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Afforestation and reforestation projects under UN REDD+ and the World Bank's Forest Carbon Partnership Facility strive to make forests more valuable standing than cut down, by creating financial value for the carbon stored in trees.
Monitoring Software
Practitioners Workshop on CDM Standards
June 8-10, Bonn

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AGENDA

- Background on Carbonflow‘s approach to digitize the monitoring and verification process
- Presentation of Analysis to standardize parameter use across methodologies.

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Carbonflow in Brief

- Carbonflow provides **an integrated suite of software applications** used by organizations worldwide **to manage, monitor, and monetize** their emission reduction and sustainable energy **projects**
- We host **unique Software-as-a-Service (SaaS)** products that empower participants to undertake these projects on a **secure multi-party platform**
- Our goal is to **reduce the time, cost, and complexity** of carbon projects to **reduce risk and improve trust** between parties

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Selected Clients and Partners

Inter-American Development Bank

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Digitizing the Monitoring Process

Bottom up process

1. Digitization of Monitoring reports
2. Digitization of verification process and DOE reports
3. Digitization interface and analysis tools at UNFCCC

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Benefits of a digitized documents

Avoid manual transmission and data entry errors

- Key users **enter data once**, which are combined into the digital PDD and can be **used in other templates** throughout the project cycle.
- All documents using the data will have the exact same data, **no errors from manual transmission** possible.
- **Default values** for baselines etc. can be set in and **entered by the system** into the project documentation.

Facilitates automated checks

- **Search, analysis and comparison** of projects as document content is provided as data rather than text.
- **of data completeness** before allowing submission of the document to next level is possible. **Avoid work on incomplete files**.
- Check can include **compliance with a required/expected range** (e.g. IRR limits in additionality analysis).
- **Basis for risk based approach to monitoring**.

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Digitized Monitoring report template

- Methodology specific report templates
  - Project specific report templates created through a **bottom up modular approach** that can be re-used in following periods
  - Created from defined modules that understand the methodology specific complexity of different **sites, activities and processes within a single and multi-methodology projects** and use standardized parameter names.
- Automated Calculation of CERs from individual parameter data (yearly, monthly, daily)

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Analysis Goals

- Architect a system for automatically perform the calculations for **all** CDM methodologies.
- Handle automatic and manual submission of data at varying intervals from 90 seconds to monthly.
- Normalize the stored data so that comparisons across methodologies can be made, allowing for benchmarking and baseline creation.

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Work done

- Fully analysed 32 CDM methodologies and all the CDM "tools", and created a listing of the data and formulae involved.
- Work covers all projects that had issuance and all that had been registered bar 3 methodologies.
- The resulting model has geographic *sites* within a project or PoA that performing one or more *activities* and which may themselves contains *processes*.

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Findings

- The CDM methodologies were developed by independent teams of experts and were never intended to be a consistent comparable set of definitions.
- There is some inconsistency in the naming of parameters, the units used, and the time intervals they apply to.
- With slight changes, they could be made consistent which would make methodologies easier to understand and allow automatic data checking and comparative baselining

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Naming

- FC_{mass} FC $FC_{biomass}$ FC_j F_{cons} $B_{biomass,PJ}$ Q_{fuel} $Q_{non\text{-}biomass}$ $FC_{EL,CP,k}$ $FC_{PJ,(NG,k)}$ $FC_{project}$
  - all are “the **mass** of each type of fuel consumed in the period”
  - Why FC, B, and Q?
- FC_{vol} FC FC_j $FF_{project,I}$ F_{cons} $FC_{EL,CP,k}$ $FC_{PJ,(NG,k)}$
  - all are “the **volume** of each type of fuel consumed in the period”
  - Some have the same names as the FC_{mass} parameters.
- Meths: ACM3 ACM9 AM25 AM26 ACM12 AM29 AMS-I.A. AM39 AMS-I.A. AMS-I.C. AMS-III.B. AMS-III.E. AMS-III.Q.

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Units

- Often same named parameters can be measured as mass or volume, but mass and volume are not comparable or convertible to each other.
  Eg.
  - NCV is measured in MJ/kg, GJ/t *or* MJ/l, GJ/m^3
  - $Q_{BL,\ product}$ is measured in Tons/yr *or* m^3/year
- Base units: energy: GJ or MWh as the base?
  - We can convert between units of the same type (eg kg, t, Mt; s, hours, days; KJ, MJ, GJ, MWh, TJ).
  - Data should be stored in a base unit, so values can be directly manipulated
  - From a scientific point of view, SI units (Kg,m,s) would be best, but this would lead to very large numbers or very small numbers.
  - For energy half the meths use MWh and half use GJ. Can we choose one to be the base?

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Time Intervals (not all ",y")

- Many parameters are written as $P_{bb,y}$ where the ",y" is short form *year*.
- Sometimes the parameter is the total over a whole year, but other times it is the value over the monitoring interval (which might only be 90 seconds).
- For example: ACM1, ACM2, AM39 all have the formula
  ERy = BEy – PEy
- In ACM2, the BE and PE are both measured over the monitoring interval, so the formula could be simplified to:
  ER = BE – PE
- But in ACM1, AM39, the BE is measured over a year, so the formula is:
  ER = ProRata(BEy) - PE

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Conclusion

- We believe that with slight changes, parameters and formulas could be made consistent which would:
  - make methodologies easier to understand
  - allow automatic data checking
  - allow comparative baselining
- Carbonflow is happy to assist in this endevour