United Nations Climate Change Secretariat

Training-Workshop on CDM Post-registration Changes (PRCs) and Programme of Activities (PoAs)
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PoA Case Study 2 - Multiple Methodologies

Guidance to carry out the case study

- Read the relevant information on the PoA and the reference regulatory documents provided for the case study.
- After reading the documents, discuss the questions asked within your group and then try to answer them individually.
- A plenary discussion will follow where selected members of your group can present your results.
- The facilitators will comment on your results and compare them with the ones suggested by the UNFCCC secretariat.

Case Study 2a

- **Brief description of the PoA**

The Programme of Activities involves the installation and operation of biogas recovery systems at industrial waste water treatment plants located in a single host party.
The recovered biogas will be captured and flared or used for energy (thermal / electricity) generation.

A typical CPA under the PoA will introduce a new treatment system with biogas recovery or install a biogas recovery system at an existing anaerobic treatment plant.
The CPA will capture and flare the biogas in an enclosed/open flare or alternatively will utilize the recovered biogas for electricity or heat generation.

The PoA-DD states:

1) AMS-III.H. "Methane recovery in wastewater treatment" Version 16 is applied in CPAs.

2) SSC-CPA can opt to use other SSC methodologies based on the biogas utilization for each specific SSC-CPA.i.e. AMS-I.C, AMS-I.D and AMS-I.F

The PoA-DD includes the following sources of baseline emissions with their respective equations:

- $BE_{power,y}$ = Baseline emissions from electricity or fuel consumption
- $BE_{ww,treatment,y}$ = Baseline emissions of the wastewater treatment systems affected by the project
- $BE_{s,treatment,y}$ = Baseline emissions of the sludge treatment systems affected by the project
- $BE_{ww,discharge,y}$ = Baseline emissions from degradable organic carbon in treated wastewater discharged into sea/river/lake
- $BE_{s,final,y}$ = Baseline emissions from anaerobic decay of the final sludge produced

The PoA-DD includes the following parameters to be monitored by each CPA

- $Q_{ww,i,y}$ = Volume of wastewater treated in baseline wastewater treatment system *i*
- COD $_{ww,untreated,y}$ = COD of untreated wastewater before the treatment system
- COD $_{ww,treated,y}$ = COD of treated wastewater after the treatment system
- COD $_{ww,discharged,y}$ = COD of discharged wastewater after the treatment system
- $S_{l,PJ,y}$ = Amount of dry matter in the sludge treated by the sludge treatment system
- $BG_{burnt,y}$ = Biogas flared/combusted in year y
- $w_{CH4,y}$ = Methane content of the biogas
- T and P = Temperature and pressure of the biogas
- FE = Flare efficiency

- **Reference regulatory documents**

1. *"STANDARD FOR DEMONSTRATION OF ADDITIONALITY, DEVELOPMENT OF ELIGIBILITY CRITERIA AND APPLICATION OF MULTIPLE METHODOLOGIES FOR PROGRAMME OF ACTIVITIES, Version 03.0"* - para. 31(c),
2. *AMS-III.H "Methane recovery in wastewater treatment", version 16- pages?*
3. *"CDM Project Cycle Procedure, version 3",* paragraph 14 (h).

- **Questions:**

1. How would the emission reductions be generated in this PoA?
2. Is the application of multiple small scale methodologies in line with the Standard for Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities Version 03.0 (EB 74 Annex 5))?
3. Is the assessment of cross effects needed? If so why?

Case Study 2b

- **Brief description of the PoA**

The overall objective of the PoA is the installation of domestic biodigesters as a clean, sustainable energy source throughout country B. The domestic energy needs are currently met by the use of fuels such as fire wood, kerosene, LPG and others. The biogas will be generated from cow dung, kitchen waste and other organic putrescible material that is treated in the biodigesters. The activity of the PoA will make the households self-sufficient in the daily fuel requirements for cooking and heating.

In each household, a family-size biodigester together with a biogas-based cooking stove unit will be installed. The biodigester will be a fixed dome model favouring the use of local materials for the construction. The capacity range of the biodigesters will be from 2 to 15 m^3. The biogas unit size for a particular household will be chosen based on the number and type of cattle owned by the household and the number of people in the household.

The methodologies applied in the PoA are:

(i) AMS-I.C "Thermal energy for user with or without electricity", version 19

In the baseline scenario the households are using kerosene for cooking and also for starting fire in the traditional wood stoves which will be saved during the project period due to the use of biogas stove. The biogas stove will fulfill the thermal energy needs of the households.

(ii) AMS-I.E "Switch from non-renewable biomass for thermal applications by the user", version 04

The proposed measure will introduce small, family-sized biogas systems (bioreactors and cookers) that supply thermal energy for household cooking needs to substitute wood used in the baseline situation. Only the non-renewable fuel wood used for cooking in the baseline is considered in the emission reduction calculations. For households participating in this project, their fuel wood use will be replaced with the use of biogas generated in small biogas reactors (renewable energy derived from cattle dung).

(iii) AMS-III.R "Methane recovery in agricultural activities at the household/small farm level", version 02

In the proposed measure, animal manure that is currently dumped in pits . Each household has a pit 1 m deep, where waste from the cattle shed – cow dung, straw, green fodder and urine – is dumped. Crop waste, food waste, and sometimes toilet waste are also disposed to the pit. The waste is not turned or mixed during the year. Cow urine, wastewater from the kitchen and other liquids are added to keep the mass in the pits wet or liquid. During the rainy season the pits also get filled with rainwater. The pits are cleaned out once a year. The animal waste is decaying anaerobically in the pit and emits methane. After introducing a biogas unit, the amount of animal manure fed into

biodigesters will not be left to decay anaerobically in the pit. Instead the manure that is fed into the biodigester will break down anaerobically in the biodigester. The biogas that is produced will be held in the biodigester until it is combusted in the biogas burners and used for cooking and heating water. According to AMS-III.R:

- **Reference regulatory documents**

1. *STANDARD FOR DEMONSTRATION OF ADDITIONALITY, DEVELOPMENT OF ELIGIBILITY CRITERIA AND APPLICATION OF MULTIPLE METHODOLOGIES FOR PROGRAMME OF ACTIVITIES (Version 03.0).*
2. *AMS-I.C "Thermal energy for user with or without electricity", version 19*
3. *AMS-I.E "Switch from non-renewable biomass for thermal applications by the user", version 04*
4. *AMS-III.R "Methane recovery in agricultural activities at the household/small farm level", version 03*
5. *Appendix B, "General guidelines to SSC CDM methodologies"*

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- **Questions for discussion:**

1. How would the emission reductions be generated in this PoA?
2. In this case study, is it needed the assessment of cross effects? Why?