CLEAN DEVELOPMENT MECHANISM
SMALL-SCALE PROGRAM ACTIVITY DESIGN DOCUMENT FORM (CDM-SSC-CPA-DD)
Version 01

CONTENTS

Annexes

NOTE:

(i) This form is for submission of CPAs that apply a small scale approved methodology using the provision of the proposed small scale CDM PoA.

(ii) The coordinating/managing entity shall prepare a CDM Small Scale Programme Activity Design Document (CDM-SSC-CPA-DD)[1,2] that is specified to the proposed PoA by using the provisions stated in the SSC PoA DD. At the time of requesting registration the SSC PoA DD must be accompanied by a CDM-SSC CPA-DD form that has been specified for the proposed SSC PoA, as well as by one completed CDM-SSC CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the SSC PoA must submit a completed CDM-SSC CPA-DD.

[1] The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

[2] At the time of requesting validation/registration, the coordinating managing entity is required to submit a completed CDM-POA-DD, the PoA specific CDM-CPA-DD, as well as one of such CDM-CPA-DD completed (using a real case).

SECTION A. General description of small scale CDM programme activity (CPA)

A.1. Title of the small-scale CPA:

>>
"CPA Title"
Version: 04
Date: 18/06/2012

A.2. Description of the small-scale CPA:

>>
The proposed small scale CDM Programme Activity "CPA Title" will consist of installation(s) of biomass based heat generation system(s) of biomass boiler(s) and/or heater(s). This CPA consists of one a bundle of small scale Project activity/ties. Investment and Trade Consultancy Company Limited (hereafter referred to as INTRACO) is the Coordinating / Managing Entity (CME) of the PoA. The CPA under the PoA titled "Biomass Heat Generation Development Programme of Activities Managed by INTRACO" CPA Title, CPA Number XXX, is of the following Project Scenario (hereafter also referred as Scenario throughout the document) type,

Project Scenario	Description
1	Biomass fired thermal energy generation in Greenfield Projects or as a Replacement of existing fossil fuel fired equipment.
2	Fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility
3	Addition of renewable energy unit at an existing renewable energy facility

Technology / measures employed: Type I: Renewable Energy Projects.
Category I.C.: "Thermal energy production with or without electricity"; Version 19.
Sectoral Scope: 01, EB 61.

The thermal energy generation from biomass based equipments (boiler or heater) displacing fossil fuel use as per applicable scenarios shall be addressed as Project activity/ies and the Equipment (boiler or heater) Owner(s) shall be addressed as 'CPA operator(s)' in this PoA.

This CPA under the PoA shall lead to Biomass Heat Generation Development in Viet Nam. In the Project activity/ies, the CPA Operator shall use biomass residues for heat generation. The CPA(s) will utilize biomasses for heat generation which is in compliance with "Definition of Renewable Biomass Annex 18 of EB 23" and Glossary of CDM Terms – Version – 05.

The contribution of SSC-CPA to sustainable development in the country:

Social well being
The Project activity/ies generate additional employment to rural poor, direct and indirect through the following:

- Biomass processing & supply management
- Collection & transportation to Project sites
- Promoting farmers to supply the waste biomass
- Biomass fuel handling at Project sites.

Thereby contributing to alleviation of poverty and leading to improvement in the quality of life of the rural people. The programme offers employment opportunities to both genders thereby contributing towards removal of social disparities in addition to improvement to quality of life in rural areas.

Economic well being
The needs of the people are opportunities for employment towards alleviation of poverty. This programme through the Project activities brings additional investments through plant and machinery, storage and transportation systems offering employment opportunities.

Environmental well being
The programme is based on use of renewable biomass, so use of biomass replacing the fossil fuels will reduce GHG emissions in the atmosphere. As the programme is based on use of renewable biomass, it ensures eco-friendliness and sustainability of the resources.

Technological well being

The biomass based heat generation system is environmentally safe and sound technology. The Project activities demonstrate the replicable clean energy technologies in the country.

A.3. Entity/individual responsible for the small-scale CPA:

INTRACO is the Coordinating / Managing Entity (CME) whereas the equipment (Boiler or Heater) owner is addressed as "**CPA operator**". These terminologies are used consistently throughout the CPA- DD.

☐ INTRACO is the Coordinating / Managing Entity of the PoA.
☐ The CPA operator/s is/are the entity/individual responsible for the small scale CPA and they are aware and have agreed that their activity is being subscribed to the PoA.
☐ The CPA Operator – name XXX has given mandate to the CME to consider the inclusion of CPA under PoA.
☐ INTRACO is a Project Participant of the PoA.

The CME has considered the CPA in the PoA. For inclusion it has obtained the mandate from the CPA Operator/s.

A.4. Technical description of the small-scale CPA:

A.4.1. Identification of the small-scale CPA:

>>

The operational and management arrangements established by the CME for the implementation of the PoA are described as below:

Record keeping system for each Project activity under the CPA is as under:

CPA Number	
CPA Operator	
Project Scenario	
Type of equipment	
Project activity	
Boiler /Heater Make	
Boiler/Heater Model	
Working pressure	
Rated steam/heat generation Capacity	
Saturated OR Superheated steam temperature (applicable for boiler only)	
Type of Biomass Fuel	
Type of fuel firing	
Furnace type	
Boiler /Heater Number	
Address of Equipment Installation	
Province	
GPS location	
Commissioning date	
Plant Process	
Steam/Heat Application	

The above unique information for this SSC CPA will avoid double counting of emission reduction.

A.4.1.1. Host Party:

>>

Viet Nam

A.4.1.2. Geographic reference or other means of identification allowing the unique identification of the small-scale CPA (maximum one page):

>>

The CPA included in the PoA is within the geographical boundary of Viet Nam.

The Project activity included in the CPA is implemented within the geographical boundary of Viet Nam covering all the cities and provinces territories. The CPA is being implemented considering all applicable national / sectoral policies and regulations of Viet Nam.

The CPA included in this PoA will follow all applicable national/sectoral policies and regulations within host country as a chosen boundary. There is no national/sectoral policy for biomass based heat generation.

Individual projects under each CPA are identified by detailing all the relevant information as tabulated below. This has enabled the unique identification of Project activity in the CPA. The CPA should be identified by detailing all the relevant information as tabulated below to enable unique identification of the CPA:

Sr. No.	Name of the Company/ Organization	Type - Boiler/Heater, Make, Model, Boiler/ Heater No., Rated Capacity	Address	Commune/ District/City	Global Positioning System		Commissioning Date
					Latitude	Longitude	

Table A.4.1: Identification of Individual Project under each CPA

(---------- Map(s) indicating the location of the Project activity as applicable----------)

Figure XX - Maps indicating the location of the Project activity

A.4.2. Duration of the small-scale CPA:

A.4.2.1. Starting date of the small-scale CPA:

>>

The start date of the CPA is DD/MM/YYYY (to provide justification on the starting date)

Starting date of the SSC CPA mentioned above is the biomass boiler purchase order date of the Project activity in the SSC CPA. This date is considered to be the beginning of the real action for the Project activity, hence considered as the starting date.

☐ Confirmation that the start date of this CPA is not before 11/10/2011 (date of commencement of PoA validation by the appointed DOE).

A.4.2.2. Expected operational lifetime of the small-scale CPA:

>>

☐ For Boiler - 25 Years, 0 months.

☐ For Heater – 15 Years, 0 months.

A.4.3 Choice of the crediting period and related information:

>>

Fixed credit period

A.4.3.1. Starting date of the crediting period:

>>

The starting date of a crediting period of this CPA shall be the date of its inclusion in the registered PoA or any date thereafter and the duration of the crediting period shall not exceed the end date of the PoA.

DD/MM/YYYY the date the CPA is included in the registered PoA.

A.4.3.2. Length of the crediting period, first crediting period if the choice is renewable CPA:

>>

10 years 0 month (The crediting period of each CPA is limited to the end date of the registered PoA)

A.4.4. Estimated amount of emission reductions over the chosen crediting period:

>>

Years	Estimation of annual emissions reductions in tonnes of CO2 e
DD/MM/YYYY to DD/MM/YYYY	XXX
DD/MM/YYYY to DD/MM/YYYY	XXX
DD/MM/YYYY to DD/MM/YYYY	XXX
DD/MM/YYYY to DD/MM/YYYY	XXX
DD/MM/YYYY to DD/MM/YYYY	XXX
DD/MM/YYYY to DD/MM/YYYY	XXX
DD/MM/YYYY to DD/MM/YYYY	XXX
DD/MM/YYYY to DD/MM/YYYY	XXX
DD/MM/YYYY to DD/MM/YYYY	XXX
DD/MM/YYYY to DD/MM/YYYY	XXX
Total estimated reductions(tonnes of CO_2 e)	XXXX
Total number of crediting years	**10**
Annual average of estimated reductions over the crediting period (tCO_2e)	XXX

A.4.5. Public funding of the CPA:

>>

No public funding or ODA from Annex I Parties is involved in the proposed project activity. Thus the project participant hereby confirms that there is no diversion of Official Development Assistance to the project activity.

A.4.6. Information to confirm that the proposed small-scale CPA is not a de-bundled component

>>

The CPA included in the PoA is not a debundled component of another CDM Programme Activity or CDM Project activity:

It has been demonstrated that this CPA included in the PoA is not a debundled component of another CDM Programme of Activites or another CDM Project activity, the following approach has been applied as per the guidance for determining the occurrence of de bundling under a Programme of Activities (EB 54, Annex13), the following Para no. 8, 9 and 10 of EB 54, Annex 13 are given below:

Para 8. For the purposes of registration of a Programme of Activities (PoA)[3] *a proposed small-scale CPA of a PoA shall be deemed to be a de-bundled component of a large scale activity if there is already an activity*[4]*, which satisfies both conditions (a) and (b) below:*

(a) Has the same activity implementer as the proposed small scale CPA or has a Coordinating or Managing entity, which also manages a large scale PoA of the same technology/measure, and;
Substantiation: ……(proper justification to be provided)

(b) The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point.
Substantiation: ……(proper justification to be provided and list all projects within 1 Km)

Para 9. If a proposed small-scale CPA of a PoA is deemed to be a debundled component in accordance with paragraph 2 above, but the total size of such a CPA combined with a registered small-scale CPA of a PoA or a registered CDM Project activity does not exceed the limits for small-scale CDM and small-scale A/R Project activities as set out in Annex II of the decision 4/CMP.1[5] *and 5/CMP.1 respectively, the CPA of a PoA can qualify to use simplified modalities and procedures for small-scale CDM and small-scale A/R CDM Project activities.*

Substantiation: ……(proper justification to be provided)

[3] Only those POAs need to be considered in determining de-bundling that are: (i) in the same geographical area; and (ii) use the same methodology; as the POA to which proposed CPA is being added

[4] Which may be a (i) registered small-scale CPA of a PoA, (ii) an application to register another small-scale CPA of a PoA or (iii) another registered CDM Project activity

[5] Limits have been revised as set in paragraph 28 of decision 1/CMP.2

Para 10. If each of the independent subsystems/measures (e.g. biogas digester, solar home system) included in the CPA of a PoA is no larger than 1% of the small scale thresholds defined by the methodology applied, than that CPA of PoA is exempted from performing de-bundling check i.e. considered as being not a de-bundled component of a large scale activity.

Substantiation: ……(proper justification to be provided)

The CPA does not satisfy both the conditions of Para 8 (a) & 8 (b) and hence the proposed small scale CPA under PoA is not deemed to be de-bundled component of a large-scale activity, therefore is eligible to use the simplified modalities and procedures for small-scale project activities

The CPA operator name XXX has given a declaration to CME that the Project activity is not a de-bundled component of large scale Project.

The CME confirms that the Project activity is as per EB 54 annex 13 guideline of de-bundling and the Project activity not a de-bundled component of large scale Project activity.

A.4.7. Confirmation that small-scale CPA is neither registered as an individual CDM project activity or is part of another Registered PoA:

>>

☐ The CPA operator name XXX confirms that this small-scale CPA is not registered as an individual CDM Project activity.

☐ The CPA operator name XXX confirms that this small-scale CPA is not part of another Registered PoA.
(Refer eligibility criteria 2 under section B.2)

SECTION B. Eligibility of small-scale CPA and Estimation of emissions reductions

B.1. Title and reference of the Registered PoA to which small-scale CPA is added:

>>

Title: Biomass Heat Generation Development Programme of Activities Managed by INTRACO

Reference of Registered PoA: XXX
Version: XXX
Date: DD/MM/YYY

B.2. Justification of the why the small-scale CPA is eligible to be included in the Registered PoA:

>>

The proposed CPA is eligible to be included in the corresponding PoA by qualifying the following eligibility criteria as stated in the PoA:

Nr.	Eligibility criteria description	Description of conditions to be met and reference document	Condition met?
1.	Ref: EB 65, Annex 3 Para.14 (a): The boundary of the implemented CPA is within the geographical territory of Vietnam.	The following documents shall be provided: ☐ Business license of the CPA Operator issued by Vietnamese authorities. ☐ Declaration from the CPA Operator confirm that the boundary of the implemented CPA is within the geographical territory of Vietnam and including information regarding geographic reference (latitude and longitude), name and address of the SSC-CPA.	☐ Yes ☐ No
2.	Ref: EB 65, Annex 3 Para.14 (b): Confirmation that the CPA is not registered or being registered as a stand-alone CDM project outside of this PoA, a bundled CDM Project Activity or another registered PoA which leads to double counting of emission reductions and confirmation on the unique identification of the CPA location.	The following document shall be provided: ☐ Declaration from the CPA Operator confirming that the project is not registered or in the process of being registered as a stand-alone CDM project, outside of the PoA, a bundled CDM Project Activity or another registered PoA. ☐ Confirmation described in the SSC-CPA-DD that states that the project is not registered or in the process of being registered as a stand-alone CDM project, outside of the PoA. ☐ Confirmation check by reviewing the website of the UNFCCC/DNA by the CME. ☐ Confirmation on the unique identification of the CPA location (latitude and longitude)	☐ Yes ☐ No
3.	Ref: EB 65, Annex 3 Para.14 (c): The proposed CPA shall include Project activities of biomass heat generation system from any of the following Project Scenarios only: **Project scenario 1:** Biomass fired thermal energy generation in	**For the project scenario 1**, "*Biomass fired thermal energy generation in Greenfield Projects or as a Replacement of existing fossil fuel fired equipment*" the following documents shall be provided: ☐ Declaration from CPA Operator to CME.	☐ Yes

[6] http://cdm.unfccc.int/methodologies/SSCmethodologies/clarifications/06563
[7] http://cdm.unfccc.int/methodologies/SSCmethodologies/clarifications/40659

	Greenfield Projects or as a Replacement of existing fossil fuel fired equipment (may use fossil fuel as backup fuel). **Project scenario 2:** Fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility. (may use fossil fuel as backup fuel) **Project scenario 3:** Addition of renewable energy unit at an existing renewable energy facility. (may use fossil fuel as backup fuel)	☐ Purchase contract/order of equipment For a replacement of existing fossil fuel fired equipments, additional documents shall be provided: ☐ Declaration from CPA Operator shall submit a declaration stating whether the existing equipment is scrapped or kept as a stand-by. ☐ Test Certificate of existing equipments In case of replacement of existing equipment, the new equipment shall have equal or higher capacity than the existing equipment otherwise the Project activity is not eligible to be considered as a CPA under the PoA. (refer: Clarification SSC_336[6]) In case of scrapping of existing equipment, the scrapping procedure as per section E.7.2 of PoA-DD must be followed **For project scenario 2** *"Fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility"* the following documents to be provided: ☐ Confirmation from CME that It shall be confirmed there is a fuel switch from fossil fuel to biomass by modification including retrofit of an existing facility (Refer: Clarification SSC_374[7]). ☐ Residual life assessment report of existing equipment which will be modified or retrofitted for fuel switching. ☐ Purchase contract/order for modification and retrofit of energy equipment ☐ Declaration by CPA operator that fossil fuel usage only in case of backup or unscheduled unavailability of biomass. ☐ Baseline Identification Report by CME with confirm by CPA Operator to	☐ No

		demonstrate the historical fossil fuel usage by providing historical information (detailed records) on the use of energy sources (e.g., electricity, fossil fuel) and the existing facilities output (e.g., steam/heat) in the baseline facilities for a minimum one year ☐ Test Certificate of existing equipments prior to be modified including retrofit The residual life of the existing equipment is more than the crediting period of the CPA that to be eligible under this PoA. **For project scenario 3:** "*Addition of renewable energy unit at an existing renewable energy facility*" the following documents to be provided: ☐ Purchase contract/order of equipments of the addition equipments ☐ The Declaration by CPA Operator to CME that the total capacity of units added by the CPA including the existing renewable energy facility has to be equal or less than 45 MW thermal ☐ The declaration by the CPA Operator that Existing renewable facility and new renewable facility added should be physically distinct. (Physically distinct units are those that are capable of producing thermal energy without the operation of existing units, and that do not directly affect the characteristics of the existing facility).	
4.	Ref: EB 65, Annex 3 Para.14 (d): The start date of the CPA shall not be before the commencement of validation of the PoA as a whole (date the PoA was published for global stakeholders comment on the website of the UNFCCC 11/10/2011)	The following document shall be provided: ☐ Purchase contract/order of equipments ☐ The earliest construction contract The date of signing of the earliest contract by the CPA Operator shall constitute the starting date of the CPA.	☐ Yes ☐ No

