out of which only around 6150 MW stand harnessed so far. The balance potential, if harnessed expeditiously in a judicious manner, can provide adequate resources to the state to promote its developmental activities.

Despite the incentives – Hydro Power Policy on Privatisation offered by the state government and allotment of large number of hydro projects for execution, time-overruns at different stages of development of project has reduced the lure of hydro projects among private

players. As shown in Figure 5 a hydro power plant before reaching to operational stage has to go through several stages. After completion of detailed project report (DPR), a power producer is required to obtain a large number of consents and clearances in regards to acquisition of land/ forest land diversion, and environment. The uncertain nature and disarrayed regulatory framework leads to significant delays in attaining such clearances.

Figure 5: Hydro Plant Going through Various Stages



Source: *Roadblocks in Accelerating Infrastructure Development*²⁰⁴

Various reasons could be attributed to slow pace of development of hydro capacity potential such as difficult/ inaccessible potential sites and lack of infrastructural facilities like road and communication, land acquisition problems, environment and forest issues, resettlement and rehabilitation problems, law and order problem, paucity of funds, longer gestation period, geological surprises, inter-state aspects, non-availability of hydrological data, security restrictions in border areas, lack of adequate skilled manpower and contractual problems. Even on-going projects are getting delayed for some of the aforesaid reasons. The delay could be about four to five years or may be more. The delay is eventually leading to cost overruns.

Hydro based power production is one of the major contributors in HP's gross domestic product (GDP)²⁰⁵. It also plays a crucial role in providing clean and affordable energy not only to the state of HP, but also to other northern states. Consequently, a balance needs to be achieved wherein hydro based power plants maintain its attractiveness among investors, with the adverse impacts of land acquisition/ forest land diversion, rationally managed and appropriately addressed. It is therefore of paramount importance that policies governing operation the operation of hydro power plants and managing the land /forest land in the state, achieve this end, and are adequately tailored, if they are currently not.

The following Chapter describes the key land and forest related legislations in India, including the process as articulated by the legislations to which industries, including Hydro based power producers, are subject to.

Chapter 2

Selection of Legislation

1. Background

As mentioned in the previous Chapter, there are various hurdles that private producers have to face for the purpose of setting up of hydro power projects in India. This Chapter would analyse two main legislations i.e. land acquisition and forest clearance, which have been shortlisted based on literature review (desk research) and post a discussion with relevant stakeholders. Post an in-depth analysis including comparison based on certain indicators, one legislation would be identified for the purpose of undertaking cost-benefit analysis (impact assessment).

Land acquisition process (private/forest land), in recent times has emerged as one of the key bottleneck resulting in time lags, cost over runs, etc. leading to shelving of projects by companies. Centre for Monitoring Indian Economy Pvt. Ltd. (CMIE), a Mumbai based think tank has produced data indicating that more than Rs6,00,000 crore (US\$100bn) worth of infrastructure projects in India had been stalled as of March 31, 2014 due to delay in securing environmental and forest clearances, land acquisition, putting strain on the creaky infrastructure in the country.²⁰⁶ The process to acquire private land and forest land for infrastructure purposes is laid down by two critical legislations namely; The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (LARR Act) and Forest Conservation Act (FCA), 1980, respectively. These are accompanied with respective rules, regulations and notifications of the Government.

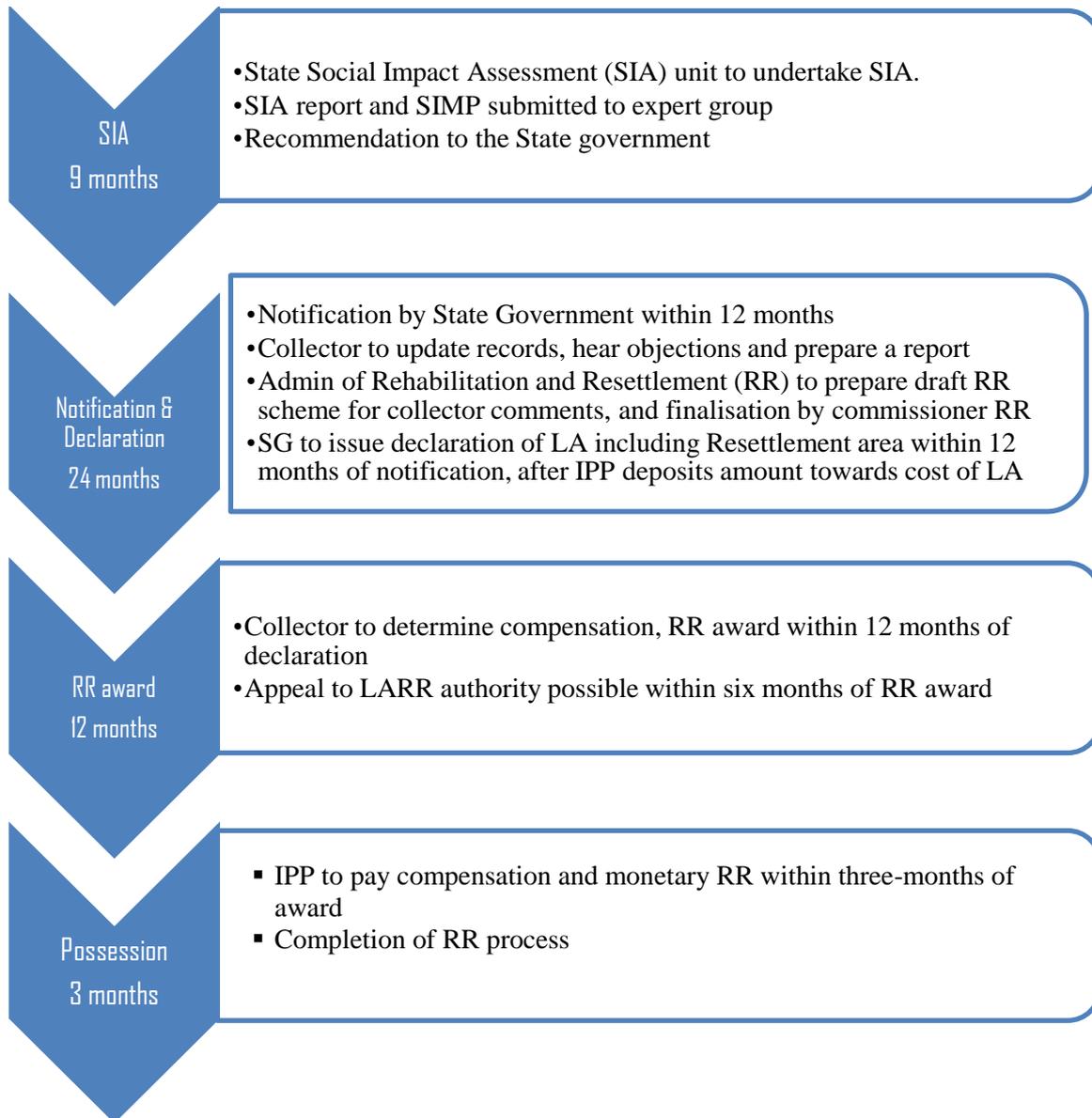
2. Brief Description of Key Legislations

2.1. LARR Act, 2013

About a year and a half old Land Acquisition Rehabilitation and Resettlement (LARR) Act which came into effect in January, 2014 is considered to be a complex piece of legislation by economists, politicians and pundits world-wide. The LARR Act lays down the procedure for land acquisition by infrastructure developers as well and focusses on issues pertaining to rehabilitation and resettlement of the affected people²⁰⁷. The process of land acquisition, under LARR Act involves undertaking social impact assessment survey, a preliminary notification stating the intent for acquisition, a declaration of acquisition and compensation to be provided by a certain time. The LARR Act further proposes that compensation to the owners of the acquired land should be four times the market value in rural areas and twice that of in urban areas. One of the critical pre-conditions for private companies and public-private partnerships in process of land acquisition is to obtain 70-80 percent consent from land losers respectively.

Figure 6 provides a diagrammatic representation of the process of land acquisition, under the LARR Act.

Figure 6: Process of Land Acquisition



2.2. FCA, 1980

The Forest Conservation Act (FCA), 1980 came in force as an interface between conservation and development. Section 2 of FCA, 1980 strictly restricts and regulates the de-reservation of forests or use of forest land for non-forest purposes without the prior approval of Central Government. FCA, 1980 read with Forest Conservation Rules (FCR), 2003 (as amended up to date) sets out the process in relation to diversion of forest land for non-forest purposes. It is a two stage approval process wherein regional office/member secretary, MoEFCC depending upon the area requested to be diverted issues an In-Principal approval to the project

proponent.²⁰⁸ After a proper examination of the compliance report²⁰⁹ submitted by the project proponent regarding compliance with conditions as provided under Stage I approval, second stage/final approval²¹⁰ is issued by the relevant central government authority.

According to provision under FCR, 2003 (as amended as on date) every user agency/project proponent requiring forest land for non-forest purposes has to prepare a proposal in the prescribed format and submit the same to a Nodal Officer authorised in this behalf to represent the State Government, along with all requisite information and documents complete in all respect.²¹¹ The proposals received by the State Government are examined at four levels i.e. Divisional Forest Officer (DFO), conservator of forest, nodal officer and state government. The state government after being satisfied sends the proposal along with its specific comments and justification for diversion of forest land, to the central government.

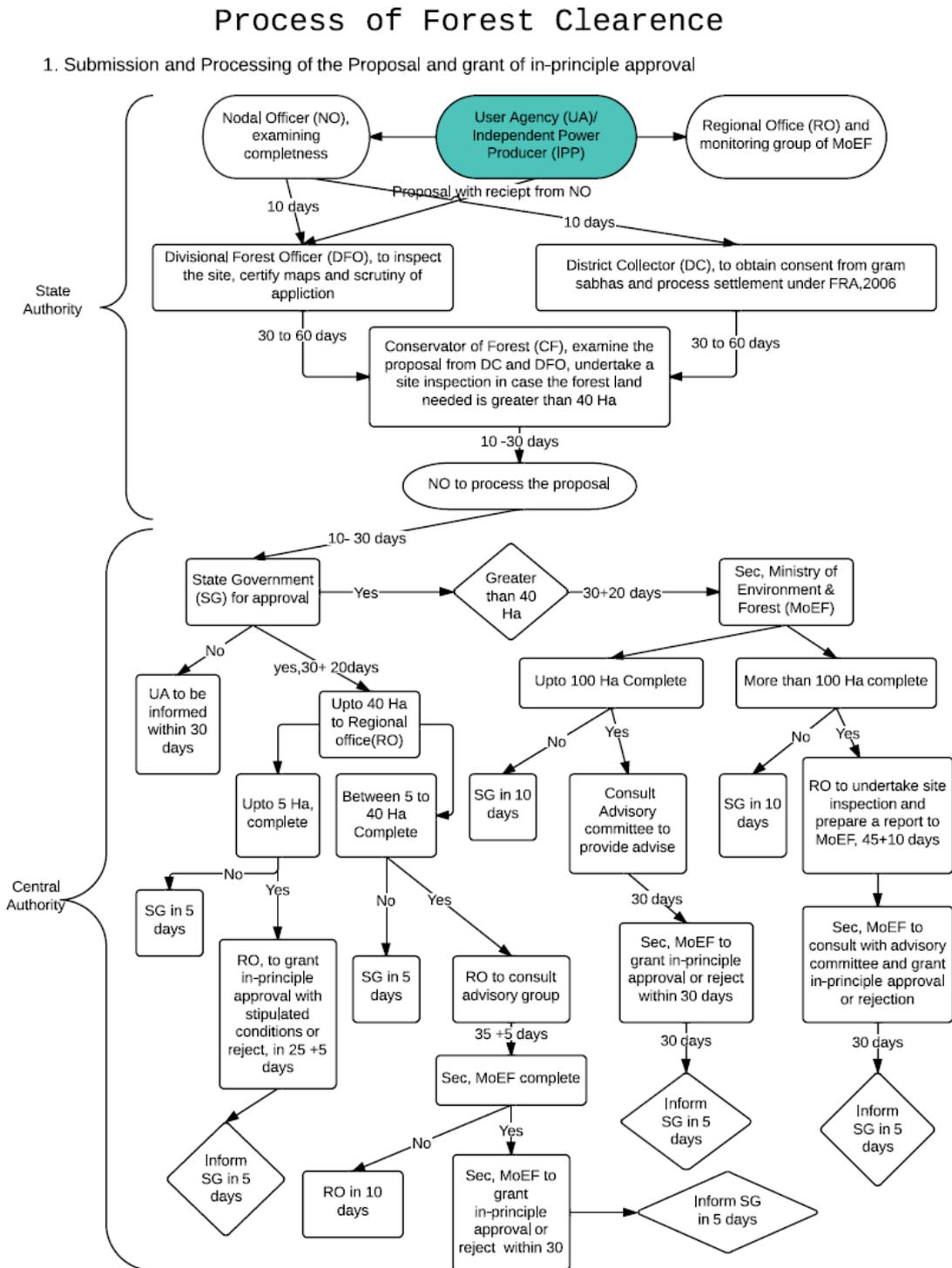
The proposals involving forest land of more than forty hectares are sent by the State Government to the Secretary to the Government of India (GoI), MoEF. Similarly, the proposals involving the forest land up to forty hectares are sent to the concerned regional office.

In respect of the proposals received by the regional office, the Chief Conservator of Forests of the concerned regional office is responsible to finally dispose of all proposals involving forest land up to 5 hectares. The proposals involving diversion of forest land over and above 5 hectares and up to 40 hectares are examined by the Additional Principal Chief Conservator of Forest in consultation with State Advisory Group. The views/recommendations of the advisory group along with the proposal are sent to the MoEF for final decision. However, in case of proposals requiring forest land more than 40 hectares, along with site inspection report²¹² referred by the central government to the Forest Advisory Committee (FAC) before granting 'in-principal approval'.

An 'in-principal approval' document carries certain stipulated conditions, such as payment of compensatory afforestation, net present value, clearance under FRA, 2006 etc. which a proponent is required to comply and submit a compliance report to obtain 'final approval'.

For a diagrammatic representation of the process of acquiring forest land for non-forest government under the FCA, 1980 see Figure 7.

Figure 7: Process of Diversion of Forest Land



Source: <http://moef.gov.in/citizen/specinfo/forflow.html>

3. Selection of Legislation for Impact Assessment

3.1. Indicators for comparison

As indicated above, industries, including hydro power plants are required to obtain approval for acquiring land/forest land under LARR Act/ FCA respectively. In addition, compliance with conditions of approvals, as the case might be, is required, before and during the operation of hydro power plant. Thus, these are the most critical legislations in relation to land/forest land acquisition. This was validated by stakeholders, such as public and private developers and experts, during interactions with them. This research project envisages assessing impact of provisions of a single legislation. Consequently, costs and benefits of the selected legislation (amongst these) must be assessed, which has the potential to impose maximum costs on the principal stakeholder category, i.e. hydro power producers. Literature on assessment and comparison of cost of doing business, suggests comparison of relevant regulations on the basis of three broad indicators, viz. time, costs, and procedures.²¹³ Time includes average time to obtain the approval, costs include fees etc. paid to the regulatory authorities, and procedure includes documentation and authorities involved in granting of clearance.

On this basis, and upon suitable modification for the purpose of this project, following indicators have been developed for comparison of selected legislations:

- *Approvals*: Number of approvals required
- *Costs*: Fees paid to the regulatory authorities
- *Time*: Statutory time period within which the clearance is required to be granted
- *Documentation*: Documentation required to obtain clearance and report compliance with conditions under clearances
- *Procedures*: Authorities involved in processing the clearance and
- *Conditions*: Conditions precedent (such as, requirement of other approvals) and subsequent to the approvals

3.2. Comparison of legislations

On the basis of indicators developed above, the comparison of LARR Act, 2013 and FCA, 1980 is set out (Table 34).

Table 34: Comparison of Legislations

S. No	Indicators	LARR Act, 2013	FCA, 1980
1.	Approvals	State government (SIA, notification, declaration), R&R	Diversion of forest land from central government. State government has no power to approve
2.	Costs	SIA cost, RR award, value of assets and compensation	Cost of compensatory afforestation, Net Present Value, Catchment Area Treatment plan (CAT Plan)
3.	Time	47 months	250-400 days
4.	Documentation	Land acquisition proposal with	Project plan, maps, site

S. No	Indicators	LARR Act, 2013	FCA, 1980
		relevant documents, SIA report, SI management plan	inspection report, compliance report etc.
5.	Procedures	State government, State SIA unit, <i>Panchayat/Municipality/ Municipal corp.</i> , District Collector (DC), Sub-divisional magistrate, Expert group, Administrator of R&R, Commissioner of R&R, LARR authority	Around 10 different authorities, inclusive of state and central-level
6.	Conditions	-	Approval under FRA, 2006

While the documentation requirement seems similar for both the legislations more often than not, cost of land acquisition under LARR (owing to R&R) and the time taken to grant the requisite clearance is more cumbersome as compared to that under FCA. However, the numbers of authorities involved in the FCA Act are more in numbers as compared to the LARR Act, 2013. A prerequisite for RIA is availability of evidence of effectiveness of implementation of the legislation. As LARR was enacted as late as in 2013, given the limited time of its implementation, it might be too early to undertake detailed assessment of the legislation. Given this, the FCA seems to be most appropriate legislation for the purpose of this study. In addition, during the research design meeting organised for validation of research methodology, the experts attending the meeting agreed with the aforementioned approach of undertaking RIA of the FCA.

The following Chapter discusses the FCA along with the FCR, in details and highlight potential sub-optimal provisions and issues.

Analysis of the Selected Legislation

1. Background

As discussed in the previous Chapter, the FCA along with the FCR, have been selected for undertaking impact assessment. The objective of FCA is to protect the country's rich biodiversity and natural heritage by permitting only unavoidable use of forest land for various developmental purposes. It aims to balance the conservation of forests with the sustainable development needs of the country contributing to better environment, health and economy.²¹⁴

The FCA intends to achieve its objectives by making de-reservation of forest land or use of forest land for non-forest purposes contingent upon prior approval of the central government,²¹⁵ and imposition of penalties on contravention of provisions of FCA.²¹⁶

As discussed earlier, the procedure for obtaining approval from the government for diversion of forest land or use of forest land for non-forest purposes is provided in the FCR, issued under the FCA. FCR provides for a time limit within, which a decision on application for diversion must be made by the central government. FCR also requires the project proponents to pay compensatory levies to address and manage the potential damage on forests. The Government has issued various circulars, notifications etc. under the FCA with respect to time limit and compensatory levies, with the intention of providing clarity and the aid in interpretation of FCR.

The time and financial costs imposed by the FCA, FCR and other notifications, are, presumably, with the intention that benefits to stakeholders from imposition of such costs would outweigh such costs. Consequently, it must be ensured that only such costs as envisaged are imposed on the project proponents, for any unintended, unreasonable or additional burden has the potential to disrupt the delicate balance between industry and forest needs, resulting in failure to achieve the desired objective of FCA.

Unintended costs could be imposed on the project proponents if the decision on applications for approval of diversion of forest land is not made within the timelines prescribed for the same, or the compensatory levies are imposed in a manner, which imposes unreasonable burden and costs on the project proponents. It could be reasonably assumed that any unreasonable cost imposed on the project proponents would be passed on to the consumers, consequently having adverse impact on interests of consumers.

2. Analysis of FCA and FCR

The following sections undertakes an in-depth analysis of the provisions of FCA and FCR to identify potentially sub-optimal provisions having the possibility of imposing unreasonable time and compensatory levies on project proponents. In addition, issues that ought to be, but are not covered by FCA and FCR, resulting in the possibility of imposition of unreasonable costs on the stakeholders are also discussed.

This section is broadly segregated in two broad heads i.e. time costs and compensatory levies, wherein relevant provisions/issues emanating from FCA, FCR and notification, circulars etc.

issued therein are discussed accordingly. A hypothesis/problem statement follows each of the issues identified, existence of which will be tested in the following Chapter on the basis of data collected and analysed under the project.

2.1. Provisions/issues potentially causing delay in the decision-making

2.1.1. Accountability provisions of expert committees

The FCR has constituted a FAC, to provide advice to the central government with regard to grant of approval for diversion of forest land.²¹⁷ The FCR has also constituted Regional Empowered Committees (REC) at each of the regional office to deal with forest conservation matters.²¹⁸

The FAC and REC are required to provide their advice on the proposals within a period of one month to the government. However, there is no statutory requirement to provide reasons should such time period is not met. The advice of FAC and REC is usually followed.

The FAC comprise three official members and three non-official members, in addition to a member secretary who is a government official. The FAC is required to meet at least once in a month. However, no provision in FCR exists which requires the FAC to provide sufficient explanation in case it is not able to meet in a particular month.

The term of the non-official members of FAC is two years, consequently the FAC is required to be constituted every two years. The FCR does not provide any details with respect to the re-constitution process of FAC. There is no guarantee that the FAC will be reconstituted before the expiry of term of its existing non-official members.

The provisions regulating functioning of REC also suffer with similar omissions, resulting in absence of accountability proceedings with respect to proceedings at REC, as well.

Issue: Absence of accountability provisions with respect to functioning of expert committees could result in delay in decision making

2.1.2. Absence of statutory requirements of periodic capacity review

The FCR requires the DFO to examine factual details and feasibility of the proposal, certify maps, and carry out on site-inspections and enumeration of the trees.²¹⁹ The DFO is required to process and forward the application along with findings, within 30 days, 45 days, and 60 days, respectively, for proposals involving forest land up to 40 hectares, between 40 and 100 hectares, and above 100 hectares, respectively.²²⁰

Similarly, a DC is required to complete the process for settlement of rights in accordance with the provisions of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (Forest Rights Act, or FRA), obtain consent of the *Gram Sabha*²²¹, and forward his findings to the Conservator of Forests, within 30 days, 45 days, and 60 days, respectively, for proposals involving forest land up to 40 hectares, between 40 and 100 hectares, and above 100 hectares, respectively.²²²

It might not be feasible for the DFO or the DC to complete the assigned tasks within the specified time period, unless aided by adequate resources, in terms of manpower and technology.²²³ Absence of a periodic capacity review of government departments' assigned to undertake various functions under the FCR, makes it difficult for such departments to comply

with the timelines mentioned under the FCR. A periodic capacity review mechanism might not be possible sans flanking statutory provisions requiring the same.

Issue: Absence of statutory provisions requiring periodic capacity review

2.1.3. Uncertainty with respect to procedure under Forests Rights Act

As mentioned earlier, under the provisions of FRA, the DC is required to complete the process for settlement of rights under FRA, and obtain consent of *gram sabha*. There have been frequent changes with respect to scope and applicability of procedure under FRA. In addition, several union ministries have taken differing stands, and there has been a difference of opinion between central and state governments, with respect to compliance with procedure under FRA.²²⁴

In terms of notifications dated 05 February 2013 and January 15, 2014, the MOEFCC exempted linear projects, other than those involving recognised rights of the primitive tribal groups and pre-agricultural committees, from the requirement of obtaining consent from each concerned *gram sabha*.²²⁵ Pursuant to a letter dated 07 March 2014, the Ministry of Tribal Affairs (MTA) stated that it is the competent ministry relating to FRA, provisions of which need to be strictly construed. The letter further stated that even if the MOEFCC does not insist on compliance to FRA for linear projects, it cannot be said that this authorises the land acquisition/transfer authorities to violate FRA. It concludes with the statement that compliance with FRA is a mandatory requirement before forest land can be diverted, and failure to do so would be a violation of law.²²⁶

In its office memorandum dated August 27, 2014, MTA further clarified that the FRA does not provide for any exemption to its provisions for any category of forests, projects, persons etc.²²⁷ MTA, in its letter dated 21 October 2014, further clarified that no agency of the Government has been vested with powers to exempt application of FRA in part or in full. The letter also mentions that any action or process inconsistent with the due process laid under the FRA would not be legally tenable and is likely to be struck down by the courts of law.²²⁸

However, MOEFCC issued a circular on 28 October 2014 exempting proposals seeking prior approval of central government for diversion of plantations notified as ‘forests’ on a day less than 75 years prior to December 13, 2005, being located in villages having no recorded population of scheduled tribes, as per the Census-2001 and the Census-2011, from the requirement of initiation and completion of process for recognition and vesting of forest rights of scheduled rights and other traditional forest dwellers. In such cases, a certificate from the concerned DC certifying the aforesaid fact was made sufficient.²²⁹ Various civil society institutions have filed their representations, in opposition of this circular.

Such divergent opinions from different central government ministries tend to create uncertainty and ambiguity with respect of procedures, potentially leading to delays, and resulting in cost escalations.

Moreover, in a letter dated 28 February 2013 to the Chief Minister of Himachal Pradesh, seeking his personal intervention, the MTA alleged that FRA is not being seriously implemented in Himachal Pradesh and the state government has been consistently taking a stand that rights over forest land had been settled long back and recorded in settlement and therefore, there is limited scope of implementation of FRA in Himachal Pradesh.²³⁰

Consequently, difference in opinion in different government departments at different levels lead to uncertainty, resulting in delay in obtaining requisite clearances under FRA, consequently causing protraction in decision making on applications for diversion of forest land for non-forest purposes.

Issue: Absence of statutory provisions requiring consistency in statutory policies resulting in uncertainty

2.1.4. Consideration of proposal by the central government contingent upon different factors

The FCR provides that whenever the time taken by state government for processing the proposal exceeds the time limits stipulated in the FCR, the proposal will be considered by the central government only if an explanation for the delay is furnished to the satisfaction of the Central Government, together with action taken against any individual held to be responsible for the delay.

Consequently, the consideration of an already delayed proposal by the central government has been made contingent upon satisfactory explanation of delay and action against responsible officer. This is despite the ambiguous provisions fixing responsibility on government officers, as discussed separately in this Chapter.

Such provisions have the potential to delay the process of approval of diversion of forest land and cause further harm to project proponents. It is possible that pending an explanation of delay/action against responsible officer, the proposal is not considered by the central government, imposing additional time costs on the project proponents, and consequently the stakeholders.

Issue: Statutory provisions making consideration of proposal by the central government contingent upon different factors might result in delay

2.1.5. Ambiguity and frequent changes in policies governing hydel power plants

The Forest (Conservation) Amendment Rules, 2014²³¹ authorises the regional office of the central government to grant in-principle approval to proposals involving forest land up to five hectares, other than proposals relating to mining and encroachments.²³² Consequently, proposal for hydel power projects involving forest land up to five hectares could have been approved by the regional office. However, this position was reversed within an eight month period by the Forest (Conservation) Second Amendment Rules, 2014²³³ which withdrew the powers of regional officer to grant in-principle approval for hydel projects involving forest land as small as five hectares.²³⁴

Further, in relation to the proposals involving diversion of forest land of more than 100 hectares, the Forest (Conservation) Second Amendment Rules, 2014²³⁵, require the regional office to prepare an inspection report and submit it to the MOEFCC within 45 days. The MOEFCC is required to refer such proposals, amongst others, to the FAC, for its advice.²³⁶ Such proposals along with inspection report are also required to be referred to REC within five days of receipt of site inspection report.²³⁷ There is lack of clarity of role of RECs after receipt of such proposals and inspection report for diversion of forest land more than 100 hectares, as RECs usually have jurisdiction over proposals involving diversion of forest land up to 40 hectares.

Such ambiguous provisions and frequent changes creates uncertainty with respect to policies governing hydel-based power producers. Such policy instability and uncertainty usually compel the power producers to delay their decision with respect to setting up of power plants, consequently possibly delaying the commissioning of hydel power projects, thus inflating the costs to stakeholders, in the process. Projects might even be abandoned on account of ambiguous and unpredictable policy environment.

Issue: Ambiguity and frequent changes in policies governing hydel; based power plants resulting in delay

2.2. Provisions/issues potentially resulting in imposition of unreasonable compensatory levies

As discussed earlier, FCR specifies the kind of compensatory levies which could be imposed on the project proponents. Circulars and notifications issued by the MOEFCC on the issue of compensatory levies, when read together with the FCR, provide a complete picture with regard to the nature and manner of payments required to be made by the project proponents. This section discusses provisions/issues having the potential to result in imposition of unreasonable compensatory levies on project proponents.

2.2.1. Absence of accountability provisions for government

Sections 3A and 3B of the FCA are penalty provisions. A contravention or abetment of contravention of provisions of section 2 of FCA (which provides for restriction of use of forest land for non-forest purposes) is punishable with a simple imprisonment up to 15 days. It is not clear if this provision could be extended to contravention of rules, circulars and provisions made under FCA. It is also not certain if accountability could be fixed on government departments and government officers should they contribute to violation of provisions in FCR, including non-compliance with statutory time limits.

Section 3B of the FCA further provides that if an offence is committed by a government department, head of the department shall be deemed guilty of such offence, subject to certain knowledge exceptions. However, it does not define the term 'offence'. It is not clear if imposition of unreasonable conditions or non-compliance with statutory timelines would constitute offence under the FCA.

In addition, one could question the proportionality between the breach of provisions of FCA and consequent penalty of imprisonment for a period up to 15 days. This provision has remained as such since 1980, i.e. enactment of the FCA. It must be reviewed if this is an adequate deterrent to prevent breach of provisions of the FCA.

Further, under rule 9 of the FCR, the central government could authorise any officer not below the rank of Conservator of Forests (CF) to initiate proceedings against a person *prima facie* found guilty of offence under the FCR or violation of FCR, amongst other rules made under FCA. Such procedure would not be feasible should a government officer be accused of offence under the Act or violation of FCR. Consequently, there seems to be absence of adequate accountability provisions for government officials under the FCA and FCR.

Absence of adequate accountability provisions tends to result in misuse of discretion by the relevant authorities having the potential to impose unintended direct and indirect costs on the project proponents.

Issue: Absence of adequate accountability provisions in the FCA and FCR

2.2.2. Wide discretionary powers to regulatory authorities

The FCR provides that the REC is required to tender its advice in relation to proposals relating to hydel projects involving diversion of forest land up to 40 hectares.²³⁸ The REC can suggest such conditions or restrictions, for imposition on use of forest land for non-forest purpose, which in its opinion would minimise adverse environment impact.²³⁹ The central government, after considering the advice of the REC and after further enquiry as it might consider necessary, might arrive at a decision with respect to grant of approval.²⁴⁰

Similarly, the FAC is required to tender its advice in relation to proposals relating to hydel projects involving diversion of forest land more than 40 hectares.²⁴¹ The FCR provides that while tendering advice, the FAC may suggest any condition or restriction on the use of any forest land for any non-forest purpose, which in its opinion would minimise adverse environmental impact.²⁴² The central government, after considering the advice of FAC and after such further enquiry as it may consider necessary, grant in-principle approval subject to fulfillment of stipulated conditions.

There is no statutory provision for either the expert committees or the MOEFCC (either at the RO or HO level) to provide reasons for their decisions. Moreover, while rule 7(4)(e) of the FCR lists matters, which the FAC is required to give due regard to, while tendering its advice, no such guidance is provided in case of the REC, or MOEFCC.

The FAC and REC are expert bodies and it could be reasonably presumed that their advice would, more often than not, be accepted by the central government. However, absence of statutory provisions requiring justification of advice has the potential to result in abuse of discretion and consequently imposition of unreasonable and disproportional costs on the project proponents. Similarly, absence of statutory provisions requiring reasons for the decision taken by MOEFCC, has the potential to result in imposition of unintended costs on project proponents, specifically hydel power projects.

