Project-based MRV: best practices and lessons learned from the CDM

1st Autumn School of the International Partnership on Mitigation and MRV "MRV – today, tomorrow and the future"

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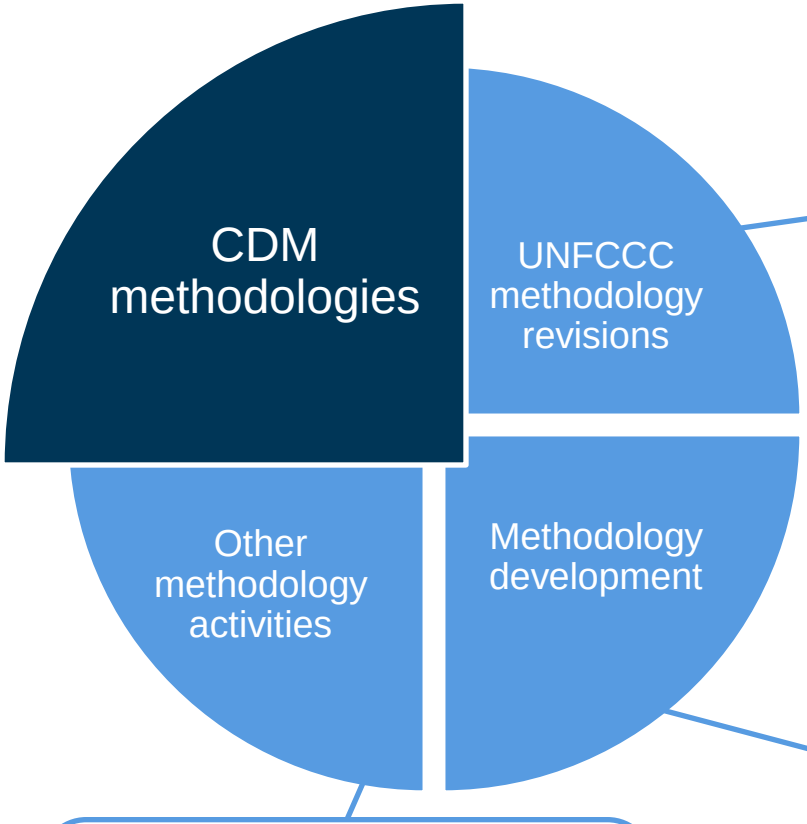
Overview

- Perspectives‘ credentials in CDM
- Experience with MRV in the CDM, including PoAs
- Common problems encountered during verification
- The role of standardisation and sampling
- Implications of different types of measures for MRV
- Conclusions/lessons learned from CDM
- Case study (if we have time) – MRV framework for EE NAMA in Mexico: “Sector Vivienda”

Expertise: CDM/JI methodologies approved by UNFCCC



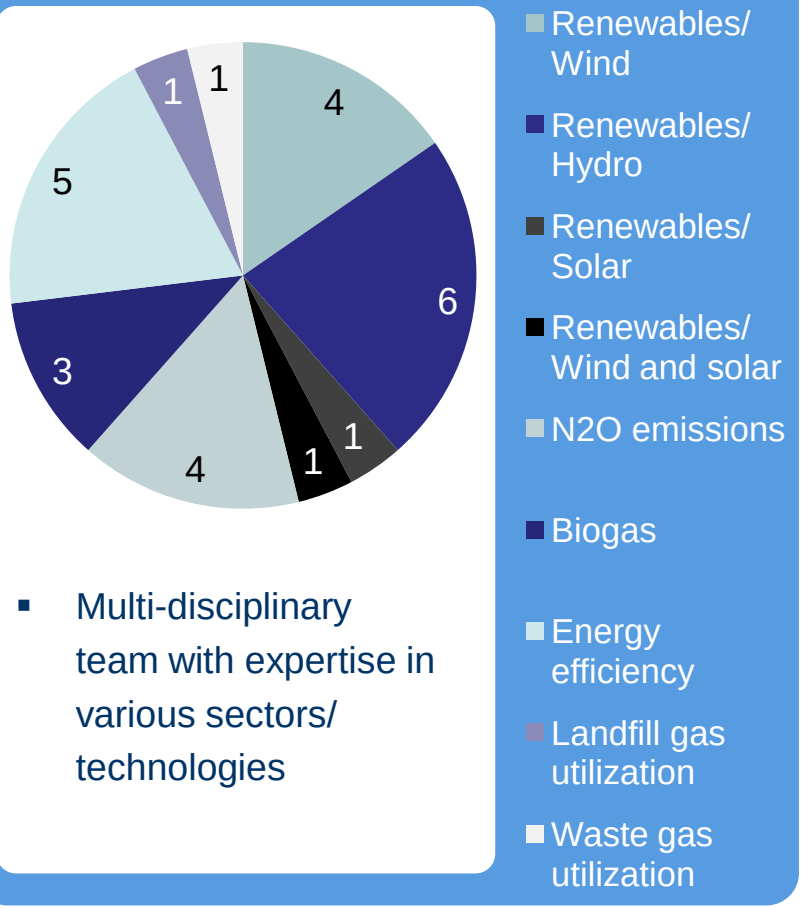
- CDM Methodology AM0021
- CDM Methodology ACM0001
- CDM Methodology ACM0002
- CDM Methodology ACM0006
- CDM Methodology AMS-III.A.
- CDM Methodology AMS-III.F.

