



GROUPED ROOFTOP SOLAR PROJECT BY TATA POWER RENEWABLE ENERGY LIMITED



Document Prepared by EKI Energy Services Limited

Project title	Grouped Rooftop Solar Project by Tata Power Renewable Energy Limited
Project ID	3556 ¹
Monitoring period	01-May-2022 to 31-January-2024 (inclusive of both the dates)
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Version	02
VCS Standard Version	VCS Standard Version 4.7 ²
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¹ <https://registry.terra.org/app/projectDetail/VCS/3556>

² <https://terra.org/wp-content/uploads/2024/04/VCS-Standard-v4.7-FINAL-4.15.24.pdf>

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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The project involves installation of Solar Photovoltaic (SPV) Panels on rooftops and floating solar PV technology in various states of India. The sole purpose of project activity is to install solar power plant for captive purpose and surplus generated electricity can be supplied to grid and further equivalent energy will be consumed from grid through net metering arrangement with state electricity board

Under the concept of Net Metering, the customers are charged only for the net power that they consume from the electricity service provider that has accumulated over a specific period. In other words, if their renewable energy generating systems make more electricity than consumed, they may be credited or paid for the excess electricity contributed to the grid over the same period. Net metering is also a way to increase the energy in the power grid to keep up with increase in demand during peak power use times, and this is of particular interest to states facing power shortages.

As per para 3.5.14 of VCS Standard V.4.7, each project activity instance of grouped project activity is less than 15 MW capacity. Thus, small scale methodology AMS I.F is applicable for proposed grouped project activity.

As per the applicable methodology, a Greenfield power plant is defined as “a new renewable energy power plant that is constructed and operated at a site where no renewable energy power plant was operated prior to the implementation of the project activity”.

The Project activity is a new facility (Greenfield) and the electricity generated by the Project will be exported to the Indian Grid. The Project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the Project. At the time of registration 13 instances had added and during the current monitoring period project proponent have added 13 more instances in the group project.

The estimated emission reduction as per registered JPDMR 15,171 tCO₂e/annum. As this is a grouped project activity PP has added new instances during current monitoring period. Thus, the total estimated emission reduction for the grouped project activity 74,230 (59,059+15,171) tCO₂e .

The estimated electricity generation as per registered JPDMR 16,305 tCO₂e/annum. As this is a grouped project activity PP has added new instances during current monitoring period. Thus, the total estimated electricity generation for the grouped project activity 82,171 (65,866+16,305) MW.

For the current monitoring period of 1-May-2022 to 31-January-2024, the project generated 42,285.47 MWh electricity and contributing to the GHG reductions of 39,343 tCO₂e. ER spread sheet can be referred for the detail assessment.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
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Validation and verification	01-October-2020 to 30-April-2022	VCS	LGAI Technological Center, S.A. (Applus+ Certification)	1 Year 6 Months
Verification	01-May-2022 to 31-January-2024	VCS	RINA Services S.P.A (RINA)	1 Year 9 Months
Total	01-October-2020 to 31-January-2024			3 Years 3 Months

1.3 Sectoral Scope and Project Type

Sectoral scope ³	01 - Energy industries (renewable / non-renewable sources)
Project activity type	I - Renewable Energy Projects

1.4 Project Proponent

Organization name	The Tata Power Company Limited
Contact person	Prashant Kumar Tiwari
Title	Group Head - Carbon Asset Management,
Address	Tata Power Renewable Energy Limited, Corporate Center B, 34 Sant Tukaram Road, Carnac Bunder, Mumbai 400 009, Maharashtra, India
Telephone	+91 9099006418
Email	prashant.tiwari@tatapower.com

Organization name	Tata Power Renewable Energy Limited
Contact person	Prashant Kumar Tiwari
Title	Group Head - Carbon Asset Management,
Address	Tata Power Renewable Energy Limited, Corporate Center B, 34 Sant Tukaram Road, Carnac Bunder, Mumbai 400 009, Maharashtra, India
Telephone	+91 9099006418

³ Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: <https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes>

Email	prashant.tiwari@tatapower.com
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1.5 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the project	Project Consultant
Contact person	Bhaskar Dutta
Title	Deputy General Manager - Operations
Address	Office no. 201, Plot 48, Scheme 78 part 2 Vijay Nagar Indore Madhya Pradesh India 452010
Telephone	+91 7979789810
Email	registry@enkingint.org , meraj.ali@enkingint.org . bhaskar.dutta@enkingint.org

1.6 Project Start Date

Project start date	01-October-2020
Justification	It is the date of commissioning of the earliest commissioned solar unit involved in the grouped project activity

1.7 Project Crediting Period

Crediting period	☒ Seven years, twice renewable ☐ Ten years, fixed ☐ Other (state the selected crediting period and justify how it conforms with the VCS Program requirements)
Start and end date of first or fixed crediting period	01-October-2020 to 30-September-2027

1.8 Project Location

The details of the project locations are mentioned in the table below:

S.I No.	Customer	Installed DC Capacity (kWp)	Longitude	Latitude	City	State
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1	Tinplate Company of India Limited	200.64	22.7936	86.2295	Jamshedpur	Jharkhand
2	Duraline India Private Limited	980	17.1699	78.2926	Hyderabad	Telangana
3	GE T&D India Limited, Hosur	832	12.7532	77.8098	Hosur	Tamil Nadu
4	Arya Anathalay I	80	28.5558	77.2558	Delhi	Delhi
5	Time of India, Airoli	186.9	19.1643	73.0017	Airoli	Maharashtra
6	Asian Paints Limited	451	19.0593	73.1221	Mumbai	Maharashtra
7	Time of India, Kolkata	226.95	22.5748	88.4266	Kolkata	West Bengal
8	TATA Lockheed Martin Aerostructures Limited	999.6	17.2292	78.5523	Hyderabad	Telangana
9	TSPDCL, Demag	318	22.7703	86.2198	Jamshedpur	Jharkhand
10	Apollo Gleneagles Hospital Limited	335	22.5739	88.4011	Kolkata	West Bengal
11	Tata Metaliks Limited	1059	22.3845	87.2849	Kharagpur	West Bengal
12	Arya Anathalay II	202.29	28.5575	77.2554	Delhi	Delhi
13	Tata Motors Limited (Car Plant)	6250	18.6578	73.8207	Pimpri	Maharashtra

This is a grouped project activity, So PP has added some new instances during this monitoring period. The details of the newly added instances mentioned below:

SL No	Customer		Installed AC Capacity (MW)	Latitude (N)	Longitude (E)	City	State
1.	Tata Steel Limited (Odisha)	TSK Steelanium	6.880	20.97111	85.997	Kalinganagar	Odisha
		TSK SMS		20.967033	86.016355		
		TSK MWTP		20.972121	86.021182		
		TSK HSM E/W		20.966446	86.022274		
		TSK HSM N/S		20.966956	86.032433		
2	Tata Steel Limited (Odisha)	TSK RWR	7.50	20.978813	86.016628	Kalinganagar	Odisha
3	Tata Steel Limited (Jharkhand)	TSL CWH	4.920	22.775792	86.190468	Jamshedpur	Jharkhand
		TSL WRM		22.782784	86.198012		

		TSL CRM		22.78768	86.21301		
		TSL, HSM		22.78240	86.205644		
4	Tata Steel Limited (Jharkhand)	TSL UCP	7.50	22.792039	86.191514	Jamshedpur	Jharkhand
5	Tata Electronics Private Limited	Assembly building 1	7.12	12.552329	77.950999	Hosur	Tamil Nadu
		DM plant		12.552291	77.952597		
		BMB 1 Building		12.551173	77.952545		
		BMB 2 Building		12.549523	77.952576		
		Ano building		12.550885	77.951003		
6	Kejirawal Castings Limited		1.418	22.63924	88.29996	Kolkata	West Bengal
7	The Tinplate Company of India Limited- Ph-02		1.10	22.795258	86.234222	Jamshedpur	Jharkhand
8	Mplastics Toys & Engineering Private Limited		0.996	12.667694	77.805139	Hosur	Tamil Nadu
9	ZF Rane Automotive India Private Limited (Virmalai)		0.850	10.632844	78.570897	Chennai	Tamil Nadu
10	ZF Rane Automotive India Private Limited (Gudvancherry)		0.702	12.835169	80.052394	Chennai	Tamil Nadu
11	Tata BlueScope Steel Private Limited		1.426	22.816354	86.235986	Jamshedpur	Jharkhand
12	Rane Madras Limited		0.760	11.923741	79.647083	Pondicherry	Tamil Nadu
13	Premium Transmission Private Limited		0.480	19.870431	75.503808	Aurangabad	Maharashtra

India is the project boundary of this group project activity as per registered JPD MR. A KML file have been submitted in order to indicate the project location and geographic boundaries for all the instances.



1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	AMS.I. F	Renewable Electricity Generation for captive use and Mini-grid, Ver 5.0; EB 115	5.0 ⁴
Tool	Tool 27	Investment analysis, Version 13.0, EB 120 annex 3,	13.0 ⁵
Tool	Tool 07	Tool to calculate the emission factor for an electricity system ⁶ - Version 07.0 (EB 100, Annex 04)	07.0 ⁶

⁴ <https://cdm.unfccc.int/UserManagement/FileStorage/I1P3XEBCJ0625DUALGSNO79R8FWY4V>

⁵ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v13.pdf>

⁶ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

1.12 Sustainable Development Contributions

Contribution to sustainable development:

Apart from generation of renewable electricity, the grouped project activity and project activity instances proposed to be included under it would contribute to the sustainable development of the region - socially, environmentally and economically. Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. The project contributes to sustainable development using the following ways.

- **Social well-being:** The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to utilization of unused area with which the sources of development increases. This project will lead to development in infrastructure in the region by the multiple utilizations of single source and also may promote business with improved power generation.