Issue: Absence of statutory provisions requiring expert committees and MOEFCC to provide reasons for their advice/decisions might result in imposition of unreasonable cost

2.2.3. Lack of grievance redressal mechanism with respect to compensatory levies imposed

The FCR provides that the DFO is required to prepare a demand note containing compensatory levies to be paid, and documents, certificates and undertakings required to be submitted by the project proponents in order to comply with conditions stipulated in the in-principle approval, within 10 days of receipt of in-principle approval. The project proponent is required to make payment and submit a compliance report within 30 days of receipt of demand note.²⁴³

There is no provision which allows the project proponent to challenge the compensatory levy imposed, or the computation thereof. While section 16(e) of the National Green Tribunal Act, 2010, provides that any person aggrieved by an order or decision made by the state government or other authority under section 2 of the FCA, might prefer an appeal to the National Green Tribunal (NGT), it is not clear if the appellate jurisdiction of NGT extends to hearing appeals against imposition of certain compensatory levies, or computation thereof.

Absence of grievance redressal mechanism has the potential to result in imposition of unreasonable levies and costs on project proponents.

Issue: Absence of statutory grievance redressal provision with respect to levies imposed for project proponents

2.2.4. Conflict of interest and competition distortionary provisions

The FCR provides that in case the state government decides not to de-reserve or divert forest land for non-forest purpose, as the case might be, it is required to intimate the same to the applicant. However, in proposals involving diversion of forest land for projects of the central government or central government undertakings, if the state government does not agree in – principle for diversion/dereservation, it is required to forward the proposal to central government along with its comments.²⁴⁴

Such provisions raise serious issues of conflict of interest within the central government, which acts as a decision-making authority in its own proposal (or proposals of its undertakings), disregarding all the settled principles of natural justice.²⁴⁵ It is highly unlikely that a proposal made by a department or an undertaking of the central government will be rejected by another department of central government.²⁴⁶

Aforementioned provisions also tend to skew the playing field in favour of government applicants, distorting competition, and are against the spirit of competitive neutrality. Provision allowing rejection of proposal of private hydel power producers, and providing an another opportunity to public sector hydel power producers, only because the proponent is central public sector undertaking, has the potential to impose unjustifiable direct and indirect cost on private sector applicants.

However, the problem seems not to be limited to central government proposals. State governments are actively involved in harnessing the hydel potential in the state of Himachal Pradesh. The Himachal Pradesh Power Corporation Limited (HPPCL) is one of the biggest players in power production in the state. Consequently, when one arm of the government assesses the application made by another arm, irrespective of the fact that application is made by the central or state government, an unbiased consideration of application and application of arm length principle would seem to be difficult. Such arrangement might also result in bias against private sector project proponents, resulting in imposition of unreasonable costs.

Issue: Statutory provisions resulting in conflict of interest and distortion of competition might result in imposition of unreasonable costs on private sector project proponents

2.2.5. Ambiguity in scope of terms 'forest land' and 'reserved forest'

Two terms which are often repeated in the FCA (section 2) are forest land and reserved forest. The use of forest land for non-forest purpose *et al* and dereservation of reserved forest is regulated. While the FCA indicates that reserved forest would fall within the expression 'reserved forest' in any law for the time being in force in the relevant state²⁴⁷, and also provides some clarification with respect of the scope of 'non-forest purpose'²⁴⁸, it remains silent, and consequently ambiguous, with respect to the scope and expanse of the term 'forest land'.

While the Indian Forests Act, 1927 delves into terms such as reserved forests, village forests, protected forests, and provides an inclusive definition of forest produce, these are not of

much help in relation to ascertaining the scope of relevant terms under the FCA. The FRA defines forest land as *land of any description falling within any forest area and including unclassified forests, undemarcated forests, existing or deemed forests, protected forests, sanctuaries and national parks.*²⁴⁹ However, the definition is not clear and fails to provide any clear principles or indicators with respect to determination of forest land. The Supreme Court (SC) has ruled that the term ‘forest’ must be understood according to its dictionary meaning, which covers all statutorily recognised forests, whether designated as reserved, protected or otherwise for the purpose of section 2(i) of the FCA. According to the SC, forest land includes any area recorded as forest in the government record irrespective of the ownership.²⁵⁰ The definition is exhaustive and depends on government records, amongst others.

Consequently, lack of statutory definition of the term ‘forest land’ and ‘reserved forest’ has the potential to create the process of obtaining approval for diversion of forest land complicated. If one is not clear about the term ‘forest land’ it would presumably be difficult to determine if application needs to be made under the FCR for use of such land for non-forest purposes. Lack of desired clarity would presumably require investment of additional efforts and resources on the part of the project proponents to identify if they require approval under the FCA, thus imposing additional unintended costs.

Moreover, the term ‘reserved forest’ is left to be guided by state level statutes. This would potentially result in uncertainty as different states could define the term in different ways.²⁵¹ While this might be necessary, but lack of a guiding principle under the principal statute, potentially provides huge discretion to the state level authorities, resulting in the possibility of imposition of unintended and unreasonable costs on project proponents, including hydel-based power projects.

Issue: Absence of clarity in scope of ‘forest land’ and ‘reserved forest’ under the FCA.

2.2.6. Sub-optimal provisions governing non-official members of expert committees

The non-official members of FAC are required to be experts one each in mining, civil engineering and development economics.²⁵² Similarly, the REC is required to have three non-official members from amongst eminent persons who are experts in forestry and allied disciplines.²⁵³ Non-official members of both FAC and REC are paid travelling and daily allowance only, and could be removed from office on failure to attend three consecutive meetings of the respective committees without any sufficient cause.²⁵⁴ Further, the quorum of meeting of the FAC is three²⁵⁵ and there is no requirement of minimum number of non-official members.

It could be deduced from above that while the non-official members of both committees are required to share their expertise on a continuous basis with the government, the compensation paid to such members might not be commensurate to the services they render. Further, official members might not be subject to requirements similar to those which are required to be complied with by the non-official members.

Consequently, differential treatment of non-official members of the FAC and REC might lead to sub-optimal decisions by the FAC and REC, and possibly, imposition of unreasonable costs on project proponents.

Issue: Sub-optimal provisions regarding constitution and functioning of FAC and REC under the FCR might result in unreasonable costs on project proponents

2.3. Potentially sub-optimal provisions

In addition to the provisions/issues emanating from the FCR, which have the potential to impose unintended time and financial costs on the project proponents, a review of provisions of FCR reveal existence of several sub-optimal provisions, potentially having the scope for rationalisation and simplification, and consequently reducing the costs imposed on power producers, and the consumers. Some of these are discussed in this section.

2.3.1. Statutory requirements for duplication of procedures

The FCR requires a CF to examine factual details, feasibility of the proposal, and carry out site inspection in case the area of forest land proposed to be diverted is more than 40 hectares.²⁵⁶ The CF receives the proposal from DFO, who is supposed to have undertaken this process previously. The regional offices of the MOEFCC are also required to mandatorily undertake site inspections where forest land proposed to be diverted is more than 100 hectares, consequently, undertaking the same process thrice.

Moreover, rule 8 of the FCR requires completeness of the compliance report (with respect to conditions imposed under in-principle approval) submitted by the project proponent, to be checked by several authorities at different levels.

Duplication of procedures must be avoided, to the extent possible, as carrying out procedures requires investment of time, money and efforts on the part of relevant stakeholders, government departments in this case. It is reasonable to presume that cost of such repetitive procedures would be passed on to project proponents, and eventually to the consumers.

Consequently, while in certain cases, it might be absolutely essential for CF or the RO to repeat the activities already conducted, and completeness of the compliance report to be checked by different authorities, sound justification and reasoning must be provided, absence of which might lead to wastage of resources.

Issue: Absence of statutory provision requiring justification of duplication of procedures

2.3.2. Provision of transit time under the FCR

The FCR provides that the total time exclusively for transit of a proposal between various authorities at the state government-level will not be more than 20 days, over and above the time-period specified for processing of proposal by each authority.²⁵⁷ It further provides that the time taken for transit of proposal from RO to MOEFCC could not be more than five days.²⁵⁸

While the term 'transit time' is not defined under the FCR, it could be reasonably assumed that such time is being allotted for physical delivery of proposals and other relevant documents.

While owing to quantity of documents, it might be essential to deliver physical copies of documents, the FCR has no mention of transfer of documents in electronic format. In addition, strong arguments might be available to justify review and reduction of transit time under the FCR, given that it prolongs the time period for grant of approval for diversion of forest land, imposing direct and indirect costs on stakeholders.

The provision of transit time also seems unreasonable in light of advancements of information and communication technology and availability of internet. The legislation provisions must be dynamic and keep abreast with the technological advancements and progress, and avoid remaining archaic and imposing unreasonable time and financial costs on the stakeholders.

Issue: Statutory provisions for transit time without necessary justification

To conclude, this chapter discusses such provisions in the FCA and FCR, and issues left uncovered in these statutes, which have the potential to impose varied unintended and unreasonable time and financial costs on the project proponents, and eventually the consumers. The following Chapter tests the validity of such provisions and issues raised on the basis of data collected and analysed, under the project. The following Chapter also attempts to estimate and quantify the costs imposed on stakeholders as a result of such provisions and issues.

Chapter 4

Validation and Estimation of Costs

1. Background

The previous Chapter identified potentially sub-optimal provisions under FCA and FCR, and issues that remain unaddressed under these legislations. This Chapter attempts to validate the assumptions made with respect to such provisions/issues, on the basis of data collection and analysis.

In order to collect data/relevant information, survey of publicly available data was undertaken. During the five-year period from 2009-2014 (up to September 2014), according to publicly available information, 81 hydel-based power plants in Himachal Pradesh were involved in the process of obtaining approval for diversion of forest land for non-forest purposes. These include public sector as well as private sector power plants. See Table 35 for details.

Table 35: Power Plants Involved in Diversion of Forest Land (2009-2014)

	Private Sector				Public Sector				Total
	Up to 5Ha	>5Ha-40 Ha	>40 Ha-100 Ha	>100 Ha	Up to 5Ha	>5Ha-40 Ha	>40 Ha-100 Ha	>100 Ha	
Pending at RO	9	2	1	0	1	0	0	1	14
Pending at DFO/DCF	5	2	1	1	0	0	0	0	9
Pending with SG	9	0	0	0	0	0	0	0	9
Pending with GoI	2	0	0	0	0	0	0	0	2
In Principle	15	0	1	1	0	0	1	1	19
Approved	18	5	2	0	0	2	1	0	28
Total	58	9	5	2	1	2	2	2	81
Approval percentage (%)	31	55	40	0	0	100	50	0	34.5

Source: Details of forest clearances, as available at <http://forestsclearance.nic.in/>, accessed on November 16, 2014

As can be deduced from Table 35, while the approval percentage for applications for diversion of forest land for non-forest purposes during the previous five years is around 34 percent, the applications made in the years 2013 and 2014 could not be reasonably expected to get the approval, as the statutory time limit for making a decision on application for diversion of forest land ranges between 265-410 days, and on the assumption that the process complies with such statutory timelines.

Consequently, a reasonable data set out of the 81 applicants mentioned aforesaid, mostly comprising applications made during 2009-2012, and representing a healthy mix of private as

well as public sector applicants, involving diversion of forest land of different sizes, were found to be most appropriate to test the validation of the assumptions made in the previous chapter, with respect to imposition of unreasonable time and financial costs on the project proponents.

This exercise has been undertaken in the following sections. Each of the sections begin with description of the data set, validation of assumption of unreasonable time and financial costs, and conclude with reasons for imposition of such unreasonable costs, on the basis of qualitative information collected during stakeholder consultations. Stakeholder consultations include interaction with officials of department of forest of the Government of Himachal Pradesh, hydel-based power producers, officials of MOEFCC, experts, research institutions *et al.* This approach was ratified by experts and was considered optimal considering the time period, availability of data in public domain, and scope of the project.

2. Validation of Delay in Decision-Making

2.1. Data set

In order to verify the hypothesis of delay in decision-making with respect to applications made for diversion of forest land for non-forest purposes, 23 applicants for hydel-based power plants were selected from the available 81 hydel-based power plant applicants. This was a mix of public sector and private sector applicants, having applied for diversion of different sizes of forest land. The applications are pending at different stages, and some have been granted approval. Table 36 lists the data set for time analysis.

Table 36: Data Set for Time Analysis

S. No.	Plant name	Capacity (MW)	Status (as on September 2014)	Date of Application
A.	Application of diversion up to 5 ha			
1.	Panvi	4	Pending at RO	June 25, 2010
2.	Soldan	5	Pending at RO	April 23, 2013
3.	Seehi-II	5	Approved	August 11, 2009
4.	Shaung	3	Approved	February 16, 2009
5.	Diklery	2	Approved	November 04, 2009
6.	Baner Sangam	5	Approved	May 24, 2010
7.	Harindi Nala	2	Approved	August 08, 2012
8.	Rala	9	Approved	July 04, 2011
9.	Sal-II	3	Approved	June 17, 2011
10.	Chirchind-II	9.90	In Principle	January 30, 2013
B.	Application for diversion > 5-40 ha			
11.	Rupin	24.9286	Pending at RO	October 25, 2012
12.	Baragaon	24	Approved	May 11, 2010
13.	Kharnal	14	Pending at RO	April 09, 2013
14.	Integrated Kashang - Stage II and III	130	Approved	August 11, 2009

S. No.	Plant name	Capacity (MW)	Status (as on September 2014)	Date of Application
15.	Tangnu Romai-I	44	Approved	May 12, 2009
16.	Chanju-I	36	Approved	October 26, 2009
C.	Application for diversion > 40-100 ha			
17.	Shontong-Karcham	402	Approved	February 04, 2010
18.	Bajoli-Holi	180	Approved	March 16, 2011
19.	Miyar	120	In-principle	August 11, 2011
20.	Dhaura Sidh	66	In-principle	August 04, 2011
D.	Application of diversion > 100 ha			
21.	Luhri	775	In principle	April 04, 2011
22.	Seli	400	in principle	March 31, 2012
23.	Renukaji	40	Pending at HO	January 28, 2013

2.2. Evidence of delay in decision-making

A snapshot of analysis of the time taken to grant in-principle and final approval for diversion of forest land for the 23 power plants as listed in Table 36, is presented in Table 37.

Table 37: Compliance with Statutory Time Period

(Figures in days)

Forest land involved	Average time taken	Statutory time period	Delay
<i>In-principle approval</i>			
Upto 5 ha	98 ²⁵⁹	135	(37)
>5-40 ha	395	190	205
>40-100 ha	273	205	68
>100 ha	577	280	297
<i>Final approval</i>			
Upto 5 ha	264	130	164
>5-40 ha	158	130	28
>40-100 ha	860	130	730
>100 ha	N.A ²⁶⁰	130	-

As revealed from the Table 37, in most cases, the statutory time period for grant of approval of diversion of forest land was not met. Consequently, the hypothesis laid down in the previous Chapter, with respect to validation of forest land for non-forest purposes, stands validated. Possible reasons for the same, as revealed during stakeholder consultations are discussed below.

2.2 Possible reasons for non-compliance with the statutory time period

2.2.1. Sub-optimal provisions regulating functioning of expert committees

A survey of minutes of selected FAC meetings reveals that often the proposals listed under the agenda are not taken up for discussion, and are postponed to the following meeting. Table 38 provides the details.

Table 38: Review of FAC Minutes

Date of meeting	Projects included under agenda	Status (as provided in minutes)
August 26, 2011	120 MW, 63.05 ha Miyar Hydro, Hindustan Power	Postponed, due to paucity of time
September 28, 2011	66MW, 57.7 ha Dhaula Sidh HEP, SJVN limited	No discussion available in the minutes
	120 MW, 63.05 ha Miyar Hydro, Hindustan Power	
	111 MW, Swarna Kuddu Himachal Pradesh Power Corporation Limited (HEP, HPPCL), about additional forest land for const. of adit 1 and adit 2 road (0.34 ha)	
October 11, 2011	66MW, 57.7 ha Dhaula Sidh HEP, SJVN limited	Postponed, due to paucity of time
	120 MW, 63.05 ha Miyar Hydro, Hindustan Power	
	111 MW, Swarna Kuddu HEP, HPPCL, about additional forest land for const. of adit 1 and adit 2 road (0.34 ha)	
28 November 2011	66MW, 57.7 ha Dhaula Sidh HEP, SJVN limited	No discussion available in the minutes
	120 MW, 63.05 ha Miyar Hydro, Hindustan Power	
	111 MW, Swarna Kuddu HEP, HPPCL, about additional forest land for const. of adit 1 and adit 2 road (0.34 ha)	
December 26, 2011	None of the above plants – either in agenda or in the minutes (no new HEP from Himachal Pradesh either)	
<i>Source: Agenda and Minutes of the FAC meetings, as available at http://forestsclearance.nic.in/FAC_Report.aspx, accessed on November 16, 2014</i>		

Consequently, it could be deduced that applications for some of the project proponents were in the agenda of FAC meetings for four consecutive months but the same were not discussed, resulting in delay in decision-making. Rule 7(4)(d) of the FCR requires the FAC to provide its recommendations to the government within a period of one month. It is evident that, at times, this condition is not met. There is no provision in FCR, which mandates the FAC to provide reasons for the non-compliance with statutory time limits mentioned in the FCR. This results in FACs functioning in an unaccountable fashion.

In addition, a review of dates of meetings of FAC also reveals that between August 2011 – October 2014 (period for which information is publicly available), FAC was not able to meet during June 2012, July 2012, March 2013, December 2013, March 2014, and August 2014. This is despite statutory provisions requiring the FAC to meet at least once a month.²⁶¹ While, at times, FAC met more than once during a month and its meetings have extended to more than one day, not meeting at least once a month results in inordinate delays in consideration of proposals, and consequent decision making.

In at least three (June 2012, July 2012, August 2014) of the five months listed above, the absence of FAC meeting seems to be on account of delay in re-constitution of FAC. In 2012 and 2014, FAC was re-constituted pursuant to orders dated 03 August 2012²⁶² and 27 August 2014,²⁶³ respectively. However, no explanation was available with respect to omission by FAC to meet in the months specified above. Absence of any statutory provision requiring initiation of the process of reconstitution of FAC before the end of term of existing FAC seems to be leading to delay in reconstitution of FAC.

In addition, at times FAC differed with the project proponents' explanation with respect to description of private and forest lands used for the project. As a result, the FAC often required the proponents to acquire additional/different land, which it considered appropriate. This usually required consents under the FRA, and thus delays the approval process. Consequently, sub-optimal provisions governing functioning of experts committee seem to have contributed to delay in grant of approval for diversion of forest land.

2.2.2. Absence of statutory requirements requiring periodic capacity review

It was revealed during stakeholder consultations that tasks of examining the factual details, certifying the maps, carrying out site inspection, and enumerating the trees, require substantial time and effort on the part of the DFO. Consequently, it is very difficult (given available resources) to complete these within the timelines mentioned under FCR, which range between 30 to 60 days. A snapshot of applications pending with Divisional Forest Officer (DFO) in December 2014 is provided in Table 39.

Table 39: Applications Pending with DFO

S. no.	Applicant	Area required (ha.)	Date of application
<i>Applications made in 2014</i>			
1	Winsome Textile Industries Limited	1.42	November 14, 2014
2	Karsog Valley Hydro Power Project	4.42	August 10, 2014
3	Him Power Associates Private Limited	3.52	June 10, 2014
4	Mahamai Hydro Power private Limited	0.83	April 21, 2014
<i>Applications made in 2013</i>			
5	Shree Naina Hydro Power	0.38	July 30, 2013
<i>Applications made in 2012</i>			
6	Nanal Hydropower Consultancy	2.26	October 22, 2012
7	Jagdambey Hydro Projects	3.34	September 22, 2012
8	Seli Hydro Electric Power Company Limited	276.19	July 24, 2012
9	Parvat Hydro Power Project Private Limited	4.50	May 19, 2012
<i>Applications made prior to 2012</i>			
10	GMR Bajoli Holi Hydro Power Private Limited	75.30	09 December 2010
Source: Online submission and monitoring of forest clearance proposals, available at http://forestsclearance.nic.in/ , accessed on December 16, 2014			

Assuming that the regulatory authorities prior to DFO completed their tasks within a reasonable time and forwarded the applications to DFO, it is evident from the table 39 that a significant number of applications, which are pending at DFO-level were made in the years prior to 2014. However, this trend does not seem to be limited to 2014. In February 2013, the Northern Regional Office of the MOEFCC wrote the Government of Himachal Pradesh stating that the state government is taking unreasonably long to forward the proposals to the RO, resulting in inordinate delays.²⁶⁴

It was revealed during stakeholder consultations that the government officers assigned to perform specific activities are not available regularly, and at times, activities are stuck for two-three months. Even if they are available, they might not possess adequate expertise and training to undertake the assigned activities. It was also mentioned during stakeholder consultations that, at times, government officials end up asking questions, which might be beyond the scope of the project, or require submission of information not directly related to the project, resulting in delaying the process.

The stakeholder consultations also revealed that reasons for delay include time taken in collection of required data/papers from the concerned authorities, demarcation, joint inspection, enumeration of trees, collections of no objection certificates/consent, approvals from local bodies and various government departments, *et al.*

While it might also be true that at times, applicants provided incorrect or incomplete information, resulting in government authorities questioning relevance and the demanding for correct information, it was felt that training of local and mid-level government officials, enhancement of technical capacity and expertise, and ensuring availability of adequate manpower will be required to facilitate compliance with timelines mentioned under the statutes.

2.2.3. Uncertainty with respect to procedure under FRA

Stakeholder consultations revealed that obtaining consent of *gram sabha*, under FRA was one of the major reasons for delay in obtaining approval for diversion of forest land. This is mostly due to lack of cooperation by locals and local administration. Often, convening *gram sabha* meetings at *panchayat* is difficult,²⁶⁵ and the quorum is not arrived at. For one of the projects under consideration, it took around 20 months to obtain no objection certificate from four project affected *panchayats*.

In addition, it was mentioned during stakeholder consultations that the consent of *gram sabha* is usually subject to several onerous conditions. For instance, as a condition for providing consent, the power producers are asked to employ unskilled locals at power plants, on a long term (30-40 years) basis. Problems, such as provision for employment during weekends/plant shut downs, have also been encountered by the power producers.

It was further revealed that disruptions at the project site by workers and locals on the issue of providing employment, allotting infrastructure works and main civil works to local firms (which do not possess local expertise) are the most critical issues due to which commissioning of projects are being delayed. There is a notion that all the land losers are to be compensated by providing employment. The statutory provisions related to employment of land losers are required to be clarified for proper explanation to the affected people.

It must be noted that by recruiting people from communities in/around project sites might result in ignorance of merit, resulting in compromising the quality of manpower which affects the quality of construction and the duration of construction of project leading to time and cost over runs.

In addition, at times, non-government organisations having vested or no interest in the land being diverted pose problems for obtaining consents of *gram sabha*. A perusal of minutes of the FAC also reveals that unless the applicant has got the consent of *gram sabha* under FRA, the FAC was unable to review the proposal.²⁶⁶

While the MOEFCC has been trying to simplify and rationalise the procedure, through exempting consent in certain cases, lack of coordination and concurrence between MOEFCC and MTA and between the central government and the Government of Himachal Pradesh has posed further problems. As discussed in the earlier chapter, the MTA has issued instructions that it is the nodal agency in relation to FRA and no other department has the right to waive the consent requirement under the FRA. In such an eventuality, the applicants could face problems even if they comply with the instructions of MOEFCC, which is the agency to grant approval for diversion of forest land under the FCA and FCR.

Consequently, absence of clarity with respect to grant of clearance under FRA, lack of coordination between government departments and absence of statutory provisions requiring the same seem to be a significant cause for delay in the approval process under FCR.

2.3. Notional cost imposed due to non-compliance with statutory time period

A snapshot of delay in grant of approval of diversion of forest land for select plants, under consideration is set out in Table 40.

Table 40: Delay in Grant Approval for Diversion

Company	Plant	Delay (days)
HPPCL	130 MW Integrated Kashang-stage II & III	352
	402 MW Shongtong-Karcham	679
Indo Arya Central Transport Limited	36 MW Chanju-I	277
GMR Bajoli Holi Hydro Power Private Limited	180 MW Bajoli-Holi	249

The delay in grant of approval for diversion of forest land could result in delay in start of construction and consequently commissioning of the power plant. As the plant would start generating electricity from a later date, this could result in notional loss of revenue, and the consumers being deprived access to the electricity for a longer period of time.

The notional loss of revenue to select power plants is set out in Table 41.

Table 41: Notional Revenue Loss on Account of Delays

Power plant	Projected capacity (Kw)	Projected capacity utilisation (Kw)*	Projected date of commissioning **	Rate of sale of power at commissioning (Rs/Kwh)**	Projected loss at commissioning (Rs)***	Net present value for 2014-15 (Rs)****
Integrated Kashang – II and III	1,30,000	1,17,000	December 2013	2.02	2,36,340	2,14,854
Bajoli Holi HEP	1,80,000	1,62,000	December 2016	5.03	8,14,860	-
<p>* Estimated at 90 percent of projected capacity ** Source: Kanjlia et al, Hydroelectric Projects in India, Central Board of Irrigation and Power, 2012 *** Projected capacity utilisation * rate of sale of power. Consequently, the projected revenue loss is on hourly basis. **** Calculated on the basis of 10 percent annual discounting rate</p>						

Of the power projects under consideration, per available information, none have achieved commissioning. Consequently, it is difficult to estimate the actual revenue loss. However, the Integrated Kashang – II and III power plant has missed its scheduled commissioning date (December 2013), owing to significant time overrun. Table 42 estimates the revenue loss to Integrated Kashang – II and III power plant up to January 2015.

Table 42: Estimated Revenue Loss to Integrated Kashang – II and III Power Plant

A	Projected capacity utilisation (Kwh)	1,17,000
B	Projected date of commissioning	December 2013
C	Generation hours lost (up to January 2015)	8,760
D	Generation lost during C (Kwh) (A*C)	102,49,20,000
E	Free power to state government (12 percent of D)	12,29,90,400
F	Power capable of generating revenue (Kwh) (D-E)	90,19,29,600
G	Rate of sale of power (INR/Kwh)	2.02
H	Projected loss during C (Rs crore) (F*G)	182.19

It could be deduced from Tables given above that the Integrated Kashang – II and III power plant was envisaged to be commissioned in December 2013. However, owing to delay of more than 350 days in grant of approval for diversion of forest land, amongst other factors, which might be present, it has not yet been commissioned. Consequently, the company has suffered a notional revenue loss, to the tune of Rs182.19 crore, up to January 2015. Delay in commissioning of power plant also results in delay in access to electricity by the consumers.

In addition, it was revealed during stakeholder consultations that the hydro-electric plants operating in the state of Himachal Pradesh are required to supply 12 percent free power to Government of Himachal Pradesh. Owing to the delay in commissioning of the power plants, the state is losing out on such free power.

3. Imposition of Unreasonable Financial Levies

3.1. Data set

In order to verify the hypothesis of imposition of unreasonable financial costs on hydel-based project proponents, 12 project proposals were selected from the available 81 proposals, for an in-depth study. These 12 projects form a part of already available data set of 23 projects, identified in the Table 36 above. The primary consideration for selection of these 12 projects was availability of reliable data. This was a mix of public sector and private sector applicants applying for diversion of different sizes of forest land, pending at different stages of application process, in addition to some, which have been granted approval. Such project proponents are listed in Table 43.

Table 43: Data Set for Financial Cost Analysis

S. No	Company	Power plant	Application	In-principal approval	Final approval
Proposals involving forest land up to 5 ha					
1.	Darjeeling Power Limited	Shaung	February 2009	March 2009	December 2009
2.	Yogindera Powers ltd.	Baner Sangam	May 2010	June 2010	May 2011
3.	Shivalik Energy Private Limited	Chirchind-II	January 2013	February 2014	–
Proposals involving forest land between 5 and 40 ha					
4.	S B Power	Rupin	October 2012	Pending	---
5.	Himachal Pradesh Power Corporation Limited (HPPCL)	Kasang Stage II & III	August 2009	March 2011	June 2011
6.	Indo Arya Central Transport Limited	Chanju-I	October 2009	June 2011	June 2011
Proposals involving forest land between 40 and 100 ha					
7.	HPPCL	Shongtong-Karcham	February 2010	March 2011	November 2012
8.	GMR	Bajoli Holi	March 2011	July 2011	October 2012
9.	Hindustan Power	Miyar	August 2011	July 2012	–
Proposals involving forest land greater than 100 ha					
10.	SJVNL	Luhri	April 2011	February 2013	–
11.	Hindustan Power	Seli	March 2012	July 2013	–
12.	HPPCL	Renuka Ji	January 2013	–	–
Source: Ministry of Environment, Forests and Climate Change, available http://forestsclearance.nic.in/state/HimachalPradesh , accessed on October 01, 2014					

3.2. Evidence of imposition of unreasonable financial levies

As mentioned in the previous Chapters, under the provisions of FCR, subsequent to the grant of in-principle approval, a project proponent is required to pay several compensatory levies, as condition precedent for the grant of final approval. These levies include cost of creation

and maintenance of compensatory afforestation, net present value, cost of implementation of catchment area treatment (CAT) plan or wildlife conservation plan, amongst others.

Pursuant to a notification dated September 30, 2009, the government of Himachal Pradesh mandated that the amount of CAT plan should be based on the actual extent of works to be done in the catchment area, but should not be less than 2.5 percent of the total project cost. The notification further stated that the total cost of the CAT plan could be deposited in equal yearly instalments spread over the duration from commencement to commissioning of the project with the last instalment payable at least six months before the commissioning of the project. The notification was applicable to all CAT plans, which were not approved by the Himachal Pradesh forest department or forwarded to the government of India, till that time.²⁶⁷

It was revealed during stakeholder consultations that prior to the issue of the said notification, amount for CAT plans were usually kept as per actual requirements, around 1 percent of the project cost, and the notification increased the minimum CAT plan amount to 2.5 percent of the project size. As the notification came into force with immediate effect, the project proponents did not get any time to plan amendments to their respective CAT plans, make adjustments, and arrange for requisite finance. This adversely impacted the financial condition, projections, and consequently feasibility of the project.

On 9 November 2012, the MOEFCC issued a letter clarifying that the facility of payment of CAT plan in installments was available only to small hydel projects having installed capacity less than 25 MW.²⁶⁸ Consequently, the government of Himachal Pradesh issued a letter on December 12, 2013, stating that the concession to pay cost of implementation of CAT plan in more than one installment was extended only to small hydro plants having installed capacity less than 25 MW with prospective effect from the date of issue of MOEFCC letter i.e. 09 November 2012. The letter further stated that for hydel projects having installed capacity of 25 MW and above, both before and after issue of the said letter by MOEFCC, the entire amount of implementation of CAT plan was required to be realised by the state government in one instalment.²⁶⁹

With issue of this letter, the government of Himachal Pradesh seems to have disregarded and overridden its own notification of 30 September 2009. Consequently, it could be presumed that all hydel-based power plants of capacity of 25MW or more, having planned to submit CAT plan amount in installments, as per the previous notification of government of Himachal Pradesh, and having made financial arrangements accordingly, were required to make payment of the entire amount upfront. It could be reasonably assumed that such sudden change in policy resulted in imposition of unreasonable levies and costs on the power producers. It was revealed during stakeholder consultations that such provisions and sudden policy changes often make the projects unfeasible and unviable.

Stakeholder consultations also revealed that expenditure for establishment of hydro-electric projects is met generally by borrowing to the tune of 70 percent of the project cost at interest of around 13 percent. The provision of upfront payment of CAT plan amount put unreasonable strain on the finances of the project proponents. This resulted in the requirement to increase the borrowing, increased outflow of interest, and the possibility of delayed break-even for the project.