- AM0021: N2O reduction in the production of adipic acid
- AM0029: Grid-connected electricity generation plants using natural gas
- AM0046: Lighting retrofit for residential use
- AM0056: Efficiency improvement by boiler replacement or rehabilitation and optional fuel switch in fossil fuel fired steam boiler systems
- NM0217: Grid-connected supercritical coal-fired power generation
- AMS-III.A.: Urea offset by inoculants application in soy-bean-corn rotations on acidic soils on existing croplands
- AM0083: Avoidance of landfill gas emissions by in-situ aeration of landfills
- AM0091: Energy efficiency and fuel switching measures in new buildings

- JI methodology development for N2O reduction in the production of adipic acid
- Contributions to a CDM methodology for Carbon Capture and Storage (CCS)

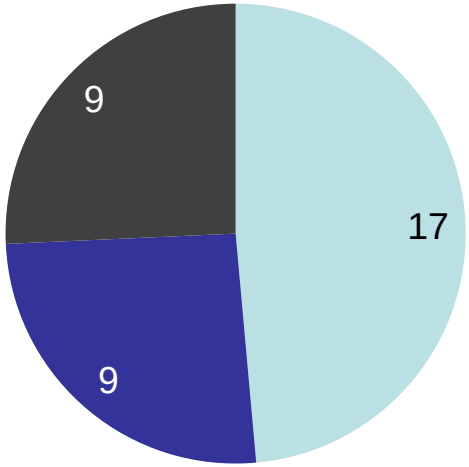
Expertise: CDM/JI references

CDM projects: Technology



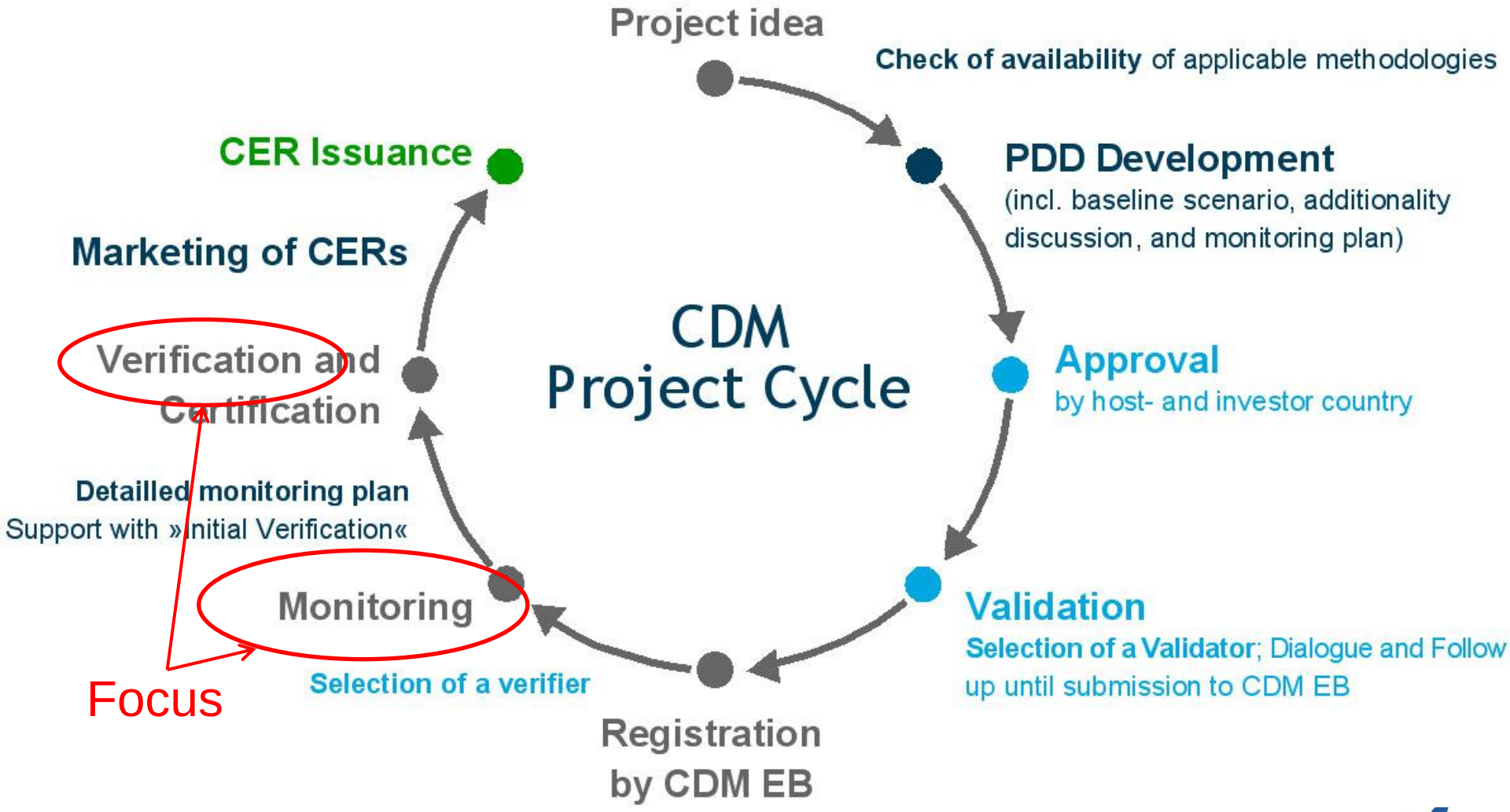
- Multi-disciplinary team with expertise in various sectors/ technologies

CDM projects: Status



- Including 14 PoAs

The standard CDM project cycle



CDM: Not all monitoring is the same

Project type related differences

- Monitoring only after implementation of the project activity
- Monitoring already required during the implementation phase