- **Economic well-being:** The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits. This project activity will also help to reduce the dependency on grid there by reduces the demand supply gap in the state. The project activity creates local employment generation in the form of O&M of the plant which helps economic well-being of local people.
- **Technological well-being:** The successful operation of project activity would lead to promotion of rooftop solar based power generation and would encourage other entrepreneurs to participate in similar projects.
- **Environmental well-being:** Solar being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the Project activity also helps in avoiding significant amount of GHG emissions in the area of installations by recuing the dependency on the fossil fuel-based alternatives at times of grid connected power supply failure.

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	7.2	7.2.1 Renewable energy share in the total final energy consumption	Implemented activities to increase	About 42,285.47 MWh/year renewable electricity is supplied to the grid that helps in the increase renewable energy share in the energy mix. This will be updated during the verification of the project activity.	The electric power to the tune of 56,224.47 (13,936+42,285.47) MWh has been generated for the project lifetime
2)	8.5	Average hourly earnings of female and male employees by occupation, age and persons with disabilities	Implemented activities to increase	26 employments were created and 17 trainings were imparted to the employees.	39 (26+13) employments were created and 30 (13+17) trainings were imparted to the employees.
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By supplying 39,343 MWh of clean electricity, the project avoided the release of 40,409 t CO ₂ e into atmosphere during this monitoring period	For the Project lifetime, the project contributed towards 52,309 (39,343 + 12,966) t CO ₂ e for the project lifetime

1.13 Commercially Sensitive Information

No commercially sensitive information has been excluded in this monitoring period of the project activity.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	In accordance with paragraph 3.18.1 of VCS Standard 4.7 ⁷ , which states, "In identifying stakeholders, the project proponent must consider the significance of user populations and how deeply affected they may be by the project activities, such that distant or intermittent user groups who will be affected in very limited ways by the project need not be defined as stakeholders," the project has identified the villagers, local government officials, and the representatives of the contractors and as the main stakeholders. This selection is based on their significant positive impact resulting from the project activities.
Legal or customary tenure/access rights	The PP holds the company ownership and land-use rights, granted through specific legal statutes.
Stakeholder diversity and changes over time	All project activity instances have been set up at various states in India characterized by a vibrant tapestry of social, economic and cultural diversity. The project's impacts on stakeholder diversity over time are as follows: <u>Social Diversity:</u> No adverse effects of the project activity on the social diversity of the project location have been observed. <u>Cultural Diversity:</u> No negative impacts of the project activity on the cultural diversity of the project location have been identified. <u>Economic Diversity:</u> The project contributes to the local economy by providing employment opportunities to the common folk. No detrimental effects on economic diversity have been recorded.

⁷ <https://verra.org/wp-content/uploads/2024/04/VCS-Standard-v4.7-FINAL-4.15.24.pdf>

Expected changes in well-being	The implementation of this Solar project has brought about substantial positive changes in various dimensions of well-being and stakeholder characteristics under the baseline scenario. Environmental benefits include a reduction in the usage of fossil fuels and thereby reducing air pollution and mitigating climate change, by producing a cleaner energy through intermittent source of solar power. On the economic front, the project creates job opportunities, fostering economic development within the community. These changes collectively contribute to the project's overarching goal of promoting sustainability and enhancing the overall quality of life for stakeholders in the various Project Instances spread across India.
Location of stakeholders	The stakeholders of the project activity are situated within the geographical boundaries of India. More information has been incorporated in section 1.8 of this report.
Location of resources	In terms of the location of territories and resources owned or accessed by stakeholders, it can be stated that they possess ownership of their respective lands. that no land/territorial resource from the stakeholder has been used for the project activity implementation. The PP holds all the land-use rights of the project activity location.

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	As a part of ongoing communication with stakeholders, a dedicated visitor cum grievance register has been placed at the project site and accessible to stakeholders to provide their feedback on the project. Also, Stakeholder can visit the webpage⁸ of the Project proponent and register grievance through online mode.
Date(s) of stakeholder consultation	As this is a grouped Project Activity, The Stakeholder consultation was done in in different Phases that is described in the below table.
Communication of monitored results	The monitoring results are communicated from the concerned individuals (stakeholders) to PP, through the grievance register. The site officials acknowledge and address the comments, suggestions, or grievances submitted by stakeholders, resolving issues as needed.
Consultation records	The consultation record (grievance register) is maintained by the site officials of the project activity.
Stakeholder input	There has been no grievance received for the current monitoring period.

⁸ <https://www.tatapower.com/contact/community-relations.aspx>

Sl. No.	Name of the SPV	Date of Local Stakeholders Meeting	Location
1	Tinplate Company of India Limited	03-September-2019	Jamshedpur, Jharkhand
2	Duraline India Private Limited	09-September-2019	Hyderabad, Telangana
3	GE T&D India Limited, Hosur	04-June-2019	Hosur, Tamil Nadu
4	Arya Anathalay I	11-November-2019	Delhi, Delhi
5	Time of India, Airoli	03-January-2020	Airoli, Maharashtra
6	Asian Paints Limited	06-January-2020	Taloja, Maharashtra
7	Time of India, Kolkata	20-January-2020	Kolkata, West Bengal
8	TATA Lockheed Martin Aerostructures Limited	27-January-2020	Hyderabad, Telangana
9	TSPDCL, Demag	03-February-2020	Jamshedpur, Jharkhand
10	Apollo Gleneagles Hospital Limited	10-February-2020	Kolkata, West Bengal
11	Tata Metaliks Limited	17-February-2020	Kharagpur, West Bengal
12	Arya Anathalay II	16-March-2020	Delhi, Delhi
13	Tata Motors Limited (Car Plant)	23-March-2020	Pimpri, Maharashtra

The details of the stakeholder meeting for newly added instance are mentioned below:

Sl. No.	Name of the SPV	Technology	Invitation / Notice Date	Date of Local Stakeholders Meeting	Location
1	Tata Steel Limited (Odisha)	Rooftop	03-January-24	15-January-24	Kalinganagar, Odisha
2	Tata Steel Limited (Odisha)	Floating	03-January -24	15-January-24	Kalinganagar, Odisha
3	Tata Steel Limited (Jharkhand)	Rooftop	24-January-2024	31-January-2024	Jamshedpur, Jharkhand
4	Tata Steel Limited (Jharkhand)	Floating	24-January-2024	31-January-2024	Jamshedpur, Jharkhand
5	Tata Electronics Private Limited	Rooftop	09-January-24	19-January-24	Hosur, Tamil Nadu
6	Kejirawal Castings Limited	Rooftop	23-January-24	31-January-24	Kolkata, West Bengal

7	The Tinsplate Company of India Limited- Ph-02	Rooftop	15-January-24	24-January-24	Jamshedpur,
8	Mplastics Toys & Engineering Private Limited	Rooftop	12-January-24	21-January-24	Hosur, Tamil Nadu
9	ZF Rane Automotive India Private Limited (Virmalai)	Rooftop	10-June-2023	22-July-2023	Chennai, Tamil Nadu
10	ZF Rane Automotive India Private Limited (Gudvancherry)	Rooftop	02-January-24	11-January-24	Chennai, Tamil Nadu
11	Tata BlueScope Steel Private Limited	Rooftop	05-January-24	13-January-24	Jamshedpur, Jharkhand
12	Rane Madras Limited	Rooftop	13-January-24	22-January-24	Pondicherry, Tamil Nadu
13	Premium Transmission Private Limited	Rooftop	10-February-2024	10-February-24	Aurangabad, Maharashtra

2.1.3 Free, Prior, and Informed Consent

Consent	Following clause 3.18.8 of VCS standard v.4.7⁹, the project proponent has disclosed 1. The minimum information, including the nature, size, pace, reversibility, and scope of the solar project activity; 2. The reason/purpose of the project, which is to implement the project activity that utilizes the renewable source of solar-energy to produce electricity; 3. The duration of the project activity, set at 7 years; 4. The locations that will be affected, primarily the building premises where the solar projects are implemented; and 5. A preliminary assessment of the likely economic, social, cultural, and environmental impact,
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⁹ <https://verra.org/wp-content/uploads/2024/04/VCS-Standard-v4.7-FINAL-4.15.24.pdf>

	including potential risks and fair and equitable benefit sharing in a context that respects the precautionary principle. Stakeholders were briefed that the project would bring solely positive effects on economic, social, cultural, or environmental aspects, including the production of electricity from a renewable source of energy and increased employment opportunities. 6. Moreover, information regarding personnel likely to be involved in the execution of the proposed project, (including Indigenous Peoples, private sector staff, research institutions, government employees, and others), was shared with stakeholders, and the project was implemented after their collective consent. Hence, it is evident that the affected community was informed prior to the operational date of the project activity.
Outcome of FPIC	Adhering to the FPIC rights of the stakeholders, they were informed in advance regarding the implementation, the overall impacts and other relevant details of the project activity, through the stakeholders' consultation. And only after receiving the collective consent of the stakeholders, the project activity was implemented. The project has not encroached on land, relocated people without consent, and forced physical or economic displacement.

2.1.4 Grievance Redress Procedure

Also, there is a dedicated e-mail ID "tatatpower@ethics-line.com" available for local stakeholders to lodge their complaints along with the toll-free helpline numbers 0008001004382 and 0008001008277. Also, accessible at normal domestic call rates within India: +91-11-71279005.

Also, the local stakeholders can reach through the third-party website: www.tip-offs.com & the physical mails can be addressed to "Delotte Touche Tohmatsu India LLP, C/o Arjun Rajagopalan, Partner (Ethics Helpline Services), 19th Floor, 46-Prestige Trade Tower, palace Road, High Grounds, Bengaluru - 560001.

Grievances received	Resolution and outcome
NA	NA, since no grievances have been recorded for the current monitoring period.

2.1.5 Public Comments

The Global Stakeholder Consultation commenting period had been completed before first crediting period. **No comments** have been received outside the public comment period.

