

Low-Carbon and Climate-Resilient Pathways for Indian Public Sector Enterprises

Training and Capacity Needs Assessment

New Delhi, India, August 2021



Published by

SCOPE (Standing Conference of Public Enterprises)

Standing Conference of Public Enterprises (SCOPE)

1st Floor, Core – 8, SCOPE Complex, 7 Lodi Road

New Delhi- 110 003

Email: info@scopeonline.in, scopedg@scopeonline.in

www.scopeonline.in

and

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

A 2/18, Safdarjung Enclave

New Delhi, 110 029, India

T: + 91 11 4949 5353

E: info@giz.de

www.giz.de/India

Responsible

Mr Atul Sobti, Director General, SCOPE

Dr Ashish Chaturvedi, Director-Climate Change and Circular Economy, GIZ India

Authors and Contributors

SCOPE

Mr Atul Sobti, Director General

Mr S A Khan, Lead Associate

Ms Samridhi Jain, Manager (Corporate Affairs)

GIZ

Dr Ashish Chaturvedi, Director-Climate Change and Circular Economy, GIZ India

Mr Kundan Burnwal, Advisor-Climate Change, GIZ India

Mr Jai Kumar, Advisor-Climate Change, GIZ India

Independent Consultant

Mr Sudhir Sharma

New Delhi, India, August 2021

Acknowledgement

We would like to express our gratitude and appreciation to all those who have contributed to this training needs assessment. We would like to acknowledge the PSEs for sharing their case studies and insights into the capacity and training requirements. The development of this assessment has been possible with the effort of the SCOPE, GIZ India's Climate Change and Circular Economy team and South Pole.



About SCOPE and GIZ

SCOPE

Standing Conference of Public Enterprises (SCOPE), an apex body of Public Sector Enterprises (PSEs), aims at promoting excellence in the public sector enterprises by enhancing their efficiency with the help of conducive policies and strategies enabling them to be globally competitive. It is a professional organisation enabling its member enterprises to improve their overall performance and to promote their aspirations by strengthening their effective and sustained engagement with respective stakeholders including Government and policy-makers.

SCOPE operates based on the following four pillars:

- Policy Advocacy & Representation
- Programs & Workshops
- Capacity Building & Skill Development
- Brand Building

With recent novel initiatives of SCOPE, the organization has developed into an Impactful, Innovative and Inspiring apex body expanding its horizon beyond learning and development to effective policy advocacy, research & studies and brand building to enable PSEs to carve a niche for themselves in the global map.

GIZ

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is a public-benefit federal enterprise owned by the German Government that provides services worldwide in the field of international cooperation for sustainable development. For over 60 years, GIZ India has been working jointly with partners for economic, ecological and social development.

The German Federal Ministry for Economic Cooperation and Development (BMZ), The German Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU) as well as the German Federal Ministry for Economic Affairs and Energy (BMWi) are the main commissioning parties of GIZ in India. Other clients include Indian public sector clients, the European Union and international foundations.

One of the thematic areas of GIZ in India is Environment, Climate Change and Biodiversity, wherein GIZ implements several projects supporting communities, public and private institutions to improve and conserve natural resources, minimise risks from climate change and enhance rural livelihoods in four priority areas:

- Climate Change and Circular Economy,
- Agriculture,
- Natural Resource Management and Agroecology, and
- Biodiversity.

FOREWORD



Mr Atul Sobti

Director General, SCOPE



Dr Ashish Chaturvedi

Director, Climate Change and Circular Economy, GIZ

Climate Change is adversely impacting our present and will shape the future based on global climate action. It is one of the key determinants in countries and corporates as plans for development and progress are made. The need for attention to climate change is further aggravated due to increasing natural calamities and weather changes. Given the rising awareness and collaboration of countries to mitigate climate change, it would not be an understatement that climate change will shape the 21st century agenda with focus on mitigation and adaptation measures to counter violent climate disruptions.

Realizing the importance of immediate climate action, the Government of India has also embraced the goal of achieving climate change mitigation, adaptation and sustainability by ratifying the Paris Agreement in 2015. Given the global commitment to the subject, corporates become key players in balancing commercial prudence and green environment.

The strategic importance of Public Sector Enterprises (PSEs) can be visualised from the fact that they have significant contribution to the Indian Gross Domestic Product (GDP) but also have dominant presence across key sectors like oil, gas, energy, metals and minerals, and infrastructure. While they are the key drivers in achieving the commercial and sustainable development goals, the sectors of operation of most PSEs is hard to abate i.e. carbon emissions are inherent to the very nature of their operations. This makes it imperative to onboard PSEs and help them in attaining targeted approach for long-term results.

With this perspective, SCOPE India and GIZ India have collaborated to enhance capacities of the PSEs on climate change, carbon markets, Sustainable Development Goals (SDGs) and climate finance through a focussed approach of creating knowledge through seminars and webinars and assessing capacities in PSEs so as to suggest forward for building capacities on low carbon transition.

While SCOPE and GIZ have been working together to bring knowledge sharing sessions through seminars & webinars, it gives us immense pleasure to present ***the first ever attempt to assess the capacities and training needs in PSEs with respect to sustainable efforts for climate change mitigation*** and also suggest steps to develop and adapt a systematic plan to attain effective mitigation targets. ***The report on “Low carbon and climate resilient pathways for Public Sector Enterprises- Training and Capacity Needs assessment” is an attempt to undertake a detailed analysis of the capacity/ training needs assessment of the PSEs on climate change by engaging in focused group discussions with PSEs and thereby identifying ways to further the capacities in PSEs through multiple ways on various aspects of climate change including carbon pricing, climate finance, climate change mitigation etc. The report has not only addressed the and ways for building capacities in people for developing climate resilient pathways but also paves the way for a futuristic roadmap in constructively engaging public sector in climate change mitigation action.***

We sincerely hope that you find this report informative and interesting while we work together for furthering climate action initiatives of PSEs without a compromise on commercial prudence.

EXECUTIVE SUMMARY

Climate change is recognised as one of the greatest manmade threats to the world. The reason behind the changing climate lies in increasing population, overwhelming demand for energy, excess reliance on fossil fuels and growing infrastructure along with many others. India is already experiencing and projected to further face experience adverse impacts of climate change such as high temperature, extreme rainfall, sea level rise, droughts, floods and so on. Therefore, the Indian government is implementing many exemplary measures to reduce its GHG emissions and adapt to climate change. One of the major steps needed to achieve the same and develop the Indian economy on a low-carbon and resilient pathway is to raise awareness on climate change and localize actions. Public Sector Enterprises (PSEs), being an important component of the Indian economy and a vital ingredient in India's development, play a crucial role in supporting Indian government in addressing the challenges of climate change.

In view of the above, SCOPE and GIZ India together are working on enhancing and building capacities of India's PSEs on climate change and related aspects. SCOPE and GIZ India have collaborated under the Global Carbon Markets Project funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and jointly implemented with Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India. The objective is to raise awareness and train the Indian PSEs to implement measures relevant to reducing their GHG emissions, enhancing sustainability, reducing the burden on non-conventional resources and to create sustainable and resource-efficient products. To achieve the objectives, a training needs assessment (TNA) has been conducted acknowledging the current level of understanding related to climate change knowledge, practices and activities that the PSEs have in place and identifying capacity building needs of the PSEs. An interactive and comprehensive process was adopted where a survey of twenty PSEs was conducted along with a one-on-one interview session.

As a result, the TNA found that while the Indian PSEs are aware of climate change and its impacts, most of them are at various stages of developing or planning to develop concrete plans and/or targeted approaches to address climate change. Hence enhancing their capacities to enable them to embark on low-carbon development pathways will be of paramount importance. The findings highlighted that there is a need to develop a tailored-training that can focus on relevant topics such as international response to climate change, types of carbon markets, Article 6 of the Paris Agreement, carbon pricing, climate finance, etc. It is also found that 95% of the PSEs interviewed are aware of the GHG accounting process, however, not all are implementing them.

SCOPE and GIZ India are working on enhancing and building capacities of India's PSEs on climate change and related aspects.

The TNA found that while the Indian PSEs are aware of climate change and its impacts, most of them are at various stages of developing or planning to develop concrete plans and/or targeted approaches to address climate change.

Hence, to fulfil the needs that arise out of this assessment, the following recommendations have been made to be enhance capacities of Indian PSEs considerably:

1. Capacity building:

Module 1:

Introduction to climate policy and actions

- Introduction to climate change
- International response to climate change
- India's response to climate change
- Role of PSEs in India's response



Module 2:

Building you climate journey

- How to accelerate your climate actions
- Measurement, target setting
- Reducing your GHGs
- Financing and communicating your actions
- Case studies

Module 4:

Carbon markets and climate finance

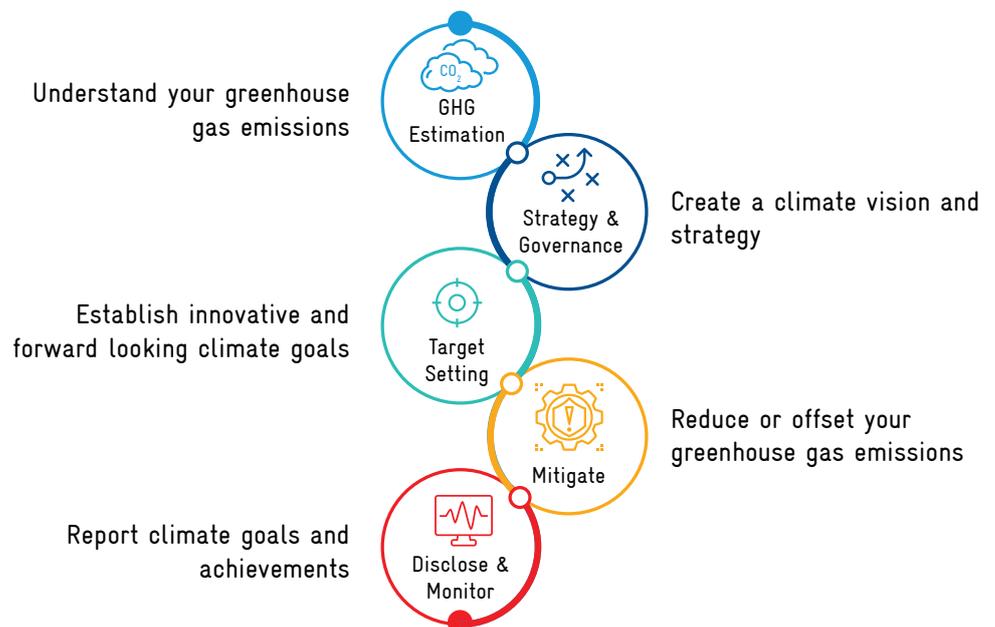
- Introduction
- Carbon credits
- Carbon project development
- Climate finance instruments and non-market mechanisms

Module 3:

Carbon pricing and indirect pricing instruments

- Introduction
- Carbon tax and ETS
- Internal carbon pricing
- Indirect pricing instruments
- Usage of revenues from carbon pricing

- **Development of training programme on climate change:** The training would encompass detailed sections on climate change, climate policies, carbon pricing, carbon markets, climate financing and case-studies specific to the Indian scenario.



- **Development of a mitigation action guidebook that the PSEs can implement and accelerate their climate journey:** A step-by-step approach of building a climate journey at a PSE level in an Indian scenario.
- **Development of sector-specific mitigation action plans:** A sector specific actionable methodological guidance for PSEs in oil & gas, mining, power and iron & steel industries needs to be developed.

2. Action & Execution:

- **Setting up dedicated teams for taking climate action:** It is suggested that engaging with staff members and other relevant stakeholders in the PSEs would be an essential component in mitigation action planning/strategy creation. It is therefore suggested that the organisation create a dedicated team, to develop an engagement strategy and create a long-term vision and whose support can be enlisted when taking steps to mitigate climate change.

3. Commitment

- **A declaration from Indian PSEs on climate action:** To demonstrate the leadership role of the PSEs in addressing the adverse impacts of climate change and supporting the Government of India in achieving its climate targets, the PSEs should declare their collective agenda on climate action. This collective declaration will highlight the unity among different PSEs and the shared need for action.

4. Benchmarking

- **Development of a mitigation index:** An index to analyse where each PSE stands and to encourage them to actively enhance their ranking via improving climate action is recommended.

5. Reporting

- **Development of a PSE action platform:** For showcasing the impeccable actions and climate change achievements on Indian PSEs, an online platform will be created and complemented by a webpage on the SCOPE website.

CONTENTS

Foreword	iii
Executive Summary	v
01 Introduction	1
Background	1
PSEs: A catalyst for climate mitigation	2
Capacity building: The need is now	3
The Role of Scope And GIZ India	4
Overall objective of the study	5
Scope of the training needs report	6
02 Understanding how PSEs are classified in India	7
Governance structure	7
Cognate sector-wise distribution of PSEs	8
Ratna recognition of PSEs	8
Methodology for conducting the training needs assessment	10
Step 1: Identification of sectors and PSEs	11
Step 2: Survey questionnaire to understand the training needs	14
Step 3: Interview with the PSEs' key personnel	14
Step 4: Analysis of the results	14
03 Findings	15
Nine out of the 12 PSEs surveyed use their funds	19
04 Recommendations	21
Module 1: Introduction to climate policy and actions	22
Module 2: Building your climate journey	23
Module 3: Carbon pricing and indirect pricing instruments	24
Module 4: Carbon markets and climate finance	24
05 Annexes	29
Annex I	29
Annex II	36
Annex III	39
Annex IV	42
Annex V	49
Annex VI	52

INTRODUCTION

BACKGROUND

India's Nationally Determined Contribution (NDC), submitted under the international Paris Agreement on climate change, commits to reducing the emissions intensity of its GDP by 33%–35% below 2005 levels by 2030. In addition, India pledged to reach a 40% share of non-fossil power generation capacity by 2030, subject to technological support from other countries and access to low-cost climate finance, such as the Green Climate Fund (GCF). Another notable target is to achieve a carbon sink of 2.5–3 Gigatonnes of carbon dioxide equivalent (GtCO₂e) by 2030, averaging out to an annual carbon sink of 167–200 GtCO₂e per year (Climate Action Tracker, 2020a¹).

Apart from the three quantifiable targets above, India has also set five qualitative targets. It aims to achieve a sustainable lifestyle based on the traditions and values of conservation and moderation and to adopt a climate-friendly and a cleaner pathway than that followed hitherto by others at a corresponding stage of economic development².

Additionally, India also aims to better adapt to climate change by investing in development programmes in vulnerable sectors, mobilising domestic and new and additional funds from developed countries, implementing climate change actions, and building its capacities and international architecture for the diffusion of climate technology.

According to the Climate Action Tracker (CAT), if India were to achieve its target, its emissions would be compatible with the level required to limit global temperature rises to 2°C, but it would not fully comply with the Paris Agreement's goal of limiting warming to 1.5°C. The CAT further determined that India's current policies would allow it to reach its NDC target (CAT, 2020b³). These policies include the coal cess, Renewable Energy Credits (REC) and the Perform, Achieve, Trade (PAT) scheme.

