PARTNERSHIP FOR MARKET READINESS (PMR)

Draft Technical Note 6

Overview of Carbon Offset Programs: Similarities and Differences

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The document is based on publicly-available information on the Clean Development (CDM), Joint Implementation (JI), the Gold Standard, the Climate Action Reserve, the Québec Offset Program, Japan's Joint Crediting Mechanism (JCM), the China CER (CCER) and the Verified Carbon Standard (VCS), as well as on interviews and feedback from officials and experts from these standards. The authors and the PMR Secretariat would like to thank the representatives from these eight programs for their much appreciated collaboration and constructive feedback.

An earlier draft was presented and discussed at the PMR Technical workshop in Barcelona on May 26, 2013. Feedback from participants has been taken into account for this final report. Special thanks go to Jessica Allen (Australia), Thomas Bernheim (European Commission), Bengt Boström (Sweden), and Rachel Child (Project Developers Forum).

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For more information on the PMR, please visit www.thepmr.org.

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1. Introduction

1.1 Objective

Within the Partnership for Market Readiness (PMR), implementing countries are considering different approaches to market based mechanisms. A number of countries are proposing to explore the design of domestic carbon pricing mechanisms, which may include a domestic offset component.[1] Over the past almost two decades, a rich body of experience has been gained with offset mechanisms, which in turn are informing the considerations and design and regulation of existing and planned/proposed offset programs.

This technical note documents a mapping exercise that outlines the key elements and design features of offset programs and synthesizes and discusses the essential differences and similarities between programs. It identifies main elements and design features of eight different offset programs and discusses how these programs address key issues such as efficiency, environmental integrity, applicability, and transaction costs.

This technical note may be useful for those PMR Implementing Countries that are contemplating different designs of crediting mechanisms in their countries and may contribute to the general discussion on the options for the design of crediting mechanisms in the context of climate change mitigation policy action.

The technical note is meant to provide an overview of the key features of selected offset programs and draw out similarities and differences; it does not provide an evaluation of the treatment of these features nor of the offset programs.

1.2 Approach

This technical note examines eight offset programs. The programs were selected based on their relevance and because together they represent a wide range of different offset program designs. A list of other offset programs that may be equally relevant but that could not be considered in the present study is provided in Annex II. A study framework for mapping the eight different offset programs was developed. It seeks to outline the main characteristics of the examined offset programs[2]. The framework considered the following main topics for each of the offset programs:

- Overview of offset programs;
- Principles and Goals;
- Operationalized Principles;
- Governance structure;
- Project Registration Procedures;
- MRV and Credit Issuance Procedures; and
- Sustainable Development Aspects.

The analysis included desk reviews of literature and program documentation and was complemented with interviews and written input from program administrators. The design features

[1] In this paper, the term *carbon offset program* is used to avoid potential confusion that may arise with terms such as *standards* or *registry*. A carbon offset program combines (i) accounting rules, (ii) monitoring, reporting, verification and certification rules and (iii) registration and enforcement systems. See also website by SEI and GHG Management Institute.

[2] The Technical Note does not, however, seek to assess the overall benefits and potential limitations of offsets per se.

of the eight programs are summarized in the tables in Annex I.[3] The most salient design features were examined to identify similarities, differences and trends. Preliminary results of this work were presented at the 5th PMR Partnership Assembly Meeting in Washington, DC in March 2013 and preliminary feedback from participants was collected. A subsequent draft of the *Technical Note on Offset Programs* was reviewed by the representatives of each offset program for another round of feedback; it was then presented at the May 26, 2013 PMR Technical Workshop in Barcelona, Spain, for further discussion and feedback, which informed this final PMR Technical Note.

[3] It should be noted that while some of the standards examined have been in operation for a number of years and thus have road-tested procedures (e.g., the CDM, Gold Standard, CAR or the VCS); others are very new or even in the final stages of development (e.g., Japan's Joint Crediting mechanism and the China CER program)

2. Overview of Programs

2.1 Considered Programs

The technical note examines eight offset[4] programs that represent a wide spectrum of approaches in terms of design and implementation (see Table 1 below).

Table 1. Overview of Considered Offset Programs[5]

The two offset mechanisms under the Kyoto Protocol: • **Clean Development Mechanism** (CDM) • **Joint Implementation** (JI) Track 1[6]
Offset programs developed and administrated by governments to supply offsets for their domestic climate mitigation programs: • **Chinese CER** (CCER): offsets can be used for compliance under the pilot cap-and-trade systems that are being developed *inter alia* in five Chinese provinces and two cities. • **Japanese Joint Crediting Mechanism** (JCM):[7] a bilateral project-based offset mechanism that both Japan and the host country may use to meet national climate targets. • **Québec's offset program:** Project-based offset mechanism under the Québec cap and trade system.[8]
Voluntary programs that generate offsets that are used in the voluntary market as well as for compliance under some governmental compliance schemes: • The **Climate Action Reserve** (CAR): some of its offsets are also eligible under California's cap and trade system.
Voluntary programs that generate offsets that are used in the voluntary market:[9] • **Gold Standard** (GS) can be used as-add on certification to CDM and Joint Implementation or as stand-alone offset program for voluntary projects. • The **Verified Carbon Standard** (VCS).

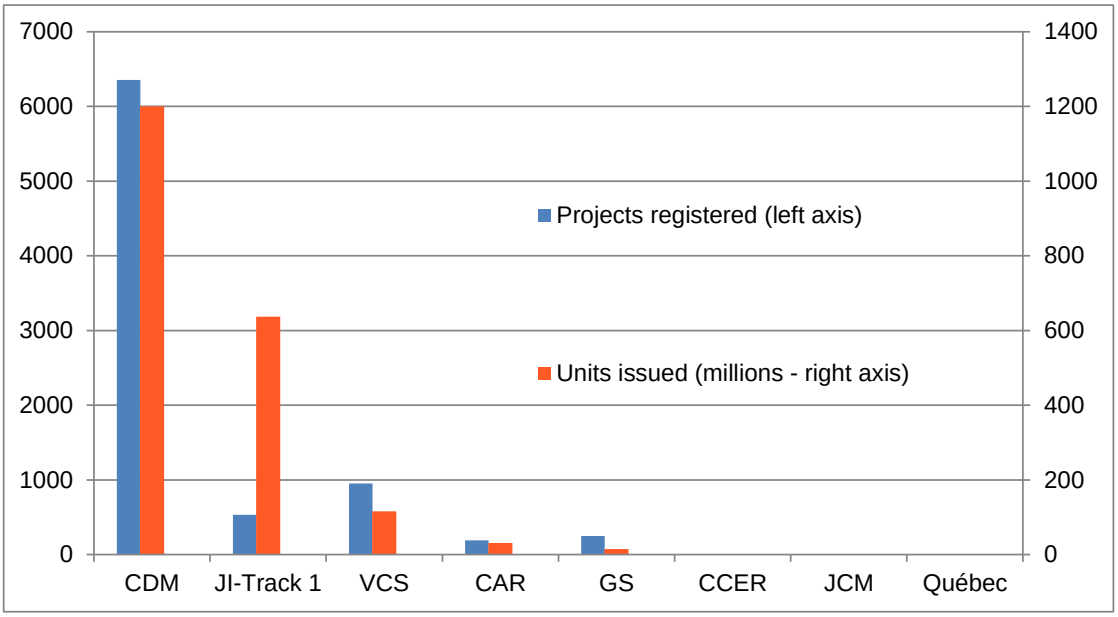
The regulatory, institutional and political landscape in which an offset program is designed influences its policy objectives, program design and implementation[10]. Objectives, scope and size of offset programs, therefore, vary substantially. Table 1 in Annex I summarizes the regional and political scope, size, and age of each of the eight programs examined.

[4] In this Technical Note, the terms "offsets" and "credits" are used inter-changeably.
[5] The data in this table is valid as of February 2013. A list of other offset program can be found in Annex II.
[6] Joint Implementation can be implemented under "Track 1", under which host countries are responsible for most aspects of the project cycle including registration and issuance. Under "Track 2", which is overseen by the UNFCCC, requirements and procedures are similar to those of CDM.
[7] Also known as Bilateral Offsets Crediting Mechanism (BOCM).
[8] A linking of the Québec and the California cap and trade systems is anticipated.
[9] Includes both private sector and government administrated voluntary programs.
[10] Annex I (Table 2) provides an overview of the primary users of credits/offsets generated by the offset programs. An analysis of the trends in offset/credits demand preferences (e.g., as expressed in international climate change negotiations and domestic legislations) could be a useful complement to this Technical Note.

2.2 Size of Programs

The size of the program and the number of offsets issued varies significantly among programs. This is because some are still at an early stage of implementation while others have been operational for several years. Also some programs have fewer credits issued because they have a more limited scope in terms of eligible project types and geographic coverage.

Figure 1. Number of Registered Projects (blue – left axis) and Units Issued (orange – millions on right axis), as of February 2013



Note: One unit typically represents 1 tonne of CO_2 equivalent in GHG reductions in a carbon accounting system. Source: information provided by offset programs and UNFCCC websites. Please note that the CCER, JCM and the Québec program are in their start-up phase and have no registered projects yet.

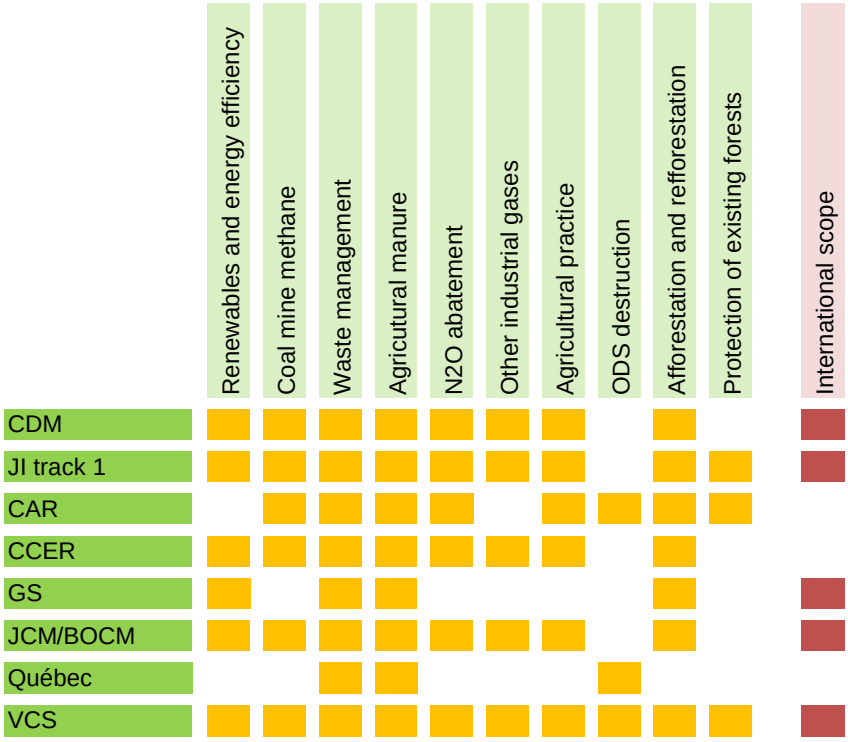
It is interesting to note that the Gold Standard with its limited scope of (smaller) project types has issued on average fewer offsets per project than the other programs (60,000 units per project in GS compared to 189,000 in CDM), whereas high volumes per project are a salient feature of JI Track 1 (1.2 million units per project).

The offset mechanisms under the Kyoto Protocol—CDM and the JI-Track 1—are responsible for the lion's share of issued offsets so far (of the eight considered programs, CDM and JI account for over 90% of credits issued). The CDM is also the mechanism that has by far the most registered projects (i.e., CDM projects account for 75% of all projects registered under the eight considered programs).

2.3 Scope of Programs

The following figure provides a simplified overview of the scope of eligible project types in the considered offset programs.