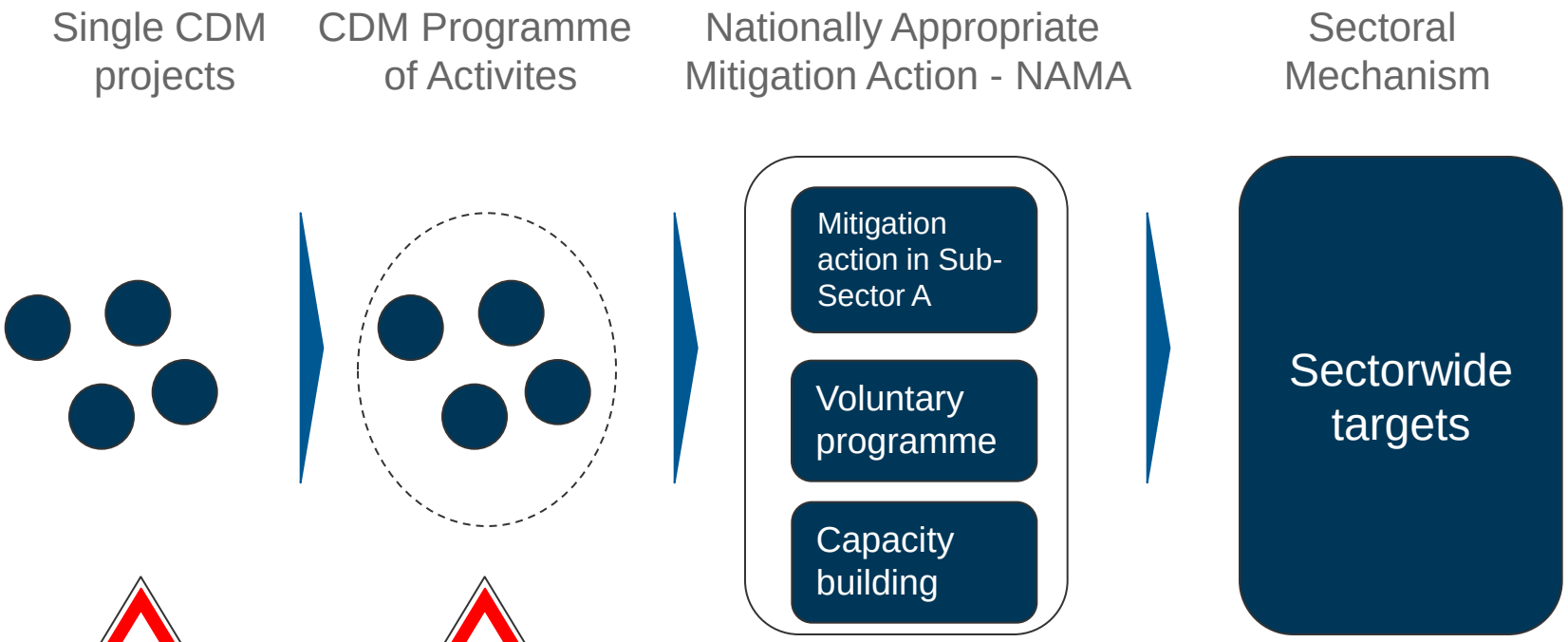
Methodology related differences

- Methodology provides very stringent and fixed procedures
  - e.g. ACM0002 (grid-connected renewable energy generation)
- Methodology leaves a high level of interpretation
  - e.g. AMS II.G (e.g. cook stoves), AMS II.C (e.g. CFLs)

PoA related differences

- Some methodologies include extra requirements for PoAs
  - e.g. AMS III.AO - requires independent monitoring of scrapping
  - e.g. AMS II.G – requires monitoring of leakage / discounting

NAMAs are more closely related to PoAs



Setting up the Monitoring for a succesful PoA – part I

Project Idea

- Applicability of methodology(ies)
- Requirements for monitoring (PoA specific)

Programme Design Document (PoA-DD)

- **Defining the Monitoring Plan**
- Complying with requirements of methodology/ies
- Defining the requirements for all CPAs
- **Designing the monitoring procedures**
- **Defining the responsibilities**
- Defining the PoA boundary

CDM Programme Activity Design Document (CPA-DD)

- **Applies Monitoring Plan as given in the PoA-DD**
- **Adjust monitoring procedures if required**

Foundations of successful monitoring provided *in the design stage* of PoA

perspectives climate change

Setting up the Monitoring for a succesful PoA - Part II

Validation/Registration

- DOE/EB checks correct application of methodology/ies and CDM requirements
  - parameters to be measured, frequencies, calibration etc

Implementation

- e.g. training of staff involved in monitoring, set up of monitoring database, install equipment, design monitoring forms, road-testing procedures etc

