

**SIMPLIFIED MODALITIES FOR DEMONSTRATING ADDITIONALITY OF
RENEWABLE ENERGY (RE) PROJECTS ≤ 5 MW AND ENERGY EFFICIENCY (EE)
PROJECTS WITH ENERGY SAVINGS ≤ 20 GWH PER YEAR**

(Version 01)

I. Background

1. As requested by the CDM Executive Board at its fifty-third meeting, the SSC WG is making this recommendation on simplified modalities for demonstration of additionality taking into account public inputs received.

II. Public inputs

2. In response to the call for input from the Board (see paragraph 53 of EB 53) inviting suggestions for *establishment of simplified modalities for demonstrating additionality for project activities up to 5 megawatts that employ renewable energy as their primary technology and for energy efficiency project activities that aim to achieve energy savings at a scale of no more than 20 gigawatt hours per year* (see paragraph 24 of further guidance relating to clean development mechanism, Decision 2/CMP.5.), 17 inputs were received.

3. These class of the projects i.e., ≤ 5 MW and ≤ 20 GWh per year, also termed Very Small Scale CDM (VSSC) projects in some submissions, have high transaction costs relative to CER revenues which are rather modest. Some submissions argue that a narrow interpretation of Validation and Verification Manual (VVM) and ‘Guidelines for objective demonstration and assessment of barriers’ (annex 13 of EB 50) has blurred the distinction between large and small scale CDM projects; DOEs often insist on the analysis of impact of barrier on investment decision or investment analysis, although Attachment A to appendix B of CDM modalities and procedures requires proof of existence of one of the four barriers i.e., investment, technological, prevailing practice and others (institutional, managerial or organisational). Others point out that SSC modalities were developed to reduce transaction costs¹ but have thus only limited success to date, therefore modalities for additionality of VSSC projects could unintentionally make it more difficult for the regular SSC projects if not addressed carefully. Submissions also point out that requirement to access multiple sources of third party data, need for surveys that are often required, lack of existence of third party evidence under some instances are all examples of difficulties with the present barrier tests.

4. For VSSC projects, approach based on the following criteria have been suggested to reduce transaction costs:

- **Geographical location** e.g., LDC projects (inherently small size and high investment risk results in very few projects in LDCs);
- **Market penetration** (a measure of the diffusion of a technology, product, or practice in a defined market);
- **Beneficiaries** (CDM has bypassed household RE and EE activities to date i.e., $< 2\%$ of registered CDM projects are for households);
- **Positive list of technologies defined by EB and DNAs** (host countries know best which technologies need CDM support and EB ensures environmental integrity);

¹ Paragraph 9 of modalities and procedures of SSC CDM proposed various measures to reduce transaction costs of SSC CDM projects.

- **Checklist based barrier test;**
- **Performance standards.**

5. More details from the submissions are included in annex 1. In annex 2, a comparison of the most pertinent features of additionality tests of a variety of offset programs, protocols and standards are presented (retrieved from *Carbon offset research & education*, Stockholm Environment Institute at <http://www.co2offsetresearch.org/policy/ComparisonTable.html>).

III. Proposals for Modalities for demonstration of additionality

6. Taking into account the above information, approaches to simplified additionality tests for VSSC renewable energy and energy efficiency projects have been presented including decision trees in figure 1 and figure 2 below.

7. Project activities up to 5 megawatts that employ renewable energy as their primary technology are additional if any one of the below conditions are satisfied:

- (a) The geographic location of the project activity is in LDCs/SIDs;
- (b) The project activity is an off grid activity supplying energy to households/communities;
- (c) The project activity is for distributed energy generation with both condition (i) and (ii) below satisfied;
 - (i) Each of the independent subsystem/measure in the project activity is smaller than or equal to 150 kW electrical or 450 kW thermal installed capacity;
 - (ii) End users of the of the subsystem or measure are households/communities/SMEs;
- (d) The market penetration of the technology/measure is equal to or smaller than 5%²

8. Energy efficiency project activities that aim to achieve energy savings at a scale of no more than 20 gigawatt hours per year are additional if any one of the below conditions are satisfied:

- (a) The geographic location of the project activity is in LDCs/SIDs;
- (b) The project activity is a non industrial demand side energy efficiency activity with both condition (a) and (b) below satisfied;
 - (i) Each of the independent subsystem/measure in the project activity achieves an estimated annual energy savings of equal to smaller than 600 megawatt hours; and
 - (ii) End users of the of the subsystem or measure are households/communities/SME;
- (c) The market penetration of the technology/measure of the project activity is equal to or smaller than 5% or the project activity is deploying a technology/measures that meets or exceeds the highest level of requirements in a performance standard e.g.,