The web link of the project is given below:

<https://registry.verra.org/app/projectDetail/VCS/3556>

Summary of comments received	Actions taken
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NA	NA
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2.2 Risks to Stakeholders and the Environment

Risk identified		Mitigation or preventative measure taken
Risks to stakeholder participation	Not Applicable	There are no exclusions, lack of communication or barriers in the project activity, that might prevent stakeholders from engaging or participating.
Working conditions	Not Applicable	There are no risks related to working conditions of the employees in the project activity, due to comprehensive safety training programs for the workers/employees.
Safety of women and girls	Not Applicable	The project activity has no negative impact over the safety of women and girls. Also, the safety concerns of the women and girls are addressed through the interactions with the stakeholders and resolved as per requirement. Moreover, the project strictly adheres to the laws for the women and girls, demonstrating the commitment to address any threat related to the safety of the women/girls of the project location.
Safety of minority and marginalized groups, including children	Not Applicable	No threats to the safety of minority and marginalized groups, including children have been identified. The PP duly diligently follows the legal and human rights of the children, minorities and marginalized groups, and hence, the project poses no negative effects on them.
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	Not Applicable	There is no risk due to generation of pollutants (noise, discharges to water, generation of waste, and release of hazardous materials), due to project activity. The project rather improves air quality by preventing fossil fuel burns and mitigates climate change by producing electricity from a clean source of energy, i.e. solar energy.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

Discrimination and sexual harassment	The PP strictly follows the national laws prohibiting discrimination and sexual harassment, and hence no discrimination or sexual harassment has occurred or will occur in the future.
Management experience	The PP has a proficient management team for the seamless operation of the project activity. The team consists of the members, having expertise in their relevant fields and who work closely with local communities and government agencies.
Gender equity in labor and work	The PP strictly follows the national laws promoting the gender equality in labor and work, and commits that equal opportunities have been or will be provided in the context of gender equity and pay for labor and work.
Human trafficking, forced labor, and child labor	The PP strictly follows the national laws prohibiting human trafficking, forced labor and child labor, and hence does not and will not use victims of human trafficking, forced labor, and child labor.

2.3.2 Human Rights

The following demonstrations show how the project is committed to safeguard the rights of IPs, LCs, and customary right holders, while following the international human rights law¹⁰, the UNDRIP¹¹ and ILO Convention 169-

- **Free, Prior, and Informed Consent (FPIC)**: The project activity has obtained the FPIC from the local stakeholders including the IPs, LCs and customary right holders, ensuring their unforced consent before the project operation, respecting their right to make decisions.
- **Non-discriminatory Participation in the Project Activity**- The project distributed devices without cultural or social biases, safeguarding the rights of IPs, LCs, and customary rights holders to be free from discrimination.
- **Employment due to the Project Activity**- The project activity also leads to the employment from the IPs, LCs and customary right holders, enabling them to exercise their right to fair treatment in employment and salary.

2.3.3 Indigenous Peoples and Cultural Heritage

The project activity does not impact the tangible or intangible cultural heritage or the indigenous people nearby.

2.3.4 Property Rights

Disputes over rights to territories and resources	N/A
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¹⁰ <https://www.ohchr.org/sites/default/files/Documents/Publications/fs9Rev.2.pdf>

¹¹ https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf

Respect for property rights	The land / property for the project activity belongs to the project proponent and, it can be supported through the relevant documents. Additionally, the project activity has obtained the free, prior and informed consent of the stakeholders (including the IPs, LCs, and customary rights holders). This ensures that their lands are property rights are protected and respected.
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2.3.5 Benefit Sharing

Summary of the benefit sharing plan	Since the above section 2.3.4 is not applicable, hence this section is also not applicable .
Benefit sharing during the monitoring period	N/A

2.4 Ecosystem Health

Risk identified		Mitigation or preventative measure taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	This project activity doesn't result in adverse effects; instead, it positively impacts on the biodiversity and ecosystem by decreasing air pollution and mitigating climate change.
Soil degradation and soil erosion	No risk identified	This project activity keeps check of the soil degradation and soil erosion by periodic monitoring.
Water consumption and stress	No risk identified	This project activity is a solar PV project and does not have any negative impacts on water consumption or does not lead to water stress in any way.
Usage of fertilizers	No risk identified	Since, this is a Solar PV project activity, hence it does not account for any adverse impacts associated with the use of fertilizers.

2.4.1 Rare, Threatened, and Endangered species

Species or habitat	Since the project activity involves the production of electricity utilizing the solar energy, which is not located in or adjacent to habitats for rare, threatened, or endangered species; hence this cell is not applicable .
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2.4.2 Introduction of species

This project activity involves the production of solar electricity and its export to the INDIAN grid, and there is no planting or species introduction. Hence, this information is **not applicable**.

Species introduced	Classification	Justification for use	Adverse effects and mitigation
N/A	N/A	N/A	N/A

Existing invasive species	Mitigation measures to prevent spread or continued existence of invasive species
N/A	N/A

2.4.3 Ecosystem conversion

Since, the project activity is neither ARR, ALM, WRC nor ACoGS, hence this information is **not applicable**.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project involves installation of Solar Photovoltaic (SPV) Panels on rooftops and floating solar PV technology in various states of India. The sole purpose of project activity is to install solar power plant for captive purpose and surplus generated electricity can be supplied to grid and further equivalent energy will be consumed from grid through net metering arrangement with state electricity board.

Start date of project activity is 01-October-2020, which is the date of commissioning of the earliest commissioned solar unit involved in the grouped project activity.

The Project is in continued operation for 2nd periodic verification for which the monitoring period is from 01-May-2022 to 30-April-2023 (Inclusive of both dates). There has been no major downtime of equipment's, overhaul times or exchange of equipment's in the project activity during the current monitoring period. The project underwent continued generation and no major breakdown occurred during the monitoring period. So, there has been no any such event that may impact the GHG emission reductions during the current monitoring period. During the current monitoring period 13 new installations with rooftop and floating solar PV technology have been included in the group project activity. This suggests that the project is expanding its use of solar energy to generate more clean electricity and reduce its environmental footprint. The expansion with new rooftop and floating installations indicates a continued commitment to clean energy generation by the PP. The details of the new instances have been added in the section 3.3 of the monitoring period.

3.2 Deviations

3.2.1 Methodology Deviations

Not Applicable

3.2.2 Project Description Deviations

As per registered JPDMR section no 1.4 eligibility criteria 4 stated the project activity instances to be included in the grouped project activity will be Greenfield activities involving renewable electricity generation power plants (captive use) using solar technology. But as per actual

scenario the newly added stances involved in the project activity is are selling to third party consumer. Thus, the deviation is requested to include third party consumption project also, in the grouped project activity. The same changed also be done on the section 3.3 of the monitoring report.

3.3 Grouped Projects

The following table demonstrates how the new project activity instances being included in the grouped project activity fulfil above mentioned eligibility conditions as per section 3.2 of the registered JPDMR.

Sr. No.	Eligibility Criteria	Project Activity instances eligibility
1	Applicability Conditions: The project activity instances shall meet applicability conditions for applicable methodology (AMS I.F version 5.0) as defined in section 3.2	All the new instances in this project activity meet applicability conditions of methodology (AMS I.F Version 5.0 (project activity instances having capacity less than 15 MW), hence this eligibility criteria are fulfilled.
2	Geographical Area: The project activity instances to be included in the grouped project activity will be activities involving Renewable Electricity Generation for captive use and Mini-grid using solar technology located within India.	All project activity instances being included in the grouped project are located within geographic boundaries of India. Hence this condition is fulfilled. Please refer commissioning certificate for geographical area of project activity.
3	Baseline scenario: All Project Activity Instances shall meet the baseline definition as defined in respective methodology and as explained in section 3.4	As per section 3.4 of the registered JPDMR, the project activities that displace electricity consumed from the electric grid and from a fossil fuel fired on-site captive power plant, the baseline emission factor shall reflect the emissions intensity of the grid and the captive power plant in the baseline scenario, All the new instance added in this project activity during current monitoring period have followed the same baseline scenario as mentioned in registered JPDMR. Hence this eligibility criterion is fulfilled. Please refer section 3.4 of the registered JPDMR for baseline scenario.
4	Technology type: The project activity instances to be included in the grouped project activity will be Greenfield activities involving Renewable Electricity Generation for captive use and Mini-grid using solar PV technology. The electricity should be supplied to grid, or to third party or to be used for captive purpose etc.	All project activity instances are solar PV power plants (i.e., Renewable Electricity Generation) supplying electricity for mini grid or captive/third party use. The details of the technology type have been included section 3.3 of the monitoring report. Also, all the new instances are greenfield projects. Hence this condition is fulfilled.

	Additionality: The project activity instances to be added as part of the grouped project will meet additionality criteria as set out in respective methodologies - for Small Scale Project instances the methodology applicable will be AMS-I.F.	The additionality for the all-project activity instances included in the grouped project has been demonstrated in subsequent sections of the monitoring report.
6	Start Date: The start date of each project activity instance under the grouped project should not be prior to the start date of the grouped project. The start date of each project activity instance will be determined through documentary evidence.	The start date of grouped project is considered as the earliest commissioning date (i.e., 01-October-2020) of project activity instance and start date of all other new instances is after this date. Please refer commissioning certificate for start date of grouped project activity.
7	Conditions that avoid double Counting of emission reductions like unique identifications of project and claiming emission reduction only under one GHG program.	The existing and new project activity instances are identified by latitude and longitude and location of the plant. Also, declaration has been provided and these project activity instances are not participating in any other GHG program. Hence this condition is fulfilled.
8	The Grouped Project specific requirements stipulated by the Entity responsible for coordinating and managing grouped project for conducting local stakeholder consultations and environmental impact assessment (EIA), as applicable.	Local stakeholder consultation has been conducted as a part of grouped project activity. There is no requirement for carrying out EIA for these projects in India, hence this condition is fulfilled.
9	The project activity using solar PV project will supply electricity to grid or to users through grid network or in house captive use.	The existing and new project activity instances are solar PV power plants supplying electricity to grid or user or in house captive use. Hence this condition is fulfilled.

