METHODOLOGY FOR EARLY RETIREMENT OF COAL-FIRED POWER PLANTS USING A JUST TRANSITION

Document Prepared by The Rockefeller Foundation-led Coal to Clean Credit Initiative

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1 SOURCES

This methodology is based on the following methodologies:

- Clean Development Mechanism (2006) AM0019: Renewable energy projects replacing part of the electricity production of one single fossil fuel fired power plant that stands alone or supplies to a grid, excluding biomass projects, Version 2.0
- Clean Development Mechanism (2022) ACM0002: Grid-connected electricity generation from renewable sources, Version 21.0

The following have also informed the development of the methodology:

- RMI (2022): Guidelines for Financing a Credible Coal Transition

This methodology uses the latest versions of the following Methodologies and Tools:

- VMD00XX: Module to determine the baseline scenario retirement date of a coal fired power plant
- Clean Development Mechanism (CDM) ACM0001: Flaring or use of landfill gas
- Clean Development Mechanism (CDM) ACM0002: Grid-connected electricity generation from renewable sources
- Clean Development Mechanism (CDM) ACM0006: Electricity and heat generation from biomass
- Clean Development Mechanism (CDM) ACM0014: Treatment of wastewater
- Clean Development Mechanism (CDM) ACM0022: Alternative waste treatment processes
- Clean Development Mechanism (CDM) Tool 7: Tool to calculate the emission factor for an electricity system.

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2 SUMMARY DESCRIPTION OF THE METHODOLOGY

Additionality and Crediting Method	
Additionality	Project Method
Crediting Baseline	Project Method

The proposed methodology enables net greenhouse gas (GHG) emission reductions resulting from the accelerated[1] retirement of grid connected Coal Fired Power Plants (CFPP) with partial or full replacement of the electricity generated by the CFPP with renewable electricity (RE).

The methodology ensures that accelerated retirement of the CFPP is accompanied by a comprehensive Just Transition (JT) plan and its implementation. The JT mitigates negative impacts from accelerated retirement of CFPP such as loss of livelihoods of workers, their households, contractors, and communities.

3 DEFINITIONS

Accelerated Retirement

The decommissioning of a Coal Fired Power Plant earlier than it would have retired with or without additional financing.

Baseline Scenario Retirement Date

The baseline scenario retirement date is the date in which the CFPP or CFPP unit would have been expected to retire due to technical, regulatory, or economic drivers, in the absence of revenues from sales of carbon credits. Also referred to as baseline retirement date.

Coal Fired Power Plant/Unit (CFPP)

An installation that generates electric power through the conversion of heat to power using a heat engine. The heat is produced in a heat generator via combustion of coal and consumed in a heat engine (e.g. steam turbine) coupled to an electricity generator. In the context of this methodology, coal plants operating as combined heat and power plants are not included in the definition of a CFPP. Several power units at one site comprise one power plant, whereas a power unit is characterized by the fact that it can operate independently from other power units at the same site. Several power units at one site comprise a power plant. In context of the methodology a single unit of the power plant may also be referred to CFPP.

[1] The terms accelerated retirement, early decommissioning and accelerated decommissioning are used interchangeably in the methodology

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Coal Transition Mechanism (CTM)

The financial products and services that aim to accelerate a managed transition of a CFPP that has remaining fair value to their owners. This is done by changing the underlying cost of capital of a CFPP or its required revenues to deliver necessary returns. Voluntary Carbon Market (VCM) and Article 6 is excluded from the definition of a coal transition mechanism.

Independent Power Producer (IPP)

A legal entity or instrumentality that owns facilities for the generation of electricity and sells electricity to an electric utility under a power purchase agreement.

Grid (Electricity system of CFPP)

It is the spatial extent to which the project CFPP is physically interconnected, and which is also connected to other power plants and consumers through transmission and distribution lines. The electricity system extent is limited to that which is managed by a single balancing pool operator or system operator. It does not extend beyond the national jurisdictional border in which the project activity occurs .

Mothballed power plant

A CFPP that either has been deactivated/put into an inactive state but is not retired or has been damaged and is not in use. Such a CFPP could return to operation but is not currently operating.

Mine mouth power plant

A CFPP that is constructed and is being operated near to a coal mine, where the CFPP is the anchor buyer of the coal from the mine and the coal is transported directly to the CFPP (e.g., via a conveyor belt).

Power Purchase Agreement (PPA)

A long-term contract between a independent power producer and an off taker. In this methodology, PPAs refer to agreements in which the off taker is a utility or electricity system operator.

Regulated electricity market

An electricity market with an integrated utility company that is the system operator, owns the power system transmission and distribution (including all associated infrastructure), and generates, and or purchases wholesale electricity from IPPs to sell to customers. The market is overseen by a public regulator with the authority and mandate to ensure consumers have access to reliable electricity at a reasonable cost.

Regulated utility (electricity)

An integrated utility company that is the system operator, owns the power system transmission and distribution (including all associated infrastructure), generates, and purchases wholesale electricity from IPPs to sell to customers. A regulated utility is overseen by a public regulator with rate-making authority, mandated to provide consumers with access to reliable electricity at a reasonable cost.

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System operator/off-taker

The regulated company that balances the power system and in a regulated electricity market is the single buyer of electricity from IPPs.

4 APPLICABILITY CONDITIONS

The methodology is applicable to project activities that meet all the following conditions:

1) Projects that accelerate the retirement of existing CFPPs, by meeting the applicability conditions in Section 4.1
2) Projects that pair lost electricity generation capacity with new RE, by meeting the applicability conditions in Section 4.2, and
3) Projects that ensure Just Transition to mitigate adverse impacts on workers, communities, and other identified affected stakeholders that may result from accelerated CFPP retirement by meeting the applicability conditions in Section 4.3.

4.1 Applicability Conditions for CFPP Retirement

1) The methodology is applicable to project activities where the CFPP or a CFPP unit (hereinafter referred as CFPP) is fully retired and decommissioned. The CFPP must not be mothballed or repurposed to continue to combust fossil fuels, including co-firing biomass with coal or gas.
2) The CFPP to be retired early must demonstrate that construction of the CFPP began prior to [*Dec 31, 2021*].
3) The CFPP is connected to the grid. Captive power plants are not eligible.
4) The CFPP must be operating in a regulated electricity market and have one of the ownership structures:
    a) The CFPP is owned by a regulated utility.
    b) The CFPP is owned by an independent power producer (IPP) and has a power purchase agreement (PPA) to sell electricity to a system operator or regulated utility off taker.
    c) [*Merchant CFPPs that compete in wholesale markets to sell electricity or other electricity services are not eligible under this methodology version. (future revision possible)*]
5) The CFPP has demonstrated utilization (i.e., positive capacity factor) over the [*five*] most recent years prior to the retirement of CFPP and at the time of project validation. Where the CFPP has been operating for fewer than five years, it must have demonstrated utilization each year since its commercial operation date.
6) The CFPP has demonstrated positive free cash flows to equity each year over the last three years prior to the retirement of CFPP and at the time of project validation. The CFPP has demonstrated positive fair value using a methodology that meets International Financial Reporting Standards for accounting (IFRS 13 Fair Value Measurement).