		In case CPA Operator has not committed to expenditures related to the implementation of the CPA, it shall be concluded that this eligibility requirement has been met.	
5.	Ref: EB 65, Annex 3 Para.14 (e): The CPA shall meet all the application of the methodology AMS-I.C/Version 19	The CPA will provided the documents as per application of AMS-I.C/Version 19 as defined in the criteria from No. 15 to 31 of this eligibility criteria description	☐ Yes ☐ No
6.	Ref: EB 65, Annex 3 Para.14 (f): The additionality for each CPA is demonstrated by any one of the following approaches: **Approach 1:** EB 63 Annex 23 'Guidelines for Demonstrating Additonality of Microscale Project Activities'(Version 03). Or **Approach 2:** As per Attachment A to Appendix B of the "Simplified Modalities and Procedures for small – scale CDM Project activities", Version 08, EB 63, Annex 24 additionality is demonstrated only by Investment barrier route.	CPAs that are inline with the additionality guidelines as per Approach 1 or Approach 2. **In case of Approach 1**: the CPAs that employ renewable energy as primary technology are additional, if any of the conditions as per EB 63 Annex 23 'Guidelines for Demonstrating Additonality of Microscale Project Activities'(Version 03) The CPA that employs renewable energy as primary technology shall be additional as per Approach 1 only if the following condition is satisfied: The CPA is for distributed energy generation where in each of the independent subsystem/ measure in the Project activity is smaller than or equal to 4500 kW thermal installed capacity and the end users of subsystems or measures are SMEs, the following documents shall be provided ☐ Technical specifications of equipment and purchase contract for the equipment ☐ A letter from a local authority regarding end user being a SME as Governmental guidelines. In case of Approach 2, the additionality demonstration shall be inline with	☐ Yes ☐ No

		"Attachment A to Appendix B" investment barrier following the Levelized Unit Cost (LUC) method using a fixed template called as (LUC template). The LUC of steam / heat generation from at least one fossil fuel must be less than the LUC of steam / heat generation from each type of biomass feasible for the CPA, the following document shall be provided: ☐ The Levelized Unit Cost of the CPA	
7.	Ref: EB 65, Annex 3 Para.14 (g): A CPA level local stakeholder's consultation and environmental impact analysis has to be carried out prior to inclusion.	The CPA level local stakeholder consultation and environmental impact analysis shall be carried out prior to inclusion, the following documents shall be provided: ☐ The stakeholder consultation report ☐ Environmental impact analysis report and its approved by a local authority	☐ Yes ☐ No
8.	Ref: EB 65, Annex 3 Para.14 (h): Confirmation on involvement of public funding or ODA from Annex I Parties in SSC-CPA	The following document shall be provided: ☐ Declaration from the CPA Operator regarding the no involvement of public funding or ODA from Annex I Parties.	☐ Yes ☐ No
9.	Ref: EB 65, Annex 3 Para.14 (i): Target group set by the CME for selected CPAs that the CPA shall only utilize renewable biomass which are in line with the "*Definition of Renewable Biomass*" as per Annex 18 of EB 23 and "Glossary of CDM terms (Version 05)", Charcoal shall not be used at all by the CPA activity and Information on Biomass availability in the region of the CPA shall be available.	The following document shall be provided: ☐ Declaration from CPA Operator for using renewable biomass ☐ Regional Biomass Availability Study carried out by Third Party.	☐ Yes ☐ No
10.	Ref: EB 65, Annex 3 Para.14 (j): The CPA Operator has signed a valid contractual agreement with the CME which permits its	The following document shall be provided: ☐ Contractual agreement between CME and CPA Operator.	☐ Yes ☐ No

	participation and inclusion in the PoA and specifies the duties and responsibilities of a CPA Operator and the acceptance of the terms and conditions of the PoA including the conditions related to sampling requirements for a PoA in accordance with the approved guidelines/standard from the Board pertaining to sampling and surveys		
11.	Ref: EB 65, Annex 3 Para.14 (k): The SSC-CPA in aggregate meets the small-scale or microscale threshold criteria and remains within those threshold throughout the credit period of the CPA	The following document shall be provided: ☐ Declaration from CPA Operator	☐ Yes ☐ No
12.	Ref: EB 65, Annex 3 Para.14 (l): Confirmation that the CPA is not a de-bundled component of another large-scale CPA or CDM project activity as per latest guidance given by the CDM Executive Board	The following document shall be provided: ☐ Declaration from the CPA Operator confirming that the CPA is not a de-bundled component of another large-scale CPA or CDM project activity as per latest guidance given by the CDM Executive Board.	☐ Yes ☐ No
13.	Confirmation on the crediting period of the CPA which shall not exceed the length of the PoA (28 years from the date of the PoA approved by the Board to be registered) regardless of the time of inclusion of CPA in the PoA	The following document shall be provided: ☐ Confirmation from CPA Operator	☐ Yes ☐ No
14.	The CPA activities involve in installation of biomass equipments for displacement of the existing fossil fuel equipment or retrofit/ modify an the existing fossil fuel equipment for biomass energy generation are only eligible if the remaining lifetime of the equipment estimated is more than the crediting period of the CPA activity	The following documents shall be provided: ☐ Baseline identification report to define the historical commissioning, operation and fossil fuel usage of the existing equipments ☐ First Commissioning Report the existing equipments ☐ Certificate given by inspectorate of the existing equipments ☐ Confirmation from the existing equipment Operator	☐ Yes ☐ No
The proposed CPA shall meet the applicability criteria of the methodology AMS-I.C./ Version 19 as elaborated below:			

15	Ref: AMS-I.C./ Version 19, Para.1: This methodology comprises renewable energy technologies that supply users with thermal energy that displaces fossil fuel use. These units include technologies such as solar thermal water heaters and dryers, solar cookers, energy derived from renewable biomass and other technologies that provide thermal energy that displaces fossil fuel.	The project activities in any of the CPA under the PoA shall utilize renewable biomass that displaces fossil fuel for the generation of thermal energy in boilers/heaters. The following documents shall be provided: ☐ Purchase contract/order of equipment ☐ Confirmation from CPA Operator	☐ Yes ☐ No
16	Ref: AMS-I.C./ Version 19, Para.2: Biomass-based cogeneration systems are included in this category. For the purpose of this methodology "cogeneration" shall mean the simultaneous generation of thermal energy and electrical energy in one process. Project activities that produce heat and power in separate element processes (for example heat from a boiler and electricity from a biogas engine) do not fit under the definition of cogeneration project.	The project activities in any of the CPA under the PoA comprise of biomass-based system for thermal energy generation only. Co-generation projects are excluded from the PoA The following documents shall be provided: ☐ Purchase contract/order of equipment ☐ Confirmation from CPA Operator	☐ Yes ☐ No
17	Ref: AMS-.I.C./ Version 19, Para.3: Emission reductions from a biomass cogeneration system can accrue from one of the following activities: a) Electricity supply to a grid; b) Electricity and/or thermal energy (steam or heat) production for on-site consumption or for consumption by other facilities; c) Combination of (a) and (b).	The CPA shall not involve any cogeneration system or electricity generation The following documents shall be provided: ☐ Purchase contract/order of equipment ☐ Confirmation from CPA Operator	☐ Yes ☐ No
18	Ref: AMS-.I.C./ Version 19, Para.4: The total installed/rated thermal energy generation capacity of the	The total installed/rated thermal energy generation capacity of all project activities under each CPA will be equal to or less than 45MW thermal	☐ Yes ☐ No

	project equipment is equal to or less than 45 MW thermal (see paragraph 6 for the applicable limits for cogeneration project activities).	The following documents shall be provided: ☐ Purchase contract/order of equipment ☐ Confirmation from the equipment supplier	
19	Ref: AMS-.I.C./ Version 19, Para.5: For co-fired systems, the total installed thermal energy generation capacity of the project equipment, when using both fossil and renewable fuel, shall not exceed 45 MW thermal (see paragraph 6 for the applicable limits for cogeneration project activities).	The CPA is co-fired sysem (the simultaneous combustion of both biomass residues and fossil fuels in a single equipment), the total installed thermal energy generation capacity of the CPA equipment, when using both fossil and renewable fuel, shall not exceed 45 MW thermal The following documents shall be provided: Purchase contract/order of equipment Confirmation from CPA Operator	☐ Yes ☐ No
20	Ref: AMS-.I.C./ Version 19, Para.6: The following capacity limits apply for biomass cogeneration units: (a) If the project activity includes emission reductions from both the thermal and electrical energy components, the total installed energy generation capacity (thermal and electrical) of the project equipment shall not exceed 45 MW thermal. For the purpose of calculating this capacity limit the conversion factor of 1:3 shall be used for converting electrical energy to thermal energy (i.e. for renewable energy project activities, the maximal limit of 15 MW(e) is equivalent to 45 MW thermal output of the equipment or the plant);	The CPA selected shall not involve any cogeneration system The following documents shall be provided: ☐ Purchase contract/order of equipment ☐ Confirmation from CPA Operator	☐ Yes ☐ No

	(b) If the emission reductions of the cogeneration project activity are solely on account of thermal energy production (i.e. no emission reductions accrue from electricity component), the total installed thermal energy production capacity of the project equipment of the cogeneration unit shall not exceed 45 MW thermal; (c) If the emission reductions of the cogeneration project activity are solely on account of electrical energy production (i.e. no emission reductions accrue from thermal energy component), the total installed electrical energy generation capacity of the project equipment of the cogeneration unit shall not exceed 15 MW.		
21	Ref: AMS-.I.C./ Version 19, Para.7: The capacity limits specified in the above paragraphs apply to both new facilities and retrofit projects. In the case of project activities that involve the addition of renewable energy units at an existing renewable energy facility, the total capacity of the units added by the project should comply with capacity limits in paragraphs 4 to 6, and should be physically distinct from the existing units.	The total installed/rated thermal energy generation capacity of all the Project activities (new and/or retrofit) under each CPA will be determined according to the manufacturer's rated thermal energy output and shall be equal to or less than 45 MW thermal. In the case of Project activities that involve the addition of renewable energy units at an existing renewable energy facility, the total capacity of the units added shall be equal to or less than 45 MW thermal. The CPA Operator shall ensure that the proposed CPA activity is physically distinct from the existing units. The following documents shall be provided: ☐ Purchase contract/order of equipment ☐ Confirmation from CPA Operator	☐ Yes ☐ No
22	Ref: AMS-.I.C./ Version 19, Para.8: Project activities that seek to retrofit or modify an existing	Project activities that seek to retrofit or modify of an existing facility for the purpose of fuel switch from fossil fuels to biomass residues in the heat	

	facility for renewable energy generation are included in this category.	generating equipment, such type of Project activities are included as a CPA in the PoA. The following documents shall be provided: ☐ Purchase contract/order of retrofit or modified equipment	☐ Yes ☐ No ☐ N/A
23	Ref: AMS-.I.C./ Version 19, Para.9: New Facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the "General Guidelines to SSC CDM methodologies".	The CPA selected as New Facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario shall comply with the related and relevant requirements in the "General Guidelines to SSC CDM methodologies". The following document shall be provided: ☐ Purchase contract/order of equipment ☐ Confirmation from CPA Operator	☐ Yes ☐ No
24	Ref: AMS-.I.C./ Version 19, Para.10: If solid biomass fuel (e.g. briquette) is used, it shall be demonstrated that it has been produced using solely renewable biomass and all project or leakage emissions associated with its production shall be taken into account in the emissions reduction calculation.	In case of solid biomass fuel (e.g briquette) is used by a CPA, the respective CPA Operator shall demonstrate that the biomass has been produced using solely renewable biomass and all project or leakage emissions associated with its production shall be taken into account in the emissions reduction calculation The following document shall be provided: ☐ Confirmation from CPA Operator ☐ Confirmation from the biomass supplier	☐ Yes ☐ No
25	Ref: AMS-.I.C./ Version 19, Para.11: Where the project participant is not the producer of the processed solid biomass fuel, the project participant and the producer are bound by a contract that shall enable the project participant to monitor the source of the	In case of solid biomass fuel (e.g briquette) is used by a CPA where the project participant is not the producer of the processed solid biomass fuel, the project participant of the CPA and the producer are bound by a contract that shall enable the project participant to monitor the source of the renewable biomass to account for any emissions	

	renewable biomass to account for any emissions associated with solid biomass fuel production. Such a contract shall also ensure that there is no double-counting of emission reductions.	associated with solid biomass fuel production. Such a contract shall also ensure that there is no double-counting of emission reductions The following documents shall be provided: ☐ A contract between biomass producer and CPA Operator to allow CPA Operator to monitor the source of the renewable biomass to account for any emissions associated with solid biomass fuel production including that there is no double-counting of emission reductions	☐ Yes ☐ No
26	Ref: AMS-.I.C./ Version 19, Para.12: If electricity and/or steam/heat produced by the project activity is delivered to a third party i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered into that ensures there is no double-counting of emission reductions.	If electricity and/or steam/heat produced by the project activity is delivered to a third party i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will be entered into that ensures there is no double-counting of emission reductions. The following documents shall be provided: ☐ A contract between a third party steam/heat user and CPA Operator for no double-counting of emission reductions	☐ Yes ☐ No
27	Ref: AMS-.I.C./ Version 19, Para.13: If the project activity recovers and utilizes biogas for power/heat production and applies this methodology on a stand alone basis i.e. without using a Type III component of a SSC methodology, any incremental emissions occurring due to the implementation of the project activity (e.g. physical leakage of the anaerobic digester, emissions due to inefficiency of the flaring), shall be taken into account either as project or leakage emissions.	The selected CPA shall not recovers and utilizes biogas for power/heat production The following document shall be provided: ☐ Confirmation from CPA Operator	☐ Yes ☐ No

28	Ref: AMS-.I.C./ Version 19, Para.14: Charcoal based biomass energy generation project activities are eligible to apply the methodology only if the charcoal is produced from renewable biomass sources[10] provided: a) Charcoal is produced in kilns equipped with methane recovery and destruction facility; or b) If charcoal is produced in kilns not equipped with a methane recovery and destruction facility, methane emissions from the production of charcoal shall be considered. These emissions shall be calculated as per the procedures defined in the approved methodology AMS-III.K.[11] Alternatively, conservative emission factor values from peer reviewed literature or from a registered CDM project activity can be used, provided that it can be demonstrated that the parameters from these are comparable e.g. source of biomass, characteristics of biomass such as moisture, carbon content, type of kiln, operating conditions such as ambient temperature.	The CPA selected does not involve charcoal based biomass energy generation The following document shall be provided: ☐ Confirmation from CPA Operator	☐ Yes ☐ No
29	Ref: AMS-.I.C./ Version 19, Para.47: If the energy generating equipment currently being utilised is transferred from outside the boundary to the project activity, leakage is to be considered.	The selected CPA shall describe clearly in the CPA DD If the energy generating equipment currently being utilised is transferred from outside the boundary to the CPA, the leakage is to be considered in the CPA DD	☐ Yes ☐ No

[10]Refer to EB 23, annex 18 for the definition of renewable biomass.
[11]AMS-III.K "Avoidance of methane release from charcoal production by shifting from traditional open-ended meth
to mechanized charcoaling process"

		The following document shall be provided: ☐ Confirmation from CPA Operator	
30	Ref: AMS-.I.C./ Version 19, Para.48: In cases where the collection/processing/transportation of biomass residues is outside the project boundary CO2 emissions from the collection/processing/transportation of biomass residues to the project site shall be taken into account as leakage	The selected CPA shall describe clearly in the CPA DD where the collection/processing/transportation of biomass residues is outside the project boundary CO2 emissions from the collection/processing/transportation of biomass residues to the project site shall be taken into account as leakage The following document shall be provided: ☐ The biomass supply plan by the biomass supplier which clearly define in detail where biomass comes from, how it process/transport to determine the leakage to be taken into account	☐ Yes ☐ No
31	Ref: AMS-.I.C./ Version 19, Para.51: The following conditions apply for use of this methodology in a project activity under a programme of activities: a) In the specific case of biomass project activities the applicability of the methodology is limited to either project activities that use biomass residues or processed biomass (e.g. briquette) only or biomass from dedicated plantations complying with the applicability conditions of AM0042; b) In the specific case of biomass project activities the determination of leakage shall be done following the general guidance for leakage in small-scale biomass project activities (attachment C of Appendix B	A CPA project activity under this PoA shall satisfy the following: (a) The CPAs under PoA shall only use of biomass residues as per "Definition of Renewable Biomass Annex 18 of EB 23" and and shall not consider the biomass from dedicated plantations complying with the applicability conditions of AM0042. (b) The CPA under this PoA, the determinate of leakage shall be done following the general guidance for leakage in small-scale biomass project activities (attachment C of Appendix B of simplified modalities and procedures for small-scale clean development mechanism project activities; decision 4/CMP.1) (c) The CPA will give a declaration that in case CPA involves replacement of equipment, the leakage from the use of the replaced equipment in another	☐ Yes ☐ No

	of simplified modalities and procedures for small-scale clean development mechanism project activities; decision 4/CMP.1) or following the procedures included in the leakage section of AM0042; c) In case the project activity involves the replacement of equipment, and the leakage from the use of the replaced equipment in another activity is neglected, because the replaced equipment is scrapped, an independent monitoring of scrapping of replaced equipment needs to be implemented. The monitoring should include a check if the number of project activity equipment distributed by the project and the number of scrapped equipment correspond with each other. For this purpose scrapped equipment should be stored until such correspondence has been checked. The scrapping of replaced equipment should be documented and independently verified.	activity shall be neglected, because the replaced equipment shall be scrapped and an independent monitoring of scrapping of replaced equipment shall be implemented by a recognized independent agency (refer section E.7.2: Scrapping of equipment). The scrapping of replaced equipment shall be documented and independently verified. The scrapped equipment shall be stored until such correspondence has been checked. The following document shall be provided: ☐ Confirmation from CPA Operator	

B.3. Assessment and demonstration of additionality of the small-scale CPA, as per eligibility criteria listed in the Registered PoA:

>>

The assessment and demonstration of additionality of the CPA has been based on the criteria mentioned in the section E.5.2 of the PoA-DD.