The applicability conditions of the approved methodology AMS I.F., Version 5.0, Sectoral Scope 1, are justified below-

Applicability Condition of AMS I F Ver. 5	Project activity vis-à-vis applicability Conditions
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This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to user(s). The project activity will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e., in the absence of the project activity, the users would have been supplied electricity from one or more sources listed below: a. A national or a regional grid (grid hereafter); b. Fossil fuel fired captive power plant; c. A carbon intensive mini-grid	The project activity instances comprise of renewable electricity generation using solar energy units which supply power to the user(s). The solar plant unit is located at the respective rooftop and floating of the mentioned site at the subsequent section. The project activity will displace electricity from INDAN Grid, which is supplied by predominantly fossil fuel plants. Out of the 13 project activity instances, 3 instances are connected to the grid through net metering & all the project instances will lead to replacement of equivalent quantum of fossil fuel dominated grid power. Hence, the project activity instances follow this applicability conditions.
Illustration of respective situations under which each of the methodology (AMS-I.D., AMS-I.F. and AMS-I.A.) applies is included in Table 3.	The project activity applies methodology AMS I.F and the detailed scenario has been explained after end of this table.
Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: a. The project activity is implemented in an existing reservoir with no change in the volume of reservoir; b. The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m² c. The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m².	Project activity instances does not include hydro power generation.

This methodology is applicable for project activities that: a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); b) Involve a capacity addition, c) Involve a retrofit of (an) existing plant(s); or d) Involve a replacement of (an) existing plant(s).	All project activity instances are installation of greenfield power plants. Hence the condition (a) justifies by the project activity instances. For future project activity instances, option b, c and d may be applicable and applicability will be justified for each project activity instance.
In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	Project instances are not capacity addition. All instances are green field installation. If any project activity instance involves any capacity addition, then total capacity of each project activity instance is less than 15 MW.
In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	This Project activity instances are not a retrofit or replacement of existing project activity. If any project activity instance involves any retrofit or replacement, then total capacity of each project activity instance is less than 15 MW
If the unit added has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The project activity instances do not have a non-renewable component. Hence this section is not applicable
Combined heat and power (co-generation) systems are not eligible under this category.	The project activity instances do not involve with co-generation. Hence this section is not applicable
If electricity and/or steam/heat produced by the project activity is delivered to a third party, i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered that ensures that there is no double counting of emission reductions.	Every project activity instance having a contractual agreement between supplier and consumers in order to specifically avoid double counting.
In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	The project activity instances do not involve with biomass usage. Hence this section is not applicable

Differentiation amongst applicability of AMS – I.A, AMS-I. D and AMS- I.F

S.No	Project type	AMS-I. A	AMS-I. D	AMS-I. F
1	Project supplies electricity to a national/regional grid		√	
2	Project displaces grid electricity consumption (e.g. grid import) and/or captive fossil fuel electricity generation at the user end (excess electricity may be supplied to a grid)			√
3	Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling)		√	
4	Project supplies electricity to a mini grid system where in the baseline all generators use exclusively fuel oil and/or diesel fuel			√
5	Project supplies electricity to household users (included in the project boundary) located in off grid areas	√		

As the solar units involved in the proposed project generate electricity primarily to deliver to captive consumers and excess electricity is to be supplied to the grid, this resembles the scenario listed at S.I no. 2 of the above table and hence the methodology, AMS I F is applied appropriately.

The following instances added details given below:

Sl. No	Customer		Installed Capacity (KW)			Date of Commissioning	Technology	Primary Purpose	Net Metering
			DC (MWp)	AC (MW)					
1	Tata Steel Limited (Odisha)	TSK Steelanium	0.510	0.480	6.880	Upcoming	Rooftop	Third party use	No
		TSk SMS	1.670	1.200		Upcoming	Rooftop	Third party use	No
		TSK MWTP	1.050	0.800		Upcoming	Rooftop	Third party use	No
		TSK HSM E/W	3.300	2.600		Upcoming	Rooftop	Third party use	No
		TSK HSM N/S	2.500	1.800		Upcoming	Rooftop	Third party use	No
2	Tata Steel Limited (Odisha)	TSK RWR	10.1	7.500		Upcoming	Floating	Third party use	No
3	Tata Steel Limited	TSL CWH	2.282	1.280	4.920	21-September-2022	Rooftop	Third party use	No

	(Jharkha nd)	TSL WRM	1.175	1.000		29- December- 2022	Rooftop	Third party use	No
		TSL CRM	2.007	1.200		Upcoming	Rooftop	Third party use	No
		TSL, HSM	2.448	1.440		23-March- 2023	Rooftop	Third party use	No
4	Tata Steel Limited (Jharkha nd)	TSL UCP	10.78 5	7.500		Upcoming	Floating	Third party use	No
5	Tata Electroni cs Private Limited	Assembly building 1	0.242	1.760	7.120	07- February- 2023	Rooftop	Third party use	No
		DM plant	0.640	0.480		Upcoming	Rooftop	Third party use	No
		BMB 1 Building	2.225	1.760		07- February- 2023	Rooftop	Third party use	No
		BMB 2 Building	2.420	1.760		07- February - 2023	Rooftop	Third party use	No
		Ano building	1.794	1.360		07- February - 2023	Rooftop	Third party use	No
6	Kejirawal Castings Limited		1.418	1.26		30- January- 2024	Rooftop	Third party use	No
7	The Tinsplate Company of India Limited- Ph-02		1.10	0.892		31- December- 2022	Rooftop	Third party use	No
8	Mplastics Toys & Engineering Private Limited		0.996	0.77		Under Commissio ning	Rooftop	Third party use	No
9	ZF Rane Automotive India Private Limited (Virmalai)		0.850	0.69		10-January -2024	Rooftop	Third party use	No
10	ZF Rane Automotive India Private Limited (Gudvancherry)		0.702	0.56		18- January- 2024	Rooftop	Third party use	No
11	Tata BlueScope Steel Private Limited		1.783	1.426		05-May- 2022	Rooftop	Third party use	Yes
12	Rane Madras Limited		0.974	0.760		13-June- 2023	Rooftop	Third party use	Yes

13	Premium Transmission Private Limited	0.687	0.480	23-January-2023	Rooftop	Third party use	Yes
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Project Location

The details of the project locations are mentioned in the table below:

SL No	Customer		Installed AC Capacity (MW)	Latitude (N)	Longitude (E)	City	State
1.	Tata Steel Limited (Odisha)	TSK Steelanium	6.880	20.97111	85.997	Kalinganagar	Odisha
		TSK SMS		20.967033	86.016355		
		TSK MWTP		20.972121	86.021182		
		TSK HSM E/W		20.966446	86.022274		
		TSK HSM N/S		20.966956	86.032433		
2	Tata Steel Limited (Odisha)	TSK RWR	7.50	20.978813	86.016628	Kalinganagar	Odisha
3	Tata Steel Limited (Jharkhand)	TSL CWH	4.920	22.775792	86.190468	Jamshedpur	Jharkhand
		TSL WRM		22.782784	86.198012		
		TSL CRM		22.78768	86.21301		
		TSL, HSM		22.78240	86.205644		
4	Tata Steel Limited (Jharkhand)	TSL UCP	7.50	22.792039	86.191514	Jamshedpur	Jharkhand
5	Tata Electronics Private Limited	Assembly building 1	7.12	12.552329	77.950999	Hosur	Tamil Nadu
		DM plant		12.552291	77.952597		
		BMB 1 Building		12.551173	77.952545		
		BMB 2 Building		12.549523	77.952576		
		Ano building		12.550885	77.951003		
6	Kejirawal Castings Limited		1.418	22.63924	88.29996	Kolkata	West Bengal
7	The Tinsplate Company of India Limited- Ph-02		1.10	22.795258	86.234222	Jamshedpur	Jharkhand

8	Mplastics Toys & Engineering Private Limited	0.996	12.667694	77.805139	Hosur	Tamil Nadu
9	ZF Rane Automotive India Private Limited (Virmalai)	0.850	10.632844	78.570897	Chennai	Tamil Nadu
10	ZF Rane Automotive India Private Limited (Gudvancherry)	0.702	12.835169	80.052394	Chennai	Tamil Nadu
11	Tata BlueScope Steel Private Limited	1.426	22.816354	86.235986	Jamshedpur	Jharkhand
12	Rane Madras Limited	0.760	11.923741	79.647083	Pondicherry	Tamil Nadu
13	Premium Transmission Private Limited	0.480	19.870431	75.503808	Aurangabad	Maharashtra

A separate KML file also has been provided to VVB for all the new instances locations.