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7) Where the CFPP is owned by:
    a) a state-owned utility company, both the utility and the host country must have a commitment to no new coal power plants. The commitment must be publicly available.
    b) by an IPP, the IPP must have a commitment to not build any new coal power plants. This includes all members of an IPP consortium and their parent or holding companies (future revision possible for inclusion).
8) The project proponent must demonstrate the system operator or regulated utility:
    a) has conducted an assessment on the implications of the CFPP's accelerated retirement, including a rate impact analysis and reliability assessment, and
    b) confirms that the early CFPP retirement will not have a direct negative effect on consumer prices and energy access.
    c) [*Where the project proponent is an IPP, the above may be demonstrated via a letter obtained from the system operator confirming the above. Where the CFPP is owned by a state-owned utility, the utility must present a self-declaration confirming the same.*]
9) Upon decommissioning the CFPP, major plant equipment must be adequately disposed of to prevent their use to build a new CFPP and/or extend the life of existing ones. Plant equipment to be disposed of must include the [*coal crusher and grinding equipment*]. Disposal may include recycling of material or retooling of equipment to support low-carbon activities (i.e., repurpose the CFPP site for non-fossil fuel combustion activities, such as utilizing the plant for thermal energy storage).
10) Upon decommissioning, the proponent must conduct site reclamation and remediation. This must include at a minimum the removal of any toxic chemicals like asbestos, and cleanup and proper disposal of coal ash. [*Proper disposal of coal ash includes its removal from the site to specifically designated landfills that follow the minimum technical standards such as under the US EPA under Subtitle D of the Resource Conservation and Recovery Act (RCRA) or equivalent*].

4.2 Applicability Conditions for Paired Renewable Energy

1) The project proponent must have a plan for pairing the retired CFPP generation capacity fully or partially with new RE generation.
2) The pairing plan must have at least all of the following:
    a) An ultimate paired RE generation capacity - [*The ultimate paired RE generation capacity must be no less than 40% of the retired generation capacity of the CFPP by the end of the total crediting period of the project*].
    b) The type of RE - Refer to eligible RE types below.
    c) The name, capacities, and location using geodetic coordinates of each paired RE power plants (and unit for all RE types except solar) proposed.

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d) The planned commercial operations start date of each proposed RE power plant - The commercial operations start date must be planned to occur during the eligible crediting period.

3) The initial paired RE generation capacity at the project start date must be at least [10%] of the retired CFPP generation capacity.

4) The paired RE generation capacity must include one or a combination of the following RE types:
   a) Solar power plant with or without Battery Energy Storage Systems (BESS)
   b) On-shore and/or off-shore wind power plant with or without BESS
   c) Hydro power plant
   d) Geothermal power plant
   e) Tidal/wave power plant
   f) Biomass-fired power plant
   g) Landfill gas power plant
   h) Biogas power plant, including those from wastewater treatment
   i) [*Waste to Energy (WtE) power plant*]

5) Pairing of RE generation must be established through one or a combination of the following pathways:
   a) Contractual pairing - existing CFPP Power Purchase Agreements (PPAs) are terminated or renegotiated and result in a PPA that relies exclusively on new RE generation capacity instead.
   b) Financial pairing - financing conditions associated with refinancing a CFPP for retirement require new RE generation capacity.
   c) On-site pairing - new RE generation capacity is developed at the CFPP site and utilizes existing grid connection or balance of plant components.
   d) Regulatory pairing - a regulator approves previously unapproved RE generation capacity as an explicit replacement for the retired CFPP generation capacity.
   e) [*Counterfactual plans pairing – a system operator conducts a planning process and publishes resource plans, and the phasedown/retirement of the CFPP enables new RE generation to come online earlier or at greater capacity than the previously published resource plan. The proponent must demonstrate that the new RE commercial operations start date is earlier than the expected RE commercial operations start date in the most recent public, regulatory approved resource plan*.]

4.3 Applicability Conditions for Just Transition

1) The project proponent must develop and implement a Just Transition (JT) plan for the project. The JT plan must include all of the following:
   a) A stakeholder mapping processes to:
      i) identify the relevant local stakeholders that would be impacted by the project, and

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ii) categorize the stakeholders (groups or individuals) as directly or indirectly impacted by the project.

b) The stakeholder mapping process must at least include the following stakeholder groups:
   i) Employees including both permanent and contract workers directly engaged in management, operations, and maintenance of the CFPP.
   ii) Other formal or informal sector workers working at the CFPP site (e.g., daily wage workers cleaning the office building of the CFPP).
   iii) Where the CFPP is a mine mouth power plant, permanent employees and contract workers, and any other formal/informal sector workers working in the mine.
   iv) Contractors with whom the CFPP has short- or long-term contracts (e.g., contractor providing coal to the CFPP, contractor providing plumbing services, or logistics service provider responsible for transportation of coal).
   v) Businesses, especially local micro, and small enterprises, that depend on providing products/services or receiving products/services from the CFPP or its employees (e.g., a tea stall near the CFPP providing tea to employees of CFPP).
   vi) Communities and other local groups, especially vulnerable groups that depend on the CFPP (e.g., communities living in the vicinity of the CFPP that would have collected discarded bottom ash to be utilized for self-consumption or sold to the market).
   vii) Local and/or regional (state/provincial) and/or national governmental ministries and/or departments.
   viii) Non - governmental and/or non - profit organizations, (women) Self Help Groups (SHG) working for upliftment of the individuals and communities in the vicinity of and/or impacted by the accelerated retirement of CFPP.

c) The results of the stakeholder mapping process (i.e., a comprehensive stakeholder list)

d) A process to assess vulnerability of the identified stakeholders. The vulnerability assessment must be according to the relevant national/regional/local laws, policies, or guidelines. In absence of such national/local laws, policies or guidelines, the vulnerability assessment must be according to relevant international guidelines or scientific peer reviewed literature such as [*Luna, F. (2019). Identifying and evaluating layers of vulnerability–a way forward*]. The vulnerability assessment must be done alongside assessment of environmental and socio-economic impacts. The process must at least assess vulnerability based on all of the following:
   i) sex and gender expression
   ii) physical and/or mental disability
   iii) age
   iv) tribe and/or ethnicity
   v) economic status

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vi) social status (e.g., single parents, women headed household, etc.)
vii) religion and/or caste

e) The results of the vulnerability assessment.

f) A communication strategy for ongoing information dissemination, dialogue and seeking feedback (hereinafter together referred as communication) with identified stakeholders. The objectives of the communication strategy must be timely and culturally-sensitive communication of appropriate and adequate information pertaining to the project, including elements of JT.

g) The communication strategy must include at least all of the following:
   i) Identification of modes and procedures for initial and continued communication. The modes and procedures include but are not limited to physical communication, focus group discussions, digital communication (e.g., SMS, WhatsApp, emails, as relevant), letters, newspaper, calls (audio and/or video) while considering the local relevant languages, dialect, culture and any other regional and local customs of the communities.
   ii) Justification of the appropriateness and adequacy of communication modes and procedures for each stakeholder group and stage at which communication and engagement is planned.
   iii) Communication of timelines for all the activities associated with the project and JT plan, including tentative milestones.
   iv) Communication of timelines related to cessation of job, termination, or modification of contracts for products and services, and other potential impacts on the livelihood of the relevant stakeholders.
   v) Communication of rights of different identified stakeholders.
   vi) Communication of options, provisions and mechanisms, and their respective timelines for compensation, job assistance, reskilling, etc.

h) A process to identify and implement options, provisions, and mechanisms to mitigate the loss of work and ensuring continued sustainable livelihood of identified stakeholders due to the project. The options, provisions and mechanism for each stakeholder or stakeholder category must include one or combination of the following:
   i) Severance package, [*minimum requirement of two days of salary per year of service*]
   ii) Early retirement/voluntary retirement benefits, especially for the employees that are nearing retirement age.
   iii) Similar employment or any other similarly compensated alternative livelihood opportunity at or near any other CFPP owned by the project proponent. Where CFPP is replaced by a new RE capacity at the same site, the permanent employees and contracted workers must be preferred, especially where the skills required are similar (e.g., managing transmission of electricity) or similar skills can be developed via structured trainings

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and/or skill development programs (e.g., operations of wind power plant). This could also include employment from remediation activities.

iv) Similar employment or any other similarly compensated alternative livelihood opportunity at or near the directly paired RE capacity.

v) Social security and/or unemployment benefits and payments by the national, regional, or local governments.

vi) Support for further education and/or conducting training for skill development. This can be through partnered organizations/institutes, existing government programs, on the job learning and development opportunities.

vii) Support for job seeking. This includes but is not limited to options for networking, assistance in interview preparation, connecting to relevant/similar employment providers.

viii) Lump sum compensation or staggered compensation package to businesses and/or contractors (workers and organizations) affected by the CFPP's accelerated retirement.

ix) Support to business, especially local micro and small enterprises that depend on providing products/services or receiving products/services from the CFPP or its employees. The support can include but is not limited to one or more of the following:

I. Lump sum or staggered compensation

II. Financial and/or technical support to set up alternate business or enterprise.

III. Financial and/or technical support to set up similar business or enterprises (especially those supported by employees of the CFPP) at other CFPP or facilities of the project proponent or at sites of directly paired RE capacity.

