Aggregation Discussion Paper

Companion paper to Carbon Accounting and Insetting Framework

Climate Smart Group

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Contents

1 Introduction

This discussion paper is designed to clarify why aggregation is a recommended practice within an insetting framework and to provide details of current aggregation schemes. The discussion in this paper is supplementary to the information on aggregation provided in the Carbon Accounting and Insetting Framework. Additionally, specific information for verification processes and requirements of aggregated projects can be found within the Verification companion paper.

Presently, the project-specific requirements of most offset systems (both voluntary and regulatory) make it difficult for emission reductions to be achieved from a single small-scale project (Benefits, Existing Methods and Key Challenges to Aggregating Greenhouse Gas Emissions Offsets, 2012). This is particularly relevant to forestry, agricultural, energy efficiency and microgeneration projects. Aggregation overcomes this challenge by grouping multiple small and often geographically and temporally dispersed projects into a single project to achieve economies of scale.

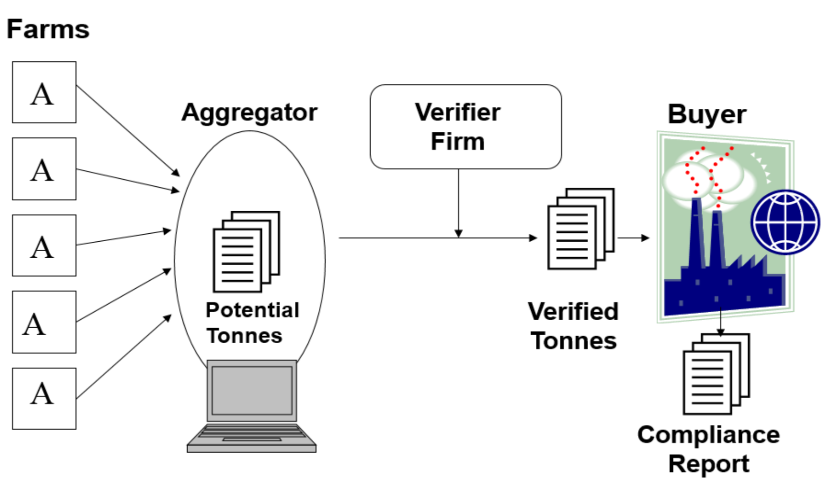

Figure 1 Aggregated Approach in a Compliance Market

2 Aggregation System Requirements

Generating large volumes of offset credits from biological projects is complex and if not properly managed, may open the door to errors and omissions that risk credit invalidation. Effective use of data management technology and proven business processes mitigates the risks associated with credit generation.

Project developers must collect, review and track data from every participant in the project. This means that a project developer could be working with a large number of participants at any given time. Therefore, the systems and processes adopted by an aggregator must be designed so that they:

- Ensure that credits are generated in a consistent manner while adhering to the insetting framework requirements;
- Lower data processing costs through technological efficiencies;
- Allow for controls based verification rather than a file based verification; and
- Provide project transparency to participants, verifiers, offset buyers and/or registries.

Large scale aggregation projects should not be managed with spreadsheets or word documents. Large scale aggregation systems should be built on a relational database such as MySQL, Oracle or a MS SQL Server. Sophisticated systems may include workflow management and document management tools. In addition to a data management system, it is imperative that the project developer have security and backup systems.

3 Verification of Aggregated Projects

Verifications are conducted across a spectrum that ranges from "Substantive" to "Controls Based". Substantive verifications rely on the manual review of a large subset of the data and evidence collected during the project. Controls based verifications test the controls that project developers have in place to mitigate the risk of invalid offsets. Control based verifications are very cost effective but can only be conducted if a robust project development system is in place. Control based verifications will always include a review of substantive data, but the sample size can be much smaller than on a project completed with no controls.

Cost effective verification of aggregated projects may be achieved if the verifier can draw a verification conclusion by reviewing only a sample of project records. The verifier can rely on the results of this review of a sample of project records if the verifier is satisfied that the sample is representative of the whole population of data in the aggregated project.

The verifier may need to stratify the project into smaller groupings, if their review risk is drastically different. Applying sampling methods to these stratified groupings will still be more cost effective than reviewing every sub-project in the aggregated project. Additionally, grouping by risk of project failure ensures the overall project is still economically viable, despite higher risk to certain sub-projects.

An insetting program should be designed to apply consistent quantification and eligibility practices and procedures across all participating sub-projects. This homogeneity will ensure that a verifier can rely on the results of sampling.