3.3. Possible reasons for imposition of unreasonable financial levies

3.3.1. Absence of statutory mechanisms to check abuse of discretion, ensure accountability and grievance redressal mechanism

As mentioned in previous Chapters, the regulatory authorities have been provided unchecked discretion to issue circulars, notifications, with respect to matters governing forest clearance, including, compensatory levies, and they are not required to provide any justification or reasoning for their actions. The trajectory of circulars/notifications, as discussed above, and stakeholder interactions validate this. Subsequent to the issue of aforementioned notifications with respect to CAT plan amount, various hydel power producers intended to approach the relevant government authorities, but lack of any independent and statutory grievance redressal mechanism left with them no option other than to write letters to the government, to revisit their decision, which often proved inconsequential.

The stakeholders also mentioned that it made limited sense to set a minimum CAT plan amount for hydel projects. Hydro-electric plants could be established on main rivers as well as on tributaries. Requirement of catchments on tributaries could not be compared with that on main rivers as tributaries have relatively cleaner water due to lesser construction activities and lesser population density. Similarly, it was informed that the silt content in different rivers in Himachal Pradesh is not the same and depends on a number of factors. This would result in difference in the nature and intensity of treatment required. The CAT plan amount also depends on the number of hydro-electric projects established and planned in the catchment area. The stakeholder consultations revealed that the government has failed to take into account all these factors, while prescribing a minimum CAT plan amount, and linking the same with the project cost.

The stakeholders also mentioned that there is no transparent formula to calculate the compensatory levies required to be paid by the project proponents. No public consultation happens with respect to determination of appropriateness of compensatory levies.

The Supreme Court has issued several orders in the recent past with respect to calculation of the net present value. In its order dated 05 May 2006, in writ petition (civil no. 202/95), the Supreme Court accepted that every project proponent shall have to pay net present value (NPV) for forest land diverted for non-forestry use. In pursuance of the Supreme Court order dated 26 September 2005, a three-member Expert Committee was formed to formulate a practical methodology to work out the NPV for forest land diverted for non-forest use on economic principles. The Committee suggested that calculations for determining NPV payment should be site-specific and demonstrated the methodology by calculating circle-wise rates for the state of Himachal Pradesh. Further, the Supreme Court in its order dated 28 March 2008 suggested that the rates of NPV for forest diversion should be revised after 3 years.²⁷⁰

However, judicial activism cannot substitute legislative provisions. Despite the Supreme Court directions, stakeholder consultations revealed that methodology to calculate net present value, compensatory afforestation fund amount etc., have remained unclear, and in dire need of some transparency. It was also revealed that due to unavailability of guidelines of assessment of proposals, and lack of scientific parameters/process, at times, the regulatory authorities tend to impose unjustifiable costs.

In addition, a selected review of in-principle and final approvals granted by the government reveals that under the approvals, the chief conservator of forests, regional office and other

authorities are authorised to impose conditions as they deem fit and can make grant of approval subject to compliance with such conditions. Such authorities are not required to provide any justification for their actions. The stakeholder consultations also revealed that a substantial number of cases filed against the forest department of MOEFCC in relation to limited application of mind by expert committees. This also seems to be a result of lack of reasons with respect to recommendations made by the expert committees, making ascertainment of rationale difficult.

Consequently, absence of statutory mechanisms to check abuse of discretion, ensure accountability and grievance redressal mechanism, seem to contribute significantly to imposition of unreasonable costs on stakeholders.

3.4. Notional cost imposed due to imposition of unreasonable financial levies

Table 44 sets out the details of CAT plan amount, to be paid up front, as a result of the 2013 notification by the government of Himachal Pradesh, for select hydel-based power projects in Himachal Pradesh of generation capacity more than 25 MW, under consideration for the project.

Table: 44: CAT Plan Amount

S. no	Plant	CAT plan amount to be paid upfront (cr.) (as on 2013)*	Net present value (cr.) (as on 2014)****
Plants received in-principle approval			
1.	Chanju I	7.38	6.71
2.	Integrated Kashang HEP	17.48**	15.90
3.	Shongtong Karchham	60.44	54.95
4.	BajoliHoli	43	39.09
Plants awaiting in-principle approval***			
5.	Rupin	9.81	
6.	Renukaji dam	75	
7.	Miyar	1.86	
*Total CAT plan amount, on the assumption that such amount has not been paid (unless specified otherwise) *Pursuant to December 2013 letter of the Ministry of Himachal Pradesh **Total CAT plan amount is Rs30.51 crore, of which company has already paid Rs13.03 crore ***Plants awaiting in-principle approval will be required to pay the entire CAT plan amount upfront ****Discounting rate of 10 percent has been assumed			

The applications for most of the projects listed in Table 44 above were submitted after the issue of September 2009 notification of the government of Himachal Pradesh. Consequently, it could be presumed that in their financial planning, the project proponents would have envisaged payment of CAT plan in installments during the construction period. However, with the issue of 2013 notification, all such plants will have to pay the CAT plan amount upfront.

It was revealed during stakeholder consultations that expenditure for establishment of hydro-electric projects is met generally by borrowing to the tune of 70 percent of the project cost at interest of around 13 percent. The provision of upfront payment of CAT plan amount put unreasonable strain on the finances of the project proponents, with the necessity to increase

the borrowings, resulting in outflow of higher interest payment. Such additional costs could be presumed to be eventually passed on to the consumers.

Consequently, it could be assumed that the plants having received in-principle approval prior to the issue of the 2013 notification, were required to pay the CAT plan amount on the date of issue of notification, which they would have not been required to pay, save the notification. Accordingly, the net present value of the amount due on account of CAT plan has been calculated. For the plants awaiting in-principle approval, the CAT plan amount would have been paid upon receipt of such approval.

In addition to the CAT plan amount, the power producers are required to pay varied levies. A snapshot of such levies is provided in Table 45.

Table 45: Snapshot of Select Compensatory Levies

Amount in Rupees

S. no	Plant	Compensatory afforestation cost	Net present value	Restoring/ reclamation plan
1	Shaung	3,80,700	29,68,532	2,28,800
2	Baner Sangam	10,11,600	41,22,383	21,46,000
3	Chirchind II	12,39,000	26,22,876	-
4	Rupin	52,68,113	1,74,25,100	25,50,000
5	Integrated Kashang II and III	1,00,99,971	1,23,62,304	15,71,079
6	Chanju-I	86,23,220	14,69,857	20,00,000
7	Shongton-Karcham	1,74,65,952	5,69,60,846	6,44,314
8	Bajoli-Holi	2,58,48,605	6,75,47,688	–
9	Miyar	2,75,84,253	4,78,78,545	–
10	Luhri	5,24,79,640	20,13,91,197	–
11	Seli	14,36,63,253	22,90,31,981	–
12	Renukaji	5 percent of the project cost for development and management of sanctuary	-	–

Source: Data collected from stakeholders. ‘-’ indicates details not available

Like possible unreasonableness of the CAT plan amount, as discussed above, it is quite possible that the some of the levies mentioned above are not commensurate to the benefits they intend to achieve, resulting in imposition of unreasonable costs on the power producers. This becomes plausible in a situation when no legislative provisions exist with respect to determination and calculation of compensatory levies.

4. Potentially sub-optimal provisions

As discussed in the previous Chapter, in addition to the provisions/issues emanating from the FCA and the FCR which have the potential to impose unintended time and financial costs on the project proponents, FCR possibly contains several sub-optimal provisions, having the potential of rationalisation and simplification, and consequently reducing the costs imposed on power producers, and the consumers. This section reviews this hypothesis on the basis of stakeholder consultation.

4.1. Statutory duplication of procedures

It was revealed during stakeholder consultations that while multiple site inspections and completeness checks might be intended to prevent bias, but they result in unnecessary complications and sub-optimal provisions. Better alternatives must be found out to ensure that the objective of such checks is met without adversely impacting interests of project proponents.

4.2. Provision for transit time under FCR

The stakeholders felt the transit time for transfer of documents from one government department to other, running up to 20 days, is completely unjustified, in this day and age, when the country has made substantial progress in information technology. While delivery of documents in hard copy could be absolutely essential, the stakeholders realised that this extra time must not be treated at par with the time taken to review the documents, and must be avoided to the extent possible. In addition, information, communication and technology (ICT) tools could be used to ensure that the documents reach the intended recipient on the same day.

Accordingly, it seems that there are potentially sub-optimal provisions in the FCR, rationalisation of which could be possible to reduce the cost imposed on stakeholders.

On the basis of data analysis and stakeholder consultations, this Chapter validated assumption made in the previous Chapter with respect to imposition of unreasonable time and financial costs on hydel-based power producers in Himachal Pradesh, arising from certain provisions and issues in FCA and FCR. The Chapter also attempted to quantify the cost.

Stakeholder consultations revealed that owing to such unreasonable time and financial costs, at times, power producers have abandoned their projects in the state. Moreover, Himachal Pradesh has not received any new investment for hydel power production, and power producers are looking for opportunities in other North-eastern parts of the country.

The following Chapter will attempt to provide some alternatives, along with costs and benefits of such alternatives, to the issues/sub-optimal provisions highlighted in this Chapter.

Chapter 5

Development of Alternatives

1. Background

The previous Chapter validated existence of sub-optimal provisions in the FCA and FCR, revealed a number of issues not dealt with under the FCA and FCR. Unreasonable time and financial costs imposed on stakeholders as a result of such sub-optimal provisions/issues was also estimated. The following sections attempts to provide alternatives to certain existing deficient provisions of FCR, and also suggest certain new provisions to ensure that the purpose of FCR is achieved. Costs and benefits of such alternatives will also be estimated in the following sections.

2. Lack of Accountability of Government Departments and Expert Committees

As discussed in the previous Chapters, there have been concerns with respect to functioning and accountability of expert committees and government departments.

2.1 Alternative 1: Accountability obligations on regulatory authorities

It is proposed that the regulatory authorities, i.e. expert committees and the government departments, be statutorily obligated to provide reasons for not complying with statutory timelines to provide recommendations/decisions, or undertake the assigned tasks. The expert committees should also be required to provide reasons for failure to meet in a particular month, failure to consider all proposals listed in the agenda, in their meeting subsequent to which in the failure has happened. In addition, the regulatory authorities (expert committees/government) must be required to clearly explain the reasons for the conditions imposed on project proponents, in their decisions/recommendations.

At present, MOEFCC publishes an annual report, providing details of its functions, clearances granted in the year, but no information is provided in relation to compliance or non-compliance with the statutory time limit.²⁷¹ Similarly, no information is available on efficiency or lack thereof, of the FAC and RECs. While agenda and minutes of meetings of FAC are available in public domain, which ensures transparency, no such information is available with respect to meetings of RECs. Consequently, it is necessary to ensure transparency in provisions with respect to functioning of FAC as well as RECs, which could result in accountability.

It is proposed that the annual reports of MOEFCC provide details of, *inter alia*, matters in relation to diversion of forest land dealt with during the year, matters in which the statutory time limit was not met, reasons for non-compliance with statutory time limit, and the measures to ensure compliance with the time limits. The annual report must have separate sections for government and expert committees. In addition to providing reasons for non-compliance with statutory time period, if any, and measures to prevent the same in future, the expert committees (FAC and REC) would be required to provide reasons for not meeting in particular months, if any, reasons for non-consideration of proposals listed in the agenda.

Public disclosure of environmental information is one of the key features of the United Nations Environment Programme (UNEP) Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters, which advocate affordable, effective and timely access to environmental information held by public authorities.²⁷²

2.1.1. Potential costs of alternative 1 on government

All FCA related matters are currently looked after in the MOEFCC by the Forest Conservation division (FC division). It also provides Secretarial support to the FAC.²⁷³ Presumably, it drafts the recommendations/decisions of the regulatory authorities, provides inputs to draft forest conservation related sections in the annual report of MOEFCC, and drafts minutes of meetings of the FAC.

Consequently, it will be best placed to ensure that reasons are provided for not being able to comply with statutory timelines, and for conditions imposed on the project proponents. It can also ensure that minutes of meetings of the FAC provide reasons for failure to meet in a particular month, and failure to consider all proposals listed in the agenda.

As the FC division provides FCA related inputs for the preparation of annual report, it would also be in a position to provide details of, *inter alia*, matters of diversion of forest land dealt with during the year, matters in which the statutory time limit was not met, reasons for non-compliance with statutory time limit, and the measures to ensure compliance with the time limits. It could also provide inputs for drafting sections of FAC in the annual report and providing reasons for not meeting in particular months, if any, and reasons for non-consideration of proposals listed in the agenda.

Consequently, it is proposed that a deputy director and a research assistant level officer in the FC division be deputed to undertake the aforesaid tasks. Annual basic remuneration of a Deputy Director-level officer and a research assistant in 2014 is estimated to be around Rs9,00,000 and Rs5,40,000²⁷⁴, respectively.

In addition, in order to assist REC to increase transparency and efficiency in their functioning, the regional offices of MOEFCC would have to be adequately staffed in manpower and technological terms. It is proposed that one officer at Deputy Director-level and one Officer at research investigator level be deputed per RO to ensure preparation of timely minutes of each REC meeting, inclusive of reasons of non-compliance with statutory provisions, ensuring online publication of such minutes, and providing inputs in the annual report with respect to the REC. Annual basic remuneration of Deputy Director-level Officer and a Research Investigator-level Officer at RO in 2014 is estimated to be around Rs4,80,000 and Rs4,20,000, respectively.²⁷⁵ At present, there are ten regional offices. The budget allocation to the regional offices would have to be accordingly increased.²⁷⁶

Table 46 provides a snapshot of annual direct cost on government as a result of alternative 1.

Table 46: Annual Basic Remuneration Cost on Government

S. no	Additional Position	Annual basic remuneration (Rupees)
1	Deputy Director – HO (1)	9,00,000
2	Research Assistant – HO (1)	5,40,000
3	Deputy Director – RO (10)	48,00,000
4	Research Investigator – RO (10)	42,00,000
Total		1,04,40,000

In addition, significant investment in information technology at regional offices would be required to ensure placing of minutes of REC in public domain.

Estimated annual direct remuneration cost to government: Approximately Rs1.04 crore (excluding other incentives)

Estimated one-time infrastructure and ICT cost to the government: Significant

2.1.2. Potential benefits of alternative 1 on power producers, state government and consumers

It is expected that public disclosure of information on compliance with statutory time frame under FCR will nudge expert committees and government departments towards compliance with statutory provisions and eventually resulting in reduction in delays in decision making on applications. Compliance with statutory time frame under FCR will ensure prevention of loss of notional revenue to power producers and ensure access to electricity by consumers and the state government in a timely manner.

In addition, clear justification of conditions subject to which approvals are granted is expected to result in rationalisation of conditions and imposition of only such conditions which are absolutely essential and necessary. This is expected to reduce the financial costs imposed on the power producers, and consequently reduce the cost of power to consumers.

Potential benefits to power producers, state government and consumers: Significant

2.2. Alternative 2: Opportunity of grievance redressal at NGT

As discussed earlier, section 16(e) of the NGT Act provides that any person aggrieved by an order or decision made by the state government or other authority under section 2 of the FCA, may prefer an appeal to the NGT. It is not clear if as per the NGT Act an appeal can be preferred under this provision in case of delay in making of decision by relevant authorities, such as the expert committees and government departments, and in case of non-compliance with the provisions of the FCA or FCR. It is also not clear if appeal can be preferred alleging imposition of unreasonable conditions, by expert committees and government departments.

However, it must be noted that section 19 of the NGT Act authorises NGT to pass an order requiring any person to cease and desist from committing or causing any violation of specified enactments, including FCA. Consequently, it seems that NGT has the authority to prevent non-compliance with statutorily prescribed time period, amongst other non-compliances, and take action if such non-compliance has occurred.

Consequently, it is suggested that an unambiguous provision be inserted under the NGT Act providing an opportunity to project proponents to file an application at the NGT in case the statutory time period under the FCR has passed but the regulatory authorities have not taken a

decision. Provisions allowing appeal from the decision of the regulatory authorities, on the grounds of rejection, delay, and imposition of unreasonable conditions, must also be allowed at the NGT.

In addition, NGT must be specifically authorised to impose costs on relevant agencies, such as government departments and expert committees, in case of non-compliance with provisions of FCA and FCR, such as the statutory time period. It must be noted NGT has the power to impose costs while disposing of applications and appeals under the NGT Act.²⁷⁷

Corresponding provisions should be inserted in the FCA and FCR to ensure consistency and clarity in the arrangement, along with a provisions specifying liability of government departments, in terms of fines, in case of non-compliance with provisions of the FCA and FCR.

Along with aforesaid suggestions, steps must be taken to ensure speedy disposal of matters at NGT.

Access to justice is one of the core principles of UNEP Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters.²⁷⁸

2.2.1. Costs of alternative 2 on the government

Alternative 2 provides additional grounds to approach NGT. Consequently, the number of matters filed at NGT is expected to increase. Thus, the government will be required to invest human and infrastructure resources to deal with the increased case flow.

At present, NGT has five benches. Case load is usually managed by officers, as mentioned in Table 47.²⁷⁹

Table 47: Details of Officers Undertaking Case Management

S. no	Officer	Annual Basic Remuneration in 2014 (Rupees)
1	Deputy Registrar	6,00,000
2	Assistant Registrar	6,00,000
3	Section officer	4,80,000
4	Assistant (Judicial)	4,80,000
	Total	21,60,000

It is proposed that in order to handle increase in the case flow, one officer of every category mentioned above be deputed at each of the benches of the NGT. In addition, availability of adequate technological and physical infrastructure must be ensured to manage the increase in case load at NGT.

Estimated annual direct financial cost to the government: Approximately Rs1.08 crore (5 benches of NGT) (exclusive of other incentives)

Estimated one-time infrastructure and ICT cost to the government: Significant

2.2.2. Benefits of alternative 2 on power producers, state government and consumers

The possibility of challenging delay in approval procedure at NGT is expected to reduce the time taken by the regulatory authorities, such as expert committees and government departments, to arrive at a decision, and they are expected to comply with the statutory time limits mentioned in the FCA and FCR. In addition, the provision for imposition of fines by the NGT in case of unsatisfactory explanation of delay is expected to have a similar impact.

Consequently, it is expected that decisions on applications for diversion of forest land will be made within the statutory time period, resulting in prevention of notional loss of revenue to the power producers. This is expected to contribute to commissioning of project on time and access to electricity by consumers and state government in a timely manner.

The possibility of questioning the reasonableness of conditions at the NGT is expected to result in imposition of only such conditions, which are justifiable, and consequently reasonable. This is expected to reduce the financial costs imposed on the power producers, consequently reducing the cost of electricity for the consumers.

Potential benefits to power producers, state government and consumers: Significant

3. Lack of transparency in imposition of compensatory levies

As discussed in the previous Chapters, FCA or the FCR does not provide any guidance to the DFO for the preparation of the demand note. There seems to be a lack of transparency in relation to the formula/process for calculation of compensatory levies.

3.1. Alternative 1: Formulation of an independent panel of experts to approve compensatory levies

It is proposed that an independent panel of experts is statutorily constituted to review and approve the compensatory levies and other conditions suggested by the DFO in the demand note. Following could be the key features of the proposed panel:

- The panel would be constituted at the regional-level, i.e. a panel would have jurisdiction over states within a region. Consequently, it would be attached to the regional offices of the MOEFCC, which would provide the panel necessary secretarial services.
- The panel would comprise independent experts and practitioners on the subject, preferably three, who would be adequately compensated for their services.
- Initially, the non-official members of the REC could constitute the panel. Consequently, the panel would be re-constituted every two years.
- The DFO would send the panel draft demand note for suggestions within five days of receipt of in-principle approval from the central government, and would be present at the meeting to provide its point of view.
- The panel would meet electronically as soon as possible, on receipt of draft demand note, and would provide their suggestions to the DFO within seven days of receipt of the draft demand note and
- The DFO would finalise demand note within five days of receipt of suggestions from the panel and would forward the same to the project proponent.

3.1.1. Cost of alternative 1 on the government

At present, there are three non-official members of the REC. Travelling and daily allowance is payable to such non-official members at the highest rate admissible to the group 'A' government servants.²⁸⁰ Assuming the adequacy of the existing compensation structure, and in light of the suggestion that the expert committee meets electronically once a week, it is suggested that daily allowance be paid to the members of the proposed independent panel as well, for the day of the e-meeting.

Consequently, estimated cost per independent expert per meeting of the independent panel would be around Rs5,000.²⁸¹ As there are ten regional offices, there would be ten such panels.

In addition, as ROs would be required to provide institutional support of the independent panel, it is suggested that one Deputy Director-level Officer and one research investigator be deputed to assist the independent panel. Basic annual remuneration of deputy director level officer and a research investigator level officer in 2014 is estimated to be around Rs4,80,000 and Rs4,20,000, respectively.²⁸²

Table 48 estimates the total annual direct cost on the government for constitution of the proposed independent panel:

Table 48: Basic Annual Remuneration Cost on Government

S. no	Additional positions	Annual basic remuneration (Rupees)
1	Member of the proposed panel (30)	36,00,000*
2	Deputy Director – RO (10)	48,00,000
3	Research Investigator – RO (10)	42,00,000
Total		1,26,00,000

* Assuming two meetings per month

In addition, investment in technical, physical and technological infrastructure would be required to provide adequate support in functioning of the independent panel.

Estimated annual basic remuneration cost to the government: Approximately Rs1.26 crore (exclusive of other incentives)

Estimated one-time infrastructure and ICT cost to the government: Significant

3.1.2. Cost of alternative 1 on the power producers

It has been proposed that the DFO will submit draft demand note to the independent expert panel within five days of receipt of in-principle approval. The independent expert panel will review the draft demand note submitted by the DFO and provide its suggestions within a period of seven days of its receipt, and the DFO will have five days to revise the demand note on the basis of suggestions of the independent panel. At present, the DFO is required to provide demand note to project proponent within 10 days of receipt of in-principle approval

Consequently, it is expected that the total statutory time period for grant of approval of diversion of forest land for non-forest purpose, along with the demand note, will be extended by around 10 days, which might result in postponement of start of construction and thus, commissioning of power plant. This might result in notional loss of revenue for 10 day period to the power producers.

Estimated cost on the power producers: Substantial

3.1.3. Benefits of alternative 1 on the power producers, consumers and the state government

Possibility of review of compensatory levies proposed by the DFO in the demand note by a panel of independent experts is expected to bring rationalisation and transparency in the calculation and imposition of compensatory levies. It is also expected to make DFO accountable and suggest only such compensatory levies, which are actually required and justifiable.

Consequently, it is expected that the financial costs imposed on the power producers would be made reasonable and rationalised, resulting in their possible reduction. This is expected to bring down the expected costs on the power producers, resulting in reduction of electricity costs of the consumers and the state government.

Possible benefits on the power producers, state government and the consumers: Substantial

3.2. Alternative 2: Setting up internal grievance redressal cell in relation to levy of compensatory levies

It is proposed that forest department of every state sets up an internal grievance redressal cell which could be approached by the aggrieved power producers. The grievance redressal cell could comprise an adjudicatory officer having the jurisdiction to review the reasonableness and mode of calculation of the compensatory levy. Such officer must have expertise in forest related and legal matters and would be obligated to provide an opportunity of hearing to aggrieved party as well as the DFO. The adjudicatory officer would be a permanent position and could be filled by an open selection process.

3.2.1. Estimated costs of alternative 2 on the government

As the proposed position at the grievance redressal cell is state-level and adjudicatory in nature, it is proposed that the basic remuneration of the adjudicatory officer be equal to the basic remuneration of the high court judge, which is approximately Rs12,00,000 per annum.²⁸³

In addition, the proposed grievance redressal cell will have to be provided secretarial support by the forest department. It is proposed that two officers in the forest department of each state be deputed in this regard. The consolidated annual basic remuneration of such officers is estimated to be around Rs12,00,000.²⁸⁴

Table 49 estimates the annual basic remuneration cost on the government for setting up internal grievance redressal panel.

Table 49: Annual Basic Remuneration Cost on Government

S. no	Additional Position	Annual basic remuneration (Rs)
1	Adjudicatory Officers (29)	3,48,00,000
2	Forest Department Officers (58)	3,48,00,000
Total		6,96,00,000

In addition, significant technological, infrastructure and related investments would need to be made by respective state governments to put in place the proposed grievance redressal cells.

Estimated annual direct financial cost to the government: Approximately Rs6.96 crore (exclusive of other incentives)

Estimated one-time infrastructure and ICT cost to the government: Significant

3.2.2. Benefits of alternative 2 on the power producers, consumers and the state government

Possibility of approaching a state level grievance redressal cell for review of compensatory levies proposed by the DFO in the demand note is expected to bring rationalisation and transparency in the calculation and imposition of compensatory levies. It is also expected to make DFO accountable and suggest only such compensatory levies, which are actually required and justifiable.

Consequently, it is expected that the financial costs imposed on the power producers would be made reasonable and rationalised, possibly resulting in their reduction. This is expected to bring down the expected costs on the power producers, resulting in reduction of electricity costs on the consumers and the state government.

Possible benefits on the power producers, state government and the consumers: Substantial

4. Conflict of interest and competition distortionary provisions

As discussed in the previous Chapters, the FCR does not provide the state government the right to reject proposals made by central government entities. While stakeholders revealed that currently public and private sector is not differentially treated in Himachal Pradesh, the situation might soon change, if the sub-optimal legislative provisions are not fixed.

4.1. Alternative 1: Providing power of rejection of central government promoted projects to the state government

It is proposed that the power to reject the proposals for diversion of forest land by central government or central government entities be provided to the state government, similar to the state government's power to reject all kind of private sector proposals. It is suggested that the state government be required to provide detailed reasoning for rejection of private sector as well as public sector proposals.

4.1.1. Costs of alternative 1 on central government entities

Pursuant to alternative 1, the central government as well as the central government entities will lose the right of their proposal being considered by the central government. This might result in their proposals being rejected at the state government-level, and the project proponents not having any right of recourse against such rejection.

Such possibility of rejection at state-level should nudge the central government project proponents to prepare high quality proposals inclusive of all relevant details of benefits to the state government, and genuinely compete with the private sector for establishment of the projects.

Additional approximate cost on central government entities: Reasonable

4.1.2. Benefits of alternative 1 to stakeholders

It is expected that alternative 1 will ensure a level playing field between the central government and state government entities, resulting in promotion of competition.

Alternative 1 might also result in improvement in quality of proposals being submitted and superior proposals being cleared, resulting in greater possibility of the objective of sustainable development being achieved. In addition, the central government will not be burdened by additional proposals by central government entities, which the state governments propose to reject. This is expected to reduce pendency and the time taken by central government in decision making.

Approximate benefits on stakeholders: Substantial

4.2. Alternative 2: Constitution of independent expert committee to review all proposals

While alternative 1 promotes competitive neutrality between central government promoted and private sector promoted proposals, the concerns of conflict of interest remain as one arm of government reviews the proposals made by another arm. The state government also reviews proposals made by state government promoted entities, which result in greater concerns of conflict of interest.

In order to address such concerns, it is suggested that independent expert committees at state, regional and central-level be constituted to review all proposals. While the RECs and FAC are currently present, they are not independent as they comprise equal number (if not more) of official and non-official members. One can assume that the opinion of non-official members would prevail in case of difference of opinion.

Consequently, it is proposed that the RECs and FAC be replaced by completely independent expert committees and independent state expert committees (SECs) to be constituted at state level.²⁸⁵ Following could be the key features of such independent expert committees:

- The official members of the RECs and FAC (to be reconstituted as Forest Expert Committee, FEC) would be replaced by non-official members, to make it completely independent. However, it will continue to receive secretarial support from the RO and MOEFC, respectively.
- The function of the RECs and FEC would be similar to what is today, review the project proposals and provide advice to different levels of central government (RO and MOEFCC, respectively).
- The SEC will comprise state level independent members, being expert in forest related matters, and would provide expert advisory services to the state government, specifically in relation to proposals wherein the state government has expressed its intention to reject, on a *prima facie* basis.
- The expert committees will be required to meet at least once a month.
- The expert committees will be required to provide detailed reasoning for its recommendation and the respective governments will have to provide detailed reasoning should they refuse to accept the recommendation of the expert committees and
- Minutes of meetings of all the expert committees and their recommendations will be available in public domain.

4.2.1. Costs of alternative 2 on government

Alternative 2 suggests replacement of official members in the FAC and RECs with the non-official members. The FAC and RECs have three official members each.

It can be assumed that the official members rendered their services at no extra cost, as they already receive remuneration as per their designation. However, as provided in FCR, the non-official members receive daily allowance and travelling allowance, aggregating to INR 10,000 per day.²⁸⁶ In addition, at state-level, SECs are required to be constituted. As in case of the proposed FEC and REC, they will also have six independent expert members, who will have to be paid travelling and daily allowance. Average aggregated daily and travelling allowance for members of SECs, considering the scope of work, is estimated to be around Rs8,000 per day.

Table 50 estimates the total annual direct cost on the government for setting up independent expert committees:

Table 50: Annual Direct Cost on Government

S. no	Additional positions	Annual basic remuneration (Rupees)
1	Forest expert committee (3)	3,60,000
2	Regional expert committees (30)	36,00,000
3	State expert committees (174)	1,67,04,000
Total		2,06,64,000

In addition, significant technological, infrastructure and related investments would need to be made by respective state governments, regional offices and head office of MOEFCC to provide Secretarial support to the expert committees.

Estimated annual direct financial cost to the government: Approximately Rs2.07 crore (exclusive of other incentives)

Estimated one-time infrastructure and ICT cost to the government: Significant

4.2.2. Benefits of alternative 2 on stakeholders

Alternative 2 completely removes the possibility of bias and conflict of interest within the government and also benefits government from an independent expert opinion. It is expected to genuinely promote competition and encourage quality applications from the project proponents.

This is expected to act as confidence building measure for the private sector, which might no longer remain under the apprehension that a genuine private sector proposal might be rejected and a sub-optimal public sector proposal might be approved.

As the government will have benefit of an impartial expert advice, to reject, which it will have to provide detailed reasons, only such proposals, which have the possibility to achieve the objective of sustainable development, as enshrined under the FCA, are expected to be approved.

Approximate benefits on stakeholders: Substantial

5. Statutory requirements requiring periodic capacity review

As discussed in the previous chapters, certain government officers might have limited technical capacity, expertise or manpower support, to undertake the tasks assigned to them, within the time period prescribed, under the FCA and FCR.

Consequently, in order to ensure that the required tasks are carried out within the statutorily prescribed time limit, periodic capacity review of government officers is essential, followed by capacity building and training programmes, and ensuring adequate manpower to carry out the assigned tasks.

Such periodic capacity review (which could be carried out every alternate year) by an independent expert organisation and consequent training and capacity building programmes are expected to impose substantial costs on the government. However, the benefits of such exercise would be avoiding delays in decision-making on proposal for diversion of forest land for non-forest purposes. This is expected to prevent notional loss of revenue, contribute to construction and commissioning of the project within the projected time period, and consequently, timely access to electricity by the consumers and state government.

6. Statutory Requirements Prohibiting Retrospective Operations of Statutory Instruments

As discussed in earlier Chapters, circulars and notifications have been issued by government departments which have come into effect from a retrospective date, adversely impacting the stakeholders, such as project proponents, financially and otherwise.

Consequently, it is proposed that a statutory requirement be included in FCA that all statutory instruments (circulars/ notifications/ guidelines *et al*) issued under FCA will come into effect from a specified future date. If no such date is specified, the relevant instrument would come into effect 30 days after the date of issue of such statutory instrument. An express prohibition could be included in the statute against issue of statutory instruments from a retrospective date.