² Where market penetration rate is a measure of the diffusion of a technology, product, or practice in a defined market, as represented by the percentage of annual sales for a product or practice, or as a percentage of the existing installed stock for a product or category of products, or as the percentage of existing installed stock that utilizes a practice. Submission may be made to the CDM Executive Board including proposals to determine an appropriate market definition and market penetration metric for a category of technology, product or practice using the procedures for request for clarifications.

international standard, national building energy code, 5 star label to an appliance
by a national agency

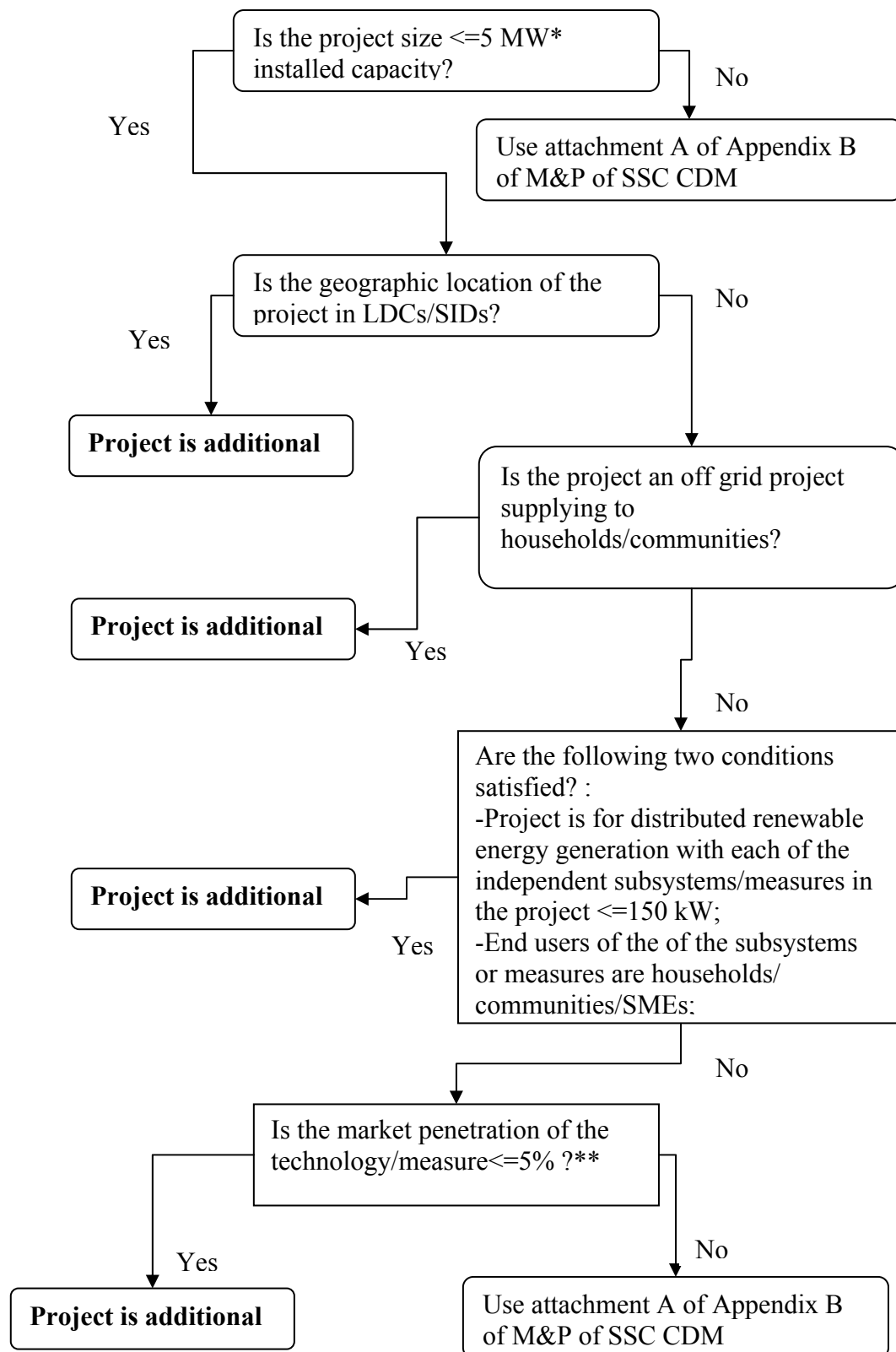


Figure 1 Additionality test for VSSC RE projects

* Units are electrical; multiply by 3 to determine thermal units.