Technical specifications:

Technical specifications of all the new instances are as follows:

Sl.No	Customer		Installed Capacity (MW)		PV Modules	Inverters
			DC	AC		
1	Tata Steel Limited (Odisha)	TSK Steelanium	0.510	6.880	950 nos. (540 Wp each) Manufactured by Jinko Solar	6 nos.(80 KW each) Manufactured by GoodWe
		TSK SMS	1.670		3,124 nos. (540 Wp each) Manufactured by Jinko Solar	6 nos.(200 KW each) Manufactured by Sungrow
		TSK MWTP	1.050		1,948 nos. (540 Wp each) Manufactured by Jinko Solar	4 nos.(200 KW each) Manufactured by Sungrow
		TSK HSM E/W	3.330		6,178 nos. (540 Wp each) Manufactured by Jinko Solar	13 nos.(200 KW each) Manufactured by Sungrow
		TSK HSM N/S	2.50		4,686 nos. (540 Wp each) Manufactured by Jinko Solar	9 nos.(200 KW each) Manufactured by Sungrow
2	Tata Steel Limited (Odisha)	TSK RWR	10.10	7.50	6,552 nos. (530 Wp each) 7,616 nos. (535 Wp each) 4,707 nos. (540 Wp each) Manufactured by Jinergy	2 nos.(3750 KW each) Manufactured by TBEA

3	Tata Steel Limited (Jharkhand)	TSL Jamshedpur CWH	2.282	4.920	4,188 nos. (545 Wp each) Manufactured by Jinko Solar	8 nos.(200 KW each) Manufactured by GoodWe
		TSL Jamshedpur WRM	1.175		2,155 nos. (545 Wp each) Manufactured by Jinko Solar	5 nos.(200 KW each) Manufactured by GoodWe
		TSL Jamsedpur CRM	2.007		3,174 nos. (545 Wp each) Manufactured by Jinko Solar	6 nos.(200 KW each) Manufactured by Sungrow
		TSL_HSM	2.448		4,492 nos. (545 Wp each) Manufactured by Jinko Solar	9 nos.(200 KW each) Manufactured by GoodWe
4	Tata Steel Limited (Jharkhand)	TSL UCP	10.785	7.50	20,130 nos. (535 Wp each) Manufactured by Jinery Solar	2 nos.(3,750 KW each) Manufactured by Sungrow
5	Tata Electronics Private Limited	Assembly building 1	2.42	7.08	5,440 nos. (445 Wp each) Manufactured by Jinery	22 nos.(80 KW each) Manufactured by Solis
		DM plant	0.640		1,440 nos. (445 Wp each) Manufactured by Jinery	6 nos.(80 KW each) Manufactured by Solis
		BMB 1 Building	2.225		5,440 nos. (450 Wp each) Manufactured by Jinery	22 nos.(80 KW each) Manufactured by Solis
		BMB 2 Building	2.420		5,440 nos. (445 Wp each) Manufactured by Jinery	22 nos.(80 KW each) Manufactured by Solis
		Ano building	1.794		4,042 nos. (445 Wp each) Manufactured by Jinery	17 nos.(80 KW each) Manufactured by Solis
6	Kejirawal Castings Limited		1.418	1.26	257 nos. (545 Wp each) Manufactured by Tata Power Solar	6 nos.(60 KW each) 12 nos.(80 KW each) Manufactured by Solis
7	Tata Tinplate Ph-2		1.10	0.892	3,335 nos. (330 Wp each) Manufactured by Tata Power Solar	4 nos.(80 KW each) 7 nos.(60 KW each) 2 nos.(36 KW each)

					1 nos.(50 KW each) 1 nos.(30 KW each) Manufactured by GoodWe
8	Mplastics Toys & Engineering Private Limited	0.996	0.77	1,831 nos. (545 Wp each) Manufactured by Tata Power Solar	9 nos.(80 KW each) 1 nos.(50 KW each) Manufactured by Solis
9	ZF Rane Automotive India Private Limited (Virmalai)	0.850	0.69	1,575 nos. (540 Wp each) Manufactured by Tata Power Solar	5 nos.(80 KW each) 4 nos.(60 KW each) 1 nos.(50 KW each) Manufactured by Solis
10	ZF Rane Automotive India Private Limited (Gudvancherry)	0.702	0.56	1,301 nos. (540 Wp each) Manufactured by Tata Power Solar	3 nos.(80 KW each) 2 nos.(60 KW each) 4 nos.(50 KW each) Manufactured by Solis
11	Tata BlueScope Steel Private Limited	1.783	1.426	3,936 nos. (450 Wp each) Manufactured by Tata Power Solar	9 nos.(80 KW each) 6 nos.(60 KW each) 3 nos.(50 KW each) Manufactured by GoodWe
12	Rane Madras Limited	0.974	0.760	1,804 nos. (540 Wp each) Manufactured by Waree Solar	5 nos.(80 KW each) 6 nos.(60 KW each) Manufactured by Solis
13	Premium Transmission Private Limited	0.687	0.480	1,262 nos. (545 Wp each) Manufactured by Tata Power Solar	6 nos.(80 KW each) Manufactured by Tata Power Solar

Additionality

The additionality of the Project shall be demonstrated by applying the following approach, consisting of two components:

- (i) A Legal Requirement Test; and
- (ii) An Additionality Test either based on a Positive List test or a projects-specific additionality test.

a) Legal Requirement Test

The project is not enforced by law. The project passes the legal requirement test since there are no enforced laws, statutes, regulations, court orders, environmental-mitigation agreements, permitting conditions of other legally-binding mandates requiring its implementation. Since voluntary commitments/agreements within a sector or by an entity do not constitute the legal requirement, the outcome of the legal requirement test is concluded as positive.

b) Additionality Test

accordance with applied Tool 21, “Demonstration of additionality of small-scale project activities Version 13.1, the project proponent shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

- Investment barrier
- Technological barrier
- Barrier due to prevailing practice
- Other barriers

The project proponent has identified “investment barrier” as the most relevant barrier faced by the project activity. The investment barrier faced by the project activity consists of barrier due to high capital cost and consequent impact on return

Investment Barrier:

The purpose of investment analysis is to determine whether the project activity is economically or financially less attractive than other alternatives without additional funding that may be derived from the sale of carbon credits. The investment analysis was conducted in accordance with guidelines on investment analysis.

The project proponent has considered Equity IRR as the suitable financial indicator for investment analysis.

Suitability of Benchmark:

As per Tool 27: Investment analysis, Version 13.0, EB 120 annex 3, “In cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or WACC are appropriate benchmarks for a project IRR. Required/expected returns on equity are appropriate benchmarks for an equity IRR. Benchmarks supplied by relevant national authorities are also appropriate if the DOE can validate that the benchmarks used are applicable to the project activity and the type of IRR calculation presented.”

Accordingly, the project proponent has selected required/ expected returns on equity as the appropriate benchmark for the project.

The investment analysis has been carried out in Nominal terms. Accordingly, Default value has been adjusted by adding suitable forecasted inflation rate taken from RBI (Central Bank, India). Project proponent has calculated Benchmark based on WPI mean inflation rate. As per paragraph 16 of the Tool 27: Investment analysis, Version 13.0, EB 120 annex 3, the inflation forecast of the central bank of the host country should be for the duration of the crediting period. However, since RBI provides forecast inflation only for 5 & 10 years, the project investor has calculated benchmark using 10 years durations and the same is considered as Benchmark for the project activity.

Methodology deployed for arriving at a suitable value of Benchmark using Default Value has been described below:

- As the project activity generates power utilizing solar energy, Group 1 as per paragraph 5 of Appendix of EB 116, Annex 2 has been identified as a suitable category.

- The investment analysis has been carried out in Nominal terms. Accordingly, default value as given in paragraph 6, Appendix, Annex 2, EB 116 has been adjusted by adding suitable forecast inflation rate taken from RBI (Central Bank, India).
- Project investor has calculated Benchmark based on WPI mean inflation rate. As per paragraph 16 of Appendix of EB 116, Annex 2, the inflation forecast should be for the duration of the crediting period. The project investor has calculated benchmark using 10 years inflation as Benchmark for the project activity.

The benchmark has been computed in the following manner:

$$\text{Nominal Benchmark}^{12} = \{(1 + \text{Real Benchmark}) * (1 + \text{Inflation rate})\} - 1$$

Where:

- Default value for Real Benchmark = 9.13% (as per Appendix of CDM TOOL 27¹³: Investment Analysis, version 13)
- Inflation Rate forecast published by Reserve Bank of India (RBI) (i.e. Central Bank of India).

For benchmark estimation, the Cost of Equity has been considered using the “Methodological tool: Investment analysis” available at the time of decision making.

The inflation forecast rate, benchmark, default benchmark considered for all the project activities is summarized in the table below.

SI No.	Project Owner	Capacity (MW)	State	Technology	Inflation Forecast	Benchmark	Default Benchmark	Decision Date
1	Tata Steel Limited (Odisha)	6.88	Odisha	Rooftop	4.0 ¹⁴ %	13.50%	9.13%	04-October-2021
2	Tata Steel Limited (Odisha)	7.50	Odisha	Floating	4.0 %	13.50%	9.13%	04-October-2021
3	Tata Steel Limited (Jharkhand)	4.92	Jharkhand	Rooftop	4.0 %	13.50%	9.13%	04-October-2021
4	Tata Steel Limited (Jharkhand)	7.50	Jharkhand	Floating	4.0 %	13.50%	9.13%	04-October-2021
5	Tata Electronics	7.08	Tamil Nadu	Rooftop	4.0 %	13.50%	9.13%	05-May-2021

¹² As per Fisher Equation, https://en.wikipedia.org/wiki/Fisher_equation

¹³ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v13.pdf>

¹⁴ <https://www.rbi.org.in/commonman/English/Scripts/PressReleases.aspx?id=3238>

	Private Limited							
6	Kejirawal Castings Limited	1.26	West Bengal	Rooftop	4.0 %	13.50%	9.13%	11-May-2022
7	The Tinplate Company of India Limited- Ph-02	0.892	Jharkhand	Rooftop	4.0 %	13.50%	9.13%	01-March-2021
8	Mplastics Toys & Engineering Private Limited	0.77	Tamil Nadu	Rooftop	4.0 %	13.50%	9.13%	09-January-2023
9	ZF Rane Automotive India Private Limited (Virmalai)	0.69	Tamil Nadu	Rooftop	4.0 %	13.50%	9.13%	05-January-2023
10	ZF Rane Automotive India Private Limited (Gudvancher ry)	0.56	Tamil Nadu	Rooftop	4.0 %	13.50%	9.13%	05-January-2023
11	Tata BlueScope Steel Private Limited	1.426	Jharkhand	Rooftop	4.0 %	13.50%	9.13%	19-October-2021
1 2	Rane Madras Limited	0.76	Tamil Nadu	Rooftop	4.0 %	13.50%	9.13%	18-November-2022
13	Premium Transmission Private Limited	0.48	Maharashtra	Rooftop	4.0 %	13.50%	9.13%	04-August-2022

The period considered for Post Tax Equity IRR calculations is 25 years, which corresponds to the operational lifetime of the project activity.

