

A high-speed train, white with blue accents, is shown traveling on a track through a lush green landscape with trees and fields. The train is moving from left to right. A semi-transparent blue banner with white text is overlaid on the upper part of the image. The text reads: "MANUAL OF INSTRUCTIONS FOR GHG DATA COLLECTION".

MANUAL OF INSTRUCTIONS  
FOR  
GHG DATA COLLECTION

**Production Unit**



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# Section 1: General Information and Operational Data

## 1. Introduction

The purpose of this **GHG Data Collection Template** is to facilitate Indian Railways in systematically documenting **greenhouse gas (GHG) emissions**. The collected data will contribute to measuring emissions from various sources, monitoring energy consumption, and supporting compliance with sustainability goals.

This document serves as a structured guide for personnel, ensuring that data is entered accurately and comprehensively.

## 2. General Guidelines

- All entries should be **accurate, current, and aligned with official records**.
- Enter numerical values in the **specified units** only.
- If a particular data point is **not available (NA)**, it should be indicated appropriately rather than left blank.
- Data should be recorded in accordance with the **quarterly and annual reporting cycles**.
- For fields with **drop-down options**, users should select the most appropriate value from the list.
- If additional data types need to be included, users may add rows as required.

## 3. General Information Section

This section requires users to provide **fundamental location details**, encompassing financial and operational aspects.

Field Name	Description & Guidelines
<b>Location Name</b>	Specify the name of the workshop or production unit.
<b>Location Type</b>	Select the appropriate category from the dropdown (e.g., Workshop, Production Unit).
<b>Address</b>	Enter the complete address of the unit.
<b>Product/Service Details</b>	Please provide a brief overview of the products or services offered at this location, along with a description of the processes involved in their production or delivery.



## Budget and Expenditure

Field Name	Description & Guidelines
<b>Budget Allocation</b>	Total Budget allocation to be reported including all departments
<b>Annual Expenditure</b>	Total expenditure to be reported including all departments

## 4. Contact Details Section

This section captures information about the key personnel responsible for data collection and verification.

Field Name	Description & Guidelines
<b>Contact 1 (Location Head)</b>	Provide the name, official email, and contact number of the location's head officer.
<b>Contact 2 &amp; 3 (Coordinator)</b>	Include details of coordinators responsible for data entry, validation, and submission.

Contact Details	Name	Email	Phone/Mobile
Contact 1 (Location Head)			
Contact 2 (Coordinator)			
Contact 3 (Coordinator)			

## 5. Operational Data Section

This section records workforce details and locomotive operational data for both passenger and freight transportation.

### 5.1 Number of Employees

Users should enter the number of employees working in different capacities over the given fiscal years.

Field Name	Description & Guidelines
<b>Permanent Employees</b>	Employees who have a long-term service agreement with the railway and are entitled to job security, benefits, and pensions.

## 5.2. Production Data

Field Name	Description & Guidelines
<b>Output (S1) ( Mention type of Service here)</b>	Repair / Refurbishment data e.g. No of Coaches, No of Locomotives, Wagons, No of wheels, Trainsets, etc.
<b>Output (S2) ( Mention type of Service here)</b>	Repair / Refurbishment data e.g. No of Coaches, No of Locomotives, Wagons, No of wheels, Trainsets, etc.
<b>Output (S3) ( Mention type of Service here)</b>	Repair / Refurbishment data e.g. No of Coaches, No of Locomotives, Wagons, No of wheels, Trainsets, etc.

Production Data	Description	UOM
Output (S1) ( Mention type of Service here)	Repair / Refurbishment data e.g. No of Coaches, No of Locomotives, Wagons, No of wheels, Trainsets, etc.	Nos
Output (S2) ( Mention type of Service here)	Repair / Refurbishment data e.g. No of Coaches, No of Locomotives, Wagons, No of wheels, Trainsets, etc.	Nos
Output (S3) ( Mention type of Service here)	Repair / Refurbishment data e.g. No of Coaches, No of Locomotives, Wagons, No of wheels, Trainsets, etc.	Nos

## 6. Installed Renewable Energy Capacity in Railway facilities

Field Name	Description & Guidelines
<b>Solar (Rooftop/ Ground mounted)</b>	The installed capacity of solar power plants in kilowatt-peak (KWp), representing the maximum output under ideal conditions.
<b>Wind</b>	The installed wind power capacity in kilowatt-peak, reflecting the railway's wind energy generation potential
<b>Volume of biogas produced</b>	The volume of biogas produced per day, typically from organic waste eg. Food, Human bio waste, Garden waste
<b>Any other type please add rows and mention with unit of measurement (UOM)</b>	Any Other Type (Please Add Rows and Mention with UOM): A placeholder for additional renewable energy sources, specifying the unit of measurement (UOM).