** Market penetration rate: A measure of the diffusion of a technology, product, or practice in a defined market, as represented by the percentage of annual sales for a product or practice, or as a percentage of the existing installed stock for a product or category of products, or as the percentage of existing installed stock that utilizes a practice. Submission may be made to the CDM Executive Board including proposals to determine an appropriate market definition and market penetration metric for a category of technology, product or practice using the procedures for request for clarifications. S. Kartha and M Lazarus in their paper titled ‘Market penetration metrics: tools for additionality assessment?’ have cited Grubler et al, 1999 to show that market enters into pervasive diffusion phase when the penetration rates are above 5%.

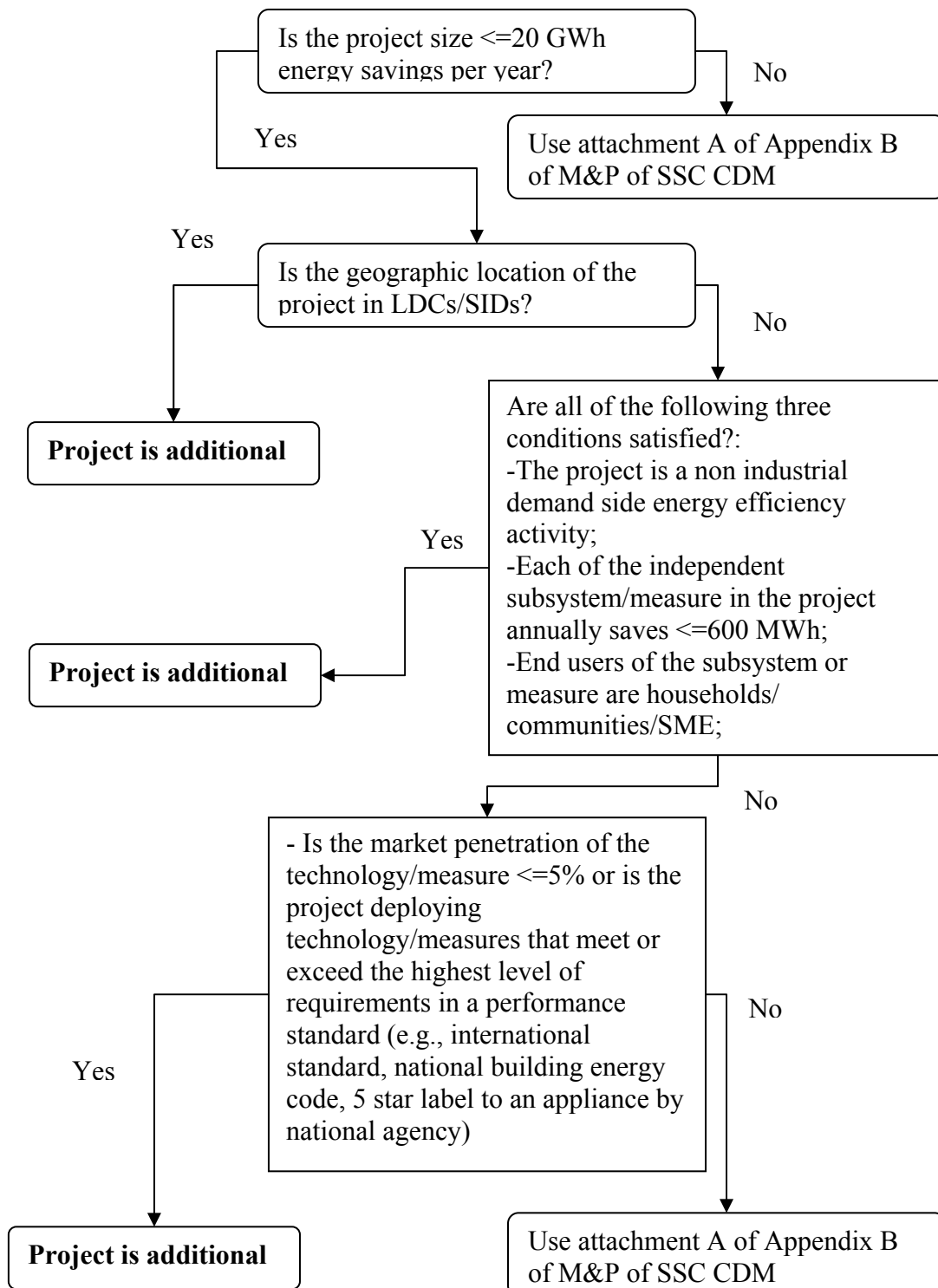


Figure 2 Additionality test for VSSC EE projects

Annex 1**SUMMARY OF PUBLIC INPUTS ON SIMPLIFIED MODALITIES FOR ADDITIONAL OF
<5MW AND <20 GWH PROJECTS**

**(It is recommended that readers consult the full text of the submissions at:
<http://cdm.unfccc.int/public_inputs/2010/additionality_ren_nrg/index.html>, as the
summary below may not be an accurate abstract of the submissions)**