IV. [*other provision/option/mechanism*]

i) A justification of the appropriateness and adequacy of the:

i) option/provision/mechanism to mitigate the loss of work, or any combination communicated and made available to the stakeholders identified, and

ii) the timeframe for proposed implementation of the option/provision/mechanism.

j) A process to build consensus amongst identified stakeholders. The process to build consensus must:

i) Allow both the project proponent and stakeholders to appropriately utilize modes and procedures of communication described above.

ii) Allow stakeholders adequate time to group and discuss amongst themselves and/or with project proponent the potential impact of the project and JT plan, options, and proposed alternate livelihoods.

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iii) Allow for informed decision making by the impacted stakeholders (e.g., employees being laid-off must be allowed sufficient time to discuss and decide amongst the options provided for severance package and training are appropriate.

iv) Appropriate and adequate procedures to allow stakeholders to put forth their interests, preferences and concerns associated with the JT plan, in their local language or dialect. This must consider gender-based challenges, vulnerability of different stakeholders, access to resources to communicate by different stakeholders, and any relevant preferred and/or prevalent methods of communication (e.g., local community might not have access to digital media such as phones, hence would give feedback verbally).

v) Allow project proponents to present alternative options, provisions, and mechanisms to mitigate the loss of work and ensuring continued sustainable livelihood where the stakeholders do not agree or express concerns.

vi) Allow neutral third-party mediation/arbitration where a consensus is not reached directly between the project proponent and stakeholders (or stakeholder category).

k) A description of third-party elements on which the JT plan relies. The description must include identification, intended utilization, and other relevant details. Third party elements may include policies (national, regional or local), programs (either operated, supported or funded by governmental agencies, developmental organizations, philanthropy, etc.), or grants (e.g., Existing programs by national or state governments for skill development). The third parties may include organizations (governmental and non-governmental), groups/cooperatives and individuals.

l) An estimate of the cost to implement the JT plan and a procedure to review it annually during implementation. The annual review procedure must include feedback received from stakeholders during consensus building process, recognizing that many costs may need to be disbursed years prior to decommissioning. The cost estimate must include at minimum the following:

i) Cost associated with continued communication and consultations, including consensus building with the identified stakeholders.

ii) Cost associated with provisions and mechanisms associated with providing compensation, opportunities, skill development, etc. to individuals, business, and communities whose livelihood is directly impacted by accelerated decommissioning of the CFPP.

iii) Costs associated with operations and management of JT plan implementation.

m) A description of funding sources during implementation of the JT plan. The description must include:

i) A description of funding provisions or mechanisms, including:

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I. Loans, funds and/or grants received or to be received from government owned/funded organizations, schemes and/or policies. (e.g., The Just Transition Fund in European Union).

II. Funds and/or grants received or to be received from non-governmental organizations, corporations (e.g., through their corporate social responsibility funds), philanthropies, etc.

III. Dedicated JT funds established by project proponent through savings, investments, bonds (e.g., green bonds, sovereign bonds), equity, etc.

IV. Loans or any other debt financing through financing institutions such as national or private banks.

V. Part of carbon revenue received from sales of carbon credits. [*A minimum of 5% of the revenues expected from the sales of carbon credits must be allocated to implementation of the JT plan. This expected revenue must be estimated based on the financial gap between the project and the baseline retirement scenarios. The methodology does not set an upper limit of percentage of revenue from sales of carbon credits to be diverted towards JT plan implementation as monetary requirements may vary from country to country, asset to asset, etc.*]

VI. [*any other financial mechanism or source deemed relevant and necessary*].

ii) Identification and assessment of risks associated with different sources of funding for JT implementation, including risk mitigation options and strategies.

iii) [*Procedures to identify and pursue means of alternative and/or additional finance during JT plan implementation*].

iv) [*A procedure for periodic review and audit of financial transactions associated with different components of the JT plan and implementation. The procedure must include at least the following:*

I. Where deemed required, creation of a separate financial account for the JT funding and disbursements, owned and controlled by the project proponent(s)

II. Provision to internally prepare and review financial statements at least twice in a year, and report any material deviations from the JT plan.

III. Annual auditing by an independent third party of financial statements associated with JT plan and its implementation, ensuring that overall materiality levels are set at overall JT financing, following internationally accepted risk-based accounting procedures, with emphasis on options, provisions and mechanisms implemented to ensure continued work and sustainable livelihood.

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IV. *Identification and annual reassessment of risks and their potential impact on finances linked to JT plan implementation.*

V. *Identification and review of any uncertainties.*

VI. *Review of present and planned financial risk mitigation options and strategies*.]

n) A description of the operational and management system for JT plan implementation. At minimum, it must include the following:

i) Clear definition of roles and responsibilities of personnel and organizations (including any external organizations) involved in the operation and management of activities of JT.

ii) Clearly documented and agreed governance mechanism for taking decisions and reviewing decisions associated with JT plan and its implementation.

iii) Financial management structure, including personnel(s) responsible for overall management of finances. This must also include procurement policies for the approval of expenses and procedure for approval by personnel(s) with appropriate level of authority.

iv) Standard operating procedures for periodic internal review of JT plan and where required its revision, its implementation, including provisions for corrective actions and continuous improvement. This includes revisions required to JT plan based on continuous consensus making process and feedback received from identified stakeholders.

v) Maintenance of records (including version control) associated with JT plan and its implementation.

2) The JT plan must be fully funded [*irrespective of the carbon revenues from the transaction*]

3) A project announcement must be made that:

a) Includes all relevant project information,

b) Reaches all stakeholders identified in the stakeholder mapping process, and

c) Occurs no less than six months before the start of physical decommissioning activities at the CFPP.

5 PROJECT BOUNDARY

The spatial extent of the project boundary encompasses the following:

1) CFPP to be retired.

2) Where applicable, emissions from operations of paired RE capacity.

Significant sources of leakage included in the quantification are:

1) All the power plants/units connected to the electricity system (i.e., grid) that would compensate for electricity generation that is not produced by retired CFPP and is not covered by paired RE capacity.

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The greenhouse gases included in or excluded from the project boundary are shown in Table 1.