While such provisions would require better planning and coordination at government's end, it is expected that it will enable the stakeholders, such as project proponents, to make suitable adjustments, to their financial projections and future plans, to adjust to the change in applicable laws, and ensure compliance with the same. In effect, it is expected that this will ease and streamline the financial burden passed on to the consumers.

7. Statutory requirement requiring mandatory consultations with other government departments and state government

As discussed in the earlier Chapters, there have been instances in the past wherein different government departments, such as MOEFCC and MTA, have often disagreed, and issued letters/circulars/notifications, apparently conflicting with each other.

It is proposed that a statutory requirement be inserted in the FCA requiring mandatory consultation with relevant government departments prior to issue of statutory instruments. While this requirement would require proper coordination between different government departments and governments at different levels, such mandatory consultation is expected to

reduce the ambiguity and unpredictability in policies, reducing the possibility of imposition of unreasonable financial costs on the stakeholders.

8. Statutory requirements requiring periodic review of impact of provisions

As discussed in the previous Chapters, there seem to be certain provisions in the FCA and FCR which do not seem to have taken into account information technology innovations, or seem sub-optimal being repetitive in nature.

It is thus necessary to undertake a periodic review of the impact of the provisions of FCA and FCR, to ensure they remain relevant. Thus, it is proposed that a statutory requirement be included in the FCA and FCR to undertake a periodic review of impact of their provisions, and ensure that the cost of such provisions on the stakeholders is outweighed by their benefits.

While undertaking periodic impact assessment of provisions of FCA and FCR is expected to imposed substantial costs on the government, its benefits i.e.; ensuring existence of only relevant provisions in the statute, is expected to keep costs imposed on stakeholders low, which is expected to benefit power producers and consumers.

9. Avoidance of Ambiguity and Changes in Hydel Power Plants Policies

As discussed in the previous Chapters, frequent changes in policies governing hydel power plants, such as power to grant in-principle approval, lead to ambiguity and unpredictability.

Consequently, it is proposed that a statutory provision be inserted in the FCR to provide that any rules, circulars, notifications etc. issued, under the FCA must be clear about their objective, and lucidly explain the rationale and intended impact of the relevant statutory instrument. The draft statutory instruments must be published for public comments, and the government must provide its response to the suggestions provided by the public. Public consultation and participation in development of legislations relating to environment matters has been recommended by UNEP.²⁸⁷

Such provision will impose significant costs on the government, and might result in delay in issuance of statutory instruments. The government will have to put in greater efforts while introducing rules, circulars, notifications etc. under the FCA, and provide adequate justification. However, the suggested alternative will introduce clarity and certainty regarding intent and object of statutory instruments. Power producers will be better placed to understand the government intent and make relevant amendments to their respective plans and policies. This would prevent imposition of any unintended costs on the power producers, and consequently the consumers.

While this Chapter proposed alternatives to certain existing provisions of the FCA and FCR, certain additional provisions in the FCA and FCR, and estimated costs and benefits thereof, the next chapter would compare such estimated costs and benefits, and recommend most optimal alternatives with the purpose of achieving the objective of sustainable development.

Chapter 6

Selection of Alternatives

1. Background

The previous Chapter suggested statutory alternatives to sub-optimal provisions of FCA and FCR and estimated costs and benefits thereof, to various stakeholders. It also suggested additional provisions to FCA and FCR to cover the issues remaining hitherto unaddressed by these statutes.

The following sections attempt to undertake a comparison of costs and benefits of relevant provisions of FCR, if any (no change scenario), with alternatives suggested, and recommend the most optimal alternative.

2. Lack of accountability of government departments and expert committees

Table 51 compares the existing provisions under FCA and FCR on accountability of government departments and expert committees, with suggested alternatives.

Table 51: Accountability of Government Department and Expert Committees

Issue	Existing provisions/no change	Alternative 1	Alternative 2
Description	No accountability provisions	Public disclosure of non-compliance with statutory provisions, reasons for non-compliance and measures to prevent the same in future and Disclosure of reasons and delays in recommendations/decisions	Opportunity of grievance redressal to project proponents at NGT
Estimated impact on government		<i>Substantial increase in costs</i> Annual basic remuneration cost – Rs1.04 crore (excluding other incentives) and Significant physical and ICT infrastructure costs <i>Substantial increase in benefits</i> Early access to free electricity by state government	<i>Substantial increase in costs</i> Annual basic remuneration cost - Rs1.08 crore (excluding other incentives) Significant physical and ICT infrastructure costs <i>Substantial increase in benefits</i> Early access to free electricity by state

Issue	Existing provisions/no change	Alternative 1	Alternative 2
			government
Estimated impact on project proponents/consumers	<i>Costs</i> Inordinate delays and imposition of unreasonable costs	<i>Reasonable reduction in costs</i> • Reasonable improvement expected in environment governance, and consequent reduction in delays and imposition of unreasonable costs, owing to increase in public disclosure.	<i>Reasonable reduction in costs</i> • Reasonable improvement expected in environment governance, and consequent reduction in delays an imposition of unreasonable costs, owing to presence of a grievance redressal mechanism.
Estimated impact on society/forests	<i>Costs</i> Imposition of disproportionate costs	<i>Reasonable reduction in costs</i> Reasonable improvement is expected in quality of environment clearance process, and consequent imposition of proportionate costs on stakeholders, owing to increase in public disclosure.	No change

2.1. Selection of alternative

Following deductions could be made from aforesaid comparison of existing and proposed provisions to check abuse of discretion:

- *Government* – The costs imposed by public disclosure at all levels (alternative 1) and grievance redressal of project proponents at NGT (alternative 2), are similar. However, when compared with no change scenario, the costs imposed by both alternatives are substantially higher.
- *Project proponents/consumers* – Both the alternatives are expected to improve the quality of environment governance and consequent reduction in delays and imposition of unreasonable costs, when compared with no change scenario.
- *Society/forests* – Greater public disclosure at all levels (alternative 1) is expected to result in imposition of costs proportional to potential damage, hence is expected to increase the benefit to society/forest. As alternative 2 provides additional grounds to approach NGT to project proponents only, no benefit is expected to society/forest.

Recommendation – Alternative 1, i.e. public disclosure at all levels, while imposing substantial costs on the government, is expected to improve environment governance, by benefitting all categories of stakeholders.

3. Lack of transparency in imposition of compensatory levies

Table 52 compares the existing provisions under FCA and FCR, on transparency in imposition of compensatory levies, with suggested alternatives.

Table 52: Transparency in Imposition of Compensatory Levies

Issue	Existing provisions/ no change	Alternative 1	Alternative 2
Description	<ul style="list-style-type: none"> No transparency provision 	Independent panel of experts to approve compensatory levies	Setting up of state level grievance redressal cell for project proponents
Estimated impact on government		<p><i>Reasonable increase in costs</i></p> <p>Annual basic remuneration cost - Rs1.26 crore (excluding other incentives) and Significant physical and ICT infrastructure costs</p> <p><i>Reasonable increase in benefits</i></p> <p>Reduction in cost of assess to electricity</p>	<p><i>Substantial increase in costs</i></p> <p>Annual basic remuneration cost - Rs6.96 crore (excluding other incentives)</p> <p>Significant physical and ICT infrastructure costs</p> <p><i>Reasonable increase in benefits</i></p> <p>Reduction in cost of assess to electricity</p>
Estimated impact on project proponents/ consumers	<p><i>Costs</i></p> <p>Imposition of unreasonable/ unjustifiable compensatory levies</p>	<p><i>Reasonable reduction in costs</i></p> <p>Possibility of review of compensatory levy by independent panel is expected to rationalise and thus reduce the costs</p>	<p><i>Reasonable reduction in costs</i></p> <p>Possibility of approaching grievance redress cell in case of imposition of unreasonable compensatory levy is expected to rationalise and thus reduce the costs</p>
Estimated impact on society/ forests	<p><i>Costs</i></p> <p>Imposition of disproportionate compensatory levies</p>	<p><i>Reasonable reduction in costs</i></p> <p>Possibility of review of compensatory levy by independent panel is expected to ensure proportionality between costs and damage to forests</p>	No change

3.1. Selection of alternative

Following deductions could be made from aforesaid comparison of existing and proposed provisions to check abuse of discretion:

- *Government* – The costs of setting up independent panel of experts to review compensatory levies (alternative 1) is substantially lesser than the costs of setting up state level grievance redressal cell for project proponents at NGT (alternative 2). However, both alternatives are significantly costly when compared with no change scenario.
- *Project proponents/ consumers* – Both the alternatives are expected to reasonably reduce the costs, owing to possibility of rationalisation of compensatory levies, when compared with no change scenario.
- *Society/forests* – Establishment of independent panel to review compensatory levies (alternative 1) is expected to result in imposition of costs proportional to potential damage to forests, hence, is expected to reasonably increase the benefit to society/ forests. As alternative 2 provides additional grounds to approach grievance redressal cell to project proponents only, no benefit is expected to society/ forests.

Recommendation – Alternative 1 i.e. establishment of independent panel of experts to review compensatory levies.

4. Conflict of Interest and Competition Distortionary Provisions

Table 53 compares the existing provisions under FCA and FCR, to deal with conflict of interest and competition distortionary provisions, with suggested alternatives.

Table 53: Resolving conflict of interest

Issue	Existing provisions/no change	Alternative 1	Alternative 2
Description	<ul style="list-style-type: none"> • State governments have no power to reject central government promoted proposals 	<ul style="list-style-type: none"> • State governments to have power to reject central government promoted proposals 	<ul style="list-style-type: none"> • Constitution of independent expert committee to review all proposals
Estimated impact on government			<p><i>Substantial increase in costs</i></p> <ul style="list-style-type: none"> • Annual basic remuneration cost – Rs2.07 crore (excluding other incentives) • Significant physical and ICT infrastructure costs
Estimated	<i>Benefits</i>	<i>Reasonable reduction in benefits</i>	<i>Reasonable reduction in benefits</i>

Issue	Existing provisions/no change	Alternative 1	Alternative 2
impact on central government project proponents	Favourable playing field with only central government having the opportunity to reject proposals promoted by central government entities	Doing away of uneven playing field	Doing away of uneven playing field
Estimated impact on state government project proponents	<i>Costs</i> Uneven playing field between central government and state government project proponents.	<i>Reasonable reduction in costs</i> Doing away of uneven playing field.	<i>Reasonable reduction in costs</i> Doing away of uneven playing field
Estimated impact on private sector project proponents	<i>Costs</i> Uneven playing field between private sector and public sector project proponents	No change	<i>Reasonable reduction in costs</i> Doing away of uneven playing field
Estimated impact on society/forests	<i>Costs</i> Sub-optimal quality of projects, and sub-optimal forest clearance process	<i>Reasonable reduction in costs</i> Limited improvement in competition, quality of project proposals and forest clearance process	<i>Substantial reduction in costs</i> Improvement in competition, quality of project proposals and forest clearance process

4.1. Selection of alternative

Following deductions could be made from aforesaid comparison of existing and proposed provisions to check abuse of discretion:

- *Government*: The costs of setting up independent committee of experts to review all proposals (alternative 2) is substantially higher than no change scenario and conferring power on state government to reject central government proposals (alternative 1), both of which are not expected to impose any costs on government.
- *Project proponents/consumers/society/forests*: When compared with no change scenario, while both the alternatives are expected to improve competition, the level of competition expected to increase via alternative 2 (committee of experts to review all proposals) is much more than competition expected to improve via alternative 1 (increase in power to state government). Increase in competition is expected to improve quality of project proposals and thus the forest clearance process.

Recommendation: Alternative 2 i.e. establishment of independent committee of experts to review all proposals, as benefits are expected to outweigh its costs.

5. Other Provisions

As discussed in earlier Chapter, several additional statutory provisions have been recommended for adoption, under the FCA and FCR by the project. These are as under:

- Statutory requirements requiring periodic capacity review at all levels of government involved in forest clearance process
- Statutory requirements prohibiting retrospective operations of statutory instruments
- Statutory requirements requiring mandatory periodic consultations amongst central and state government departments
- Statutory requirements requiring periodic review of impact of existing provisions and
- Statutory requirements to undertake impact assessment while issue of statutory instruments

While all the above provisions are expected to impose substantial costs on government, these are expected to be outweighed by projected benefits, such as significant improvement in forest governance process, including ensuring transparency, accountability and reasoned decisions. This is expected to substantially reduce delays in environment clearance process and rationalise the costs imposed on different stakeholders. Consequently, the alternatives suggested above are recommended for adoption.

Part III

Solar Sector in India

Introduction and Overview of the Sector

1. Introduction

Renewable energy (RE) seems to be considered as a panacea for global energy challenge, while it is perceived to offer developmental and climate change mitigation co-benefits. Consequently, there is a race among nations to raise their respective renewable portfolios. More recently, investment on RE capacity addition has exceeded the investment on additional fossil-fuel based generating capacity addition worldwide.

Keeping with the global trend, India has been an active player in RE development. The underlying objective is to achieve domestic energy security while attaining spin-off benefits like regional development and cooperation, employment generation, globally competitive domestic industries, improved energy access for the poor and climate mitigation. The country had set a target to raise its RE installed capacity to 74 GW by 2022, including 22 GW of solar, and procure 15 percent of consumable electricity from RE sources by 2020.²⁸⁸ With renewable installed capacity of about 35 GW at present, the country is already one of the global leaders.²⁸⁹ The new government at the centre has recently revised the solar target to achieve 100 GW installed capacity by 2022.²⁹⁰ This is certainly an ambitious target and requires huge investment in coming years.²⁹¹

Private sector will play a vibrant role in executing the plan. RE development in India so far has been driven by private sector participation, but meeting the future targets requires much more aggressive investment from the private players. The government has time and again emphasised the need for private contribution to electricity generation in general and RE specifically.²⁹² For the new solar target, the government has sought participation of foreign companies (particularly from China, Japan, Germany and United States) to raise the required investment.

Proposed mode of private participation is an evolution from the past experiences.²⁹³ Failure of public electrification and limits of market-first approach has forced the state to implement a partnership model, pairing the public sector with private sector. Even though the rhetoric remains that of market reformism, with actual implementation done by the private players, emerging electricity governance architecture seems to be a pragmatic hybrid with the state playing a stronger role of steering and guiding.

Given its role, the state seeks to promote RE development through market players by setting up a favourable policy/regulatory environment, with complementary policies, incentive mechanisms and R&D support. Are these policy initiatives enough to achieve India's renewable ambitions? What are the challenges, hurdles and opportunities for the private investors and project developers? How to overcome these challenges through policy measures to ensure greater private sector participation?

As solar energy is poised to represent a major share in India's RE development and also to future energy mix, in this part of the study we focus on solar policies. In this direction, the study looks into policies and regulations governing solar energy development, with the aim to identify the costs and benefits for private solar developers and suggest reforms to ease their

participation. Due to the limitations of time and resources, we have looked at solar policy in the best performing state, Gujarat, *vis-à-vis* the national solar policy. The objective is to identify cumbersome, deterring and expensive practices and suggest measures to best utilise the available resources, and ease and facilitate private sector investment in solar energy development. It offers a comprehensive analysis of the National Solar Mission (NSM) *vis-à-vis* the Gujarat State Solar Policy (GSSP), identifies challenges and opportunities for the solar developers, analyses how and why Gujarat has done better than others and suggests ways to improve regulatory framework for solar energy promotion at national level. For analysis, the study draws on the tool of Regulatory Impact Assessment and analyses costs and benefits of existing policies/initiatives and suggests alternatives and additional enabling policies with low cost.

2. Rationale and Focus of the Study

The energy mix in India is dominated by coal fired electricity, followed by hydro power.²⁹⁴ Considering successive governments' increasing emphasis on solar power, it is expected to represent a major share in future capacity addition. The wider study seeks to analyse the most onerous regulations for these technologies, to identify cost and benefits of these regulations and suggest alternatives having greater net benefits that will ease participation of private sector players. Coal and hydro being the oldest technologies in electricity generation and their size and scale have required detailed state regulations to protect competing interests.

Solar being at an evolution stage in India in terms of technology, adoption and grid integration, the State has not mandated regulatory interventions. Rather promotion of the technology is guided by a set of enabling policy guidelines from both the central and state governments. Yet, given the importance of the technology in India's future energy mix, we have looked into the policy framework for solar energy promotion. The goal here is not to prepare an alternative policy framework or suggest specific regulations, which is a difficult task given the volatility in the technology, but to suggest a strategy to strengthen the existing policy framework with additional and/or alternative measures. The wider target is to recommend, building on existing policies, an enabling and predictable policy framework that eases and enhances private sector participation and investment without putting unnecessary fiscal burden on the state and compromising consumer welfare.

While solar technology is not new, it got state impetus in India during last few years. The central government has put forth a comprehensive policy guideline in form of the National Solar Mission.²⁹⁵ In addition, some states have also prepared their respective solar policies, with some variations to suit local context and ambitions (see Table 54 for a comparative analysis of the NSM and state solar policies). Consequently, solar power development varies considerably across states, with much of the developments concentrated in four states, viz. Gujarat, Rajasthan, Madhya Pradesh and Maharashtra. This study aims to provide a comparative analysis of the national solar policy and one of the state policies. Considering Gujarat's success (about 33 percent of national solar capacity addition taken place under the state policy), we have taken Gujarat State Solar Policy as a case for analysis. The study attempts to identify costs incurred by solar developers in the current policy frameworks and suggests ways how these costs could be reduced for better economic welfare without putting any additional burden on the public finance.

Given that private sector participation is dependent on availability of market finance and reliable return on investment along with a conducive business environment, we have

emphasised on access to finance and revenue realisation in our analysis. During our preliminary consultation with industry players and subject experts, it was found that solar energy sector has multiple challenges for the developers. However, absence of priority funding, high costs of finance and revenue unreliability are the major challenges that together contribute to high cost of solar energy. The Chapter 2 discussed the challenges in detail and suggests why finance issues need greater attention.

Limitations

Before we move into further details, we would like to point out some caveats in this part of the study. Generation segment of solar power does not have any direct regulation; rather the solar energy development is guided by a set of policy guidelines. Yet, it was taken up considering the future contribution to energy mix. Consequently, the recommendations are focussed on broad policy alternatives and implementation issues. Wherever possible, estimation of the costs and benefits of suggested policy measure has been attempted.

Access to data and especially on finance aspect is a major challenge. Considering many of the companies are new, they are not forthcoming on sharing information on finance and this information is not available on public domain. Therefore, the data for analysis is largely drawn from anecdotal information sharing. Finally, as the technology and costs are changing frequently, it is difficult to calculate a standard cost or benefit in monetary terms. Therefore, an attempt has been made to calculate percentage share of costs to the overall project costs. However, in some cases, monetary value of costs and benefits, factoring in the current costs, has been drawn. These values are indicative and drawn from past projects; precise costs and benefits of each project might vary depending on prevailing conditions.

Table 54: Comparison of National Solar Policy with State Solar Policies

	Policy targets	Off-taker	Financial Incentives	Expected commissioning in 2014	Announced or expected allocations in 2014	Exemptions from open access charges	Other key benefits	DCR
NSM	20 GW till 2022	SECI	Viability Gap Funding (VGF) based on reverse bidding	45 MW	1,500 MW	Will depend on the state in which the project is being executed.	Will depend on the state in which the project is being executed.	375 MW out of the 750 MW (of batch I)
Tamil Nadu solar policy	3 GW till 2015	Obligated entities (as defined by the state), State distribution company	Preferential tariff based on reverse bidding for a part of the target	–	–	No exemption	<ul style="list-style-type: none"> • Single window clearance, • Generation based incentives for rooftop solar 	None
Uttar Pradesh solar policy	500 MW till 2017	State distribution companies	Preferential tariff based on reverse bidding	50 MW	300 MW	Exemption on wheeling/transmission charges	Evacuation infrastructure construction by the state	None
Andhra Pradesh solar policy	Not driven by target	Third-party power consumers, Obligated entities	None	50 MW	None	Exemption on wheeling/transmission charges	Banking of power permitted with fee	None
Karnataka solar policy	200 MW till 2016	State distribution companies	Preferential tariff-based on reverse bidding	42 MW	50 MW	No exemption	None	None
Rajasthan solar policy	750 MW till 2017	State distribution companies	Preferential tariff based on reverse bidding	75 MW	None	No exemption	Availability of government land at a low lease price, Cost of transmission line to be borne by the government	None

	Policy targets	Off-taker	Financial Incentives	Expected commissioning in 2014	Announced or expected allocations in 2014	Exemptions from open access charges	Other key benefits	DCR
Punjab solar policy	1 GW till 2022	State distribution companies	Preferential tariff based on reverse bidding	50 MW	300 MW	No exemption	Exemption on land stamp duty	None
Madhya Pradesh solar policy	800 MW (no timeline)	State distribution companies	Preferential tariff based on reverse bidding	50 MW	100 MW	No exemption	Solar parks to be created for policy allocations	None
Chhattisgarh solar policy	500 -1000 MW by 2017	State distribution companies	Preferential tariff based on reverse bidding	None	100 MW	No exemption	Exemption from electricity and stamp duty	None
Gujarat solar policy	Target exceeded	State distribution companies	Preferential tariff based on reverse bidding	None	None	No exemption	Solar park infrastructure provided	None
Uttarakhand solar policy	500 MW till 2017	State distribution companies	Preferential tariff based on reverse bidding	None	50 MW	Exemption on cross subsidy charges	Availability of government land on lease for offer of free electricity, Exemption on land stamp duty	None
Odisha solar policy	135 MW till 2015	State distribution companies	Preferential tariff-based on reverse bidding	None	20 MW	No exemption	Availability of government land at a low lease price	None
Haryana solar policy	Not specified	State distribution companies	Preferential tariff-based on reverse bidding	None	50 MW	No exemption	Projects could be set up anywhere in India	None

3. Evolution of Solar Energy in India

More recently, solar energy has been touted as the perfect fit solution for a range of problems in Indian electricity. It is recognised as clean, abundant, decentralisable and a nationally self-reliant source of power. In principle, it assures alleviation from chronic power shortages, as well as the strategic handicaps of imported fuel dependence while also promising other socioeconomic advantages. Indian policy interest in solar energy dates back to the 1980s, with pilot projects materialising at varying scales for over two decades. However, a major impediment to accelerated deployment has been high cost of the technology compared to conventional technologies like coal or hydro. Even within the renewable technologies, wind power proved to be cheaper than solar implementations. Consequently, there was notable wind capacity addition in India during 2000s, while policy-makers did not pursue solar power deployment on any meaningful scale until 2009.

Over the past 4-5 years, the Government of India together with various state governments has been working towards introducing policies and creating an environment conducive for developing solar power in the country. The National Solar Mission (NSM), launched in November 2009, is the largest of such policy initiatives. One of the eight National Missions laid out in India's National Action Plan on Climate Change (NAPCC), the mission was launched with an aim to install 22 GW of solar generation capacity using both photovoltaic (PV) and concentrated solar power (CSP) technologies by 2022 as well as a large number of other solar applications, such as solar lighting, heating, and solar powered water pumps (with the latter aimed at increasing energy access). However, this target has recently been revised.

A number of reasons led to the introduction of a mission-based policy approach by the Indian government for the solar sector. By the late 2000s, the Indian government was increasingly coming under pressure at various international fora to take steps towards climate change mitigation. Meanwhile, some central government ministries led by the MNRE and the DHI were drawing up plans to boost the solar sector due to job creation, energy security and industrialisation considerations. Because of these concerns and interests with the chronic energy shortage and import dependence for energy in India, a mission-based push for the solar sector made imminent sense. However, to address the growing international pressure the NSM was packaged and presented primarily as a measure towards reducing India's carbon footprint.

As the sector has grown along with policy evolutions, the presence and influence mechanisms of key actors have also evolved. The Table 55 below identifies the key actors and agencies, both government and non-government, in India's solar energy sector. At the initial stage, manufacturers and few non-government organisations (NGOs) constituted the main influence outside the government, as the developers were almost non-existent at that point. However, over past five years, a pool of developers has emerged responding to the market development and many of them have gained experience of project implementation. Correspondingly, the actors on the support side including financiers, industry associations and R&D agencies have also emerged as sources of policy influence. At the same time, the government have set up a public sector company – Solar Energy Corporation of India- with the objective of developing solar technologies and ensuring inclusive solar power development throughout India and also to coordinate with private manufacturers and developers. All these actors have been actively engaged in the policy deliberations and have grown both in their influence as well as the scope of this influence, which at present extends to the agenda-setting. Interestingly, the developers seem to have a more pronounced

influence at the state-level, while the domestic manufacturers seem to be favoured at central level for industrialisation²⁹⁶

However, with new target for accelerated solar capacity addition and required private investment, there might significant change in focus and influence in coming years.

Table 55: Key Actors in the Indian Solar Market

Strategic	<p>Policy-makers and Implementing Agencies</p> <ul style="list-style-type: none"> • Ministry of New and Renewable Energy (MNRE) • Indian Renewable Energy Development Agency (IREDA) • State Renewable Development Agencies • Central Electricity Regulatory Commission (CERC) • State Electricity Regulatory Commission (SERC) • <i>National Thermal Power Corporation Vidyut Vyapar Nigam (NVTN)</i> • Ministry of Power (MoP) • Solar Energy Corporation of India (SECI)
Implementation	<p>Developers, Manufacturers and Installers</p> <ul style="list-style-type: none"> • Manufacturers (cells, modules, balance of systems): For example. Moser Baer, Tata Power Solar, EMMVEE • Project Developers: For example, Azure Power, Green Infra, Mahindra, Welspun, etc. • Engineering, Procurement and Construction (EPC) contractors: For example, Lanco Infratech, Mahindra EPC, Tata Power Solar, etc.
Support	<ul style="list-style-type: none"> • Financiers: Axis Bank, ICICI, US Export Import (EXIM) Bank, Overseas Private Investment Corporation (OPIC) • Industry Associations: Solar Energy Society of India (SESI), Indian Solar Manufacturers Association (ISMA) • Research and Development: Solar Energy Centre (SEC), National Centre for Photovoltaic Research and Education (NCPRE)

While NSM has been the primary policy enabler at national-level for solar energy development, some state policies at sub-national level (especially of Gujarat and Rajasthan) have led to accelerated deployment at respective states, leaving behind other states. In case of Gujarat, for example, most of the deployment (which itself accounts for one-third of all India installed solar capacity) has leveraged on state policy.

At the same time, evolution of the sector is driven by several narratives corresponding to national priorities. The four dominant narratives include:

- **Industrialisation through Solar:** One of the key drivers of the National Solar Mission was the Indian central policy-makers' aspiration to become a major global solar player through the establishment of a domestic solar manufacturing base that not only caters to the domestic market but might also become an exporting industry in future. A major policy element for encouraging the emergence of a domestic solar

manufacturing industry was the inclusion of a domestic content requirement (DCR).²⁹⁷

- **Domestic Energy Security:** India's status as a net energy importer nation has for long motivated policy-makers to pursue energy security as a strategic goal. Renewable energy programmes, over the past two decades have been primarily aimed at this motivation.
- **Public-Private Partnership in Infrastructure Development:** Owing to the limits of public finance and rising need for infrastructure, the state has been seeking to build a creative public-private partnership to leverage private investment for infrastructure development. In fact, the 12th Plan has sought half of the investment from private sector. Given the projected potentials of solar energy, it has been an area where greater private participation is expected. To attract the private players and accelerated deployment to meet the above goals, the state has also offered some incentives including feed-in tariffs²⁹⁸ and RPOs²⁹⁹.
- **Climate Change Mitigation:** The NSM, although launched within the ambit of the NAPCC, has not been guided or shaped to a significant degree by climate change mitigation concerns. The twin concerns of industrialisation and energy security have taken centre stage while climate change mitigation has more often been used as a packaging when projecting the NSM at international fora. Yet, it remains a driver for solar energy promotion at least at the rhetoric-level.

Box 1: Key Features of Solar Energy in India

- By third quarter of 2014, India achieved 2,734 MW of grid-connected solar installed capacity, while another 1,982 MW capacity addition is upcoming.
- The leading states include Gujarat, Rajasthan, Madhya Pradesh and Maharashtra who have commissioned 908 MW, 728 MW, 311 MW and 278 MW respectively.
- In 2013, India added 916 MW of new solar capacity, little less than 2012, yet sixth in global capacity addition in the year (following China, Japan, USA, Germany & Italy).
- By 2030, International Energy Agency predicts, India will overtake both China and USA in terms of yearly capacity addition to become the world's leading solar market.
- Availability of finance (both investment and secure return) has been a major challenge to solar development in India.
- India has set a target of 22 GW of installed solar capacity and 3 percent of consumable electricity from solar by 2022, which required an investment of US\$13bn and
- The new Government has upgraded the target to 100 GW of solar installed capacity by 2022, which would require an investment of more than US\$100bn, over seven years. However, a clear strategy for the target is yet to come.

The present government's target is to achieve a cumulative solar installed capacity of 100 GW by 2021-22. Achieving this target would help scale up India's solar capacity to 9 percent of total electricity demand. However, meeting such an ambitious goal would also require a

high compound annual growth rate in solar capacity addition of 62.2 percent between now and the deadline. Moreover, achieving the target of 100 GW would require an investment to the order of US\$100bn, which is way beyond the limits of public spending. This will require a major participation and investment from the private sector players. Though India has a huge untapped potential to achieve this target, there is a need for right set of policy incentives and supportive ecosystem to attract the private players. Although the new ambitious goal is technically feasible, it would test the resolve of policy-makers, project developers, engineering contractors, financiers, manufacturers and other stakeholders in the sector.

Even after government's emphasis on solar energy promotion and various incentives offered under the central policy as well as state, the sector is not free from challenges. Private solar producers have to jump through many loops to implement a project and it varies from state to state depending on the policy provisions being followed. In the following section, we discuss the specific challenges faced by the solar power producers.

Chapter 2

Assessment of Costs and Benefits

1. Driving Factors for Private Participation in Solar Energy Development

Despite the policy supports from the central and state governments, solar energy development is not free from challenges. This section identifies and discusses some of the key challenges faced by solar developers and that have consequential implications for India's solar ambitions.

As in any other business, investments in the solar energy have been (and will continue to be) primarily driven by a predictable expected rate of return and ease of doing business. In case of solar, as in any other business, expected returns are a function of costs involved and revenue generated, factoring in the time lapse in receipt of the revenue. Considering the fact that the major clients/buyers of solar power are financially insolvent state utilities, there have been uncertainties on their paying capability. Drawing on our interview with a range of solar energy developers, we have identified factors that influence private sector participation in solar energy.

Cost Factors

- Cost of the system that includes solar panels and balance of system. The national policy offers incentives like viability gap funding to reduce this part of the cost. But, at the same time, the provisions of national policy, like the domestic content requirement, has contributed to high cost of system by requiring the developers to procure expensive Indian products.
- Cost of finance: In most cases, the solar developers arrange the investment through debt or equity. In case of debt, which has been a major source of solar financing, the cost to the company depends on regulatory incentives (mitigating or increasing project risks), interest rates and loan tenure. Various factors, including location of the project, type of panel used, power purchase agreement and developers financial credibility and determine the access and cost of finance.
- Cost of land acquisition is a significant driver. In some states, the governments have tried to ease this part by providing ready to use solar parks. But generally, the solar developers feel that cost of solar parks has been high.
- Cost of evacuation infrastructure is an equally important driver. While the solar plants take limited time (up to six months) to set up, the evacuation infrastructure takes longer time to come up. In those cases, the plants have to incur revenue loss by waiting to sell their produce, while the regular maintenance costs continue. However, the solar parks address this issue by provide ready to use evacuation infrastructure and
- Operations and maintenance costs are small but a regular cost in case of solar plants. This part of the cost increases where the plants use some storage technology.