India's NDC targets are:



Reduction of GHG emission intensity of its GDP by

33 to 35%

below 2005 levels by 2030



40%

share of non-fossil based power generation

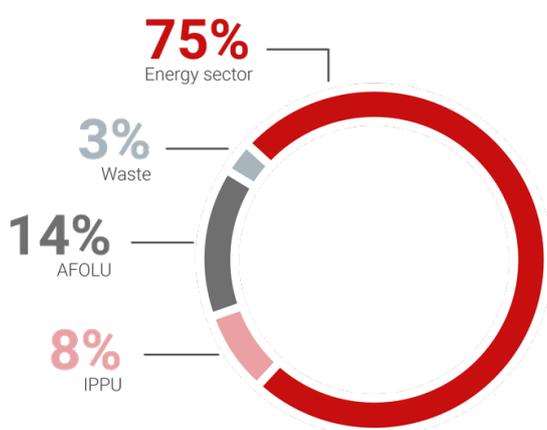


Increase of carbon sink by

2.5 to 3

GtCO₂e by 2030

Apart from the three quantifiable targets above, India has also set five qualitative targets.



¹ <https://climateactiontracker.org/countries/india/>

² <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/India%20First/INDIA%20INDC%20TO%20UNFCCC.pdf>

³ <https://climateactiontracker.org/countries/india/current-policy-projections/>

Thompson Reuters’ report on ‘Global 250 Greenhouse Gas Emitters’ (October 2017) features 250 global companies that significantly contribute to global GHG emissions. These companies are from various sectors including coal, oil and gas, steel, automotive, mining and cement. Many of these sectors are also called ‘hard to abate’ sectors.

According to India’s third Biennial Update Report (BUR3), submitted to the United Nations Framework Convention on Climate Change (UNFCCC), the energy sector is the largest contributor of greenhouse gas (GHG) emissions, accounting for almost 75% of total emissions. Another significant emitter is the IPPU sector Industrial Processes and Product Use (IPPU), contributing 8% of total emissions. Based on India’s industrial production growth GHG emissions from this sector are expected to increase further and hence their mitigation is one of the major developmental and policy-level challenges for the country.

Public Sector Enterprises (PSEs) or the State Owned Enterprises (as known internationally) are the key drivers of economic development and social justice. This is also true for Indian PSEs. India has a strong PSE presence across various sectors, including in energy, metals, minerals and infrastructure. At the time of independence, the focus was on developing strong domestic capabilities as well as capital base through PSEs in core sectors such as rail, steel, power, oil, telecommunications, mining and transportation. PSEs in India have been of high strategic importance, being driven by the long-term vision of contributing to the generation of capital and employment, to the balanced development of regions and to the promotion of research and development. Although PSEs provide goods and services similar to the private sector, most of them are often not driven by profit maximisation or equity valuation motives alone. They help the country in ensuring that there is adequate energy and food security and support governments with achieving the sustainable development goals (SDGs).

Currently, PSEs play an important role in meeting countries’ strategic objectives. Prominent among the geo-strategic objectives is addressing climate change. Many of the PSEs include some of the largest participants in the global energy sector, which generates the significant share of GHGs. Thompson Reuters’ report on ‘Global 250 Greenhouse Gas Emitters’ (October 2017) features 250 global companies that significantly contribute to global GHG emissions. These companies are from various sectors including coal, oil and gas, steel, automotive, mining and cement. Many of these sectors are also called ‘hard to abate’ sectors, i.e., the costs of reducing emissions in these sectors are high and the progress towards decarbonisation has been slow. According to the Thompson Reuters report, three Indian PSEs – Coal India Limited (CIL), National Thermal Power Corporation Limited (NTPC) and Oil & Natural Gas Corporation (ONGC) – are in the list of the top 100 companies with the highest CO₂ emissions. The role of these PSEs in reducing GHG emissions will thus be of paramount importance to making meaningful progress towards meeting India’s climate goals. One important aspect to consider for some of these PSEs is the risk posed by the climate transition, as this connects the discourse around climate policy, legal requirements, technology and market deviations with the financial health of assets and companies. This is evident for PSEs like CIL and the Indian Railways.

PSEs: A catalyst for climate mitigation

When considering the strategic reach of PSEs and their contribution to economic development, it is imperative to ask the question ‘**Why should PSEs focus on the climate agenda?**’ The policy discourse around PSEs has been primarily on improving their economic performance. However, climate change mitigation is steadily gaining significance as a pertinent area. There is a growing realisation that it is very important to consider both the impact of the climate risk transition and the perception of businesses by financial markets to assess the capabilities required for PSEs to respond effectively to the climate change agenda and contribute to the low-carbon transition.

It is paramount that PSEs actively contribute to the climate agenda for several reasons.

- First, to address the climate transition risk. Assets and companies may become stranded over a period taking the climate transition risk into account requires PSEs to avoid overinvesting in high-carbon assets and look for low-carbon alternatives.

- Second, to maintain competitiveness. PSEs may face competition from other companies; prioritising low-carbon investments will improve their cost-competitiveness and reduce their business risks.
- Third, to develop climate-resilient infrastructure. PSEs in the electricity sector, for example, are involved in developing infrastructure for electricity transmission and distribution networks which may be vulnerable to climate change and related disruptions. Thus, such PSEs should invest in making such infrastructure resilient to the impacts of climate change.
- Fourth, because of the high potential of contributing to national climate goals. Many Indian PSEs have high GHG emissions some are also reported as also ranking in the top companies globally in terms of GHG emissions. The government ownership structure of PSEs provides an opportunity for steering the implementation of national climate policy preferences and transitioning to a low-carbon economy. Power sector Indian PSEs, for example, are actively engaging in reducing emissions and adopting renewables to generate power, which is also a part of the national climate goals. In the past two years, Indian PSEs have added a high quantum of renewable energy; they are now focusing on expanding the capacities of the grid for storing renewable power.
- Fifth, PSEs' role in and contribution to research and development is of primary importance to the low-carbon transition. PSEs in the transport sector have deployed regenerative braking systems in metro rails which have reduced carbon emissions by more than 30%. Many of them are also working towards e-mobility in terms of setting up charging infrastructure, developing technologies for e-vehicle and exploring the manufacturing of e-vehicle and batteries. More such initiatives will be needed to chart the way for the transition to the low carbon economy.

As PSEs are not only driven by the motives of profit maximisation and equity evaluation, but they can also lead the way in researching and developing low-carbon technologies.

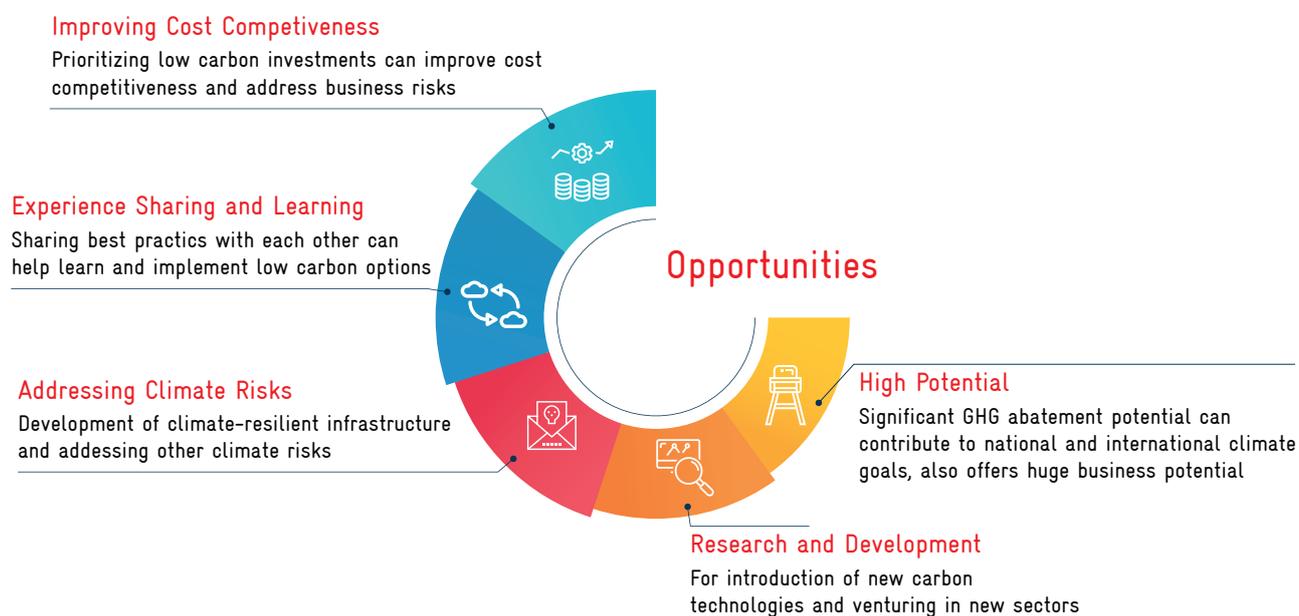
Capacity building: The need is now

It is therefore important to enhance the capacities of Indian PSEs in order to effectively implement policies for reducing GHG emissions at the company level, thereby contributing to overarching industrial-level policies and targets.

Climate change risks and opportunities (Source: SCOPE, 2020)

The government ownership structure of PSEs provides an opportunity for steering the implementation of national climate policy preferences and transitioning to a low-carbon economy.

To support PSEs in their efforts to address climate change and incorporate climate change mitigation within their business strategies, the strategic reorientation of PSEs will be necessary, i.e. successfully merging climate goals with development objectives, enhancing internal capacities around climate change and establishing linkages with global best practice and with other PSEs and businesses.



By taking appropriate action, the risks posed by climate change could be converted into opportunities, as shown in Figure 1.

Actions around climate change and the SDGs also help with the following areas:

- long-term value creation proposition
- building resilience
- gaining stakeholder trust
- social licence to operate
- avenues for forging novel partnerships
- reputation and branding opportunity
- enabling robust risk management

THE ROLE OF SCOPE AND GIZ India

Standing Conference of Public Enterprises (SCOPE) is the the apex body of public sector enterprises (PSEs) in India. The autonomous body has been playing a constructive role in supporting the Indian PSEs in their endeavours. SCOPE has evolved itself into an effective organization through a series of novel initiatives which expand beyond learning and development to effective policy advocacy, research & studies and brand building so as to enable PSEs to carve a niche for themselves in the global map. SCOPE undertakes various projects that are of national importance and reflect value for the PSEs thereby assisting them to embark on newer initiatives. Recently, SCOPE has been undertaking projects on Climate Change, women empowerment, leadership, PSEs in the COVID Pandemic etc.

Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ), is a global service provider in the field of international cooperation for sustainable development. GIZ has more than 50 years of experience in a wide variety of areas, including economic development, employment, energy, the environment and peace and security. As a public-benefit federal enterprise, GIZ supports the German government as well as public and private sector clients in around 130 countries with achieving their objectives in international cooperation. With this aim, GIZ works with its partners to develop effective solutions that sustainably offer people better prospects and improve their living conditions.

Identifying and understanding the pivotal role of PSEs in climate change mitigation, SCOPE & GIZ India entered into a MoU in October 2019. While the focus of the MoU was to develop capacities in PSEs around climate change, the MoU also seeks to address capability development in SDGs, carbon markets, climate finance etc.

Many PSEs have adopted an ‘Environmental Policy Statement’ as a part of their corporate strategy, thereby integrating climate change mitigation within their corporate policy. In addition to mass-scale awareness campaigns, significant steps have been taken by PSEs in different sectors which contribute to the national commitment to mitigating climate change.

The power sector has made a concerted effort to increase the base of renewable power generation, thereby reducing the need to use fossil fuel for power generation. These PSEs are focusing on expanding the capacities of the grid for storing renewable power, thereby ensuring the pragmatic use of renewable power. PSEs in the sector are also attempting to justify the use of coal by exploring opportunities for clean coal technology and alternate coal uses.

In the transport and logistics sector, significant steps are being taken to increase the use of electrified vehicles and electrified systems to reduce the carbon emissions of the logistics sector. For example, Indian rail, which constitutes one of the world’s largest railway networks, has launched instrumental initiatives to make it a net-zero carbon emitter by 2030 and the network 100% electrified by 2024. Solar plants are being established alongside railway tracks to electrify railways and technology is being developed for a regenerative braking system. E-mobility is increasingly encouraged by the government; as a result, PSEs are actively setting up the infrastructure and systems to make this initiative a success.

Many PSEs are setting up charging stations while exploring manufacturing and developing the technology for e-vehicles. In the oil and gas sector, companies have been investigating opportunities for promoting the set-up of biogas plants, in addition to developing flare gas recovery systems for reducing flaring and fuel consumption. In addition to national targets, certain PSEs have also set individual company targets for reducing carbon emissions.

As PSEs continue to work towards a greener environment, it is necessary to direct their efforts towards increasing their engagement with the climate change agenda and ensuring the adoption of a more informed and results-oriented approach.

Thus, to prepare for the impacts of climate policy and carbon markets, companies must first understand their own emissions footprint. Depending on where they are in the process, PSEs may find that significant capacity-building efforts are needed to bring management and other business units up to speed on their contributions to climate change. An understanding of how to access climate finance and carbon markets may open opportunities for further emission reductions.

Overall objective and scope of the study

Against this backdrop, SCOPE and GIZ India conducted a training needs assessment to assess the present status with respect to awareness on sustainability and how the Indian PSEs can build on their present knowledge to mitigate climate change. This exercise was performed with technical support from South Pole.

The main objectives of the training needs assessment were:



PSEs may find that significant capacity-building efforts are needed to bring management and other business units up to speed on their contributions to climate change. An understanding of how to access climate finance and carbon markets may open opportunities for further emission reductions.

Based on the objectives and the scope of work above, as a first step, SCOPE and GIZ India conducted a training needs assessment to identify the capacities of PSEs in India (their knowledge and institutional capacities) and recognise the gaps in the actions they have taken to address climate change. The exercise will support the PSEs with enhancing their awareness and building their capacities around addressing the impacts of climate change. This report presents an analysis of the climate change topics on which the training could focus and where the PSEs' mitigation actions could potentially be enhanced. **Based on the results of this analysis, in this report SCOPE and GIZ India offers, their perspective on the gaps in the knowledge of and challenges for PSEs and the topics for the training modules, which are to be considered for the capacity building and training around climate change.**

UNDERSTANDING HOW PSEs ARE CLASSIFIED IN INDIA

Section 2 (45) of the Companies Act of India 2013 defines a public sector company as a government or any company in which no less than 51% of the paid-up share capital is held by the central government, or by any state government. As of 31 March 2020, the Department of Public Enterprises (DPE) reported 366 PSEs in India with a total investment of INR 21,58,877 crore. As per the PSE dashboard 256 are operating and none are under closure.⁴

Such PSEs in India have been established to serve the broad macroeconomic objectives of higher economic growth, enhancing India's sufficiency in terms of the production of goods and services, enhancing long-term equilibrium in terms of the balance of payments and meeting other socio-economic obligations.

Governance structure

PSEs in India are divided into various sectors depending upon their inherent operation. Further, each PSE is governed by its parent administrative ministry. Parallely, it also receives administrative guidance from Department of Public Enterprises (DPE) which is the nodal department for all the Central Public Sector Enterprises (CPSEs i.e. PSEs where President of India holds majority shareholding) and formulates guidelines on performance improvement and evaluation, autonomy and financial delegation and personnel management in CPSEs.

⁴ <https://dpedashboard.gov.in/>



As of 31 March 2020, the Department of Public Enterprises (DPE) reported 366 PSEs in India, with a total investment of INR 21,58,877 crore.

Cognate sector-wise distribution of PSEs

The DPE reports on the PSEs according to the following sector and sub-sector divisions:

Annex I lists the 256 operational PSEs under each of the sectors above. The PSEs are categorised into four schedules, namely, A, B, C and D. This categorisation is based on various qualitative factors such as national importance, level of technology and prospects for expansion as well as various quantitative factors, such as investment, capital employed, net sales, profit before tax, and number of employees. Multiple other factors also contribute to the categorisation.