## 7. Waste management

Field Name	Description & Guidelines
<b>Installed capacity of Effluent Treatment Plant</b>	The maximum amount of industrial wastewater that can be treated per day.



<b>Installed capacity of Sewage Treatment Plant</b>	The maximum amount of sewage that can be treated per day.
<b>Volume of recycled water</b>	The total amount of treated water that is reused per day.
<b>Installed Capacity (Waste treatment facility for Bio toilets / Food Waste/Organic waste )</b>	The capacity of waste treatment facilities for biodegradable waste, measured in kilograms.

Installed Renewable Energy Capacity in Railway facilities	Definition	UOM	FY 2021-22	FY 2022-23	FY 2023-24	Q1 (Apr'24-June'24)	Q2 (July'24-Sept'24)	Q3 (Oct'24-Dec'24)
Solar (Rooftop/ Ground mounted)	The installed capacity of solar power plants in kilowatt-peak (KWp), representing the maximum output under ideal conditions.	(KWp)						
Wind	The installed wind power capacity in kilowatt-peak, reflecting the railway's wind energy generation potential.	(KWp)						
Volume of biogas produced	The volume of biogas produced per day, typically from organic waste eg. Food, Human bio waste, Garden.	(m <sup>3</sup> / day)						
Any other type please add rows and mention with unit of measurement (UOM)	Any Other Type (Please Add Rows and Mention with UOM): A placeholder for additional renewable energy sources, specifying the unit of measurement (UOM).							
Waste management	Definition	UOM	FY 2021-22	FY 2022-23	FY 2023-24	Q1 (Apr'24-June'24)	Q2 (July'24-Sept'24)	Q3 (Oct'24-Dec'24)
Installed capacity of Effluent Treatment Plant	The maximum amount of industrial wastewater that can be treated per day.	(KL/ day)						
Installed capacity of Sewage Treatment Plant	The maximum amount of sewage that can be treated per day.	(KL/ day)						
Volume of recycled water	The total amount of treated water that is reused per day.	(KL/ day)						
Installed Capacity (Waste treatment facility for Bio toilets / Food Waste/Organic waste )	The capacity of waste treatment facilities for biodegradable waste, measured in kilograms.	Kgs						

# Section 2: GHG Data Collection Scope-wise and Fuel Data (Production Units)

## 1. Scope 1 – Stationary Combustion

This section records data on fuel combustion in stationary equipment.

Field Name	Description & Guidelines
<b>Gen Sets / Power plants</b>	
<b>Fuel used in power backup generators to support Railway facilities (DG or Gas Gen Sets)</b>	Fuel used in power backup generators refers to diesel, gasoline, or other energy sources consumed by standby generators to provide emergency or auxiliary power in Workshops including buildings, Residential societies, Hospitals, Schools, Guest house and other locations This ensures uninterrupted operations.
<b>Equipment / operations</b>	
<b>Fuel combustion in other Stationery Equipments_Boilers</b>	Fuel combustion in stationary equipment refers to the consumption of fuels such as diesel, petrol, LPG, furnace oil, and other energy sources in fixed machinery and devices. This includes boilers, furnaces, incinerators, cookstoves, and other stationary equipment used for heating, industrial processes, and operational needs.
<b>Fuel combustion in other Stationery Equipments_Furnaces</b>	
<b>Fuel combustion in other Stationery Equipments_Incinerators</b>	
<b>Fuel combustion in other Stationery Equipments_Cooking</b>	
<b>Fuel combustion in any other Stationery Equipments</b>	