The Additionality for the Project activity is demonstrated by

☐ Approach 1

☐ Approach 2

As prescribed in the simplified modalities and procedures of small scale CDM Project activities, the

CPA can demonstrate the additionality as per any of the prescribed approaches.

Additionality Justification:

The additionality for the SSC-CPA is demonstrated by Approach 1 or Approach 2, applicable for the Project activity.

☐ Approach 1- EB 63 Annex 23 'Guidelines for Demonstrating Additonality of Microscale Project Activities'(Version 03)

According to paragraph 2(c) of EB 63 Annex 23, Project activities up to 5 megawatts that employ renewable energy as their primary technology are additional if the below conditions are satisfied:

(b) The Project activity is designed for distributed energy generation (not connect to a national or regional grid) with both conditions (i) and (ii) satisfied (see below);

(i) Each of the independent subsystem/measure in the Project activity is smaller than or equal to 1500 kW electrical installed capacity;
(ii) End users of the subsystem or measure are households/communities/ small and medium enterprises (SMEs)

The PoA will employ renewable energy technologies as their primary technology and this will be applicable for distribution of thermal energy generation. Project activities shall be eligible under Approach 1 only if each of the independent subsystem / measure in Project activity is smaller than or equal to 4500 $kW_{thermal}$ (1500 kWe x 3)[12] installed capacity and end user are households / communities / small and medium enterprises (SMEs).

Note –Justification to be provided as per below

☐ Technical specifications of equipment and purchase order of the equipment.
☐ Confirmation by CME on approach
☐ Declaration letter regarding end user being a SME applicable as per Government guideline

OR

☐ Approach 2 - The Project activity attempting Investment barrier analysis which shall be demonstrated as per Attachment A to the Appendix B.

A typical CPA in this PoA consists of installation(s) of the biomass based boiler/heater system. As prescribed in the simplified modalities and procedures of small scale CDM Project activities, the Project can demonstrate the additionality as per Attachment A to Appendix B, approach 2.

Attachment A to appendix B is referred to demonstrate the Additionality to show that the Project activity

[12] Multiply by 3 to derive thermal capacity from electricity capacity according to AMS I.C ver.19 para. 6a)

would not have occurred anyway.

Investment Barrier

The investment barrier shall be demonstrated based on the investment analysis Sub-step 2b, Option II – Apply Investment Comparison Analysis of the 'Tool for the demonstration and assessment of additionality' as per the applicable EB guidance.

Financial additionality of the Projects is demonstrated based on investment comparison analysis by using Levelized Unit Cost (LUC) of steam/heat generation as financial indicator. The data and the supporting documents are submitted to DOE during validation for inclusion of the CPA.

The investment comparison analysis is carried out with the most plausible alternatives for the Project activity. The unit cost of steam/heat generation from Biomass fuel is compared with the other fossil fuel alternatives.

The PoA-DD Levelized Unit Cost templates which provide the key parameters for financial assessment as per Annex 3 have been provided to DOE for validation. It shall be demonstrated by providing financial calculations as per the template having the condition that the LUC of a typical SSC-CPA Project activity operating on biomass is less than the baseline alternative then Project is not eligible. Only if the LUC of the Project activity is more than the fossil fuel fired baseline alternative, the SSC-CPA is considered as additional and eligible.

Conclusion:

1. The Project activity is a voluntary initiative.
2. The PoA is not implementing any mandatory policy/regulation requirements in Viet Nam which enforces the use of biomass based heat generation system.

Hence, this PoA is enabling a number of users to opt for biomass based thermal (heat/steam) energy generation system. In the absence of CDM revenues, this proposed voluntary measure would not have been implemented.

The following alternative fuels are available to the CPA operator name XXX to generate steam/heat for his process heating application at the time of decision making context-

- Fossil fuel alternative no 1
- Fossil fuel alternative no XX
- Biomass residue (XX)

Fossil fuel alternative no 1

(CPA operator to provide clear description and justification of the alternative with supporting evidence)

Fossil fuel alternative no XX

(CPA operator to provide clear description and justification of the alternative with supporting evidence)

Biomass residue (XX)
(CPA operator to provide clear description and justification of the alternative with supporting evidence)

The CPA operator has worked out the LUC for the above alternatives available to the proposed project by using parameters mentioned in assumption sheet (refer LUC spreadsheet) and compared it with the LUC of steam / heat generation for proposed Project activity fuel i. e. Biomass residues.

The unit cost was levelized based on the data available at the time of decision making context which in conformance with paragraph 13 of guidelines Annex 5 of EB 62 and "Tool for the demonstration and assessment of additionality" Version 6.0.0., Sub-step 2b Option III (30) (b).

The cost analysis reveals the following levelized unit cost of thermal generation for above mentioned fuel alternatives considered and justified as bellows:

Table B.3.1: Input data used for LUC calculation of the CPA

(---------- to insert the input data table and justification ----------)

1. Result of Financial Assessment

☐ LUC of Project activity is submitted to DOE

Alternative fuels	Levelized Unit Cost (LUC) in VND for ☐ steam per kg/ ☐Heat per Million Kcal
Fossil fuel alternative no 1 –	
Fossil fuel alternative no XX -	
Project activity – Biomass residue (XX)	

(Note - Further elaboration if necessary or applicable)

As can be assessed the LUC of at least one fossil fuel alternative is lesser than that of LUC of Biomass and thus the CPA Project activity is additional. It is demonstrated that the CDM benefits alleviates the investment barrier for the Project activity.

2. Result of Sensitivity Analysis

The purpose of the sensitivity analysis is to determine whether the Project activity is more favourable than the cheapest alternative when the critical parameters are subjected to reasonable variation. Only if in spite of variations of the critical parameters the Project activity remains financially unattractive than the cheapest alternative, then the Project activity is additional. The sensitivity analysis has been carried out by varying critical parameters which are unit price of biomass residue (XX) (VND/kg or VND/Million Kcal) and NCV of biomass residue (XX) by +10% / -10% inline with Annex 5 of EB 62.

As per EB 62, Annex 5 paragraph 20, the variable parameters which contribute towards change in more than 20 % of the total cost are critical and need to be subjected to the sensitivity analysis. The sensitivity analysis is carried out twice in the following manner:

1. The sensitivity analysis is carried out by keeping the Fossil fuel alternative XX price and the NCV of biomass residue (XX) fixed and varying the unit price of biomass residue (XX) (VND/kg or VND/ Million Kcal)) by +10% / -10%.
2. The sensitivity analysis is carried out by keeping the Fossil fuel alternative XX price and the unit price of biomass residue (XX) (VND/kg or VND/ Million Kcal)) fixed and varying NCV of biomass residue (XX) by +10% / -10%.

The results of the sensitivity analysis are presented in the Table B.3.2 below:

Levelized Unit Cost (VND/kg or VND/ Million Kcal)) of Steam / Heat Generated - Biomass residue (XX)			
Variable Factor	-10%	Base case	+10%
Fuel price			
NCV_k			

Table B.3.2: Sensitivity Analysis of LUC of steam / heat on Biomass residues (XX) (Additional justification to be provided if necessary)

Sensitivity analysis by varying biomass residue (XX) price +/- 10%:

The objective of this sensitivity analysis is to determine whether the Project activity would pass the benchmark or become more favorable than the alternative within a reasonable range of variations in the Project context. As per the methodology the reasonable variations in the sensitivity analysis should at least cover a range of +10% and –10%.

In case the prices are increased by 10% above the base price, the difference between the LUC of steam/heat from fossil fuel and biomass residue (XX) becomes wider and is not becoming favourable than the alternative.

It is clearly demonstrated by the sensitivity analysis that even after reducing the biomass residue (XX) price by 10% below its base price the Levelized Unit Cost of steam/heat from biomass residue (XX) is not becoming favourable than the alternative .

Sensitivity analysis by varying NCV of biomass residue (XX) by +/- 10%:

The objective of this sensitivity analysis is to determine whether the Project activity would become more favorable than the alternative within a reasonable range of variations in NCV of biomass residue (XX) in the Project context. As per the methodology the reasonable variations in the sensitivity analysis should at least cover a range of +10% and –10%.

In case the NCV is decreased by 10% below the base value, the difference between the LUC of steam/heat from fossil fuel and biomass residue (XX) becomes wider and is not becoming favourable

than the alternative.

It is clearly demonstrated by the sensitivity analysis that even after increasing the biomass residue (XX) NCV by 10% above its base value, the Levelized Unit Cost of steam from biomass residue (XX) is not passing the benchmark of base LUC and is not becoming favourable than the alternative .

Based on the sensitivity analysis done by variation of +/- 10% on Biomass residue (XX) price and Biomass residue (XX) NCV, it can be concluded that, without the Project being registered under the PoA, the CPA Operator would have invested in fossil fuel based boiler to generate thermal energy rather than in Biomass residue (XX) fired Boiler.

The thermal energy generation with biomass residue (XX) is not the cost effective way of steam/heat generation. In spite of investment barrier, the CPA Operator has opted for Project activity to initiate this GHG emission reduction project under Clean Development Mechanism by considering CDM revenue. The LUC for the steam generation with biomass residue (XX) considering the CDM revenue alleviates the investment barrier for the Project activity.

3. **Prior Consideration of the CDM:**
The CPA operator has seriously considered the CDM benefits before implementation of the project. The prior consideration for proposed Project activity as per paragraph 6, 7 and 8 of Annex 13 of EB 62 is mentioned below –

Main Event	**Date**
Board Resolution /Decision of the CPA operator regarding prior consideration of CDM and investment decision.	DD/MM/YYYY
Contractual Agreement between CME and CPA operator	
Purchase order for equipment (starting date)	
Commissioning of Equipment	

(Note – the above events need not be as per the chronological order mentioned, and substantiated if necessary)

B.4. Description of the sources and gases included in the project boundary and proof that the small-scale CPA is located within the geographical boundary of the registered PoA.

>>
As per paragraph 15 of AMS I.C, version 19, the project boundary for the proposed CPA is

a) All plants generating power and/or heat located at the project site, whether firedwith biomass, fossil fuels or a combination of both;
b) All power plants connected physically to the electricity system (grid) that the project plant is connected to;
c) Industrial, commercial or residential facility, or facilities, consuming energy generated by the system and the processes or equipment affected by the project activity;
d) The processing plant of biomass residues, for project activities using solid biomass fuel (e.g. briquette), unless all associated emissions are accounted for as leakage emissions;

e) The transportation itineraries, if the biomass is transported over distances greater than 200 kilometres, unless all associated emissions are accounted for as leakage emissions;
f) The site of the anaerobic digester in the case of project activity that recovers and utilizes biogas for power/heat production and applies this methodology on a stand alone basis i.e. without using a Type III component of a SSC methodology.

For this CPA project activity para a), or/and b), c), d), e), f) are applicable which is indicated in the below diagram and the write up.