Table 1. Sectoral classification of PSEs in India

Sector	Sub-sector
Agriculture	Agro-based industries
Mining and exploration	Crude oil
	Other minerals and metals
	Coal
Manufacturing, processing and generation	Chemicals and pharmaceuticals
	Fertilisers
	Heavy and medium engineering
	Industrial and consumer goods
	Petroleum (refinery and marketing)
	Steel
	Power generation
	Textiles
Services	Transportation, vehicles and equipment
	Contract, construction and consultancy
	Financial services
	Hotel and tourist services
	Power transmission
	Telecommunication and information technology
	Trading and marketing
Transport and logistics	

Ratna recognition of PSEs

Another way of PSE categorisation is based on the degree of financial autonomy that the enterprise has. This categorisation is based upon achievement of pre-determined financial parameters like profit, revenue etc. over a specified period. Based on the above, PSEs are categorised as:

Maharatnas

The Maharatnas recognition was introduced in 2010 with the objective of delegating enhanced powers to the boards of identified large-sized Navratnas PSEs to facilitate the expansion of their operations in both the domestic and international market. There is a set of eligibility criteria that makes PSEs eligible for Maharatna status, such as:

- i. Being listed on Indian stock exchange, with a certain minimum public shareholding as per Securities and Exchange Board of India (SEBI) regulations

- ii. Should have the Navratna recognition
- iii. Average annual turnover for past three years is more than INR 25,000 crore (approx. EUR 3 billion)
- iv. Average annual net worth for past three years is more than INR 15,000 crore (approx. EUR 1.7 billion)
- v. Average annual net profit after tax for past three years is more than INR 5,000 crore (approx. EUR 0.6 billion)
- vi. Significant international operations

Currently there are ten PSEs in India that have Maharatna status. The list is attached in Annex II.

Navratnas

The Navratna recognition was introduced in 1997 with the objective of identifying and delegating additional powers to PSEs with comparative advantages and the potential to become global players. The eligibility criteria for PSEs to be awarded the Navratna status is that Miniratna category 1 PSEs, or Schedule A PSEs, have obtained an 'excellent' or 'very good' rating under the MoU system for the past three years and have a composite score of more than 60 for six selected parameters.

At present, 14 PSEs in India have been granted the Navratna recognition. The list of PSEs with Navratna status can be found in Annex II.

Miniratnas

The Miniratna recognition was also introduced in 1997 with a similar objective: to grant financial autonomy and enhanced powers to PSEs that were profit-making with the goal of making them more efficient and competitive. The Miniratna PSEs are further sub-divided and have set eligibility criteria as provided below:

Miniratna category I:

PSEs that have a positive net worth have made profit in the past three years and have a pre-tax profit of more than INR 30 crore (approx. EUR 3 million) in one of those three years.

Miniratna category II:

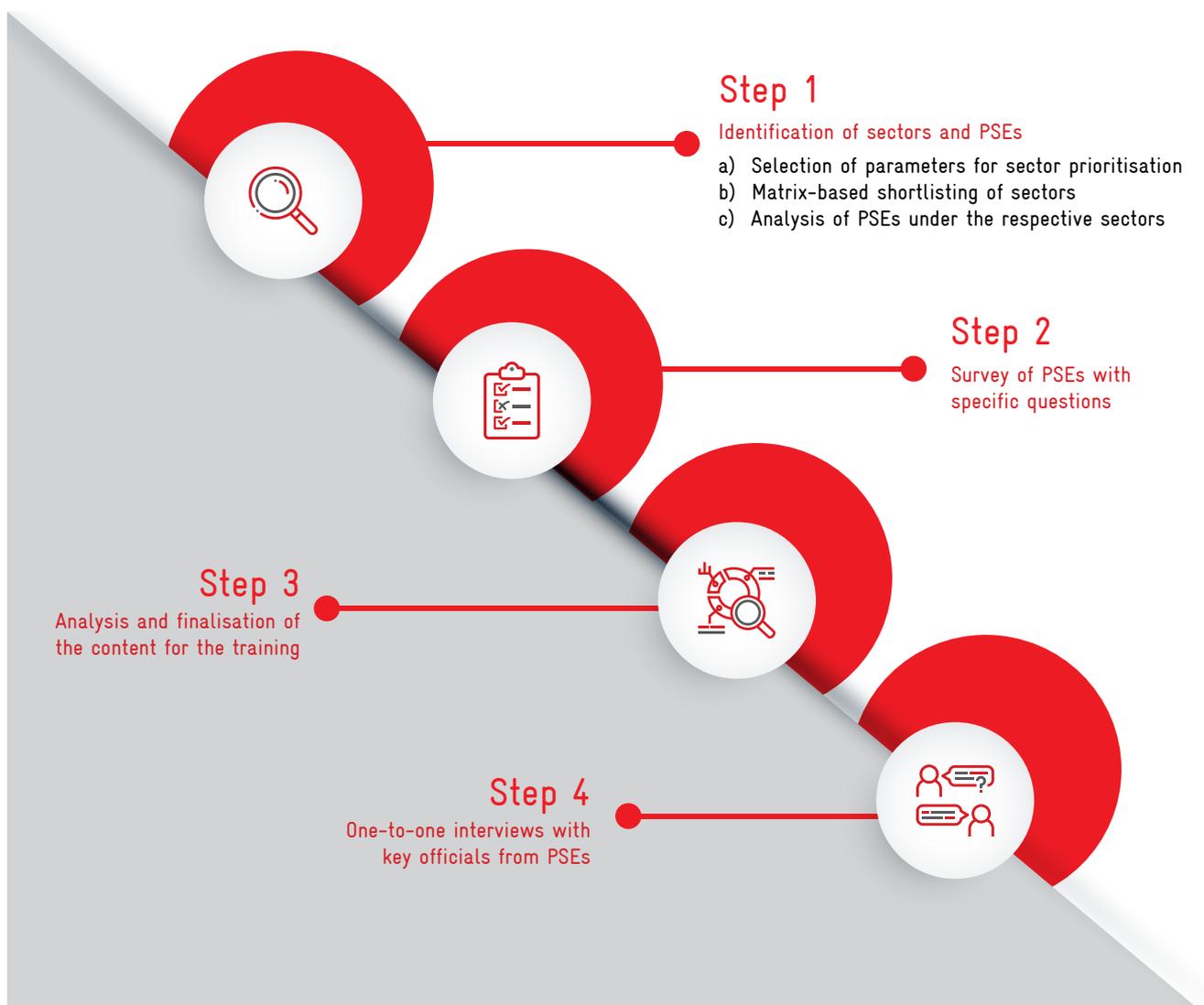
PSEs that have a positive net worth and have continuously made a profit in the past three years.

There are other rules that PSEs also need to fulfil for the Miniratna recognition which are explained in detail by DPE. Currently, there are 73 PSEs that fall under the Miniratna category (61 category I and 13 category II). They are listed in Annex II.

Only 97 PSEs out of the 256 operational PSEs have received the Ratna recognition.

METHODOLOGY FOR CONDUCTING THE TRAINING NEEDS ASSESSMENT

The overall aim of this study is to help PSEs in India build institutional capacities, strengthen their knowledge base, leverage climate finance through national and international sources and develop toolkits, all with the goal of mitigating the impacts of climate change. To achieve this major transformation, conducting a training needs assessment is a first step. This section provides an overview of our strategy for implementing the project tasks and further details the steps taken to identify the institutional capacities, recognise the gaps in the knowledge base and analyse PSEs' existing actions around climate change. The steps that have been followed for this training needs assessment are given below:



Step 1: Identification of sectors and PSEs

Following parameters are crucial for identifying the important sectors for conducting a training needs assessment. The emphasis is on parameters that are important from an economic and environmental perspective.

- 1. Energy consumption/GHG emissions profile of the sector:** Under this parameter, the team identified the sectors with a higher contribution of emissions to India's total emissions profile. Capacity building in more emissions-intensive sectors will lead to a higher impact.
- 2. GHG mitigation opportunities:** Under this parameter, the team identified the emissions mitigation possibilities of each sector. These measures can be implemented in the sector itself as well as throughout the supply chain (upstream/downstream).
- 3. Existing mitigation actions:** This parameter ranks the sectors based on the actions that the sector has already taken, or if the sector has already ventured/availed carbon finance.
- 4. Contribution to India's economy:** This parameter lists the sectors based on their contribution to the GDP. This will illustrate the sector's importance to the Indian economy.

5. Positive externalities/co-benefits:

This parameter includes the impact of the sector on all externalities such as land, water, air and people. The mitigation opportunities in the sector will be screened for the potential sustainable development benefits (economic, social, and environmental) they could bring beyond GHG emissions reductions.

- 6. Existing climate policies:** This parameter emphasises the climate policies and actions that already exist in the sector. This may be broadly definitive of the vision/mission of the sector as well.

For the above parameters, the following matrix (Table 2) was used to prioritise the sectors. The initial assessment was conducted with equal weightage for each of the parameters. The grade that could be given to any of the aspects listed above ranges from 1 to 3 where 1 is the lowest score and 3 is the highest. Detailed score dimension and its criteria are given below in Table 2. The overall score has been calculated through a sum of individual scores multiplied by the corresponding aspect weightage.

Table 2. Sectoral classification of PSEs in India

	Score		
	1	2	3
GHG emissions profile of the sector Unit: million tCO ₂ e Weighting: Equal weighting	Low (<1million tCO ₂ e)	Medium (2-3 million tCO ₂ e)	High (>3 million tCO ₂ e)
GHG emissions potential of the sector Unit: million tCO ₂ e Weighting: Equal weighting	Low (<5% of emissions)	Average (<10% of emissions)	High (>10% emissions)
Existing mitigation action Weighting: Equal weighting	1 to 2	3 to 5	More than 5
Contribution to India's economy Unit: % share in India's GDP Weighting: Equal weighting	Low (<2%)	Medium (2-10%)	High (>10%)
Positive externalities Weighting: Equal weighting	Some alignment (<2% co-benefits)	-	High alignment (> 2% co-benefits)
Existing climate policies Weighting: Equal weighting	No existing policy	Indirect policy action available but would require some revision	Fully applicable climate policy available

Step 1.1: Identification of sectors based on the criteria above

As explained in section 2, India's PSEs are grouped into different sectors and sub-sectors. Based on the criteria above, the team conducted secondary research which led to a score from 1 to 3 being awarded. For the GHG emissions profile of the sector, emissions-based information was collated from BUR3, this being the latest submission to UNFCCC to date. Further, based on the GHG emissions profile of the sector and their respective mitigation actions, a subjective score from 1 to 3 was used to estimate the GHG mitigation potential of the sector. Similarly, existing mitigation actions for these sectors were identified based on the BUR3. To determine the contribution of the sector to India's economy and to assess the importance of the sector within the economy, the percentage share of these sectors to India's Gross Value Added (GVA) was referred to, with data provided by the Ministry of Finance on its public portals. Information on positive externalities was collated from secondary research available from various sources. Information on existing climate policies for each sector came from different government departments, such as the Department of Mining.

A detailed table is attached in Annex III which details the results from the exercise above. Based on this information, we provided each sector with a relative score from 1 to 3. Table 3 (overleaf) shows the score given for each of identified sectors.

The sectors' scores ranged from 6 to 17 and the average score was 10 for all sectors. We have shortlisted the sectors that received a score of more than 10. These are as follows:

1. Coal
2. Fertilisers
3. Petroleum
4. Steel
5. Power generation
6. Transport and logistics

Sector	Sub-sector	GHG emissions profile of the sector	GHG mitigation potential	Existing mitigation actions in the sector	% share of India's GDP	Positive externalities	Existing climate policies	Total score
Agriculture	Agro-based industries	2	2	1	1	1	1	8
Mining and exploration	Crude oil	2	2	2	1	1	1	9
	Other minerals and metals	2	2	2	1	1	1	9
	Coal	3	3	3	1	2	2	14
Manufacturing, processing and generation	Chemicals and pharmaceuticals	1	1	1	3	1	1	8
	Fertilisers	2	3	3	3	2	2	15
	Heavy and medium engineering	1	1	2	3	1	1	9
	Industrial and consumer goods	1	1	2	3	2	1	10
	Petroleum (refinery and marketing)	3	3	3	3	2	2	16
	Steel	3	3	3	3	2	2	16
	Power generation	3	3	3	3	3	2	17
	Textiles	1	1	1	3	1	1	8
Transportation, vehicles and equipment	1	1	1	3	1	1	8	

Sector	Sub-sector	GHG emissions profile of the sector	GHG mitigation potential	Existing mitigation actions in the sector	% share of India's GDP	Positive externalities	Existing climate policies	Total score
Services	Contract, construction and consultancy	1	1	1	2	1	1	7
	Financial services	1	1	1	3	3	1	10
	Hotel and tourist services	1	1	1	3	2	1	9
	Power transmission	2	2	2	1	2	1	10
	Telecommunication and information technology	1	1	1	3	2	1	9
	Trading and marketing	1	1	1	3	1	1	8
	Transport and logistics	2	2	2	3	1	1	11

Step 1.2: Analysis of PSEs

A list of operating Public Sector Enterprises was obtained from the DPE, which was based on their annual gross turnover in the year 2018-19 (Annex IV). The PSEs were ranked by the DPE in terms of their annual gross turnover. For this analysis, the team only considered those PSEs that have been awarded the Ratna recognition. Ratna recognition means these PSEs received an excellent score from the DPE, performing well based on various parameters and were important to the Indian economy. They also represent a fair share of their sector. Furthermore, some of these PSEs have a global presence and are more competitive and efficient, which will lead to a capacity-building exercise with greater impact. These PSEs can serve as a best-in-class example for their respective sectors and other PSEs.

Subsequently, a parameter-based matrix was prepared for each of the PSEs falling within the Maharatna and Navratna categories (Annex IV). The data for each parameter was collected using a combination of desk research and publicly available reports.

For the Miniratna category, a slightly different approach was used because of the lack of available data for several parameters. Some of these PSEs are subsidiaries of the Maharatna PSEs, hence some of the data had already been compiled (e.g. PSEs such as Mangalore Refinery & Petrochemical Ltd. and Chennai Petroleum Corporation Ltd. are subsidiaries of ONGC and IOCL, respectively). Similarly, South Eastern Coalfields Ltd., Central Coalfield Ltd., Western Coalfield Ltd., etc. are subsidiaries of Coal India Ltd., which had already been analysed. Most of the PSEs in the Miniratna category have not reported their GHG emissions or mitigation actions in the public domain.

The analysis of PSEs provides in-depth knowledge of the climate actions that they have already undertaken. It also sheds light on the positive opportunities that they are creating, while highlighting the gaps that exist in climate knowledge, in institutional capacities (such as a lack of dedicated teams/departments as well as climate policies) and the absence of companies measuring and reporting their GHG emissions. It also provides further detail about the broader mitigation actions that are being integrated into the value chain, both horizontally and vertically. It helps us to understand further the opportunities that lie ahead with this training and emphasises which topics are important from a climate training point of view.

Step 2: Survey questionnaire to understand the training needs

As a second step, the team prepared a questionnaire with a detailed list of queries to understand the need for a discussion with the PSEs and the PSEs' level of preparedness for addressing climate change. Twenty PSEs responded to the questionnaire. The survey questionnaire is attached as Annex V.

Step 3: Interview with the PSEs' key personnel

To assess the specific needs of the training and understand its logistical aspects, one-to-one interviews were conducted with the key personnel at the PSEs.

The interviews provided a deep understanding of the topics to focus on, the different personnel and departments that should be trained and how the training could effectively support PSEs with the actual implementation of mitigation actions. The outlines of the training module were presented to the PSE officials who were interviewed and their inputs on each module were received and incorporated.