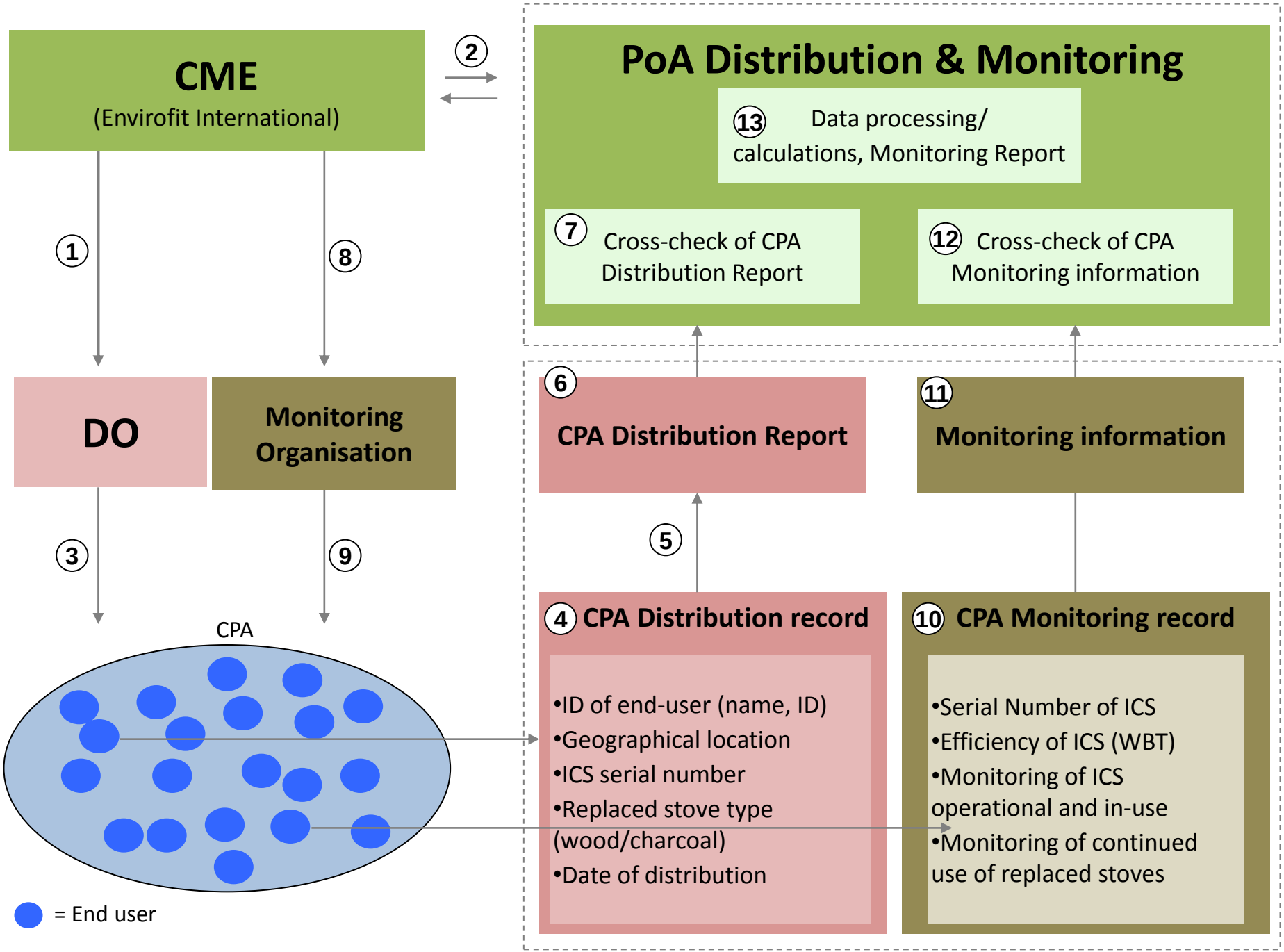
Conducting the monitoring

- Monitoring occurs continuously over the life of the PoA
- Likely to involve remote metering, sampling etc
- Data transfer to a central database managed by the CME

Case study I – Cook stove PoAs

- Monitoring plan design and implementation is critical for successful cook stove PoA
  - 1000s of end users in each CPA
  - Difficult to locate, contact
  - Must prove actually using stoves
- AMS.II.G provides limited detail on monitoring certain things:
  - e.g. Need to monitor consumption of biomass using old (baseline) stoves if not scrapping them
- Sampling is essential given number of end users and CPAs
- Sampling across CPAs is now possible (but only for SSC!)

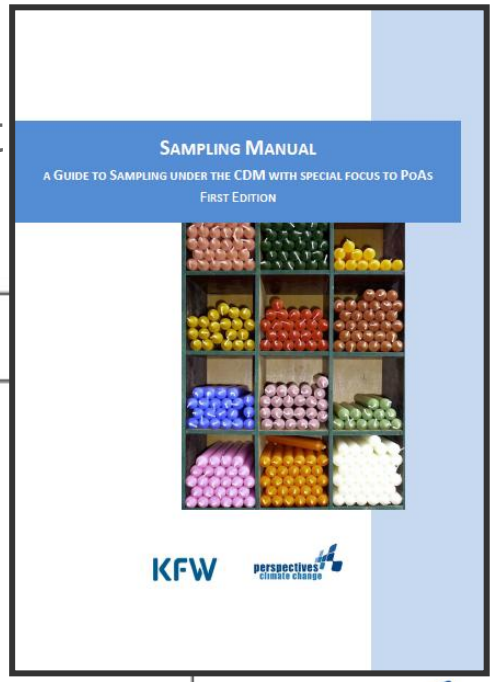
→ **Both CME and local partners play a critical role**