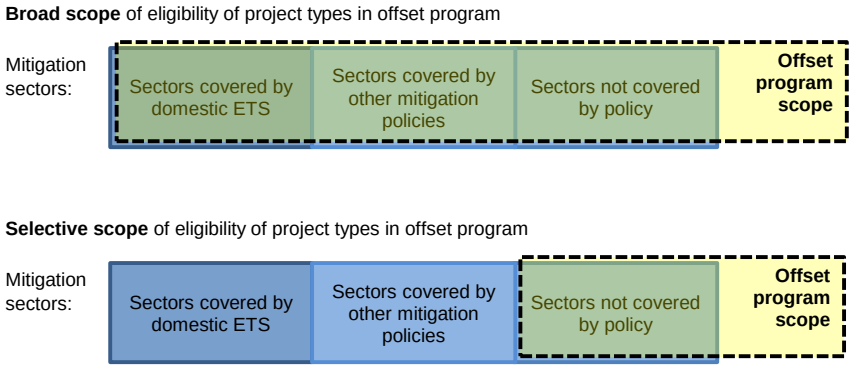
Figure 2. Simplified Overview on Coverage of Considered Program in Terms of Project Types and Sector (yellow) and International vs. Domestic Scope (red)



Two different approaches in terms of the scope of eligible project types can be distinguished:

- *Broad scope*: These programs are generally open to all project types, with some very limited exceptions (e.g., nuclear projects are excluded in most examined standards). Programs with a broad scope include the CDM, JI-Track1, CCER, JCM and VCS. With the exception of the CCER these are all programs with international scope.
- *Selective scope*: These programs are usually more regional in scope and are designed to complement other domestic mitigation policies such as domestic cap and trade systems or other domestic mitigation/energy policies. These programs have a limited number of eligible project types. Examples include CAR and the Québec offset program.

Figure 3. Offset Programs with a *Broad Scope* that Cover All Sectors in a Host Country vs. Programs with a *Selective Scope* that Covers Only Sectors Not Included in a Domestic Emission Trading Scheme or by Mitigation Policies



Offset programs with a broad scope aim to ensure maximum coverage to foster offset projects in many different areas and sectors. They may be able to tap into a large pool of potential offset projects and thereby potentially offer greater opportunities for mitigation. Because programs with a broad scope can include projects that may generate offsets in sectors covered by other policies and instruments, establishing project baselines and additionality[11] and accounting for mitigation action may be – overall – more challenging than for offset programs with a more selective scope, e.g., potential double counting issues in case of overlap with a cap and trade system[12], or additionality determination issues in the context of related to domestic mitigation policies (e.g., in the so-called "E+/E- issue" (see e.g., INFRAS 2012)). Programs with a broad scope therefore often require in-depth proof of additionality, which may add costs and uncertainty for the project developers.

Offset programs with a more selective scope on the other hand can restrict eligibility of project types to those types of activities where demonstration of additionality is more straight-forward and where double-counting risks are lower. The rationale for adopting such an approach may be to provide clear signals as to which types of projects are to be incentivized through offsets (e.g., to ensure avoidance of double-counting with projects covered under a cap-and trade system) and limit ambiguity as to how the emission reductions are to be calculated, and to lower costs and risks for project developers. However, a selective scope limits the program's overall potential to generate large volumes of offset credits.

It is useful to note that for the purpose of this assessment, the different offset programs are described as having either "broad" or "selective" scopes, while in practice, the policy choice regarding the scope of offset programs may be best described as a spectrum of options with different scopes for different project types or sectors rather than a binary choice between "broad" and "selective" scopes.

In the following sections, we examine how the scope of a program may be related to the characteristics of top-down vs. bottom-up approaches and their level of standardization.

11 In the context of CDM, additionality is defined as follows: "A CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (3/CMP.1, Annex, paragraph 43)."
In practice, additionality is the principle that only those projects that would not have happened anyway should receive carbon credits. A project is additional if its proponents can document that realistic alternative scenarios to the proposed project would be more economically attractive or that the project faces barriers that carbon finance helps it overcome. Some offset programs determine ex-ante a list of project types that are automatically deemed additional.

12 The actual incidence or risk of such potential double-counting has not been examined in this Technical Note however.

3. Principles and Goals of Programs

All offset programs state environmental integrity and economic efficiency as main goals for achieving mitigation action. Tables 3-5 in Annex I summarize the stated principles and goals of offset programs such as:

- Environmental integrity, including conservativeness, avoidance of double counting, and taking into account leakage and indirect emissions; and
- Transparency and sustainability (discussed in more detail in the section on Sustainable Development Aspects below).

The way these principles are interpreted and operationalized varies significantly. Tables 4 and 5 in Annex I summarize how these overall principles are operationalized including:

- Eligibility of projects types under the program;
- Processes for the development and approval of methodologies;
- Additionality and baseline rules;
- Requirements for third-party validation and verification; and
- Transparency and stakeholder participation.

4. Approach to Program Design

The considered offset programs differ in terms of their program design. We can distinguish bottom-up versus top-down approaches as well as different levels of standardization.

Bottom-up versus top-down approaches

Bottom-up: Some programs use a more bottom-up process to develop project methodologies. Methodologies spell out the rules and procedures that determine how emission reductions are to be measured and calculated for a particular project type. Under a bottom-up process, methodologies are typically developed by individual project participants who propose specific methodological approaches for their project[13]. These are then evaluated and approved by the relevant authority of the offset programs. Offset programs that use a bottom-up process tend to have a broader scope in terms of geographic coverage (i.e., international) as well as in terms of project eligibility (i.e., few limitations on eligible project types (see above)). Examples of bottom-up programs include CDM, JI, VCS, and the Gold Standard. The CDM has generated the largest number of methodologies, but it is important to note that in several cases, these methodologies can be eligible and recognized in several other offset programs (e.g., GS, VCS, and CCER).

Top-down: Programs that are more selective in terms of their geographic scope and their project type eligibility often use a more top-down approach. Here, methodologies are developed by the programs themselves, usually in consultation with external experts and stakeholders. Examples of top-down programs include CAR and the Québec offset program.

[13] Although methodologies are often prepared by individual project developers, once they are approved by the relevant authority, they typically become available to others

Standardized baseline and additionality determination

All offset programs use standardized approaches to some extent, such as the use of default parameters instead of requiring monitoring of actual emissions, or the use of sector wide performance standards to assess additionality and baseline setting. Such standardization tends to reduce costs and risks for project developers. For example, under a "positive list" approach (or list of pre-determined eligible project types), all projects of a particular type are automatically deemed additional and therefore do not have to go through a lengthy process of proving additionality for each individual project.

Generally, it appears that programs that use a more top-down approach to methodology development also tend to use a more standardized approach to determining additionality and baselines. Even programs that were originally set up with a bottom-up approach – often to be able to start rapidly and to be open to different mitigation opportunities in different contexts and countries – have recently started to use more top-down, standardized approaches. For example, the CDM, the VCS, and the GS have developed procedures to streamline and to standardize methodologies. In fact, the CDM has a whole work program that includes the development of top-down methodologies for project types that have been deemed priorities.[14]

It appears that a more standardized approach goes hand in hand with a more selective scope in project eligibility, as is the case for CAR and Québec. On the other hand, offset programs with a broader scope, such as the CDM, JI, GS, and VCS tend to use more bottom-up and project-by-project approaches. Yet, a more standardized approach can also be implemented in a bottom-up process. Both the CDM and the VCS have specific guidance on how to develop standardized methodologies.[15]

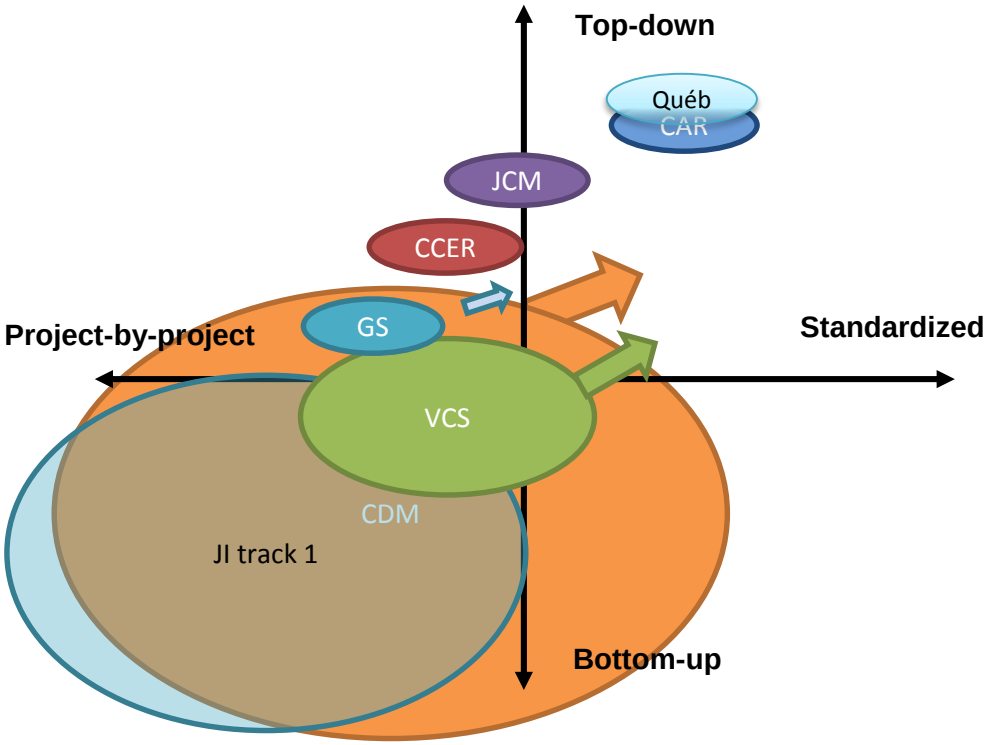
Programs with a more selective scope may have designed their programs based on the experience in the CDM. These more selective programs may have sought to avoid the experience of the bottom-up approach, which, generally, is more costly for project developers, tends to lead to more project-specific methodologies (and thus limit usability by others), and can provide less predictability (in terms of acceptability of the proposed methodology and projects).

Figure 4 maps the considered standards in terms of their design and highlights some of the dynamics toward more standardization and top-down approaches.

14 E.g., see projects for "Top-down revision of standards and Top-down large-scale methodologies using standardized approaches" in latest CDM Management Plan for 2013-14 (EB71 Annex 1).

15 For CDM see http://cdm.unfccc.int/methodologies/standard_base/index.html .
For VCS see http://v-c-s.org/standardized-methods.

Figure 4. Characteristics of Offset Programs in Terms of Approach to Development and Standardization



Box 1: Does a Selective Scope Simplify Standardization of Approaches?

A selective scope for geographic and project type eligibility may more easily allow for the standardization and streamlining of baseline and additionality determination, as it allows for the selection, up-front, of project types that are especially suitable for such approaches. CAR and Québec, for example, have only eleven and three approved methodologies respectively, all of which are for non-CO_2 project types that are not covered under other mitigation or energy policies and that, in some cases, do not generate other revenue streams (i.e., there are no other significant revenues than those associated with emission reductions). The eligible project types and technologies are also rarely observed to be implemented without support of an offsetting scheme or specific policies and can therefore be categorized as "not common practice" (e.g., methane projects from small landfills and livestock operations). It appears that limiting (or pre-selecting) the eligibility of projects to those that are not covered by other mitigation policies, is not likely to generate significant revenues other than those from emission reductions, and makes it easier to apply standardized approaches to additionality determination.

Developing positive lists that include technologies and project types that are automatically considered additional and establishing standardized additionality benchmarks in sectors seems more difficult for programs that are international in scope and cover project types in sectors that generate significant revenue and are likely to be covered by other policies (e.g., the power sector). In CDM, for example, the majority of projects, and a substantial fraction of credits, are associated with project types for which there is considerable business-as-usual (BAU) activity – energy efficiency, renewable energy, and fuel switching – and straightforward practice-based or performance-based standards are particularly difficult to establish.