☐ **Figure B.4.1: Project Boundary for Scenario 1**

☐ **Figure B.4.2: Project Boundary for Scenario 2**

☐ **Figure B.4.3: Project Boundary for Scenario 3**

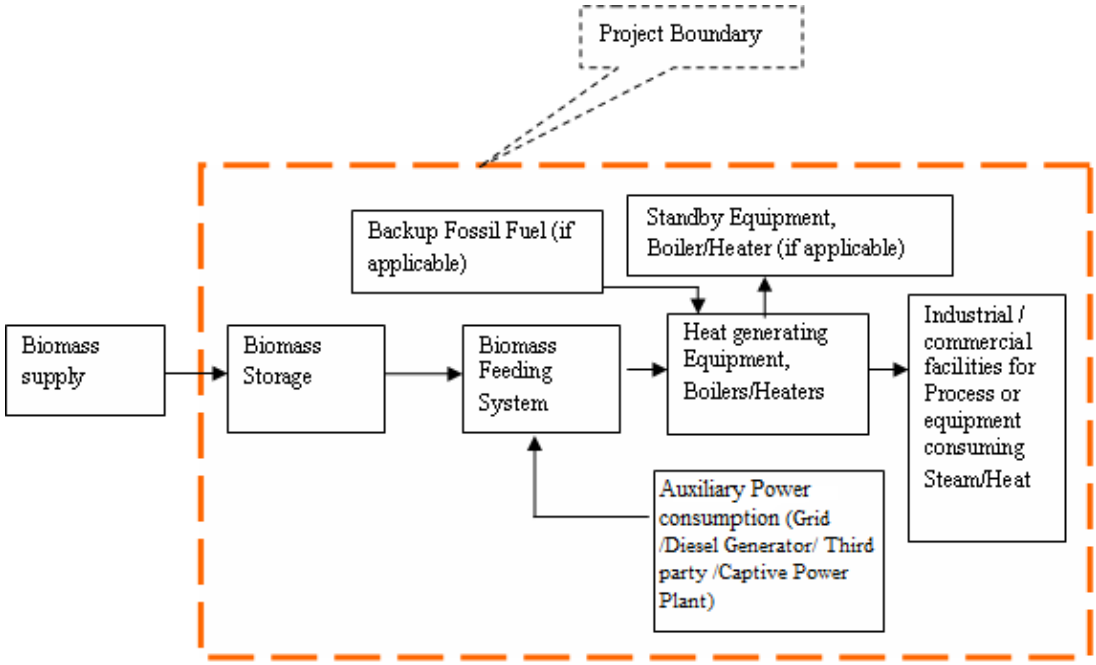

Figure B.4.1*: *Project Boundary for Scenario 1

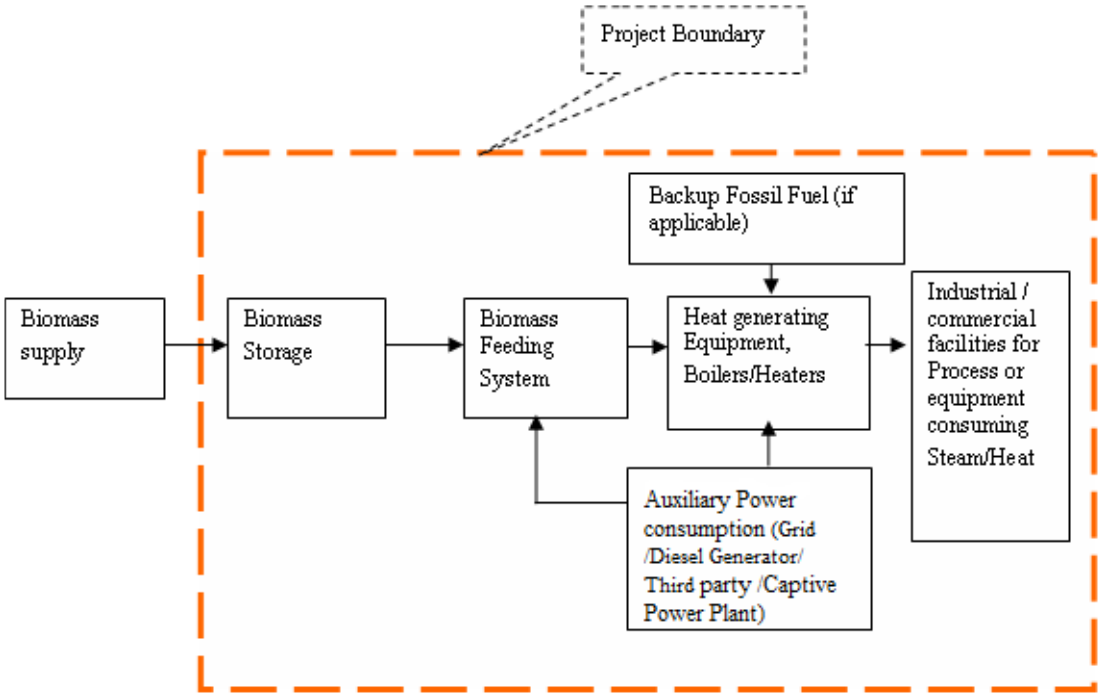

Figure B.4.2*: *Project Boundary for Scenario 2

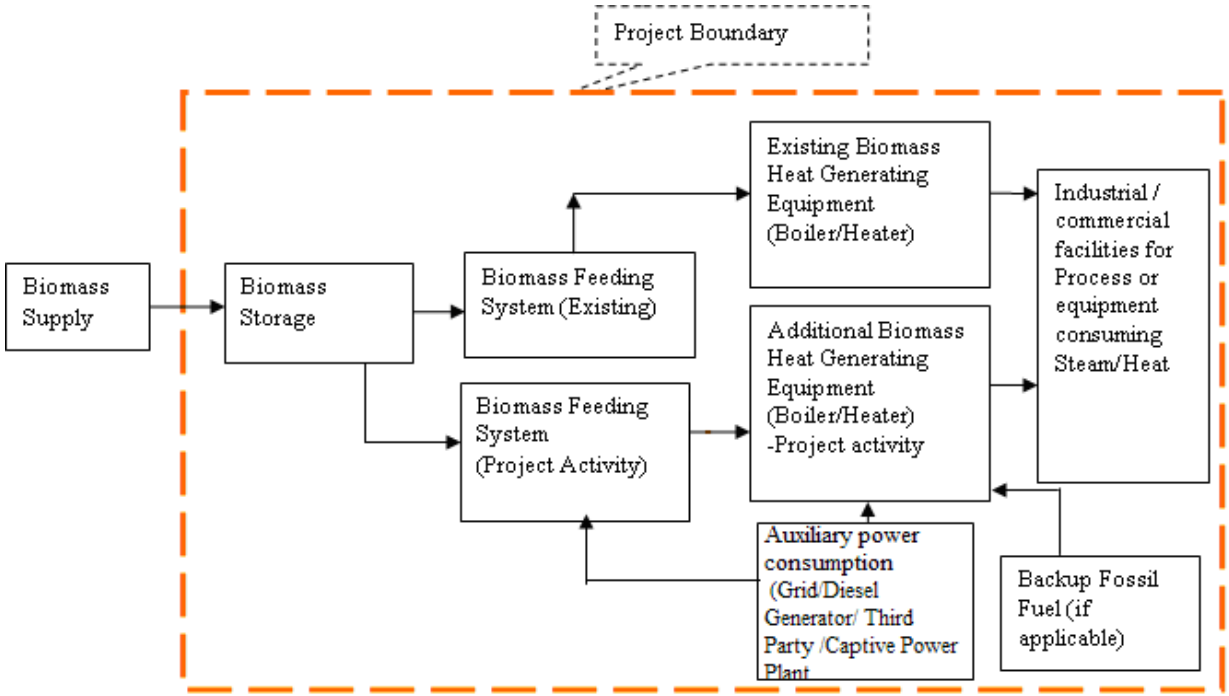

Figure B.4.3: Project Boundary for Scenario 3

(---------- to insert justification for the the project boundary for the CPA --------)

The small-scale CPA is located within geographical boundary of the registered PoA (refer section A.4.1.2. of CPA-DD) for the address and location of the CPA project activity.

The description of the sources and gases included in the Project boundary is given as below-

	Source	Gas	Included?	Justification/Explanation
Baseline	Fossil fuel combustion in Boiler/Heater for steam/heat generation	CO_2	Yes	Emitted by combustion of fuel in the boiler/heater for steam/heat supply in the absence of Project activity
		N_2O	No	Excluded for simplification. This is conservative
		CH_4	No	Excluded for simplification. This is conservative
	Uncontrolled burning or decay of the biomass residues	CO_2	No	It is assumed that CO_2 emission from surplus biomass residues do not lead to changes of carbon pools in the LULUCF sector.
		N_2O	No	Excluded for simplification. This is conservative
		CH_4	No	Excluded for simplification. This is conservative
Project activity	On-site fossil fuel and electricity consumption	CO_2	Yes	Emitted by combustion of fossil fuel in the boiler/heater for steam/heat supply in the Project activity and auxiliary power consumption of biomass boiler/heater, biomass storage and fuel feeding system (if applicable).
		CH_4	No	Excluded for simplification. This emission source is assumed to be very small
		N_2O	No	Excluded for simplification. This emission source is assumed to be very small
	Off-site transportation of biomass residues	CO_2	Yes	The emissions will be considered only if biomass is transported beyond 200 km of Project boundary.
		CH_4	No	Excluded for simplification. This emission source is assumed to be very small
		N_2O	No	Excluded for simplification. This emission source is assumed to be very small

	Combustion of biomass residues for heat generation	CO_2	No	It is assumed that CO_2 emission from surplus biomass residues do not lead to changes of carbon pools in the LULUCF sector.
		CH_4	No	Excluded for simplification. This emission source is assumed to be very small
		N_2O	No	Excluded for simplification. This emission source is assumed to be very small
	Biomass storage	CO_2	No	It is assumed that CO_2 emission from surplus biomass residues do not lead to changes of carbon pools in the LULUCF sector.
		CH_4	No	Excluded for simplification. Since biomass residues are stored for not longer than one year, this emission source is assumed to be very small
		N_2O	No	Excluded for simplification. This emission source is assumed to be very small

Table B.4.1*: *Sources & GHG's included in Baseline & Project activity of CPA Boundary

B.5. Emission reductions:

B.5.1. Data and parameters that are available at validation:

>>

Note – Select the applicable parameters as per the Scenario and Equipment

Data / Parameter:	CAP_{boiler}
Data unit:	Tons/hr
Description:	Rated capacity (thermal output) of the boiler of the Project activity.
Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data obtained from the technical specifications provided by manufacturer.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario1 ☐ Scenario 2.

Data / Parameter:	CAP_{heater}
Data unit:	kCal/hr or kJ/hr
Description:	Rated capacity (thermal output) of the heater of the Project activity.
Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)

Justification of the choice of data or description of measurement methods and procedures actually applied :	Data obtained from the technical specifications provided by manufacturer.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2

Data / Parameter:	$\eta_{BL,thermal}$
Data unit:	%
Description:	The Efficiency of the plant using fossil fuel that would have been used in the absence of the Project activity
Source of data used:	Recorded /Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	As referred in paragraph 30 of the applicable methodology (AMS I.C., Version 19) or default of 100 %. The value shall be chosen according to Para 30 (a), (b) or (c) of AMS I.C. methodology.
Any comment:	This data will be archived upto 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐Scenario 2 ☐ Scenario 3

Data / Parameter:	$EF_{FF,CO2}$
Data unit:	tCO_2e/TJ
Description:	CO2 Emission Factor of the fossil fuel that would have been used in the baseline plant
Source of data used:	IPCC Default value from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Chapter 1 (Table 1.4). The lower values should be chosen in conservative manner
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	The value of the Baseline fuel shall be indicated as per the baseline identification test for each Project activity/CPA. The baseline identification test shall conclude the specific fossil fuel (like furnace oil, coal etc.) as a plausible alternative to the Project activity/CPA.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	SA_k
Data unit:	%
Description:	Surplus availability of Biomass within 50 km radial distance
Source of data used:	Published literature/official reports/Third Party Survey report/ public domain document at the beginning of crediting period
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and	As per Annex 28 – EB – 47, C. Competing uses for the Biomass, the CPA operator shall evaluate ex-ante, if there is a surplus of the biomass in the region of the Project activity, which is not utilized. If it is demonstrated at

procedures actually applied :	the beginning of each crediting period that the quantity of available biomass in the region (e.g., 50 km radius), is at least 25% larger than the quantity of biomass that is utilised including the project activity, then this source of leakage can be neglected otherwise this leakage shall be estimated and deducted from the emission reductions.
Any comment:	This data will be archived upto 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐Scenario 2 ☐ Scenario 3

Data / Parameter:	$EF_{grid,CM,y}$
Data unit:	tCO_2/MWh
Description:	Ex-ante Grid Emission Factor in a year y
Source of data used:	Grid Emission Factor Report approved (2003-2008) by DNA Vietnam dated 26/03/ 2010
Value applied	0.5764
Justification of the choice of data or description of measurement methods and procedures actually applied :	This value is the combined margin emission factor for Viet Nam grid calculated in accordance with the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption". Operating Margin Emission Factor: 0.6464 tCO2/MWh Build Margin Emission Factor: 0.5064 tCO2/MWh Combined Margin Emission Factor: 0.5764 tCO2/MWh
Any comment:	The ex ante grid emission factor will be revised at the point of the renewal of crediting period of the PoA. (if so required). This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$EF_{EL,j,y} = EF_{EL,l,y}$
Data unit:	tCO2/MWh
Description:	Emission Factor for fossil fuel based electricity generation for source j and/or l in year y
Source of data used:	The value will be considered as per " Tool to calculate baseline, Project and/or leakage emissions from electricity consumption"
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	--
Any comment:	This data will be archived upto 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$EC_{LE,l,y}$

Data unit:	MWh
Description:	Auxiliary Electricity Consumption for biomass processing, outside Project boundary.
Source of data used:	Declaration by biomass supplier / Technical specification of electricity consumption for biomass processing.
Value applied	--
Justification of the choice of data or description of measurement methods and procedures actually applied :	Since the monitoring of the parameter is out of control of CPA operator, the declaration by the biomass supplier will be submitted at the time of first periodic verification of each CPA. OR The auxiliary electricity consumption for biomass processing from equipment shall be calculated in MWh by using the technical specification of electricity consumption for biomass processing from the equipment supplier in MW/Ton multiplied by the total processed biomass consumed in the monitoring period. Not applicable if surplus of biomass within 50km is >25%.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$EF_{km,CO2}$
Data unit:	tCO_2/km
Description:	Average CO2 emission factor for the trucks measured during the year y
Source of data used:	Available literature / National data in conservative manner
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$TDL_{l,y} = TDL_{j,y}$
Data unit:	--
Description:	Average technical transmission and distribution losses for providing electricity to source l and/or j in year y
Source of data used:	Use recent, accurate and reliable data available within the host country; Use as a default value of 20 % , a) For leakage electricity consumption. b) Baseline electricity consumption sources if the electricity consumption by all Project and leakage electricity consumption sources to which scenario A or scenario C (cases C.I or C.III) applies is larger than the electricity consumption of all baseline electricity consumption sources to which scenario A or scenario C (cases C.I or C.III) applies
Value applied	20 % (if host country data is not available)
Justification of the choice of data or description of measurement methods and	As per EB 39 Annex 7, "Tool to calculate baseline, Project and/or leakage emissions from electricity consumption". TDLl,y is considered if leakage emission is applicable

procedures actually applied :	
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$CAP_{boiler,old}$
Data unit:	Tons/hr
Description:	Rated capacity (output) of the existing renewable fuel fired boiler
Source of data used:	Manufacturer's specification/ Plant data
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data obtained from the technical specifications provided by manufacturer.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$CAP_{boiler,add}$
Data unit:	Tons/hr
Description:	Rated capacity (output) of the Boiler added to the existing renewable facility
Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data obtained from the technical specifications provided by manufacturer.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$CAP_{heater,old}$
Data unit:	kCal/hr or KJ/hr
Description:	Rated capacity (thermal output) of the existing renewable fuel fired heater
Source of data used:	Manufacturer's specification/ Plant data
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data obtained from the technical specifications provided by manufacturer/Plant data.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$CAP_{heater,add}$
Data unit:	kCal/hr or KJ/hr
Description:	Rated capacity (thermal output) of the heater added to the existing renewable facility

Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data obtained from the technical specifications provided by manufacturer.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$Q_{historical,steam,y}$
Data unit:	Tons or tonnes
Description:	Historical steam delivered by the existing facility
Source of data used:	Plant data
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$T_{historical,steam,y}$
Data unit:	°C
Description:	Average Historical steam temperature at MSSV (Main steam stop valve) outlet of the existing facility
Source of data used:	Plant data
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for Scenario 2

Data / Parameter:	$P_{historical,steam,y}$
Data unit:	Kg/cm2g
Description:	Average Historical steam pressure (gauge) at MSSV (Main steam stop valve) outlet of the existing facility
Source of data used:	Plant data
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$T_{historical,FWB,y}$
Data unit:	°C
Description:	Average Feed Water Temperature at inlet of the existing facility
Source of data used:	Plant data
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$Qc_{i,historical}$
Data unit:	Tons or tonnes
Description:	Quantity of fossil fuel consumed in baseline plant in year y.
Source of data used:	Plant average historical data
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	--
Any comment:	This data will be archived upto 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2.

Data / Parameter:	$NCV_{i,historical}$
Data unit:	kCal/kg
Description:	Calorific value of fossil fuel consumed in baseline plant in year y.
Source of data used:	Plant average historical data
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	--
Any comment:	This data will be archived upto 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2.

Data / Parameter:	$CAP_{BL,retrofit}$
Data unit:	Tons/hr
Description:	Rated capacity (output) of the Baseline fuel fired boiler
Source of data used:	Manufacturer's specification/ Plant data
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data obtained from the technical specifications provided by manufacturer/Plant data.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$Cp_{i,historical,out}$
Data unit:	kCal/kg °C or kJ/kg^{0}C
Description:	Specific heat of heat transfer fluid type 'i' at outlet of existing fossil fuel facility.
Source of data used:	Manufacturer's specification
Value applied	XX
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data type: Determined based on outlet of heat transfer fluid. Value will be derived from Manufacturer's standard based on outlet temperature. Data Archiving: Data will be archived by electronic / Paper mode
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$\delta_{i,historical,out}$
Data unit:	Kg/m^3
Description:	Density of heat transfer fluid type 'i' at T_{out} temperature of existing fossil fuel facility
Source of data used:	Manufacturer's specification
Value applied	XX
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data type: Determined based on historical data provided by manufacturer. Data Archiving: Data will be archived by electronic/Paper mode. Monitoring: Value will be derived from Manufacturer's standard based on outlet temperature
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$Q_{historical,flow}$
Data unit:	m^3/hr
Description:	Flow of heat transfer fluid at the heater outlet of existing fossil fuel facility.
Source of data used:	Historical records
Value applied	XX
Justification of the choice of data or description of measurement methods and procedures actually applied :	--
QA/QC procedures to be applied:	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$T_{historical,in}$
Data unit:	°C
Description:	Average Inlet Temperature of heat transfer fluid at the inlet of the heater existing fossil fuel facility.
Source of data used:	Historical records.
Value applied	XX

Justification of the choice of data or description of measurement methods and procedures actually applied :	--
QA/QC procedures to be applied:	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$T_{historical,out}$
Data unit:	°C
Description:	Average Temperature of heat transfer fluid at the outlet of the heater of existing fossil fuel facility.
Source of data used:	Historical records
Value applied	XX
Justification of the choice of data or description of measurement methods and procedures actually applied :	--
QA/QC procedures to be applied:	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$h_{,historical,y}$
Data unit:	Hr or hours
Description:	Operational hours of the baseline plant in a year y
Source of data used:	Plant data
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$CAP_{retrofit}$
Data unit:	For Boiler –Tons/hr, For Heater - kCal/hr or kJ/hr
Description:	Rated capacity (output) of the boiler or heater after retrofit
Source of data used:	Manufacturer's specification and plant data
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data obtained from the technical specifications provided by manufacturer/plant.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$Cp_{i,out}$
Data unit:	kCal/kg °C or kJ/kg°K
Description:	Specific heat of heat transfer fluid at heater outlet. The specific heat is a physical property of the fluid 'i' and is a function of temperature for a given fluid. The specific heat value for a given fluid corresponding to the temperature range is provided by the heat transfer fluid manufacturer / for water as a heat transfer medium, water specifications from standard tables are to be considered.
Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data type: Determined based on outlet of heat transfer fluid. Value will be derived from Manufacturer's standard based on outlet temperature. Data Archiving: Data will be archived by electronic / Paper mode
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2

Data / Parameter:	$\delta_{i,out}$
Data unit:	Kg/m^3
Description:	Density of heat transfer fluid at T_{out} temperature of the heater (kg/m3)
Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data type: Determined based on data provided by manufacturer. Data Archiving: Data will be archived by electronic/Paper mode. Monitoring: Value will be derived from Manufacturer's standard based on outlet temperature
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2

Data / Parameter:	$Cp_{i,\ retrofit,out}$
Data unit:	kCal/kg °C or kJ/kg^oK
Description:	Specific heat of heat transfer fluid type 'i' at outlet of renewable energy unit after retrofit
Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data type: Determined based on outlet of heat transfer fluid. Value will be derived from Manufacturer's standard based on outlet temperature. Data Archiving: Data will be archived by electronic / Paper mode
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$\delta_{i,retrofit,out}$
Data unit:	Kg/m^3
Description:	Density of heat transfer fluid type 'i' at T_{out} temperature after retrofit

Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data type: Determined based on data provided by manufacturer. Data Archiving: Data will be archived by electronic/Paper mode. Monitoring: Value will be derived from Manufacturer's standard based on outlet temperature
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$Cp_{i,out,old,y}$
Data unit:	kCal/kg °C or kJ/kg°K
Description:	Specific heat of heat transfer media of type 'i' at outlet of an existing renewable energy production facility in year y.
Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data type: Determined based on outlet of heat transfer fluid. Value will be derived from Manufacturer's standard based on outlet temperature. Data Archiving: Data will be archived by electronic / Paper mode
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$Cp_{i,\ out,add,y}$
Data unit:	kCal/kg °C or kJ/kg°K
Description:	Specific heat of heat transfer media 'i' at outlet of additional renewable energy unit at an existing renewable energy production facility in year y.
Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data type: Determined based on outlet of heat transfer fluid. Value will be derived from Manufacturer's standard based on outlet temperature. Data Archiving: Data will be archived by electronic / Paper mode
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$\delta_{i,out,old,y}$
Data unit:	Kg/m^3
Description:	Density of heat transfer fluid type 'i' at T_{out} temperature of an existing renewable energy production facility in year y.
Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data type: Determined based on data provided by manufacturer Data Archiving: Data will be archived by electronic/Paper mode. Monitoring: Value will be derived from Manufacturer's standard based on outlet temperature
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$\delta_{i,out,add,y}$
Data unit:	Kg/m^3
Description:	Density of heat transfer fluid type 'i' at T_{out} temperature of new renewable energy unit at the renewable energy facility in year y
Source of data used:	Manufacturer's specification
Value applied	XX (value applicable for the Project activity as per CPA XXX)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data type: Determined based on data provided by manufacturer. Data Archiving: Data will be archived by electronic/Paper mode. Monitoring: Value will be derived from Manufacturer's standard based on outlet temperature
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

B.5.2. Ex-ante calculation of emission reductions:

>>

Baseline emissions

The baseline emissions are calculated for the Project activity as per the following:

☐ Project Scenario 1

☐ Project Scenario 2

☐ Project Scenario 3

☐ Project Scenario 1 – Biomass fired thermal energy generation in Greenfield Projects or as a Replacement of existing fossil fuel fired equipment

The baseline emissions are calculated as per paragraph 22 of the methodology (AMS I.C/Version 19):

$$BE_{thermal,CO_2,y} = (EG_{thermal,y} / \eta_{BL,thermal}) * EF_{FF,CO_2} \quad \textbf{(2)}^{14}$$

Where:

$BE_{thermal,CO_2,y}$	The baseline emissions from steam/heat displaced by the project activity during the year *y* (tCO_2)
$EG_{thermal,y}$	The net quantity of steam/heat supplied by the project activity during the year *y* (TJ)

[14] Equations are numbered in accordance with the methodology AMS I.C, version 19.

EF_{FF,CO_2}	The CO_2 emission factor of the fossil fuel that would have been used in the baseline plant; tCO_2/TJ, obtained from reliable local or national data if available, otherwise, IPCC default emission factors are used
$\eta_{BL,thermal}$	The efficiency of the plant using fossil fuel that would have been used in the absence of the project activity.

For boilers:

$EG_{thermal} = Q_{steam} * (H_{out} – H_{in}) * 10^{-6}$

Where:

$EG_{thermal}$	Net quantity of heat supplied by the project activity
Q_{steam}	Quantity of steam supplied in tons
H_{out}	Specific enthalpy of steam at corresponding absolute pressure and temperature at the outlet (kcal/kg)
H_{in}	Specific enthalpy of feed water at corresponding temperature at the boiler inlet (kcal/kg)

For heater:

$EG_{thermal} = Q_{flow} * Cp_{out} * \delta_{out} * (T_{out} – T_{in}) * 10^{-6}$

Where

$EG_{thermal}$	Net quantity of heat supplied by the project activity
Q_{flow}	Flow of heat transfer fluid at the heater outlet (m^3)
δ_{out}	Density of heat transfer fluid at Total temperature (kCal/kg.^oC)
T_{out}	Temperature of the heat transfer fluid at the outlet of the heater (^oC)
T_{in}	Temperature of the heat transfer fluid at the inlet of the heater (^oC)

☐ Project Scenario 2 - Fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility

Project activities that seek to retrofit or modify an existing facility for the purpose of fuel switch from fossil fuels to biomass residues in heat generation equipment, the baseline emissions are calculated as per paragraph 15 of the methodology. (Refer Project Scenario 1 for the calculation of baseline emission Refer: Clarification SSC_374).

For fuel switching from fossil fuel to renewable biomass in existing facilities, historical information (detailed records) on the use of energy sources (e.g. fossil fuel) and the plant output (e.g. steam / heat) in

the baseline plant from at least 3 years prior to Project implementation are used in the baseline calculations, For facilities that are less than 3 years old, all historical data are available (a minimum of one year data would be required).

The remaining lifetime of the modified existing equipment with retrofit are met as described in the General Guidance for methodologies. If the remaining lifetime of the affected systems increases due to the Project activity, the crediting period is limited to the estimated remaining lifetime, i.e., the time when the affected systems would have been replaced in the absence of the Project activity.

☐ Project Scenario 3 - Addition of renewable energy unit at an existing renewable energy facility

The baseline emissions are calculated as per paragraph 15 of the methodology:

In the case of Project activities that involve the addition of renewable energy units at an existing renewable energy production facility, where the existing and new units share the use of common and limited renewable resources (e.g., biomass residues), the potential for the Project activity to reduce the amount of renewable resource available to, and thus thermal energy production by, existing units must be considered in the determination of baseline emissions, Project emissions, and/or leakage, as relevant.

For Project activities that involve the addition of new energy production units (e.g., turbines) at an existing facility, net increase in thermal energy generation should be calculated as follows:

$$EG_{thermal,add,y} = EG_{thermal,PJ,y} - EG_{thermal,old,y}$$

Where

$EG_{thermal,add,y}$	Net increase in thermal energy generation at existing plant in year y that should be considered as energy baseline (EG BL) (TJ)
$EG_{thermal,PJ,y}$	Total actual thermal energy produced in year y by all units, existing and new Project units (TJ)
$EG_{thermal,old,y}$	Estimated thermal energy that would have been produced by existing units (installed before the Project activity) in year y in the absence of the project activity; TJ

The value $EG_{thermal,old,y}$ is given by:

$$EG_{thermal,old,y} = MAX(EG_{thermal,actual,y}, EG_{thermal,estimated,y})$$

Where:

$EG_{thermal,actual,y}$: The actual, measured thermal energy production of the existing in year y (TJ)

$EG_{thermal,estimated,y}$: The estimated thermal energy that would have been produced by the existing units under the observed availability of the renewable resource for year y (TJ)

For Boiler

$EG_{thermal,add,y}$ is calculated as = $EG_{thermal,PJ,y}$ - $EG_{thermal,old,y}$

$EG_{thermal,PJ,y} = Q_{steam,\ add} * (H_s - H_w) * 10^{-6} + EG_{thermal,old,y}$

$EG_{thermal,PJ,y}$	Net quantity of heat supplied by the Project activity
Q_{steam}	Quantity of steam supplied in Tons
H_s	Specific enthalpy of steam at corresponding absolute pressure and temperature at the outlet (Kcal/kg)
H_w	Specific Enthalpy of feed water at corresponding temperature at the Boiler inlet (Kcal/kg)

$EG_{thermal,actual,y}$ is determined from Plant record
$EG_{thermal,estimated,y}$ is determined from the rated capacity (output) and the operating parameter of the existing Boiler
The Baseline is calculated as per the paragraph 15 of the methodology. $EG_{thermal,y} = EG_{thermal,add,y}$

For Heater
$EG_{thermal,add,y}$ is calculated as = $EG_{thermal,PJ,y} - EG_{thermal,old,y}$

$EG_{thermal,PJ,y} = Q_{flow} * Cp_{out} * \delta_{out} * (T_{out} - T_{in}) + EG_{thermal,old,y}$

$Q_{flow,add}$	Flow of heat transfer fluid at the heater outlet (m^3).
$Cp_{out,add}$	The specific heat of heat transfer fluid at T out temperature (kCal/kg. °C).
$\delta_{out,add}$	Density of heat transfer fluid at Tout temperature of the heater (kg/m^3).
$T_{out,add}$	Temperature of the heat transfer fluid at the outlet of the heater (°C).
$T_{in,add}$	Temperature of the heat transfer fluid at the inlet of the heater (°C).

$EG_{thermal,actual,y}$ is determined from Plant record
$EG_{thermal,estimated,y}$ is calculated from the rated capacity (thermal output) and the operating parameter of the existing heater (Flow * rise in T * δ * Cp)
The Baseline are calculated as per the paragraph 15 of the methodology. $EG_{thermal,y} = EG_{thermal,add,y}$

If the existing units shut down, are derated, or otherwise become limited in production, the Project activity should not get credit for generating thermal energy from the same renewable resources that would have otherwise been used by the existing units (or their replacements). Therefore, the equation for $EG_{thermal,old,y}$ still holds, and the value for $EG_{thermal,estimated,y}$ should continue to be estimated assuming the capacity and operating parameters are the same as that at the time of the start of the Project activity.

In the case of Project activity consuming biomass and fossil fuel to produce thermal energy, specific energy consumption of each type of fuel (biomass or fossil) to be used are specified ex ante. The consumption of each type of fuel is monitored.

Specific energy consumption can be derived as follows:

$$SEC_{j,PJ,y,measured} = \frac{\sum_j (FC_{j,PJ,y} \times NCV_{j,y})}{EG_{PJ,y}}$$

Where

$SEC_{j,PJ,y,measured}$	Specific energy consumption of fuel type j of the Project activity in year y (TJ/MWh)
$EG_{PJ,y}$	Energy generation in year y (MWh)
$FC_{j,PJ,y}$	Quantity of fuel type j combusted in the Project activity during the year y (volume or mass unit)
$NCV_{j,y}$	Average net calorific value of fuel type j combusted during the year y (TJ per unit volume or mass unit)

Project emissions

As per paragraph 45 of AMS I.C, version 19, project emissions include:

CO_2 emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion".

In cases that the project activity consumes fossil fuels for operation of fossil fuel based boilers for running gensets when power outage happens, the "*Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion* (version 02)" (refer annex 11, EB41) (hereafter referred to as "Fossil fuel Tool") will be used.

CO_2 emissions from fossil fuel combustion in process *j* are calculated based on the quantity of fuels combusted and the CO_2 emission coefficient of those fuels, as follows:

$$PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y} \qquad \text{(Fossil fuel tool:1)}$$

Where

Parameter	Description	Unit
$PE_{FC,j,y}$	Are the CO_2 emissions from fossil fuel combustion in process j during year *y*	(t CO_2e/yr)
$FC_{i,j,y}$	Is the quantity of fuel type *i* combusted in process *j* during year *y*	(mass or volume unit/year)
$COEF_{i,y}$	Is the CO_2 coefficient of fuel type *i* in year *j*	(t CO_2/mass or volume unit)
i	Are the fuel types combusted in process *j* during the year *y*	

As the data on the chemical composition of the fossil fuel type *i* used by the project activity is not available. Thus, the option B of the Tool is adopted for calculation of the CO_2 emission coefficient $COEF_{i,y}$. The $COEF_{i,y}$ is calculated based on net calorific value and CO_2 emission factor of the fuel type *i* , as follows:

$COEF_{i,y} = NCV_{i,y} \times EF_{CO2,i,y}$ (Fossil fuel Tool: 4)

Where:

Parameter	Description	Unit
$COEF_{i,y}$	CO_2 coefficient of fuel type *i* in year *j*	(t CO_2/mass or volume unit)
$NCV_{i,y}$	Weighted average net calorific value of the fuel type *i* in year *j*	(GJ/mass or volume unit)
$EF_{CO2,i,y}$	Weighted average CO_2 emission factor of fuel type *i* in year *y*	(t CO_2/GJ)
i	Fuel types combusted in process *j* during the year *y*	

Actually, within the project activity, there is no concurrent operation of biomass- and fossil fuel boilers because the biomass boilers will totally replace the fossil fuel boiler. Furthermore, due to the intermittent nature of this kind of operation, annual consumption is assumed to be zero per annum for all CPA. Fossil fuel consumption will be part of the monitoring plan of each CPA.

CO_2 emissions from electricity consumption by the project activity using the latest version of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption".

As the project activity will consume electricity, the "*Tool to calculate baseline, project and/or leakage emission from electricity consumption*" Version 01 (hereafter referred to as "Electricity Tool") is applied to calculate project emission from electricity consumption ($PE_{EC,y}$).

Scenario A (electricity consumption from the grid) from the tool applies and emissions are calculated as follows:

$$PE_{EC,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} \times \left(1 + TDL_{j,y}\right)$$ (Electricity Tool: 1)

Where:

Parameter	Description	Unit
$PE_{EC,y}$	Project emissions from electricity consumption in year y	tCO2e/yr
$EC_{PJ,j,y}$	Quantity of electricity consumed by the project electricity consumption source j in year y	(MWh/yr)

$EF_{EL,j,y}$	Emission factor for electricity generation for source j in year y	(tCO_2/MWh)
$TDL_{j,y}$	Average technical transmission and distribution losses for providing electricity to source j in year y	-

Since grid electricity will be used, thus $EF_{EL,j,y} = EF_{grid,CM,y}$. Refer to Annex 3 for calculation of the combined margin grid emission factor for Vietnam.

In line with the requirements of AMS-I.C./ Version 19, para 25 and version 02.2.1 of the 'Tool to calculate the emission factor for an electricity system' has been used as described, the following approach is used to calculate the uniform baseline for the CPA:

(a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the Emission Factor for an electricity system'.

OR

(b) The weighted average emissions (in kg CO_2e/kWh) of the current generation mix. The data of the year in which project generation occurs must be used.

Option (a) is applied for this project, which uses a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "*Tool to calculate the emission factor for an electricity system*", version 02.2.1.

The most recent data available (2000-2008) in Grid Emission Factor Report approved (2000-2008) by DNA Vietnam dated 26th March 2010 (at the time of the PoA-DD making available for validation in August 2010) is used as data source to determine the Operating Margin (OM) emission factor and the Build Margin (BM) emission factor. The EF of the Grid had been calculated and officially published by DNA Viet Nam on 26/03/2010[15] using "Tool to calculate the emission factor for an electricity system" version 01.1. The CME has utilized the most latest available data in the Vietnam DNA's GEF Report for updating the GEF applied in this PoA according to the "*Tool to calculate the emission factor for an electricity system" version 02.2.1*., the GEF calculation spreadsheet according to the "Tool to calculate the emission factor for an electricity system" version 02.2.1 is submitted with this PoA DD.

The description below follows the steps of the version 02.2.1 of the "*Tool to calculate the emission factor for an electricity system*" (here in after referred as Tool) and focuses on the key process of the calculation of the emission factors.

Step 1: Identify the relevant electricity systems

The "Tool to calculate the emission factor for an electricity system" (Version 02.2.1) defines a project electricity system as "the spatial extent of the power plants that can be dispatched without significant transmission constraints". On this basis, the project electricity system is defined as the Vietnamese national electricity grid. The Vietnamese national electricity grid is also connected to the South China

[15] http://www.noccop.org.vn/Data/vbpq/Airvariable_ldoc_vnHe%20so%20phat%20thai.pdf

electricity grid and is a net importer of electricity from this source. As per the "Tool to calculate the emission factor for an electricity system" (Version 02.2.1) the emission factor for net electricity imports from another host country is assumed to be zero (0) tCO_2/MWh.

Step 2: Choose whether to include off grid power plants in the project electricity system (optional).
Only grid connected power plants are included in the calculation as per Option I of the "Tool to calculate the emission factor for an electricity system" (Version 02.2.1).

Step 3: Select a method to determine the Operating Margin (OM)
The "Tool to calculate the emission factor for an electricity system" (Version 02.2.1) provides four options for calculating the Operating Margin:

(a) Simple OM; or

(b) Simple adjusted OM; or

(c) Dispatch data analysis OM; or

(d) Average OM

Option (a) can only be used if low-cost/must-run resources constitute less than 50% of total grid generation (based on either average of the five most recent years, or on long-term averages for hydroelectricity production), between 2004-2008, the average contribution of low-cost/must-run resources to the Vietnamese national electricity grid was 34.77%, as shown in Table B.6.1 below. On this basis, the Simple OM has been used.

The rate of low-cost/must run resources based on electricity generation in Vietnam is showed in the following table:

Table B.5.2.1 Rate of low cost/must-run sources based on electricity generation[16]

Year	2004	2005	2006	2007	2008	Average
Rate of low cost/must-run sources generation, %	39.71	32.52	34.13	33.74	34.72	34.77

The Simple OM is calculated ex ante as the 3-year generation-weighted average, based on the most recent data available. Under this option there is no requirement to monitor or recalculate the emission factor during the crediting period.