Annex VI, which is attached to this report, gives a list of the PSE officials who were interviewed for the consultation process.

Step 4: Analysis of the results

Lastly, based on the secondary research, the survey responses and the interviews, the team created a matrix and analysed the results of the training needs. The findings are discussed in detail in the following section.

FINDINGS

Based on interactions with the participants from PSEs and the secondary research, it was established that, while all PSE are aware of climate change and its impacts, most of them lack concrete plans and/or targeted approaches to address climate change. The interviewed stakeholders agreed that existing knowledge and skills will need to be enhanced to manage actions related to climate change. They showed an interest in receiving guidance on how to implement more effective climate action through capacity building. The discussion revealed that an inclusive approach required. The following are the specific findings of the TNA exercise, based on conversations with select PSEs and their responses to the survey questionnaire. The results have been divided into sections based on the questions that were asked during the interviews and the surveys:

The training needs and feedback on the modules

A glimpse of the training modules was provided to the participants during the consultation process. The training modules were highly appreciated by all the stakeholders and it was felt that some of the topics within this training, such as internal carbon pricing, GHG estimation, climate communication and climate finance would really support PSEs with enhancing their mitigation actions.

For instance, in the steel sector, the Steel Authority of India (SAIL) has taken exemplary actions to reduce the impact of climate change and begin its sustainability journey. Their actions are commendable and inspirational for many in their sector. During the conversation, SAIL highlighted that to become a pioneer in addressing the climate issue, the training would need support to SAIL with enhancing its existing mitigation targets and would help it to create an action plan to achieve those targets. SAIL is keen to learn about internal carbon pricing, especially as it is an integral tool for localising climate policies at the company level.

While all PSE are aware of climate change and its impacts, most of them lack concrete plans and/or targeted approaches to address climate change. The interviewed stakeholders agreed that existing knowledge and skills will need to be enhanced to manage actions related to climate change.



There is a need to build capacities of Indian PSEs to be able to enhance their actions on climate change and support India in achieving its NDC targets



The representative from Rashtriya Ispat Nigam Limited (RINL) highlighted the commendable actions that RINL has been taking around climate change. It engages actively in the carbon markets and is one of the few PSEs to internally put a price on carbon. He also highlighted RINL's high-impact action plan. As regards the training, he reiterated that the impact of the Paris Agreement on the Clean Development Mechanism (CDM) market (and how CDM projects will transition after 2020) is an important aspect to consider and of high interest to RINL.

If aviation sector is considered, the representative from the Airports Authority of India (AAI) highlighted that it is crucial for the training to bring the requisite momentum to the conversation about mitigating climate change and emphasise the importance of taking action now. While all the modules were highly appreciated by AAI, AAI felt that the modules on carbon pricing and carbon markets were of especially high interest, as these are the topics that would help it enhance its plan of action and strategy around climate change. AAI also felt that, while it has made remarkable progress with its actions, it would be helpful for the training to elaborate on the specific details of what can be done in the aviation sector and how. Currently, AAI reports the emissions of four of its airports and recently declared the creation of a carbon management plan. AAI has also just set a carbon emission reduction target. This training would thus support AAI with taking the next steps to accelerate its climate journey.



Specific topics for capacity building

The following topics were identified for the training, based on the survey and interview feedback (>50% responses from PSEs during the survey highlighted the following topics):

Climate policies

The assessment found that there is a need to decode India's NDCs, its targets and the implications of the Paris Agreement in a post-2020 environment. Accordingly, the participants

suggested that there is an enhanced need to understand carbon taxes, carbon pricing and internal carbon pricing. Without understanding the national and international policies around climate change, it is difficult for PSEs to understand where they can leverage and develop their action plans. (Comprehending India's different policies on climate change, the various market-based mechanisms, and the implications of internal carbon pricing is crucial for PSEs, so that they can incorporate these policy actions and mechanisms into their implementation and strategic plans, which will help them to focus on resource efficiency and reducing their GHG emissions).

GHG emission estimation

Most of the participants were aware of GHG emission estimation and already had some form of an estimation process in place.

However, it was suggested that specific training on the topic could still help PSEs with identifying the next major steps for streamlining the process of GHG estimation, developing their climate journey and prioritising mitigation actions. It would also help them to understand which methodologies and emission estimation processes are internationally acceptable. Understanding GHG emissions is important for identifying emission hotspots, understanding what and where is attention needed, and developing the next steps. The GHG emission estimation process develops a scientific understanding of the supply chain, helps to identify inputs to the models, helps with understanding the links between operations and associated emissions, monitors progress towards policy goals and enhances communication with the public. Given that more and more consumers are becoming aware of sustainability and climate change, it is imperative that companies communicate better with the public to create interest and awareness.

Understanding GHG emissions is important for all organisations, irrespective of their nature of work and their sector. A few organisations such as National Hydro Power Corporation (NHPC) and the Power Finance Corporation (PFC) do not have a high GHG emissions profile due to the nature of their work. NHPC generates renewable energy and the PFC finances renewable energy. They are, however, still interested in learning about GHG emission estimation and how it would help them to better communicate their climate actions.

Carbon markets

Another interesting topic which emerged from the survey and the assessment was carbon markets. Notably, it was found that while all the PSEs are aware of the markets, only a small number have developed mitigation activities under them. GAIL India has registered one CDM project (5 MW solar power project) while ONGC has registered 15 CDM projects so far. RINL has applied for 14 CDM projects, out of which four were approved and three were registered. RINL has already received certified emission reductions (CERs) for two projects. There is an inclination towards learning about carbon markets and the various standards in terms of how these markets operate, their status and how carbon credits and projects are registered.

On the question of carbon markets, representatives from NTPC and ONGC suggested the importance of demystifying how carbon markets will function in a post-2020 scenario. They also said that there is need for clarity around the functioning of Article 6 of the Paris Agreement and the transition of carbon markets from Kyoto to Article 6. NTPC further suggested that the training could support NTPC with insetting, offsetting, reporting and the other climate actions that can be taken to strengthen its existing climate journey. Many PSEs were also interested in offsetting and the generation and use of offsets.

95%
of the PSEs
analysed are
aware of GHG
estimation process,
however, not all are
estimating it

Some benchmarks for target setting in Indian PSEs



Steel Authority of India has aligned itself with goals of HDC and has set the following targets by 2030:

Reduce 2.2-2.4 tCO₂/tcs

in BF-BOF (Blast Furnace - Basic Oxygen Furnace) Route

Reduce 2.6-2.7 tCO₂/tcs

in DRI-EAF (Direct Reduced Iron- Electric Arc Furnace) Route



Gail aims to reduce its emission intensity by 33%. This is a good initial target but it is currently incomplete as the target does not specify a time limit for achieving this.



ONGC declared itself carbon neutral for 2013-2014



Indian Oil has committed to reducing its 18% carbon footprint by 2020

Carbon pricing

Another topic of high interest was carbon pricing. It was found that, while most of the PSEs are interested in learning more about carbon pricing and internal carbon pricing, only a few of them have implemented, or are planning to implement an internal carbon price. Understanding internal carbon pricing, its different dimensions, how to put a price on carbon and how to use the resulting revenues will support PSEs with clearly communicating their comprehensive action plans and enhance their actions in terms of mitigation. Learning and understanding this is highly important. Most of the PSEs would benefit from understanding the importance of putting a price on carbon and how it would impact their triple bottom line.

Communicating climate actions

It was further found that, while all the interviewed PSEs are aware of the importance of disclosing their climate actions and do so internally (in their business responsibility reports/ sustainability reports and/or their websites), none of them report externally on any platform such as CDP (previously known as Carbon Disclosure Project) or TCFD (the Task Force on Climate-related Financial Disclosure). There is limited awareness of these platforms the training should thus take this into consideration. It is interesting that some of the PSEs, namely, SAIL, GAIL, ONGC and BPCL use the Global Reporting Initiative (GRI) framework to report their GHG emissions. Other PSEs can use this a best-in-class example for their sector and learn more about this during the training.

Aligning with international standards is important because it is bringing benefits. A company can gain recognition and trust from investors because of its climate change commitments. These standards are not only useful for mature companies with a well-established climate change strategy, but also for companies that are still developing their reporting and disclosure practice. Reviewing these standards will help them to understand the information that needs to be collected to improve their understanding of their company's climate change impacts and contribution to climate actions, as well as to prepare them for participation in carbon pricing or climate finance schemes.

Climate finance

From the discussions and the surveys, it was observed that participants are keen on learning about how they can access climate finance from different sources – both nationally and internationally. Climate finance is important as it will help PSEs to mobilise finance that can then be used for their climate action and sustainability action. Currently, out of the sample of PSEs assessed, only two (i.e., GAIL and RINL) have accessed international climate finance. RINL has accessed international finance for the installation of a 20.6 MW Sinter waste heat recovery plant under Japan Green Aid Plant. The project is 50% funded by Japan NEDO and balance- funding is provided by RINL.

Nine out of the 20 PSEs surveyed use their funds

Further, it was found that nine out of the 20 PSEs surveyed use their own funds to finance their climate action; interestingly, only three have accessed climate finance through domestic sources and only one through international sources. Most of the interviewed PSEs said that they are unaware of these financing windows and the process for accessing finance for climate action. Hence, a part of the training should provide information on these aspects.

Logistical arrangements of the capacity building exercise: During the survey, seven out of 12 PSEs responded that a training programme of at least three days would be effective for learning about climate change. Four PSEs (namely NFL, ONGC, SJVN and PFC) felt that a five-day programme would be effective.

In the interview, most of the PSEs highlighted the fact that the training needs to be developed in two formats: one for the strategic and higher/senior management team, the other for the main implementation team. The training for the higher management can be succinct, covering only the strategic and decision-making aspects, while the other training for the implementation team can go into further detail on each of the topics.

During the interview, NTPC suggested that the training programme be a five-day programme in Hindi and in English, both offline and on virtual platforms.

SAIL suggested that the training programme can be a two-day programme for the implementation group and a shorter programme for the planning group (the key decision-makers), which could be delivered virtually. It was also suggested that post-pandemic, the training be developed using a classroom training approach (regional as well) for a better learning process.

PFC suggested that the training could incorporate five to eight persons initially and then be extended to a larger audience, say 50% of PFC staff. It also suggested that the trainees be evaluated for increased impact.

These discussions only provide a glimpse of the suggestions and inputs received from the larger consultation group. Similar viewpoints were observed across the PSE consultation.

Areas identified for capacity building of Indian PSEs on climate change are:

- Climate Policies
- GHG emission estimation
- Carbon Markets
- Carbon pricing
- Communicating climate action
- Climate finance

Majority PSEs Responded that a training programme of at least three days would be effective for learning about climate change.



RECOMMENDATIONS

Based on the analysis above, it is evident that there is a need to build the capacities of the Indian PSEs around climate change and its related topics. However, it was also identified that, to achieve a low-carbon pathway and sustainable development, much more is needed besides the training. Support is needed on topics such as understanding how to build a climate journey, create emission reduction targets and how to communicate. It is therefore recommended that support be provided to PSEs with developing and implementing their mitigation action plans. While some PSEs, such as GAIL, RINL and SAIL are making progress on their climate journey, some support is still required to accelerate those actions so that they can become climate leaders in their respective sectors.

While there are number of actions that can be taken to mitigate climate change at a company level, the following recommendations are suggested for the time being for the effective capacity-building of Indian PSEs around climate change.

Capacity building of PSEs around climate change: Based on the results above, it is recommended that a training programme be developed to eliminate existing knowledge gaps. The training programme will include four modules, which each highlight and give more importance to the identified topics. The four identified modules/topics are as follows:

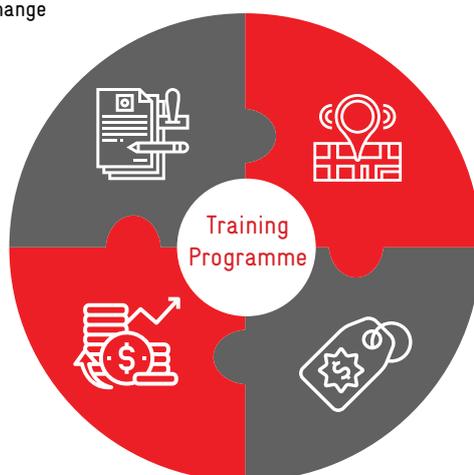


Need to build the capacities of the Indian PSEs around climate change and its related topics. However, it was also identified that, to achieve a low-carbon pathway and sustainable development, much more is needed besides the training. Support is needed on topics such as understanding how to build a climate journey, create emission reduction targets and how to communicate.

Module 1:

Introduction to climate policy and actions

- Introduction to climate change
- International response to climate change
- India's response to climate change
- Role of PSEs in India's response



Module 4:

Carbon markets and climate finance

- Introduction
- Carbon credits
- Carbon project development
- Climate finance instruments and non-market mechanisms

Module 2:

Building your climate journey

- How to accelerate your climate actions
- Measurement, target setting
- Reducing your GHGs
- Financing and communicating your actions
- Case studies

Module 3:

Carbon pricing and indirect pricing instruments

- Introduction
- Carbon tax and ETS
- Internal carbon pricing
- Indirect pricing instruments
- Usage of revenues from carbon pricing

The training modules will elaborate on each topic with specific case studies and activities. A detailed table of contents is being prepared based on the above and once developed will be shared with SCOPE and GIZ India.

It is proposed that the training modules be delivered to the PSEs virtually through a three-to five-day programme, where the participants take part in the training for a few hours each day. Initially, the training was developed with the intent of face-to-face interaction but given the current COVID-19 situation, the training can only be conducted virtually. If the situation improves in 2021, we will conduct in-person trainings with the PSEs. It was further concluded that the training be delivered for two teams: the senior management and the implementation team for the most effective execution of the training. The section below captures what each of the training module would involve:



Module 1: Introduction to climate policy and actions

To plant a tree, it is important to understand the soil structure, the type of tree and how much nourishment in the form of sun and water it will need. Similarly, to mitigate climate change, understanding the topic in detail is very important. Therefore, this module dives deep into creating an understanding of the issue. While most of us are aware of climate change, understanding it from a business perspective is crucial. Once we know the root cause, we better understand the accompanying actions.

The module proposes to explain the main concepts of climate change, unclear, please rephrase. It would also detail the different mechanisms for addressing climate change, i.e., adaptation and mitigation actions. It would then explain the differences between adaptation and mitigation activities and reflect on the current impacts of climate change on the world, on India and on businesses.