Table 1: GHG Sources Included or Excluded From the Project Boundary

Source		Gas	Included?	Justification/Explanation
Baseline	Emissions from Electricity Generation from CFPP	CO_2	Yes	Major Source
		CH_4	No	Conservative
		N_2O	No	Conservative
		Other	No	N/A
	Emissions from CFPP Decommissioning	CO_2	No	Decommissioning of CFPP same in baseline and project scenario
		CH_4	No	Decommissioning of CFPP same in baseline and project scenario
		N_2O	No	Decommissioning of CFPP same in baseline and project scenario
		Other	No	Decommissioning of CFPP same in baseline and project scenario
Project	Emissions from Electricity Production from New Renewable Energy	CO_2	Conditional	To be considered for landfill gas, geothermal, hydro, biomass thermal, wastewater and waste to energy plants. Not to be considered for other eligible RE sources.
		CH_4	Conditional	To be considered for landfill gas, geothermal, hydro, biomass thermal, wastewater and waste to energy plants. Not to be considered for other eligible RE sources.
		N_2O	No	de minimis
		Other	No	N/A
	Emissions from RE plant construction	CO_2	No	de minimis
		CH_4	No	de minimis
		N_2O	No	de minimis
		Other	No	de minimis
	Emissions from CFPP Decommissioning	CO2	No	Decommissioning emissions of CFPP same in baseline and project scenario but at different times
		CH4	No	Decommissioning emissions of CFPP same in baseline and project scenario but at different times
		N2O	No	Decommissioning emissions of CFPP same in baseline and project scenario but at different times
		Other	No	Decommissioning emissions of CFPP same in baseline and project scenario but at different times

Leakage	Emissions from Electricity Sourced from the Grid	CO_2	Yes	Major Source
		CH_4	Yes	Upstream methane emissions considered for gas fired power plants where incremental gas is burned to compensate for retired CFPP electricity generation
		N_2O	No	de minimis
		Other	No	de minimis

6 BASELINE SCENARIO

The methodology uses the project method to determine the eligible crediting baseline.

The baseline scenario is the continued operation of the CFPP until it would have been retired in the absence of carbon revenues (i.e., until the baseline scenario retirement date).

The total project crediting period ends at the earlier of:

1) the total crediting period as defined in the latest version of the *VCS Standard*,
2) baseline scenario retirement date, refer to the latest version of the module *VMD00XX: Module to determine the financially feasible retirement date of a coal-fired power plant* to determine the baseline scenario retirement date.
3) [*If the jurisdiction reneges on its no new coal commitment, either explicitly or implicitly through the permitting of a new coal plant, the date on which it announces such intention, or permits a new coal plant, and*
4) *If the IPP proponent reneges on a no new coal commitment, either explicitly or implicitly through the application for permits for a new coal plant anywhere globally, the date on which it announces such intention, or applies for a new coal plant*.]

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7 ADDITIONALITY

The methodology uses the project method for the demonstration of additionality.

Step 1: Regulatory Surplus

Project proponents must demonstrate regulatory surplus in accordance with the rules and requirements regarding regulatory surplus set out in the latest version of the *VCS Methodology Requirements*.

Step 2: Implementation Barrier - Investment barrier

Investment barriers that prevent the CFPP being retired by the proposed retirement date is demonstrated using the latest version of module *VMD00XX: Module to determine the retirement date of a coal-fired power plant*. An investment barrier exists if the proposed retirement date is before the baseline scenario retirement date.

Step 3: Common Practice Analysis

The project must conduct common practice analysis as per the guidance provided in The GHG Protocol for Project Accounting, Chapter 7 (WRI-WBCSD). The project type must not be a common practice in the country/region as compared to projects receiving no carbon revenue. Where the project type is common practice, the project proponent must identify barriers as compared to other projects.

8 QUANTIFICATION OF ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

8.1 Baseline Emissions

The baseline emissions in any year y of the crediting period are determined by:

$$BE_y = BElec_{CFPP_y} * EF_{BL_y} \quad (1)$$

Where:

BE_y	=	Baseline emissions in year y (tCO_2)
$BElec_{CFPPy}$	=	Baseline net electricity production in year *y* i.e., the amount of electricity that is assumed would have been generated in year *y* of the crediting period had the CFPP not been retired (MWh)

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EF_{BLy}	=	Baseline Emissions Factor in year y, i.e., the amount of CO_2e per MWh of electricity that would have been generated in any year y of the crediting period if the CFPP had not been retired (tCO_2/MWh)

Baseline net electricity production ($BEelec_{CFPPy}$) in any year y of the crediting period must be determined as follows:

$$BEelec_{CFPP_y} = CFPPBL_{Gencap} * CFPPBL_{CFPP_y} * 8760 \quad (2)$$

Where:

$BE_{elecCFPPy}$	=	Baseline net electricity production in year *y* i.e., the amount of electricity that is assumed would have been generated in year *y* of the crediting period had the CFPP not been retired (MWh)
$CFPP_{BLGencap}$	=	Net Installed Generating Capacity of the CFPP being retired (MW)
$CFPPBL_{CFPPy}$	=	[*Lowest between the*] baseline CFPP's historical Capacity factor ($CFPP_{BLCFhis}$) [*and the Average Capacity Factor ($CFPPREF_{CFave,y}$) of at least two Reference CFPPs*].
8760	=	Number of hours in one year

The baseline emission factor (EF_{BLy})is determined using the equation below.

$$EF_{BL_y} = (FC_c * NCV_c * EFCO2_c) / EG_{CFPP} \quad (3)$$

Where:

EF_{BLy}	=	Baseline Emissions Factor in year y, i.e., the amount of CO_2 per MWh of electricity that would have been generated in any year y of the crediting period if the CFPP had not been retired (tCO_2/MWh)
FC_c	=	Quantity of coal fired in the CFPP in the three most recent years (mass unit)
NCV_c	=	Average net calorific value of coal used in the CFPP (GJ/ mass unit)
$EFCO2_c$	=	CO_2 emission factor of coal used in the CFPP (tCO_2/GJ)
EG_{CFPP}	=	Quantity of electricity generated and supplied to the grid by the CFPP in the [*three most recent years prior to the project being registered with the carbon standard*] (MWh)

8.2 Project Emissions

Project emissions are calculated as follows:

$$PE_y = \sum PE_{RE_{i,y}} \quad (4)$$

Where:

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PE_y	=	Project emissions in year y (tCO_2e)
$PE_{REi,y}$	=	Project emission from operations of renewable energy power plant i in the year y (tCO_2e)

Project emissions are those that are emitted from operations of RE that can be demonstrated to be integrated into the grid as a result of the power plant being retired, i.e., Renewable Energy capacity that can be demonstrated to be paired with the accelerated retirement of the CFPP.

Generation of electricity from the following RE types does not have project emissions to account:

- Solar PV
- Wind (onshore/offshore)
- Tidal
- Wave

Some RE types emit GHGs, and the GHG emissions must be quantified as per the latest version of the following CDM methodologies:

- Project emissions from electricity generation from landfill gas: CDM ACM0001: Flaring or use of landfill gas
- Project emissions from Geothermal and Hydropower: CDM ACM0002: Grid-connected electricity generation from renewable sources
- Project emissions from biomass fired power plant: CDM ACM0006: Electricity and heat generation from biomass
- Project emissions from wastewater treatment: CDM ACM0014: Treatment of wastewater
- Project emissions from waste to energy power plant: CDM ACM0022: Alternative waste treatment processes

8.3 Leakage Emissions

Leakage emissions are calculated as follows:

$$LE_y = (EGGrid_y - \sum EG_{RE_{i,y}}) \, x \, EF_y \quad (5)$$

Where:

LE_y	=	Leakage emissions in year y (tCO_2e)
$EGGrid_y$	=	incremental output from grid connected power plants in year y (MWh)
$EG_{REi,y}$	=	the amount of electricity generated and supplied to the grid by the new RE capacity i added to the grid in year y that can be proven to be a direct result of retiring the CFPP ahead of its planned retirement date. (MWh)
EF_y	=	emissions factor associated with the production of EGgrid,y in the year y (tCO_2e/MWh)

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Step 1: Determination of Electricity Generation from Grid ($EGGrid_{,y}$)

The additional amount of electricity that needs to be generated by the grid connected plants once the CFPP has been retired equals that which the CFPP would have generated had it not been retired before its planned retirement date. The additional electricity that needs to be generated from the power plants connected to the grid after the CFPP has been retired can be conservatively assumed to be the highest of the following:

- the average electricity generated by the CFPP over the five most recent years prior to the project being registered with the carbon standard; OR
- the baseline scenario electricity generated in any year y of the crediting period.