Based on our interaction with solar developers, we have calculated the share of costs in setting up a solar plant as provided in the Table 56. Owing to continuous drop in the price of solar PV, the costs have been in flux. In 2014, the average cost for one MW installation was around Rs7 crore and is expected to drop further. Although in past, there was significant gap in cost of installation, under GSSP and NSM (for an example see table 54), with the drop in

price the gap seems to converge.³⁰⁰ Out of this, the system cost (including PV panels and BoS equipment) constitutes a major portion depending on the policy framework followed. The DCR projects, under the NSM require higher investment owing to the higher cost of domestic panels. The Table 56 provides different cost shares in case of NSM and GSSP. It is an indication of the average costs involved and the actual cost will vary from project to project and depending on the time of execution.

Table 56: Share of Costs to Solar Plants

Cost Factor	Share of Cost (in percent) (NSM)	Share of Cost (in percent) (GSSP)
System Cost	70	75
Operation and Maintenance costs	8	8
Cost of Finance	14	10
Land	5#	7*
Evacuation Infrastructure	3	NA

* In case of Gujarat, there is a huge variation in land cost. Developers who have taken land in the solar park have spent Rs1crore per MW (about 14 percent of the project cost) and generally have a higher project cost. Those who have procured private land have spent less, in the range of Rs0.4-0.5 crore. But, in the latter case, land procurement and getting it ready takes some time and resources, while land in solar parks is ready to use. In either case, Gujarat provides the required evacuation infrastructure.

* In case of NSM projects, especially outside Gujarat, land procurement involves some unaccounted expenses (including speed money and cost of time delay), which is not factored in here.

Revenue Factors

- The demand for solar power in the respective states determines the revenue of solar plants and the demand is strongly affected by the extent and enforcement of renewable purchase obligations (RPOs). Only seven states have been able to comply with their RPOs, while others are lagging behind.
- The tariff at which solar power is sold, which is positively affected by feed-in tariffs, tariff rebates, generation-based incentives. While some states have been offering feed-in tariffs, the national scheme rather provides a viability gap fund partly linked to generation performance and
- Access to the grid is a small but crucial factor that is affected by wheeling charges and priority dispatch to the grid.

Ease of Doing Business Factors

- The certainty and longevity of solar policies matter for private sector participation. While many states have put up a dedicated solar policy, not all have ensured certainty. In addition, there is a need for timely enforcement of these policies. To be effective, the states also need to ensure honouring of contracts, the strong presence of the rule of law, and effective dispute resolution mechanism.

- Approval time and number of clearances required also equally affect ease of doing business and thus affect investors' interest in the state.
- Access to information pertaining to projects, generation and irradiance enables the developers to better plan and strategise and
- Availability of skilled manpower and standards of quality control are other important factors.

2. The Challenges for Solar Project Developers

Drawing on our discussion with solar project developers, we have identified following challenges faced by them: 1) limited access and high cost of finance; 2) access to land; 3) access to system equipment; 4) grid connectivity and power evacuation; 5) revenue realisation; and 6) policy stability.

1. The Finance Challenge

Among these, access to finance and high cost of debt is the major challenge, as pointed out by the informants, and significantly contributes to high cost of solar energy. A CPI-ISB study estimates that high cost and inferior term debt for solar energy in India raises the cost of solar power by 28 percent compared to US and Europe.³⁰¹

Solar energy projects in India are funded by a range of investors, including institutions, banks, and registered companies. Institutional investors are either state-owned or bilateral and multilateral institutions. Among banks, both private sector and public sector banks are involved. In addition to registered companies, venture capital and private equity investors contribute equity investment. Return expectations of the investors vary according to the source of their funds and the risk attached to specific projects. In recent years, investments in solar projects have been growing steadily.

Yet, high interest rates continue to be one of the biggest challenges in India's solar energy development. Although not endemic to the solar market, the high up-front capital cost of solar energy mean that projects are burdened with high interest rates during initial development and construction. For example, India's commercial banks typically offer shorter-term loans (about 7 to 10 years) to solar developers at high interests (12 to 15 percent), raising the cost of debt substantially.

The lower-cost debt offered by both self-financing and international funding sources during the early years proved attractive to many solar developers to get projects off the ground. Many of the multilateral financing groups that played a major role earlier are shifting their focus to clean energy financing opportunities in other developing economies. The self-financing among larger industry players that was prevalent is now looking less realistic as projects scale up.

While the capital costs in India is about 25 percent lower than those in the developed countries, the cost advantage is eliminated by the lower expected output per MW, which is likely the result of lower insolation and higher levels of dust, or possibly the use of less expensive but less reliable equipment. With these two factors offsetting each other, the Indian solar PV facility was nevertheless 26 percent more expensive due entirely to the higher return requirements for investors in India, that is, the more expensive cost of financing the project.³⁰²

2. Other Challenges

While access to finance remains limited and expensive, it is driven and influenced by several factors that contribute to the project risks. Solar being land-intensive and per capita land availability being low in India, land acquisition for solar projects emerges as a key challenge. Dedication of land area near substations for exclusive installation of solar cells might have to compete with other necessities that require land. While a significant amount of barren land in parts of the country could be utilised for solar deployment, it would require high investment in setting up evacuation infrastructure. Grid connectivity of solar plants and timely access to adequate evacuation infrastructure is another challenge. While the solar plants take less time to set up, evacuation infrastructure usually takes longer time. Adding to the cost are transmission and distribution losses (about a quarter of the electricity generated³⁰³) that make generation through solar energy sources highly unfeasible.³⁰⁴ Availability of system equipment is also a challenge. While there remains a concern over quality of domestic equipment, domestic manufacturing falls short of meeting the national solar target. On the other hand, manufacturers are prioritising export markets that buy the panels at a higher price. This could pose a serious challenge and reduce supplies for the fast-growing local market.

Another area of concern is lack of closer industry-government cooperation for the technology to achieve scale. The need for intra-industry cooperation in expanding the PV supply chain, in technical information sharing, in collaborating with BOS (balance of systems) manufacturers and in gathering and publishing accurate market data, trends and projections is less acknowledged. The need to build stakeholders' awareness about the technology, its economics and right usage is important for scaling up the technology deployment.

Finally, policy instability across the states has been a major challenge for development of the sector. In most of the states, the solar policy and its implementation strategy is gradually taking shape and under constant flux. While centrally designed policies and tools have been adopted and implemented in a varying degree across the states, states have devised their own policies. Consequently, there is a significant difference across the states in actual realisation of solar capacity.

It has been projected that solar energy technology is some years away from true cost competitiveness and from being able to compete on the same scale as other energy generation technologies.³⁰⁵ However, to achieve grid parity for the technology in India, there is an urgent need to address these challenges that add to the cost of solar deployment. Considering the cost of finance is a major contributor to high cost of solar, in this study, we prioritise the measures that could reduce the cost of finance, so that required investment could be realised.

Being the most successful state to attract one-third of national investment in solar, Gujarat state policy needs detail consideration. In the following section, we discuss how the state policy has shaped up and how it has been able to address the challenges discussed above.

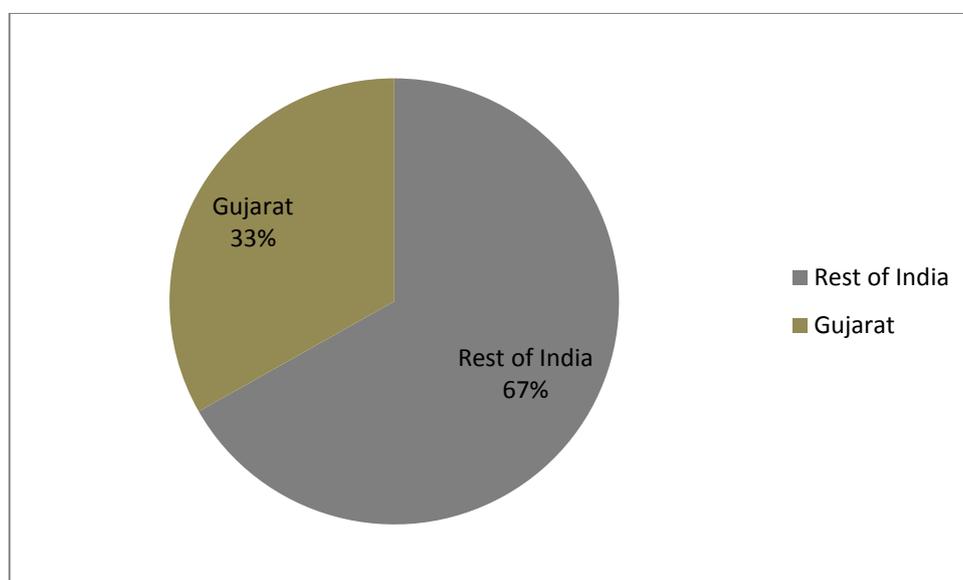
3. Gujarat: The Frontrunner

Undoubtedly, Gujarat is the frontrunner when it comes to adoption of renewable energy technologies in the country. The total installed capacity in the state stands at 21,000 MW with plans afoot to extend it to 30,000 MW in the near future. Out of this, 18 percent is based on renewable energy technologies. Ranking third when it comes to wind energy in the country, Gujarat is the undisputed leader when it comes to solar power with an installed capacity base

of 908 MW. It is interesting to note that the solar capacity additions in the state are purely a result of the state's solar policy rather than the NSM.³⁰⁶

With over 300 days of sunshine and solar radiation of 5.6–6.0 kWh/m²/day, the state of Gujarat has a potential of 750 GW of solar installed capacity. To capture this huge potential, in January 2009, the Government of Gujarat introduced the solar power policy (GSSP) as a commitment to climate change initiatives, to address energy security, and to provide favourable environment for implementation of solar energy. The GSSP 2009 with an overarching aim of promoting alternative sources of energy through investment from private developers was an important step for solar power development in the state. From the release of the GSSP in 2009 to 2014, the state contributed to about 908 MW of the total installed 2,734 MW grid-connected capacities in the country (Figure 8); all under the state policy.

Figure 8: Gujarat's Share in Total Solar Installed Capacity in India (as on May 10, 2014)



Even after the release of the national policy, Gujarat has emerged as a favourite destination for the private developers. A quick analysis of various studies and media reports suggests that tariff is an important criterion and game player in the decision-making of the developers to choose a specific policy (national or state policy). The high feed-in tariff of Gujarat compared to competitive bidding, under NSM seems to have made the private developers lean towards Gujarat solar policy. Moreover, as no timelines or guarantees were required from developers to sign PPAs, initially many developers took interest in the Gujarat solar policy.

After the NSM policy was formalised in December 2009 (almost a year after GSSP was launched), developers moved away from Gujarat to NSM. The enormous interest from developers in NSM led to competitive bidding for the projects and this situation led to decrease in power generation tariff. Consequently, there was a steep fall in the NSM tariff below the levelled tariff.³⁰⁷ In the case of Gujarat, it is the fixed tariff floated by the Government to the developers unlike the NSM. It could be noted that after the release of NSM in 2010, there was a sudden rush to NSM bidding process. The total amount of capacity that was bid under NSM in July 2010 was as high as 5126 MW. However, within months due to steep fall in NSM tariff, the bid capacity was reduced to as small as 650 MW (in

September 2010). Of the total 5776 MW capacity bid under the NSM in 2010, about 620 MW capacity projects only had reached the stage of signing Power Purchase Agreements (PPAs) (in January 2011). This shows that due to fluctuation in tariffs unlike fixed tariff of Gujarat, the initial rush to NSM declined later.

The project developers preferred fixed tariff as it offered reliability and guarantee for return on their investment. It was also stressed that a significantly higher feed-in tariff in the first 12 years in Gujarat matches investors' timelines, as they would look to recover the cost of debt during this period. Though fixed tariff is preferred by the investors, it is binding on the power procurers (or the utilities), who are deprived of the natural benefits of market competition that would bring down the solar tariff. For example, utilities in Gujarat have already met their solar Renewable Purchase Obligations (RPOs) at a higher tariff, which will remain for the duration of PPA, while other states who moved through competitive bidding later have a reduce solar tariff. This does affect the price charged to end consumers. However, in case of a nascent technology, this kind of trade-offs (where the first mover pays more) will remain till the technology gets stabilised. Furthermore, unlike NSM's Phase I (2010–13) project execution timelines, the Gujarat SSP 2009 has longer timelines for execution and commissioning of projects.

Box 2: Salient Features of Gujarat State Solar Policy 2014

A state specific policy dedicated to solar was first envisioned by Gujarat in 2009. The policy was the first solar specific policy introduced in the country predating the National Solar Mission. The Gujarat Solar Policy was operative till March 31, 2014. Any Solar Power Generator commissioned during the operative period is eligible for incentives declared under this policy for a period of 25 years. The salient features of the policy includes:

Capacity

- Only new plants and machinery will be eligible, under this Policy. No fossil fuel should be allowed for Solar Thermal Project.
- The minimum capacity of for Solar PV and Solar Thermal projects would be 5 MW each. A total of 500MW SPG should be allowed for installation during the operative period of this policy.

Cross-subsidy charge

- Cross subsidy surcharges shall not be applicable for Open Access obtained for third party sale within the state.

Wheeling Charges

- As determined by GERC from time to time.

Electricity Duty

- Exempted from payment of electricity duty for sale through all modes (self-consumption/sale to third party/sale to licensee)
- Exemption from demand cut to the extent of 50percent of installed capacity

PPA

- PPA duration will be 25 years

Bank Guarantee

- Developer to furnish a bank guarantee of Rs50Lakhs/MW at the time of PPA signing with Distribution Licensee. Bank guarantee to be refunded if the developer commissions the project in time as per PPA.

Metering of Electricity

- Electricity generated would be metered jointly on a monthly basis by Gujarat Energy Development Agency (GEDA)/Gujarat Energy Transmission Corporation (GETCO). Metering to done at sending sub-station of 66 kV or above, located at the site

Reactive power charges

- As per GERC order.

Transmission infrastructure

- Transmission line from plant switch yard to GETCO sub-station shall be laid by GETCO. Solar plant to inject power at 66kV

Sharing of CDM benefit

- Solar power generator will pass 50 percent of Clean Development Mechanism (CDM) benefit to Distribution Companies (DISCOM) with whom PPA is signed.

Forecasting and scheduling

- Solar power based generation shall not be covered under scheduling procedure for Intra-state availability based tariff.

Nodal Agencies for facilitation and implementation of the policy

- Gujarat Energy Development Agency (GEDA)
- Gujarat Power Corporation Limited (GPCL)

However, the devil is in details. To understand why solar developers are keener to have a fixed levelled tariff over competitive bidding, we need to understand the cost dimension of setting up a solar power plant. Tariff (expected) is a reflection of the IPPs' expected return over a period (as per PPA) on their investment. The expected returns of solar IPPs will depend on the amount they are investing in setting up the plant, factoring in the various incentives offered by the governments, and any other risks involved in the process.

Investments in solar get an impetus when there are long term guarantees on policy measures, if developers are assured of enforcement of obligations and incentive schemes and if a fast and fair legal framework exists to protect investments. Considering Gujarat has been the single state to receive highest amount of investment in solar, it is worth exploring whether the state has been able to offer a fast and fair legal framework to the investors, how that framework could be consolidated and what insights can be drawn for national policy, so that the country can achieve its solar targets.

4. Comparison of NSM and GSSP- Incentives, Opportunities and Hurdles

The NSM is the main instrument promoting solar demand in India. It targets installations of 20 GW of grid-connected and 2 gigawatts of off-grid solar power by 2022. In the policy's first of three phases, from 2010 to 2013, the government aimed to set up 1,000 megawatts of grid-connected power plants and succeeded. In addition, 200 megawatts of off-grid and 100 megawatts of small-grid solar power were also installed at the tail end of the transmission grid.

For the financial year 2010-2011, the government originally offered a feed-in tariff of Rs17.91 per kilowatt-hour for utility-scale PV projects, rooftop projects, and projects migrated from previous incentive programmes to the NSM (known as Migration Projects); a feed-in tariff of Rs15.40 was offered for concentrated solar power (CSP).

Power Purchase Agreements (PPAs) offered through the NSM have a tenure of 25 years. In June 2010, the Central Electricity Regulatory Commission (CERC) estimated that the tariff would allow investors an internal rate of return (IRR) on equity of about 16 percent to 21 percent after taxes. By September 18, 2010, the application deadline for projects under the first phase of the National Solar Mission more than 400 project developers had put forward bids worth 1,815 megawatts for 150 megawatts of available PV and 3,311 megawatts for 500 megawatts of available CSP. The maximum size for a CSP bid was 100 megawatts; the maximum for a PV bid was 5 megawatts.

Given the oversubscription of the first round for projects, the government decided to award contracts based on competitive bidding to those project developers that offered the highest discount on the initial tariff of Rs17.91 per KWh for PV and Rs15.40 per KWh for CSP. Companies offering the highest discount to the tariff rate prescribed by the CERC were selected to produce 620 megawatt under the first phase. Thirty projects worth 150 megawatt for PV and seven projects worth 470 megawatt for CSP were selected.

For PV, the highest discount offered on the CERC tariff was Rs6.96 per KWh and the lowest successful discount was Rs5.15 per KWh. With the lowest successful bid, the tariff went down to Rs12.76 KWh. However, most of the successful bidders were less well-known companies or new companies, who had submitted aggressive bids. Consequently, some of the larger industrial houses, who participated in the bidding, were not awarded projects, as they did not bid aggressively enough. For CSP projects, the highest discount offered was INR 4.82 per KWh and the lowest was Rs3.07 per KWh. In case of CSP, the lowest successful discount brought down the price to Rs12.36.

The Gujarat solar policy was in place a year before the NSM was announced. It offered a levelled tariff of Rs13.30 per kilowatt-hour for PV and Rs10.54 per kilowatt-hour for CSP over 25 years. There were no timelines or guarantees required from developers by the government to sign PPAs after the allotment of projects, although some companies like Moser Baer signed PPAs as early as January 12, 2009. Until late 2009, many developers had not signed PPAs in Gujarat. After the NSM policy was formalised in December 2009, developers moved away from Gujarat toward the NSM.

The tremendous interest from developers in the NSM led to competitive bidding for projects and a subsequent decrease in tariffs. The fall in the NSM tariff below the levelled tariff in Gujarat suddenly made the Gujarat policy very attractive to developers. Further, a

significantly higher feed-in tariff in the first 12 years in Gujarat matches investors' timelines, as they would look to cover the cost of debt during this period.

As compared to the NSM, the Gujarat policy has longer timelines for the execution of projects. At the same time, it has a stringent penalty mechanism for delays and intends to levy penalties on redundant projects. In addition, delayed projects will face a downward revision in their tariffs.

The two policies offer different incentives, come with different challenges and consequently, have created two different markets (See Table 54 for a comparative summary of provisions under both the policies). In this section, we discuss how these regulations and incentives affect solar power developers' ability to access finance and their financial viability. To understand this, we have looked into following specific risk aspects of solar power development.

a. Competitive Capital Subsidy vs. Preferential Tariff

The national policy at present offers a viability gap fund up to 30 percent cost of the project, subject to a maximum of Rs2.5 crore per MW. The fund is partly linked to construction of the plant and part with generation of electricity. This fund is allocated through competitive bidding process, where the bidder requesting lowest VGF has a better chance. Consequently, the lowest VGF requested has gone down to Rs1.36 crore per MW, which supports about 20 percent of the current project costs. This is good for the government as it will be able to support more projects with the available funding. But from the perspective of solar developers, reducing VGF is emerging as a major challenge and barrier to their financial viability. As pointed by respondents, the smaller and new companies are bidding aggressively low to get hold of the projects, pushing the bigger and stable players out of the market.

This trend could have multiple negative effects. First, as the funds/incentives reduce for the developer, the quality may suffer. Second, envisioning this risk, the financial lenders are more reluctant to invest in such projects and when they do, they seek a high premium (interest rate in the range of 15 percent) for it. Consequently, such projects receive limited incentive but have to operate with high operational costs. Finally, these plants lack resilience to any other risks, operate under financial uncertainties and the return on investment is unclear.

On the contrary, the Gujarat State Solar Policy offers a relatively stable generation linked incentive of preferential tariff. Preferential tariff or feed-in tariff allows the developer to better determine the return on investment and plan accordingly. This certainty of return also makes such project better bankable. It was pointed out that in case of preferential tariff, the interest on debt is reduced by 3-5 percent, given all other factors remain same. Among the solar developers consulted, most of them felt that preferential tariff is more favourable for them compared to a competitive capital subsidy. It was also pointed out that developers with own investment and with access to equity may incline towards the capital subsidy. But, given that the VGF is getting small owing to competitive bidding, it has lost its incentive value. There is a need to redirect funds to better incentivise solar developers.

b. Domestic Content Requirement

Domestic content requirement is one of the requirements under the national policy, which requires the solar developers to procure a specified percentage of solar PVs and balance of the system equipment from Indian manufacturers. However, the size and nature of DCR has

been changing during different phases and batches of commissioning.³⁰⁸ The solar developers are not very happy with the provision and see it as a barrier for primarily two reasons. There is a market understanding that Indian equipment is of inferior quality and has limited lifespan compared to their American or European counterparts. Considering the Indian PVs have not yet lived their full life, it is hard to prove validity of this market perception. Consequently, it seems to add a risk to the project and negatively affect bankability of projects. Second, more important, the cost of Indian equipment is significantly higher by about 20-25 percent than other market competitors. Moreover, the VGF provided under the national policy has been calculated on the basis of market price of equipment, considering the lowest price of imported equipment. The solar developers seem to be disappointed with this double standard in government approach. Moreover, some respondents also pointed out that there would be delay in delivery of panels & BoS equipment as the manufacturing capacity is not being enhanced in tune with the rising demand and manufacturers are targeting global market for better return.

However, the Gujarat State Solar Policy does not have any such requirement. The developers are allowed to procure the equipment from any source at a competitive price. This might have an implication for India's industrial aspirations to be a solar manufacturing hub. But the costs here are hard to calculate for two reasons. First, the solar manufacturing capacity in India is not adequate to meet the need for installation; India will have to depend on international imports to meet the 100 GW target. Second, yet, the Indian manufacturers are keen to export their product for better return; in 2013-14, India exported solar modules worth US\$270 million, up from US\$107mn in the previous year.³⁰⁹ Given this context and growth, it seems domestic manufacturers are not vulnerable as it has been claimed. Yet, there is need for in-depth analysis of the costs and benefits of import dependency in solar industry and how it will affect Indian industries and foreign reserves.

c. Land Acquisition

Land being a scarce resource in India and solar being land-intensive, land acquisition for solar development is a complex and crucial issue. The process of land acquisition is complex, mired with several clearances and a time consuming process that might unnecessarily delay the projects and increase the cost for solar developers. However, the national policy is silent of land acquisition. The policy does not offer any kind of support or preference in this area for the nascent industry. Though land is a state subject and regulated by the state government, there has been a debate on developing central guidelines and signals on land acquisition for industries of national interest (like highways, Special Economic Zones, etc.). Solar energy, for its future potential in alleviating India's energy poverty, merits to be considered for inclusion. Although the recent changes in land regulation offered an opportunity to make favourable provisions for solar projects, the LARR Ordinance 2014 does not have any such provisions.

On the other hand, the Gujarat state policy have paid well attention to this subtle and yet complex externality. Gujarat has endeavoured to ease this aspect by providing ready to use solar parks that have all required infrastructures.³¹⁰ The developers have a choice to use the solar park or procure other lands. The experience has been mixed. Many respondents pointed out that being first of its kind, the land in solar parks were expensive and cost about Rs0.1 crore per MW, about 10 percent of the project cost then. On the other hand, those who procured land on their own incurred half the cost. Although, the cost of solar park lands appear to be expensive, solar park lands offer other benefits like ease of access and ready to use infrastructure. We discuss these costs below in the case study (Box 3). Moreover, there

seems to be a realisation on expensiveness of solar park land. The Solar Energy Corporation of India (SECI), the nodal agency for developing solar parks at national level, claims that the costs will be brought down to half (Rs0.5 crore per MW) with the new solar parks being developed. Several states are participating in the new solar park development.

d. Evacuation Infrastructure

Evacuation infrastructure is another important aspect of solar energy development. While installation of a solar plant is done in a limited time period of about six months, installation of the evacuation infrastructure takes longer time, up to a year. In that case, the plants stay idle for six months while incurring the operating and maintenance costs. This in turn is estimated to raise the cost of the project by 2-3 percent.

Gujarat has been partly successful in providing a solution by ensuring pre-installation of evacuation infrastructure in the solar parks. As the solar parks take off at national-level, this issue may get addressed.

e. Access to Finance Market

At the beginning, the finance market remained conservative to investment in solar energy. Some companies could access finance building on their financial credibility or tying up with any other credible establishment. But gradually the finance market has opened up to investment in renewable energy in general and especially solar. Yet, none of financing institutions, both in public and private sectors, has a precise lending portfolio for the solar energy or renewables in general. The Box 3 provides the available debt instruments to solar developers in India and their limits.

Box 3: Debt Instruments for Solar Developers

- **Local Currency Loans:** Debt financing for solar projects in India is predominantly provided through local currency term loans by financial institutions. In most cases, the borrowers guarantee the loan repayments by providing a full or partial guarantee from their existing asset base. The major limitations of these financing are high interest (12-15 percent), short tenure (less than 10 years), floating interest rate and requirement for guarantee. Financers define their sector limits and renewables are covered under the power sector. As most of the financers are approaching their power sector limits, there is limited finance available for solar, renewables in general.
- **Foreign Currency Loans:** Foreign currency loans are provided by development banks, EXIM banks and international banks. Though these loans have low interest rate (3-6 percent) and longer tenures (10-18 years), they come with exchange rate fluctuation risks. Moreover, some lenders mandate partial or full hedging of the debt component, adding another 3-6 percent to the cost of the loan. Adding all the costs, the cost of foreign currency loans remains nominally lower than local currency loans; yet, the longer tenure makes them more attractive.
- **Supplier Credit:** Some suppliers extend credit, limited to the value of the equipment supplied by them. The terms, however, depend on the negotiation between the borrower and the supplier. Typically, these credits are extended for the construction period and on commissioning, substituted with a term loan.

- *Construction/Bridge Finance:* As construction phase is associated with highest risks, term loans raised pre-construction entail higher interest. To avoid that developers use short-term loans from private NBFCs and commercial banks to fund construction phase. In some cases, this bridge finance is converted to term loans post commissioning.
- *Take-Out Finance:* It is a common method of financing operating assets. Once the project starts operating commercially, and risks are lower, the developers refinance these loans to get better terms, such as higher debt-equity ratio, lower interest rate, and longer loan tenure.
- *Lease Financing:* It is commercial arrangement between the lender and the developer, where former purchases the generating equipment and other components and leases them to the latter. In India, the NBFCs offer such lease financing. Although the banks are allowed, they do not have any significant presence.

Considering the foreign currency loans are on a declining trend, the debt instruments available to solar developers are expensive, short term and limited. As discussed earlier, these limitations of finance has led to 28 percent higher price of solar energy in India compared to the US and Europe. Moreover, it was also pointed out that given the short term tenure of debt and unpredictable revenue realisation, existing projects may not repay the debt on time and in that case, they will have to refinance the project to continue operations. If it happens, the lifetime cost of projects will increase reducing the profitability of developers and the solar market might collapse.

Existing finance would clearly fall short of meeting the required investment of US\$100 billion for a solar target of 100 GW by 2022. Yet, on access to finance, both the national and state policies remain silent. However, the Gujarat policy, by addressing some of the externalities, seems to improve bankability of the projects. The central government has recently sought participation of foreign companies, who may leverage foreign capital. However, the government needs to recognise solar (and other renewables) as a priority industry and seek the public finance agencies to provide certain amount of priority lending. At the same time, innovative approaches can be taken up to generate funds for solar energy in domestic market. In the following Chapter, the opportunities will be discussed.

f. Revenue Viability

Last, but most important is the revenue viability of solar projects. While preferential tariff may indicate a stable return on investment, it does not guarantee revenue realisation. Considering the fact that major buyers of solar powers are financially insolvent state utilities, there is higher uncertainties on revenue realisation.

On the other hand, as solar power is expensive compared to its conventional counterpart, there is a need to push it in the power market. Realising the need, the Government has introduced renewable purchase obligations for each utility, but it is hardly complied with. RPO has a dedicated component for solar procurement that is required to progressive rise to three percent of total power procurement by 2020. A Greenpeace study suggests that only seven states in India could comply with their RPOs in 2012-13.³¹¹ Consequently, the demand for solar energy has not built up.

Although both policies are silent on this aspect, the Electricity Regulatory Commission in Gujarat has been proactive in enforcing the RPOs and mandating payment of dues on monthly basis. Solar generators in Gujarat are paid their dues on 7th of each month, while the worse performing states take up to 14 months for clearing the dues. This, in fact, has been a major reason for flourishing of solar industry in the states. This needs more of regulatory proactiveness; the SERCs can play an important role here by mandating timely payment of solar dues, as the GERC has done.

However, it is hard to calculate the cost of delay in revenue realisation owing to its unpredictability. Moreover, it will also depend on the share of debt funding. If we assume a project has raised 60 percent of the cost through debt funding (remaining 40 percent through equity) and it has to bear with an average three months delay in receiving the power bills, the power producer has to pay additional interest on debt in the range of 2-3 percent per annum. If timely payment of power due can be ensured, as it has been in Gujarat, the effective interest on debt could be reduced by 2-3 percent. Without any change in debt tenure, in our estimation, 2-3 percent interest reduction on the debt could bring down the cost of solar power by at least five percent.

Table 57: Comparison of NSM and GSSP: Incentives, Opportunities and Hurdles

Indicators		Gujarat State Solar Policy	NSM
Nature & Scope	Capacity limit per project	5 MW (Min)	10-100 MW (Individual Project cap 50 MW)
	Type of Use	For self-use or sale of power to grid/sale to third party. Captive use is not allowed.	–
	Bank Guarantee (BG)	<ul style="list-style-type: none"> Rs50Lakhs/MW at the time of PPA signing with Distribution Licensee BG to be refunded if the developer commissions the project in time as per PPA 	<ul style="list-style-type: none"> Earnest Money Deposit of Rs20 Lakh/MW along with RfS. Bid Bond as per Clause 2.7 (d) along with RfP bid (if applicable) Performance BG of INR 30 Lakh/MW at the time of signing of PPA
Investment Incentives	Viability Gap Funding (VGF)	None	Based on reverse bidding. 30 percent of the total project cost (up to a maximum of Rs2.5 crores per MW), whichever is lower (Phase II)
	Levelised Tariff	MW Scale: Rs8.97 (Without AD) and 8.03 (With AD) kW Scale: Rs10.76 (Without AD) and 9.63 (With AD)	Rs5.45 per kWh-25yrs. Rs4.75 per kWh (With AD)

Indicators		Gujarat State Solar Policy	NSM
Investment Incentives	Support to Off-grid Solar PV applications	None	Rs90/Wp (With battery storage) INR 70/Wp (Without battery storage) Soft loan @ 5% p.a
	Tax Holiday	None	10 years with MAT of 18.5%, which can be set off with income tax after ten years
	Depreciation	Developer free to choose between Accelerated or Custom Depreciation Method-Feed-in-Tariff for those using accelerated depreciation lower	Can claim 80% accelerated depreciation in the first year of installation
Revenue Incentives	Feed-in-Tariffs (FiTs)	MW scale: 8.35-12yrs, 7-13yrs (With AD); 9.42-12yrs,7.50-13yrs (W/o AD); KW scale: 9.63 (With AD), 10.76 (W/o AD)	Discontinued in Phase II
	Solar Purchase Obligation (SPO)	SPO target is 3%, by 2022. Progressively raised from 0.25% in 2010-11 to 1.25% in 2014-15	National target: 3% by 2022. No restriction on fixing higher SPO at state-level
	Sharing of CDM benefits	IPPs will pass on 50% of the gross benefits of CDM to the Distribution licensee with whom PPA is signed	-
Financial Externalities	DCR	Not required	375 MW out of the 750 MW allocated for DCR. (50%)
	Grid Connectivity	Power by the SPG to be injected at 66 kV. Evacuation facility from the solar substation/switch yard to GETCO substation to be approved & laid by GETCO.	Interconnection STU @ voltage level of 33 kV or above-Construction the transmission line from power plant upto 132/33 kV by STU
	Land Acquisition	Solar Parks created for policy allocation	None
	Net Metering	Available. Tariff-Rs11.21/kWh and 11.78/kWh	
Operating Costs	Wheeling Charges	As determined by GERC from time to time	No provision
	Electricity Duty	Exemptions	No provision
	Cross-Subsidy Charge	Not applicable for open access obtained for third party sale within the state	No provision

Indicators		Gujarat State Solar Policy	NSM
	Excise & Custom Duties	Prerogative of Central Government	Exemptions on all solar and micro/mini grid power plants.