Highly standardized project methodologies reduce costs and risks for project developers. But they also limit the number of projects that can be implemented under the offset program and may therefore not always be an option for programs. Although highly standardized project methodologies reduce administration costs for the program at the point of project registration as well as at credit issuance, it may not necessarily reduce costs for the offset programs overall. Standardized approaches require offset programs to carefully assess how particular parameters or project types can be standardized. This requires significant research and data availability for the sectors to be covered.

5. Governance Structure

Governance and decision-making structures are set up to balance the goals of quality assurance and economic efficiency. Table 6 in Annex I summarizes governance structures of offset programs. The examined programs have similar governance structures that include an executive body, program administrators, advisory boards and third-party auditors. Although the governance bodies differ to some extent in terms of their roles and responsibilities, there are common features we found in all programs:

Executive Body: The executive body provides strategic governance and guidance, approves new methodologies and significant revisions, and under some programs the executive body also approves project registrations and credit issuance, and accredits and monitors auditors. Clarity of rules and guidance and predictability in decision making are important elements to encourage investment in an offset program.

Program Administrators: Program Administrators ensure the day-to-day operation of an offset program. They conduct completeness checks for project registrations and credit issuance documentations. In some programs, administrators also work on the approval or development of methodologies and procedures (together with Advisory Boards). They are responsible for communication on the rules and procedures of the program and may also provide training to a variety of stakeholders, such as auditors and project developers. Adequate capacity of administrators and sufficient training for stakeholders and auditors is an important factor for offset programs.

Advisory boards: Advisory boards develop technical guidelines and rules for specific topics such as forestry, standardization, accreditation of auditors etc. All programs examined use technical advisory boards and external experts. This allows programs to take advantage of external expertise for project evaluation, protocol development, and review and other technical issues that need to be addressed.

Third-party auditors: All programs require the use of third-party auditors to validate (if done separately) and verify projects and their emission reductions. Third-party auditors are a key component of offset programs' overall quality assurance procedures. They must be competent to execute the project validation and/or to verify the reported emissions reductions. Having a robust accreditation and quality control system for auditors is seen as critical in establishing a successful offset program. Of the examined programs all require accreditation of project auditors. CAR, Québec and VCS rely on the American National Standards Institute (ANSI) – which offers an accreditation program for third-party auditors of offset projects and is based on the requirements of ISO 14065 - to provide accreditation to their respective program's auditors. The CDM has an auditor accreditation process in place and also conducts spot-checks to ensure the CDM auditors perform adequately. When deemed necessary the CDM and CAR issue warnings and can suspend verifiers for poor performance. GS employs CDM-accredited auditors and provides requisite training on sustainable development audits.

Observations

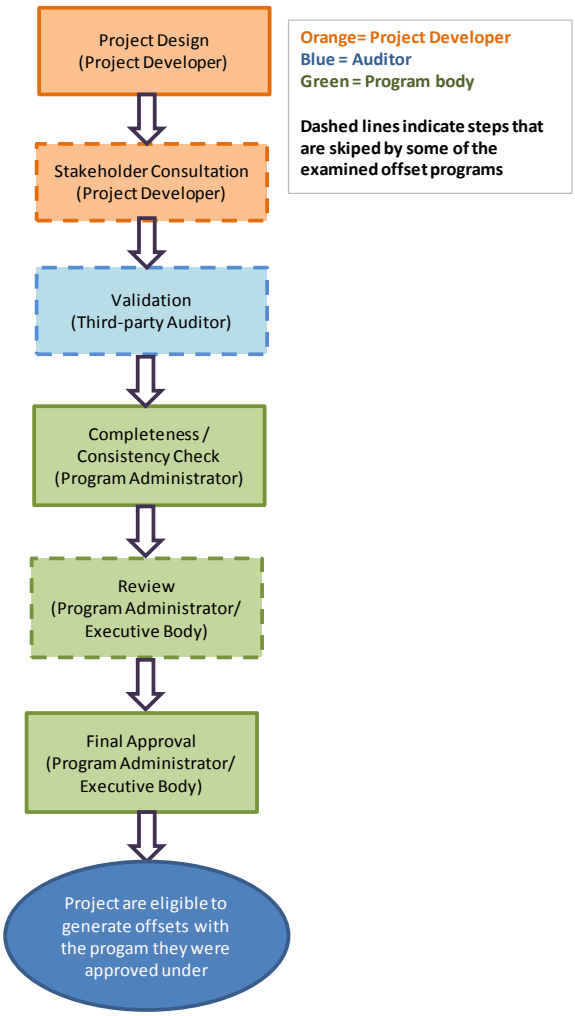
A well designed program infrastructure helps to ensure quality and to reduce transaction costs. The particular structure of an offset program has to be shaped by its objective and scope. Although all of the examined programs have similar governance structures, there are differences in terms of the responsibilities these bodies have. The next chapter examines in more detail how decisions are made during the offset project cycle.

6. Monitoring, Reporting, and Verification (MRV) and Project Cycles

MRV[16] systems aim to ensure that the number of offset credits issued is equal to the number of achieved GHG reductions. The project cycles of the programs examined have common features and elements, but also some noteworthy differences which we elaborate on in the following sections.

6.1 Project Registration Procedures

Figure 5. General Sequence of Project Registration[17]



Overview of project registration procedures

The initial project review process includes the assessment and approval (or rejection) of an offset project by a program. Usually this review process occurs before or during the early stages of implementation. Approval of a project commonly includes listing the project in the program's registry or database. Figure 5 lays out the general sequence of the project registration process. The dashed lines indicate steps that are not required by all programs.

Table 7 in Annex I summarizes the project registration procedures and is structured based on the general sequence of steps in the project registration process. We use the following terms:

- **Validation** is the detailed assessment of a proposed offset project to evaluate whether the project meets the offset program requirements and standards as an eligible project. Validation

16 In the context of carbon offset programs, the "M" in "MRV" is used for the more specific term "monitoring" rather than the more vague term "measurement".

17 In some programs validation is included in the verification process (CAR, Quebec and VCS; see Section on verification below).

may include an evaluation of baseline determination, additionality testing and monitoring plans. Validation is most commonly done by a third-party auditor. This step is part of the project registration process in the CDM, CCER, and GS. Under CAR, Quebec and VCS, there is no separate validation step. Validation is done as part of the verification (see next section on verification).

- **Completeness/Consistency Check** refers to a review to ensure that the project application, including the validation report (where relevant), are complete and consistent with program rules and that all legal requirements are fulfilled. This step is usually done by program administrators. (In the eight programs examined, only the CCER has the completeness check done by the auditor.)
- **Review**[18] refers to an assessment of all project documents, including the validation report. A review is more in-depth than the completeness-check and is commonly done by the program administrator and/or the decision-making body. The extent of the review varies by program. Top-down programs with limited, scope such as CAR, have a more limited review process than broad scope programs such as the CDM.

Final Project Approval refers to the acceptance of a project based on a positive determination of each of the preceding process steps. Final decision making power lies with the program decision making body; yet, in practice, it is often the program administrator that determines if a project can be approved. After final approval, projects are registered[19] with the program's registry or database. This means that the project has been deemed eligible to generate offset credits of the program under which it was approved.

Observations from offset program comparison

Differences in project approval processes are correlated to the type of methodologies employed by the programs. Initial project approval under programs with more standardized methodologies generally requires less in-depth project information because projects do not have to prove additionality and/or baseline scenarios on an individual basis. This reduces the administrative burden during the project approval process in comparison with the more in-depth reviews required by programs with project-by-project additionality and baseline determination approaches such as used predominantly by CDM, JI, VCS, and GS. The latter programs tend to rely on the CDM additionality tool, which involves assessing additionality based on the particular barriers (financial, investment, institutional, or other) faced by individual projects, in comparison with other alternative investments or activities. This is also reflected in the length of the project documents: for the CDM, they are usually 40-60 pages, while in CAR they are as short as 2 pages.

CAR and the Québec offset programs, on the other hand, use standardized additionality determination. The types of activities recognized as "additional" and eligible to earn credits are determined up-front in a kind of positive list by the program authority. The project approval stage is therefore more streamlined for individual project developers. For example, a regular project submitted to CAR usually requires about 1-2 hours for a staff person to review (three staff members review the same project to ensure consistency and accuracy). Under the CDM, on the other hand, a project review – once the third-party validation has been completed – may require one to two days, depending on the complexity of the project.

18 Under CDM, 'review' refers specifically to a request by the CDM Executive Board for further review if it has doubts about the validity of (certain aspects of) a project. We use the term more generally to refer to an in-depth examination.

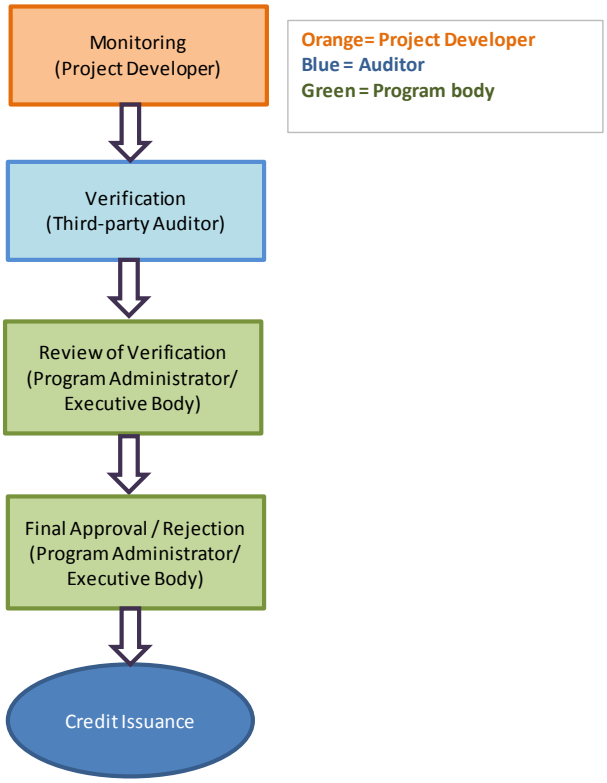
19 Under CAR, projects are first listed and only registered after the first verification.

6.2 Project Verification and Issuance Procedures

Overview of project verification and issuance procedures

Once a project has been registered and implemented, it can submit claims for emission reductions or removals and request the issuance of credits. Verification is the step that seeks to ensure that claimed emissions reductions have been achieved in accordance with requirements of the applicable offset protocol for monitoring, quantification, and reporting. Verification is typically conducted at regular intervals after project implementation, as specified by the protocol and project type. Once the verification report has been accepted by the program authority, offset credits are then issued and placed in the project proponent's account on the program's registry. Figure 2 lays out the general sequence of the verification and credit issuance process. Table 8 in Annex I summarizes the MRV and credit issuance procedures

Figure 6. General Sequence of Project Verification and Issuance Procedure



Observations from offset program comparison

Unlike the project registration process, all programs use the same sequence during the credit issuance process. All of the reviewed offset programs require that emission reductions are verified by third-party auditors. The verification report is submitted to the program administrator where it is evaluated and, if approved, credits are issued. CAR, VCS, and GS A/R have combined the validation and verification steps. Both validation and verification are conducted by the same auditor the first time a projects submits documentation to receive offset credits. The sequence of credit issuance may be similar in all programs because confirmation of the actual emission reductions achieved requires careful monitoring, reporting, and verification for almost all types of projects. Differences exist in terms of the depth of information provided at verification. Project types that are based on methodologies that use standardized baseline scenarios, default values such as grid emission factors

may require less detailed monitoring and verification information than programs and project types that require more project specific information.