Key Assumptions supporting financial projections in excel spreadsheet is submitted and the same has been summarized below for all the new added instance.

1. Tata Steel Limited (Odisha) : Rooftop

Details of the project		Source	Link
State where the project is situated	Odisha		
Total Capacity (MW)	6.880		
Date of Commissioning	20-Mar-24		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	11,451,072	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	4.30	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	430.28	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	430.28		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-

1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	430.28	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	43.03	Calculated Value	
Net Depreciable Value (INR Mn.)	387.25	Calculated Value	
Residual Value (INR Mn.)	43.03	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2023-24		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2023-24 for a domestic company	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2023-24 for a domestic company	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
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PLF	7.34%	8.97%	10.53%	29.82%
O&M	9.18%	8.97%	8.76%	-260.09%
Project Cost	10.49%	8.97%	7.70%	-25.19%
Tariff Rate	7.34%	8.97%	10.53%	29.82%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.97%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

2. Tata Steel Limited (Odisha): Floating

Details of the project		Source	Link
State where the project is situated	Odisha		
Total Capacity (MW)	7.500		
Date of Commissioning	20-Mar-24		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	12,483,000	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	6.20	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	4.69	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	469.05	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		

Equity Investment (INR Mn.)	469.05		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	469.05	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	46.91	Calculated Value	
Net Depreciable Value (INR Mn.)	422.15	Calculated Value	
Residual Value (INR Mn.)	46.91	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2023-24		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2023-24 for a domestic company	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//hdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2023-24 for a domestic company	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
Education cess (%)	4.00%		

Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.34%	8.97%	10.53%	29.81%
O&M	9.18%	8.97%	8.76%	-260.09%
Project Cost	10.49%	8.97%	7.70%	-25.19%
Tariff Rate	7.34%	8.97%	10.53%	29.81%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.97%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

3. Tata Steel Limited (Jharkhand) :Rooftop

Details of the project		Source	Link
State where the project is situated	Jharkhand		
Total Capacity (MW)	4.920		
Date of Commissioning	21-Sep-22		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	8,188,848	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	4.06	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		

Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	3.08	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	307.70	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	307.70		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	307.70	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	30.77	Calculated Value	
Net Depreciable Value (INR Mn.)	276.93	Calculated Value	
Residual Value (INR Mn.)	30.77	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2022-23		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2022-23 for a	https://incometaxindia.gov.in/Books%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
MAT (%)	15.00%		

		domestic company	
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//hdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.23%	8.87%	10.44%	30.46%
O&M	9.08%	8.87%	8.65%	-263.88%
Project Cost	10.39%	8.87%	7.59%	-25.57%
Tariff Rate	7.23%	8.87%	10.44%	30.46%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.87%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

4. Tata Steel Limited (Jharkhand): Floating

Details of the project		Source	Link
State where the project is situated	Jharkhand		
Total Capacity (MW)	7.500		
Date of Commissioning	21-Sep-22		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	12,483,000	Calculated Value	

Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	6.20	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	4.69	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	469.05	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	469.05		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	469.05	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	46.91	Calculated Value	
Net Depreciable Value (INR Mn.)	422.15	Calculated Value	
Residual Value (INR Mn.)	46.91	Calculated Value	-
IT Depreciation			

IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2022-23		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//hdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.27%	8.87%	10.43%	30.54%
O&M	9.08%	8.87%	8.66%	-264.10%
Project Cost	10.38%	8.87%	7.62%	-25.61%
Tariff Rate	7.27%	8.87%	10.43%	30.54%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.87%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

5. Tata Electronics Private Limited

Details of the project	Source	Link
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State where the project is situated	Tamil Nadu		
Total Capacity (MW)	7.080		
Date of Commissioning	7-Feb-23		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	11,783,952	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	5.85	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	4.43	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	442.78	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	442.78		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			

Land	-		
Gross Depreciable Value (INR Mn.)	442.78	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	44.28	Calculated Value	
Net Depreciable Value (INR Mn.)	398.50	Calculated Value	
Residual Value (INR Mn.)	44.28	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2022-23		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.29%	8.91%	10.47%	10.55%

O&M	9.12%	8.91%	8.70%	-107.79%
Project Cost	10.42%	8.91%	7.65%	-10.48%
Tariff Rate	7.29%	8.91%	10.47%	10.55%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.91%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

6. Kejirawal Castings Limited

Details of the project		Source	Link
State where the project is situated	West Bengal		
Total Capacity (MW)	1.260		
Date of Commissioning	30-Jan-24		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	2,097,144	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	1.04	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.79	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	78.80	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		

Equity Investment (INR Mn.)	78.80		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	78.80	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	7.88	Calculated Value	
Net Depreciable Value (INR Mn.)	70.92	Calculated Value	
Residual Value (INR Mn.)	7.88	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2023-24		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2023-24 for a domestic company	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2023-24	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
Education cess (%)	4.00%		

		for a domestic company	
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.28%	8.90%	10.45%	30.60%
O&M	9.10%	8.90%	8.69%	-265.11%
Project Cost	10.41%	8.90%	7.63%	-25.74%
Tariff Rate	7.28%	8.90%	10.45%	30.60%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.90%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

7. The Tinsplate Company of India Limited- Ph-02

Details of the project		Source	Link
State where the project is situated	Jharkhand		
Total Capacity (MW)	0.892		
Date of Commissioning	31-Dec-22		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	1,484,645	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.74	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		

Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.56	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	55.79	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	55.79		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	55.79	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	5.58	Calculated Value	
Net Depreciable Value (INR Mn.)	50.21	Calculated Value	
Residual Value (INR Mn.)	5.58	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2022-23		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2022-23 for a	https://incometaxindia.gov.in/Books%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
MAT (%)	15.00%		

		domestic company	
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//hdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.24%	8.86%	10.40%	30.80%
O&M	9.06%	8.86%	8.65%	-266.96%
Project Cost	10.36%	8.86%	7.60%	-25.77%
Tariff Rate	7.24%	8.86%	10.40%	30.80%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.86%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

8. Mplastics Toys & Engineering Private Limited

Details of the project		Source	Link
State where the project is situated	Karnataka		
Total Capacity (MW)	0.770		
Date of Commissioning	2-Aug-23		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	1,281,588	Calculated Value	

Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.64	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.48	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	48.16	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	48.16		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	48.16	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	4.82	Calculated Value	
Net Depreciable Value (INR Mn.)	43.34	Calculated Value	
Residual Value (INR Mn.)	4.82	Calculated Value	-
IT Depreciation			

IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2023-24		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2023-24 for a domestic company	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//hdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2023-24 for a domestic company	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.23%	8.87%	10.44%	30.46%
O&M	9.08%	8.87%	8.65%	-263.88%
Project Cost	10.39%	8.87%	7.59%	-25.57%
Tariff Rate	7.23%	8.87%	10.44%	30.46%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.87%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

9. ZF Rane Automotive India Private Limited (Virmalai)

Details of the project	Source	Link
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State where the project is situated	Tamil Nadu		
Total Capacity (MW)	0.690		
Date of Commissioning	23-Aug-23		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	1,148,436	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.57	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.43	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	43.15	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	43.15		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		

Gross Depreciable Value (INR Mn.)	43.15	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	4.32	Calculated Value	
Net Depreciable Value (INR Mn.)	38.84	Calculated Value	
Residual Value (INR Mn.)	4.32	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2023-24		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2023-24 for a domestic company	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//hdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2023-24 for a domestic company	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.23%	8.86%	10.44%	30.43%
O&M	9.07%	8.86%	8.65%	-264.31%
Project Cost	10.39%	8.86%	7.59%	-25.59%

Tariff Rate	7.23%	8.86%	10.44%	30.43%
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Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.86%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

10. ZF Rane Automotive India Private Limited (Gudvancherry)

Details of the project		Source	Link
State where the project is situated	Tamil Nadu		
Total Capacity (MW)	0.560		
Date of Commissioning	2-Aug-23		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	932,064	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.46	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.35	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	35.02	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	35.02		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-

Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	35.02	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	3.50	Calculated Value	
Net Depreciable Value (INR Mn.)	31.52	Calculated Value	
Residual Value (INR Mn.)	3.50	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts/%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2023-24		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2023-24 for a domestic company	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//hdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2023-24 for a domestic company	https://taxguru.in/income-tax/income-tax-rates-fy-2023-24-ay-2024-25.html
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	

Service Tax (%)	18.72%	Calculated Value	
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Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.23%	8.87%	10.44%	30.46%
O&M	9.08%	8.87%	8.65%	-263.88%
Project Cost	10.39%	8.87%	7.59%	-25.57%
Tariff Rate	7.23%	8.87%	10.44%	30.46%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.87%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

11. Tata BlueScope Steel Private Limited

Details of the project		Source	Link
State where the project is situated	Jharkhand		
Total Capacity (MW)	1.426		
Date of Commissioning	5-May-22		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	2,373,434	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	1.18	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.89	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			

TOTAL COST (INR Mn.)	89.18	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	89.18		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	89.18	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	8.92	Calculated Value	
Net Depreciable Value (INR Mn.)	80.26	Calculated Value	
Residual Value (INR Mn.)	8.92	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2022-23		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//hdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%		

Education cess (%)	4.00%	Tax rate applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.24%	8.88%	10.45%	30.40%
O&M	9.09%	8.88%	8.66%	-263.40%
Project Cost	10.41%	8.88%	7.60%	-25.54%
Tariff Rate	7.24%	8.88%	10.45%	30.40%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.88%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

12. Rane Madras Limited

Details of the project		Source	Link
State where the project is situated	Tamil Nadu		
Total Capacity (MW)	0.760		
Date of Commissioning	13-Jun-23		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	1,264,944	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			

O & M Expenses (INR Mn.)	0.63	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.48	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	47.53	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	47.53		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	47.53	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	4.75	Calculated Value	
Net Depreciable Value (INR Mn.)	42.78	Calculated Value	
Residual Value (INR Mn.)	4.75	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			

Financial Year	FY - 2022-23		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.24%	8.88%	10.45%	30.40%
O&M	9.09%	8.88%	8.66%	-263.40%
Project Cost	10.41%	8.88%	7.60%	-25.54%
Tariff Rate	7.24%	8.88%	10.45%	30.40%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.88%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

13. Premium Transmission Private Limited

Details of the project		Source	Link
State where the project is situated	Maharashtra		
Total Capacity (MW)	0.480		
Date of Commissioning	23-Jan-23		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf

Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	798,912	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.40	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.30	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	30.02	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	30.02		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	30.02	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	3.00	Calculated Value	
Net Depreciable Value (INR Mn.)	27.02	Calculated Value	

Residual Value (INR Mn.)	3.00	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2022-23		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//hdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2022-23 for a domestic company	https://incometaxindia.gov.in/Books%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.27%	8.89%	10.44%	30.75%
O&M	9.10%	8.89%	8.68%	-264.92%
Project Cost	10.40%	8.89%	7.63%	-25.75%
Tariff Rate	7.27%	8.89%	10.44%	30.75%

Conclusion:

Equity IRR without CDM	Benchmark (Equity IRR)
8.89%	13.50%

As equity IRR is less than the benchmark, this instance is additional.