Box 4 below provides a case study of a solar developer who developed two projects simultaneously: One under the NSM in Rajasthan and one under the GSSP in Gujarat. The case study provides the costs incurred in each segment of development and supports offered by the respective policy frameworks.

Box 4: Comparison of Costs and Experiences under NSM & GSSP
<p>Here, we present the experience and costs of a solar developer who has developed projects simultaneously under the NSM in Rajasthan and GSSP in Gujarat.</p> <ul style="list-style-type: none"> • Project Cost: The overall cost for 1 MW capacity installation was Rs9.8 crore under NSM and Rs7.4 crore under GSSP. Though time delays and revenue losses are costs to the solar power developers, those costs have not been included in the overall cost factor. The major factor for the cost difference was the higher cost of domestic panels used in the NSM project. Yet, other externalities also contributed to the cost escalation in NSM project. • Land Acquisition: The solar developer went for private land in both the cases, though there were solar park facilities in both the states. The cost of land was almost equal in both cases: Rs0.8 crore in Rajasthan and Rs0.75 crore in case of Gujarat. But the process of land acquisition took nine months in Rajasthan, while it took only three months in Gujarat for the enabling policies in the state. The developer, however, does not claim any financial loss as not much was invested before land acquisition. But the delay in energy production by six months has some welfare loss for those who got energy access from the plant. • Domestic Content Requirement: It happens to be the major costs factor in the process. While the same developer had access to imported panels for GSSP project at Rs36 per watt, it had to spend Rs44 per watt for the NSM project, about 22 percent higher costs. • Evacuation Infrastructure: For the GSSP project, the evacuation infrastructure was ready by completion of the plant installation. The whole installation was provided by state agency without any cost to the solar developer. However, for the NSM project, the developer had to wait for five months after the plant installation to get access to the grid. The developer was also required to put up transmission infrastructure for some distance that had a cost of about Rs0.05 crore per MW. Due to the five months delay in putting up the evacuation infrastructure, the developer had to bear a revenue loss of about Rs0.35 crore per MW (at Rs0.07 crore per month/MW). Moreover, this has an unaccountable welfare cost to the project beneficiaries, who could have benefitted five months earlier.

- **Cost of Finance:** The project developer has accessed debt for both the projects from different sources. Based on bankability of the project, the developer pays varying interest rates for both the projects. In case of the GSSP project, the interest rate is 13 percent per annum, while it is little high at 15 percent per annum in case of NSM project. A major driver in deciding the bankability of project, as claimed by the developer, was concerns over the quality and reliability of domestic panels.

In case, a project is based on full debt (the developer did not disclose the amount and source of debt finance), the cost of additional 2 percent interest could cost about Rs150,000 a month for 1 MW capacity.

- **Financial Incentives:** The NSM project received a Viability Gap Funding (VGF) worth Rs2.17 crore per MW. However, the support is not adequate to compensate for additional costs involved in NSM project and the lower revenue guaranteed. GSSP does not offer any such capital incentives and
- **Tariff and Revenue Realisation:** The Gujarat State Solar Policy (GSSP) project received a levelled tariff of INR 13.30 per unit, while the NSM project receives a levelled tariff of Rs8.33 per unit. As claimed by the developer, given the production uncertainties, the payback period for GSSP be would be 12-15 years, while the NSM project would take more than 20 years out of the plant life of 25 years.

In terms of revenue realisation, again Gujarat is a better performer by ensuring monthly payment to solar power producers. In case of Rajasthan, the payment schedule has been erratic, with maximum delay of seven months. Delay in payment has a cost to the power producers as it delays interest and repayment schedule. Though the solar developers claim to have paid additional interest charges for this, none of them disclosed the modalities. However, timely payment of power bills to producers is beyond the scope of policies; rather, it requires regulatory proactiveness.

Recommendations and Policy Alternatives

Over last few years, the solar energy industry has evolved in India, though with varying experiences at state level, and now ready to take a stride forward. Now that the central government has raised the solar target by five times, it is time to consolidate the policy framework for solar energy promotion and provide enabling ecosystem for private sector investment and participation. We need to draw insights from state experiments and experiences to set and pursue a national agenda for solar energy promotion. In this section, we provide some policy recommendations and alternatives to better coordinate and facilitate solar energy development. The Table 58 provides a summary of the recommendations with an indication of the concerned implementing agency. Given that the sector does not have any specific regulation, and it is unviable to have regulations until the technology matures and stabilises, our aim is to consolidate the policy framework for better private sector participation and greater consumer welfare. The measures suggested here are more directed towards distributing the existing costs and funds better to improve benefits.

Reliability of Revenue Flow: The major concern and driver for any private investor in any sector is the expected return on investment, which has been uncertain in case of solar. As a first step, the government must devise a method to ensure predictable and reasonable return on investment. A combination of accelerated depreciation and generation based incentive, like preferential tariff, would be most acceptable to the private players, as currently provided under the GSSP. While preferential tariff would ensure sustained and stable return over the plant life, accelerated depreciation would allow the developer to clear off the debt faster. The power procurers might be in a disadvantageous position by losing the benefits of competitive pricing. But the developmental and social benefits in form of energy access, regional development and job creation³¹² will offset those costs. If the preferential tariff is calculated in regular intervals it will not add much cost to the buyers; rather, it will enable the stable and reliable players to enter the market. In long run, competitive presence of bigger player might promote technological innovation and cost reduction. As the incentive is linked to generation, it will also encourage the power producers to improve their plant load factor and produce more, which in turn will reduce the need for capacity addition and related costs. Moreover, if solar achieves grid-parity in 2017, as predicted, the price will soon stabilise.

In addition to pricing, what is important is timely payment of dues. Though India has set up an RPO mechanism to ensure a better market for renewables including solar and have provisions for compliance and penalty for non-compliance, it is rarely enforced across states. Enforcement of RPO provisions is a regulatory prerogative. The SERCs are required to strictly follow the RPO targets and ensure timely payment of solar dues. As discussed earlier, ensuring timely payment of power dues will bring down the cost of solar power by at least 5 percent. Considering the lowest solar tariff in India is at Rs6/kWh³¹³, timely payment of dues would bring it down to Rs5.70/kWh.

Addressing Finance Challenge: Though the financing sector has been opening up for renewable energy investment, the finance portfolio is still limited and costs involved in the process are too high. While many countries, including China, have been providing soft loans for solar energy development, the rate of interest on renewable finance remains too high, in the range of 12-15 percent. There is a need to set up a dedicated financing agency to finance

renewable energy, including solar, at low interest rate. Existing institutions like Indian Renewable Energy Development Agency (IREDA) could take up the role. At the same time, current capital subsidies could be redirected to subsidise interest rate, without putting any additional burden on the public finance. In addition, part of the National Clean Energy Fund, that has been unutilised so far, can be utilised for this purpose. Moreover, considering the push required for a nascent sector, solar should also be included in the priority funding sectors.

In addition, the government need to come out with innovative financing instruments to reduce the interest rate and increase loan tenure for solar developers. There are multiple instruments that could be adopted; the prominent ones include government bonds, infrastructure debt fund, partial credit guarantee and partial risk guarantee. Considering the potential and transaction costs involved in other financing instruments, government bonds emerge as most comprehensive, cost-effective and feasible option. It also offers better potential to reduce the cost of solar development. The benefits of the same are discussed in the Box 5.

The central government periodically raises money from the domestic markets through issue of bonds to meet various government expenditure commitments. There is no precedent of using bonds to subsidise or support any particular technology or industry. However, this is a common practice in many other developing countries.³¹⁴ Given the significance of energy crisis and importance of solar energy, such an innovative approach is a prerequisite to raise the required investment for ambitious 100 GW solar installed capacities.

Box 5: Government Bonds

The most feasible way that the government can provide concessional finance to solar developers is to raise money through a domestic issue of bonds and directly on-lend the proceeds to solar projects. Since the government holds the highest credit rating in the domestic market, it can raise money at the lowest possible rate of interest. The government can pass the benefit to the borrowers by lending at the same rate or at a minimum required margin. In addition, the government can also provide a fixed interest rate as it also raises money at a fixed rate.

In the present context, the interest rate for domestic solar financing ranges from 12 to 15 percent per annum. The government has the ability to borrow at an interest rate of as low as 7.8 percent. If the government finances solar projects through the proposed dedicated funding agency at a rate of minimum margin charged by sector-focussed public financing agencies (like Power Finance Corporation), the interest rate will come down to 11 percent and loan tenure could be extended up to 20 years.

Compared to a median interest rate of 13 percent and less than 10 year term in prevailing finance market, 2 percent point reduction in interest rate and 20 year tenure will reduce the solar power cost by 10 percent. If this model is adopted, the solar power price will drop from reduced price of Rs5.70/kWh to Rs5.13/kWh, almost at par with the cost of imported coal fired power. Under this model, the state does not have to bear any transaction cost, although have to share the risk factor, i.e. credit risk with respect to default on interest and principal repayment obligations by the borrowers – the solar power producers. However, the reduced cost of finance is expected to raise viability and creditworthiness of borrowers, thus reducing the credit risk.

In addition, the model is expected to ensure benefit in terms of other developmental and institutional benefits.

However, the state may absorb the transaction costs (administrative and institutional expenses) and lend the proceedings at the borrowing rate of 7.8 percent interest. In that case, the cost of solar power will drop down by about 25 percent.

Easing Land Acquisition: While the new government at centre has been pushing for solar parks to ease the land issue³¹⁵, there is a need for further efforts. In addition to solar parks, the states need to create land bank for solar projects and allow leasing of both government and private lands for solar energy projects. At the same time, the state governments might also consider to exempt duties on sale of private lands for solar projects. This will help the solar developers to reduce their hassle and costs. Although the duties and taxes on land sale vary across states, on an average it contributes to 7-10 percent of the land cost. The exemption will reduce the overall project cost by at least 0.5 percent and cost of solar price correspondingly. As the land price varies across states and location, it would be difficult to calculate the exact benefit. Yet, assuming the cost of private land for 1 MW capacity is Rs0.3 crore, the benefit to the project developer would be at least Rs0.021 crore per MW. Though not a huge amount, but it will reduce the debt burden of large solar plants significantly and thus the project risks.

Moreover, by making land acquisition easier, the state may help the project developers to reduce their risk and improve bankability of the project. These initiatives will not necessarily require addition institutional capacity or cost. Existing land agencies can facilitate pooling of a land bank at state-level, while the central pledge to support solar parks will bear the cost for infrastructure development. As most of the land used for solar projects is otherwise unutilised and therefore not traded, exemption of sale duties on land for solar projects will not affect existing state revenue. However, the state will gain from developmental outcomes from such projects. Government's current initiative to release canal tops for solar projects is a commendable development and may make land acquisition easier in future.

Grid Connectivity and Timely Evacuation: There is a need for faster development of evacuation infrastructure so that the solar plants do not sit idle for initial few months and lose their revenue. In addition the Green Corridor project might be expedited to benefit renewable energy projects including solar. The funding for evacuation infrastructure development might come from the National Clean Energy Funds. On time availability of evacuation infrastructure will not only improve timely availability of electricity but also will reduce the cost for project developers.

If any project has to wait for six months after completion to get grid connectivity, it may lose revenue of up to Rs0.42 crore per 1 MW capacity (see case study in Box 3), while paying interest on the debt. Readily available evacuation infrastructure could reduce this additional and often unforeseen cost. While these costs are not factored in determining the solar tariff, avoiding these would make the developers financially viable, reduce risks in the sector, and attract more private players.

Regulatory Proactiveness and Ease of Doing Business: there is a need for regulatory proactiveness to better facilitate solar energy promotion and private sector participation. As in the case of Gujarat, the wheeling and cross-subsidy charges might be relaxed on the solar power to bring down the cost of solar energy, which is a regulatory prerogative. Though it

will have marginal effect on sub-national power finance, it will help the sector by mitigating the need for expensive peak power, as more solar capacity added.

The state governments need to take few measures to ease the doing business experience for solar investors and developers. At present, there is no single source of basic information available to potential private players. With information ambiguity, several projects have got into deadlocks and stalled.³¹⁶ The governments might come out with an information sharing platform with basic details on solar irradiation, infrastructure facility, power demand, projects and power generation data. Running around many places for multiple clearances takes significant time and resources, in cases more than the time required to set up plants. Respondents pointed out that, in their worst experience, the company have spent more than a year in getting the clearances, while the plant has been set up in six months' time. There is a need to create a single window clearance facility for solar projects. In the last budget (2013-14), the government has exempted excise duty for renewable energy components, including EVA, backsheets, tempered glass and copper wires used in solar modules. The solar PV manufacturers had been questioning the inverted duty structure for imported solar components that attracted an excise duty of 12.36 percent at present, whereas the finished goods had lower duty or no duty at all. The move offers some respite to the manufacturers, whose cost of production might reduce in the range of 2-5 percent. This might bring down the cost of solar panels. However, the governments also need to put more emphasis on R&D in solar technology, which could be funded through the National Clean Energy Fund.

While some of the policy recommendations would require the state to incur some cost on physical and technological development and take innovative approaches to raise the funds. However, it will benefit the project developers by providing a better business environment and also will contribute to faster development and deployment of the technology. At the same time, the state and the end consumers will benefit from improved energy security, regional development and employment creation.

Meeting India's new ambitious solar target of 100 GW installed capacity by 2022 would require aggressive private sector participation and investment. Investments will get impetus only when there are long term guarantees on policy measures, if developers and investors are assured of enforcement of obligations and incentive schemes and if a fast and fair legal framework exists to protect investments. Along with the existing policies and initiatives, these are few steps in that direction.

Table 58: Broader Recommendations for an Enabling Policy Framework for Solar Energy Development

Major Policy Areas	Alternative Policy Arrangements	Implementing Agency
Return on Investment (To address high system costs and low revenues)	Provision for a combination of incentives, including accelerated depreciation and generation based incentives	MNRE, MoEF, NVVN <i>Have to be adopted at appropriate level- both the national policy and state policies</i>
Availability of Finance (To expedite and ease access to finance)	Establish a dedicated funding agency or consortium to provide low cost loans with long term tenure.	MoF, IREDA and other domestic financing agencies

Major Policy Areas	Alternative Policy Arrangements	Implementing Agency
	Include renewable energy within priority sector lending.	<i>Could be built into the national policy.</i>
	Redirect capital incentives (VGF) to reduce the interest on investment.	MNRE and MoP <i>The NSM need to be modified to adopt this provision.</i>
	Government Bonds to finance solar projects	GoI <i>A decision to be taken and adopted by the central government.</i>
Land (To ensure availability of land and rationalise costs)	Provision for exemption of duties on sale of land for solar plants. This has already been implemented in some states.	State governments as part of state solar policies <i>As land is a state subject, the state governments have to implement it. But the central government may issue policy guidelines.</i>
	Lease government land at concessional rates for project lifetime. Rajasthan has been successfully providing this incentive and have attracted significant investment.	State governments as part of state solar policies
	Create land banks for solar development. Even leasing of private lands can also be permitted.	State governments as part of state solar policies
Evacuation Infrastructure (To ensure on time access to power evacuation facility)	Faster development of evacuation infrastructure using the National Clean Energy Fund. Expedite the implementation of Green Corridor project.	MNRE, MoP, and REDAs
	Periodic public information sharing on detail roadmaps for existing and new substations in solar intensive areas.	MoP and State Nodal Agencies
	Exemption of wheeling and cross subsidy charges, as in Gujarat, can further reduce the price of solar energy.	SERCs
Demand for Solar Power (To ensure selling of solar power generated)	Specify a roadmap for RPO implementation and ensure compliance	SERCs and MoP
	RPO compliance could be further consolidated by integrating a RPO compliance mechanism to the prevailing	MoP and GoI

Major Policy Areas	Alternative Policy Arrangements	Implementing Agency
	legislation – The Electricity Act 2003	
Ease of Doing Business	Create and information sharing platform for project and power generation data	Solar Energy Coporation of India (SECI), Minister of New and Renewable Energy (MNRE), NVVM and Real Estate Developers Associations (REDAs)
	Establish single window clearance facility with time-bound clearances. This has been successful in the two best performing states- Gujarat and Rajasthan.	State Governments.
	Further, investment in R&D and training.	MNRE

Conclusion and Way Forward

1. Background

This study undertook an unique exercise of conducting regulatory impact assessments of regulatory instruments issued at different levels, viz. policies (NSM and GSSP), delegated legislations (EIA Notification and FCR) and to a limited extent, primary legislations (EPA and FCA). Not surprisingly, the report emerges with quite interesting findings.

Usually, delegated legislation is preceded by a primary legislation which, in turn, follows a policy document on the sector. This chronology offers an indication of development and complexity in a sector. For instance, the solar power sector, being in infancy, is governed by policies sans corresponding legislations, while coal and hydel power sectors have been in vogue for quite some time, and thus are regulated through specific rules/ notifications, which find their origin in, and are inextricably linked to, the primary legislations of respective sectors.

For this reason, this Chapter discusses conclusions and the way forward for coal and hydel power generation sector, separately from those of solar power generation sector.

2. Coal and Hydel Power Generation

As discussed in earlier Chapters, the objective of forest conservation and environment protection laws is to achieve sustainable development. Literature on regulatory governance suggests that agencies must have adequate tools to be able to achieve prescribed objectives.³¹⁷ The tools provided by FCA, FCR, EPA and EIA Notification to government agencies are in the form of screening applications for clearances, and monitoring compliance with conditions under the clearances.

The regulatory agencies must have adequate independence to choose tools most suited to the matter at hand.³¹⁸ The legislations have ensured this by conferring discretion on regulatory agencies to make clearances subject to such conditions and financial payments as they deem fit, with the purpose of managing and compensating the environment/forest damage.

Experience of regulatory governance has shown that grant of adequate tools and independence is necessary, but not adequate condition, to ensure effective regulation. The government agencies must have understanding and capacity to use appropriate tools, and the misuse of independence/discretion must be checked by putting in place adequate transparency and accountability mechanisms.³¹⁹

The study reveals that it is at this front that the legislations in India seem be failing. Adverse impacts of consequent sub-optimal regulation of sectors vouch for this. Inadequate capacity and accountability mechanisms have led to delays in decision-making on clearance applications. The study has projected a notional loss on account of such delays up to Rs8 lakhs/hour in hydel plants and Rs38 lakh/hour for coal plant. On yearly basis, the loss was estimated to be around Rs186 crore for a coal plant, and Rs182 crore for a hydel plant. The cost escalation on account on delay in commissioning for a coal plant was around INR 816 crore. In addition, the one-time financial levy imposed on hydel plants as a result of

unpredictable change in government regulation was estimated to be as high as Rs75 crore. Urgent steps are needed to prevent imposition of such costs and improving regulatory governance in India.

The following sub-sections briefly describe key conclusions in relation to coal and hydel power regulation in India and present a way forward to improve quality of regulatory governance.

2.1. Capacity constrains at regulatory agencies

As complexity increases in a sector, its regulations tend to become specific to address possible complicated scenarios. While such regulations tend to increasingly burden the relevant government/ regulatory agencies with the task of managing increasingly complicated sector, the failure to ensure periodic training and capacity building of officers to deal with such increase in complexity, tend to make the regulations infructuous.

The fundamental reason this is failure of legislations to envisage, and consequently put in place, adequate training and capacity building apparatus, while increasingly specifying expectations from government agencies. Such sub-optimal regulation increases costs on stakeholders without any consequential benefits, often resulting in regulatory failure.

For instance, as discussed in earlier Chapters, while the EIA Notification and FCR obligates the MOEFCC and other relevant authorities to process applications within specific time period, failure of the respective primary laws to ensure adequate technical and manpower capacity to deal with increased flow of applications hamper compliance with such specified time frames. Similarly, while the EPA authorises SPCBs to monitor compliance with conditions specified under the environment clearances, inadequate monitoring and supervisory capacity of SPCBs impedes enforcement. Adverse impacts of such sub-par implementation of statutory obligations, owing to capacity constraints, include imposition of the unfeasible and sub-optimal conditions/costs on project proponents, owing to lack of information about compliance with conditions imposed.

Recommendations

As a result, the study suggests adoption of statutory requirements to undertake periodic training and capacity review of relevant government/regulatory agencies. While one might argue that statutory requirements to conduct periodic training and capacity building might not be the best way to ensure adequate capacity, experience suggests that other informal modes to increase capacity and ensure enforcement have been ineffective.

Way forward

The stakeholders must be increasingly concerned about the policy-makers' failure to envisage the training and capacity needs to enforce legislative provisions and consequently ensure effective implementation. In this regard, it would be important to highlight the costs imposed on stakeholders as a result of capacity constraints at stakeholders, which could assist in generation of demand amongst stakeholders to take into account capacity considerations by policy makers, while development of legislations.

To ensure adequate capacity, facilitating cooperation between technical experts in the industry and relevant government departments at central and state level would be required. Simultaneously, as suggested in previous sections, steps would need to be taken increase manpower of government agencies at different levels. For this, engagement with policy-

makers and relevant government agencies, and showcasing of benefits expected from such increase in manpower and technical capacity, would be needed. In addition, necessary funds would need to be sanctioned (under the budget) to incur costs of capacity up gradation, for which, discussions with relevant government departments and ministries, including Ministry of Finance, would be required.

2.2. Abuse of discretion

In order to deal with increasingly complex and unpredictable situations, delegated legislations tend to confer excessive discretion on government/ regulatory agencies without corresponding accountability provisions. For instance, the government agencies are not statutorily required to provide rationale for imposition of conditions subject to which clearances are granted. Principles of regulatory governance teach us that discretion and accountability go hand in hand, and one without other is not advisable.³²⁰ While discretion sans accountability is often abused, the opposite precludes agencies/regulators from achieving intended objective, and consequently being unjustifiably prosecuted.³²¹ For instance, expert agencies constituted to provide recommendations on applications for environment and forest clearances, at times, recommended imposition of unreasonable conditions, without adequate justification, and were often not able to provide their recommendations within the prescribed time period. This often leads to uncertainty and lack of predictability.

While delegated legislative instruments are required to be laid before the Parliament,³²² and are subject to scrutiny by Committees on Subordinate Legislations,³²³ they are not subjected to intense parliamentary scrutiny, consequently carrying the risk of prescribing provisions that impose excessive costs on stakeholders, often not compensated by the intended benefits, resulting in sub-optimal regulation of the sector.

Recommendations

As a result, the report suggests need of statutory provisions requiring reasoned and transparent decision making, and greater disclosures in annual reports and related statements. Disclosures with respect to non-compliance with statutory time limits, reasons for the same, and proposals to prevent non-compliance in future, have been suggested. This is expected to ensure transparency, certainty and predictability in decision making.

Way forward

Generation of demand from civil society for ushering greater transparency and accountability of regulatory/ government agencies would be critical. In addition, the government must learn from international best practices of transparency and accountability to devise appropriate mechanisms/ disclosure formats in India, for improving the quality of information disseminated in public domain.

To this end, knowledge support would be required to be provided to such government agencies, from think tanks and international groups. Stakeholder engagement would also be necessary to customise international best practices, and devising of practices suitable for the country. Civil society groups having the capacity to undertake such stakeholder interaction and provide knowledge support to the government would need to be engaged with, in this regard.

2.3. Periodic review of impact of regulatory changes

As observed during the study, while statutes have been updated from time to time with the objective of improving regulatory quality, failure to review if such objective was met, often resulted in sub-optimal regulation. For instance, the Accreditation Scheme was introduced to check the tendency amongst EIA consultants to prepare sub-standard reports. However, it has been unable to check this menace. Similarly, the EIA Notification expanded the scope of public consultation as it existed prior to its introduction, with the objective of ensuring effective public involvement, however, failure to review the effectiveness of consultation mechanism, resulted in persistence of problem of sub-optimal consultation.

Recommendations

Consequently, statutorily prescribed periodic review of legislations is necessary to ensure their vibrancy, dynamicity and enabling them to respond to the changes in social, political and economic landscape. As this report suggests, use of RIA as a tool to ascertain costs and benefits of existing provisions, and their consequent utility, with involvement of public, could be game changer in development and review of legislations.

The RIA could initially be undertaken by relevant government agencies involved in implementation of legislations. However, going forward, a dedicated centralised agency specialised in undertaking cost-benefit analysis and evaluating impact of legislative instruments would be needed. Such body could be attached to recently constituted National Institution of Transforming India (NITI) *Aayog*.

Way forward

Various expert committees have already recommended adoption of RIA in India. These include the erstwhile Planning Commission of India in its report on Business Regulatory Framework, Damodaran Committee, Financial Sector Legislative Reforms Commission, et al. In fact, steps are underway for adoption of RIA in financial sector regulation.

This report has generated evidence of utility of RIA in India. The findings of this report, along with recommendations of various expert committees, would need to be disseminated amongst stakeholder community to demonstrate benefits of RIA. In addition, engagement with policy-makers and senior government officials would be necessary to provide legal sanctity of RIA in India, at the earliest.³²⁴

While all the above provisions are expected to impose substantial costs on government, these are expected to be outweighed by projected benefits, such as, significant improvement in economic governance process, including ensuring transparency, accountability and reasoned decisions.

3. Solar Power Generation

Policies are usually statements of intent, with limited legal sanctity. However, without a corresponding legislation, legitimacy of policies increases, being the sole document to guide behaviour of regulated entities.

As discussed in previous Chapters, the NSM sets an ambitious target for solar power generation in the country. It is increasingly becoming evident that in addition to setting targets, government must also lay down the processes through which it intends to achieve the targets it sets for itself, to enable policies to achieve stated objectives. This is more important

when the policy is the sole government instrument, not accompanied by corresponding legislations and the regulations. The study attempts to fill this vacuum while reviewing the effectiveness of NSM provisions, and making recommendations with respect to process of achieving the target.

On the basis of reviewing the NSM, it urges the government to learn from the best practices of solar power development, and ensure reliability of revenue flow for power producers by providing a combination of accelerated depreciation and generation based incentive.

To aid in achievement of target of manifold increase in solar power generation, the government would need to work on ensuring adequate finance, land, grid connectivity and make doing business easier. In the literature on competitiveness, these comprise specialised factor conditions, related supporting industries, and microeconomic conditions that guide firm strategy, structure and rivalry.³²⁵ In other words, laying down the right policies is only a part of the solution, and the government will need to work towards establishing enabling regulatory environment, by improving its competitiveness, for operation and implementation of policies adopted.

While this might impose significant costs on government, the consequent benefits in terms of increased solar power production and greater access to consumers, is expected to outweigh the costs.

4. Conducting RIA

In addition of providing relevant recommendations to ensure achievement of objectives of policies and legislations in electricity generation sector, this report offers important lessons for undertaking RIA. Some such critical lessons are listed below:

- Correct identification of the problem which needs to be addressed is a necessary starting point for conducting RIA. Equally significant is to select the legislations on which RIA needs to be conducted.
- Data collection and analysis, understandably, are most critical aspects of RIA. Stakeholders would need to be convinced about confidentiality of data, and benefits they could expect from the RIA exercise, should they be required to part with relevant data and information, necessary to conduct RIA.
- Interactions/consultations with different stakeholder categories, and keeping a healthy stakeholder mix, is absolutely essential, to comprehensively capture concerns of different stakeholders, ensure unbiased and impartial assessment, and prevent regulatory capture.³²⁶
- While recommending cost effective alternatives is necessary, ensuring that benefits of the alternatives are expected to, and in practice, outweigh the costs is much more important, for sustainable improvement in regulatory governance and
- There is no one-size-fits all RIA model and the RIA process has to be customised on the basis of ground realities, and availability of information. In addition, one must realise that RIA is not a panacea to solve all the problems, and must be treated as a part of a comprehensive package of regulatory reforms.

To ensure uptake of RIA, political will is necessary. The policy-makers must appreciate the benefits of RIA and actively work towards adopting the same. To enable institutionalisation of RIA, training and capacity building of relevant government institutions to undertake in-depth RIA would be required. Building such capacity and conducting periodic RIAs would put significant strain on exchequer. However, the consequent benefits of improved regulatory governance and imposition of minimal costs on stakeholders to achieve regulatory objectives are expected to outweigh the costs of institutionalisation and conducting RIA.

Endnotes

- 1 http://articles.economictimes.indiatimes.com/2012-08-23/news/33342429_1_red-tape-fiscal-deficit-business-growth accessed February 02, 2015
- 2 Ibid
- 3 Regulation (2009), Merriam-Webster Online Dictionary, www.merriam-webster.com/dictionary/regulation
- 4 Richard A .Posner (2004), ‘Theories of Economic Regulation’, Working Paper, No. 41, Center for Economic Analysis of Human Behaviour and Social Institutions
- 5 Vijay Vir Singh *et al* (2008), ‘Regulatory Management and Reform in India’, Background Paper for OECD, CUTS International
- 6 Auby J B and Perroud T 2013, Regulatory Impact Assessment, Global Law Press, p. 21
- 7 <http://www.archives.gov/federal-register/codification/executive-order/12291.html>, accessed December 19, 2014
- 8 <http://www.nytimes.com/1981/11/07/us/reagan-order-on-cost-benefit-analysis-stirs-economic-and-political-debate.html>, accessed February 11, 2015
- 9 http://planningcommission.nic.in/aboutus/committee/wrkgrp12/wg_brf2103.pdf, accessed February 09, 2015
- 10 Jacobs. S, ‘RIA: Benefits and Application’, Jacobs and Associates
- 11 Starnova. K (September 2007), “Mapping of ex-ante Policy Impact Assessment Experiences and Tools in Europe”, World Bank Group
- 12 http://www.cuts-ccier.org/pdf/Ex-post_Regulatory_Impact_Assessment_in_Emerging_Economies.pdf, accessed February 01, 2015
- 13 Cut EU red tape: One year on November 2014, UK Government, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/371088/Cut-eu-red-tape_one-year-on.pdf, accessed February 09, 2015
- 14 OECD (2012), ‘Energy’, OECD Green Growth Studies, OECD Publishing
- 15 World Energy Outlook 2014, available at www.worldenergyoutlook.org
- 16 ToI (2014): Want to start power plant? Go, get 143 approvals, <http://timesofindia.indiatimes.com/business/india-business/Want-to-start-power-plant-Go-get-143-approvals/articleshow/37287577.cms>
- 17 Central Electricity Authority, *Executive Summary of the Power Sector*, Government of India, October 2014, available at http://www.cea.nic.in/reports/monthly/executive_rep/sep14.pdf, accessed on December 08 2014
- 18 Central Electricity Authority, *Executive Summary of the Power Sector*, Government of India, September 2014, available at http://www.cea.nic.in/reports/monthly/executive_rep/sep14.pdf, accessed on November 17, 2014
- 19 Ibid
- 20 Ibid
- 21 Ibid
- 22 Tirora TPP, Phase II (Unit 3) by Adani Power Limited
- 23 Supra note 17
- 24 The northern region comprises Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan, Uttar Pradesh, Utrakhand, and Chandigarh.
- 25 Supra note 17
- 26 Central Electricity Authority, *Load Generation Balance Report: 2014-15 – Anticipated Power Supply Position in the Country during 2014-15*, Ministry of Power, Government of India, May 2014
- 27 Government of Rajasthan, Rajasthan State Action Plan on Climate Change, December 2011

28 Central Electricity Authority, *Executive Summary of the Power Sector*, Government of India, September 2014, available at http://www.cea.nic.in/reports/monthly/executive_rep/sep14.pdf, accessed on November 17, 2014

29 Supra note 17

30 Department of Energy, Policy for Promotion of Private Sector Investment for setting up of Power Generation Projects in the State of Rajasthan, as amended up to November 2010

31 Unit 2 of Kalisindh TPP, having capacity of 600 MW, being developed by RRVUNL is expected to be commissioned by January 2015

32 Also see, Central Electricity Authority, *Monthly Report on Broad Status of Thermal Power Projects in the Country*, November 2014, available at http://www.cea.nic.in/reports/proj_mon/broad_status.pdf, accessed on January 02, 2015

33 As on May 01, 2014, 21 projects were delayed by more than 12 months, due to pending clearances from MOEFCC. Of these 21 projects, six projects have reported cost overruns, Lok Sabha unstarred question no. 302, to be answered on July 11, 2014, and Lok Sabha unstarred question no. 2545, to be answered on July 25, 2014.