Scope for Streamlining in Verification

At the verification and credit issuance stages, offset programs aim to ensure the conservative and accurate accounting of emission reductions while minimizing transaction costs for programs and project developers. Offering standardized forms and tools can streamline and simplify the review as well as the application process for offset projects. Examples include look-up tables, default emissions factors and standardized validation and verification forms, as well as "how to" manuals such as the Gold Standard Toolkit, the CDM Validation and Verification manual and the CAR Program and Verification Manuals.

Other approaches to keep transaction costs low include inter alia:

- defining materiality thresholds (i.e., to provide for simple approaches in case of minor errors or deviations);
- balancing frequency of credit issuance (as higher frequency increases issuance costs);
- allowing aggregation of projects to make use of up-scaling, including programmatic approaches;
- standardizing procedures;
- providing clear and unambiguous rules;
- providing guidance tools;
- ensuring consistency of evaluations; and
- maximizing transparency.

Programs are evolving and seem to increasingly use these streamlining tools.

7. Sustainable Development Aspects

While the key role of GHG offset programs is to recognize the emission reductions (or emission sequestration) of project activities compared with a baseline, offset activities can also contribute to other co-benefits (i.e., in addition to the reductions/sequestration of GHGs), such as addressing local air pollution, enhancing access to energy services, and employment. These typically constitute the overall sustainable development benefits associated with individual offset project activities. The importance and or recognition that offset programs give to sustainable development aspects vary significantly among the programs considered in this note.

Many of the considered offset programs mention the contribution to sustainable development in their program principles. While such mention is common, their rules and procedures to require or enhance sustainable benefit aspects of offset projects vary significantly. Table 10 in Annex I summarizes the differing approaches, including stakeholder consultation requirements, sustainability benefit requirements and do-no-harm safeguards.

Among the offset programs examined for this note that evaluate sustainable development at a program level, the GS has the most stringent and detailed requirements with respect to sustainable development contributions of eligible offset projects. A comprehensive sustainability assessment has to be performed for each GS project both before project registration and after project implementation, and is part of the verification process by an independent third party. The GS includes an appeals body and a grievance mechanism to remediate issues during the crediting periods. The monitoring, reporting, and verification of sustainability benefits in the GS leads to

additional costs compared with other offset programs. On the other hand, the GS projects, on average, fetch premium prices as some offset buyers are ready to pay more for GS offsets because they wish to support projects with independently verified sustainability co-benefits (e.g., because the offset program's requirements may mitigate reputational risks).

Under the CDM, eligible project activities should contribute both to meeting emission reductions objectives and to the sustainable development of the host country. In the CDM the determination of what contributes to the sustainable development is the prerogative of each individual host country. Sustainable development requirements and benefits associated with CDM projects are therefore defined and evaluated by the relevant host country authority. There is significant difference in terms of what is required by host countries. As a result, what each CDM project contributes and is reported on its contribution to sustainable development varies from project to project. [20]

VCS and CAR have specific sustainability requirements for land-use/forestry projects but not for other project types, CCER and JCM are still in the process of developing their sustainability requirements and procedures. In practice sustainable development benefits are rarely considered by host countries in JI.

A stakeholder process is an important means to ensure sustainable development benefits are considered and taken into account[21] when developing and approving offset projects. Such a process gives the affected population an opportunity to voice concerns and support and potential preferences. Requirements are considerably different between programs with the GS having extensive stakeholder requirements and other programs having limited or no such requirements (JI Track 1, VCS, CAR, and Québec).

Sustainable development as a distinct objective for offsets may be less relevant in some jurisdictions than in others. For example, in California and Québec, the political and economic context for domestic offsets is very different from CDM and GS, which are internationally focused.

[20] It should also be mentioned that several buyers of offsets, including multilateral institutions, apply internal bank safeguards that may include similar sustainable development assessments. Sovereign buyers may also take these sustainability issues into account, typically in their due diligence of potential offset projects and Emission Reduction Purchase Agreements (ERPAs).

[21] It should be noted that the objective of stakeholder consultation processes is typically broader than ensuring a project's contribution to sustainable development.

8. Conclusions

The present comparison of eight offset programs provides an overview of the range of approaches used to design and administer offset programs (see Tables in Annex I).

The considered offset programs build on many common elements in terms of governance structure, methodologies, and processes. The offset programs can broadly be put into two groups:

Offset program with broad scope	Offset program with selective scope
• Few eligibility restrictions • International scope • Bottom up • Limited standardization • Additionality determination mostly project based	• Eligibility restricted to a few project types • Limited geographic scope • Top-down • Increased standardization, especially for additionality determinations
Examples: CDM, JI-Track 1, CCER, JCM, GS and VCS	Examples: CAR and Québec

Offset programs continue to evolve. A wealth of experience has been gained over the last decade. Newer programs tend to learn from existing ones. In particular, the CDM has served as an important model and reference for all other offsets programs. Many of its procedural, methodological, and institutional elements have been copied and adapted by other offset programs. For example, the CDM has developed over 180 project methodologies. All of the other examined standards are using or have modified CDM methodologies and processes for their own program.

Other offset programs have brought innovations to the field as well, for example:

- The Gold Standard developed a comprehensive framework to document, monitor, and verify sustainability benefits;
- The VCS has advanced the development of new project types (e.g., forestry) and standardization approaches; and
- CAR has pioneered a selective, top-down approach, standardizing approaches and simplifying the project cycle.

While there are important similarities among the various offset programs, the variability of approaches confirms that there is no absolute one-size-fits-all: Offset program design depends on many factors, including

- **Targeted market segment:** Offset programs have to target a certain market and then cater to the needs of buyers in that market. These needs may include a requirement for the program to be able to issue units recognized for the compliance with the buyer's emission trading system or a specific demand for units with specific characteristics[22] (e.g., sustainability);
- **Regulatory framework** in both the host and targeted buyers country (e.g., what is possible in host countries and what are the opportunities or restrictions for offsets to be eligible in potential buyer countries' systems);

[22] For example, some potential buyers may have limitations towards buying units from project-based offset programs and may prefer (or be required to) look for credits based on broader approaches (e.g. programmatic and/or sectoral).

- Overall approach to **standard design** (top-down vs. bottom-up), i.e., whether a program encourages project developers to submit new methodologies for different project types in a broad scope of project types for the consideration and approval of the standard's regulatory body, or whether a standard's regulatory body defines up-front the eligibility/additionality of a selective number of project types along with associated baseline and monitoring methodologies for project participants to be used when submitting new projects; and
- Availability of **technical and institutional capacities and resources** (e.g., different designs of offset programs have different implications in terms of technical and institutional resources needed to run them).

All offset programs aim to balance the goal of quality assurance (i.e., safeguarding environmental integrity) with the need to keep costs and risks for programs and project developers minimal and to provide clear and predictable rules and guidance. Existing bottom-up programs such as the CDM, VCS and GS are increasingly adding top-down procedure and standardization of approaches, yet remain in principle bottom-up, broad scope programs. Standardization of approaches tends to reduce transaction costs for project developers but may lead to higher burdens for the development of standards for program administrators.

Learning from existing programs may be beneficial for emerging offset programs to avoid re-inventing the wheel, as well as ensuring an optimum program design and attractiveness to the market. Aiming at a certain level of consistency and comparability in the design between the different programs may also be beneficial to enable potential future linking between systems.

Annex I: Overview Tables of Evaluated Offset Programs

Table 2: Overview of Programs (as of February 2013)

Name of Program	Type of Program	Regional scope	Start of Program	Projects registered	Tradable Unit Name	Units issued	Primary Users of credits
Clean Development Mechanism (CDM)	› Offset mechanism under the Kyoto Protocol (Article 12) › Primarily project-based › Also recognizes program-based mitigation	International	General rules established in 2001, first offset issued in 2005	6,354	Certified Emission Reductions (CERs)	Above 1.2 billion	› Annex 1 countries that have a reduction commitment under the Kyoto Protocol › Private buyers that are covered under an ETS (e.g., EU-ETS) › Voluntary buyers
Joint Implementation (JI) Track 1	› Offset mechanism under the Kyoto Protocol (Article 6) › Primarily project-based › Also recognizes program-based mitigation	International	General rules established in 2001, national rules established individually in each country, first offset issued in 2008	532	Emission Reduction Units (ERUs)	637 million	› Annex 1 countries that have a reduction commitment under the Kyoto Protocol › Private buyers that are covered under an ETS (e.g., EU-ETS) › Voluntary buyers
Chinese CER (CCER)	› Project-based offset mechanism	China	Expected start in 2013	0	Chinese Certified Emission Reductions (CCERs)	0	› Voluntary buyers (both Chinese and international)
Japanese Joint Crediting Mechanism (JCM) or Bilateral Offsets Crediting Mechanism (BOCM)[23]	› Bilateral project-based offset mechanism	International	Guidelines to be implemented starting April 2013	0	Units currently not traded ("non-trading-mechanism"); may become trading mechanism at a later date	0	› Both government and private sector can be financing entities › Both government and private sector entities can be allocated units

[23] The Japanese programme has two names: JCM and BOCM. Please note that all technical details provided for the JCM are subject to further consideration and discussion with host countries.

Name of Program	Type of Program	Regional scope	Start of Program	Projects registered	Tradable Unit Name	Units issued	› Primary Users of credits
Regulation respecting a cap-and-trade system for GHG allowances (Québec)	› Project-based offset mechanism under the Québec ETS	Québec (Canada for 1 project type)	January 1st 2013	0	Offsets	0	› Entities covered by the Québec ETS and the California ETS › Voluntary buyers
The Climate Action Reserve (CAR)	› Project-based voluntary offset mechanism, non-profit organization › Approved as a compliance offset project registry for CA cap-and-trade regulation	US and Mexico	2008 (the California Climate Action Registry started 2002)	191	Climate Reserve Tonnes (CRT)	31 million	› Voluntary buyers in the US and compliance buyers with reduction commitments under California's Global Warming Solutions Act
Gold Standard (GS)	› Project-based voluntary offset mechanism that can be used as-add on certification to CDM and JI or for voluntary projects, non-profit organization	International	2003	273	Gold Standard Voluntary Emission Reductions (GS VERs), GS CERs for CDM projects GS ERUs for JI projects	18 million	› Mostly voluntary buyers › GS CERs and ERUs – few Annex 1 countries that have a reduction commitment under the Kyoto Protocol (e.g., Switzerland). › Private buyers that are covered under an ETS (e.g., EU-ETS)
The Verified Carbon Standard (VCS)	› Project-based voluntary offset mechanism, non-profit organization	International	Launched in 2007 (version 1 in 2006)	951	Verified Carbon Units (VCUs)	116 million	› Voluntary buyers mainly in the US and Europe

