

QUESTIONS ON THE SAMPLING STANDARD:

1. **Are there any areas of the sampling standard that need further elaboration or can potentially be simplified? For example does paragraph 19 (and footnote 14) related to the sampling plan for a group of CPAs need further elaboration? If so, what are the options to indicate homogeneity?**

The use of a single sampling plan is an efficient and method of conducting monitoring surveys for small scale CDM PoAs especially where the project activity involves distribution of technologies to households across wide geographical areas and methodological monitoring requirements involve testing and or physical spot checks.

The current version of the STANDARD FOR SAMPLING AND SURVEYS FOR CDM PROJECT ACTIVITIES AND PROGRAMME OF ACTIVITIES Version 2 has only the mention of the applicability of the single sampling plan and a confidence/precision level of 95/10. This however does not provide PPs or DOEs with clear guidance on the application of the same for actual monitoring survey designs.

The CDM Workshop on Project Cycle did however define the minimum thresholds which are to be used by a PP to demonstrate standardization of CPAs for which a single sampling plan is applicable as follows:

Simplified Sampling Requirements for Homogeneous PoAs:

Parameter values shall be estimated by sampling in accordance with the requirements in the applied methodology separately and independently for each of the CPAs included in a PoA unless the CME demonstrates that the PoA confirms to the definition of homogeneous PoA per paragraph 56 and meets the applicability conditions (size threshold) as specified in paragraph 57 below.

56. A homogeneous PoA is defined when all CPAs included in a PoA implement technologies/measures only with high degree of standardisation

The high degree of standardisation of technology/measures shall be demonstrated [in relation to] [using applicable criteria from the following]:

- baseline and project technology/measure,
- where relevant fuel/feed stock inputs,
- type and capacity of service,
- geographic location particularly the ambient/weather conditions of interest.
- Combinations of technologies/measures and/or methodologies are applied as per paragraph 11.a to 11.d of STANDARD FOR APPLICATION OF MULTIPLE CDM METHODOLOGIES FOR A PoA

57. Homogeneous PoAs can apply a simplified sampling approach when each independent subsystem/measure in the CPA is equal to or smaller than a threshold value which is 1% of Small Scale CDM thresholds.

58. For homogeneous PoAs, to determine parameters for PoA-DD/CPA-DD preparation (i.e. before implementation of CPAs) or for monitoring reports, a common sampling plan can be undertaken if it is implemented during the specified period under the following conditions:

(a) It is demonstrated that values of parameter of interest are proved not changed significantly over the time period specified (e.g. usage hours of light bulbs in a PoA for efficient lighting or household fossil fuel consumption in a PoA for efficient cook stoves are unlikely to change significantly within a period of about 3 years), or

(b) If the values of parameter of interest are expected change significantly over time such as a failure rate or retention rate of project equipment (e.g. CFL), group of CPAs covered under the common sampling plan shall have [been started and commissioned within a specified period defined by CMEs (e.g. overlap with +/- 2 months)] [been implemented during an overlapping time periods for the major part] [been implemented around the same time].

(c) [95/10] [95/5] confidence/precision shall be applied to determine sample size.

(d) As required in the Procedures (Section V), the common sampling plan shall be included in CDM-PoA-DD/CPA-DD along with necessary justifications indicated above which will be validated by a DOE.

Sampling Requirements for DOE validation and verification for PoAs:

59. When DOEs select a validation and verification method that uses sampling approach i.e. without verifying all CPAs, a statistically sound sampling method/procedure shall be used.

60. Statistically sound method shall meet the following sampling requirements:

(a) For homogeneous PoAs satisfying the paragraph 56 and 57 conditions, DOEs shall follow options available in paragraph 51 and 52.

(b) For PoAs that do not confirm to the definition of homogeneous PoA per paragraph 55 but consist of only subsystem technology/measures that are no greater than [10%] of SSC CDM threshold, DOEs shall follow paragraph 52(a). All project units in the PoA shall be considered as the population for the calculation of sampling size for DOEs.

(c) For rest of the PoAs not covered by paragraph 60(a) or 60(b), DOEs shall verify each CPA and each technology/measure within the CPA.

This demonstration of standardization therefore serves a pivotal benchmark which PPs or DOEs can use to assess which CPAs implemented under a PoA are eligible to be monitored under the single sampling plan approach and therefore this demonstration should be included in the standard as has been demonstrated in the draft inputs document at : https://cdm.unfccc.int/public_inputs/2012/eb69_01/eb69_ss.pdf.

2. Are the proposed approaches and best practice examples on acceptance sampling practical and appropriate? Is there any section of the document which requires more clarification and examples?

The following question draws from the Best practice examples focusing on sample size and reliability calculations and sampling for validation/verification.

In calculation of the mean values the best practices call for the PP to calculate the sample size using the following parameters:

- (a) The expected mean (the desired reliability is expressed in relative terms to the mean);
- (b) The standard deviation;
- (c) The level of precision, and confidence in that precision (90/10 for all small-scale examples).

At the design stage it might be difficult perhaps even impracticable for the PP to know the standard deviation. For example in a project activity under the baseline and monitoring methodology AMS-II.G it might be difficult for the PP to estimate the standard deviation for the parameter of interest which is the mean value for the thermal efficiency of improved cook stoves at the time of developing the design documentation.

Using the same illustration which requires Water boiling Tests for calculation of the thermal efficiency using available public literature is also not applicable given the often wide discrepancies in Water boiling test results because of variables such as technology, altitudes and fuel types. In fact the only way to truly assess these variables would be for the PP to conduct a pilot study. In fact this has been specifically described in Paragraph 9 b of the best practices as a follows:

“In a situation where we do not have any information from previous studies, we could take a preliminary sample as a pilot and use that sample to provide our estimates;”

However this might not always be practical in real life implementation of the project activity for example in a PoA which encompasses multiple technologies which would yield different results (using the same illustration of the AMS-II.G project activity)

There should be included in the best practice examples an equation that allows the PP to calculate the sample size where these variables are unknown at the time of design. This equation can be as follows:

$$n_0 = \frac{Z^2 \sigma^2}{e^2}$$

Where:

n_0 = Sample Size

Z^2 = Required confidence 95% (1.96)

σ^2 = Variance of an attribute in the population (a conservative value using the maximum variance of 0.5 shall be used)

e^2 = Desired Precision level

This approach is also described to be statistically valid and has been referenced in the University of Florida sample size calculation which can be found at: <http://edis.ifas.ufl.edu/pd006>.