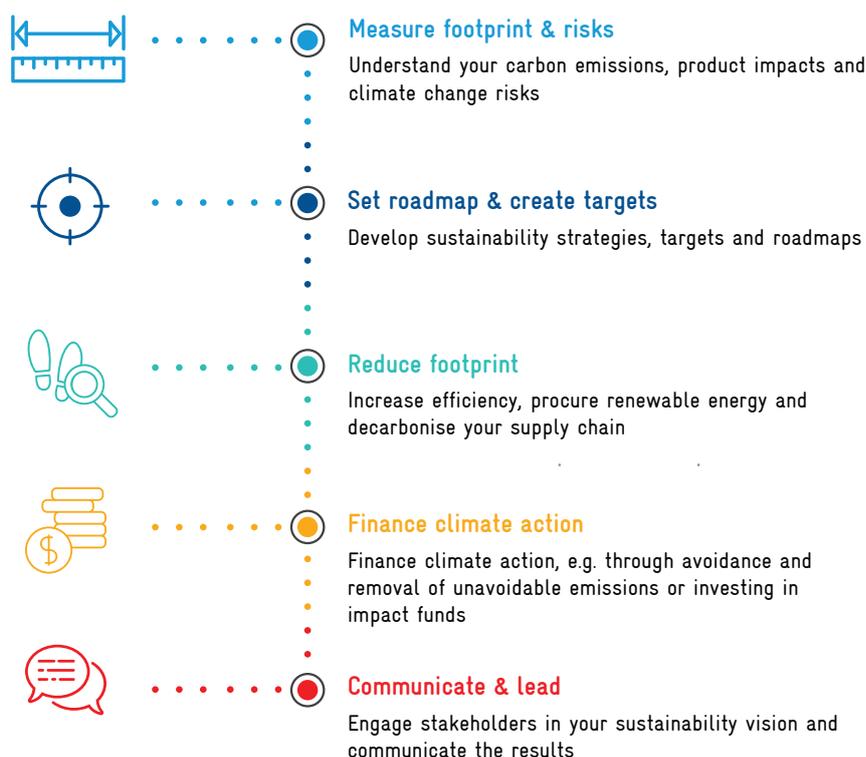
Moving on from building an understanding of the global impact of climate change, the module will then elaborate on the policy actions taken to address this, according to the timelines that have been published in recent years. Similarly, it will dive deep into the

national actions that may influence decision-making and have an impact (direct/indirect) on PSEs. It will also indicate the implications of sustainability on business and vice-versa.

Module 2: Building your climate journey



The second module will be developed bearing in mind the various stages of taking climate action. It will support the PSEs who are already on their climate journey with identifying the actions that are necessary, as well as supporting the PSEs that have no prior experience and whose journey is yet to begin. The module will focus on building a step-by-step process which includes the following components:



GHG estimation: This section will create an in-depth understanding of the purpose of quantifying GHG emissions. It will explain how the boundaries for emission estimations are defined and what the aim should be. It will also explain the various methodologies and standards that exist, and which are relevant from the Indian perspective, providing case studies and example activities.

Reduce footprint/mitigation: Another part of the module will explain what mitigation is, along with case studies and examples, why reducing your footprint is important, and how this can be achieved. The module will also focus on the current actions that can be taken with best-in-class examples of existing mitigation actions taken by PSEs.

Set roadmap & targets: The module will further elaborate on the details of setting a roadmap and targets. It will also focus on developing sustainability strategies and the different targets and standards available for PSEs to align themselves with and how they can achieve this.

Finance climate action: The module will demonstrate how PSEs can finance their actions using internal and external sources of financing.

Communicate and lead: The module will focus on why communicating climate action is important and how it can be done. It will focus on the different international methodologies available and what their processes.



Module 3: Carbon pricing and indirect pricing instruments

The module will build the capacities of PSEs around the important topic of carbon pricing. It will focus on the question of what carbon pricing is, how a price on carbon is incorporated, and why is it important. It will also teach participants about the various market-based and nonmarket-based pricing instruments available across the globe and explain what different countries are implementing. It will advise PSEs on the importance of putting a price on carbon internally and suggest various tried and tested methodologies for doing this. The module will also touch on indirect pricing instruments and enhance PSEs' existing knowledge of Renewable Energy Certificates.

The module will further recommend the principle of insetting and explain how this can be implemented across the supply chain. Insetting GHG emissions is an important and evolving activity which can help PSEs to enhance their mitigation actions.



Module 4: Carbon markets and climate finance

We suggest that a module be prepared on two crucial subjects: carbon markets and climate finance. The first part of the module will focus on the meaning of carbon markets, the different types of markets (compliance and voluntary), the needs of these market their existing status globally and nationally, and most importantly, the various standards available within a carbon market. The module will also explain in detail what is traded in a carbon market and how the trading is conducted so that if any PSE wishes to participate in the carbon markets, they will have a clear understanding of how and what to do.



The module will explain the different market types under the UNFCCC mechanism in detail and what Article 6 of the Paris Agreement may entail for the carbon markets after 2020. Since little is known about the transition of the carbon market post-2020, the module will build on the existing knowledge and information available and provide some guidance on the transition of the credits from the Kyoto Protocol to Article 6. The module will indicate clearly where carbon credits can be sold and purchased and what the state of demand is for carbon credits. It will also focus on the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and what this mechanism would mean for India.

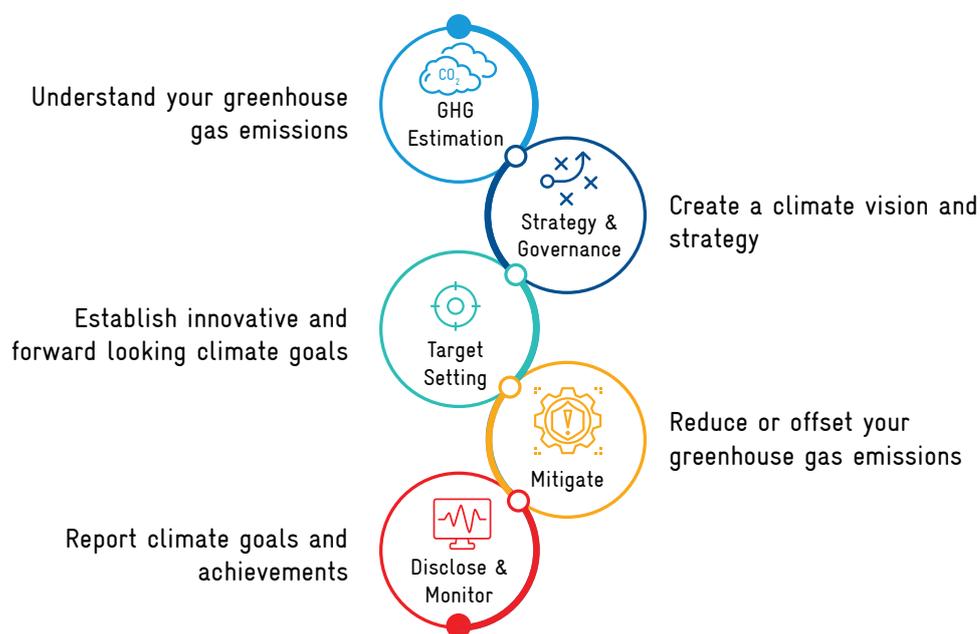
The module will additionally teach participants about how to develop carbon projects and the step-by-step approach that is needed to issue carbon credits. Once the project is developed, the module will then try to build capacities of the PSEs around the measurement, reporting and verification (MRV) framework.

The second part of the module will discuss climate finance and how this is different from other forms of finance, namely sustainable finance, environmental finance, green finance, and adaptation finance. The module will then perform a deep-dive into the state of climate finance in India as well as globally and how PSEs have been engaged in it. It will also describe the key challenges that exist when accessing this finance and the different mechanisms and sources that are available for PSEs. It will elaborate on each public and private source that is relevant to PSEs and clarify the methodology for mobilising such finance. The module will also discuss the steps needed to develop a good climate finance project.

From the modules above, it is expected that the PSEs may be able to enhance their existing methods, strategy and actions for addressing the mitigation component of climate change. The modules will be made interactive in each case by using different approaches, practical know-how, case studies and activities to enhance the understanding of each topic.

Formation of dedicated teams for taking climate action: It is suggested that engaging with staff members and other relevant stakeholders be an essential component in mitigation action planning/strategy creation. Effective climate action planning mostly relies on an adequate, existing planning process and incorporating stakeholders into the process of developing the action plan. Senior management and officials can play a key role in facilitating the implementation of crucial policies and creating a governance structure for climate action planning, while the junior management can support the organisation with outreach, organising meetings, conducting GHG

assessments and helping to draft sections of the plan. It is therefore suggested that the organisation create a dedicated team, who can then help to develop an engagement strategy and create a long-term vision and whose support can be enlisted when taking steps to mitigate climate change. This team should brainstorm and develop the goals for the execution of the mitigation action plan.



Development of mitigation action guidebook: To further streamline the training and help PSEs enhance their existing mitigation actions or support those PSEs who are just beginning their climate action journey, a mitigation action guidebook could be developed. This action guidebook can act as a step-by-step guide to building the climate journey and accelerating climate action. The following step-by-step journey is proposed in this mitigation guidebook:

Details on each of these steps will be provided in the guidebook with relevant information on how to complete one step and move to the next, supported by Indian case studies and examples. The guidebook may serve as an excellent accompaniment for any PSE to develop their mitigation strategies and action plans.

Development of sector-specific mitigation guidebooks: From the discussions and surveys with PSEs, it was found that more sectoral-level support is needed to tap into the mitigation opportunities available. The generic guidebook that will be prepared will support all PSEs, while sector-specific mitigation guidebooks are recommended for the development of action plans for select sectors. These guidebooks will provide details on sector-specific opportunities for climate change mitigation. The guidebook will also provide an analysis of the sector, including the cost of mitigation technologies, the timeframe available for implementing them and the associated benefits. Based on our discussions with the PSEs,

four sectors have currently been prioritised, namely, power, iron and steel, oil and gas and mining. South Pole will build from its personal experience of working with these sectors and analyse the available mitigation actions that can be implemented on a national level.

Development of mitigation index: To understand PSEs and empower them to accelerate their climate action, it is suggested that a mitigation index be developed to analyse where each PSE stands and to encourage them to actively enhance their ranking via improving climate action. The mitigation index can categorise PSEs based on their readiness to address climate change, their mitigation potential, their existing mitigation actions, climate disclosure and other important parameters. It can help with measuring the responsibility of a PSE for taking climate action and equip PSEs with data-driven tools to identify low-carbon development opportunities in support of mitigating climate change and driving comprehensive low-carbon development and growth. The mitigation index may support PSEs with analysing the factors that need the most attention and identifying what can be done differently to become climate pioneers in their respective sectors.

Climate change declaration by the public sector:

To demonstrate the leadership role of the PSEs in addressing the adverse impacts of climate change and supporting the government of India with achieving its climate targets, the PSEs should declare their collective agenda on climate action. This collective declaration will highlight the unity



among different PSEs and the shared need for action. This declaration should be developed and vetted by the interested PSEs, Ministry of Environment, Forest, and Climate Change and the Department of Public Enterprises, and then eventually launched.

Development of a platform for reporting climate achievements by PSEs: To highlight and showcase the impeccable actions and climate change achievements on Indian PSEs, an online platform will be created and complemented by a webpage on the SCOPE website. This platform will host news on the latest developments and activities taken by Indian PSEs on climate change mitigation and adaptation. The platform will encourage other PSEs to take more action and achieve features to showcase their unique actions and strategies around climate change. It will also bring together the data and the information from PSEs in one platform and may encourage PSEs to perform better.

The recommendations above are based on the findings of this report which has been prepared with the intention of supporting Indian PSEs with pioneering their climate journey, understanding the urgency of addressing climate change and finally, of supporting the bigger agenda of achieving the targets under the NDC that India has promised. If all the PSEs are able to enhance or begin their climate journey, achieving the targets and creating a global impact may serve as a first-in-class experience for India. It would demonstrate India's ability to implement the actions of Paris agreement and the greater goal of serving its citizens a sustainable and a clean future. In order to achieve this, all the above activities would need to be implemented in sync and coherently under four pilot training programmes. The training programmes will ensure the delivery and enhancement of existing knowledge and will further emphasize the need to develop the capacities of PSEs further. The training programmes will be developed in the form of three to five-day training, either virtually or in-person depending on the state of restrictions with regards to the pandemic.





ANNEXES

Annex I

List of 366 PSEs based on their cognate sectors

S. No.	Sector / Cognate Group / Cpse
Agriculture	
Agro Based Industries	
1	Andaman & Nicobar Isl. Forest & Plant. Dev. Corp. Ltd
2	HPCL Biofuels Ltd.
3	National Seeds Corpn. Ltd.
Mining And Exploration	
Coal	
4	Bharat Coking Coal Ltd.
5	Central Coalfields Ltd.
6	Coal India Ltd.
7	Eastern Coalfields Ltd.
8	Mahanadi Coalfields Ltd.
9	Northern Coalfields Ltd.
10	South Eastern Coalfields Ltd.
11	Western Coalfields Ltd.
Crude Oil	
12	Bharat Petro Resources Ltd.
13	Oil & Natural Gas Corporation Ltd.
14	Oil India Ltd.
15	ONGC Videsh Ltd.
16	Prize Petroleum Company Ltd.
Other Minerals & Metals	
17	FCI Aravali Gypsum & Minerals (India) Ltd.
18	Hindustan Copper Ltd.
19	IREL (India) Ltd.
20	J&K Mineral Development Corpn. Ltd.
21	Kiocl Ltd.
22	Moil Ltd.
23	National Aluminium Company Ltd.
24	NMDC Ltd.
25	Orissa Mineral Development Company Ltd.
26	The Bisra Stone Lime Company Ltd.
27	Uranium Corporation Of India Ltd.

S. No.	Sector / Cognate Group / Cpse
Manufacturing, Processing And Generation	
Steel	
28	Ferro Scrap Nigam Ltd.
29	Mishra Dhatu Nigam Ltd.
30	Rashtriya Ispat Nigam Ltd.
31	Steel Authority Of India Ltd.
Petroleum (Refinery & Marketing)	
32	Bharat Petroleum Corpn. Ltd.
33	Chennai Petroleum Corporation Ltd.
34	Hindustan Petroleum Corpn. Ltd.
35	Indian Oil Corporation Ltd.
36	Mangalore Refinery & Petrochemicals Ltd.
37	Numaligarh Refinery Ltd.
Fertilizers	
38	Brahmaputra Valley Fertilizer Corpn. Ltd.
39	Fertilizers & Chemicals (Travancore) Ltd.
40	Hindustan Fertilizer Corpn. Ltd.
41	Madras Fertilizers Ltd.
42	National Fertilizers Ltd.
43	Rashtriya Chemicals And Fertilizers Ltd.
44	The Fertilizer Corpn. Of India Ltd.
Chemicals & Pharmaceuticals	
45	Bengal Chemicals & Pharmaceuticals Ltd.
46	Bharat Immunologicals & Biologicals Corp. Ltd.
47	Brahmaputra Crackers & Polymer Ltd.
48	Goa Antibiotics & Pharmaceuticals Ltd.
49	Hil (India) Ltd.
50	Hindustan Antibiotics Ltd.
51	Hindustan Fluorocarbons Limited
52	Hindustan Organic Chemicals Ltd.
53	HLL Biotech Ltd.
54	IDPL (Tamilnadu) Ltd.
55	Indian Drugs & Pharmaceuticals Ltd.
56	Indian Medicines & Pharmaceutical Corpn. Ltd.
57	Indian Vaccine Corp. Ltd.
58	Karnataka Antibiotics & Pharmaceuticals Ltd.
59	Ongc Mangalore Petrochemicals Ltd.
60	Orissa Drugs & Chemicals Ltd.
61	Rajasthan Drugs & Pharmaceuticals Ltd.
62	Bihar Drugs & Organic Chemicals Limited
63	Maharashtra Antibiotics & Pharmaceuticals Limited
64	Manipur State Drugs & Pharmaceuticals Limited
Heavy & Medium Engineering	
65	Balmer Lawrie & Co. Ltd.