Table 3: Principles and Goals of Programs

Name of Program	Stated purpose	Environmental Integrity	Conservativeness	Transparency	Sustainability	Avoidance of double counting
CDM	*To assist Parties not included in Annex I to the Convention in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3 of the Kyoto Protocol*. (Article 12, Kyoto Protocol)	*Further emphasizing that environmental integrity is to be achieved through sound modalities, rules and guidelines for the mechanisms* *The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed project activity […]* Decision 3/CMP.1	Decision 3/CMP.1 mentions conservativeness as a requirement when establishing baselines and standardization	Decision 3/CMP.1 mentions transparency as a requirement, *inter alia*, for establishing baselines, monitoring and verification, and conduct of CDM Executive Board (EB) and other bodies Most documents are publically available; EB meetings partially streamed	One of the two main objectives of the mechanism, see stated purpose	› Projects can be hosted only by countries that have ratified the Kyoto Protocol and do not have emission reduction targets under the Kyoto Protocol › CERs are issued into the CDM Registry › Each CER has a unique serial number, which includes a project identifier, party of origin and commitment period › Transactions are tracked via the international transaction log (ITL)
JI Track 1	JI was established for the "*purpose of meeting [...] commitments"* of Parties included in Annex I (Article 6 Kyoto Protocol)	*Any such project provides a reduction in emissions by sources, or an enhancement of removals by sinks, that is additional to any that would otherwise occur* (Article 6 Kyoto Protocol) › Varies by host Party › Under Track 1, additionality requirements are set by the host Party, thus the level of requirements with regard to the environmental integrity varies by host Party › Typically environmental impacts have to be considered; some parties require EIA for all or certain project types.	Varies by host Party- Under Track 1, requirements are set by the host Party In practice, JI Track 2 rules are usually applied, which require that baselines are established *taking account of uncertainties and using conservative assumptions* and ER calculations are *based on conservative assumptions* Decision 9/CMP.1 And Guidance on criteria for baseline setting and monitoring	Varies by host Party- Host Parties are required to publish their JI rules, information on projects and ERU transactions (Decisions 9/CMP.1 and 13/CMP.1) However, there have been issues with transparency and this requirement has been reiterated by the CMP, e.g., COP 18 Decision on JI Registered projects are listed on the UNFCCC website; the information is provided by host Parties The UNFCCC is not responsible for completeness or accuracy of documents	Requirements are set by the host Party: *It is the host Party's prerogative to confirm whether an Article 6 project activity assists it in achieving sustainable development* (Decision 16/CP.7) In practice, sustainability benefits have not been regarded as critical by host countries	› Projects can be hosted only by Annex I Parties with emission reduction targets under the Kyoto Protocol and established assigned amount › ERUs are issued through the conversion of assigned amount units (AAUs) or removal units (RMUs) › Each ERU has its unique serial number, which includes a project identifier, party of origin and commitment period › Transactions are tracked via the international transaction log (ITL)

Name of Program	Stated purpose	Environmental Integrity	Conservativeness	Transparency	Sustainability	Avoidance of double counting
CCER	› To support China's 2020 target of 40-45% CO_2 emission reduction per domestic GDP by 2020 compared to 2005 level and to promote voluntary GHG emission trading	The GHG emission reductions should be real, measurable, verifiable and additional	NA	National registry is open for public and credits can be traced in registry; PDD will probably be accessible to the public	Sustainability is one of the requirements in the process of project application approval by NDRC	Offsets are tracked in national registry
JCM	› Fostering low-carbon growth › Facilitating diffusion of leading low carbon technologies and services › To achieve Japan's emission reduction target › Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions or removals, complementing the CDM	› Environmental integrity should be taken into account in the design and implementation of JCM; JCM is seeking a net decrease of GHG emissions (in line with Framework for Various Approaches) › The JCM aims to implement this by assuring that reference emission scenarios are below business as usual (BAU)	› A crediting threshold should be established conservatively in order to calculate reference emissions below BAU emissions › Default values to calculate project emissions (instead of measuring) are derived conservatively	*Transparency* should be *taken into account* in the design and implementation of JCM	C*ontributing to sustainable development of developing countries* is part of the JCM's *Basic Concept*	› Double counting is excluded: preventing uses of any mitigation projects registered under the JCM for the purpose of any other international climate mitigation mechanisms to avoid double counting on GHG emission reductions or removals › Depending on agreement between countries, emission reductions are shared between host country and Japan, so there is no double counting › If a project is registered under the JCM, it may not be registered in another program (Rules of Procedures)
Québec	› To lower compliance costs and to incentivize emission reductions in sectors not covered by the Qc-ETS Source	The reductions in GHG emissions must be real, permanent and irreversible; additional and verifiable Source	Standardized baselines built into the protocols	The Ministry of the Environment of Québec will keep a registry including contact information of project developers, project plan, project reports, validation and verification reports and information on project status.	No requirements for sustainability benefits	The project developer has to declare that may not apply for credits for the GHG emission reductions under another GHG emission reduction program

Name of Program	Stated purpose	Environmental Integrity	Conservativeness	Transparency	Sustainability	Avoidance of double counting
CAR	*Promote the reduction of greenhouse gas emissions by pioneering credible market-based policies and solutions.* *http://www.climateactionreserve.org/about-us/mission/*	*The Reserve's program rules and procedures, eligibility criteria, and quantification and verification protocols are designed to ensure that GHG emission reductions certified by the Reserve are:* › *Real […]* › *Additional […]* › *Permanent […]* › *Verified […]* › *Owned Unambiguously […]* (Section 1.2 Program Manual)	› *Conservative assumptions, values, and procedures should be used to ensure that GHG reductions are not over-estimated* › *Reserve protocols employ conservative estimation methods whenever data and assumptions are uncertain and* › *Measures to reduce uncertainty would be impractical.* (Program Manual)	*Sufficient information should be disclosed to allow reviewers and stakeholders to make decisions about the credibility and reliability of GHG reduction claims with reasonable confidence* (Section 2.2 Program Manual) › CAR uses an open, stakeholder-driven process for developing methodologies; › Methodologies are publicly available; › Documentation for all listed projects is publically available on the CAR's registry	*Project activities should not cause or contribute to negative social, economic or environmental outcomes and ideally should result in benefits beyond climate change mitigation* (Section 1.2 Program Manual)	CAR rules are designed to ensure that: *GHG emission reductions certified by the Reserve are: Owned Unambiguously: No parties other than the registered project developer must be able to reasonably claim ownership of the GHG reductions* (Section 1.2 Program Manual) Project developers sign an Attestation of Title that protects against double counting each time CRTs are issued (Section 3.1.6, Program Manual) CRTs tracked in CAR's registry, units have individual serial numbers CAR staff cross reference each project with projects listed on publicly available registries prior to issuing CRTs
GS	*[…] to ensure that [GS carbon offset projects] demonstrate real and permanent greenhouse gas (GHG) reductions and sustainable development benefits in local communities that are measured, reported and verified (*NGOs and The Gold Standard) *[…] the purpose of The Gold Standard is to encourage innovation, provide legitimacy, and enable pragmatism in the compliance and voluntary market for the technologies within scope* (The Gold Standard Requirements)	*To be eligible for GS certification, projects must:* › *Adhere to the strictest standards on additionality* › *Positively impact the economy, health, welfare and environment of the local community hosting the project*	Conservativeness stated as one of the fundamental principles of the GS: *[…] The Gold Standard relies on conservative choices that are well-documented and traceable* (The Gold Standard Requirements)	*[…] a commitment to verifiable information and transparency* is listed among the key principles of the GS (The Gold Standard Requirements) have to transparently demonstrate their compliance with the GS requirements Documentation for all registered projects is publically available on the GS Project Registry	› Sustainability is a core requirement › Sustainability aspects of the projects are examined before and after implementation through a sustainability assessment, in addition to emission reduction reporting › Sustainable development indicators are monitored, reported, and verified	For CDM and JI projects certified by GS respective CDM and JI registries are used (see above) In addition, the GS maintains Registry of projects and VER credits, which have unique serial numbers. PP has to provide *[…] a clear and convincing demonstration that no double counting and/or claiming would arise from the issuance of Gold Standard carbon credits.* (The Gold Standard Requirements) Projects not allowed in Annex B countries

Name of Program	› Stated purpose	Environmental Integrity	Conservativeness	Transparency	Sustainability	Avoidance of double counting
VCS	› *To provide a trusted, robust and user-friendly program that brings quality assurance to voluntary carbon markets* › *To pioneer innovative rules and tools that open new avenues for carbon crediting and allow businesses, non-profits and government entities to engage in on-the-ground climate action* › *To share knowledge and encourage the uptake of best practice in carbon markets so that markets develop along coherent and compatible lines even as top-down regulations take shape* http://v-c-s.org/who-we-are/mission-history	VCS Program Criteria for GHG Projects VCUs must be: › Real › Measurable › Permanent › Additional › Independently Audited › Transparent (VCS Program Guide 3.4)	Conservativeness is defined as: *Use conservative assumptions, values and procedures to ensure that net GHG emission reductions or removals are not overestimated* *When highly uncertain data and information are relied upon, conservative values shall be selected that ensure that the quantification does not lead to an overestimation of net GHG emission reductions or removals* VCS Standard 3.3	Transparency is defined as: *Disclose sufficient and appropriate GHG-related information to allow intended users to make decisions with reasonable confidence* Documentation for all registered projects and VCUs is publicly available on the VCS Project Database	No requirements for sustainability benefits except for AFOLU projects	*There must be no double counting of the environmental benefit, in respect of the GHG emission reductions or removals* (VCS Program Guide 3.4) › A secure registry system that offers assurance against double counting and provides transparency to the public › Projects are not allowed in countries with a reduction target under the Kyoto Protocol, unless cancellation of AAUs occurs (VCS Double Counting: Clarification of Rules)

Table 4: Operationalized Principles (as of February 2013)

Name of Program	Projects types	Methodology development code used for type of methodologies used in other programs: A= CDM, B= CDM based and amended or simplified C= new methodologies	Number of methodologies	Methodologies approval process	Leakage	Indirect emissions
CDM	All except nuclear facilities and protection of existing forests	Bottom-up, project-by-project as well as top-down.	184 total (89 large scale, 87 small scale, 8 LULUCF)	› The project participant develops and proposes a new methodology through a DOE › The secretariat makes it available for public comments and prepares draft recommendation › The relevant Meth Panel or working group makes its draft recommendation to the EB › EB makes the final approval decision	Considered: precise rules depend on methodology	Considered: specific rules vary by methodology
JI Track 1	All except nuclear facilities	Bottom-up, project-by-project Requirements set by host Party In practice, rules are usually based on JI Track 2 which allows: A: CDM methodologies or B: elements thereof or C: project-specific approaches	Not determined	No formal methodology approval process; the description of the methodology is included in the PDD and assessed by an AIE as part of the determination process	Under Track 1, requirements are set by the host Party. Typically, the rules are based on JI Track 2, where rules for addressing leakage are described in Guidance on criteria for baseline setting and monitoring	Under Track 1, requirements are set by the host Party Typically indirect emissions are considered, as it is required in JI Track 2

CCER	The regulation is applied to trading activities of following 6 GHG emissions: CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. =Kyoto gases	› NDRC organizes experts to evaluate CDM methodologies Criteria: translation into Chinese and should be simplified and adapted for China › NDRC evaluates new methodologies submitted by project developers or research institutions	Currently 52 CDM methodologies approved by NDRC; several new methodologies under consideration by NDRC (forestry)	Project participant develops and submits to NDRC; NDRC assigns 2-3 independent experts to do technical evaluations (60 working days); NDRC takes into account the experts' opinions and approves or rejects them within 30 working days	No rules	Same rules as under the CDM
JCM	No restrictions	Bottom-up, and top-down, project-by-project and standardized baselines as threshold will be determined for each sector/technology for each country; requirements set by *Joint Commitee*. B, and C	About 200 proposed methodologies as outcome of feasibility studies; no methodology has been submitted to JC yet	›Bottom-up methodologies are submitted by project participants (private sector) ›Completeness check by secretariat (7 days) ›Public inputs (15days) ›Assessment (60-90days) ›Approval by JC	All major emission sources have to be included: precise rules depend on methodology	There are no explicit procedures to include upstream emissions. Precise rules depend on methodology
Québec	› Livestock manure management › Landfill gas › O3 depleting substances from appliance foams	Top-down: developed by the government of Quebec (Sustainable Development, Environment, Wildlife and Parks and the agriculture ministries) based based on existing protocols and the Western Climate Initiative's rules	3	› All current protocols developed by the government › Western Climate Initiative will serve as a forum for the development of more methodologies › Each new protocol added to the regulation is subject to a 60 days consultation period	The GHG reductions resulting from the project must not be wholly or partly compensated by increases in GHG emissions occurring outside the boundaries of the project Source	Considered: precise rules depend on methodology