Scope 1 - Stationary combustion		
Stationery combustion refers to the burning of fuels in fixed locations, such as equipment or facilities, to generate energy. In the context of Railways, this includes activities like fuel used in Diesel Generator Sets, Boilers, powerhouses, other stationary equipment and operations, cooking, heating systems. Consumption of fuel such as Diesel, Natural Gas, LPG, Furnace Oil/Heavy Oil, Coal, Biodiesel, Biomass, Biogas including in Workshops including buildings, Residential societies, Hospitals, Schools, Guest house and other locations		
Gen Sets / Power plants	Definition	Type of the fuel
Fuel used in power backup generators to support Railway facilities (DG or Gas Gen Sets)	Fuel used in power backup generators refers to diesel, gasoline, or other energy sources consumed by standby generators to provide emergency or auxiliary power in Workshops including buildings, Residential societies, Hospitals, Schools, Guest house and other locations This ensures uninterrupted operations.	<div style="border: 1px solid black; padding: 5px;">           Diesel            Natural Gas/CHG/PHG            Furnace Oil            Heavy Duty Oil            LPG            Petrol            Kerosene            Biofuel         </div>
<b>(Please add rows if additional sources are identified)</b>		
Equipment / operations	Definition	UOM
Fuel combustion in other Stationery Equipments_Boilers	Fuel combustion in stationary equipment refers to the consumption of fuels such as diesel, petrol, LPG, furnace oil, and other energy sources in fixed machinery and devices. This includes boilers, furnaces, incinerators, cookstoves, and other stationary equipment used for	<div style="border: 1px solid black; padding: 5px;">           Kilo Litres            Litres            SCM(Standard Cubic Meters)            Tonnes         </div>
Fuel combustion in other Stationery Equipments_Furnaces		
Fuel combustion in other Stationery Equipments_Cooking		
Fuel combustion in any other Stationery Equipments		
<b>(Please add rows if additional sources are identified)</b>		

Select the appropriate fuel type from the drop-down menu

Select the appropriate Quantity (UOM) from the drop-down menu

## 2. Scope 1 – Mobile Combustion

This section records fuel consumption in transport vehicles and mobile equipment.

Field Name	Description & Guidelines
<b>Fuel Combustion in Vehicles and Mobile Equipment</b>	The combustion of fuel in mobile equipment and vehicles, such as forklifts, motorized trolleys, fuel-powered transport vehicles, cranes, tankers, mobile cleaning units, portable generators, fire-fighting trucks, and other mobile machinery including transport vehicles e.g. Bus, Car etc

Provide the fuel type and quantity (UOM) for each category. If any additional fuel use case exists, add rows and specify details.

## 3. Scope 1 - Fugitive emissions (Refrigerant leakage)

This section tracks refrigerant leakage and fire extinguisher emissions.

### 3.1 Fugitive Emissions (Refrigerant Leakage)

Field Name	Description & Guidelines
<b>Annual refrigerant refill (make up) in RMPU</b>	Annual refrigerant refill (make-up) in RMPU (Roof Mounted Package Unit) in coaches refers to the process of replenishing refrigerant lost due to leakage or regular operation in the air conditioning systems of railway coaches.
<b>Annual refrigerant refill (make up) in Centralised HVAC systems</b>	Annual refrigerant refill (make-up) in centralized HVAC systems installed in office buildings, auditoriums, and cinema halls refers to the process of replenishing refrigerant lost due to leakage or normal operation.
<b>Annual refrigerant fill (make up) in Standalone systems (e.g. Window ACs, Split ACs, VRF Systems)</b>	Annual refrigerant refill (make-up) in standalone systems, such as Window Acs, split ACs and VRF (Variable Refrigerant Flow) systems, refers to the process of replenishing refrigerant lost due to leakage or regular operation.

Scope 1 - Fugitive emissions (Refrigerant leakage)			
Leakage of refrigerants (e.g., HFCs) from air conditioning systems in Workshops including buildings, Residential societies, Hospitals, Schools, Guest house and other locations			
	Definition	Refrigerant Type	UOM
Annual refrigerant refill (make up) in RMPU	Annual refrigerant refill (make-up) in RMPU (Roof Mounted Package Unit) in coaches refers to the process of replenishing refrigerant lost due to leakage or regular operation in the air conditioning systems of railway coaches.		
Annual refrigerant refill (make up) in Centralised HVAC systems	Annual refrigerant refill (make-up) in centralized HVAC systems installed in office buildings, auditoriums, and cinema halls refers to the process of replenishing refrigerant lost due to leakage or normal operation.	<ul style="list-style-type: none"> <li>R11</li> <li>R12</li> <li>R22</li> <li>R32</li> <li>R410A</li> <li>R134A</li> <li>R290</li> <li>R450A</li> </ul>	
Annual refrigerant fill (make up) in Standalone systems (e.g. Window ACs, Split ACs, VRF Systems)	Annual refrigerant refill (make-up) in standalone systems, such as Window Acs, split ACs and VRF (Variable Refrigerant Flow) systems, refers to the process of replenishing refrigerant lost due to leakage or regular operation.		Kg