34 Shamshad *et al*, *Impact of coal based thermal power plant on environment and its mitigation measure*, International Research Journal of Environment Sciences, Vol 1(4), 60-64, November (2012)

35 Prayas Energy Group, *Thermal power plants on the anvil – implications and need for rationalisation*, April 2011

36 Mercury has the tendency for bioaccumulation as methyl mercury and thus enters into the food chain. Once released into the environment, mercury contaminates soil, air, surface and ground water.

37 UNEP, *Assessment of the Mercury Content in Coal fed to Power Plant and study of Mercury Emissions from the Sector in India*, UNEP Chemicals Branch, Geneva, Switzerland, February 2014

38 Goenka *et al*, *Coal Kills*, Greenpeace India *et al*, available at http://www.greenpeace.org/india/Global/india/report/Coal_Kills.pdf, accessed on December 31, 2014. Also,

39 World Bank, *India: Diagnostic Assessment of Select Environment Challenges: An analysis of physical and monetary losses of environmental health and Natural Resources*, Volume 1, June 05, 2013

40 Rajasthan Pollution Control Board, *State of the Environment Report for Rajasthan*, 2007, available at <http://www.rpcb.rajasthan.gov.in/rpcbweb/soer/ExsummSoER-1.pdf>, accessed on November 18, 2014

41 Department of Environment, *Rajasthan State Environment Policy*, Government of Rajasthan, 2010

42 Ibid

43 Article 51A of the Constitution of the India

44 United Nations Environment Programme, *Declaration of the Human Rights Conference on Human Environment*, 1972, available at <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97&articleid=1503>, accessed on November 19, 2014

45 Ministry of Environment and Forests, *National Environment Policy, 2006*, Government of India, available at <http://envfor.nic.in/sites/default/files/introduction-nep2006e.pdf>, accessed on November 19, 2014

46 Government of Rajasthan, *Rajasthan Power Sector Reforms Policy Statement, 1999*, available at <http://www.rajenergy.com/polstar99.htm>, accessed on November 19, 2014

47 Section 25 of the Water Act

48 Section 25(7) of the Water Act

49 Section 28 of the Water Act. Usually, the appellate authority is Secretary, Department of Environment of the State Government

50 Sections 63 and 64 of the Water Act

51 Preamble of the Air Act

52 Chapter II of the Air Act

53 Section 21 of the Air Act

54 Section 21(4) of the Air Act

55 Sections 53 and 54 of the Air Act

-
- 56 Section 3 of the EPA
- 57 Section 6 of the EPA
- 58 Section 15 of the EPA
- 59 Section 17 of the EPA
- 60 Rule 3 of the EPR
- 61 Rule 5 of the EPR
- 62 Item 2 of the EIA Notification
- 63 Item 5 of the EIA Notification
- 64 Item 4 of the EIA Notification
- 65 MOEF, Office Memorandum, *Guidelines for consideration of proposals for grant of environmental clearance Environmental Impact Assessment (EIA) Notification, 2006 and its amendments - regarding categorization of Category 'B' projects/activities into Category 'B1' & 'B2'*, 24 December 2013, available at <http://envfor.nic.in/sites/default/files/ia-24122013.pdf>, accessed on December 15, 2014
- 66 Item 8 of the EIA Notification
- 67 Item 10 of the EIA Notification
- 68 World Bank, *Doing Business: Measuring Business Regulations – Methodology*, available at <http://www.doingbusiness.org/methodology>, accessed on November 20, 2014
- 69 Association of Power Producers, *Key Issues of Consideration*, June 20, 2014. Also see, Sandeep Singh, *PSUs also faced environment ministry stonewalling*, The Financial Express, December 27, 2013. The article notes, 'While an aggregate of 1,474 projects received the clearance in 2009 and 2010, the number of projects that received the Ministry's nod in 2012 and 2013 came down to only 839, a drop of 43 percent'.
- 70 MOEFCC, *Projects pending in environment clearance*, Lok Sabha Questions, available at <http://164.100.47.132/LssNew/psearch/OREsult16.aspx?qref=6080>, accessed on December 9, 2014
- 71 Centre for Science and Environment, *Understanding EIA*, available at <http://www.cseindia.org/node/383>, accessed on December 10, 2014
- 72 The term 'sustainable development' was coined and defined by Brundtland Commission (formerly, World Commission on Environment and Development) (1987) as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs,' in its publication: Our Common Future. It laid the groundwork for Rio Declaration on Environment and Development (Rio Declaration) (1992) and establishment of the United Nations Commission on Sustainable Development (CSD) in 1992. Principle 17 of the Rio Declaration provides that 'environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.' The CSD was replaced in 2013 by the United Nations High-level Political Forum on Sustainable Development
- 73 As on May 1, 2014, 21 projects were delayed by more than 12 months, due to pending clearances from MOEFCC. Of these 21 projects, six projects have reported cost overruns, Lok Sabha unstarred question no. 302, to be answered on 11 July 2014, and Lok Sabha unstarred question no. 2545, to be answered on 25 July 2014. Also, 'the brief reasons for time overruns as reported by various project implementing agency are delay in clearances (land acquisition, Forest/Environment)...', Ministry of Statistics and Programme Implementation, *Project Implementation Status Report of Central Sector Projects costing INR 150 cr. and above, October-December 2013*. See also, Ministry of Statistics and Programme Implementation, 27th *Project Implementation – An Overview – July 2014*; Project Management Institute et al, *Study on project schedule and cost overruns*, 2013; Ram Singh, *Delays and cost overruns in infrastructure projects*, Delhi School of Economics, November 2009
- 74 NABET and QCI, *Scheme for Accreditation of EIA Consultant Organisations*, August 2011
- 75 Ministry of Environment and Forests, *Office Memorandum on Accreditation of the EIA Consultants with QCI/NABET*, December 01, 2009, available at http://www.moef.nic.in/divisions/iass/QCI_on_web.pdf, accessed on November 29, 2014. Also see Office Memorandum on the same subject dated June 30, 2011, available at <http://moef.nic.in/downloads/public-information/0m-30-07-2011.pdf>, accessed on November 29, 2014
- 76 The High Level Committee to review various Acts administered by MOEFCC (November 2014) also observed, 'there is overdependence on the information provided by the project proponents – it should be
-

-
- noted that in the current dispensation, the consultant is remunerated by the project sponsor, and has no incentive to bring out all the relevant facts, some of which might be adverse to the interest of the project proponent.’
- 77 Urmila Jha *et al*, *Health within EIA in the UK and India*, International Association for Impact Assessment, May 2013, ‘Findings also reveal that in India factors related to the economy and education are being more emphasised than the bio-physical factors. This might be owing to the sensitivity of many projects and the communities involved. It is interesting to note that Indian participants were concerned a lot about political consequences of incorporating health within EIA’.
- 78 Ministry of Environment and Forests, Office Memorandum regarding Name of Consultants to be shown along with the project proponents in the minutes of the EACs – instructions, March 17, 2010, available at http://www.moef.nic.in/divisions/iass/Consultants_EACS.pdf, accessed on November 29, 2014
- 79 *Environment assessment is a joke, says Jairam; wants 3rd party EIA*, The Hindu Business Line, March 19, 2011, available at, <http://www.thehindubusinessline.com/governmentandpolicy/environmentassessmentisajokesaysjairamwants3rdpartyeia/article1553560.ece>, accessed on December 31, 2014
- 80 The order of MOEFCC in relation to reconstitution of expert appraisal committee of thermal power and coal mine projects under EIA Notification, June 14, 2010, available at <http://www.moef.nic.in/divisions/iass/Cir/OO-14-06-2010.pdf>, accessed on November 12, 2014, provides that recommendation for rejection will contain comprehensive reasons, but reasons seem not necessary in case of delay or imposition of conditions subject to which clearance is granted.
- 81 EAC members usually meet once a month
- 82 Item 8(ii) of the EIA Notification, 2006
- 83 Section 20 of the EPA
- 84 Srestha Banerjee, *Green clearances: Time for reform*, Down To Earth, June 15, 2014, available at <http://www.downtoearth.org.in/content/mr-modi-wish-us-happy-environment-day?page=0%2C3>, accessed on December 31, 2014
- 85 ‘Resource limitation also plays a significant role in explaining the lack of EIA implementation, particularly in the poorer countries where the concerned government agencies lack funds to regularly collect baseline data and information about the current state of their environment and natural resources. A lack of qualified staff in government agencies also hinders EIA implementation in the Mekong region.’ Jenifer C. Li, *EIA in Developing Countries: An Opportunity for Greater Environment Security*, Working Paper no. 4, USAID Foundation for Environment Security and Stability, 2008, available at <http://www.fess-global.org/workingpapers/eia.pdf>, accessed on 30 December 2014. Also, ‘Capacity, in terms of human, material and financial, still remains the biggest challenge to the effective institutionalisation and application of EIA in Africa. Political will and support are key to ensuring that countries overcome these challenges’, Economic Commission for Africa, *Review of Application of EIA in select African countries*, ECA/SDD/05/13, December 2005 (first printed), available at http://repository.uneca.org/bitstream/handle/10855/5607/bib.%2041846_I.pdf?sequence=1, accessed on December 30, 2014
- 86 Item 3(6) of the EIA Notification
- 87 Item 3(5) of the EIA Notification
- 88 Item 4(iii) of the EIA Notification
- 89 Item 7(III) of the EIA Notification
- 90 Item 7(III) of the EIA Notification
- 91 The High Level Committee to review various Acts administered by MOEFCC (November 2014) also observed, ‘A mechanism should be put in place to ensure that only genuine local participation is permitted.’
- 92 Clause 7(II) of the EIA Notification
- 93 Clause 7(III)(vii) of the EIA Notification
- 94 Arunabha Ghosh, *Clearing the air on clearances*, Business Standard, October 27, 2014
- 95 Srestha Banerjee, *Green clearances: Time for reform*, Down To Earth, June 15, 2014, available at <http://www.downtoearth.org.in/content/mr-modi-wish-us-happy-environment-day?page=0%2C3>, accessed on December 31, 2014, ‘the process of public hearings must be strengthened and made more transparent.’ Also, Centre for Science and Environment, *Strengthen Institutions, Reform Laws, and Streamline*
-

-
- Processes: Agenda for Improving Environmental Governance in India*, 2014. This problem seems to persist in majority of developing countries, ‘Majority of country laws apply public participation requirements to EIA across a wide spectrum with differing laws and practices from country to country. All too often public participation is too late in the process to be either meaningful or influential, and the process does not allow sufficient time to resolve disputes or conflicts that might arise. Citizens have resorted to the courts to force public hearing and comment opportunities that were denied them in order to influence the outcome of the EIA process. In other words citizen suits are often the means for enforcement of public participation requirements’, Cheryl Wasserman, *Enforcement of Environmental Impact Assessment Requirements*, Ninth International Conference on Environmental Compliance and Enforcement, 2011, available at http://inece.org/conference/9/proceedings/57_Wasserman.pdf, accessed on December 31, 2014
- ⁹⁶ The interventions of courts while worthy of applause, might impede capacity building in the pollution control agencies, and thereby to compromise the development of sustained environmental management in India, Lord Carnwath CVO, *Judges and the Common Laws of the Environment – At Home and Abroad*, *Journal of Environmental Law Advance Access*, May 19, 2014
- ⁹⁷ In many countries like the US, The Netherlands, Canada, the involvement of the public and their concern are addressed in the scoping exercise. ‘Countries in North America and Europe, at least for high impact projects, require formal public scoping processes, including consultation with stakeholders and interested public, to identify issues to be addressed in the EIA’, Cheryl Wasserman, *Enforcement of Environmental Impact Assessment Requirements*, Ninth International Conference on Environmental Compliance and Enforcement, 2011.
- ⁹⁸ The EIA policy in EU is codified in Directive 2011/92/EU of 13 December 2011 (2011 Directive), available at <http://ec.europa.eu/environment/eia/eia-legalcontext.htm>, accessed on December 25, 2014. The 2011 Directive has been amended in 2014 by Directive 2014/52/EU, with the objective of, *inter alia*, ensuring that environmental protection is improved, resource efficiency is increased and sustainable growth is supported, by simplification and harmonisation of procedures laid down by the 2011 Directive.
- ⁹⁹ MOEFCC, *Circular on consideration of projects of thermal power, steel sector etc. for environment clearance with sourcing of coal from dedicated coal blocks/ Coal India*, November 01, 2010, available at <http://www.moef.nic.in/downloads/public-information/Coal-blocks.pdf>, accessed on November 12, 2014
- ¹⁰⁰ MOEFCC, *Circular on consideration of projects of thermal power, steel sector etc. for environment clearance with sourcing of coal from dedicated coal blocks/ Coal India*, April 19, 2012, available at <http://www.moef.nic.in/downloads/public-information/notif-20042012.pdf>, accessed on November 12, 2014
- ¹⁰¹ MOEFCC, *Office memorandum on consideration of environment clearance for UMPPs linked to captive coal blocks*, 30 December 2013, available at <http://www.moef.nic.in/sites/default/files/OM%2030.12.2013.pdf>, accessed on November 12, 2014
- ¹⁰² MOEFCC, *Office memorandum on consideration of projects of thermal power, steel sector etc. for environment clearance with sourcing of coal from dedicated coal blocks/ Coal India*, 5 February 2013, available at <http://www.moef.nic.in/assets/om-050513.pdf>, accessed on November 12, 2014
- ¹⁰³ Arunabha Ghosh, *Clearing the air on clearances*, *Business Standard*, October 27, 2014
- ¹⁰⁴ Item 9.4 of Form 1 (Appendix I of EIA Notification)
- ¹⁰⁵ Prayas Energy Group, *Thermal power plants on the anvil – implications and need for rationalisation*, April 2011
- ¹⁰⁶ MOEFCC, Environment Impact Assessment Division, available at <http://envfor.nic.in/division/introduction-8>, accessed on November 29, 2014
- ¹⁰⁷ Item 10 of the EIA Notification
- ¹⁰⁸ Morrison-Saunders et al, *EIA Follow-Up*, International Association for Impact Assessment, July 2007
- ¹⁰⁹ CPR India, *A Framework of Principles for Environmental Regulatory Reform: Submission to the High Level Committee’s Review of Environmental Laws*, October 2014, available at http://www.cprindia.org/sites/default/files/CPR%20Submission%20to%20HLC%20for%20website_2.pdf, accessed on December 31, 2014
- ¹¹⁰ Nitin Sethi, *Government to cut red tape, start single application model for green clearances*, *Business Standard*, 18 November 2014, available at http://www.business-standard.com/article/economy-policy/less-red-tape-for-green-clearances-114111800033_1.html, accessed on December 31, 2014
- ¹¹¹ Centre for Science and Environment, *Strengthen Institutions, Reform Laws, and Streamline Processes: Agenda for Improving Environmental Governance in India*, 2014, ‘The six regional offices of MoEF&CC
-

-
- are supposed to monitor thousands of projects every year; they hardly monitor even one hundred projects. The entire compliance system is based on periodic submission of compliance reports by the project proponents. But MoEF&CC don't have manpower to even check these compliance reports. The incorrect or false information given in environmental impact assessment reports or the compliance reports often go unverified and offenders typically are never penalized. Worst still, these self-compliance reports are not put in the public domain... As far as projects cleared by SEAC/SEIAA at the state-level are concerned, there is no clarity on the monitoring authority, as this has not been specified under the EIA Notification, 2006'. Also, Sunita Narain, *Environment ministry is not a clearance ministry*, Mint, July 03, 2014, available at <http://www.livemint.com/Home-Page/h7WcvuOCG2mHRMJ4gsq3MI/Environment-ministry-is-not-a-clearances-ministry-Sunita-Na.html>, accessed on 03 January 2015, 'there should be a focus on monitoring because nobody monitors whether the companies are compliant with the conditions or not'; Deep Narayan Pandey, *Environmental Compliance and Enforcement: Evidence-Based Strategies for Pollution Control in India*, 2014; Kalpvriksh, *Calling the Bluff: Revealing the state of monitoring and compliance of environment clearance conditions*, September 2009, 'Less than 50 percent of the projects cleared in 2003 had monitoring reports generated by the MoEF.'
- 112 Srestha Banerjee, *Green clearances: Time for reform*, Down To Earth, June 15, 2014, available at <http://www.downtoearth.org.in/content/mr-modi-wish-us-happy-environment-day?page=0%2C3>, accessed on December 31, 2014, 'The government must provide resources, build capacity and reform institutions for better implementation of regulations. It must urgently strengthen SPCBs as they are the regulators on the ground.' Kalpvriksh, *Calling the Bluff: Revealing the state of monitoring and compliance of environment clearance conditions*, September 2009, 'At present MoEF has over 6,000 projects to monitor through 6 regional offices and a staff of two to four officers per office for the task.'
- 113 IIM Lucknow, *Evaluation of Central Pollution Control Board*, February 2010, '77 percent of Chairpersons and 55 percent of Member Secretaries in different State pollution control Boards are not qualified enough to hold the post.'
- 114 Websites of MOEFCC (<http://environmentclearance.nic.in/>) and Department of Environment, Government of Rajasthan (<http://environment.rajasthan.gov.in/EC.htm>)
- 115 *Online Submission and Monitoring of Environment Clearances*, MOEFCC, available at <http://environmentclearance.nic.in/>, accessed on October 15, 2014
- 116 *Details of Environment Clearances*, Government of Rajasthan, available at <http://environment.rajasthan.gov.in/EC.htm>, accessed on October 15, 2014
- 117 It is not clear if the statutory time limit mentioned in the EIA Notification is applicable to extension of environment clearance as well
- 118 Minutes of the 5th Meeting of Reconstituted Expert Appraisal Committee on Environmental Impact Assessment of Thermal Power and Coal Mining Projects dated 6-7 September 2013, available at http://environmentclearance.nic.in/Report/minutes_meeting.aspx, accessed on November 28, 2014
- 119 Minutes of the 28th Meeting of Reconstituted Expert Appraisal Committee on Environmental Impact Assessment of Thermal Power and Coal Mining Projects dated July 4-5, 2011, available at http://environmentclearance.nic.in/Report/minutes_meeting.aspx, accessed on November 28, 2014
- 120 Minutes of the 6th Meeting of Reconstituted Expert Appraisal Committee on Environmental Impact Assessment of Thermal Power and Coal Mining Projects dated December 05-06, 2013, available at [http://environmentclearance.nic.in/writereaddata/Form-IA/Minutes/0_0_1117122412141MoM6thEAC\(T\)Dec2013.pdf](http://environmentclearance.nic.in/writereaddata/Form-IA/Minutes/0_0_1117122412141MoM6thEAC(T)Dec2013.pdf), accessed on November 28, 2014
- 121 T Muruganandam and others v. MOEF and others, Appeal no. 50/2012, NGT decision dated November 10, 2014, available at <http://greentribunal.gov.in/Writereaddata/Downloads/50-2012%28PB-l%29%28APL%29-10-11-2014.pdf>, accessed on December 31, 2014
- 122 Such linkage was highlighted during stakeholder consultations
- 123 NABET and QCI, *Scheme for Accreditation of EIA Consultant Organisations*, August 2011
- 124 Letter to Environment Minister regarding concerns on QCI registration of EIA consultants, April 01, 2010, available at http://sandrp.in/otherissues/Ltr_to_Env_Minister_RE_Concerns_on_QCI_registration_of_EIA_consultants_April_1_2010.pdf, accessed on December 10, 2014
- 125 Minutes of 19th Meeting Of Reconstituted Expert Appraisal Committee On Environmental Impact Assessment Of Thermal Power And Coal Mine Projects, available at
-

-
- http://environmentclearance.nic.in/Report/minutes_meeting.aspx, accessed on November 28, 2014
- 126 T Muruganandam and others v. MOEF and others, Appeal no. 50/2012, NGT decision dated November 10, 2014, available at <http://greentribunal.gov.in/Writereaddata/Downloads/50-2012%28PB-I%29%28APL%29-10-11-2014.pdf>, accessed on 31 December 2014, 'Perusal of the additional conditions imposed by EAC as referred to at para 24 of the minutes indicates a casual approach as these conditions are extremely general in nature and do not prescribe extent or level of work required to be carried out and in the absence of any specifics, such conditions shall remain on paper without being effectively monitored for implementing the conditions and the mitigative measures required.' Also, EIA Resource and Response Centre, *eRc Journal*, Volume V, August 2010; Ritwik Dutta, *Cleaning up the environment mess*, Mint, January 14, 2014
- 127 MOEFCC, *Circular on seeking additional studies by EACs/SEACs during appraisal of the projects beyond the ToRs prescribed under EIA Notification*, October 07, 2014, available at http://moef.gov.in/sites/default/files/OM_EAC_SEAC_07_10_2014.pdf, accessed on November 29, 2014
- 128 The IA division was established around 1978-79 with the function of impact assessment of river valley projects. The scope of work of the IA division has been subsequently enhanced to cover other developmental sectors. Sectors currently within the scope of IA division are mining projects; industrial projects; thermal power projects; river valley, multipurpose, irrigation and hydro-electric projects; infrastructure development, miscellaneous projects; and nuclear power projects.
- 129 MOEFCC, *Introduction to EIA division*, available at <http://www.moef.nic.in/division/introduction-8>, accessed on December 15, 2014
- 130 MOEFCC, *Institutional Strengthening and Capacity Building*, available at <http://envfor.nic.in/divisions/iass/emcb/Chapter8.PDF>, accessed on December 15, 2014
- 131 Such as on carrying capacity, Ibid
- 132 Ibid
- 133 MOEFCC, Office Memorandum on Online Submission for TOR/EC proposals, 6 June 2014, available at <http://www.moef.nic.in/sites/default/files/Online%20ToR-EC%20Proposals.pdf>, accessed on November 29, 2014
- 134 Expenditure Budget, Vol I of the Government of India
- 135 Notes on Demands for Grants, 2015-2016, Expenditure Budget, Vol I of the Government of India
- 136 '...in June 2010, the MoEF appointed two new chairpersons of the Expert Appraisal Committee who had no background in environmental issues but rather represented the very industry they were supposed to regulate...', EIA Resource and Response Centre, *eRc Journal*, Volume V, August 2010. Also, Ritwik Dutta, *Cleaning up the environment mess*, Mint, January 14, 2014
- 137 Items 7 and 8 of order of MOEFCC in relation to reconstitution of expert appraisal committee of thermal power and coal mine projects under EIA Notification, June 14, 2010, available at <http://www.moef.nic.in/divisions/iass/Cir/OO-14-06-2010.pdf>, accessed on November 12, 2014
- 138 As revealed during stakeholder consultations
- 139 Details of Post, Pay band and Emoluments of Officers/Employees of Environment Department, updated as of April 2012, available at http://environment.rajasthan.gov.in/Utilites/Upload/RTI_Acts/Point_content_10_1.pdf, accessed on November 28, 2014, provides monthly remuneration of Senior Environment Officer of around Rs75,000 as of 2012. An annual increase of around 10 percent is estimated to arrive at the possible current remuneration.
- 140 Minutes of meetings of CEAC of thermal power and coal mine projects, available at http://environmentclearance.nic.in/Report/minutes_meeting.aspx
- 141 As revealed from minutes of meeting of the immediately subsequent committee
- 142 Also, order of MOEFCC in relation to reconstitution of expert appraisal committee of thermal power and coal mine projects under EIA Notification, June 14, 2010, available at <http://www.moef.nic.in/divisions/iass/Cir/OO-14-06-2010.pdf>, accessed on November 12, 2014
- 143 Government of Rajasthan, *Details of Environment Clearance*, available at <http://environment.rajasthan.gov.in/EC.htm>, accessed on November 20, 2014
-

-
- ¹⁴⁴ Also, office order of Pollution Control Board on account of conduct of public hearing, 05 July 2013, available at <http://www.ppcb.gov.in/Attachments/Notification%20and%20Office%20Orders/292officeorder.pdf>, accessed on December 10, 2014
- ¹⁴⁵ ‘The major concern expressed in public consultation is related to provision of employment to local residents followed by request for participation in local developmental activity as part of CSR. The concerns categorized as others are, concerns which are not related to the project, for which the public consultation is being conducted.’ G.V. Reddy et al, *Public Consultation: EIA – Indian Perspective*, Impact Assessment for Social and Economic Development, 34th Annual Conference of the International Association for Impact Assessment, April 8 – 11, 2014
- ¹⁴⁶ Also, EIA Resource and Response Centre, *eRc Journal*, Volume V, August 2010; Ritwik Dutta, *Cleaning up the environment mess*, Mint, January 14, 2014
- ¹⁴⁷ CPR India, *A Framework of Principles for Environmental Regulatory Reform: Submission to the High Level Committee’s Review of Environmental Laws*, October 2014, available at http://www.cprindia.org/sites/default/files/CPR%20Submission%20to%20HLC%20for%20website_2.pdf, accessed on December 31, 2014
- ¹⁴⁸ As on May 1, 2014, 21 projects were delayed by more than 12 months, due to pending clearances from MOEFCC. Of these 21 projects, 6 projects have reported cost overruns, Lok Sabha unstarred question no. 302, to be answered on July 11, 2014, and Lok Sabha unstarred question no. 2545, to be answered on 25 July 2014. Also, ‘the brief reasons for time overruns as reported by various project implementing agency are delay in clearances (land acquisition, Forest/Environment)..’, Ministry of Statistics and Programme Implementation, *Project Implementation Status Report of Central Sector Projects costing Rs150 crore and above, October-December 2013*. See also, Ministry of Statistics and Programme Implementation, *27th Project Implementation – An Overview – July 2014*; Project Management Institute et al, *Study on project schedule and cost overruns*, 2013; Ram Singh, *Delays and cost overruns in infrastructure projects*, Delhi School of Economics, November 2009
- ¹⁴⁹ RRVUNL, *Petition for approval of aggregate revenue requirement and provisional tariff for FY 2014-15 for Kalisindh Thermal Power Station Unit-1 to Rajasthan Electricity Regulatory Commission*, June 2014
- ¹⁵⁰ RRVUNL, *Additional submission on Return on Equity (RoE) in the matter of ARR for FY 2014-15 for Kalisindh Thermal Power Station Unit-1 to Rajasthan Electricity Regulatory Commission*, 2014. Pursuant to order dated July 16, 2014, the RERC has allowed interim tariff at the rate of 80 percent of the tariff petitioned.
- ¹⁵¹ Supra note 146
- ¹⁵² Central Electricity Authority, *Monthly Report on Broad Status of Thermal Power Projects in the Country*, November 2014, available at http://www.cea.nic.in/reports/proj_mon/broad_status.pdf, accessed on January 02, 2015
- ¹⁵³ MOEFCC, *Environment clearance regarding 2X600 MW coal-based thermal power plant at Kalisindh*, 26 February 2009
- ¹⁵⁴ Supra note 146
- ¹⁵⁵ MOEFCC, Circular on categorisation of environment clearance conditions, October 07, 2014
- ¹⁵⁶ CPR India, *A Framework of Principles for Environmental Regulatory Reform: Submission to the High Level Committee’s Review of Environmental Laws*, October 2014, available at http://www.cprindia.org/sites/default/files/CPR%20Submission%20to%20HLC%20for%20website_2.pdf, accessed on December 31, 2014
- ¹⁵⁷ Supreme court order in ManoharLal Sharma v. The Principal Secretary and Ors. Write Petition (CRL.) No. 120 of 2012, and others.
- ¹⁵⁸ Environment clearance to Parsa East and Kanta Basan Open Cast Coal Mine by MoEF, December 21, 2011, available on <http://www.rvunl.com/images/pdf/EC%20letter%2021.12.11.pdf>, accessed on December 12, 2014
- ¹⁵⁹ Shreya Jai, *Day after coalgate verdict: Four state power entities to shell out 35 percent of penalty*, Business Standard, September 26, 2014, available at http://www.business-standard.com/article/specials/sc-s-penalty-on-operational-coal-blocks-to-fetch-govt-rs-7-600-cr-114092501004_1.html, accessed on December 16, 2014
-