Step 2: Determination of Electricity Generation from Paired RE ($EG_{REi,y}$)

Eligible RE power plants used for pairing must be described in the PDD with their start date. Supporting documentation must substantiate that additional RE generating capacity would be integrated into the grid in response to the CFPP being retired.

For RE power plants that are eligible because of counterfactual plans pairing (See Section 4.2), RE generation must be assumed to directly replace retired coal generation only for the period of time between when the RE project was brought online and when it would have been brought online in the absence of the project. For reporting periods after, grid generation must be assumed to replace the coal generation and must be accounted for as leakage.

Renewable energy credits (RECs) or carbon credits in other crediting program must not be issued or sold for the duration of the time the eligible RE paired capacity is accounted as such in this methodology.

Step 3: Determination of Grid Emission Factor (EF_y)

The grid emission factor to be applied is a Combined Margin (CM) Grid emissions factor that combines the Operating Margin (OM) and Build Margin (BM) emissions factor. The CM, OM and BM Emissions Factors are to be determined as follows:

$$EF_y = \frac{OM}{2} + \frac{BM}{2} \quad (6)$$

Where:

EF_y	=	Emissions factor (CM) associated with the production of $EGgrid_{,y}$ in the year y (tCO_2e/MWh)
OM	=	Operating Margin (tCO_2e/MWh)
BM	=	Build Margin (tCO_2e/MWh)

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Step 3a: OM emissions factor determination

The OM emissions factor shall be determined using each step below:

Step 3a -1 - A subcritical coal default emissions factor must be applied if any of the following conditions are met:

- The mothballed coal power plant generating capacity connected to the grid is greater than or equal to the retired CFPP generating capacity in the project.
- Reserve margin is greater than or equal to the regulatory-determined reserve margin target plus [*10%*], and [*the unused capacity in the reserve margin is more than 50% coal*].

Step 3a - 2 - The Simple OM, calculated as per the latest version of CDM Tool 7: Tool to calculate the emission factor for an electricity system as the generation weighted average of all non-low cost must run (LCMR) electricity sources connected to the grid. LCMR electricity sources include renewables and nuclear. Coal fired power plants must not be included as LCMR in the Simple OM calculation.

Where there are other coal-to-clean/power sector crediting projects, the operating margin calculation should include those CFPPs, assuming the same generation projected in the baseline retirement case, estimated ex-ante and presented in the PDD of the CFPP being retired.

Step 3b: BM emissions factor determination

Determined as indicated in the latest version of CDM Tool 7: Tool to calculate the emission factor for an electricity system.

The paired renewable energy sources must be excluded from the build margin calculations for all future coal-to-clean/power sector crediting projects.

Step 4: Inclusion of upstream methane leakage in gas fired power plants

[*The emissions factor must incorporate the upstream methane leakage emissions associated with power generation. The upstream methane emissions must be determined using one of the following two options:*

- *Option (A): simple approach based on a default global emission factor; or*
- *Option (B): detailed approach based on granular, region-specific emissions analysis*

For Option (A) the global default emission factor is 8.3 tCO_2e/TJ , The emissions factor should be multiplied by the GFPP heat rate (e.g., TJ/MWh).

For Option (B) project participants may choose between two options

- *Option (i): reference the emission rate from reputable published emissions inventories where these exist (for example, country-specific and industry-specific emission*

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inventories published by national reporting entities and industry associations, confirming that these have been developed using an IPCC Tier 2 or Tier 3 approach.

- *Option (ii): provide evidence of MiQ asset-level certification demonstrating methane leakage rates for each GFPP below 1.6% and apply the respective emissions factor and global warming potential (GWP) as per the latest version of the VCS Standard*]

8.4 Net GHG Emission Reductions and Removals

The GHG emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_{,y} \quad (7)$$

Where:

ER_y	=	GHG emissions reductions in year y (tCO_2e)
BE_y	=	Baseline emissions in year y (tCO_2e)
PE_y	=	Project emissions in year y (tCO_2e)
LE_y	=	Leakage emissions in year y (tCO2e)

9 MONITORING

9.1 Data and Parameters Available at Validation

Data / Parameter	CFPP BL_{Gencap}
Data unit	MW
Description	Net Installed Generating Capacity of the CFPP being retired (MW)
Equations	2
Source of data	Project proponent records
Value applied	As per project proponent and CFPP records
Justification of choice of data or description of measurement methods and procedures applied	Project proponent (IPP or utility) will have the correct data
Purpose of Data	Calculation of Baseline Emissions
Comments	To Determine the Installed Generating Capacity of the CFPP being retired.

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Data / Parameter	$CFPPBL_{CFhis}$
Data unit	Dimensionless
Description	CFPP historical capacity factor
Equations	2
Source of data	Project proponent records
Value applied	Lowest value of the following: • CFPP BL $_{CF\ val,\ 5\text{-}average}$: the average capacity factor of the baseline plant over the five most recent years at the time of validation of the PDD; OR • CFPP BL $_{CF\ val,\ 3\text{-}average}$: the average capacity factor of the baseline plant over the three most recent years at the time of validation of the PDD; OR • CFPP BL $_{CF,\ pre\text{-}decom,\ 5\text{-}average}$: the average capacity factor of the baseline plant over the five years before the CFPP's actual retirement; OR • CFPP BL $_{CF,\ pre\text{-}decom,\ 3\text{-}average}$: the average capacity factor of the baseline plant over the three years before the CFPP's actual retirement.
Justification of choice of data or description of measurement methods and procedures applied	Lowest value selected for the purpose of conservativeness
Purpose of Data	Calculations of Baseline Emissions
Comments	-

Data / Parameter	*$[CFPPREF_{CFave,y}$*
Data unit	*Dimensionless*
Description	*Average capacity factor of at least two reference CF*
Equations	*2*
Source of data	*System operator records*
Value applied	*Average value of capacity factors of the reference CFPPs.*
Justification of choice of data or description of measurement methods and procedures applied	*Average of reference plants considered to ensure appropriateness and conservativeness.*

Purpose of Data	*Calculations of Baseline Emissions*
Comments	*Reference plants used to determine must meet all of the following criteria:* ● *Unabated CFPPs combusting at least 90% coal on a thermal input basis. CFPP shall not be a CHP plant.* ● *No contracted power offtake outside of the system operator.* ● *Equal or greater nameplate capacity than the CFPP being retired.* ● *Equal or greater long-run marginal cost than the CFPP being retired, defined as the sum of fuel costs, fixed and variable O&M costs, and carbon costs (where applicable) per unit of electricity produced. A Reference plant may be selected based on the following criteria if the data needed to determine the long-run marginal cost is not available:* ○ *The Reference CFPP has a similar or lower efficiency technology than the CFPP being retired, in order of less efficient to more efficient: subcritical, supercritical, ultra-supercritical For conservativeness, CFB CFPP should use subcritical CFPPs as a reference CFPP if no other suitable CFB Plants are connected to the grid.* ○ *The Reference CFPP uses a similar grade of coal and the CFPP being retired does. In order of lower to higher grade coal: lignite, subbituminous, bituminous, anthracite.* ○ *The Reference CFPP's average capacity factor over the last five years is equal to or lower than that of the CFPP that is sought to be retired.* *If there are no CFPPs that meet the above criteria, then the value to be applied for CFPP REF CF ave,y shall be obtained as follows:* ● *if CFPP BL CF val, ave is greater than or equal to 60%, then the capacity factor is assumed to decline linearly to 30% over the baseline retirement date* ● *if CFPP BL CF val. is greater than 60% and the baseline retirement date is greater than 10 years from project decommissioning, then assume CFPP BL CF val, ave. declines linearly to 30% over its remaining technical life.]*

Data / Parameter	FC_c
Data unit	Mass unit
Description	Quantity of coal fired in the CFPP in the three most recent years
Equations	3
Source of data	Onsite measurements, project proponent records

Value applied	As per project proponent records
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of Data	Calculation of Baseline Emissions
Comments	The measurement devices must be calibrated as per manufacturer's specifications or as per industrial guidelines.