Specify the refrigerant type from the drop-down menu.



### 3.2 Fugitive Emissions (CO2 Fire Extinguishers)

Field Name	Description & Guidelines
<b>Fire Extinguisher refill- for all locomotive purposes: only CO2 type</b>	This refers to the refilling data for all CO <sub>2</sub> -based fire extinguishers installed in locomotives, coaches, and wagons. It specifically includes only CO <sub>2</sub> -type extinguishers and excludes all non-CO <sub>2</sub> variants.
<b>Fire Extinguisher refill- for all non-locomotive purposes: only CO2 type</b>	This refers to refilling data for all CO <sub>2</sub> based fire extinguishers installed in Workshops including buildings, Residential societies, Hospitals, Schools, Guest house and other locations. Non CO <sub>2</sub> type should not be included

### 3.3 Fugitive Emissions (SF6 Leakage)

Field Name	Description & Guidelines
<b>SF6 refilling data</b>	This refers to the complete refill of SF <sub>6</sub> (Sulfur Hexafluoride) gas in equipment such as circuit breakers, switchgear, or transformers.
<b>Total Quantity of circuit breaker in the electrical transmission and distribution systems</b>	This refers to the total number of circuit breakers in the railway's electrical infrastructure that use SF <sub>6</sub> gas.  Data to Provide: The total count of circuit breakers that contain SF <sub>6</sub> .
<b>Total Quantity of circuit breaker in the electrical transmission and distribution systems</b>	This refers to the total number of circuit breakers in the railway's electrical infrastructure that use SF <sub>6</sub> gas.  Data to Provide: The total count of circuit breakers that contain SF <sub>6</sub> .
<b>Total Quantity of circuit breaker in the electrical transmission and distribution systems</b>	This refers to the total number of circuit breakers in the railway's electrical infrastructure that use SF <sub>6</sub> gas.  Data to Provide: The total count of circuit breakers that contain SF <sub>6</sub> .

Scope 1 - Fugitive emissions (SF6 leakage)			
	Definition		Quantity (UOM)
SF6 refilling data	This refers to the complete refill of SF6 (Sulfur Hexafluoride) gas in equipment such as circuit breakers, switchgear, or transformers.		
		Select voltage range	Quantity (UOM)
Total Quantity of circuit breaker in the electrical transmission and distribution systems	This refers to the total number of circuit breakers in the railway's electrical infrastructure that use SF6 gas. Data to Provide: The total count of circuit breakers that contain SF6.		
Total Quantity of circuit breaker in the electrical transmission and distribution systems	This refers to the total number of circuit breakers in the railway's electrical infrastructure that use SF6 gas. Data to Provide: The total count of circuit breakers that contain SF6.	<input type="text" value="11k-33k (Medium Voltage)"/> <input type="text" value="66k-132k (High Voltage)"/> <input type="text" value="220k-440k (Extra High Voltage)"/>	Numbers
Total Quantity of circuit breaker in the electrical transmission and distribution systems	This refers to the total number of circuit breakers in the railway's electrical infrastructure that use SF6 gas. Data to Provide: The total count of circuit breakers that contain SF6.		Numbers

Enter quantity (UOM) and specify voltage range for each system.

#### 4. Scope 1 – Process Emissions

This section records GHG emissions from industrial processes.

Field Name	Description & Guidelines
<b>Acetylene Gas - Welding &amp; Metal Fabrication</b>	This refers to the use of acetylene gas in welding and metal fabrication activities
<b>LPG - Consumption in gas cutters</b>	LPG gas used in metal cutting process
<b>Any other GHG gas emissions in processes- e.g. CO2 as blanketing</b>	Any other GHG gas emission during the process refers to the release of gases like Carbondioxide(CO2), Methane(CH4), Nitrous Oxide(N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), and nitrogen trifluoride (NF3) during industrial processes. These gases, though less common than CO2, have a much higher Global Warming Potential (GWP) and contribute significantly to climate change.