4 Reports and General Guidance

4.1 Electric Power Research Institute Technical Update, October 2011

The EPRI "Aggregation of Greenhouse Gas Emissions Offsets: Benefits, Existing Methods, and Key Challenges" report assessed the current state of aggregation, including lessons learned and need for further research. The report called for the further discussion and clarification of aggregation rules including: temporal dispersion, geographical dispersion, additionality, risk allocation, modeling and quantification, sampling, as well as enforcement. Key lessons learned were as follows:

1) Programs that reduce individual participants' exposure to carbon market risks can increase participation
2) Simplified, standardized protocols help to enable large-scale participation in aggregation programs
3) Aggregation can make it possible to use new, innovative methods to quantify offsets and assess additionality
4) Aggregation facilitates project financing

4.2 Coalition on Agricultural Greenhouse Gases (C-AGG) Proposal, January 2014

The Coalition on Agricultural Greenhouse Gases submitted a proposal on aggregation to ARB to promote aggregation in agricultural offset projects. The proposal presented a list of key aspects of an aggregation model to achieve successful implementation and development of protocols that are rigorous and cost-effective. To summarize, these points include:

- Multiple landowners in adjacent regions can join together as Offset Project Operators (OPO) to create a Cooperative Offset Project;
- A single responsible party, or Authorized Project Designee (ADP), is assigned as the project aggregator that oversees development, maintenance, and verification; and
- A single Offset Project Data Report (OPDR) is submitted by the APD on behalf of all project within the Cooperative Offset Project, requiring only a single verification.

5 Aggregation Approaches

Aggregation should be considered at the outset of an emission reduction project's design, as it can fundamentally change the approach used to qualify and quantify emission reductions. A wide range of aggregation approaches have been adopted. Although there are many different current methods, certain aspects may be combined to create a hybrid approach that best suits the needs of an insetting program. This discussion focuses on the Alberta system as a reference point from which to compare other aggregation approaches.

5.1 Alberta Offset System

The Alberta Offset System allows project developers to aggregate sub projects into a single project. There is a single project plan and all sub projects are verified under the umbrella of the overall project. Draft versions of the guidance documents for project developers will indicate specific details of sub-projects will need to be identified in the offset project plan. Verifications require sampling of a subset of projects in the aggregated project.

Although the Alberta system allows for several different kinds of project types to be aggregated, all project sites generally need to be nominated at the time of the project listing and cannot be added later. All subprojects within the aggregate must use the same crediting period regardless of when the activity started that is eligible for crediting. This results in subprojects with a later start date being penalized by only being eligible for a shortened crediting period.

This system has successfully implemented protocols with regionalized, performance standard baselines that allow for large-scale participation of multiple farms in an aggregate (i.e. the Conservation Cropping Protocol).

Additionality is established at the activity level and within the protocol development process. Individual subprojects within an aggregate therefore do not need to prove additionality beyond records that they are undertaking the activity as prescribed by the protocol.

As with additionality, permanence is accounted for at the activity/protocol level using a conservative reversal factor. As a result, permanence does not need to be evaluated for each subproject within an aggregate. However, reversals by field are supposed to be tracked through the reporting field-tracking documentation; while there may be a perceived value in this from an assurance perspective, it is practically impossible due to several factors (the nature of growing participation, ever-changing field and farm ownership, etc.)

To prevent double-counting, standardized reporting tools are used for aggregated projects, containing site-specific details (e.g. legal land location, reporting period, offset attributes) that allows for more efficient and effective monitoring.

The requirement to maintain records for a period of seven years following project registration is reasonable and allows for audit of all sub-projects in the aggregate if required. Although reasonable, this requirement that producers in subprojects maintain records for a seven-year period is exceedingly difficult to implement and oversee, with questionable benefit if the aggregator has also maintained records.

5.2 Clean Development Mechanism Programme of Activities

Under the Clean Development Mechanism Programme of Activities (CDM PoA), each individual project is called a CDM Programme Activity (CPA). New CPAs can be added to a PoA at any time during the PoA's 28-year crediting period, once verified by a verifier that the new CPA meets the criteria of the PoA's design document[1] (called a Designated Operating Entity in the CDM program), without additional approval by the CDM. The PoA approach reduces transaction costs, investment risks and uncertainty for individual CPAs. It also enables smaller projects to access the CDM and allows the PoA to be continuously scaled up (since additional CPAs can be added). There are no registration fees for each CPA. Instead, registration fees are based on "expected average emission reductions of the 'actual case' CPAs submitted at the PoA registration" (CDM Programmes of Activities, 2015)

This modular approach allows stacking of multiple practices while also promoting broad applicability since different subprojects within a PoA can use a different suite of approved practices. The PoA is set up as a general activity, with individual subprojects having specialized start dates. Crediting periods can then be added afterwards, as long as the activity start date is after the start date of the PoA.