This substantiates that the investment is not financially attractive (Equity IRR for the project activity is less than the Benchmark Equity IRR) for any of the investor.

Also, it can be noted that some of newly added instance has been commissioned. Hence, the Equity IRR is calculated with the actual values and tabulated below:

Sl. No.	Name of the customer	Commissioning Date	Benchmark	Equity IRR (CERC Values)	Equity IRR (At Actuals Cost)
1.	Tata Steel Limited (Odisha)	Under Commissioning	13.50%	8.97%	-
2.	Tata Steel Limited (Odisha)	Under Commissioning	13.50%	8.97%	-
3.	Tata Steel Limited (Jharkhand)	21-September-2022	13.50%	8.87%	0.54%
4.	Tata Steel Limited (Jharkhand)	Under Commissioning	13.50%	8.87%	-
5.	Tata Electronics Private Limited	07-February-2023	13.50%	8.91%	3.0%
6.	Kejirawal Castings Limited	30-January-2024	13.50%	8.90%	1.86%
7.	The Tinplate Company of India Limited- Ph-02	31-December-2022	13.50%	8.86%	1.21%
8.	Mplastics Toys & Engineering Private Limited	Under Commissioning	13.50%	8.87%	-
9.	ZF Rane Automotive India Private Limited (Virmalai)	10-January - 2024	13.50%	8.86%	5.58%
10.	ZF Rane Automotive India Private Limited (Gudvancherry)	18-January-2024	13.50%	8.87%	5.44%
11.	Tata BlueScope Steel Private Limited	05-May-2022	13.50%	8.88%	6.07%
12.	Rane Madras Limited	13-June-2023	13.50%	8.88%	6.33%
13.	Premium Transmission Private Limited	23-January-2023	13.50%	8.89%	6.38%

With the above table, it is evident that no instance is breaching the benchmark even with the actual parameters (IRR Calculation spread sheets have been provided to VVB). Thus, it can be easily concluded that project activity is additional & is not business as usual scenario.

Common Practice Analysis

Not Applicable as this is a small-scale project activity.

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EF _{grid,OM,y}
Data unit	tCO ₂ e/MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	CO ₂ Emission Database, Version 17.0 ¹⁵ , October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value applied:	0.9522
Justification of choice of data or description of measurement methods and procedures applied	Calculated as the last 3-year (2018-19, 2019-20, 2020-21) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Purpose of Data	Calculation of baseline emissions
Comments	-

Data / Parameter	EF _{grid,BM,y}
Data unit	tCO ₂ e/MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	CO ₂ Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value applied:	0.8653

¹⁵ https://cea.nic.in/wp-content/uploads/tpc_cc/2022/02/User_Guide_ver_17_2021.pdf

Justification of choice of data or description of measurement methods and procedures applied	Calculated as the last year (2020-21) build margin, sourced from Baseline CO ₂ Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Purpose of Data	Calculation of baseline emissions
Comments	-

Data / Parameter	EF _{grid,CM,y}
Data unit	tCO ₂ e/MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	CO ₂ Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value applied:	0.9305
Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: EF_{grid,BM,y}= Build margin CO₂ emission factor in year y (tCO₂/MWh) EF_{grid,OM,y}= Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM}= Weighting of build margin emissions factor (%) = 25%
Purpose of Data	Calculation of baseline emissions
Comments	-

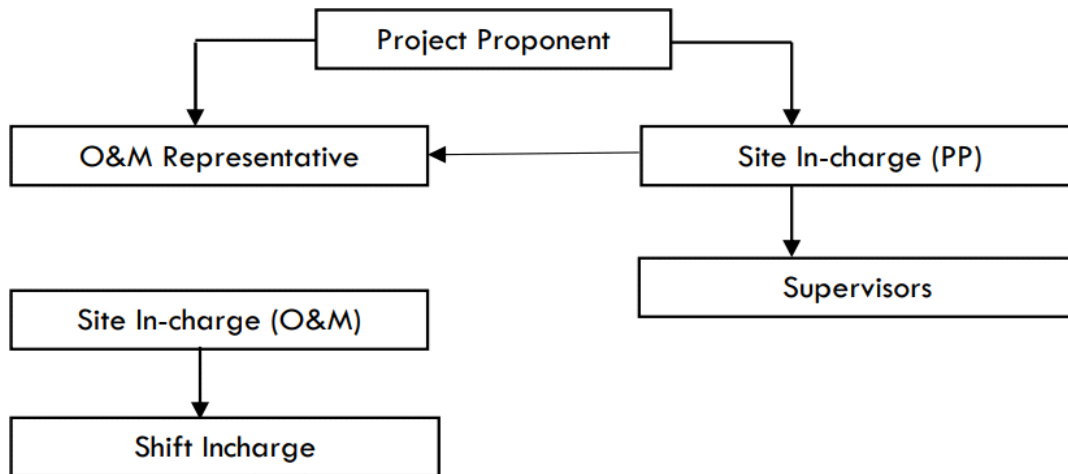
4.2 Data and Parameters Monitored

Data / Parameter	EG _{BL,y}
Data unit	MWh
Description	Quantity of net electricity displaced as a result of the implementation of the VCS project activity in year y (MWh)
Source of data	Monthly Joint Meter Readings taken at the project site

Description of measurement methods and procedures to be applied	The meter readings are taken by the individual project instance site employees and the same has been forwarded to the central office of the Tata Power Renewable Energy Limited. In case of net metering also, the meter readings are taken by the individual project instance site employees and the same has been forwarded to the central office of the Tata Power Renewable Energy Limited. In case of electricity supplied to grid, the same will be reflected in the consumer bill of the SPV.
Frequency of monitoring/recording	Continuous measurement & monthly recording
Value monitored	42,285.47
Monitoring equipment	Electricity Meters installed for each individual project instance. Kindly refer to Annexure – I for the details of meters viz., make, serial number, accuracy class & the calibration frequency.
QA/QC procedures to be applied	According to Central Electricity Authority (Installation and Operation of meters) Regulations 2006, all the electricity meters (interface & consumer meters) shall be tested at least once in five years and recalibrated, if required. Hence, all the meters that are part of this grouped project activity will be tested at least once in 5 years and recalibrated, if required.
Purpose of the data	Calculation of baseline emissions
Calculation method	The meter readings are taken by the individual project instance site employees and the same will be forwarded to the central office of the Tata Power Renewable Energy Limited. As part of cross check mechanism, all the generation reports (JMRs) will be cross checked with the invoices raised by the individual SPVs.
Comments	-

4.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities. The monitoring plan, which will be implemented by the project participant describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.



Organizational structure and responsibilities:

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipment for this project activity. The team comprises of the following members:

Responsibilities of Site In-charge (PP): Overall functioning and maintenance of the project activity, the Site in charge shall coordinate with the O&M operator as well as the site supervisors.

Responsibilities of O&M Representative: Co-ordination between Site in-charge of the O&M operator as well as the project participant and further report to PP head office.

Responsibilities of Site In-charge (O&M Operator): Responsibility for maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment) as well as data recording for all the parameters.

Responsibilities of Shift In-charge: Responsibility for day-to-day data collection and maintains day to day monitored data.

Data Measurement

The net electricity displaced by project will be measured continuously using above mentioned energy meter located after inverters. Readings of meters shall be taken on monthly basis by authorized officer of developer in the presence of PP or representative of PP. In the event of failure of generation meter, the user energy meter or inverter generation value will be used in monitoring the electricity generation data.

Data collection and archiving

Readings from meters will be collected in the presence of the plant in-charge. The net electricity displaced by project would be recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VERs for the project activity whichever occurs later.

Emergency preparedness

The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

QA/QC Procedures

Energy meters are installed at the respective project site. The testing of all the meters will be undertaken at required intervals (at least once in five years as per CEA notifications) and faulty meters will be duly replaced/recalibrated immediately. Records of calibration certificates will be maintained for verification purposes. Hence, a reliable method will be ensured with monitoring of the parameters. The invoice records will be used and kept for cross checking the consistency of the recorded data.

Sampling Approaches

Not required

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline emission is the product of Quantity of net electricity generation that is produced as a result of the implementation of the project activity multiplied by the Combined margin CO₂ emission factor for grid connected power generation

$$BE_y = E_{BL,y} \times EF_{grid,CM,y}$$

Where,

BE_y = Baseline Emissions in year y; t CO₂

$E_{BL,y}$ = Quantity of net electricity displaced as a result of the implementation of the VCS project activity in year y (MWh)

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system Version 7.0" (t CO₂/MWh)

$$BE_y = 42,285.47 \text{ MWh} \times 0.9305 \text{ tCO}_2\text{e/MWh} = 39,343 \text{ tCO}_2\text{e (Rounded down value to nearest 0)}$$

If in the absence of the project activity, the users would have been supplied electricity from one or more sources listed below, the respective emission factor will be used for baseline emissions:

(a) A national or a regional grid (grid hereafter); = National Grid emission factor

(b) Fossil fuel fired captive power plant; = Emission factor of baseline fuel displaced

(c) A carbon intensive mini-grid = Emission Factor of Mini Grid.