Step 4: Calculate the Operating Margin Emission Factor according to the selected method
The "Tool to calculate the emission factor for an electricity system" (Version 02.2.1) identifies two options to calculate the Simple OM:

- Option A: Based on the net electricity generation and a CO_2 emission factor of each power unit; or
- Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

[16] Grid Emission Factor Report approved (2000-2008) by DNA Vietnam dated 26th March 2010

Option A has been selected as the required data is available for Vietnam. Under this option, the simple OM emission factor is calculated based on the net electricity generation of each power unit and an emission factor for each power unit, as follows:

$$EF_{grid,OM,simple,y} = \frac{\sum_{m} EG_{m,y} \times EF_{EL,m,y}}{\sum_{m} EG_{m,y}} \quad \text{(Equation 1 of Tool)}$$

Where:

$EF_{grid,OMsimple,y}$	Simple operating margin CO2 emission factor in year y (tCO_2/MWh)
$EG_{m,y}$	Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y (*MWh)
$EF_{EL,m,y}$	CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
m	All power plants/units serving the grid in year *y* except low-cost/must-run power plants/units
i	All fossil fuel types combusted in power plant/unit *m* in year *y*
y	The relevant year as per the data vintage chosen in step 3.

Under Option A, $EF_{EL,m,y}$ is determined using one of the following 3 sub-options:

- Option A1: if data on fuel consumption and electricity generation is available for relevant power units.
- Option A2: if only data on electricity generation and the fuel types is available.
- Option A3: to be used if only data on electricity generation is available.

As the data of fuel consumption of individual power plant connected to the Vietnam National Grid is available in Report on calculation of Vietnam Grid Emission Factor for 2008 approved and published by Vietnam DNA in a letter dated 26th March 2010 so option A1 is applied and used to calculate the Simple OM emission factor as follows:

$$EF_{EL,m,y} = \frac{\sum_{i} FC_{i,m,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{m,y}} \quad \text{(Equation 2 of Tool)}$$

Where:

$EF_{EL,m,y}$	CO_2 emission factor of power unit m in year y (tCO_2/MWh)
$FC_{i,m,y}$	Amount of fuel type *i* consumed by power plant/unit *m* in year *y*. (Mass or volume unit of the fuel)
$NCV_{i,y}$	Net calorific value (energy content) of fossil fuel type *i* in year *y (*GJ/mass or volume unit)
$EF_{CO2,i,y}$	CO2 emission factor of fossil fuel type *i* in year *y (* tCO2/GJ)
$EG_{m,y}$	Net quantity of electricity generated and delivered to the grid by power plant/unit *m* in year *y (*MWh)
m	All power plants/units serving the grid in year *y* except low-cost/must-run power

	units
i	All fossil fuel types combusted in power plant/unit *m* in year *y*
y	The relevant year as per the data vintage chosen in step 3.

Calculation of simple OM is not included low cost/must run power plants but electricity imported from China is included. The emission factor of imported electricity is 0t CO2e/MWh as indicated in Step 1 above.

Note: As the values of fuel emission factors and NCVs of fossil fuels are not provided by the respective fuel suppliers, the same values are taken from in the Report on calculation of Vietnam Grid Emission Factor for 2008 approved and published by Vietnam DNA in a letter dated 26th March 2010. This report provides fuel specific fuel emission factors and plant specific NCVs.

Step 5: Calculate the build margin (BM) emission factor

According to "Tool to calculate the emission factor for an electricity system" (Version 02.2.1) there are two alternatives for selecting the sample group of power units (*m*):

a) The set of five power units that have been built most recently; or

b) The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.

The comparison carried out by the project participants shows that the group of power capacity additions that have been built most recently and comprise 20% of the system electricity generation has the larger annual generation than the group of five power units that have been built most recently and hence it is employed. The calculated values of option a) and b) are provided in Report on calculation of Vietnam Grid Emission Factor for 2008 approved and published by Vietnam DNA in a letter dated 26th March 2010.

In carrying out the comparison the electricity data at plant level is used as all the power units of the respective power plant site are identical by virtue of same capacity, age and type.

Power plants registered as project activities are excluded in the sample group that is used to calculate the BM. Moreover, in the period from 2004 to 2008 (2008 being the most recent year for which data is available), the amount of power capacity additions made up over 20% of the total grid generation capacity in 2008. Therefore, identified for estimating the build margin emission factor includes power units that are built not more than 10 years.

In terms of vintage of data, Option 1 shall be chosen for the proposed project. Details are as follows: in the ten years of crediting period, calculating the BM emission factor ex-ante shall be based on the most recent information available on units already built for sample group *m* at the time of CDM-PDD submission to the DOE for validation.

Step 6: Calculate the combine margin emission factor

The build margin emission factor is the generation-weighted average emission factor (tCO_2/MWh) of all power plant units *m* during the most recent year *y* for which power generation data is available at the time of preparing the PDD. The Build Margin is calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_{m} EG_{m,y} \times EF_{EL,m,y}}{\sum_{m} EG_{m,y}}$$

Where:

$EF_{grid,BM,y}$	The build margin CO_2 emission factor in year y (tCO_2/MWh)
$EG_{m,y}$	The net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$	CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
y	The most recent historical year for which power generation data is available

The combined margin emission factor is calculated as:

$$\mathbf{EF_{grid,CM,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM}}$$

Where:

$EF_{grid,BM,y}$	Build margin CO_2 emission factor in year y (tCO_2/MWh)
$\mathbf{EF_{grid,OM,y}}$	Operating margin CO_2 emission factor in year y (tCO_2/MWh)
W_{OM}	The operating margin weight, which is 0.5 by default for a hydro plant for the first crediting period
W_{BM}	The build margin weight, which is 0.5 by default for a hydro plant for the first crediting period

Table B.5.2.2. Data Used to Determine the Baseline Scenario

Variable	Value / Unit	Source
Operating Margin Emission Factor	0.6464 tCO_2/MWh	Grid Emission Factor Report (2003-2008) approved by DNA Vietnam dated 26th March 2010
Build Margin Emission Factor	0.5064 tCO2/MWh	Grid Emission Factor Report (2003-2008) approved by DNA Vietnam dated 26th March 2010
Combined Margin Emission Factor	0.5764 tCO_2/MWh	Grid Emission Factor Report (2003-2008) approved by DNA Vietnam dated 26th March 2010

Any other significant emissions associated with project activity within the project boundary;

There are no other significant emissions associated with the project activity within the project boundary.

For geothermal project activities, project participants shall account for the following emission sources, where applicable: fugitive emissions of carbon dioxide and methane due to release of non-condensable gases from produced steam; and carbon dioxide emissions resulting from combustion of fossil fuels related to the operation of the geothermal power plant.

The CPA project activity is not a geothermal project.

Leakage

The leakage emissions will be determined as per paragraph 47 and 48 of the methodology

Paragraph	Requirements	Explanations
47	If the energy generating equipment currently being utilized is transferred from outside the boundary to the project activity, leakage is to be considered.	The equipments in all the selected CPAs under the PoA are new and have not been transferred from another activity; hence leakage is not envisaged due to this source.
48	In cases where the collection/processing/transportation of biomass residues is outside the project boundary CO2 emissions from the collection /processing /transportation of biomass residues to the project site shall be taken into account as leakage. If biomass residues are transported over a distance of more than 200 kilometers due to the implementation of the project activity then this leakage source attributed to transportation shall be considered, otherwise it can be neglected.	The leakage estimation at the SSC CPA level will be evaluated following 3 aspects as per Table 1 of the "General Guidance on leakage in biomass project activities" (version 03, EB47, Annex 28)

In this regard, following 3 aspects as per Table-1 of "General Guidance on leakage in Biomass Project Activities (Version 03; EB 47; Annex 28)" are evaluated for leakage estimation at the SSC CPA level.

Parameter	Guidance on leakage	Project activity status
Shift of pre project activities	Shift of pre-Project activities are relevant where in the absence of Project activity the land areas would be used for other purposes (i,e agriculture) and the renewable biomass from existing or new forests	Project activities use biomass residues. Hence this is not applicable
Emissions from the production of the renewable biomass	Potentially significant emission sources from the production of renewable biomass can be (a) Emission from application of fetilizeerr; and (b) Project emissions from clearance of land	Project activities use biomass residues. Hence, this is not applicable
Competing use for the biomass	The CPA operator shall evaluate ex ante if there is a surplus of the biomass in the region of the project activity, which is not utilized. If it is demonstrated (e.g, using published literature, official reports, surveys, etc.) that the quantity of available	If the surplus availability of the biomass residues in the region (e.g 50 km radius) is at least 25 % larger than the quantity of biomass that is utilized including the project activity, then this

	biomass in the region (e.g 50 km radius) is at least 25 % larger than the quantity of biomass that is utilized including the project activity, then this source of leakage can be neglected otherwise this leakage shall be estimated and deducted from the emission reductions	source of leakage can be neglected. Biomass availability will be assessed at the beginning of the crediting period.

In case the surplus of biomass in the region is less than 25 % leakage emissions with regard to collection/processing / transportation from outside the Project boundary will be considered for each Project activity under a CPA. The leakage will be estimated as follows:

1. Leakage emissions due to processing of biomass by utilizing electricity.
2. Leakage Emissions due to Transportation of collection of biomass to biomass processing site
3. Leakage Emissions due to Transportation of processed biomass to Project site

1. Leakage Emissions due to processing of biomass by utilizing electricity:

Leakage Emissions due to processing of biomass by utilizing electricity will be calculated using "Tool to calculate baseline, Project and/or leakage emissions from electricity consumption" (refer Project emissions due to electricity consumption as per scenario C.I, C.II and C.III as mentioned above). The leakage emissions will be included in the CPA under the PoA.

$LE_{EC,y} = EC_{LE,l,y} * EF_{EL,l,y} * (1+TDL_{,l,y})$

Where,

$LE_{EC,l,y}$	Leakage emissions from electricity consumption in year y (tCO_2/yr)
$EC_{ELl,y}$	Net increase in electricity consumption of source l in year y as a result of leakage(MWh/yr)
$EF_{EL,l,y}$	Emission factor for electricity generation for source l in year y (tCO_2/MWh)
$TDL_{,l,y}$	Average technical transmission and distribution losses for providing electricity to source l in year y

2. Leakage Emissions due to Transportation of collection of biomass to biomass processing site

Leakage Emissions due to transportation of collection of biomass to biomass processing site is calculated as below-

$$LE_{Collection,y} = N_{c,y} \cdot AVD_{c,y} \cdot EF_{km,CO2} \quad \text{(ACM0006: 40)}$$

Where:

$LE_{collection,y}$	Leakage Emissions due to transportation of collection of biomass to biomass processing site
N_y	Number of truck trips for the transportation of biomass during the year *y*

AVD_y	Average round trip distance (from and to) between the biomass residues fuel supply sites and the site of the project plant during the year *y* (km)
$EF_{km,y}$	Average CO_2 emission factor for the trucks measured during the year *y* (tCO_2/km)

3. Leakage Emissions due to biomass Transportation of processed biomass to Project site

Leakage Emissions due to transportation of processed biomass to Project site will be calculated as below-

$$LE_{transportation,y} = N_{,y} * AVD_{,y} \; EF_{km, CO2}$$

Where:

$LE_{transportation}$	Leakage Emissions due to transportation of processed biomass to Project site
$N_{,y}$	Number of truck trips during the year y
$AVD_{,y}$	Average round trip distance (from and to) between the biomass fuel supply sites and the site of the Project plant during year y (km)
$EF_{km,CO2}$	Average CO_2 emission factor for the trucks measured during the year y (tCO_2/km)

As per paragraph 48 of the methodology:
If biomass residues are transported over a distance of more than 200 kilometers due to the implementation of the project activity then this leakage source attributed to transportation shall be considered, otherwise it can be neglected.

The Leakage Emissions due to biomass transportation will be considered whenever the biomass residues are transported over a distance of more than 200 km due the implementation of Project activity under the PoA.

Leakage emission: $LE_y = LE_{ECy} + LE_{coly} + LE_{try}$

Emission reductions

Emission reductions for any given year of the crediting period are obtained by subtracting project emissions from baseline emissions:

$$\mathbf{ER_y = BE_y - PE_y - LE_y}$$

Where:
ER_y Emissions reductions of the project activity in year *y* (tCO2e / year)
BE_y Baseline emissions in year *y* (tCO2e / year)
PE_y Project emissions in year *y* (tCO2e / year)
LE_y Leakage emissions in year *y* (tCO2e / year)

(Note: The real values for general ERs should be provided in rCPA-DD)

B.5.3. Summary of the ex-ante estimation of emission reductions:

>>

Year	Estimation of project activity emissions (Tonnes of CO_2e)	Estimation of baseline emissions (Tonnes of CO_2e)	Estimation of Leakage (Tonnes of CO_2e)	Estimation of overall emission reductions (Tonnes of CO_2e)
DD/MM/YYYY to DD/MM/YYYY				
DD/MM/YYYY to DD/MM/YYYY				
DD/MM/YYYY to DD/MM/YYYY				
DD/MM/YYYY to DD/MM/YYYY				
DD/MM/YYYY to DD/MM/YYYY				
DD/MM/YYYY to DD/MM/YYYY				
DD/MM/YYYY to DD/MM/YYYY				
DD/MM/YYYY to DD/MM/YYYY				
DD/MM/YYYY to DD/MM/YYYY				
DD/MM/YYYY to DD/MM/YYYY				
Total (tonnes of CO_2e)				

B.6. Application of the monitoring methodology and description of the monitoring plan:

>>

B.6.1. Description of the monitoring plan:

>>

(a) Description of monitoring plan for the SSC-CPA

The biomass based steam system parameters will be monitored using Field Instruments, Hardware & Software installed at every Project site and/or Manual data recording in the log book.

☐ **Monitoring of boiler**:

No.	Parameters	Measuring instruments
1	Steam flow	Flow meter
2	Steam temperature	Directly measured by separate temperature measuring instrument or field instrument integral to steam flow meter
3	Steam pressure	Directly measured by separate pressure measuring instrument or field instrument integral to steam flow meter
4	Feed water temperature	Temperature measuring instruments
5	Electricity consumption	Electricity meter
6	Fuel Weighing	Weighing machine (mass meter)

☐ **Monitoring of heater**:

No.	Parameters	Measuring instruments

1	Fluid Flow	Flow meter
2	Heat Transfer Fluid/heating medium –inlet & outlet temperature sensors	Directly measured by field instruments integral to the flow meter or separate temperature measuring instrument.
3	Electrical Energy Consumption	Energy meters
4	Fuel Weighing	Weighing machine (mass meter)

The monitoring parameters from the field instruments will be recorded to log-book. This data will be transferred to CME to monitoring

In view of the continuous changes in electronic measurements and technology of data acquisition and transfer, the CME may adopt suitable upgraded technology fulfilling the monitoring requirements. However, all monitoring equipments shall meet the manufacturer's standards for calibration & measurements.

The following parameters will be monitored and recorded during the implementation of Project activity.

Thermal energy Produced by the system:

☐ **Boilers**

The steam flow generated from the biomass boiler is measured with the help of a mass flow meter.

Thus the thermal energy generated from the biomass fired boiler is calculated as the differential value between the thermal energy of the steam at the outlet of the main steam stop valve (MSSV) and the Thermal Energy (Specific enthalpy) of the feed water, measured at the inlet of the boiler at corresponding feed water temperature. The equation is expressed as below:

Method of calculation:

For Boiler:

$EG_{thermal} = Q_{steam} * (H_s - H_w) * 10^{-6}$

$EG_{thermal}$	Net quantity of heat supplied by the Project activity
Q_{steam}	Quantity of steam supplied in Tons/hr
H_s	Specific enthalpy of steam at corresponding absolute pressure and temperature at the outlet (Kcal/kg)
H_w	Specific Enthalpy of feed water at corresponding temperature at the Boiler inlet (Kcal/kg)

This applies to net quantity of heat supplied calculation for the entire year & the crediting year(s).

☐ **Heater**

The net quantity of heat supplied from a heater is calculated by the product of mass flow of the heat transfer fluid, the specific heat of the fluid at the measuring point and the temperature differential (or rise) across the heater.

Volumetric flow (Q_{flow}) is measured in m^3 with the help of a flow meter installed at the outlet line of the heater, the flow obtained is then converted to mass flow by multiplying with density (δ) which is computed in the monitoring system which is determined based on data provided by manufacturer at corresponding operating temperature (T_{out}) recorded at the heater outlet. No other monitoring parameter is considered to determine this parameter

Similarly the Cp, specific heat, of the heat transfer fluid is also computed in the monitoring system based on the manufacturer's data corresponding to the operating temperature (T_{out}) recorded near the flow measuring point at the heater outlet.

As delta T i.e. ($T_{out} - T_{in}$) is a direct function to account for the heat generated, temperature sensors are installed at the inlet and outlet line (Two each- one working & one stand by) of the heater to measure the rise in temperature of the heat transfer fluid entering the heater and leaving the heater, respectively.