5.3 Verified Carbon Standard Grouped Projects

Within the Verified Carbon Standard (VCS), multiple projects can be aggregated to form a "grouped project"; however, all projects must share the same baseline and crediting period. The geographic area of a grouped project must have similar regulations, practices and quantification criteria. New project activities can be added to a grouped project with verifier approval if they are within the pre-defined geographic area. Any project added after the start date, is only credited for the remaining time associated with the initial project's crediting period (Diamant et al., 2011).

Although additional projects can be added to the aggregate after the initial geographic boundaries and eligibility for the grouped project have been set, all subprojects in the aggregate must use the same crediting period regardless of when the activity started that is eligible for crediting. This results in subprojects with a later start date being penalized by only being eligible for a shortened crediting period.

Within the program standardized methods are allow which increases efficiency by eliminating the need to determine baselines on a project by project basis. This would be very cumbersome for an aggregate on a subproject level.

Additionality is determined at the project/methodology level. This is much more practical than establishing it for a specific project, which becomes even more challenging if necessary for every project in an aggregate.

[1] Note: Verifiers are assigned liability for "erroneous inclusion". In other words, if they approve the inclusion of a new CPA within a PoA and the CDM EB or the Designated National Authority later finds that an included CPA does not meet the requirement of the PoA's design document, the verification organization can be required to purchase replacement credits for all certified emission reductions (CERs) that were erroneously included. This poses a financial and reputational risk to verification firms.

Risk of non-permanence (i.e. reversal) is evaluated by project type. Unfortunately if the verifier feels that the reversal risk for a specific project warrants a buffer reserve greater than the highest withholding percentage for the project type, then the project is not eligible for credits.

5.4 Climate Action Reserve Forestry Aggregation Guidelines

Climate Action Reserves (CAR) forestry aggregation guidelines are found within the Forestry Protocol that is currently under review. Forestry projects on land parcels smaller than 5,000 acres can be aggregated. Aggregated projects must be verified by site visits every 12 years. Offset credits can be issued based on desk verification of a monitoring report between on-site verifications (note: unaggregated projects must individually undergo verification every time they want to register offsets). Each project does not have to individually sample their plots, instead a sampling error approach is taken. This has substantially lowered verification costs (Diamant et al., 2011).

This protocol has a fully defined process for handling leaving an aggregate and dealing with change in project ownership. The approaches used to deal with projects in an aggregate are developed and documented at a protocol level. As opposed to being defined at the system level, this may ensure that the aggregation approach for each activity is the most accurate and applicable.

Different protocols may require demonstration of additionality by passing an involved performance standard for individual subprojects, such as the Nitrogen Management Project Protocol. This requires gathering performance data from subprojects to determine eligibility, which can stifle enrollment and create a negative view of the program when subprojects are not eligible after having provided a significant quantity of data. Within this protocol, practice changes must not have been implemented more than six months prior to the aggregate project listing date. This is a rigorous approach from the perspective of additionality, and it may be suitable for an insetting framework where a high-level regional baseline is not appropriate. Depending on the practice being considered, a wider 'lag time' may also need to be considered to assist enrollment.

5.5 Climate Action Reserve Cooperative Approach

CAR's second approach to aggregation lies within the Grassland Project Protocol. Within the protocol (Version 2.0 – January 28, 2017) a 'project cooperative' is defined as "a collection of two or more individual grassland projects managed by a common entity (referred to as the Cooperative Developer) that engage in joint monitoring, reporting, and verification." The Cooperative Developer may or may not also hold the title to the emission reductions, but must have an account with CAR and remain in good standing per the requirements of a Project Developer.

A clearly defined system is described within the protocol for creating, entering, and leaving a cooperative. A cooperative is established via a Cooperative Submittal Form, and after successful verification, Climate Reserve Tonnes (CRTs) are issued to the appropriate Project Owner/Cooperative Developer. Individual projects can choose to join an existing cooperative, as well as leave their cooperative as long as reporting is continuous and other requirements are met. The crediting period of all projects are tied to each individual grassland. It is derived from their unique starting date, and are not affected by other project crediting periods or start dates within the cooperative.

Although the Cooperative Developer may sum all the total credits, quantification is performed for each individual project, as well as serialization and issuance of credits. For verification purposes, site visits are applied the same way as for individual projects (i.e. site visits are not mandatory; a small fraction may be visited in person while the non-visited sites are subject to larger buffer pool contributions). The cooperative operates on a verification cycle, with different scenarios listed within the protocol.