Data / Parameter	NCV_c
Data unit	GJ/Mass unit
Description	Average net calorific value of Average net calorific value of coal used in the CFPP
Equations	3
Source of data	The following data sources are to be used:

Data Source	Conditions
(i) Values provided by the supplier of coal	Preferred source of data
(ii) Measurement by project proponent	If (i) is not available
(iii) Regional or national default values	if (i) is not available and is referred to reliable national sources
[(iv) IPCC default values at the upper or lower limit – whatever is more conservative – of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	*if (i) and (iii) are not available]*

Value applied	As per source of data
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of Data	Calculation of Baseline Emissions

Comments	For (i) and (ii) the NCV must be obtained for each fuel delivery, from which weighted average values for the three most years must be calculated

Data / Parameter	$EFCO2_c$
Data unit	tCO_2/GJ
Description	CO_2 emission factor of coal used in the CFPP
Equations	3
Source of data	The following data sources are to be used:

Data Source	Conditions
(i) Values provided by the supplier of coal	Preferred source of data
(ii) Measurement by project proponent	If (i) is not available
(iii) Regional or national default values	if (i) is not available and is referred to reliable national sources
[(iv) IPCC default values at the upper or lower limit – whatever is more conservative – of the uncertainty at a 95% confidence interval as provided in Table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	*if (i) and (iii) are not available]*

Value applied	As per source of data -
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of Data	Calculation of Baseline Emissions
Comments	For (i) and (ii) the CO_2 emission factor must be obtained for each fuel delivery, from which weighted average values for the three most years must be calculated period t should be calculated-

Data / Parameter	EG_{CFPP}
Data unit	MWh
Description	Quantity of electricity generated and supplied to the grid by the CFPP in the three most recent years
Equations	3
Source of data	Direct measurements using electricity meter, project proponent records
Value applied	As per project proponent records
Justification of choice of data or description of measurement methods and procedures applied	Most accurate
Purpose of Data	Calculation of Baseline Emissions
Comments	- Use electricity meters installed at the grid interface for electricity export to grid - The electricity meter must have been subject to regular maintenance and testing in accordance with the stipulation of the meter supplier and/or as per the requirements set by the system operators or national requirements. The calibration of meters, including the frequency of calibration, must have been done in accordance with national standards or requirements set by the meter supplier or requirements set by the system operator. - The accuracy class of the meters must be in accordance with the stipulation of the meter supplier and/or as per the requirements set by the grid operators or national requirements.

9.2 Data and Parameters Monitored

GHG Quantification

Data / Parameter:	The total installed paired RE generating capacity
Data unit:	Percentage
Description:	Total installed paired RE generating capacity in the year y
Equations	N/A
Source of data:	Onsite measurement, contractual evidence and project proponent records
Description of measurement methods	As per records of installed RE generating capacity.

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and procedures to be applied:	
Frequency of monitoring/recording:	Continuous
QA/QC procedures to be applied:	Cross-check the relevant pairing scenario of the RE as per 4.2.5
Purpose of data:	Monitoring of applicability condition 4.2.2 and 4.3.3
Calculation method:	Calculate the percentage of RE capacity to the installed generating capacity of the CFPP
Comments:	-

Data / Parameter:	$EGGrid_y$
Data unit:	MWh
Description:	Incremental output from grid connected power plants in year y
Equations	6
Source of data:	Project proponent records
Description of measurement methods and procedures to be applied:	Higher of the two values must be applied: • the average electricity generated by the CFPP over the five most recent years prior to the project being registered with the carbon standard; • the baseline scenario electricity generated in any year y of the crediting period.
Frequency of monitoring/recording:	Yearly
QA/QC procedures to be applied:	-
Purpose of data:	Calculation of Leakage Emissions
Calculation method:	-
Comments:	-

Data / Parameter:	$EG_{REy,\,i}$
Data unit:	MWh
Description:	Quantity of electricity generated and supplied to the grid by any RE source *i* that can be demonstrated to be paired with the retirement of the CFPP in any year y

Equations	6
Source of data:	Measurements using electricity meters at the paired RE generating plant.
Description of measurement methods and procedures to be applied:	Use calibrated electricity meters from the grid supplier
Frequency of monitoring/recording:	Data must be monitored continuously and recorded at least monthly or with the frequency applicable according to the grid supplier.
QA/QC procedures to be applied:	• The consistency of metered electricity consumption must be cross-checked with receipts from electricity bills where applicable • The meters must be calibrated as per manufacturer's specification or as per industrial specifications • Check contracts or other legal binding agreements such as PPA to ensure RE is paired and is generated before it would have been in the baseline scenario.
Purpose of data:	Calculation of leakage emissions
Calculation method:	For each paired RE, this parameter must be either monitored using bi-directional energy meter or calculated as difference between (a) the quantity of electricity supplied by the project plant/unit to the grid; and (b) the quantity of electricity the project plant/unit from the grid. In case it is calculated then the following parameters shall be measured: (a) The quantity of electricity supplied by the project plant/unit to the grid; and (b) The quantity of electricity delivered to the project plant/unit from the grid
Comments:	To be reported from the date the CFPP is retired until the earliest of the following dates: a) the baseline scenario CFPP retirement date b) date when the renewable energy generated would no longer be considered to be "paired" with the CFPP retirement, i.e. date from which it is assumed the renewable electricity would have been generated anyway

Data / Parameter:	OM
Data unit:	tCO2e/MWh
Description:	Operating Margin

<table>
<tr><td>Equations</td><td>6, 7</td></tr>
<tr><td>Source of data:</td><td>Option 1: Use of subcritical coal default emission factor. Use following sources:

<table><tr><td>Data source</td><td>Condition</td></tr><tr><td>(i) Regional or national default values</td><td>Preferred option when values are well documented and available in reputed source of information.</td></tr><tr><td>(ii) Global average default</td><td>when (i) is not available. Use of reputed sources such as IEA, IPCC, UNFCCC.</td></tr></table>
Option 2: Simple OM - calculated as per the latest version of CDM Tool 7: Tool to calculate the emission factor for an electricity system</td></tr>
<tr><td>Description of measurement methods and procedures to be applied:</td><td>-</td></tr>
<tr><td>Frequency of monitoring/recording:</td><td>For option 2: Estimated ex ante and thereafter simple OM is calculated annually</td></tr>
<tr><td>QA/QC procedures to be applied:</td><td>-</td></tr>
<tr><td>Purpose of data:</td><td>Calculation of Leakage Emissions</td></tr>
<tr><td>Calculation method:</td><td>Option 2: Simple OM - calculated as per the latest version of CDM Tool 7: Tool to calculate the emission factor for an electricity system.
When option 2 is used, for any given crediting year y, the greater value between the ex-ante simple OM and year y simple OM must be used.</td></tr>
<tr><td>Comments:</td><td>Consideration of upstream methane leakage pursuant to GFPP to be done when option 2 is selected as per criteria and procedures established under section 8.3, Step 4.
Separate upstream methane leakage pursuant to GFPP is not considered when Option 1 as subcritical coal default emission factor is already conservative.</td></tr>
</table>