-
- 160 RRVUNL, *Petition for approval of aggregate revenue requirement and provisional tariff for FY 2014-15 for Kalisindh Thermal Power Station Unit-1 to Rajasthan Electricity Regulatory Commission*, June 2014
- 161 The Coal Mines (Special Provisions) Bill, 2014, as passed by Lok Sabha on December 12, 2014, available on <http://www.prsindia.org/uploads/media/Coal%20Mines/coal%20mines%20as%20passed%20by%20LS.pdf> accessed on December 16, 2014
- 162 Section 5 of the Coal Mines (Special Provisions) Bill, 2014
- 163 Chapter III of the Coal Mines (Special Provisions) Bill, 2014
- 164 ICRA Research Services, *Supreme Court Ruling on Captive Coal Mining – Impact Assessment, September 2014*, available at <http://www.icra.in/Files/ticker/Captive%20Coal%20Mining.pdf>, accessed on December 15, 2014
- 165 Experts share similar views. *‘The EIA report is the most important document based on which decisions are made about approving or rejecting a project. However, the completeness and correctness of EIA documents as prepared by project proponents remain questionable. An analysis of the cases at the National Green Tribunal (NGT) shows that a large number of cases involving environment clearance dispute relates to the inaccuracies in the EIA report...Though an accreditation scheme for EIA consultants has been put in place at the Quality Council of India (QCI) via an Official Memorandum, the scheme is not showing desired results due to various reasons. The most important of them being the lack of coordination between the accreditation process at QCI and the assessment/ appraisal process of Expert Appraisal Committee (EAC) at MoEF&CC and State EAC. The result of this poor coordination is that there are instances when the reports prepared by non-accredited agencies have also been accepted by EAC and SEAC. There is also a need to build the capacity of the EIA consultants to make good reports. The accreditation process at QCI also needs to be strengthened....MoEF&CC should notify an accreditation scheme with strict accountability provision; perjury should be made the biggest offence.’* Centre for Science and Environment, *Strengthen Institutions, Reform Laws and Streamline Processes: Agenda for Improving Environmental Governance in India*, 2014, available at <http://www.cseindia.org/userfiles/strengthen-institutions-reform-laws-and-streamline-processes.pdf>, accessed on January 02, 2015.
- 166 The Report of the High Level Committee to review various Acts administered by MOEFCC (November 2014), envisages adoption of a Environmental Laws (Management) Act (ELMA), which would oblige an applicant to disclose everything about its proposed project, especially possible potential to pollute and the proposed solution thereto – in short all that would be relevant to making a decision on granting or refusing the clearance applied for. The proponent and the experts who support his case will be required by law to certify that *‘the facts stated are true and that no information that would be relevant to the clearance has been concealed or suppressed’*. In addition, the Committee has proposed introduction of the concept of ‘utmost good faith’, i.e. if at any time after the application is received – even after the project takes off – it is discovered that the proponent had in fact concealed some vital information or had given wrong information or that the certificates issued by the experts suffer from similar defects, severe consequences will follow under the new Act ELMA; and they include heavy fine, penalties including imprisonment and revocation of the clearance, – and in serious cases arrest of the polluter.
- 167 MOEFCC, *Introduction to EIA division*, available at <http://www.moef.nic.in/division/introduction-8>
- 168 Mining projects; industrial projects; thermal power projects; river valley, multipurpose, irrigation and hydro-electric projects; infrastructure development, miscellaneous projects; and nuclear power projects
- 169 Telephone Directory of the officers of the MoEF, available at <http://www.moef.nic.in/about-ministry/telephone-directory-officers-moef>, accessed on November 27, 2014
- 170 Monthly remuneration of employees for the 2013, available at <http://www.moef.nic.in/sites/default/files/monthly-remuneration-2013.pdf>, accessed on November 29, 2014. The basic remuneration of a technical officer (Scientist F) in 2013 was around Rs8,00,000 per annum. Consequently, the current annual basic remuneration is estimated to be around Rs10,00,000, assuming an annual increase of Rs1,00,000.
- 171 List of Accredited EIA Consultant Organisations, updated as on November 07, 2014, available at <http://www.qcin.org/nabet/EIA/documents/Accredited%20consultants.pdf>, accessed on December 03, 2014
- 172 Experts have also suggested such mechanism. Sharon Beder, *Bias and Credibility in Environmental Impact Assessment, Chain Reaction*, No. 68, February 1993, pp28-30. Available at <http://www.uow.edu.au/~sharonb/EIS.html>, accessed on November 30, 2014
-

-
- ¹⁷³ The EIA policy in EU, as codified in Directive 2011/92/EU of 13 December 2011, available at <http://ec.europa.eu/environment/eia/eia-legalcontext.htm>, accessed on December 25, 2014.
- ¹⁷⁴ Centre for Science and Environment, *Strengthen Institutions, Reform Laws and Streamline Processes: Agenda for Improving Environmental Governance in India*, 2014, available at <http://www.cseindia.org/userfiles/strengthen-institutions-reform-laws-and-streamline-processes.pdf>, accessed on January 02, 2015, recommends public consultation to include (but not limited to): public comment and consultation at the scoping stage (while awarding terms of reference); public consultation report prepared while preparing the impact assessment report; public hearing to discuss the draft impact assessment report and public consultation report; opportunity for the affected community to present its opinion to the appraisal/assessment committee; decisions taken at the hearing to be an integral part of the assessment and clearance process; all the documents based on which clearance has been granted/ rejected must be put in public domain.
- ¹⁷⁵ The EIA policy in EU is codified in Directive 2011/92/EU of December 13, 2011, available at <http://ec.europa.eu/environment/eia/eia-legalcontext.htm>, accessed on December 25, 2014.
- ¹⁷⁶ United Nations Environment Programme, *Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters*, February 26, 2010
- ¹⁷⁷ MOEFCC, *Annual Report for 2013-14*, available at http://www.moef.nic.in/sites/default/files/annual_report/AR-2013-14-Eng.pdf, accessed on January 01, 2015
- ¹⁷⁸ Details of Post, Pay band and Emoluments of Officers/Employees of Environment Department, updated as of April 2012, available at http://environment.rajasthan.gov.in/Utilites/Upload/RTI_Acts/Point_content_10_1.pdf, accessed on November 28, 2014, provides monthly remuneration of Senior Environment Officer of around Rs75,000 as of 2012. An annual increase of around 10 percent is estimated to arrive at the possible current remuneration.
- ¹⁷⁹ RSPCB, *Advertisement for appointment on deputation*, 2010, available at http://www.rpcb.rajasthan.gov.in/rpcbweb/Circulars/Advertisement_for_appointment_deputation.pdf?id=1, accessed on January 06, 2015, provides for monthly basic remuneration of assistant environment engineer to be around Rs40,000. A yearly increase of around 10 percent has been assumed to arrive at the current remuneration.
- ¹⁸⁰ Section 16(h) of the NGT Act
- ¹⁸¹ Section 23(1) of the NGT Act. NGT itself has noted that it has complete and comprehensive trappings of a court and can exercise the limited power of judicial review to examine the constitutional validity/vires of the subordinate/delegated legislation (Wilfred J and MoEF and others, decision dated July 17, 2014, in original application no. 74 of 2014, available at <http://www.indiaenvironmentportal.org.in/files/Vizhinjam%20Port%20Project%20NGT%2017Jul2014.pdf> accessed on December 30, 2014)
- ¹⁸² United Nations Environment Programme, *Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters*, February 26, 2010, available at http://www.unep.org/civil-society/Portals/24105/documents/Guidelines/GUIDELINES_TO_ACCESS_TO_ENV_INFO_2.pdf, accessed on December 30, 2014. Guideline 19 provides ‘States should provide effective procedures for timely review by courts of law or other independent and impartial bodies, or administrative procedures, of issues relating to the implementation and enforcement of laws and decisions pertaining to the environment. States should ensure that proceedings are fair, open, transparent and equitable.’ Guideline 20 states, ‘States should ensure that the access of members of the public concerned to review procedures relating to the environment is not prohibitively expensive and should consider the establishment of appropriate assistance mechanisms to remove or reduce financial and other barriers to access to justice.’ In addition, Guideline 21 provides, ‘States should provide a framework for prompt, adequate and effective remedies in cases relating to the environment, such as interim and final injunctive relief.’
- ¹⁸³ T S R Subramaniam *et al*, *Report of the High-level Committee on Forest and Environment Related Laws, Government of India*, November 2014, recommends ‘Against any decision of the Government on recommendations by NEMA, or on decisions of SEMA an appeal is provided to a Board constituted by the GOI presided over by a retired judge of any High Court with two senior officers of the rank of Additional
-

Secretary to the GOI or above having knowledge of the subjects involved. The Board will be required to dispose off the appeal within three months after it is lodged and will have all powers of a first appellate forum including power to reject the appeal summarily and to impose heavy costs against appellants pursuing frivolous matters...the decisions of the appellate boards will be subject to judicial review by the NGT'

- 184 Job openings at NGT, available at http://www.greentribunal.gov.in/Job_open.aspx, accessed on December 06, 2014
- 185 Telephone Directory of the officers of the MoEF, available at <http://www.moef.nic.in/about-ministry/telephone-directory-officers-moef>, accessed on November 27, 2014
- 186 Monthly remuneration of employees for the 2013, available at <http://www.moef.nic.in/sites/default/files/monthly-remuneration-2013.pdf>, accessed on November 29, 2014
- 187 Organisational set up at Lucknow regional office, available at http://www.moefrolko.org/about_us-orgsetup.htm, accessed on January 03, 2015
- 188 Assuming 10 members per EAC and 42 EACs (7 CEACs and 35 SEAC/UTEAC)
- 189 EU policy on EIA has similar provisions. The EIA policy in EU is codified in Directive 2011/92/EU of 13 December 2011, available at <http://ec.europa.eu/environment/eia/eia-legalcontext.htm>, accessed on December 25, 2014.
- 190 T S R Subramaniam et al, *Report of the High-level Committee on Forest and Environment Related Laws, Government of India*, November 2014, 'The method of public consultation prescribed in the existing notification should continue with the modification that only environmental, rehabilitation and resettlement issues are captured in the public hearing. A mechanism should be put in place to ensure that only genuine local participation is permitted.'
- 191 RSPCB, *Advertisement for appointment on deputation*, 2010, available at http://www.rpcb.rajasthan.gov.in/rpcbweb/Circulars/Advertisement_for_appointment_deputation.pdf?id=1 accessed on 06 January 2015, provides for monthly basic remuneration of assistant environment engineer to be around Rs40,000. A yearly increase of around 10 percent has been assumed to arrive at the current remuneration.
- 192 Items 7 and 8 of order of MOEFCC in relation to reconstitution of expert appraisal committee of thermal power and coal mine projects under EIA Notification, June 14, 2010, available at <http://www.moef.nic.in/divisions/iass/Cir/OO-14-06-2010.pdf>, accessed on November 12, 2014. It has been presumed that daily compensation to SEAC members is equal to that of SEAC members.
- 193 United Nations Environment Programme, *Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters*, February 26, 2010.
- 194 'Instead of project-level-EIA, an EIA should take place in the context of regional and sectoral-level planning. Once sectoral-level development plans have the integrated sectoral environmental concerns addressed, the scope of project-level EIA will be quite minimal. Sectoral EIA helps in to addressing specific environmental problems that may be encountered in planning and implementing sectoral development projects...Project level EIA refers to the developmental activity in isolation and the impacts that it exerts on the receiving environment. Thus, it may not effectively integrate the cumulative effects of the development in a region....The EIA should also consider the effects that could arise from the project due to induced developments, which take place as a consequence of the project. Ex. Population density and associated infrastructure and jobs for people attracted to the area by the project. It also requires consideration of cumulative effects that could arise from a combination of the effects due to other projects with those of other existing or planned developments in the surrounding area. So the necessity to formulate a qualitative checklist is suggested to test significance, in general', IL&FS Ecosmart Limited, *Technical EIA Guidance Manual for Thermal Power Plants*, August 2010, available at http://environmentclearance.nic.in/writereaddata/Form-IA/HomeLinks/TGM_Thermal%20Power%20Plants_010910_NK.pdf, accessed on January 02, 2015
- 195 [http://www.jseejournal.com/JSEE%202012/PDF%20file%20JSEE%203\(1\)%202012/7.Energy%20scenarios%20pp.%207-17.pdf](http://www.jseejournal.com/JSEE%202012/PDF%20file%20JSEE%203(1)%202012/7.Energy%20scenarios%20pp.%207-17.pdf)
- 196 http://planningcommission.nic.in/plans/planrel/fiveyr/10th/volume2/v2_ch7_3.pdf
- 197 http://mospi.nic.in/Mospi_New/upload/Energy_Statistics_2013.pdf
- 198 International Energy Agency, '2011 key world energy statistics', IEA Report, The Economic Co-Operation and Development (OECD), 2012.

199 British Petroleum, “Statistical review of world energy,” BP Report, British Petroleum, London, UK, 2012

200 Ibid

201 V Modi, S McDade, D Lallement, and J Saghir, Energy and the Millennium Development Goals, The Energy Sector Management Assistance Programme, United Nations Development Programme, UN Millennium Project, and World Bank, New York, NY, USA, 2006.

202 <http://www.greenpeace.org/india/Global/india/report/2013/powering-ahead-with-renewables.pdf>

203 http://www.pwc.in/en_IN/in/assets/pdfs/publications/2014/hydropower-in-india-key-enablers-for-better-tomorrow.pdf <http://www.greenpeace.org/india/Global/india/report/2013/powering-ahead-with-renewables.pdf>

203 http://www.pwc.in/en_IN/in/assets/pdfs/publications/2014/hydropower-in-india-key-enablers-for-better-tomorrow.pdf

204 <http://www.ev.com/IN/en/Industries/Government---Public-Sector/Accelerating-implementation---Roadblocks-in-accelerating-infrastructure-development>, accessed on November 24, 2014

205 Economic survey of Himachal Pradesh, 2013 -14, available at http://admis.hp.nic.in/himachal/economics/pdfs/ESEng2013-14_A1b.pdf, accessed on November 24, 2014

206 <http://www.livemint.com/Politics/TUekdgCzvIc91RiSBpZGMN/Record-Rs626-trillion-projects-shelved-deferred-in-201314.html>

207 Definition of affected people given in LARR Act, 2013

208 An In-Principal approval according the FCR, 2003 (as amended as on date) is a first stage approval granted by the an authority of central government indicating that central government agrees to divert to requested forest land for non-forest purposes, provided that the project proponent/user agency meets all the condition stated in the approval.

209 According the FCR, 2003 (as amended as on date) a compliance report is a document to be produced by the project proponent /user agency which showcases that he/she has complied with all the conditions as stated in In-principal approval including submission of compensatory afforestation, amount for CAT plan, clearance under Forest Rights Act, 2006 (as amended as on date) etc.

210 A final approval acts as a certificate that permits the project proponent/user agency to start construction over forest land.

211 A checklist document is available as annexure (put a checklist document from ministry of environment and forest)

212 In case the proposal involves forest land greater than 100 ha, a third time site inspection undertaken by concerned regional offices

213 World Bank, *Doing Business: Measuring Business Regulations – Methodology*, available at <http://www.doingbusiness.org/methodology>, accessed on November 20, 2014

214 Handbook of Forest Conservation Act, 1980 *et al*, Government of India, 2004, available at <http://wrд.bih.nic.in/guidelines/awadhesh02c.pdf>, accessed on December 12, 2014

215 Section 2 of the FCA

216 Sections 3A and 3B of the FCA

217 Section 3 of the FCA

218 Forest (Conservation) Second Amendment Rules, 2014

219 Rule 6(3)(c), as inserted by the Forest (Conservation) Amendment Rules, 2014

220 Rule 6(3)(d), as inserted by the Forest (Conservation) Amendment Rules, 2014

221 In terms of notifications dated February 05, 2013 and January 15, 2014, the MOEFCC exempted linear projects, except those involving recognised rights of the primitive tribal groups and pre-agricultural committees, from the requirement of obtaining consent from each concerned *gram sabha*. The notifications are available at [http://forestsclearance.nic.in/writereaddata/public_display/orders/1503732839\\$FRA.pdf](http://forestsclearance.nic.in/writereaddata/public_display/orders/1503732839$FRA.pdf), and <http://nromof.gov.in/2013/Guidelines/150114guide.pdf>, respectively, accessed on December 16, 2014

222 Rule 6(3)(e), as inserted by the Forest (Conservation) Amendment Rules, 2014

223 The Report of the High Level Committee to review various Acts administered by MOEFCC (November 2014)

224 Timeline of attempts to sabotage forest rights for large projects, available at

<http://www.forestrightsact.com/corporate-projects/item/22-timeline-of-attempts-to-sabotage-forest-rights-for-large-projects/>, accessed on December 15, 2014

225 MOEFCC Notifications dated February 5, 2013 and January 15, 2014, available at [http://forestsclearance.nic.in/writereaddata/public_display/orders/1503732839\\$FRA.pdf](http://forestsclearance.nic.in/writereaddata/public_display/orders/1503732839$FRA.pdf), and <http://nromof.gov.in/2013/Guidelines/150114guide.pdf>, respectively, accessed on December 16, 2014

226 Circular issued by the Ministry of Tribal Affairs dated March 7, 2014, available at <http://tribal.nic.in/WriteReadData/userfiles/file/Picture%20084.pdf>, accessed on December 16, 2014

227 Circular issued by Ministry of Tribal Affairs dated 27 August 2014, available at http://tribal.nic.in/WriteReadData/userfiles/file/fra0001_Part2_Part1.pdf, accessed on December 12, 2014

228 Ministry of Tribal Affairs dated 21 October 2014, available at [http://tribal.nic.in/WriteReadData/userfiles/file/OM\(1\).pdf](http://tribal.nic.in/WriteReadData/userfiles/file/OM(1).pdf), accessed on December 16, 2014

229 MOEFCC circular dated 28 October 2014 in relation to diversion of forest land for non-forest purpose under the FCA – ensuring compliance with FRA. Also, see responses to Lok Sabha questions, available at <http://164.100.47.132/LssNew/psearch/QResult16.aspx?qref=6108>, accessed on December 16, 2014

230 Letter from Ministry of Tribal Affairs dated 28 February 2013, available on <http://tribal.nic.in/WriteReadData/userfiles/file/LetterToTheHonbleChiefMinisterHMRegardingFRA.pdf>, accessed on December 16, 2014

231 Which came into effect from 14 March 2014

232 Rule 7(2)(a) as inserted by the Forest (Conservation)First Amendment Rules, 2014

233 Which came into effect from 01 November 2014

234 Modification to the Rule 7(2)(a) as inserted by the Forest (Conservation)Second Amendment Rules, 2014

235 Pursuant to the modified rule 7(4)(c)

236 Rule 7(4)(d), as inserted by Forest (Conservation) Amendment Rules, 2014

237 Proviso to rule 7(2)(c), as inserted by Forest (Conservation)Second Amendment Rules, 2014

238 Rule 7(2)(e)

239 Proviso to rule 7(2)(e)

240 Rule 7(2)(f)

241 Rule 7(4)(d)

242 Rule 7(4)(f)

243 Rule 8 of the FCR

244 Rule 6(3)(k), as inserted by the Forest (Conservation) Amendment Rules, 2014

245 Nemoiudex in causasua, or no one should be judge in his own cause, is a settled principle of natural justice

246 Ministry of Environment, Forests, and Climate Change, in this case

247 Section 2(i) of the FCA

248 Explanation to section 2 of the FCA

249 Section 2(d) of FRA

250 In the matter of *T N Godavarman v. Union of India*, Writ Petition (Civil) No. 202 of 1995, available at <http://www.moefrolko.org/scjudgement.htm>, accessed on December 15, 2014

251 The term ‘forest’ is included in ‘List III – Concurrent List’ of Schedule VII of Constitution of India, thus allowing the states as well as central government to make laws on the subject

252 Forest (Conservation) Amendment Rules, 2004

253 Forest (Conservation) Second Amendment Rules, 2014

254 Rule 4 of the FCR

255 Rule 5 of the FCR

256 Rule 6(3)(g), as inserted by the Forest (Conservation) Amendment Rules, 2014

257 Third proviso to Rule 6(3)(l), as inserted by the Forest (Conservation) Amendment Rules, 2014

258 Proviso to rule 7(2)(f), as inserted by the Forest (Conservation) Second Amendment Rules, 2014

259 It is important to note that 98 days is a simple average (not corrected for the influence of the outliers i.e. for
instance among 7 applications only one took 394 days to get in- principle approval)

260 None of the project proponents under consideration, applying for diversion of forest land of more than 100
ha reached the final approval stage during the review period

261 Rule 5(i) of the FCR

262 MOEFCC order dated 3 August 2012 regarding reconstitution of FAC, available at
http://www.moef.nic.in/assets/FAC_order06082012.pdf, accessed on December 16, 2014

263 MOEFCC order dated 27 August 2014 regarding reconstitution of FAC, available at
http://forestsclearance.nic.in/writereaddata/order_001.pdf, accessed on December 16, 2014

264 Letter dated 13 February 13, 2013, by the Additional Principal Chief Conservator of Forests (Central),
NRO, MOEFCC to the Principal Chief Conservator of Forests, Government of Himachal Pradesh,
available at <http://nromoef.gov.in/Contents/Content25.pdf>, accessed on December 19, 2014

265 As mentioned in answer to query raised in Lok Sabha, available at
<http://164.100.47.132/LssNew/psearch/QResult16.aspx?qref=808>, accessed on December 14, 2014

266 Minutes of the FAC dated April 02, 2012, with respect to the proposal of diversion of forest land for
construction of Luhri Hydro Electric Project in favour of Satluj Jal Vidyut Nigam Limited

267 Notification No. FFE-B-F-(2)-72/2004-Pt-II, dated September 30, 2009, issued by the government of
Himachal Pradesh

268 Letter No. F. No. 11-54/2012-FC, dated November 9, 2012, issued by the MOEFCC, available at
<http://www.moef.nic.in/assets/fc-100422013.pdf>, accessed on December 17, 2014

269 Letter No. FFE-B-F(2)-1/2013 issued by the Government of Himachal Pradesh dated December 12, 2013

270 Centre for Ecological Services Management et al, *Revision of rates of NPV applicable for different
class/category of forests*, June 2013, available at
<http://www.indiaenvironmentportal.org.in/files/file/Revision%20of%20rates%20of%20NPV.pdf>, accessed
on December 20, 2014

271 MOEFCC, Annual Report 2013-14, available at
http://www.moef.nic.in/sites/default/files/annual_report/AR-2013-14-Eng.pdf, accessed on December 1,
2014

272 United Nations Environment Programme, *Guidelines for the Development of National Legislation on
Access to Information, Public Participation and Access to Justice in Environmental Matters*, 26 February
2010. Guideline 13 provides, 'States should consider appropriate ways of ensuring, at an appropriate stage,
public input into the preparation of legally binding rules that might have a significant effect on the
environment and into the preparation of policies, plans and programmes relating to the environment.'

273 Items of work handled by the MOEFCC, available at <http://envfor.nic.in/division/items-work-handled-2>,
accessed on December 19, 2014

274 Monthly remuneration of employees of MOEFCC, 2013, available at
<http://www.moef.nic.in/sites/default/files/monthly-remuneration-2013.pdf>, accessed on December 19, 2014,
provides that maximum Deputy Director-level remuneration in 2013 was around INR 67000 per month,
and a research assistant level remuneration was around Rs40,000. Assuming an annual increment of around
10 percent, it is estimated that monthly remuneration of a director level officer would be around INR
75,000 and a research assistant level officer would be around Rs45,000.

275 Sanctioned strength of employees for the Northern Regional Office, available at
<http://nromoef.gov.in/org1.htm>, accessed on December 19, 2014, provides maximum monthly
remuneration at a deputy director level being Rs39,100, and at research investigator level being Rs34,800.

276 Revised allocation of budget estimate for 2014-15, in respect of regional offices, available at
http://nromoef.gov.in/2014_budget.pdf, accessed on December 19, 2014.

277 Section 23(1) of the NGT Act

278 United Nations Environment Programme, *Guidelines for the Development of National Legislation on
Access to Information, Public Participation and Access to Justice in Environmental Matters*, 26 February
2010. Guideline 19 provides 'States should provide effective procedures for timely review by courts of law
or other independent and impartial bodies, or administrative procedures, of issues relating to the
implementation and enforcement of laws and decisions pertaining to the environment. States should ensure

that proceedings are fair, open, transparent and equitable.’ In addition, Guideline 21 provides, ‘States should provide a framework for prompt, adequate and effective remedies in cases relating to the environment, such as interim and final injunctive relief.’

279 Job openings at NGT, available at http://www.greentribunal.gov.in/Job_open.aspx, accessed on December 06, 2014

280 Rule 4(v) of the FCR

281 Office Memorandum issued by the Government of India dated September 23, 2008 regarding travelling allowance rules - implementation of sixth pay commission, available on <http://www.nitj.ac.in/News/TA%20RULES.pdf>, http://himachal.nic.in/WriteReadData/l892s/1_l892s/TAApr2012_A1b-38443351.pdf accessed on December 20, 2014, provides for maximum daily allowance of up to Rs5,000.

282 Sanctioned strength of employees for NRO, available at <http://nromof.gov.in/org1.htm>, accessed on December 19, 2014, provides maximum monthly remuneration at a deputy director level being INR 39,100, and research investigator level being Rs34,800.

283 The High Court and Supreme Court Judges (Salaries and Conditions of Service) Amendment Act, available at <http://www.prsindia.org/billtrack/the-high-court-and-supreme-court-judges-salaries-and-conditions-of-service-amendment-bill-2008-173/>, accessed on December 24, 2014, amended the High Court Judges (Salaries and Conditions of Service) Act, 1954 and Supreme Court Judges (Salaries and Conditions of Service) Act, 1958, in 2009, revising the month salaries of high court judges to Rs80,000. For the purposes of the project, monthly salary of a high court judge in 2014 is estimated to be around Rs1,00,000.

284 Letter by Principal Secretary, Government of Himachal Pradesh, dated September 25, 2012, in relation to restoration of placement in higher pay scale, available at http://himachal.gov.in/WriteReadData/finance/payrevision/3TierPayScale25Sep2012_A1b.pdf, accessed on December 20, 2014, provides a maximum monthly pay of around Rs40,000 for officers of Himachal Pradesh Forest Service. An annual increment of around 10 percent has been estimated to arrive at a figure of INR 50,000 per month in 2014.

285 State Advisory Groups have been constituted by the MOEFCC under the FCA in the past, chaired by Chief Conservator of Forests. Nodal Officer of the state acted as member secretary. See, <http://envfor.nic.in/division/introduction>. Consequently, the SAGs were not independent of government.

286 Office Memorandum issued by the Government of India dated September 23, 2008 regarding travelling allowance rules - implementation of sixth pay commission, available on <http://www.nitj.ac.in/News/TA%20RULES.pdf>, accessed on December 20, 2014, provides for maximum daily allowance of up to Rs5,000, and permissible reimbursements in form of travelling allowance. A maximum travelling allowance of Rs5,000 is being assumed for the purposes of the project.

287 United Nations Environment Programme, *Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters*, February 26, 2010.

288 Swain, A K & Charnoz, O. (2012): ‘India’s Clean Energy Paradox’, Business Standard, December 07, New Delhi.

289 India ranks sixth globally in terms of RE installed capacity, after China, US, Germany, Spain and Italy.

290 <http://cleantechnica.com/2014/11/23/india-eyes-100-gw-solar-power-capacity-2022/>

291 Several sources estimate that the investment required for installing 100 GW solar capacity would require more than US\$100bn, over next seven years. See <http://www.reuters.com/article/2015/01/02/india-solar-idUSL3N0UG13H20150102>

292 In the 12th Five Year Plan, nearly one-third of the planned investment in infrastructure sectors has been earmarked for the electricity sector; and about half of this investment is sought from private sector.

293 During last two decades, governments have been trying to promote private sector participation in electricity generation. The outcome has been limited, if not a complete failure. These experiences have shaped the government’s approach towards private sector.

294 See CEA Report on current installed capacity (as on 30.11.2014): http://www.cea.nic.in/reports/monthly/inst_capacity/nov14.pdf

295 National Solar Mission is one of the eight missions, under National Action Plan on Climate Change that seeks to balance between the domestic developmental priorities and global climate change obligations. The

Mission was launched in 2010, to promote ecologically sustainable growth while addressing India's energy security challenges.

296 With the objective to be a solar technology manufacturing hub, the government of India seems to promote domestic panels through the Domestic Content Requirement component of NSM.

297 DCR is a policy tool under NSM that requires certain solar projects to incorporate locally manufactured components in a defined ratio. For each batch of commissioning, the MNRE decides the size of capacity addition that would follow DCR and the percentage of domestic content.

298 Feed-in tariff is a policy mechanism to accelerate investment in renewable energy technologies that offers long-term contracts to power producers, typically based on the cost of generation for each technology. For example, solar power producers receive a better tariff than their counterparts using wind technology to reflect the higher cost of the former.

299 Renewable Purchase Obligations are a target set by the respective SERCs for the utilities that requires the utilities and other open access consumers to procure certain part of their power from renewable sources or pay a penalty. The goal of this initiative is to create a market for renewable energy.

300 As the GSSP completed its term in March 2014, the potential cost of installation under the policy framework is unknown.

301 Nelson, D, Shrimali, G, Goel, S, Konda, C & Kumar, R (2012): Meetings India's Renewable Energy Targets: The Finance Challenge, Climate Policy Initiative and Indian School of Business.

302 As estimated in by the CPI-ISB study. *ibid*.

303 According to CEA, 23.4 percent of electricity generated in India is lost in transmission and distribution process.

304 Solar plants at best performance have a plant load factor of 40 percent. If a quarter of it is lost in transmission & distribution, solar capacity addition would be less effective in addressing India's energy poverty.

305 It has been predicted that solar will achieve grid parity in 80 percent of the countries by 2017. See <http://reneweconomy.com.au/2015/solar-grid-parity-world-2017>

306 All the existing 908 MW solar capacity has been developed under the state policy. However, additional 40 MW capacity is coming up under the NSM in the state.

307 The bidding process under NSM was so competitive that the tariff dropped to level which was not financially viable for the solar developers. Consequently, many of the successful bids did not materialise, as the bidders backed out.

308 At present, the DCR is set at 50 percent of the equipment for the commissioned projects.

309 Most of these exports were to European market and came as an advantage of EU-China trade dispute. <http://mercomcapital.com/india-solar-market-quarterly-update-with-antidumping-case-behind-it-indian-solar-industry-looks-to-refocus-on-growth>

310 Although, this is a state prerogative, the central government can play a great role by offering incentives to states to develop solar parks. This is something the new government at seem to have taken up. <http://timesofindia.indiatimes.com/india/Rs-4000-crore-push-for-25-solar-parks/articleshow/45302503.cms>

311 Greenpeace (2013): *Powering Ahead with Renewables: Leaders & Laggards*. Greenpeace India and Infraline Energy.

312 A recent study by CEEW & NRDC finds that solar market in India has generated 23,884 cumulative jobs in the solar industry from 2011 to 2014, solely from the commissioned projects currently producing electricity. See CEEW & NRDC (2014): *Solar Power Jobs: Exploring the Employment Potential in India's Grid Connected Solar Market*, Council for Energy, Environment and Water & Natural Resources Defence Council.

313 See <http://www.bridgetoindia.com/blog/andhra-pradesh-solar-tariffs-very-close-to-new-imported-coal/>

314 For example, Brazilian National Development Bank is widely commended for promoting the economic success of Brazil through policies of concessionary finance. It has been supporting the priority industries in the country through low-cost long-terms debts.

315 The government has already issued a draft scheme for development of solar parks. See: <http://mnre.gov.in/file-manager/UserFiles/Draft-Scheme-Solar-Park-and-Ultra-Mega-Solar-Power-Projects-for-comments.pdf>

-
- 316 In the absence of adequate information on solar irradiation, power demand and grid availability, it is hard for the project developers to calculate the exact cost of project and bid accordingly. Owing to emergent competition and with the aim to enter the sector, several developers in past have submitted aggressively low bids. As the ground realities vary, many of them either have withdrawn or projects stalled in the mid owing to higher practical costs.
- 317 Report of the Financial Sector Legislative Reforms Commission, available at http://finmin.nic.in/fslrc/fslrc_index.asp
- 318 UK Department of Business, Innovation and Skills, *Principles of Economic Regulation*, 2011
- 319 Ibid
- 320 Ibid
- 321 OECD, *Recommendation of the Council on Regulatory Policy and Governance*, 2012
- 322 Section 26 of the Environment Protection Act, 1986
- 323 For details on Lok Sabha and Rajya Sabha Committees on Subordinate Legislation, see, http://164.100.47.134/committee/committee_main.aspx, and <http://164.100.47.5/webcom/MainPage.aspx>, respectively.
- 324 It must be noted that pursuant to a circular dated 05 February 2014, the government has already issued a pre-legislative consultation policy, which prescribes assessment of impact of legislation on varied stakeholders. The circular is available at <http://lawmin.nic.in/ld/plcp.pdf>, last accessed on January 21, 2015
- 325 Summary of Diamond Model, available at http://www.valuebasedmanagement.net/methods_porter_diamond_model.html, accessed on February 12, 2015
- 326 David E M Sappington, *Principles of Regulatory Policy Design*, University of Florida, 1993