S. No.	Sector / Cognate Group / Cpse
66	Bel Optronics Devices Ltd.
67	Bel-Thales Systems Ltd.
68	Bharat Dynamics Ltd.
69	Bharat Electronics Ltd.
70	Bharat Heavy Electricals Ltd.
71	Bharat Pumps & Compressors Ltd.
72	Bharat Wagon & Engg. Co. Ltd.
73	BHEL Electrical Machines Ltd.
74	Braithwaite & Co. Ltd.
75	Burn Standard Company Ltd.
76	Central Electronics Ltd.
77	Cochin Shipyard Ltd.
78	Electronics Corpn. Of India Ltd.
79	Garden Reach Shipbuilders & Engineers Ltd.
80	Goa Shipyard Ltd.
81	Heavy Engineering Corpn. Ltd.
82	Hindustan Aeronautics Ltd.
83	Hindustan Cables Ltd.
84	Hindustan Shipyard Ltd.
85	HMT Bearings Ltd.
86	HMT Chinar Watches Ltd.
87	HMT Ltd.
88	HMT Machine Tools Ltd.
89	HMT Watches Ltd.
90	Hooghly Dock And Port Engineers Ltd.
91	I T I Ltd.
92	Instrumentation Ltd.
93	Mazagon Dock Shipbuilders Ltd.
94	Naini Aerospace Ltd.
95	Rajasthan Electronics And Instruments Ltd.
96	Richardson & Cruddas(1972) Ltd.
97	Sail Refractory Company Ltd.
98	Scooters India Ltd.
99	Tungabhadra Steel Products Ltd.
100	Vignyan Industries Ltd.
Transportation Vehicle & Equipment	
101	BEML Ltd.
Industrial And Consumer Goods	
102	Andrew Yule & Company Ltd.
103	Artificial Limbs Mfg. Corpn. Of India
104	Cement Corpn. Of India Ltd.
105	Hindustan Newsprint Ltd.
106	Hindustan Paper Corporation Ltd.
107	Hindustan Photo Films Manufacturing Co. Ltd.

S. No.	Sector / Cognate Group / Cpse
108	Hindustan Salts Ltd.
109	HLL Lifecare Ltd.
110	Hooghly Printing Company Ltd.
111	Nagaland Pulp & Paper Company Ltd.
112	Nepa Ltd.
113	Sambhar Salts Ltd.
114	Security Printing & Minting Corpn. India Ltd.
Textiles	
115	Birds Jute & Exports Ltd.
116	British India Corporation Ltd.
117	National Jute Manufactures Corporation Ltd.
118	Aurangabad Textiles & Apparels Parks Limited
119	National Textile Corpn. Ltd.
Power Generation	
120	Bhartiya Rail Bijlee Co. Ltd.
121	Kanti Bijlee Utpadan Nigam Ltd.
122	Loktak Downstream Hydroelectric Corporation Ltd.
123	NHDC Ltd.
124	NHPC Ltd.
125	NLC India Ltd.
126	NLC Tamil Nadu Power Ltd.
127	North Eastern Electric Power Corporation Ltd.
128	NTPC Ltd.
129	Nuclear Power Corpn. Of India Ltd.
130	Patratu Vidyut Utpadan Nigam Ltd.
131	SJVN Ltd.
132	THDC India Ltd.
133	Nabinagar Power Generating Co Ltd.
Services	
Power Transmission	
134	NTPC Electric Supply Company Ltd.
135	Power Grid Corporation Of India Ltd.
136	Power Grid Jabalpur Transmission Ltd.
137	Power Grid Parli Transmission Ltd.
138	Power Grid Southern Interconnector Transmission System Ltd.
139	Power Grid Warora Transmission Ltd.
140	Power System Operation Corporation Ltd.
141	Powergrid Kala Amb Transmission Ltd.
142	Powergrid NM Tranmission Ltd.
143	Powergrid Unchahar Transmission Ltd.
144	Powergrid Vizag Transmission Ltd.
145	Rec Power Distribution Co. Ltd.
146	Rec Transmission Projects Co. Ltd.

S. No.	Sector / Cognate Group / Cpse
Trading & Marketing	
147	Antrix Corporation Ltd.
148	Central Cottage Industries Corpn. Of India Ltd.
149	Food Corpn. Of India
150	Handicrafts & Handloom Exports Corp. Of India Ltd.
151	HMT (International) Ltd.
152	India Trade Promotion Organisation
153	Karnataka Trade Promotion Organisation
154	M M T C Ltd.
155	M S T C Ltd.
156	National Film Dev. Corpn. Ltd.
157	National Handloom Development Corporation Ltd.
158	North Eastern Handicrafts & Handloom Dev.corpn. Ltd.
159	North Eastern Regional Agri. Marketing Corp.Ltd.
160	NTPC Vidyut Vyapar Nigam Ltd.
161	P E C Ltd.
162	State Trading Corpn. Of India Ltd.
163	STCL Ltd.
164	Tamil Nadu Trade Promotion Organisation
165	The Cotton Corpn. Of India Ltd.
166	The Jute Corpn. Of India Ltd.
Transport And Logistic Services	
167	AAI Cargo Logistics & Allied Services Company Ltd.
168	Air India Air Transport Services Ltd.
169	Air India Engineering Services Ltd.
170	Air India Express Ltd.
171	Air India Ltd.
172	Airline Allied Services Ltd.
173	Airports Authority Of India
174	BPCL-KIAL Fuel Farm Pvt. Ltd.
175	Central Inland Water Transport Corpn. Ltd.
176	Central Railside Warehouse Co. Ltd.
177	Central Warehousing Corpn.
178	Chandigarh International Airport Ltd.
180	Concor Air Ltd.
181	Container Corporation Of India Ltd.
182	Fresh & Healthy Enterprises Ltd.
183	Gail (India) Ltd.
184	Gail Gas Ltd.
185	Pawan Hans Ltd.
186	Punjab Logistic Infrastructure Ltd.
187	Shipping Corporation Of India Ltd.
188	Sidcul Concor Infra Company Ltd.
189	Visakhapatnam Port Logistics Park Ltd.

S. No.	Sector / Cognate Group / Cpse
Contract & Construction And Tech. Consultancy Services	
190	Agrinnovate India Ltd.
191	Braithwaite Burn & Jessop Construction Company Ltd.
192	Bridge & Roof Co.(India) Ltd.
193	Broadcast Engg. Consultants India Ltd.
194	Central Mine Planning & Design Institute Ltd.
195	Certification Engineers International Ltd.
196	Delhi Police Housing Corporation Ltd.
197	EDCIL(India) Ltd.
198	Engineering Projects (India) Ltd.
199	Engineers India Ltd.
200	High Speed Rail Corporation Of India Ltd.
201	Hindustan Prefab Ltd.
202	Hindustan Steelworks Costn. Ltd.
203	HLL Infra Tech Services Ltd.
204	HLL Mother & Child Care Hospitals Ltd.
205	HSCC (India) Ltd.
206	IIFCL Projects Ltd.
207	IRCON Davanagere Haveri Highway Ltd.
208	IRCON Infrastructure & Services Ltd.
209	IRCON International Ltd.
210	IRCON Pb Tollway Ltd.
211	IRCON Shivpuri Guna Tollway Ltd.
212	IRCON Vadodara Kim Expressway Ltd.
213	Konkan Railway Corporation Ltd.
214	MECON Ltd.
215	Mineral Exploration Corpn. Ltd.
216	Mumbai Railway Vikas Corporation Ltd.
217	National Highways & Infrastructure Development Corpn. Ltd.
218	National Projects Construction Corpn. Ltd.
219	National Research Development Corpn.
220	National Small Industries Corpn. Ltd.
221	NBCC (India) Ltd.
222	NBCC Engineering And Consultancy Ltd.
223	NBCC Services Ltd.
224	PFC Consulting Ltd.
225	Projects & Development India Ltd.
226	Rail Vikas Nigam Ltd.
227	Railway Energy Management Company Ltd.
228	Rites Infrastructure Services Ltd.
229	Rites Ltd.
230	Solar Energy Corporation Of India
231	TCIL Bina Toll Road Ltd.

S. No.	Sector / Cognate Group / Cpse
232	TCIL Lakhnadone Toll Road Ltd.
233	WAPCOS Ltd.
234	Chhatisgarh East Railways Limited
235	Indian Ports Global Limited
Hotel And Tourist Services	
236	Hotel Corpn. Of India Ltd.
237	India Tourism Dev. Corpn. Ltd.
238	Indian Railway Catering And Tourism Corpn. Ltd.
239	Pondicherry Ashok Hotel Corpn. Ltd.
240	Ranchi Ashok Bihar Hotel Corpn. Ltd.
241	Utkal Ashok Hotel Corpn. Ltd.
Financial Services	
242	Balmer Lawrie Investments Ltd.
243	Biotechnology Industry Research Assistance Council
244	E. C. G. C. Ltd.
245	Eastern Investment Ltd.
246	Housing & Urban Dev. Corpn. Ltd.
247	IIFCL Asset Management Company Ltd.
248	India Infrastructure Finance Co. Ltd.
249	Indian Railway Finance Corporation Ltd.
250	Indian Renewable Energy Devt.agency Ltd.
251	Jammu & Kashmir Development Finance Corporation Ltd
252	Kumarakruppa Frontier Hotels Pvt. Ltd.
253	National Backward Classes Finance & Devp.co.
254	National Handicapped Finance & Devpt. Corpn.
255	National Minorities Devp. & Finance Corporation
256	National Safai Karamcharis Finance & Devpt. Corpn
257	National Scheduled Castes Finance & Devp. Corpn.
258	National Scheduled Tribes Finance & Devp. Corpn.
259	Nmdc Csr Foundation
260	Power Finance Corporation Ltd.
261	REC Ltd.
262	Central Registry of Securitisation Asset Reconstruction & Security Interst of India
Telecommunication & Information Technology	
263	Bharat Broadband Network Ltd.
264	Bharat Sanchar Nigam Ltd.
265	Mahanagar Telephone Nigam Ltd.
266	Millennium Telecom Ltd.
267	National Informatics Centre Services Incorporated
268	Railtel Corporation India Ltd.
269	Railtel Enterprises Ltd.
270	Telecommunications Consultants (India) Ltd.

S. No.	Sector / Cognate Group / Cpse
Under Construction	
Enterprises Under Construction	
271	Ajmer Phagi Transco Ltd.
272	Anushakti Vidhyut Nigam Ltd.
273	Ballabgarh - Gn Transmission Co. Ltd.
274	Bharat Gas Resources Ltd,
275	Bharat Petro Resources Jpda
276	Bharatiya Nabhikiya Vidyut Nigam Ltd.
277	Bhind Guna Transmission Ltd.
278	Bihar Infrapower Ltd.
279	Bihar Mega Power Ltd.
280	Bijawar-Vidarbha Transmission Ltd
281	Bundelkhand Saur Urja Ltd.
282	Chandil Transmission Ltd.
283	Cheyyur Infra Ltd.
284	Chhattisgarh East Railways Ltd.
285	Chhattisgarh East-West Railways Ltd.
286	Chhattisgarh Mega Steel Co. Ltd.
287	Chhattishgarh Surguja Power Ltd.
288	Coastal Karnataka Power Ltd.
289	Coastal Maharashtra Mega Power Ltd.
290	Coastal Tamil Nadu Power Ltd.
291	Dedicated Fright Corridor Corp. Of India Ltd.
292	Deoghar Infra Ltd.
293	Deoghar Mega Power Ltd.
294	Dingchang Transmission Ltd.
295	Dumka Transmission Ltd.
296	EPI Urban Infra Developers Ltd. (Epiuidl)
297	Ghogarpalli Integrated Power Company Ltd.
298	Hemisphere Properties India Ltd.
299	HLL Medipark Ltd
300	Hoogly Cochin Shipyard Ltd.
301	HPCL Rajasthan Refinery Ltd.
302	India International Convention And Exhibition Centre Ltd.
303	Indo Cat Private Ltd.
304	Indo Russian Helicopters Ltd.
305	Inland & Coastal Shipping Ltd.
306	Jagdishpur Paper Mills Ltd.
307	Jam Khambaliya Transco Ltd.
308	Jharkhand Central Railway Ltd.
309	Jharkhand Infrapower Ltd.
310	Jharkhand Kolhan Steel Ltd.
311	Jharkhand National Mineral Devpt. Corporation Ltd.
312	Karnataka Vijay Nagar Steel Ltd.

S. No.	Sector / Cognate Group / Cpse
313	Khetri Transco Ltd.
314	Koderma Transmission Ltd.
315	Kolkata Metro Rail Corporation Ltd.
316	Lakadia Banaskantha Transco Ltd.
317	Mahanadi Basin Power Ltd.
318	Mahanadi Coal Railway Ltd.
319	Mamc Industries Ltd.
320	Mandar Transmission Ltd.
321	MJSJ Coal Ltd.
322	MNH Shakti Ltd.
323	Mohinder Garh-Bhiwani Transmission Ltd.
324	Nabinagar Power Generating Company Ltd.
325	NBCC Environment Engineering Ltd.
326	NBCC International Ltd.
327	Newspace India Ltd.
328	Neyveli Uttar Pradesh Power Ltd
329	NBCC Power Ltd.
330	NBCC Steel Ltd.
331	NBCC-CMDC Ltd.
332	NPCIL - Indian Oil Nuclear Energy Corporation Ltd.
333	NPCIL - Nalco Power Company Ltd.
334	Odisha Infrapower Ltd.
335	Oil India International Ltd.
336	Orissa Integrated Power Ltd.
337	Power Grid Mithilanchal Transmission Ltd.
338	Power Equity Capital Advisors Pvt. Ltd.
339	Power Grid Medinipur Jeerat Transmission Ltd.
340	Power Grid Varanasi Transmission Ltd.
341	Power Grid Vemagiri Transmission Ltd.
342	Powergrid Jawaharpur Firozabad Transmission Ltd.
343	Punjab Ashok Hotel Company Ltd.
344	Sagarmala Development Company Ltd.
345	Sakhigopal Integrated Power Company Ltd.
346	Sethusamudram Corpn. Ltd.
347	Shongtong Karcham Wangtoo Transmission Ltd
348	SJVN Thermal Pvt. Ltd.
349	South-Central East Delhi Power Transmission Ltd.
350	Tanda Transmission Company Ltd.
351	Tatiya Andhra Mega Power Ltd.
352	Udupi Kasargode Transmission Ltd.
353	Vapi-li North Lakhimpur Transmission Ltd.
354	Wrss Xxi(A) Transco Limited
355	Yule Electrical Ltd.
356	Yule Engineering Company Ltd.