#### 5. Scope 1 – Waste Treatment Onsite

This section captures waste treatment activities.

Field Name	Description & Guidelines
<b>Process Effluent (ETP)</b>	This refers to wastewater treated from Industrial processes from Workshops
<b>Domestic effluent / Sewage (STP)</b>	This refers to wastewater generated from domestic use in the Workshop, such as Washing, Toilets, kitchens etc. including buildings, Residential societies, Hospitals, Schools, Guest house and other locations

<b>Select Solid Waste Type (Onsite Treatment Only)</b>	Describe about the facility of onsite Solid waste treatment and select waste type (only waste treated by Railways to be included, Waste handed over to 3rd party should not be included)
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Scope 1 - Waste Treatment Onsite			
Waste Water Treatment	Definition	Treatment method or technology (briefly explain)	Quantity (UOM)
Process Effluent (ETP)	This refers to wastewater treated from operational processes within Indian Railways, such as train washing, or other operations. Data to Provide: Details of the treatment method or technology used to treat process effluent		KL
Domestic effluent / Sewage (STP)	This refers to wastewater generated from domestic activities, such as station toilets, kitchens, staff quarters, and other residential areas. Data to Provide: Details of the treatment method or technology used to treat domestic effluent/ sewage		M
Solid Waste Treatment Onsite	Waste type	Treatment method or technology (briefly explain)	Quantity (UOM)
Definition	Describe about the facility of onsite Solid waste treatment and select waste type (only waste treated by Railways to be included, Waste handed over to 3rd party should not be included)		
Solid waste	<input type="text"/>		Kg
Solid waste	Chemical Waste		Kg
Solid waste	Construction and Demolition (C&D) Waste		Kg
Solid waste	E-Waste (Electronic Waste)		Kg
Solid waste	Food waste		Kg
Solid waste	Hazardous Waste		Kg
Solid waste	Municipal Solid Waste (MSW)		Kg
Solid waste	Non Hazardous Waste /Mixed waste		Kg
Solid waste	Other waste		Kg

Specify treatment method or technology briefly.

Specify waste type from the drop-down menu

## 6. Scope 2 – Electricity

This section records electricity consumption details.

Field Name	Description & Guidelines
<b>Electricity consumption for Production</b>	Electricity consumed in Workshop
<b>Electricity consumption for Non Production</b>	Electricity consumed in buildings, Residential societies, Hospitals, Schools, Guest house and other locations
<b>Purchase of RECs</b>	No of Renewable energy certificates purchased in the year

## 7. Scope 1 - Land related

This section refers to Land Type cleared for Railway work / Laying track or infrastructure development

Field Name	Description & Guidelines
<b>Forest land/Planted land</b>	Land covered by natural forests or planted trees that is cleared for railway projects.
<b>Grassland</b>	Land covered by grasses or shrubs that is cleared for railway projects.
<b>Cropland</b>	Agricultural land used for growing crops that is cleared for railway projects.



<b>Wetland</b>	Land saturated with water, such as marshes or swamps that is cleared for railway projects.
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### 7.1 Tree plantation

Field Name	Description & Guidelines
<b>Area of Tree Plantation during the year</b>	Land covered by natural forests or planted trees that is cleared for railway projects.
<b>Total number of trees planted during the year</b>	Land covered by grasses or shrubs that is cleared for railway projects.
<b>Area of Tree Plantation (Cumulative)</b>	Agricultural land used for growing crops that is cleared for railway projects.
<b>Total number of trees planted (Cumulative)</b>	Land saturated with water, such as marshes or swamps, that is cleared for railway projects.

Specify area (hectares, acres) and number of trees planted (Nos).