CAR	› Coal mine methane › Forestry* › Landfill gas (U.S. and Mexico) › Livestock manure management (U.S. and Mexico)* › Nitrogen management › N2O abatement at nitric acid plants › Organic waste composting › Organic waste digestion › O3 depleting substances* › Rice cultivation › Urban forest* * Project types eligible under CA (only located in the US)	Top-down developed by CAR B, C*: Quantification often based on CDM methodologies but tailored for US circumstances and more standardized additionality and baseline criteria than under CDM	14	› Methodologies developed in consultation with multi-stakeholder workgroup. › Draft methodologies posted on website throughout development and for final 30-day public comment period. › Technical reviewers are asked to submit comments › Public workshop is held during public comment period to solicit additional comments. › Final approval by Board (at meetings, which are open for public comment)	*The effects of a project on GHG emissions must be comprehensively accounted for, including unintended effects (often referred to as "leakage").(* Program Manual) Considered and addressed in each protocol	› Preference is to focus on project types that yield direct emission reductions (Section 4.1, Program Manual) › If there are significant sources of indirection emissions affected by the project, indirect emissions are included in quantification › Indirect emissions may also be excluded if it is conservative to do so. (Section 2.5, Program Manual)

GS	› Renewable Energy › Energy Efficiency – industrial › Waste Handling and disposal › Land Use and Forests	› Bottom-up, project-by-project. › A, B, C: › ApplicableCDM methodologies and › 8 GS approved methodologies	8 GS VER methodologies and applicable CDM methodologies	›The project participant develops and proposes a methodology to the Gold Standard Secretariat ›GS involves two external experts to review the methodology ›GS' independent Technical Advisory Committee (TAC) makes the approval decision. The process is different for projects developed under the GS micro-scale scheme where methodologies can be proposed along with projects applying for registration	Considered: precise rules depend on methodology	Considered: precise rules depend on methodology
VCS	No restrictions	› Bottom-up, project-by-project. › Focus on standartisation, see here › A, B, C* All CAR and CDM methodologies. (all CRTs, excluding forestry, can be converted to VCUs but not vice versa.) › To incentivse new, broadly applicable methodologies, VCS rebates 20 % of the levy on VCU issued to methodology developers when a project uses the methodology they developed.	24 VCS methodologies plus CAR and CDM methodologies	›The project participant develops and proposes a methodology to VCS Secretariat ›Draft methodologies posted on website for 30-day public comment period ›Two approved validation/ verification bodies (VVBs) independently assess the methodology and must provide a positive assessment of the methodology. ›The VCSA conducts an in-depth review of the methodology and assessment reports. ›Final approval by the VCSA (VCS Methodology Approval Process Section 3.3.2, 3.4.5, 3.6.2)	Considered. Specific rules vary by methodology In particular, AFOLU projects must account for relevant market, activity shifting, and ecological leakage.	Considered: specific rules vary by methodology

Table 5: Operationalized Principles: Additionality and Baselines

Name of Program	Rules on additionality determination	Rules on baseline setting
CDM	Usually determined project-by-project. Some small scale positive lists have been developed. Technologies on a positive list are automatically considered additional. *A CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.* Decision 3/CMP.1 Rules on demonstrating additionality defined in Additionality tool: › Step 1: Identification of alternatives to the project activity › Step 2: Investment analysis to determine that the proposed project activity is either (a) not the most economically or financially attractive or (b) not economically or financially feasible; › Step 3: Barrier analysis › Step 4: Common practice analysis	Usually determined project-by-project. Standartised approaches are currently being developed for some project types. *The baseline for a CDM project activity is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity.* Decision 3/CMP.1 Rules on setting baselines defined in combined Additionality and Baseline setting tool and the relevant methodologies.
JI track 1	Under track 1, requirements are set by the host Party. Determined project-by-project *[...] a host Party may verify reductions in anthropogenic emissions by sources or enhancements of anthropogenic removals by sinks from an Article 6 project as being additional to any that would otherwise occur [...]* Decision 9/CMP.1 In practice, verification of additionality varies significantly by host Party. Often, JI Track 2 rules are applied, which allow for use of the CDM Additionality tool.	Under track 1, requirements are set by the host Party. Determined project-by-project *The baseline for an Article 6 project is the scenario that reasonably represents the anthropogenic emissions by sources or anthropogenic removals by sinks of greenhouse gases that would occur in the absence of the proposed project.* Decision 9/CMP.1 In practice, Track 2 Guidance on criteria for baseline setting and monitoring are often used.
CCER	"Almost the same as in CDM." Details have not been defined yet.	"Almost the same as in CDM." Details have not been defined yet.
JCM	Additionality determination is substituted by eligibility criteria for each of the methodologies, similar to a positive list. Both Governments (of the host country and of Japan) determine what technologies, products, etc. should be included in the eligibility criteria through the approval process of the JCM methodologies by the Joint Committee. Eligibility criteria for registration can be based on ›the efficiency of products/technologies (e.g.,tonnes output/kWh), a *benchmark approach*, or	The methodologies do not require the analysis of different hypothetical scenarios for baseline scenario determination. Rather they prescribe one "reference emissions scenario" and reference emissions are calculated by multiplying a "crediting threshold" which is typically expressed as GHG emissions per unit of output by total outputs. The crediting threshold is calculated ex ante in the methodology for a specific project type and country It is established conservatively in order to calculate reference emissions below BAU emissions.

Name of Program	Rules on additionality determination	Rules on baseline setting
	› type of product/technology, the group of accumulating methodologies will eventually form a kind of *positive list*. › Also, only projects that started their operation on or after 1.1.2013 are eligible for the JCM (Rules of the procedures for the JC – Mongolia).	
Quebec	The reductions in GHG emissions: *(a)* they must result from a project that is voluntary, that is that it is not being carried out, at the time or registration of renewal, in response to a legislative or regulatory provision, a permit or other type of authorization, an order made under an Act or regulation, or a court decision; *(b)* they must result from a project that goes beyond the current practices described in the applicable protocol for the project;	Standardized baselines are developed considering other regulations and common practice. Before the regulation is adopted, including its offsets methodologies, a consultation period allows comments from the industry and other interested parties.
CAR	***Additional**: GHG reductions must be additional to any that would have occurred in the absence of the Climate Action Reserve, or of a market for GHG reductions generally. "Business as usual" reductions – i.e., those that would occur in the absence of a GHG reduction market – should not be eligible for registration.* (Section 1.2 Program Manual) CAR additionality criteria include: (1) a legal requirement test, and (2) a performance standard test. (Section 2.4 of the Program Manual)	The Reserve uses standardized baselines in its protocols to the extent possible. Standardized baselines are developed in consultation with stakeholders by considering broad trends in the industry or sector relevant to a project type and determining what future "business as usual" alternatives are likely to be. Some project-specific calculations and emission factors may be used to ensure accuracy, or where standardized methods would result in estimates that are overly conservative (Section 2.6.1, Program Manual)

Name of Program	› Rules on additionality determination	Rules on baseline setting
GS	› GS relies on the UNFCCC's decision on additionality for CDM or JI projects applying for GS registration. GS CDM or JI projects are not required to carry out further demonstration of additionality. › GS VER projects apply UNFCCC additionality requirements, including small scale projects, validated by the DOEs and further checked by the GS Secretariat. › Positive list approach for GS micro-scale projects.	Determined project-by-project *'Baseline' means the amount of greenhouse gas emissions that would be produced in the absence of the carbon credit project, also known as the 'Business as usual' scenario, which forms the basis for calculating a project's emissions reductions and helps determine additionality.* (The Gold Standard Requirements) Baseline setting in VER projects is similar to that in CDM and JI.
VCS	All projects approved under the VCS must be additional, and the additionality requirements are those set out in the methodology that the project uses (e.g., the CDM Additionality Tool). New methodologies can include new approaches for the demonstration of additionality, either within the methodology or as a separate tool both of which are subject to the VCS Methodology Approval Process. See Section 4.6 of the VCS Standard 3.3 A number of methodologies under development are applying a positive list for additionality, in line with the VCS framework for standardized methods.	Usually determined project-by-project. However, standardised approaches are under development for a number of project types. *In developing the baseline scenario, assumptions, values and procedures shall be selected that help ensure that net GHG emission reductions and removals are not overestimated.* VCS Standard 3.3

Table 6: Governance Structure

Name of Program	Executive Body	Program Administrators	Advisory Boards	Auditors and Accreditation
CDM	**The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol** (CMP) includes all counties who have ratified the Kyoto Protocol. CMP has authority over and makes rules for the CDM, decides on the recommendations made to the Executive Board, and designates auditors (DOEs) that are provisionally accredited by the Executive Board. **CDM Executive Board (CDM EB, 10 members plus 10 alternates)** provide final approval of: › project registrations › credit issuance › methodologies › accrediting auditors The EB meets bi-monthly. Reports to the CMP	› **UNFCCC Sustainable Development Mechanisms (SDM); Registration and Performance Monitoring / Issuance and Performance Monitoring Team** (177)**:** › Review validation or verification reports › Prepare background information and analysis on project activities Undertake technical assessments of the compliance of new requests for issuance	› **CDM Methodology Panel** (16 members); › **CDM Afforestation/Reforestation Working Group** (8 members); › **CDM Small-Scale Working Group** (8 members): analyze and make recommendations related to new and approved methodologies › **CDM Accreditation Panel** (10 members): analyze and make recommendations related to accrediting DOEs	**Designated Operational Entities** (DOEs) 43 accredited companies: › conduct validations and verifications of CDM projects. › DOEs are accredited by CDM EB based on recommendations by the CDM accreditation panel. › DOE performance is checked through spot-checks. › In case of non-compliance DOEs can be suspended by the CDM EB. › DOEs are paid by project developers
JI track 1	***The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol*** *(CMP) shall provide guidance regarding the implementation of Article 6 [...]* .Decision 9/CMP.1 › **National governments** establish procedures for: › project approval › accreditation of auditors › project registration › MRV credit issuance	**National Designated Focal Points (DFPs)** are in charge of: › appraisal of project idea and its endorsement (most countries have this initial step) › project approval › project registration › accrediting auditors (if envisaged, otherwise Track 2 AIEs are used) › decision on ERU issuance	Varies by host Party. In some cases DFPs may consult with in-house or external experts.	**Accredited Independent Entities** (AIEs) › Under track 1, accreditation requirements are set by the host Party. › In practice, in most countries auditors accredited by the JI Supervisory Committee (JISC) for Track 2 are used, however, AIEs accredited for Track 2 are not accountable to the JISC for performance under Track 1. › Auditors are paid by project developers.
CCER	National Development and Research Committee is coordinating the process	Climate change department in NDRC	Ad hoc selection of experts	› NDRC accredits auditors. Requirements are issued and

Name of Program	Executive Body	Program Administrators	Advisory Boards	Auditors and Accreditation
	› Related ministries (sectors) review the project. › After that, the results are reported to the minister. The vice deputy minister responsible for Climate change in NDRC makes final decision	(22 government officers)		guideline for validation and verification similar to VVS. › Auditors are paid by project developers.
JCM	For each host country, a separate Joint Committee (JC) is formed, which consists of representatives from both governments. Each JC: › Develops/revises the rules, guidelines and methodologies › Registers projects › Discusses the implementation of JCM › Conducts policy consultations	The Joint Committees are supported by the JCM *Secretariat*. The secretariat supports the JC in their task.	*The JC can establish panels and appoint external experts to assist part of its work.*	*Third Party Entities,* are › UNFCCC accredited DOEs, or › Certification bodies that are accredited under ISO 14065 › Auditors are paid by project developers.
Québec	*Ministère du développement durable, de l'environnement et des parcs* (MDDEFP) is responsible for: › Project approval › Project registration › Methodologies › Approve the Validation and verification done by third parties › Approve Auditor accreditation › Credit issuance › Approve new protocols › Approve significant revisions to existing protocols Provides strategic guidance to organization and areas of new protocol development	MDDEFP staff: › Review all the documentation requested by the promoters (registration form, Project plan, Project report) › Review the validation and verification reports	In house experts of the MDDEFP and other government experts	› Auditors must be accredited under ISO 14065 by a member of the International Accreditation Forum (ANSI or Standard Council of Canada) according to an ISO 17 011 program. › Auditors are paid by project developers.
CAR	**Board of Directors** (15) › approve new protocols › Approve significant revisions to existing protocols › Provides strategic guidance to	**Climate Action Reserve Staff** (28) › review (and give final approval) of project submittal, verification,	**Stakeholder workgroups and outside expert review groups (convened ad-hoc)** › Give guidance and recommendations for	**Accredited Verification Body** (14) prepare verification report, verification opinion and list of findings for review and final determination by CAR staff.