Data / Parameter:	BM
Data unit:	tCO2e/MWh
Description:	Build Margin

Equations	6, 7
Source of data:	Calculated as per the latest version of CDM Tool 7: Tool to calculate the emission factor for an electricity system
Description of measurement methods and procedures to be applied:	-
Frequency of monitoring/recording:	Estimated ex-ante and after that BM is calculated annually
QA/QC procedures to be applied:	The paired renewable energy sources must be excluded from the build margin calculations for all future coal-to-clean/power sector crediting projects
Purpose of data:	Calculation of Leakage Emissions
Calculation method:	Calculated as per the latest version of CDM Tool 7: Tool to calculate the emission factor for an electricity system. For any given crediting year y, the greater value between the ex-ante simple BM and year y simple BM must be used.
Comments:	Consideration of upstream methane leakage pursuent to GFPPto be done when option 2 is selected as per criteria and procedures established under section 8.3, Step 4

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Data / Parameter:	Details of direct and indirect stakeholders
Data unit:	Details of person, local business organizations, business, etc
Description:	Details of identified directly impacted stakeholders and indirectly impacted stakeholder. Directly impacted stakeholders must be listed openly with complete personnel identification with minimum of full name, citizen ID number, address, date of birth. Disclosure of this data is under FPIC principles. Indirectly impacted stakeholders must be listed and finalized after the agreement of list after consensus building.
Equations	N/A
Source of data:	Prepared and provided by the project proponent.
Description of measurement methods and procedures to be applied:	As per the registered stakeholder mapping process in the registered JT plan.
Frequency of monitoring/recording:	Stakeholder must be identified first as per registered stakeholder identification process in the JT plan and must be updated based on any

	revision to the JT plan implementation or identification of new stakeholders.
QA/QC procedures to be applied:	-
Purpose of data:	To monitor compliance with validated JT implementation plan and monitoring of compliance of applicability condition 4.3.1
Calculation method:	N/A
Comments:	Details of directly and indirectly impacted stakeholders must be published in the JT plan.

Data / Parameter:	Stakeholder consultation and consensus building sessions
Data unit:	Number and details of stakeholder consultation and consensus building sessions
Description:	A report for each stakeholder consultation and consensus building session with direct and indirect impacted stakeholders. The report must include: - list of attendees - points of discussion - minutes of the meeting - addressal of any grievances.
Equations	N/A
Source of data:	Prepared and provided by the project proponent.
Description of measurement methods and procedures to be applied:	Sessions must be as per criteria and procedures of stakeholder consultation, following process of continued communication and process of consensus building as per the registered JT plan.
Frequency of monitoring/recording:	As and when sessions are held.
QA/QC procedures to be applied:	Representation and attendance of direct and indirect stakeholders meeting the minimum quorum (>50% of the invited stakeholders/their representatives).
Purpose of data:	To monitor compliance with validated JT implementation plan and monitoring of compliance of applicability 4.3.2 and 4.3.3
Calculation method:	N/A
Comments:	After each session, the project proponent must describe how feedback received from each consultation session is considered and, where relevant, accommodated.

Data / Parameter:	Financial estimations of JT plan
Data unit:	In the currency of the host country in which the project is located or any other currency deemed relevant (e.g., INR, IDP, USD, EUR, CHF)
Description:	Detailed annual financial estimates pertaining to implementation of the JT plan
Equations	N/A
Source of data:	Prepared and provided by project proponent.
Description of measurement methods and procedures to be applied:	Financial estimates are based on inflow and outflow of funds. Inflow is based on the funding sources identified for JT plan implementation. Outflow is based on components of JT plan that require disbursement of funds and/or are considered expenses. All cash inflow and cash outflow must be explicitly mentioned.
Frequency of monitoring/recording:	Validated at time of project registration, updated annually. Updating must be based on the revised JT plan implementation and any changes envisioned in financial flows.
QA/QC procedures to be applied:	When incoming finances (such as funds/grants) differ from the local currency, estimates must consider the exchange rate appropriately. The reporting period must be consistent without any gaps or overlaps.
Purpose of data:	Monitoring of compliance of applicability 4.3.7
Calculation method:	N/A
Comments:	Financial estimates must agree with the activities planned throughout the year. It should consider activities continued from previous years (if applicable) such as continuous communication.

Data / Parameter:	Severance package
Data unit:	Number of people given severance package: Whole number (Dimensionless)
Description:	Amount of compensation provided to each person: In the currency of the host country in which the project is located or any other currency deemed relevant (e.g., INR, IDP, USD, EUR, CHF)
Equations	Financial compensation provided by employer to the employee upon termination of employment.
Source of data:	N/A
Description of measurement methods and procedures to be applied:	Financial transaction receipt/records, bank records.

Frequency of monitoring/recording:	As per agreed-upon terms and conditions, and justified in JT implementation plan.
QA/QC procedures to be applied:	Continuous. Records updated when financial compensation is provided.
Purpose of data:	When a severance package is provided to an employee in a different currency than that of the host country (e.g., in a situation where an employee works from an other country), the exchange rate must be considered appropriately.
Calculation method:	To monitor compliance with validated JT implementation plan and applicability condition 4.3.6
Comments:	The severity package is as agreed between employee and employer (project proponent) and listed terms and conditions.

Data / Parameter:	Early retirement/voluntary retirement benefits
Data unit:	Number of people accepted early retirement/voluntary retirement: Whole number (Dimensionless) Amount of compensation provided to each person: Whole number (dimensionless). In the currency of the host country in which the project is located or any other currency deemed relevant (e.g., INR, IDP, USD, EUR, CHF)
Description:	Option provided to the employee who is in his/her/their 40s or 50s and before retirement age and has worked in the same organization for a significant time (usually ten or more years but depends on local laws/regulations or as defined by the company itself) to retire early by terminating the employment and receiving a compensation (either lump sum or staggered or continuous). The option to accept early retirement/voluntary retirement is with the employee.
Equations	N/A
Source of data:	Financial transaction receipt/records, bank records.
Description of measurement methods and procedures to be applied:	Compensation is to be per relevant national/local laws or guidelines, agreed-upon terms and conditions and justified in JT implementation plan.
Frequency of monitoring/recording:	Continuous. Records updated when financial compensation is provided.
QA/QC procedures to be applied:	When early retirement/voluntary retirement is staggered or continuous, spanning multiple periods over years, accounting of such disbursements must be appropriately accounted to ensure that total finances have been provided to the employee.
Purpose of data:	To monitor compliance with validated JT implementation plan and applicability condition 4.3.6

Calculation method:	The severity package is as agreed between employee and employer (project proponent) and listed terms and conditions.
Comments:	N/A

Data / Parameter:	Social security and/or unemployment benefits
Data unit:	Number of people getting social security or unemployment benefits: Whole number (Dimensionless) Financial Compensation provided to each person: Whole number (dimensionless) - should be in currency of host country. E.g., INR, IDP, etc.)
Description:	A minimum and periodic financial compensation provided by the national, regional or local government to the employees to lose their job with no fault of their own.
Equations	N/A
Source of data:	As prescribed in relevant national/regional/local law and/or policy. Bank account statement of the employee receiving benefits. Records of the project proponent
Description of measurement methods and procedures to be applied:	Compensation to be as per relevant national/local laws or guidelines, agreed upon terms and conditions and justified in JT implementation plan.
Frequency of monitoring/recording:	Continuously - check periodically with the people if they are getting the benefits
QA/QC procedures to be applied:	Ensure that the financial compensation received is not less than prescribed by the government law/policy and that it continues for the stipulated period.
Purpose of data:	To monitor compliance with validated JT implementation plan and applicability condition 4.3.7
Calculation method:	N/A
Comments:	-

Data / Parameter:	Similar employment or similarly compensated employment
Data unit:	Number of people provided with employment: Whole number (Dimensionless)
Description:	Employment opportunities with the same or similar work profile and other relevant employment opportunities with similar compensation

	provided to permanent and contract workers by the project proponent in place of their current employment/livelihood being threatened at the project CFPP/
Equations	N/A
Source of data:	Records of the project proponent.
Description of measurement methods and procedures to be applied:	Employment opportunities provided based on similar work profile, experience, professional expertise and/or compensation in recent or relevant professional years.
Frequency of monitoring/recording:	Continuous
QA/QC procedures to be applied:	Cross check records of the facility/organization where employee has been provided with employment
Purpose of data:	To monitor compliance with validated JT implementation plan and applicability condition 4.3.6
Calculation method:	N/A
Comments:	-