## 8. Source wise electricity consumption Break-up

### 8.1. Traction

Field Name	Description & Guidelines
<b>Purchase from State electricity board</b>	Electricity procured directly from the state-owned electricity distribution company (DISCOM) at regulated tariff rates. This is often the default source of electricity for railway operations.
<b>Purchase from Open access (Conventional)</b>	Exchange & GENCOS
<b>Purchase from Open Access (RE)</b>	Exchange & GENCOS
<b>Power transaction under DSM from Open Access</b>	Electricity accounted under deviation from GRID
<b>Captive RE generation - OPEX</b>	Installed in facility and power is purchased through agreement
<b>Captive RE generation - Capex</b>	Installed in facility and Owned by Railways

## 8.2 Non – Traction

Field Name	Description & Guidelines
<b>Purchase from State electricity board</b>	Electricity procured directly from the state-owned electricity distribution company (DISCOM) at regulated tariff rates. This is often the default source of electricity for railway operations.
<b>Purchase from Open access (Conventional)</b>	Exchange & GENCOS
<b>Purchase from Open Access (RE)</b>	Exchange & GENCOS
<b>Power transaction under DSM from Open Access</b>	Electricity accounted under deviation from GRID
<b>Captive RE generation - OPEX</b>	Installed in facility and power is purchased through agreement
<b>Captive RE generation - Capex</b>	Installed in facility and Owned by Railways

Source wise electricity consumption Break-up		
Traction		UOM
Purchase from State electricity board	Electricity procured directly from the state-owned electricity distribution company (DISCOM) at regulated tariff rates. This is often the default source of electricity for railway operations.	
Purchase from Open access (Conventional)	Exchange & GENCOS	
Purchase from Open Access (RE)	Exchange & GENCOS	
Power transaction under DSM from Open Access	Electricity accounted under deviation from GRID	
Captive RE generation - OPEX	Installed in facility and power is purchased through agreement	
Captive RE generation - Capex	Installed in facility and Owned by Railways	
Non - Traction		UOM
Purchase from State electricity board	Electricity procured directly from the state-owned electricity distribution company (DISCOM) at regulated tariff rates. This is often the default source of electricity for railway operations.	
Purchase from Open access (Conventional)	Exchange & GENCOS	
Purchase from Open Access (RE)	Exchange & GENCOS	
Power transaction under DSM from Open Access	Electricity accounted under deviation from GRID	
Captive RE generation - OPEX	Installed in facility and power is purchased through agreement	
Captive RE generation - Capex	Installed in facility and Owned by Railways	

# Section 3: Potential Carbon offset Projects for Indian Railways

## 1. Project Categories

To streamline data entry and classification, projects fall under specific categories based on their emission reduction strategies. The table below provides a reference for defining and categorizing projects.

Type of Project	Definition	Example
<b>Energy Efficiency</b>	Projects aimed at reducing energy consumption without compromising service quality.	Retrofitting buildings with LED lighting, implementing energy-efficient HVAC systems.
<b>Renewable energy</b>	Projects generating energy from renewable sources like wind, solar, and hydro to reduce reliance on fossil fuels.	Solar photovoltaic (PV) farms, wind energy projects
<b>Electrification</b>	Transitioning from fossil fuel-based systems to electrical systems	Electrification of devices, replacing diesel generators
<b>Fuel Switch</b>	Substituting higher-carbon fuels with lower-carbon or renewable alternatives.	Switching from coal to natural gas or biomass etc
<b>Wastewater Treatment</b>	Treating wastewater to improve water quality and reduce methane emissions from anaerobic decomposition.	Anaerobic digesters for treating sewage, generating biogas from treated wastewater.
<b>Waste Management (Waste Processing)</b>	Projects that improve waste handling, recycling, or conversion of waste into usable products or energy.	Composting waste, waste-to-energy incineration projects, Biogas generation projects.
<b>Materials</b>		
<b>Plantation</b>	Projects involving afforestation, reforestation, or agroforestry to enhance carbon sequestration.	Planting trees in degraded lands, mangrove restoration projects.
<b>Biogas Generation</b>	Capturing and utilizing methane from organic waste to produce biogas for energy or fuel.	Biogas plants using waste for electricity generation or used as alternative fuel
<b>Biofuel</b>	Producing liquid fuels from organic materials for use reducing dependence on fossil fuels.	Producing biodiesel from used cooking oil
<b>Battery Energy Storage System (BESS)</b>	Systems that store energy from renewable sources or grid electricity for use during peak demand or outages.	Lithium-ion battery systems integrated with solar PV installations for energy storage.
<b>Regenerative Braking</b>	Capturing kinetic energy during braking and converting it into usable electricity, reducing energy consumption in transport systems.	Regenerative braking systems in electric trains