Name of Program	Executive Body	Program Administrators	Advisory Boards	Auditors and Accreditation
	organization and areas of new protocol development **Climate Action Reserve Staff** (28) › Gives final approval of project submittal, verification, registration	registration › administer all aspects of developing methodologies › provide training, oversight and monitoring of third-party verification bodies	developing new or revised project protocols.	Verification bodies must be: › Accredited by ANSI under ISO 14065:2007 for specific project sector groupings related to approved protocols › Auditors are paid by project developers. › Reserve conducts random audits of verification › Reserve maintains rights to rescind or suspend its recognition of a verifier or verification body (Section 2 and 5, Verification Program Manual)
GS	**The Gold Standard Foundation Board** › provides financial oversight and strategic governance of the Gold Standard Foundation. **GS Secretariat** (30): › stakeholder consultation approval › Review and approval of registration of projects › Review and approval of issuance of credits › strategic and technical development, including new methodology and tool approvals, operational performance, › registry management, › capacity building for DOEs and project developers, marketing and fundraising.	See GS secretariat	**The Gold Standard Technical Advisory Committee (TAC, 13)** is an independent body composed of market specialists that provide expertise, guidance and decisions on methodology approval, rule changes and appeals. › comment on specific issues during project reviews if requested by Gold Standard Secretariat › conduct a full project review if requested by NGO supporters or by project proponents in case of rejection at registration or issuance stages › Is the first stage of escalation for GS Appeals and Grievance Mechanism	› **DOEs or AIEs accredited under UNFCCC** for the relevant scope **(see CDM and JI).** *GS recommends selecting a DOE or AIE who has an affinity with The Gold Standard values***.** (The Gold Standard Requirements) › DOEs and AIEs conduct validations and verifications of Gold Standard projects and submit to Gold Standard Secretariat for review and approval. With some exceptions, the verifying DOE has to be different from the validating DOE. › GS conducts DOE trainings every 3 months › Auditors are paid by project developers.

Name of Program	Executive Body	Program Administrators	Advisory Boards	Auditors and Accreditation
			Land-use & Forests Advisory Panel A specialist advisory group established to support the development of GS LULUCF scheme. **Supporting NGOs** (85 organizations) › can request clarification/corrective action at registration and issuance stages can request full review of projects by TAC	
VCS	**VCS Board** › Is the Governance board › Approves all changes to the standard or the program, procedures, new standards, guidelines **VCS Association** (VCSA) manages the VCS Program day to day: › conducts quarterly and annual reviews of projects and VCUs in the VCS registry system, as well as periodic spot-checks. › oversees the validation/verification bodies operating under the VCS Program. › manages the methodology approval process › convenes steering committees, advisory committees or working groups to support its work	**VCS management & staff (15).** The program team at the VCS is comprised of four functional areas: › Program management, › methodologies, › program development, › AFOLU. All changes to the VCS Program must be approved by the VCS Board.	› **AFOLU Steering Committee** Oversight of the VCS' Agriculture, Forestry and Other Land Use AFOLU) program, including development of new frameworks (e.g., for Jurisdictional and Nested REDD+) and AFOLU technical issues. › **AFOLU Expert Assessment Panel** reviews qualifications of AFOLU experts and recommends candidates to VCS. Some VCS advisory groups are ad-hoc groups of outside experts, created for specific purposes, and disbanded when work is complete, e.g., › **AFOLU Technical Working Groups**. › **Standardized Methods Steering Committee**	**VCS validation/verification bodies** conduct project validations and verifications, and methodology assessments. VCS auditors must be: › Approval by the UN Clean Development Mechanism (CDM) as a Designated Operational Entity (DOE) or › Approval by the UN Joint Implementation (JI) as an Accredited Independent Entity (AIE) or › Accreditation by the American National Standards Institute (ANSI) for ISO 14065 scope VCS or › Approval under the Climate Action Reserve (CAR) as a Verification Body (VB) › Auditors are paid by project developers.

Table 7: Project Registration Procedures

Name of Program	Project Design Document	Third-party Validation	Stakeholder Consultation requirements	Letter of Approval	Completeness / Consistency Check	Review	Final decision
CDM	Project design documents include detailed project information, additionality and baseline determination, and projected emissions reductions. Length typically 40-60 pages	DOE	Local stakeholders have to be informed and a meeting has to be held. PDD must list stakeholder comments. Guidelines are general. Global: 30 days of public consultation on website. CDM EB is currently discussing ways to improve the requirements.	By host party DNA including that the project activity assists it in achieving sustainable development. If applicable, by Annex I Party authorizing the buyer's participation in the project-	UNFCCC Secretariat	Project participant (PP) or at least 3 EB members may request a review within 28 days of receipt of the registration request. PP and DOE have 28 days to respond. Both the secretariat and two RIT members independently make assessment. If the secretariat and RIT propose the **same decision,** it becomes final within 20 days unless a CDM EB member objects. Such cases are then decided at the next EB meeting. Cases where the secretariat and RIT propose **different decisions** are decided at the next EB meeting.	No review: RIT and secretariat. Review: EB
JI track 1	Requirements set host Party. Usually JI Track 2 template is used, which includes detailed project information, additionality and baseline determination, and projected emissions reductions. Length typically 40-60 pages	Performed by an AIE Called 'PDD Determination'	Host party sets requirements. Normally participants required to inform local stakeholders. Some DFPs publish project information (including PDD) for public comment prior to approval	1) By a host country DFP. In some cases approval is equal to registration. Typically takes from 1-2 months to half a year 2) By an investor Party DFP (another AI Party), which also authorizes buyer's participation	Host country DFP	Requirements set by host Party. Typically there are no review procedures.	DFP

Name of Program	Project Design Document	Third-party Validation	Stakeholder Consultation requirements	Letter of Approval	Completeness / Consistency Check	Review	Final decision
CAR	› "Project submittal form" based on standardized project type specific submission templates (see here) › Typical length 2 pages › Project submittals reviewed w/in 10 business days of submission	Not required. Verification body confirms eligibility during initial verification, but there is not separate validation step.	Not required	Not required	CAR staff conduct initial eligibility check (less involved than CDM validation) based on project submittal form → project is 'listed'	Review happens at first verification/credit issuance stage (see table 7)	Climate Action Reserve staff
Québec	Detailed project information is found in the request form and the Project Plan document.	Accredited party by ANSI or SCC	No stakeholder consultation.	Not required	MDDEFP staff	No review procedures.	Legally the minister of the MDDEFP based on evaluation of the MDDEFP
JCM	JCM PDDs include information on eligibility criteria, projected emission reductions, environmental impact assessment, and stakeholder consultation. No information on additionality and baseline determination due to positive list approach.	Performed by *Third Party Entity*. Validation consists of eligibility check	No guidelines on stakeholder consultations have been defined so far.	Both host country and Japan are represented in project registration; no separate letter of approval by governments.	JCM secretariat (7 days)	There are no review procedures yet.	JC

Name of Program	Project Design Document	Third-party Validation	Stakeholder Consultation requirements	Letter of Approval	Completeness / Consistency Check	Review	Final decision
CCER	PDD similar to CDM	Performed by third party auditor.	Each project is subject to stakeholder consultation as part of validation. Similar to CDM.	Yes.	DOE does pre-check.	Before approval there is review process / meeting with other related ministries	NA
GS	UNFCCC PDD forms and guidelines are used for all projects (including VER). In addition, the Gold Standard Passport must be included, which includes *inter alia* sustainability monitoring plan. › GS PDD length similar to UNFCCC PDD, › GS Passport Length typically 20-30 pages	› DOE › micro-scale projects (<10,000 tCO2e per year): GS Secretariat and/or Objective Observer	A local stakeholder consultation is conducted early in the project cycle, listing of the project is conditional to approval of the local stakeholder consultation report. During a 60-day period prior to completion of the validation process, stakeholders have again the opportunity to comment (stakeholder feedback round).	› GS CDM and JI see above. › GS VER: not required but project developer has to notify the DNA	GS Secretariat Within a few days from notification of submission, less than a week	› NGO supporters (review) › GS Secretariat & GS-TAC (review and final decision) › Total 8 weeks: 6 weeks for GS TAC and NGO Supporters, 2 weeks for GS Secretariat to compile comments › Issuance stage: 2 weeks for GS TAC and NGO supporters, 1 week for GS Secretariat to compile comments, 3 weeks total.	GS Secretariat & GS-TAC
VCS	VCS Template (9 pages) includes detailed project information Project Description, v3.1	Validation may occur before first verification or at same time as the first verification.	Not required	Not required	Registries are under contract with VCS, have been trained, are overseen by VCSA.	VCS Registry	VCS Registry

Table 8: MRV and Credit Issuance Procedures

Name of Program	Monitoring	Third-party verification	Review verification report	Review Process	Final decision	Registry Information
CDM	Monitoring requirements defined in methodologies and in other guidance and standards provided by the EB	DOE verifies information in monitoring report. DOE (must differ from the one that did the validation)	UNFCCC Secretariat: certification report submitted to secretariat by DOE. (Certification report: formal confirmation by a DOE that the emission reductions which are set out in the verification report were achieved.)	PP or at least 3 EB members may request a review within 28 days of the receipt of request of issuance. PP and DOE have 28 days to respond. Secretariat and two RIT members independently make assessment. If the secretariat and RIT propose the **same decision,** it becomes final within 20 days unless a CDM EB member objects. Such cases are then decided at the next EB meeting. Cases where the secretariat and RIT propose **different decisions** are decided at the next EB meeting.	No review: RIT and secretariat. Review: EB	CDM Registry is administered by the UNFCCC secretariat. Once the EB has approved CER issuance for a project activity, the CERs are issued into the pending account of the EB. Project participants may then request the UNFCCC secretariat to forward the issued CERs to their accounts in the CDM Registry and/or registries of Annex I Parties.
JI track 1	Requirements set by host Party. Typically, the rules are similar to the Guidance on criteria for baseline setting and monitoring of JI Track 2, including rules for monitoring	AIE (unlike CDM, AIE can be the same as the one that performed determination)	Requirements set by host Party. DFP checks the compliance of the verification reports with the national JI rules. The depth of the revision varies by host Party.	Requirements set by host Party. There is no standardised review process	Host country DFP	National Registries of the host Parties DFP is responsible for ERU issuance decision, which is implemented by the Registry administrator: AAUs or RMUs are converted into ERUs and transferred to a buyer's account in respective investor Party's Registry
CAR	Monitoring defined in each methodology.	Accredited Verification Body › Confirms eligibility and conformance with methodology during initial verification → project is 'registered' › Verifies information	Climate Action Reserve staff	› Verification report submitted by project developer to CAR and reviewed for approval determination. › Three-person internal teams of Climate Action Reserve staff review verification reports and opinions for completeness and accuracy within 10 business days. › A manager must sign off on the	Climate Action Reserve staff	The CAR's registry is operated by APX, a US environmental registry provider.