Annex II

List of Maharatna, Navratna and Miniratna in India

S. No.	Maharatana CPSE	Sector	Sub-sector
1	Bharat Heavy Electricals Limited	Manufacturing, processing	Power generation
2	Bharat Petroleum Corporation Limited	Manufacturing, processing	Petroleum (refinery and marketing)
3	Coal India Limited	Mining and exploration	Coal
4	GAIL (India) Limited	Mining and exploration	Crude oil
5	Hindustan Petroleum Corporation Limited	Manufacturing, processing	Petroleum (refinery and marketing)
6	Indian Oil Corporation Limited	Mining and exploration	Crude oil
7	NTPC Limited	Manufacturing, processing	Power generation (Thermal)
8	Oil & Natural Gas Corporation Limited	Mining and exploration	Crude oil
9	Power Grid Corporation of India Limited	Manufacturing, processing	Power generation
10	Steel Authority of India Limited	Manufacturing, processing	Steel

S. No.	Navratna CPSE	Sector	Sub-sector
1	Bharat Electronics Limited	Manufacturing, processing	Heavy and medium engineering
2	Container Corporation of India Limited	Services	Transport and logistics
3	Engineers India Limited	Manufacturing, processing	Heavy and medium engineering
4	Hindustan Aeronautics Limited	Manufacturing, processing	Heavy and medium engineering
5	Mahanagar Telephone Nigam Limited	Services	Telecommunications and information technology
6	National Aluminium Company Limited	Mining and exploration	Mining – other minerals and metals
7	NBCC (India) Limited	Services	Contract, construction and consultancy
8	NMDC Limited	Mining and exploration	Iron ore – other minerals and metals
9	NLC India Limited	Mining and exploration	Coal
10	Oil India Limited	Mining and exploration	Crude oil
11	Power Finance Corporation Limited	Services	Financial services
12	Rashtriya Ispat Nigam Limited	Manufacturing, processing	Steel
13	Rural Electrification Corporation Limited	Services	Power transmission
14	Shipping Corporation of India Limited	Manufacturing, processing	Transportation, vehicles and equipment

S. No.	Miniratna CPSE	Sector	Sub-sector
1	Airports Authority of India	Services	Transport and logistics
2	Antrix Corporation Limited	Services	Contract, construction and consultancy
3	Balmer Lawrie & Co. Limited	Services	Transport and logistics
4	Bharat Coking Coal Limited	Mining and exploration	Coal
5	Bharat Dynamics Limited	Manufacturing, processing	Industrial and consumer goods
6	BEML Limited	Manufacturing, processing	Transportation, vehicle and equipment
7	Bharat Sanchar Nigam Limited	Services	Telecommunications and information technology
8	Bridge & Roof Company (India) Limited	Manufacturing, processing	Transportation, vehicle and equipment

S. No.	Miniratna CPSE	Sector	Sub-sector
9	Central Warehousing Corporation	Services	Transport and logistics
10	Central Coalfields Limited	Mining and exploration	Coal
11	Central Mine Planning & Design Institute Limited	Mining and exploration	Other minerals and metal
12	Chennai Petroleum Corporation Limited	Manufacturing, processing	Petroleum (refinery and marketing)
13	Cochin Shipyard Limited	Manufacturing, processing	Industrial and consumer goods
14	Cotton Corporation of India Limited	Manufacturing, processing	Textiles
15	EdCIL (India) Limited	Services	Telecommunications and information technology
16	Garden Reach Shipbuilders & Engineers Limited	Manufacturing, processing	Heavy and medium engineering
17	Goa Shipyard Limited	Services	Transport and logistics
18	Hindustan Copper Limited	Mining and exploration	Other minerals and metal
19	HLL Lifecare Limited	Services	Trading and marketing
20	Hindustan Newsprint Limited	Services	Telecommunications and information technology
21	Hindustan Paper Corporation Limited	Manufacturing, processing	Industrial and consumer goods
22	Housing & Urban Development Corporation Limited	Services	Contract, construction and consultancy
23	HSCC (India) Limited	Services	Contract, construction and consultancy
24	India Tourism Development Corporation Limited	Services	Hotel and tourist services
25	Indian Rare Earths Limited	Mining and exploration	Other minerals and metal
26	Indian Railway Catering & Tourism Corporation Limited	Services	Hotel and tourist services
27	Indian Railway Finance Corporation Limited	Services	Financial services
28	Indian Renewable Energy Development Agency Limited	Manufacturing, processing	Power generation
29	India Trade Promotion Organization	Services	Trading and marketing
30	IRCON International Limited	Services	Contract, construction and consultancy
31	KIOCL Limited	Mining and exploration	Other minerals and metal
32	Mazagaon Dock Shipbuilders Limited	Manufacturing, processing	Transportation, vehicles and equipment
33	Mahanadi Coalfields Limited	Mining and exploration	Coal
34	MOIL Limited	Mining and exploration	Other minerals and metal
35	Mangalore Refinery & Petrochemical Limited	Manufacturing, processing	Petroleum (refinery and marketing)
36	Mineral Exploration Corporation Limited	Mining and exploration	Other minerals and metal
37	Mishra Dhatu Nigam Limited	Manufacturing, processing	Industrial and consumer goods
38	MMTC Limited	Services	Trading and marketing
39	MSTC Limited	Services	Trading and marketing
40	National Fertilizers Limited	Manufacturing, processing	Fertilisers
41	National Projects Construction Corporation Limited	Services	Contract, construction and consultancy
42	National Small Industries Corporation Limited	Services	Trading and marketing
43	National Seeds Corporation	Agriculture	Agro-based industries
44	NHPC Limited	Manufacturing, processing	Power generation

S. No.	Miniratna CPSE	Sector	Sub-sector
45	Northern Coalfields Limited	Mining and exploration	Coal
46	North Eastern Electric Power Corporation Limited	Services	Power transmission
47	Numaligarh Refinery Limited	Mining and exploration	Crude oil
48	ONGC Videsh Limited	Mining and exploration	Crude oil
49	Pawan Hans Helicopters Limited	Services	Transport and logistics
50	Projects & Development India Limited	Services	Contract, construction and consultancy
51	Railtel Corporation of India Limited	Services	Telecommunication and information technology
52	Rail Vikas Nigam Limited	Manufacturing, processing	Industrial and consumer goods
53	Rashtriya Chemicals & Fertilizers Limited	Manufacturing, processing	Fertilisers
54	BITES Limited	Services	Contract, construction and consultancy
55	SJVN Limited	Manufacturing, processing	Power generation
56	Security Printing and Minting Corporation of India Limited	Services	Telecommunications and information technology
57	South Eastern Coalfields Limited	Mining and exploration	Coal
58	Telecommunications Consultants India Limited	Services	Telecommunications and information technology
59	THDC India Limited	Manufacturing, processing	Power generation
60	Western Coalfields Limited	Mining and exploration	Coal
61	WAPCOS Limited	Services	Contract, construction and consultancy
62	Artificial Limbs Manufacturing Corporation of India	Manufacturing, processing	Industrial and consumer goods
63	Bharat Pumps & Compressors Limited	Manufacturing, processing	Industrial and consumer goods
64	Broadcast Engineering Consultants India Limited	Services	Contract, construction and consultancy
65	Central Railside Warehouse Company Limited	Services	Transport and logistics
66	Engineering Projects (India) Limited	Services	Contract, construction and consultancy
67	FCI Aravali Gypsum & Minerals India Limited	Manufacturing, processing	Fertilisers
68	Ferro Scrap Nigam Limited	Manufacturing, processing	Steel
69	HMT (International) Limited	Manufacturing, processing	Industrial and consumer goods
70	Indian Medicines & Pharmaceuticals Corporation Limited	Manufacturing, processing	Chemicals and pharmaceuticals
71	Mecon Limited	Services	Contract, construction and consultancy
72	National Film Development Corporation Limited	Services	Trading and marketing
73	Rajasthan Electronics & Instruments Limited	Services	Telecommunications and information technology

Annex III

Analysis of sectors based on parameters in India

Sector	Sub-sector	GHG Emission profile of the sector (Gg)	GHG mitigation potential	Existing mitigation actions in the sector	% share in India's GVA	Sector's performance according to DPE (net profit in last three years)	Positive externalities	Existing climate policies
Agriculture	Agro based Industries	5717	Medium	NA	-	net negative	Climate resilient seeds development; Employment opportunities through oil-seed collection at bottom pf pyramid	National Innovation in Climate Resilient Agriculture; National Mission on Sustainable Agriculture CDM and VCS projects
Mining and exploration	Crude Oil	3167	Medium	Restoration of abandoned land in mining areas	2%	>10,000 crores	Soil carbon improvement	
	Other minerals and metals	3167	Medium	Restoration of abandoned land in mining areas	2%	2,000 – 10,000 crores	Soil carbon improvement	
	Coal	16365	High	1. Restoration of abandoned land in mining areas 2. Measures to control fugitive emissions from coal mining 3. Carbon Capture Storage and Transportation	2%	>10,000 crores	Soil carbon improvement	4 CDM projects for mining
Manufacturing, processing and generation	Chemicals and pharmaceuticals	2111	Low		16%	net negative		
	Fertilzers	5982	Medium	Production of neem coated urea	16%	150 – 200 crores	Impacting bottom of pyramid, less N2O emissions	Scheme of production of neem coated urea
	Heavy and medium engineering	352	Low		16%	2,000 – 10,000 crores	NA	PAT Scheme, Zero Effect – Zero Defect
	Industrial and consumer goods	NA			16%	net negative	NA	PAT Scheme, Zero Effect – Zero Defect

Sector	Sub-sector	GHG Emission profile of the sector (Gg)	GHG mitigation potential	Existing mitigation actions in the sector	% share in India's GVA	Sector's performance according to DPE (net profit in last three years)	Positive externalities	Existing climate policies
	Petroleum (refinery and marketing)	21692	High		16%	>10,000 crores	NA	PAT Scheme, Zero Effect - Zero Defect
	Steel	154839	High		16%	net negative	NA	PAT Scheme, Zero Effect - Zero Defect
	Power Generation	1796092	High	1. Use of clean technology actions 2. Energy efficiency related mitigation 3. Annual energy audits 4. Super critical power generation	16%	>10,000 crores	NA	PAT Scheme, Zero Effect - Zero Defect
	Textiles	3519	Low		16%	150 - 200 crores	NA	PAT Scheme, Zero Effect - Zero Defect
	Transportation, vehicle and equipment	4000	Low		16%	2,000 - 10,000 crores	NA	Energy Efficient Buildings Programme
Services	Contract, construction and consultancy	NA	Low		8%	2,000 - 10,000 crores	NA	Energy Efficient Buildings Programme
	Financial services	NA	Low	1. Use of star rated appliances	21%	>10,000 crores	NA	Energy Efficient Buildings Programme
	Hotel and tourist services	NA	Medium	Use of star rated appliances	18%	150 - 200 crores	NA	Energy Efficient Buildings Programme
	Power transmission	NA	Medium	Transfer of electricity in a more efficient manner, lead to an emission reduction of 889 MtCO ₂ e from 2008 to 2017.	3%	2,000 - 10,000 crores	Clean energy access	

Sector	Sub-sector	GHG Emission profile of the sector (Gg)	GHG mitigation potential	Existing mitigation actions in the sector	% share in India's GVA	Sector's performance according to DPE (net profit in last three years)	Positive externalities	Existing climate policies
	Telecommunication and information technology	NA	Medium		18%	net negative	Enabler	
	Trading and marketing	NA	Medium		18%	net negative	NA	
	Transport and Logistics	NA	High	<ol style="list-style-type: none"> 1. Use of alternative fuels 2. Public transport and mass transit promotion 3. Promotion of biofuel in transportation 	18%	150 - 200 crores	NA	Emission standards and auto fuel policy National electric mobility plan Ethanol blending policy

Annex IV

Analysis of Maharatna, Navratna, and Minitratna for training needs assessment

Maharatana CPSE	Sector	GHG emissions profile of the sector (MtCO ₂ e in 2018-19)	Achieved GHG mitigation of the PSE	Existing mitigation actions	
				In-house	Supply chain
NTPC Limited	Manufacturing, Processing	263.6	6.7% reduction in GHG emissions (scope 2)	<ol style="list-style-type: none"> 1. 34 million trees planted 2. Fuel diversification 3. Efficiency improvement 4. Plantation 5. Non - GHG gases mitigation 	
Steel Authority of India Limited	Manufacturing, Processing	41.5	Achieved 11.7% GHG reductions over last 10 years through clean technology; target reduction - 23% by 2030 compared to 2007-08 emissions	<ol style="list-style-type: none"> 1. Green and clean technology 2. Water conservation schemes including recycling and reuse 3. Waste management 4. Compliance with the norms as well as preparing for beyond compliance scenario 5. Energy efficient lighting systems throughout SAIL units 6. Tree plantation 	
Oil & Natural Gas Corporation Limited	Mining and exploration	25.3		<ol style="list-style-type: none"> 1. Dynamic Gas Blending 2. Energy efficient lighting 3. Energy management systems 4. Renewable energy 5. Water and Waste management 7. Tree plantation 	
Indian Oil Corporation Limited	Mining and exploration	18.7	12.43% reduction in emissions from 2012-13 level; 1329000 tCO ₂ e mitigation of ghg emissions through increasing pipeline transport of crude oil	<ol style="list-style-type: none"> 1. Carbon Capture Utilization and Storage 2. Renewable energy 3. Green infrastructure 4. Water and waste management 5. management 	<ol style="list-style-type: none"> 1. E-mobility 2. 3G Ethanol 3. Sustainable alternatives towards affordable transportation 4. Pipeline transportation
Bharat Petroleum Corporation Limited	Manufacturing, Processing	5.2	High	<ol style="list-style-type: none"> 1. Recycling/ reusing of scrap material 2. Enzymes-based remediation 3. Replacement of pet water bottles 4. Waste plastic road developed 5. Various initiatives undertaken to implement sustainable development goals 	<ol style="list-style-type: none"> 1. Reduction in emissions by adoption of energy efficient technology 2. Already undertaken a study to assess the climate change risks: Preparedness for oil and gas sector 3. Increased renewable energy capacity to mitigate some climate change threats 4. Tree plantation carried out/ Butterfly garden development

	Annual Gross Turnover	Positive externalities	Existing climate policies		
	In INR crores		Organizational level policy & targets	Climate change studies & MRV	Climate actions such as CDP, CDM, VCS etc
	90,307	<ol style="list-style-type: none"> Hunger, poverty, health care and sanitation Education and skill development Women and economically other backward society empowerment Rural development 	Voluntary program to reduce carbon dioxide emissions by establishing 'Centre for Power Efficiency and Environmental Protection'		5 MW solar project at NTPC Dadri
	66,967	<ol style="list-style-type: none"> Development of communities in Saranda forest, Women empowerment Healthcare and education Rural development 8 Model steel villages Development of aspirational districts Disaster Relief 	<ol style="list-style-type: none"> Steel Authority of India has aligned itself with the goals of India's NDC and has set the following targets by 2030: <ul style="list-style-type: none"> Reduce 2.2 –2.4 tCO₂ per tonne of crude steel in Blast Furnace –Basic Oxygen Furnace Route Reduce 2.6 –2.7 tCO₂ per tonne of crude steel in Direct Reduced Iron – Electric Arc Furnace Route Dedicated action plan to reduce GHGs 		Climate action member at world steel association
	1,09,655	<ol style="list-style-type: none"> Initiative on all SDGs Healthcare and education Swachh Bharat Rural development Sustainable street lighting in remote villages Menstrual hygiene Green sole initiative 	<ol style="list-style-type: none"> Participant in Global methane initiative Declared itself carbon neutral in 2013-14 Has signed an MoU to explore the opportunity of carbon capture and storage 	Study on preparedness of oil and gas sector on climate change	15 CDM projects
	6,05,924	<ol style="list-style-type: none"> Health and Safety Initiatives towards all SDGs Capacity building 	No policy but undertaking internal trainings on climate change awareness		2 CDM projects; engaged in VC market
	3,37,623	<ol style="list-style-type: none"> Training 75 visually impaired youth in Acupressure and Massage therapy in Latur Various initiatives on health such as free surgeries and running hospital on train Improving quality education for children and SAKSHAM programme Installation of solar streetlights Initiatives on all SDGs 	Capacity building activities on GHG inventory process and sustainable development is done frequently.	Undertaken a study on "Climate Change Risks: Preparedness for Oil and Gas Sector"	No project under CDM