## 2. Completed Projects (2021-2025)

Field Name	Description & Guidelines
<b>Type of Project</b>	Select the type of project from the dropdown menu (Energy Efficiency, Renewable Energy, etc.).
<b>Project Name &amp; overview</b>	Provide a brief description of the project and its function.
<b>Status</b>	Select the current status of the project from the dropdown (Completed, Ongoing).
<b>PO Placed (Month, Year)</b>	Specify the month and year when the purchase order was placed from the drop-down menu.
<b>Commissioning (Month, Year)</b>	Enter the month and year when the project was commissioned from the drop-down menu.
<b>Investment Made (INR)</b>	Total capital investment in the project.
<b>Annual Cost Savings (INR)</b>	Expected financial benefits from project implementation.
<b>Payback Period (Years)</b>	Time required for cost recovery.
<b>Annual GHG Emission Reductions (Tons of CO<sub>2</sub>e)</b>	Estimated emissions reduction from the project.
<b>Annual Energy Savings</b>	Provide energy savings and specify the unit (kWh, MJ, etc.).
<b>Annual Savings in Water or Materials</b>	Specify the water or material savings, mentioning the relevant unit (Liters, Kg).
<b>Reduction in Waste</b>	Provide the estimated waste reduction details.
<b>Comments / Remarks</b>	Any additional information regarding the project, including clarifications if required.
<b>Only for Renewable Energy Projects</b>	
<b>Type of Project</b>	Select the renewable energy type (Solar PV, Wind, Hydro, etc.).
<b>Capacity (MW/kWp)</b>	Mention the installed capacity of the renewable energy system.

<b>Quantity of Annual Energy Generated (kWh/MWh)</b>	Specify the expected energy generation per year.
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Completed projects (2021-2025)	
Type of Project	Project Name and Overview
<ul style="list-style-type: none"> <li>Energy Efficiency</li> <li>Renewable energy</li> <li>Electrification</li> <li>Fuel Switch</li> <li>Wastewater Treatment</li> <li>Waste Management (Waste Processing)</li> <li>Plantation</li> <li>Biogas Generation</li> </ul>	

Select the project type from the dropdown list.

### 3. Planned Projects (2025 Onwards till 2040)

Field Name	Description & Guidelines
<b>Type of Project</b>	Select the type of project from the dropdown menu (Energy Efficiency, Renewable Energy, etc.).
<b>Name of the project</b>	Provide a brief description of the project and its function.
<b>Status</b>	Select the current status of the project from the dropdown (Completed, Ongoing, or Planned).
<b>Start Date &amp; Month</b>	Provide the planned start date of the project.
<b>Commissioning (Month, Year)</b>	Enter the month and year when the project will be commissioned from the drop-down menu.
<b>Investment Made (INR)</b>	Estimated investment for the project.
<b>Annual Cost Savings (INR)</b>	Expected financial benefit upon project completion.





<b>Payback Period (Years)</b>	Estimated time required for cost recovery.
<b>Annual GHG Emission Reductions (Tons of CO<sub>2</sub>e)</b>	Projected emissions reduction potential.
<b>Annual Energy Savings</b>	Expected energy savings with specified unit (kWh, MJ).
<b>Annual Savings in Water or Materials</b>	Expected resource conservation and savings.
<b>Reduction in Waste</b>	Estimated waste minimization.
<b>Comments / Remarks</b>	Any additional information regarding the project, including clarifications if required.
<b>Only for Renewable Energy Projects</b>	
<b>Type of Project</b>	Select the renewable energy type (Solar PV, Wind, Hydro, etc.).
<b>Capacity (MW/kWp)</b>	Mention the installed capacity of the renewable energy system.
<b>Quantity of Annual Energy Generated (kWh/MWh)</b>	Specify the expected energy generation per year.

Only for Renewable Energy Projects		
Type of Project	Capacity	Quantity of Annual Energy generated
Solar		
Wind		
Biogas		
Waste to Energy		
Biofuel		
Biomass		
Energy Storage		
Green Hydrogen		

Select the Renewable Energy project type from the dropdown list.