5.2 Project Emissions

As per methodology AMS I.F. Version 5.0, for renewable energy projects, there is no any project emissions occurred.

Hence, $PE_y = 0$

5.3 Leakage Emissions

As per methodology AMS I.F. Version 5.0, for renewable energy projects, there is no any leakage emissions occurred.

Hence, $LE_y = 0$

5.4 GHG Emission Reductions and Carbon Dioxide Removals

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCU's (tCO ₂ e)	Removal VCU's (tCO ₂ e)	Total VCU's (tCO ₂ e)
(01-May-2022 to 31-Dec-2022)	10,221	0	0	10,221	0	10,221
(01-Jan-2023 to 31-December-2023)	27,119	0	0	27,119	0	27,119
(01-Jan-2024 to 31-January-2024)	2,003	0	0	2,003	0	2,003
Total	39,343	0	0	39,343	0	39,343

It is to be noted here that as per the start of operational date of each SPV, estimated emission reductions to be achieved from the project activity for the current monitoring period (01-May-2022 to 31-January-2024) is 130,360 tCO₂e, whereas actual emission reductions achieved are 39,343 tCO₂e, which is approximately 69.82 % lower than the estimated emission reductions. The generation of electricity depends upon many other climatic conditions, which are not within the control of the project participant. Also, the some of the project is still under commissioning. As a result, actual ER is less than the estimated ER.

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
2022 (01-May-2022 to 31-Dec-2022)	49,826	10,221	-79%	As this is group project So, some of the new instances included during current verification. Since some of the instances not commissioned yet therefore the actual ER is very much lower than the actual ER.

2023 (01-Jan-2023 to 31- December- 2023)	74,230	27,119	-63%	As this is group project So, some of the new instances included during current verification. Since some of the instances not commissioned yet therefore the actual ER is very much lower than the actual ER.
2024 (01-Jan-2024 to 31-January- 2024)	6,304	2,003	-68%	As this is group project So, some of the new instances included during current verification. Since some of the instances not commissioned yet therefore the actual ER is very much lower than the actual ER.
Total	130,360	39,343	-70.39%	

APPENDIX 1: COMMERCIAL SENSITIVE INFORMATION

Ass there are no any commercially sensitive information for the project activity. Hence, this section is not Applicable.

Section	Information	Justification
NA	<u>NA</u>	<u>NA</u>

APPENDIX 2: CALIBRATION DETAILS

Calibration Detail							
Sl. No.	SPV Name	Meter Serial No	Make	Accuracy class	Date of Commissioning	Pre-Calibrated & tested meter Installed on	Validity of calibration
1	Tinplate Company	540180185287	Schneider	0.5	01-Oct-20	01-Oct-20	30-Sept-25
2	Duraline India Private Limited	540180126068	Schneider	1	07-Oct-20	07-Oct-20	06-Oct-25
		540180139276	Schneider	1	07-Oct-20	07-Oct-20	06-Oct-25
3	GE T&D India Limited	540180078599	Schneider	1	11-Oct-20	11-Oct-20	10-Oct-25
4	Arya Anathalay I	540180144423	Schneider	0.5	20-Dec-20	20-Dec-20	19-Dec-25
5	Time of India, Airoli	18057019	L&T	1	19-Jan-21	19-Jan-21	18-Jan-26
		540180052157	Schneider	1	19-Jan-21	19-Jan-21	18-Jan-26
6	Asian Paints Limited	540180139576	Schneider	1	18-Feb-21	18-Feb-21	17-Feb-26
7	Time of India, Kolkata	540180178009	Schneider	0.5	22-Feb-21	22-Feb-21	21-Feb-26
8	TATA Lockheed Martin	540180169779	Schneider	1	03-Mar-21	03-Mar-21	02-Mar-26
9	TSPDCL, Demag	540180151744	Schneider	0.5	31-Mar-21	31-Mar-21	30-Mar-26
		540180146357	Schneider	0.5	31-Mar-21	31-Mar-21	30-Mar-26
10	Apollo Gleneagles Hospital Limited	540180177968	Schneider	0.5	01-Apr-21	01-Apr-21	31-Mar-26
		X1255380	Secure	0.5	01-Apr-21	01-Apr-21	31-Mar-26
11	Tata Metaliks Limited	21022500097	L&T	0.5	15-May-21	15-May-21	14-May-26
12	Arya Anathalay II	540180139208	Schneider	0.5	03-Jun-21	03-Jun-21	02-Jun-26
13	Tata Motors Limited (Car Plant)	540180176580	Conzerv	0.5	18-Jun-21	18-Jun-21	17-Jun-26
		540180182808	Conzerv	0.5			
		540180179809	Conzerv	0.5			
		540180183090	Conzerv	0.5			
		540180182394	Conzerv	0.5			

		54018018258 2	Conzerv	0.5		
		54018018310 9	Conzerv	0.5		
		54018018311	Conzerv	0.5		
		54018018365 1	Conzerv	0.5		
		54018017981 4	Conzerv	0.5		
		54018018313 1	Conzerv	0.5		
		54018018254 1	Conzerv	0.5		
		54018018252 0	Conzerv	0.5		
		54018018375 3	Conzerv	0.5		
		54018018302 2	Conzerv	0.5		
		54018018282 1	Conzerv	0.5		
		54018018314 0	Conzerv	0.5		
		54018018307 4	Conzerv	0.5		

For New Instance added:

Sl. No	Customer				Accuracy Class	Date of Commissioning	Pre-Calibrated & tested meter Installed on	Validity of calibration
			Meter Serial No	Make				
1	Tata Steel Limited (Odisha)	TSK Steelanium	Upcoming	Secure	NA	NA	NA	NA
		Tsk SMS	Upcoming		NA	NA	NA	NA
		TSK MWTP	X1920714		0.2s	NA	01-November-2022	31-October-2027
		TSK HSM E/W	Upcoming		NA	NA	NA	NA
		TSK HSM N/S	X1920718		0.2s	NA	20-February-2023	19-February-2028
2	Tata Steel Limited (Odisha)	TSK RWR	ORA00147	Secure	0.2s	NA	14-February-2023	13-February-2028
3	Tata Steel Limited	TSL Jamshedpur CWH	X1920712	Secure	0.2s	21-September-2022	01-February-2022	31-January-2027

	(Jharkhand)	TSL Jamshedpur WRM	X1920715		0.2s	29-December-2022	01-February-2022	31-January-2027
		TSL Jamshedpur CRM	Upcoming		-	Upcoming	-	-
		TSL, HSM	X1920713		0.2s	23-March-2023	01-February-2022	31-January-2027
4	Tata Steel Limited (Jharkhand)	TSL UCP	Upcoming	-	-	Upcoming	-	-
5	Tata Electronics Private Limited	Assembly building 1	04013516	L&T	0.5s	07-February-2023	25-January-2023	24-January-2028
			04013515	L&T		07-February-2023	25-January-2023	24-January-2028
		DM plant	Upcoming	-	NA	NA	NA	NA
		BMB 1 Building	04013517	L&T	0.5s	07-February-2023	25-January-2023	24-January-2028
		BMB 2 Building	04013520	L&T	0.5s	07-February-2023	25-January-2023	24-January-2028
			04013519	L&T		07-February-2023	25-January-2023	24-January-2028
		Ano building	Upcoming	NA	NA	NA	NA	NA
6	Kejirawal Castings Limited	-	-	-	-	30-January-2024	--	-
7	The Tinplate Company of India Limited- Ph-02		540180171697	Schnider	0.5s	0.5s	11-September-2020	10-September-2025
			540180185551	Schnider		31-December-2022	11-September-2020	10-September-2025
			540180143000	Schnider		31-December-2022	24-January-2020	23-January-2025
			540180171717	Schnider		31-December-2022	05-March-2020	04-March-2025
			540180171711	Schnider		31-December-2022	11-September-2020	10-September-2025

		540180185545	Schnider		31-December-2022	11-September-2020	10-September-2025
		540180171934	Schnider		31-December-2022	06-March-2020	05-March-2025
		540180185541	Schnider		31-December-2022	11-September-2020	10-September-2025
8	Mplastics Toys & Engineering Private Limited	540180310589	Schnider	0.5s	22-February-2023	27-January-2023	26-January-2028
		540180310589	Schnider	0.5s	22-February-2023	27-January-2023	26-January-2028
9	ZF Rane Automotive India Private Limited (Virmalai)	82257917, 82257911, 82257942	Secure	0.2s	23-August-2023	09-March-2023.	08-March-2028
10	ZF Rane Automotive India Private Limited (Gudvancherry)	82257925	Secure	0.5s	18-January-2024	18-January-2024	01-August-2028
11	Tata BlueScope Steel Private Limited.	540180177465	Schnider	0.5s	05-May-2022	27-April-2020	26-April-2025
		540180177470	Schnider			27-April-2020	26-April-2025
		540180177460	Schnider			27-April-2020	26-April-2025
		540180174061	Schnider			13-March-2020	12-March-2025
		540180147387	Schnider			03-October-2019	02-October-2024
		540180171976	Schnider			06-March-2020	05-March-2025
12	Rane Madras Limited	X1968663	Secure	0.5s	13-June-2023	11-June-2022	10-June-2027
		549190305757	Scneider		13-June-2023	22-December-2022	21-December-2027
13	Premium Transmission Private Limited	X1913290	Secure	0.5s	23-January-2023	25-February-2022	24-February-2027
		X1719071	Secure		23-January-2023	29-July-2021	28-July-2026