CME
(Envirofit International)
2
PoA Distribution & Monitoring
13 Data processing/ calculations, Monitoring Report
7 Cross-check of CPA Distribution Report
12 Cross-check of CPA Monitoring information
1
8
DO
Monitoring Organisation
6
CPA Distribution Report
11
Monitoring information
5
3
9
CPA
4 CPA Distribution record
•ID of end-user (name, ID)
•Geographical location
•ICS serial number
•Replaced stove type (wood/charcoal)
•Date of distribution
10 CPA Monitoring record
•Serial Number of ICS
•Efficiency of ICS (WBT)
•Monitoring of ICS operational and in-use
•Monitoring of continued use of replaced stoves
= End user

The role and importance of sampling

- Sampling aims to obtain: (a) *unbiased* and (b) *reliable estimates* of the mean value of parameters used in calculating GHG reductions
- Can reduce the costs of monitoring... if sampling plan is workable!
  - See example on next slide
- Critical for projects/PoAs involving many small activities
- Sampling Standard approved by EB in Nov 2011
- Limited experience to date + room for improvement
- See *KfW Sampling Manual* for further guidance

Parameter	Description of parameter	Confidence/precision level (frequency of sampling)[b]
η_{new}	The thermal efficiency of the ICS distributed (%)	Cross-CPA sampling: • 95/10 CPA-specific sampling: • 90/10 if annual • 95/5 if biennial
SOF	The Stove Operating Fraction, i.e. the fraction (up to 1.0) of users using the ICS	
u_{old}	The amount of woody biomass that continues to be used in the replaced stoves (kg)	
f_{old}	The fraction of stove users still using baseline (replaced) stoves (up to 1.0)	



Case Study II: PoA 2535: CUIDEMOS PoA - Smart Use of Energy Mexico

- First PoA registered (in 2009), involves distribution of CFLs to households in Mexico
- First monitoring period 01/12/2009 – 30/11/2010
- Issuance request in June 2011 for 27,665 CERs was rejected by the EB
- Examples of the issues raised by the EB:
  - Operating hours for sampled CFLs were not fully reported (data from sample group only available for 5-359 days, while monitoring period covers 365 days)
  - Number of CFLs distributed included some extra CFLs given to the same household – max. 4 were allowed in the PDD
  - No exchange record for nearly 2000 households in the system, but emissions reductions were assumed based on hypothetical values

Verification: what are the biggest challenges for DOEs?

1. Change in project design/actual monitoring compared with what was stated in the registered PDD
   - e.g different MW capacity, monitoring equipment used etc
   - means PP has to change PDD → cumbersome procedure
2. Calibration of measurement equipment
   - frequency of calibration, correct procedures followed etc
   - how to deal with this during verification? e.g. discounting
3. Cross-checking claims made in monitoring reports
   - each figure needs to be verified by DOE!
   - how to do this? Compare with other plants, literature values, Govt statistics?

→ **Problem: CDM rules do not allow for much flexibility**

→ **Accuracy is required for crediting...**

Default values and standardisation

- CDM reform has shown that greater use of default values and standardisation can greatly simplify monitoring → also for NAMAs
- Data availability and reliability is often a problem in most countries
  - Makes baseline determination time consuming and costly
  - Means that actual emissions reductions can vary significantly from expected reductions against the baseline
- Standardised baselines, standardised MRV approaches, performance benchmarking etc can help overcome this...
  - But lack of data makes establishment of benchmarks difficult!
- Default values, discount factors avoid the need to monitor everything - e.g. for accounting for leakage of emissions
- Striking a balance between accuracy and workability is key

Type of measure to be implemented under NAMA has different implications for "monitorability"

- Single projects / PoAs
- Regulations
  - Efficiency standards
  - Technology mandate
- Subsidies
  - Feed-in-tariff
  - Investment support
  - R&D support
- Emission taxes
- Information instruments
  - Labels
  - Training programs

Some lessons/insights from CDM for NAMA MRV

- CDM methodologies can act as a starting point for NAMA MRV plans, but will need to be adapted to specific needs
- Standardisation, use of benchmarks, default values, improved sampling requirements etc can help simplify MRV for NAMAs
- Key challenge: balancing the need for greater flexibility than under CDM, while maintaining its rigor
  - Unilateral and (some) supported NAMAs may not need to be as stringent as CDM… but if NAMAs are to generate credits, MRV needs to be comparably stringent
- The wide range of measures/policies that can be considered NAMAs means there are very different levels of monitorability
- And... Availability of trained auditors for verification of NAMAs will be a challenge. Requires auditors with both very broad and very deep local experience

Thank you for your attention!

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