Data / Parameter:	Further education support and conducting training
Data unit:	Whole number: Dimensionless
Description:	Support for further education and training for skill development ensures impacted employees find a source of continuing livelihood.
Equations	N/A
Source of data:	Records of the project proponent.
Description of measurement methods and procedures to be applied:	The records training must include at least the following: • Type of training provided. • Institution/organization/individual is responsible for providing training. • Schedule and timings of training provided • Number of people trained • Evidence of completion of training The records for support of education must include • Type of education supported - course/degree supported. • Institution/organization partnered or institution/university in which the employee is enrolled. • Support provided - e.g., financial support (paying the fee of education), time off without reduction in salary (if during

	employment), reduced workload without reduction in salary (if during employment), etc.
Frequency of monitoring/recording:	Continuous
QA/QC procedures to be applied:	Training provided/conducted and the education supported must be as per skills required to gain a new job or alternately ensure livelihood. Supporting education and providing training that do not lead to a tangible skill development is not eligible.
Purpose of data:	To monitor compliance with validated JT implementation plan and applicability condition 4.3.6
Calculation method:	N/A
Comments:	N/A

Data / Parameter:	Support for job seeking
Data unit:	For number of people provided with job seeking support: Whole number (dimensionless)
Description:	Support provided with project proponent to employee before, during and after decommissioning of the CFPP.
Equations	N/A
Source of data:	Records of project proponent.
Description of measurement methods and procedures to be applied:	Description of support provided must be accurate and evidence must be provided. Description must include at least: • Type of support provided (e.g., networking, assistance in interview preparation, etc) • Mode of support provided (e.g., 1-1 sessions improving interview skills, list same/similar job) • Frequency of support provided • Number of people provided with job seeking support • Details of individuals (e.g., name, job profile) that was provided support for job seeking
Frequency of monitoring/recording:	Continuous
QA/QC procedures to be applied:	Where evidence is complete, it can complemented by signed testimonials of the employees. VVB can cross-check with the people who were provided with support.
Purpose of data:	To monitor compliance with validated JT implementation plan and applicability condition 4.3.6
Calculation method:	-

Comments:	-

Data / Parameter:	Compensation to contract workers and/contracted organization
Data unit:	For number of contract workers and contracted organizations: Whole number (dimensionless) Amount of compensation provided to each contract worker and/or contracted organization. Whole number (dimensionless). In the currency of the host country in which the project is located or any other currency deemed relevant (e.g., INR, IDP, USD, EUR, CHF)
Description:	Financial compensation provided to contract worker and/or contracted organization whole contract is being terminated earlier than stipulated contractual period and/or or services reduced.
Equations	N/A
Source of data:	Records of project proponent
Description of measurement methods and procedures to be applied:	Compensation to be as per contract clauses. Where, there is no mention of early contract termination compensation, compensation must be agreed upon terms and conditions and justified in JT implementation plan.
Frequency of monitoring/recording:	Continuous.
QA/QC procedures to be applied:	Cross-check financial receipts with contract clause and agreed-upon terms of the JT. Check if the appropriate compensation is provided within the specified time and periodicity.
Purpose of data:	Where compensation is provided in a currency other than that of the host country, ensure exchange rates are considered appropriately.
Calculation method:	To monitor compliance with validated JT implementation plan and applicability condition 4.3.6
Comments:	N/A

Data / Parameter:	Support to local business dependent on CFPP or its employees
Data unit:	For number of local business and enterprises supported: Whole number (dimensionless) If business and/or enterprises are supported financially: Whole number (dimensionless). In the currency of the host country in which the project is located or any other currency deemed relevant (e.g., INR, IDP, USD, EUR, CHF
Description:	Support provided to local business especially micro and small business that could be impacted by early decommissioning of the CFPP.

Equations	N/A
Source of data:	Records of project proponent
Description of measurement methods and procedures to be applied:	Description of support provided must be accurate and evidence must be provided. Description must include at least: - Details of business and enterprises supported (e.g., name, type of business, etc) - Number of business and enterprises supported - Support provided - financial support, technical support, legal support, etc - Frequency of support provided - e.g., one time financial support to enterprise A, continuous technical support to enterprise B.
Frequency of monitoring/recording:	Continuous
QA/QC procedures to be applied:	For financial support, cross-check financial receipts with bank statements.
Purpose of data:	Check appropriate evidence for other types of support. Interview business owners for support provided.
Calculation method:	To monitor compliance with validated JT implementation plan and applicability condition 4.3.6
Comments:	-

9.3 Description of the Monitoring Plan

1) The project proponent must design and implement a comprehensive and robust monitoring plan. The monitoring procedures must address the following:

- Types of data and information to be reported;
- Units of measurement;
- Origin and/or source of the data;
- Monitoring methodologies (e.g., estimation, modeling, measurement, and calculation
- Type of equipment used;
- Monitoring times and frequencies;
- QA/QC procedures;
- Monitoring roles and responsibilities, including experience and training requirements;
- GHG information management systems, including the location, backup, and retention of stored data;

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- Where measurement and monitoring equipment is used, the project proponent must ensure the equipment is calibrated according to current good practice (e.g., relevant industry standards, manufacturer's specification, etc).
- Roles and responsibilities of the team and if parts of monitoring are being outsourced, a mechanism to ensure compliance to criteria and procedures of monitoring.

2) The QA/QC procedures must include, but are not limited to:
   - Data gathering, input, and handling measures;
   - Input data checked for typical errors, including inconsistent physical units, unit conversion errors;
   - Typographical errors caused by data transcription from one document to another, and missing data for specific time periods or physical units;
   - Input time series data checked for unexpected variations (e.g., orders of magnitude) that could indicate input errors;
   - All electronic files to use version control to ensure consistency;
   - Physical protection of monitoring equipment;
   - Physical protection of records of monitored data (e.g., hard copy and electronic records);
   - Input data units checked and documented;
   - All sources of data, assumptions, and emission factors are documented.
3) All necessary documents must be collected and centrally stored by the project proponent and be available for verification at any time. Documents and records must be stored in a secure and retrievable manner for at least two years after the end of the project crediting period.
4) The monitoring plan must include procedures to ensure competence of teams or team members engaged in technical tasks such as monitoring of data, transmission of renewable electricity. This can be via appropriate and adequate education, demonstrated experience, trainings, etc.
5) The plan must include monitoring of RE capacity directly paired to the accelerated decommissioning of CFPP. This must include but is not limited the following:
   - Details of each RE capacity being directly paired.
   - Status of each directly paired RE. E.g., RE power plant has started construction.
   - Update on the date of commissioning and any material change in the date of commissioning as compared to the proposed date at the start of validation.
   - Where there is material change in date of commissioning, the procedures to identify underpinning rationale and reasons and subsequently procedures to mitigate any negative impacts associated with delayed commissioning.
6) The monitoring plan must establish procedures for at least the following as per the JT plan:

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- Continuous updates to communication pertaining to JT.
- Continuous updates to consensus building among identified stakeholders and project proponents.
- Continuous updates to identified JT relevant policies, programs, grants, etc. and their utilization.
- Implementation and updates for options, provisions and mechanisms to mitigate loss of and ensuring continued livelihood.
- Continuous updates for financial transactions associated with JT plan implementation.
- Updates and changes to the operational and management system

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10 REFERENCES

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11 APPENDIX 1: DOCUMENT HISTORY

Version	Date	Comment
V0.1	4 Dec 2023	Initial draft version for public consultation

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