Efficiency can be increased within the cooperative through a centralized monitoring plan for projects. The data from centralized monitoring must be kept in a way that the verifier can still assess individual projects however. Additionally, cooperatives can carry out some joint effort for reporting, depending on the document type.

5.6 American Carbon Registry Forest Carbon Project Standard Guidelines for Aggregated Projects

The American Carbon Registry (ACR) allows aggregation of projects if they share a common baseline. At the time of verification, the verifier choses a sampling approach to ensure issued credits achieve the required level of assurance under ACR's statistical certainty requirements. Field visits are required every five years; however, each parcel of land does not need to be visited (Diamant et al., 2011).

This Program of Activities approach allows for the addition of cohorts to an existing project over time, thereby reducing administrative burden and costs of verification. The distinction between the concept of a full verification, which occurs every five years, and a desktop verification reduces costs over time.

Flexibility within some baseline approaches enables aggregation by allowing the use of a county-level or regional baseline. Some of the agricultural protocols rely on the use of biogeochemical models, however, and they can be complex and time-consuming to calibrate and run for the project. This also assumes that the model will be assessed and understood clearly by the verifier, making models unsuitable for aggregated projects.

Additionality is required to be demonstrated by each individual subproject within the aggregate. Some protocols use a simplified performance standard (i.e. the Nitrogen Management Protocol). Possible over-simplification of the performance standard approach can risk credibility of the entire aggregate however (e.g. when a project doesn't directly monitor yield or consider functional equivalence).

The inclusion period for the activity start date is three years prior to the project listing. This is less rigorous than other additionality approaches, such as CAR, but is more favorable from an enrollment perspective.

ACR uses a risk assessment tool to determine the number of credits to be deposited into a buffer pool at each issuance of credits, and this assessment is done at the level of the overall aggregate rather than the subproject.

The project proponent must document in the GHG project plan how double-counting will be avoided in dealing with the multiple subproject sites and participants.

It is not clear how the registry and other voluntary registries work together to ensure no registration of the same project in two offset systems. Aggregation makes it harder to identify the actual subprojects, and therefore this is potentially more of an issue than with a stand-alone project.

Records only need to be maintained by the aggregator. At a system level, the requirement is to maintain records for at least 2 years after the end of the project crediting period (e.g. potentially up to nine years from the creation of the record itself in a seven-year project period). Certain protocols with a conservation focus (e.g. Avoided Conversion of Grassland) have a 100-year requirement for record keeping as well as post-project monitoring and verification, for both the project developer/ aggregator and the individual subprojects. This approach for an insetting framework would create a huge additional administrative burden, even if it were deemed achievable.

5.7 California Air Resources Board

California's Air Resources Board (ARB) currently does not allow aggregation of offset projects. Although ARB recognizes the benefits of aggregation for forestry projects – such as within CAR's Forestry Protocol – aggregation is not permitted for forest projects under the compliance offset protocol. From the ARB Forest Offset Protocol FAQ:

"Aggregation of projects is not allowed under ARB's U.S. Forest Projects Protocol. However, multiple landowners may jointly participate in an offset project if there is one baseline and one inventory for the entire project; the project would have to meet the geographic limitations identified in Section 4 of the Protocol: Project Area cannot extend across more than two adjacent Ecosections or Supersections. All participants would be equally considered as Forest Owners and subject to all the rights and responsibilities under Section 2.2 in the Protocol (see "Forest Owner Sells Land" for associated Q/A). Multiple Forest Owners representing individual offset projects may cooperate when soliciting bids for verification services for purposes of reducing cost through economies of scale. Each project must still have its own independent Offset Project Data Report (OPDR), verification and Offset Verification Statement."

6 Discussion

One of the key challenges for aggregated projects in the agricultural world is farm to farm variability in:

- Farm boundary (changes in land leased)
- Land ownership
- Legal entity names
- Practice (weather dependent, or subject to constant updating or tweaking)
- Soil conditions
- Site specific meteorological or topological conditions

This variability leads project developers of aggregated offset projects to seek out activities, protocols and offset systems which offer:

- Flexibility
- Simplicity
- Efficiency of quantification
- Broad applicability
- Clear-cut eligibility criteria

These concepts go hand in hand with the ability to attract interest among growers. While the financial incentive is a primary factor in participation, which should be considered in designing an appropriate insetting framework, it is not outweighed by the importance of the customer experience of having clear expectations, easy-to-follow data collection procedures and a painless, risk free process. It is ultimately this customer experience that perpetuates enrolment long-term. The challenge for any insetting framework that envisages an aggregate approach is to balance these needs with the desired level of rigour, and to seek out best practices which uphold both principles.