Maharatana CPSE	Sector	GHG emissions profile of the sector (MtCO2e in 2018-19)	Achieved GHG mitigation of the PSE	Existing mitigation actions	
				In-house	Supply chain
Hindustan Petroleum Corporation Limited	Manufacturing, Processing	4.4		<ol style="list-style-type: none"> 1. Renewable energy promotion 2. Waste and energy management 3. Green infrastructure 4. Green co-rating 	<ol style="list-style-type: none"> 1. Green transportation 2. Green belt development 3. e-mobility 4. Green co-rating 5. Renewable energy promotion
GAIL (India) Limited	Mining and exploration	3.8	8324 tCO2e saved in 2018-19	<ol style="list-style-type: none"> 1. Energy conservation 2. CO2 reduction measures (5MT GHG saved) 3. Tree plantation 4. Waste treatment 5. LED lighting 6. Fuel conservation 	
Bharat Heavy Electricals Limited	Manufacturing, Processing	0.5	15907 tCO2e	<ol style="list-style-type: none"> 1. Installation of emissions control equipment's 2. Energy management systems deployed 3. Promotion of energy conservation and energy efficiency 5. Responsible waste management 	<ol style="list-style-type: none"> 1. Advanced Ultra Supercritical technology 2. Coal to methanol conversion 3. Solar Cell 4. E-mobility 5. Fuel Cells
Coal India Limited	Mining and exploration	NA		<ol style="list-style-type: none"> 1. Water conservation 2. 19.9 lakh trees planted in 2017-18 3. Installed 3.2 MW solar plants 4. Increased number of ISO units 	
Power Grid Corporation of India Limited	Manufacturing, Processing	NA	59,782 tCO2e mitigated from 2015-17	<ol style="list-style-type: none"> 1. Tree Plantation 2. Rainwater harvesting at substation and building 3. SPV power plant 	

	Annual Gross Turnover	Positive externalities	Existing climate policies		
	In INR crores		Organizational level policy & targets	Climate change studies & MRV	Climate actions such as CDP, CDM, VCS etc
	2,96,929	<ol style="list-style-type: none"> 1. Ecosystem protection 2. Women empowerment 3. Pre-retirement plans 4. Skill development 5. Women empowerment 	Climate change policy		CDM project on electricity generation through wind
	75,127	<ol style="list-style-type: none"> 1. Initiatives under all SDGs 2. Meritorious student empowerment 3. Rural development 4. Arogya initiative on health, sanitation, nutrition and water 5. Skill development 6. Care for differently abled and elderly 7. Women empowerment 	Sustainability policy that captures climate change	Contributed for a chapter on energy efficiency in a research titled 'Delhi to Paris: Corporate Vision on Climate Change'; climate change study on Oil & gas sector	1 CDM project
	30,349	<ol style="list-style-type: none"> 1. 37540 - Human capital base 2. 2100+ female employees 3. 24046 trainees 4. 530 MW+ solar PV 	No policy or set target	None	1 CDM project
	934	<ol style="list-style-type: none"> 1. Women empowerment 2. Child education 3. Rural development 4. Skill development 5. Swachh Bharat 	Corporate Environment Policy with a policy statement to address climate change as well.	None	Reporting as per GRI framework
	34,119	<ol style="list-style-type: none"> 1. Health and sanitation 2. Education 3. Skill development 4. Women empowerment 5. Rural development 	NA	NA	NA

Navratana CPSE	Sector	GHG emissions profile of the sector (MtCO ₂ e in 2018-19)	Achieved GHG mitigation of the PSE	Existing mitigation actions	
				In-house	Supply chain
Bharat Electronics Limited	Manufacturing, Processing	NA	26499 tCO ₂ e avoided due to solar	<ol style="list-style-type: none"> 1. Wind Energy 2. Grid Interactive Solar Photovoltaic Power Plant 3. Water Management 4. Green Buildings 	
Container Cooperation of India Limited	Services	NA	Reduction of 1.32 mn. Tonnes of carbon dioxide by CONCOR through use of rail transport	<ol style="list-style-type: none"> 1. Green and clean technology 2. Water conservation schemes including recycling and reuse 3. Waste management 4. Compliance with the norms as well as preparing for beyond compliance scenario 5. Energy efficient lighting systems throughout SAIL units 6. Tree plantation 	7777 solar lights and home lighting systems in UP.
Engineers India Limited	Manufacturing, Processing	NA			<ol style="list-style-type: none"> 1. Ensuring environmental sustainability in Leh Ladakh 2. 4 green cremation systems in Delhi 3. Installation of 300 LED solar lighting in Mizoram 4. 40KwP Solar Photo Voltaic Power Plants in Kargil district 5. Support setting up of plant for conversion of waste into fuel in Mathura
Hindustan Aeronautics Limited	Manufacturing, Processing	NA			<ol style="list-style-type: none"> 1. Solar power plants in Kanpur 2. Pullanji Cultivation 3. Solar power systems in 8 schools 4. Organic waste management plan
Mahanagar Telephone Nigam Limited	Services	NA		Support research on sustainable development	Waste and Plastic Management initiative
National Aluminium Company Limited	Mining and exploration	12.5	NA		<ol style="list-style-type: none"> 1. 6.8 cr saplings planted 2. Preserve environment 3. Development of parks in public spaces
NBCC (India) Limited	Services	NA	NA	<p>Incorporating features for all projects:</p> <ol style="list-style-type: none"> 1. Zero waste 2. Rainwater harvesting 3. Using Solar Energy 4. Energy efficient fixtures 5. Tree plantation under 4 major projects 	

	Annual Gross Turnover	Positive externalities	Existing climate policies		
	In INR crores		Organizational level policy & targets	Climate change studies & MRV	Climate actions such as CDP, CDM, VCS etc
	11789	Material and natural resource management, Energy management			
	6881.91	172 women/1463 employees		CSR policy ensuring environmental sustainability	
	52.91			Environmental Impact Assessment Environmental Management Plan	
	18283	1. .Water management 2. Energy conservation/ Renewable energy 3. Waste management			
	108.43	1. Infrastructure development 2. Education 3. Drinking water 4. Health care 5. Water ATMs and hand pumps 6. River rejuvenation	Renewable energy adoption		
	11499	1. Health care 2. Sanitation 3. Education 4. Livelihood enhancement projects		A guide developed on adaptation to climate change for mining industry.	National Aluminium Company Limited
	7141	1. Workforce 1847 employees 2. Green buildings 3. Ensuring zero discharge of waste			

Navratana CPSE	Sector	GHG emissions profile of the sector (MtCO ₂ e in 2018-19)	Achieved GHG mitigation of the PSE	Existing mitigation actions	
				In-house	Supply chain
NMDC Limited	Mining and exploration	0.6	In the year 2017-18 there is 0.05 kg CO ₂ e/t reduction in Specific Scope 1 emissions and 0.04 kg CO ₂ e/t reduction in Specific Scope 2 emissions in comparison with 2016-17 in the Iron ore mines. Whereas there is a 17.9% reduction in specific Scope 1 & 6.24% reduction in specific Scope 2 emissions in Diamond mines in comparison with 2016-17.		
NLC India Limited	Mining and exploration	NA	NA	<ol style="list-style-type: none"> 1. Renewable energy Power generation 2. Efficient technology to reduce Carbon footprint 3. Introduction of new technology like CFBC tech and ultra super critical boilers 	<ol style="list-style-type: none"> 1. ecology: reclamation and reuse of lands 2. Installed 5 thermal power plant, 34 wind turbine generators of capacity 1.5 MW and 440 MW solar PV Power plant.
Oil India Limited	Mining and exploration	1.1	Total methane emission from oil and gas in India (2014) is 1024.31 Gg	<ol style="list-style-type: none"> 1. eco restoration/ plantation 2. water management 3. conservation projects 	
Power Finance Corporation Limited	Services	NA	NA	<ol style="list-style-type: none"> 1. Ultra-mega power projects 2. independent transmission projects 3. generation, transmission, and distribution of power 	
Rashtriya Ispat Nigam Limited	Manufacturing, Processing	CO ₂ emissions in 2017-18: 2.62 tons/tCS		<ol style="list-style-type: none"> 1. Energy Efficient approaches 2. EnMS ISO: 50001 3. GHG management 4. Modification/ Augmentation of Electrostatic Precipitators (ESPs) of Thermal Power Plant for one Boiler to bring down the emissions below 50 mg/Nm³. 	
Rural Electrification Corporation Limited	Services	NA	NA		<ol style="list-style-type: none"> 1. conservation of bio-resources of Andhra Pradesh 2. Installation of SPV systems 3. solar powered solutions in healthcare, schools, etc.
Shipping Corporation of India Limited	Services	NA	NA		

	Annual Gross Turnover	Positive externalities	Existing climate policies		
	In INR crores		Organizational level policy & targets	Climate change studies & MRV	Climate actions such as CDP, CDM, VCS etc
	12153	Agriculture and farm-based activities Hospital on wheels Educational support to communities		Future goals to disclose GHG emissions into Carbon Disclosure Projects	
	2899	CSR Initiative- Jaluday to bring back original ecology Jaldhara- provide clean drinking water Jalaparyapatha-harness water potential		1. Solar power projects at NLC, Neyveli 2. Training programme on sustainable development for women	
	13734.96	Projects under- 1. Healthcare 2. Drinking water and sanitation 3. Sustainable livelihood generation 4. Skill development 5. Environment Oil Urja to provide efficient energy solutions			
	28842			Financing Renewable energy	PFC's Green Bond framework certified by Climate bond initiative
	20844	1. 41% of total land under afforestation. 2. Employees 17574 3. women employees 3.1% of total workforce			CERS registered under UNFCCC
	25431	1. Swachh Bharat Mission 2. installation of hand pumps 3. Job oriented skill development 4. Providing RO treatment plants			
	4144				

Annex V

Survey Questionnaire

1. Have you heard the term 'greenhouse gas (GHG)' or 'climate change'?
 - a) Yes
 - b) No
 - c) Maybe but I am not sure
2. In your opinion, is climate change impacting your organization?
 - a) Yes (please fill in how)
 - b) No, I have never felt any impact
 - c) Maybe but I am not sure
3. Does your role/profile in your organization involve you to work on climate change or other sustainable development related topics?
 - a) Yes
 - b) No
4. Are you aware of the following initiatives/institutions/organizations and their roles? (Please select Yes or No)
 - a) Intergovernmental Panel on Climate Change (Yes/No)
 - b) United Nations Framework Convention on Climate Change (Yes/No)
 - c) Paris Agreement (Yes/No)
 - d) Carbon Disclosure Project (now known as the CDP) (Yes/No)
 - e) Task Force on Climate-related financial disclosure – TCFD (Yes/No)
 - f) Science-Based Targets (Yes/No)
 - g) Sustainable Development Goals (Yes/No)
 - h) Carbon pricing (Yes/No)
 - i) Clean Development Mechanism (Yes/No)
 - j) Voluntary Carbon Market (Gold Standard and/or Verra) (Yes/No)
 - k) Perform, Achieve and Trade (PAT scheme) (Yes/No)
 - l) Renewable Energy Certificate mechanism (REC) (Yes/No)
 - m) Carbon tax (Yes/No)
 - n) Green Climate Fund (Yes/No)
 - o) Green bonds (Yes/No)
5. Does your organization report and disclose its GHG emissions?
 - a) Yes. If yes, when was it disclosed last?
 - b) No
 - c) Maybe but I am not sure.
6. Is your organization aware of carbon markets in India or internationally?
 - a) Yes, we are actively engaged in carbon credits.
 - b) Yes, but we are not engaged.
 - c) No, never heard about it.

7. If your organization is engaged in carbon markets, has it already registered any project under the clean development mechanism (CDM)?
 - a) Yes
 - b) No
 - c) Maybe, I am not aware
8. If your answer is yes, please share the sectoral scope that your organization has registered under the CDM?
9. Is your organisation aware of voluntary carbon market in India or internationally?
 - a) Yes, we are actively engaged in voluntary carbon markets.
 - b) Yes, but we are not engaged.
 - c) No, never heard about it.
10. If your organization has undertaken other activities related to climate change, environment, or other sustainability topics (e.g., installation of clean energy or energy efficiency measures, child labour?) and how did your organization finance them?
 - a) Own funds
 - b) Domestic sources (e.g., loans from a bank, grants from the government)
 - c) International sources
11. Are you aware of carbon pricing?
 - a) Yes
 - b) No
12. Is your organisation planning to put a price on carbon?
 - a) Yes
 - b) No
 - c) Maybe, I am not aware
13. From the following list, which topic would you like to know more about?
 - a) Climate change in general
 - b) International climate scenario
 - c) India's policies and actions on climate change
 - d) Carbon market and carbon pricing
 - e) Types of climate finance mechanisms (including innovative finance mechanisms)
 - f) Example of climate finance donors
 - g) How to access climate finance from international donors
 - h) How to develop a good project idea for climate finance
 - i) Carbon pricing in general
 - j) Carbon tax
 - k) Usage of revenues from the carbon tax
 - l) PSEs on engagement on climate change
 - m) Best practices across the world in the public sector on climate change
 - n) All of the above

14. What according to you would be a suitable length of a training on climate change issues for a PSE?
- a) 2 days
 - b) 3 days
 - c) 5 days
15. What kind of support would your PSE need for implementing low carbon solutions?
- a) Training and query response service
 - b) Guidebook/Manual for climate change mitigation initiatives
 - c) Access to knowledge sharing platforms
 - d) Any other.

Annex VI

List of officials interviewed

S. No.	Name of PSEs	Participant Details
1	Oil & Natural Gas Corporation Limited	Mr. S.K. Srivastava GGM- Chief Carbon Management & Sustainability Group Email Id: srivastava_sk1@ongc.co.in
2	National Aluminium Company Limited	Mr. Debabrata Mohapatra Executive Director (Production) Email Id: debabrata.mohapatra@nalcoindia.co.in
3	Rashtriya Ispat Nigam Limited	Mr. K Sudhakar General Manager (Operation) Email Id: konthamsudha@vizagsteel.com
4	IOCL	Mr. Safalya Mishra Manager (SD) Email Id: mishrasafalya@indianoil.in
5	Airports Authority of India	Ms. Reena Rai General Manager (Engg-E), CHQ Email Id: reenarai@aai.aero
6	Bharat Petroleum Corporation Limited	Mr. Ashish Gupta Chief Manager, HSSE (Corporate) Email: guptaashi@bharatpetroleum.in
7	Steel Authority of India Limited	Mr. S K Das Chief General Manager, Environment Management Division Email Id: dassubhash1442@gmail.com
8	Power Finance Corporation Limited	Mrs. Charu Kaistha Senior General Manager (Projects) Email: charu_kaistha@pfcindia.com
9	Coal India Limited (WCL)	Dr. Sanjay Kumar Director (Personnel) Email: dp.wcl.cil@coalindia.in,sanjay_cro@yahoo.co.in
10	Rashtriya Chemicals and Fertilizers Limited	Mr NH Kurne EH (HRD) Email: nhkurne@rcfltd.com
11	NTPC Limited	Mr. Vikash Kumar Deputy Manager (Sustainable Development) Email: vikashkumar07@ntpc.co.in
12	GAIL (India) Limited	Mr. Arvind Kumar Namdeo General Manager (Sustainability Development) Email: arvind.namdeo@gail.co.in
13	NHPC Limited	Mr. Ashis Kumar Dash Deputy General Manager (Env) Email: envdivnhpc@gmail.com
14	SJVN	Mr Shiraz Senior Manager, Corporate Environmental Department Email Id: sjvnced@gmail.com
15	Oil India Limited	Ms Bansuri Das Manager (HSE) Email: bansuri_das@oilindia.com

S. No.	Name of PSEs	Participant Details
16	Bharat Heavy Electricals Limited	Mr. Ajeet K Sharma Addl. GM/ Head Corp. HSE Email Id: ajitshar@bhel.in
17	NMDC Limited	Mr. M Jayapal Reddy Chief General Manager (RP) Email: jayapal@nmdc.co.in
18	THDC India Limited	Mr. P.K. Naithani AGM(S&E) Email: pknaithani@thdc.co.in
19	NLC (India) Limited	Dr. V. Manoharan CGM/Card & CEC Email: gm.card@nlcindia.in
20	National Fertilizers Limited	Mr. S.K. Shukla CGM (Tech.) Email: skshukla@nfl.co.in