Method of Calculation

Using the above values the net quantity of heat supplied from the heater are calculated every fifteen minutes with the below mentioned thermodynamic equation & will be totalized for the hour and recorded as hourly heat generation in the daily log book:

$$EG_{thermal} = Q_{flow} * Cp_{out} * \delta_{out} * (T_{out} - T_{in}) * 10^{-6}$$

Q_{flow}	Flow of heat transfer fluid at the heater outlet (m^3).
Cp_{out}	The specific heat of heat transfer fluid at T_{out} temperature (kCal/kg. ^{O}C).
δ_{out}	Density of heat transfer fluid at T_{out} temperature of the heater (kg/m^3).at the outlet of the heater (kg/m^3)
T_{out}	Temperature of the heat transfer fluid at the outlet of the heater (°C).
T_{in}	Temperature of the heat transfer fluid at the inlet of the heater (°C).

This applies to net quantity of heat supplied calculation for the entire year & the crediting year(s).

Monitoring of electricity consumption:
Electricity meter will be installed at the project site for the measurement of electricity consumption at the project site. Electricity is supplied from the national grid and is used for all activities within the project site. The electricity consumed is calculated based on monthly invoices from EVN (electricity provider).

Monitoring of biomass input for the project activity under each CPA
(a) If the weigh bridge is available at the Project site, each type of biomass weight measurement at the time of receipt at the Project site will be considered and the same will be mentioned in the logbook.
Or
(b) If the weigh bridge is outside of the Project site, receipt indicating quantity of each type of biomass will be considered and the same will be mentioned in the logbook.

(B) Description of the monitoring system for CPA
In order to ensure all CPAs are monitored and verified, the managing entity prepare a comprehensive monitoring plan for all CPAs joined in the PoA. Furthermore, the managing entity conducts periodical inspection of units randomly at any given time in a year. For this purpose the managing entity deploys

monitoring personnel who visit the CPAs, study their records and get satisfied with the upkeep. The monitoring personnel would duly attest the records as a mark of satisfactory inspection. The managing entity would randomly check the visits of monitoring personnel in order to ensure due compliance.

Various templates are made to record the data to be monitored. The monitoring personnel of the managing entity would be provided with such templates. As the steps involved in monitoring are simple, in-house training is imparted in recording the data and to translate the same into the computation of ERs.

Each CPA is responsible to form an operational and management team, which will be responsible for carrying out all monitoring functions as prescribed in the monitoring plan. This team consists of a general manager, shift managers and operators. The operators, who are under the supervision of the shift managers, will be assigned for monitoring of the parameters on a timely basis as well as recording and archiving data in an orderly manner. Monitoring reports will be forwarded to and reviewed by the general manager on a monthly basis in order to ensure the Project follows the requirements of the monitoring plan.

All data collected as part of monitoring plan will be archived electronically and be kept at least 2 years after the end of the last crediting period or the last issuance of CERs for the project activity, whichever occurs later. Data archived will also be verified regularly by the DOE. The performance of the Project will be reviewed and analyzed by the consultant on a regular basis.

Data and parameters to be monitored by each CPA

(Note: Only applicable parameters as per the relevant project scenario shall be kept in the real case CPA-DD and the non-applicable parameters shall be removed)

Data / Parameter:	Q_{steam}
Data unit:	Tons or tonnes
Description:	Quantity of steam supplied in year y
Source of data to be used:	Steam flow meter On site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: On line measurement Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy : ± 3% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate.

Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐Scenario 1.

Data / Parameter:	T_{steam}
Data unit:	°C
Description:	Steam Temperature at MSSV (Main steam stop valve) outlet
Source of data to be used:	RTD /RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured using calibrated meters Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode Accuracy Class: RTD : Class B or better Accuracy: RTD + Temperature Transmitter/ Temperature Gauge/ equivalent: ± 2% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1.

Data / Parameter:	P_{steam}
Data unit:	Kg/cm^2g
Description:	Steam Pressure (gauge) at MSSV (Main steam stop valve) outlet
Source of data to be used:	Pressure transmitter/ Pressure Gauge On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured using calibrated meters Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy: ± 2 % or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at

	least once in 3 years. Calibration will be conducted by independent accredited third party entity
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1.

Data / Parameter:	T_{FWB}
Data unit:	°C
Description:	Feed Water Temperature at inlet of boiler
Source of data to be used:	RTD/ RTD + Temperature Transmitter/Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured using calibrated meters Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent: ±2% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1.

Data / Parameter:	Q_{flow}
Data unit:	m^3/hr
Description:	Flow of heat transfer fluid at the heater outlet
Source of data to be used:	Heat Flow Meter On site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured using calibrated meters Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy

	± 3% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration..
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1.

Data / Parameter:	T_{in}
Data unit:	°C
Description:	Inlet Temperature of the heat transfer fluid at the inlet of the heater
Source of data to be used:	RTD / RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured using calibrated meters Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent: ± 2% or better Calibration frequency– As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1

Data / Parameter:	T_{out}
Data unit:	°C
Description:	Temperature of the heat transfer fluid at the outlet of the heater
Source of data to be used:	RTD/ RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission	XX (value for the Project activity as per CPA XXX)

reductions in section B.5:	
Description of measurement methods and procedures to be applied:	Data type: Measured using calibrated meters Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent : ±2% or better Calibration frequency – As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3years. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐Scenario 1.

Data / Parameter:	$h_{,y}$
Data unit:	hr or hours
Description:	Boiler / Heater operating hours of the Project activity in year y
Source of data to be used:	Built in timer in monitoring system On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Recording Frequency: Monitored daily, reported monthly and consolidated annually. Data Archiving: Data will be archived by Electronic/Paper mode The basis for measurement of operating hours is the Induced Draft Fan for balanced draft systems / Forced Draft Fan for forced draft systems operating hours. The Auxiliary contact of I.D/F.D fan switch gear is connected to Monitoring system for measurement of run hours.
QA/QC procedures to be applied:	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1

Data / Parameter:	$Q_{ob,k}$
Data unit:	Tons or t
Description:	Quantity of stored fuel type biomass k on the starting date of each monitoring period measured at the Project site
Source of data to be used:	Weigh bridge Log Book/Plant record.
Value of data applied for	XX (value for the Project activity as per CPA XXX)

the purpose of calculating expected emission reductions in section B.5:	
Description of measurement methods and procedures to be applied:	Data type: Measured Data Archiving: Data will be archived by Paper mode. Monitoring: Biomass stored will be measured (by using calibrated Weigh bridge) Calibration Frequency: at least once a year as per the valid regulation (Decision 25/2007/QD-BKHCN issued by the Ministry of Science and Technology on the Frequency of the metering equipments). Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1.

Data / Parameter:	$Q_{np,k}$
Data unit:	Tons or t
Description:	Quantity of subsequent delivery of fuel type k biomass at the Project site
Source of data to be used:	Weigh bridge Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Data Archiving: Data will be archived by Paper mode. Monitoring: Biomass delivery note obtained from the fuel supplier. Calibration Frequency: at least once a year as per the valid regulation (Decision 25/2007/QD-BKHCN issued by the Ministry of Science and Technology on the Frequency of the metering equipments) Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1

Data / Parameter:	$Q_{in,k}$
Data unit:	Tons or t
Description:	Quantity of remaining biomass fuel type k available at the end date of each monitored period measured at the Project site
Source of data to be used:	Weigh bridge Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)

Description of measurement methods and procedures to be applied:	Data type: Measured Data Archiving: Data will be archived by Paper mode. Monitoring: will be measured by using calibrated weigh bridge. Calibration Frequency: : at least once a year as per the valid regulation (Decision 25/2007/QD-BKHCN issued by the Ministry of Science and Technology on the Frequency of the metering equipments) Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. The biomass will be used by first in first out (FIFO) basis and biomass will not be stored for more than one year after the receipt. Applicable for ☐ Scenario 1.

Data / Parameter:	$Q_{c,k} = FC_{biomass,k,y}$
Data unit:	Tons or t
Description:	Quantity of biomass fuel type k consumed during the monitoring period
Source of data to be used:	Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	--
Description of measurement methods and procedures to be applied:	Data type: Calculated Data Archiving: Data will be archived by Paper mode Monitoring: It is calculated by the formula for biomass fuel type $Q_{ob,k}+\Sigma(Q_{np,k})-Q_{in,k}$
QA/QC procedures to be applied:	This can be verified with the help of steam generation and steam to fuel ratio.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1.

Data / Parameter:	$Q_{ob,i}$
Data unit:	Tons or t
Description:	Quantity of stored fuel type fossil i on the starting date of each monitoring period measured at the Project site
Source of data to be used:	Weigh bridge Log Book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Data Archiving: Data will be archived by Paper mode. Monitoring: Fossil fuel stored will be measured (by using calibrated Weigh bridge) Calibration Frequency: : at least once a year as per the valid regulation (Decision 25/2007/QD-BKHCN issued by the Ministry of Science and

	Technology on the Frequency of the metering equipments) Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1.

Data / Parameter:	$Q_{np,i}$
Data unit:	Tons or t
Description:	Quantity of subsequent delivery of fuel type fossil fuel i
Source of data to be used:	Weigh bridge Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Data Archiving: Data will be archived by Paper mode. Monitoring: Fossil fuel delivery note obtained from the fuel supplier. Calibration Frequency: : at least once a year as per the valid regulation (Decision 25/2007/QD-BKHCN issued by the Ministry of Science and Technology on the Frequency of the metering equipments) Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1.

Data / Parameter:	$Q_{in,i}$
Data unit:	Tons or t
Description:	Quantity of remaining fossil fuel type i available at the end date of each monitored period measured at the Project site
Source of data to be used:	Weigh bridge Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Data Archiving: Data will be archived by Paper mode. Monitoring: It will be measured by using calibrated weigh bridge. Calibration Frequency: : at least once a year as per the valid regulation (Decision 25/2007/QD-BKHCN issued by the Ministry of Science and Technology on the Frequency of the metering equipments) Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	

Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1.

Data / Parameter:	$Qc_{,i} = FC_{j,PJ,y}$
Data unit:	Tons or t
Description:	Quantity of fossil fuel type i consumed during the monitoring period
Source of data to be used:	Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	--
Description of measurement methods and procedures to be applied:	Data type: Calculated Data Archiving: Data will be archived by Paper mode Monitoring: It is calculated by the formula for fossil fuel type Qob,i+Σ(Qnp,i)- Qin,i Measured Quantity of Fossil fuel type i available at site on the starting date of the monitoring period (Qob,i) in a year y + Quantity of subsequent delivery of Fossil fuel type i at site throughout monitoring period in a year y (Σ(Qnp,i))- Quantity of remaining Fossil fuel type i available at the end date of each monitored period measured at the Project site in a year y (Qin,i).
QA/QC procedures to be applied:	This can be verified with the help of steam generation and steam to fuel ratio.
Any comment:	The value of Qc,i = FCj,PJ,y This data will be archived upto 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1.

Parameter:	**$MC_{biomass,y}$**
Data Unit:	% water
Description:	Moisture content of the biomass
Source of data to be used:	Laboratory reports
Value of data:	--
Brief description of measurement methods and procedures to be applied:	Measurement of the moisture content of the biomass samples will be for each batch on site by calibrated equipments.
QA/QC procedures to be applied (if any):	--
Any comment:	As per the methodology, this parameter applies for the cases where the emission reductions are calculated based on the biomass energy input. However, emission reductions for the CPA project activity are not calculated based on biomass energy input. This parameter will be used for the determination of dry biomass consumed since the biomass used in the CPA project activity will be on wet basis. Archiving policy: The data will be archived by paper mode and be kept for minimum of two years after the end of the crediting period or the last issuance of CERs for the CPA project activity, whichever occurs later

	Applicable for ☐ Scenario 1, ☐ Scenario 2, ☐ Scenario 3

Data / Parameter:	NCV_k
Data unit:	TJ/Gg or GJ/t
Description:	Net calorific value of biomass fuel k used in the Project activity.
Source of data to be used:	Analysis report of the biomass. One sample randomly picked up from site.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Calculated Analysis Frequency: Annually. Data Archiving: Data will be archived annually by Paper mode. Monitoring: Analysis from accredited or certified independent agency according to relevant national/international standards.
QA/QC procedures to be applied:	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. If the NCV report specifies unit other than TJ/Gg , then it will be appropriately converted. Applicable for ☐ Scenario 1, ☐ Scenario 2, ☐ Scenario 3

Data / Parameter:	$NCV_{i,y}$	
Data unit:	TJ/Gg or GJ/t	
Description:	Weighted average net calorific value of the fuel type i in year y	
Source of data to be used:	Data source	Conditions for using the data source
	a) Values provided by the fuel supplier in invoices	This is the preferred source
	b) Measurements by the Project participants	If a) is not available
	c) Regional or national default values	If a) is not available These sources can only be used for liquid fuels and should be based on well-documented, reliable sources (such as national energy balances).
	d) IPCC default values at the upper limit 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 a) is not available
Value of data applied for the purpose of calculating	XX (value for the Project activity as per CPA XXX)	

expected emission reductions in section B.5:	
Description of measurement methods and procedures to be applied:	Data type: Calculated Recording Frequency: Annually Data Archiving: Data will be archived by Paper mode. Monitoring: Analysis by an independent agency.
QA/QC procedures to be applied:	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. If the NCV report specifies unit other than TJ/Gg, then it will be appropriately converted. $NCV_i = NCV_{j,y}$ i is the fuel type combusted in process j during the year y. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$FC_{i,j,y}$
Data unit:	Tons or t
Description:	Quantity of fossil fuel type i consumed in a process j during the year y
Source of data to be used:	Log book/Plant record
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	--
Description of measurement methods and procedures to be applied:	Data type: Calculated Data Archiving: Data will be archived by Paper mode
QA/QC procedures to be applied:	
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$EC,_{PJ,j,y}$
Data unit:	MWh
Description:	Auxiliary Electricity Consumption of the Project activity from the from Grid in year y
Source of data to be used:	Electromechanical Energy meter/ Electronic Energy Meter/ equivalent Log book/ Plant record
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	--
Description of measurement methods and procedures to be applied:	Data type: Measured using calibrated meters Recording: Monthly Monitoring frequency : Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Calibration Frequency: As per local/national standard or as per

	manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. Accuracy class : Class 2 or better Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$EC_{EL,j,y}$
Data unit:	MWh
Description:	Auxiliary Electricity Consumption of the Project activity from the off grid Captive Power Plant (Diesel Generator set or Fossil fuel based power source) in a year y
Source of data to be used:	Electromechanical Energy meter/ Electronic Energy Meter/ equivalent Log book/ Plant record
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured using calibrated meters Recording: In case of power failure Monitoring Frequency : Continuous, during power failure Data Archiving: Data will be archived by Electronic/Paper mode Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Accuracy class : Class 2 or better Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$AVD_{,y}$
Data unit:	Km
Description:	Average return trip distance (from and to) between the source of the biomass and the site of the Project plant during the year y
Source of data to be used:	Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement	Data Type: Calculated based on the distance kilometres provided buy

methods and procedures to be applied:	trucker /supplier Monitoring frequency : Continuous, at each trip Data Archiving: Data will be archived by Paper mode.
QA/QC procedures to be applied:	Check consistency of distance record provided by trucker / supplier by comparing recorded distances with other information from other sources (eg. maps)
Any comment:	If biomass is supplied from different sites this parameter will corresponds to the mean value of kilometre travelled by trucks that supply the biomass plant. This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$N_{,y}$
Data unit:	--
Description:	Number of truck trips during the year y
Source of data to be used:	Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Monitoring Frequency: Continuous, at each trip Data Archiving: Data will be archived by Paper mode.
QA/QC procedures to be applied:	The data will be checked for consistency by comparing the quantity delivered (no. of truck, '$N_{,y}$') from invoice / delivery note with the quantity of biomass combusted.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$AVD_{c,y}$
Data unit:	Km
Description:	Average round trip distance (from and to) between the biomass fuel supply sites and the site of biomass processing in year y
Source of data to be used:	Data / declaration from supplier
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	The CPA operator shall ensure provision of this parameter from the biomass supplier in the form of declaration Monitoring frequency : Continuous , at each trip
QA/QC procedures to be applied:	--
Any comment:	This data will be archived up to 2 years after the completion of crediting

	period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$N_{c,y}$
Data unit:	--
Description:	Number of truck trips during the transportation of biomass to the biomass processing site in year y
Source of data to be used:	Data / declaration from supplier
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	The CPA operator shall ensure provision of this parameter from the biomass supplier in the form of declaration. Monitoring Frequency: Continuous ,at each trip
QA/QC procedures to be applied:	The data will be check for consistency of the number of truck trips with quantity of biomass combusted
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3