Name of Program	Monitoring	Third-party verification	Review verification report	Review Process	Final decision	Registry Information
		in monitoring report. Verification should generally take no more than 6 months.		review. Verification reports may be sent back for adjustments or corrections. › Verification report review generally occurs within 10 business days of submittal to CAR yet length of review varies by project and issues identified. › Upon approval the project developer is issued credits in their account in the CAR's registry.		
Québec	Monitoring defined in each methodology.	› Accredited Verification Body (must differ from the one that did the validation, must have verified less than 7 monitoring reports for same project and not have acted as consultant) › Verifies information in monitoring report.	Review by MDDEFP staff	› Verification report submitted by project developer to MDDEFP and reviewed for approval. › Upon approval the project developer is issued credits in their account in the registry.	Legally the minister of the MDDEFP based on an evaluation of the MDDEFP	› The government registry on the MDDEFP's website

Name of Program	Monitoring	Third-party verification	Review verification report	Review Process	Final decision	Registry Information
JCM	Monitoring requirements defined in each methodology. The methodologies seek to use default values as much as possible to reduce monitoring costs.	Performed by Third Party Entity. Validation and verification can be conducted simultaneously or separately. Verification report is submitted by Third-Party to PP, which then forwards the report to the JC (no direct submission from Third Party to JC)	JCM secretariat conducts a completeness check.	A standardized review process has not been developed yet.	Joint Committee	› Each Government (host country and Japan) can establish and maintain a registry. It is voluntary for host country. › On the basis of notification for issuance of credits by the JC, each Government issues the notified amount of credits to its registry.
CCER	Monitoring requirements defined in each methodology	The validation organization that validates the project with over 60,000 tons of emission reductions is not allowed to certify the emission reduction of the same project.	NDRC	The time of reviewing shall not be longer than 30 working days.	Head of department for Climate Change in NDRC	National registry run by NDRC tracks units
GS	Project participants have to monitor GHG reductions and sustainable development aspects. GHG monitoring is done in accordance with PDD prepared under UNFCCC standards (see	› DOE (for large scale projects, DOE must be different in verification from the one who performed the validation) › Micro-scale project activities: GS Secretariat and Objective Observer	NGO supporters (review) GS Secretariat & GS-TAC (review and final decision)	› Upon receipt of the verification report, the GS initiates a 3-week period during which GS TAC and GS NGO Supporters may request further clarification or corrective action. › GS Secretariat reviews verification documents › GS labels CERs or ERUs, or issues credits in its VER registry	GS Secretariat & GS -TAC	The GS Registry manages the full lifecycle of GS VERs. The registry also includes information on GS-labelled CDM and JI projects.

Name of Program	Monitoring	Third-party verification	Review verification report	Review Process	Final decision	Registry Information
	CDM above). Sustainability monitoring has to conform to sustainability monitoring plan in GS project Passport GS VER monitoring reports usually shorter than for CDM projects.			Average time needed for GS secretariat review: 0.5-1.5 days.		
VCS	VCS Template: Monitoring Report, v3.2	VCS approved auditor	VCS approved Auditors	› Emission reductions are verified and approved by the auditor and submitted to a VCS registry. › The independent VCS Registry Operators are responsible for verifying completeness of documentation and checks that the project has not been previously registered under the VCS Program › The registry administrator creates the issuance record on the VCS project database, which in turn issues VCU serial numbers.	VCS approved Auditors	› VCS has 2 approved independent VCS Registry Operators: APX Inc., and Markit. › VCS Registries are independent from the VCS Association and check project documents for completeness › The VCS registry system is able to conduct inter-registry transfers. › The two VCS Registries are supplemented by the central VCS Project Database, which is the publicly-available central repository of all project and VCU information and generates unique VCU serial numbers.

Table 9: Renewal of Crediting Period

Name of Program	Crediting Period	Rules for Renewal of crediting period
CDM	10 years (non renewable) or 7 years (renewable twice, for 21 years in total).	Baseline, estimated emission reductions and the monitoring plan using the latest approved methodology. New LoA not required. Validity of baseline is to be reassessed (M&P); baseline scenario is not reassessed (EB guidance)
JI track 1	Tied to length of Kyoto commitment period (i.e. 5 years for the 1st Kyoto commitment period, 8 years for the 2nd Kyoto commitment period).	The extension of the crediting period of a project to be decided by respective host Party.
CAR	› Length of a project's crediting period is defined in each methodology. › In general: 2 times 10 years for non-AFOLU (Agriculture, Forestry and Other Land Use) projects. › For AFOLU projects, crediting period may be as few as 5 years (agriculture) and up to 100 years (forestry).	Must meet the requirements of the most recent version of the methodology available at the time of renewal, including any updates to eligibility requirements. Project developer must apply for a renewal during the last 6 months of the project's expiring crediting period.
Québec	› 10 years for manure and landfill projects › 5 years for ODS projects. › No limit on how many times a project can renew its crediting period.	At the expiry of that period, the promoter may request the renewal of the offset credit project, for the same period as the initial period. A re-validation is required based on the current version of the methodology.
JCM	There is no defined crediting period. JCM covers period until the reaching of an international agreement (ca. 2020.	No defined crediting period.
CCER	Defined in the individual methodologies.	Defined in the individual methodologies.
GS	Consistent with CDM, i.e. either one-off 10 year period or up to 3 times 7 year periods	Baseline and sustainability assessment has to be renewed by project participants and revalidated by DOE after each 7-year period. PP have to redo local stakeholder process or justify why not needed.
VCS	2 times 10 years for non-AFOLU projects, other than AFOLU projects reducing N2O, CH4 or fossil-derived CO2 min of 20 years, max 100 years for Agriculture, Forestry and Other Land Use (AFOLU) projects with renewal of baseline every 10 years.	› A full reassessment of additionality is not required › regulatory surplus has to be demonstrated › Validity of the original baseline scenario has to be demonstrated, or where invalid a new baseline scenario has to be determined. VCS Standard 3.3

Table 10: Sustainable Development Aspects

Name of Program	Stakeholder Consultation requirements	Sustainability requirements	Appeals process / grievance mechanism	Do-no-harm safeguards
CDM	Local stakeholder consultation: Is part of the project validation process. The Global Stakeholder Process is conducted by displaying the PDD on the UNFCCC or DOE's website for 30 days, during which time Parties, stakeholders and UNFCCC accredited observers may make comments. These comments are also made publicly available.	No UNFCCC rules. Requirements established and enforced by each host country. Sustainability contributions evaluated ex-ante before the registration of the project. LoA by host country DNA includes host country approval of sust. contributions of a project. Voluntary tool for describing sustainable development co-benefits was approved in 2012.	Appeals process has been discussed under SBI of the COP/MOP but so far Parties have not been able to agree on who should be able to appeal and if an appeals process should only apply for rejected requests for registration/issuance or also for approved requests.	None[24]
JI track 1	Requirements set by host Party. Typically the local stakeholders have to be informed and local stakeholder consultation is part of the PDD determination process. Some DFPs publish project information for public comments prior to project approval.	Requirements set by host Party. Usually sustainability is not regarded as a high priority in JI and not required for project approval. Yet some projects voluntarily mention sustainability aspects in PDD. If appraised, sustainability contributions are evaluated ex-ante before the project approval by DFP.	None	None[24]
CAR	No stakeholder consultation requirements for project developers.	No requirements for sustainability benefits for non-forestry projects. For forestry projects, project proponents must meet sustainability and 'natural forest management' requirements, including use of native species and mixed age classes for trees.	None	"Do No Harm" Beyond Legal Requirements[25]

[24] Although CDM and JI do not include „do not harm" provisions at the program level (UNFCCC), some buyers including the World Bank, Asian Development Bank and other multilateral institutions apply internal bank safeguards including do no harm provisions. Such provisions are also known to be included in some sovereign buyers' due diligence of potential CDM projects and Emissions Reduction Purchase Agreements (ERPAs).

[25] In some cases, the Reserve may determine, in consultation with stakeholders, that existing legal requirements are insufficient to guarantee protection against important environmental and social harms. In these cases, the Reserve may include additional criteria in protocols to ensure that projects will not give rise to these harms, or may screen out certain project types or activities from eligibility under a protocol altogether. (Environmental and Social Safeguards Policy Memorandum, 2012)

Name of Program	Stakeholder Consultation requirements	Sustainability requirements	Appeals process / grievance mechanism	Do-no-harm safeguards
Québec	No stakeholder consultation.	No sustainability requirements.	None	None
JCM	The local stakeholder consultation is part of the project validation process and to be documented in the PDD. The global stakeholder process is conducted by displaying the PDD on the JCM's website for 30 days, during which time stakeholders may make comments. These comments are also made publicly available.	An environmental impact assessment is part of the project validation process and to be documented in the PDD. The EIA follows the requirements of the host country	None at this point in time.	
CCER	Similar to CDM	Contributing to the sustainable development of the society is one of the requirements in project registration process at NDRC.	Not clear yet A procedure exists for dealing with complaints	NA
GS	A checklist which provides guidance to DOEs on how to assess issues from the Local Stakeholder Consultation outcomes. Local Stakeholder Consultation must be performed before project start date and must include a discussion on the sustainable development aspects of the project; results of the stakeholder consultation must be documented and made publicly available; after which, a Stakeholder Feedback Round for 60 days is conducted to inform stakeholders about any changes made to project design based on their feedback or receive further comments by stakeholders;	Sustainability assessment has to be performed both ex-ante before project registration and ex-post after project implementation. Ex-ante includes: › the consideration of project's risks and benefits for sustainable development › 'Do No Harm' Assessment › Detailed Sustainability Impact Assessment. › Preparation of Sustainability Monitoring Plan Ex-post assessment includes: › Preparation of the Sustainability Monitoring Report (to be prepared together with emission reduction monitoring report)	**Appeals Body**: provides project developers with a provision to appeal decisions by the GS with respect to project registration, and to issuance or labelling of credits. **Grievance Mechanism:** All projects must have a formal continuous input mechanism in place to remediate issues identified during the crediting period as early as possible and prior to verification. Unforeseen issues that may arise during the course of the project and are not identified in the Monitoring Plan can also be addressed this way and local stakeholders can	The approach is based on the safeguarding principles of the UNDP and derived from the Millennium Development Goals. Assessment (see GS Annex H) which covers human rights, resettlement, removal of cultural, Sustainable Development and Social Equity, heritage, freedom of association, compulsory labor, child

Name of Program	Stakeholder Consultation requirements	Sustainability requirements	Appeals process / grievance mechanism	Do-no-harm safeguards
	All Gold Standard NGO supporters have the right to comment on the project at regular, defined intervals in the project cycle	› Verification of the Sustainability Monitoring Report by DOE, including site visit for every verification	suggest improvements or modifications based on their understanding of the local situation.	labor, discrimination, healthy work, environment, precautionary approach in regard to environmental challenges, degradation of critical natural habitats, corruption.
VCS	No requirements	No requirements for sustainability benefits for non-AFOLU projects. For AFOLU projects, project proponents must identify potential negative environmental and socio-economic impacts and take steps to mitigate them. VCS also encourages projects to use an add-on standard and has tagging agreements with CCB, Social Carbon and the Thai Government's Crown Standard.	Complaint and appeals procedure is provided in the VCS Program Guide, section. This is a two-step process, whereby complaints are processed by the VCS Association, overseen by the CEO. If the complainant is unsatisfied with the response to the complaint, it may appeal. Appeals are addressed and overseen by the VCS Board.	For AFOLU, there are various provisions, see VCS AFOLU Requirements. For non-AFOLU, there is currently no explicit do no harm

Annex 2: Other Offset Programs

The present technical report had to focus on a selection of offset programs. In the following, we list some other standards that have not been included in the present study:

- American Carbon Registry (ACR)
- Australia's Carbon Farming Initiative
- BMV Standard
- Brasil Mata Viva Standard
- Carbon Fix Standard (now part of Gold Standard)
- Chicago Climate Exchange (CCX) Offset Program (discontinued as of 1/2011)
- Climate, Community and Biodiversity Standard (CCB)
- Costa Rican offset standard
- EPA Climate Leaders Offset Guidance
- Forest Carbon Standard International
- Green-e Climate
- ISO-14064/5
- J-VER
- Panda Standard
- Plan Vivo Standards
- SOCIALCARBON Standard
- VER+ Standard

In addition, the report does only consider JI Track 1 and not JI Track 2.

Sources: Ecosystems Marketplace, Bloomberg New Energy Finance: State of the Voluntary Carbon Markets 2011, other.