Data / Parameter:	$Q_{steam,old,y}$
Data unit:	Tons or tonnes
Description:	Quantity of steam produced by an existing renewable energy unit in year y
Source of data to be used:	Steam flow meter On site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXXXX)
Description of measurement methods and procedures to be applied:	Data type: On line measurement Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy : ±3% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$Q_{steam,add,y}$
Data unit:	Tons or tonnes
Description:	Quantity of steam generated by additional renewable energy unit at an existing renewable energy production facility in year y
Source of data to be used:	Steam flow meter On site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: On line measurement Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy : +3% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$T_{steam,old,y}$
Data unit:	°C
Description:	Steam Temperature at MSSV (Main steam stop valve) outlet of an existing renewable energy production facility in year y
Source of data to be used:	RTD /RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Estimated/Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent: + 2% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at

	least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$T_{steam,add,y}$
Data unit:	°C
Description:	Steam Temperature at MSSV (Main steam stop valve) outlet of additional renewable energy unit (Boiler) at an existing renewable energy production facility in year y
Source of data to be used:	RTD /RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent: + 2% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$P_{steam,old,y}$
Data unit:	Kg/cm^2g
Description:	Steam Pressure (gauge) at MSSV (Main steam stop valve) outlet of an existing renewable energy production facility
Source of data to be used:	Pressure transmitter/ Pressure Gauge On-site measurement
Value of data applied for the purpose of calculating expected emission	XX (value for the Project activity as per CPA XXX)

reductions in section B.5:	
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy : + 2 % or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$P_{steam,add,y}$
Data unit:	Kg/cm^2g
Description:	Steam Pressure (gauge) at MSSV (Main steam stop valve) outlet of additional renewable energy unit (boiler) at an existing renewable energy production facility in year y
Source of data to be used:	Pressure transmitter/ Pressure Gauge On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy : + 2 % or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$T_{FWB,old,y}$
Data unit:	°C

Description:	Average Feed Water Temperature at inlet an existing renewable energy production facility (boiler) in year y.
Source of data to be used:	RTD /RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Estimated/Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent: +2% or better. Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$T_{FWB,add,y}$
Data unit:	°C
Description:	Feed Water Temperature at inlet of additional renewable energy unit (boiler) at an existing renewable energy production facility in year y.
Source of data to be used:	RTD /RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent: +2% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at

	least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$Q_{flow,old,y}$
Data unit:	m^3/hr
Description:	Flow of heat transfer fluid at the heater outlet of an existing renewable energy production facility in year y.
Source of data to be used:	Heat Flow Meter On site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Estimated/Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy: + 3% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$Q_{flow,add,y}$
Data unit:	m^3/hr
Description:	Flow of heat transfer fluid at the heater outlet of additional renewable energy unit (heater) at an existing renewable energy production facility in year y
Source of data to be used:	Heat Flow Meter On site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be	Data type: Measured Recording: Daily

applied:	Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy: + 3% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quaterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$T_{in,old,y}$
Data unit:	°C
Description:	Inlet Temperature of the heat transfer fluid at the inlet of the heater in an existing renewable energy production facility in year y
Source of data to be used:	RTD /RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Estimated/Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent: ± 2% or better Calibration Frequency – As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐Scenario 3

Data / Parameter:	$T_{in,add,y}$
Data unit:	°C
Description:	Inlet Temperature of the heat transfer fluid at the inlet of the heater in an additional renewable energy unit at an existing renewable energy facility in year y

Source of data to be used:	RTD /RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent: +2% or better Calibration Frequency – As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$T_{out,old,y}$
Data unit:	°C
Description:	Temperature of the heat transfer fluid at the outlet of the heater in an existing renewable energy production facility in year y
Source of data to be used:	RTD /RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Estimated/Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent: + 2% or better Calibration Frequency – As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be	Check of calibration certificate on quarterly basis towards validity of the

applied:	certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$T_{out,add,y}$
Data unit:	°C
Description:	Temperature of the heat transfer fluid at the outlet of the heater in an additional renewable energy unit at an existing renewable energy facility in year y
Source of data to be used:	RTD /RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent: ± 2% or better Calibration Frequency – As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$h_{,old,y}$
Data unit:	Hr or hours
Description:	Boiler / heater operating hours of the existing renewable facility in a year y
Source of data to be used:	Built in timer, in monitoring system. On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement	Recording Frequency: Monitored daily, reported monthly and consolidated

methods and procedures to be applied:	annually Data Archiving: Data will be archived by Electronic/Paper mode The basis for measurement of operating hours is the Induced Draft Fan for balanced draft systems / Forced Draft Fan for forced draft systems operating hours. The Auxiliary contact of I.D/F.D fan switch gear is connected to Monitoring system for measurement of run hours.
QA/QC procedures to be applied:	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$h_{,add,y,}$
Data unit:	Hr or hours
Description:	Boiler / heater operating hours of the renewable energy unit in a year y
Source of data to be used:	On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording Frequency: Monitored daily, reported monthly and consolidated annually Data Archiving: Data will be archived by Electronic/Paper mode The basis for measurement of operating hours is the Induced Draft Fan for balanced draft systems / Forced Draft Fan for forced draft systems operating hours. The Auxiliary contact of I.D/F.D fan switch gear is connected to Monitoring system for measurement of run hours.
QA/QC procedures to be applied:	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$Q_{ob,k,add}$
Data unit:	Tons or t
Description:	Quantity of stored fuel type biomass on the starting date of each monitoring period measured at the Project site
Source of data to be used:	Weigh bridge Log Book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)

Description of measurement methods and procedures to be applied:	Data type: Measured Data Archiving: Data will be archived by Paper mode. Monitoring: Biomass stored will be measured (by using calibrated Weigh bridge) Calibration Frequency: As per weigh bridge Manufacturer's standards as per Weight & Measurement department. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on monthly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$Q_{np,k,add}$
Data unit:	Tons or t
Description:	Quantity of subsequent delivery of fuel type biomass at the Project site
Source of data to be used:	Weigh bridge Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Data Archiving: Data will be archived by Paper mode. Monitoring: Biomass delivery note obtained from the fuel supplier. Calibration Frequency: As per weigh bridge Manufacturer's standards as per Weight & Measurement department. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on monthly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$Q_{in,k,add}$
Data unit:	Tons or t
Description:	Quantity of remaining biomass fuel type k available at the end date of each monitored period measured at the Project site
Source of data to be used:	Weigh bridge Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Data Archiving: Data will be archived by Paper mode. Monitoring: It will be measured by using calibrated weighing machine.

	Calibration Frequency: As per weigh bridge Manufacturer's standards as per Weight & Measurement department. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on monthly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$Q_{c,k,add}$
Data unit:	Tons or t
Description:	Quantity of biomass fuel type k consumed during the monitoring period
Source of data to be used:	Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	--
Description of measurement methods and procedures to be applied:	Data type: Calculated Data Archiving: Data will be archived by Paper mode Monitoring: It is calculated by the formula for biomass fuel type $Q_{ob,k,add}+\Sigma(Q_{np,k,add})-Q_{in,k,add}$
QA/QC procedures to be applied:	This can be verified with the help of steam generation and steam to fuel ratio.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 3

Data / Parameter:	$Q_{retrofit,steam}$
Data unit:	Tons or t
Description:	Quantity of steam supplied after fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility in year y.
Source of data to be used:	Steam flow meter Onsite measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy : ±3% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after

	calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$T_{retrofit,steam}$
Data unit:	°C
Description:	Steam Temperature at MSSV (Main steam stop valve) outlet after fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility.
Source of data to be used:	RTD /RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+Temperature Transmitter/ Temperature Gauge/ equivalent: $\pm$ 2% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$P_{retrofit,steam}$
Data unit:	Kg/cm^2g
Description:	Steam Pressure (gauge) at MSSV (Main steam stop valve) outlet after fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility.
Source of data to be used:	Pressure transmitter/ Pressure Gauge On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be	Data type: Measured Recording: Daily

applied:	Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy : ± 2 % or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. .
QA/QC procedures to be applied:	Calibration will be conducted by independent accredited third party entity.
Any comment:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$T_{retrofit,FWB}$
Data unit:	°C
Description:	Feed Water Temperature at inlet of the boiler after fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility.
Source of data to be used:	RTD /RTD + Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+ Temperature Transmitter/ Temperature Gauge/ equivalent: ± 2% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$Q_{retrofit,flow}$
Data unit:	m^3/hr
Description:	Flow of heat transfer fluid at the heater outlet after fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility in

	year y.
Source of data to be used:	Heat Flow Meter On site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy: ± 3% or better Calibration Frequency: As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$T_{retrofit,in}$
Data unit:	°C
Description:	Inlet Temperature of heat transfer fluid at the inlet of the heater after fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility.
Source of data to be used:	RTD /RTD+ Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+ Temperature Transmitter/ Temperature Gauge/ equivalent: ± 2% or better Calibration Frequency – As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years.

	Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration. Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$T_{retrofit,out}$
Data unit:	°C
Description:	Temperature of heat transfer fluid at the outlet of the heater after fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility.
Source of data to be used:	RTD /RTD+ Temperature Transmitter/ Temperature Gauge/ equivalent On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Recording: Daily Monitoring Frequency: Continuous Data Archiving: Data will be archived by Electronic/Paper mode. Accuracy Class: RTD: Class B or better Accuracy: RTD+ Temperature Transmitter/ Temperature Gauge/ equivalent: $\pm$ 2% or better Calibration Frequency – As per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. . Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$h_{,retrofit,y}$
Data unit:	Hr or hours
Description:	Operating hours of Boiler / heater after fuel switching from fossil fuel to biomass by modification including retrofit of an existing facility in year y.
Source of data to be used:	Built in timer in monitoring system. On-site measurement
Value of data applied for the purpose of calculating expected emission	XX (value for the Project activity as per CPA XXX)

reductions in section B.5:	
Description of measurement methods and procedures to be applied:	The basis for measurement of operating hours is the Induced Draft Fan for balanced draft systems / Forced Draft Fan for forced draft systems operating hours. The Auxiliary contact of I.D/F.D fan switch gear is connected to Monitoring system for measurement of run hours. Recording Frequency: Monitored daily, reported monthly and consolidated annually Data Archiving: Data will be archived by Electronic/Paper mode
QA/QC procedures to be applied:	--
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$Q_{retrofit,ob,k}$
Data unit:	Tons or t
Description:	Quantity of stored fuel type biomass k on the starting date of each monitoring period measured at the Project site in a year y
Source of data to be used:	Weigh bridge Log Book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Data Archiving: Data will be archived by Paper mode. Monitoring: Biomass stored will be measured (by using calibrated Weigh bridge) Calibration Frequency: As per weigh bridge Manufacturer's standards as per Weight & Measurement department. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$Q_{retrofit,np,k}$
Data unit:	Tons or t
Description:	Quantity of subsequent delivery of fuel type biomass k in a year y
Source of data to be used:	Weigh bridge Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be	Data type: Measured Data Archiving: Data will be archived by Paper mode.

applied:	Monitoring: Biomass Delivery note obtained from the fuel supplier. Calibration Frequency: As per weigh bridge Manufacturer's standards as per Weight & Measurement department. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$Q_{retrofit,in,k}$
Data unit:	Tons or t
Description:	Quantity of remaining biomass fuel type k available at the end date of each monitored period measured at the Project site in a year y
Source of data to be used:	Weigh bridge Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	XX (value for the Project activity as per CPA XXX)
Description of measurement methods and procedures to be applied:	Data type: Measured Data Archiving: Data will be archived by Paper mode. Monitoring: It will be measured by using calibrated weigh Bridge. Calibration Frequency: As per weigh bridge Manufacturer's standards as per Weight & Measurement department. Calibration will be conducted by independent accredited third party entity.
QA/QC procedures to be applied:	Check of calibration certificate on quarterly basis towards validity of the certificate. Compare with manufacturer's standards towards accuracy after calibration.
Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$Q_{retrofit,c,k}$
Data unit:	Tons or t
Description:	Quantity of biomass fuel type k consumed during the monitoring period
Source of data to be used:	Log book/Plant record.
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	--
Description of measurement methods and procedures to be applied:	Data type: Calculated Data Archiving: Data will be archived by Paper mode Monitoring: It is calculated by the formula for Biomass fuel type $Q_{retrofit,ob,k}+\Sigma(Q_{retrofit,np,k})-Q_{retrofit,in,k}$
QA/QC procedures to be applied:	This can be verified with the help of steam generation and steam to fuel ratio.

Any comment:	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later. Applicable for ☐ Scenario 2

Data / Parameter:	$EF_{CO2,i,y}$	
Data unit:	tCO_2/GJ	
Description:	Weighted average CO_2 emission factor of fuel type i in year y	
Source of data to be used:	The following data sources may be used if the relevant conditions apply:	
	Data source	Conditions for using
	a) Value provided by the fuel supplier in invoices	This is the preferred source
	b) Measurements by the Project participants	If, a) is not available
	c) Regional or national default values	If a) is not available These sources can only be used for liquid fuels and should be based on well-documented, reliable sources (such as national energy balances).
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	--	
Description of measurement methods and procedures to be applied:	For a) and b): Measurements should be undertaken in line with national or international fuel standards For a) and b): The CO_2 emission factor should be obtained for each fuel delivery, from which weighted average annual values should be calculated. For c): Review appropriateness of the values annually For d): Any future revision of the IPCC Guidelines should be taken into account	
QA/QC procedures to be applied:	--	
Any comment:	Applicable where Option B is used. For a): If the fuel supplier does provide the NCV value and the CO_2 emission factor on the invoice and these two values are based on measurements for this specific fuel, this CO_2 factor should be used. If another source for the CO_2 emission factor is used or no CO_2 emission factor is provided, Options b), c) or d) should be used. Applicable for ☐ Scenario 1 ☐ Scenario 2 ☐ Scenario 3.	

SECTION C. Environmental analysis

>>

C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:

>>

1. Environmental Analysis is done at PoA level ☐

2. Environmental Analysis is done at SSC-CPA level ☐

Since every CPA included in PoA will need to undertake Environmental analysis in form of approval from local Authorized body clearance letter or equivalent statutory clearance. The same will be submitted to Verifier DOE during the periodic verification of CPAs. Hence, CME proposes to undertake Environmental analysis at CPA level

C.2. Documentation on the analysis of the environmental impacts, including transboundary impacts:

>>

Environmental Impact Analysis is necessary at CPA level ☐
Environmental Impact Analysis is not necessary at CPA level ☐

Though the PoA involves installation of biomass based heat generation systems the nature of the Project activities at the SSC CPA level may vary hence Environmental analysis is considered at SSC CPA level.

C.3. Please state whether an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA), in accordance with the host Party laws/regulations:

>>

According to the regulations of the Law on Environmental protection of Vietnam (the Law on According to the Decision No. 80/2006/ND-CP dated 09/08/2006, the guidance on Environmental Protection Law of Vietnam 2005 and Circular No. 08/2006/TT-BTC dated 08/09/2006, the project activity has to the project that are required to secure Environmental Compliance Certificates (ECC) and submitted a Environmental Compliance Analysis. The CPA operator therefore will commission a third party to conduct the required Environmental Compliance Analysis (ECA) and the Environmental Compliance Certificate (ECC) will be issued by the local authority.

SECTION D. Stakeholders' comments

>>

D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:

1. Local stakeholder consultation is done at PoA level ☐
2. Local stakeholder consultation is done at SSC-CPA level ☐

D.2. Brief description how comments by local stakeholders have been invited and compiled:

>>

The local stakeholders' consultation for the CPA activity was conducted on DD/MM/YYYY at XXXXX. The local authorities were received an official invitation letters, the local radio broadcast was used to provide information on the CPA and invite local residents and the local authorities who may be effected by the CPA activity, the local stakeholder identified for the proposed project are as follows:

- Representative of Commune People Committee
- Representative of Commune Fatherland Committee
- Representative of employees of resident villages
- Householders nearby the project's site

Note - Justification to be provided for the means of invitation, questionnaire of the stakeholder consultation.

D.3. Summary of the comments received:

>>

Comments from the stake holders are summarized for each CPA and any doubts or concerns of the stakeholders about the proposed Project activity, have been addressed.

Note - Assessment of the comments

D.4. Report on how due account was taken of any comments received:

>>

A summary of how due account has been taken of comments received are provided for each CPA. The summary of positive / negative comments are addressed as below

Negative comment raised by stakeholders	Response / Explanation or Mitigation action

Annex 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE SMALL-SCALE CPA

Organization:	**XX**
Street/P.O.Box:	**XX**
Building:	**XX**
City:	**XX**
State/Region:	**XX**
Postfix/ZIP:	**XX**
Country:	**XX**
Telephone:	**XX**
FAX:	**XX**
E-Mail:	**XX**
URL:	**XX**
Represented by:	**XX**
Title:	**XX**
Salutation:	**XX**
Last Name:	**XX**
Middle Name:	**XX**
First Name:	**XX**
Department:	**XX**
Mobile:	**XX**
Direct FAX:	**XX**
Direct tel:	**XX**
Personal E-Mail:	**XX**

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

The CPA will not receive any public funding from Parties included in Annex I of the UNFCCC.

Annex 3

BASELINE INFORMATION

Data used to calculate the baseline emissions factor of the electricity grid:

Variable	Value / Unit	Source
Operating Margin Emission Factor	0.6464 tCO_2/MWh	Grid Emission Factor Report (2003-2008) approved by DNA Vietnam dated 26th March 2010
Build Margin Emission Factor	0.5064 tCO_2/MWh	Grid Emission Factor Report approved (2003-2008) by DNA Vietnam dated 26th March 2010
Combined Margin Emission Factor	0.5764 tCO_2/MWh	Grid Emission Factor Report (2003-2008) approved by DNA Vietnam dated 26th March 2010

Annex 4

MONITORING INFORMATION

Please refer to section B.6.1 of this CPA DD