1. Renewable energy projects such as solar, wind and geothermal are not feasible without Government subsidies anywhere in the world, therefore they are clearly additional [1], energy efficiency projects are even harder to implement, of the 2100 CDM projects in the pipeline very few are 'hard core' energy efficiency projects, 1 unit saved through EE is equal to >20 units in terms of fuel input [1].
2. [2] suggests that EE projects <20 GWh are additional if in the country (or in the region-defined as similar legal, regulatory and taxation environment-) proposed technology/measure has one of the following:
 - <25% penetration;
 - <25% market share in the preceding year;
 - <25% less energy intensity than the product providing similar service with the biggest market share;
 - 25% longer pay back period or 25% lesser IRR (than the product with the biggest market share);
 - >50% energy efficient as per lab tests (than the product with the biggest market share);
 - >5 MW RE projects could apply similar criteria- additional criteria could include e.g., national goal on RE share is not reached[2] also suggests multi criteria analysis based on ratings to reflect the maturity of the technology/measure and country's renewable energy share.
3. Exemption from additionality demonstration will reduce transaction cost, may also incentivate splitting projects to smaller units which should be prevented through debundling rule. Crediting period should be limited to 7 years only. For EE projects eligible technologies for all DCs on the one hand and LDCs and SIDS separately should be defined through a combination to top down and bottom up approaches [3].
4. For the type of the projects in question transaction costs for PDD development and validation will be >40% of CER revenue and verification costs will be 30% of the CER revenue. CDM doors are closed for projects yielding <10000 CER/yr in China. Investment barrier should consider seasonal variation of tariff, bear in mind that (personal) equations with grid operators may influence tariffs [4].
5. All palm oil effluent treatment projects would be additional [05].
6. Attachment A to appendix B requires proof of existence of one of the four barriers i.e., investment, technological, prevailing practice and others (institutional, managerial or organisational). Many DOEs require an investment analysis against a benchmark in addition to any of the barriers shown. Positive list by EB or DNAs (latter can be optionally be based on technologies promoted by regional/national governments) should be used to provide automatic additionality [07].

7. Positive list for <5 MW and <20 GWh projects, for the rest of RE and EE projects use a sunset clause of 10-20% for RE and 30% for EE based on penetration rates (ultra super critical coal meth already used this approach) [09].
8. As per [10] criteria should be based on: (a) **geographical location** i.e., LDC projects (inherently small size and high investment risk results in very few projects in LDCs), (b) **Market share**: Proposed RE projects in the baseline are <1% of installed cap of electricity generation in the country (or in the grid to which RE is fed) (5% penetration for EE instead of 1%), (c) **beneficiaries**: Direct beneficiaries are households or communities (CDM has bypassed household RE and EE activities to date i.e., <2% of registered CDM projects are for households), (d) **Country positive list**: DNA and EB approve positive lists and update every two years (host countries know best which technologies need CDM support and EB ensures environmental integrity).
9. As per [11] Currently CDM PDD, validation and registration costs are largely independent of the size e.g., 3 MW wind plant generates around 8500 MWh/CER in good location, PDD consultancy and registration will be 20 K Euros, validation and annual verification are another 20 K Euros, thus cost per CER will be 7-8 Euros ; VSSC projects should be automatically additional through (a) positive list on stand alone basis, or (b) based on list for prevailing practice barrier as suggested by IETA/PDF, or (c) as per prevailing practice barrier of Attachment A of appendix B. This approach will not contradict environmental integrity. As per IPCC FAR 2007, only large hydro, woody biomass combustion and geothermal technologies ‘have for the most part have been able to compete in today’s energy markets without policy support’. With the exception of this IPCC list, rest of the technologies should be automatically additional; for woody biomass combustion, geothermal, small hydro (excluding mini and micro hydro) and bioethanol if 1% market penetration rate is not achieved, they should considered not mature and hence additional.
10. [12] cautions against simplifications to VSSC that may lead to increased difficulties for regular SSC projects, CMP revised the limits in 2006 end aware of the fact that size matters; splitting projects to present as VSSC will result in further clogging of system (Sec, DOE capacity is limited). AM0070 and AM0071 are cited to argue for automatic additionality when products exceed a set benchmark on efficiency. Barrier to micro SSC projects is not additionality related as much as it is validation, PDD and monitoring costs. Benchmarks, defaults in meths are advised for reducing transaction costs
11. In [13] <5MW and <20 GWh is defined as ‘Very Small Scale CDM (VSSC). Suggests to provide a checklist (one per barrier type) following EB 50 annex 13 ‘guidelines for objective demonstration and assessment of barriers’, if checklist for one kind of barrier is fulfilled project is additional, positive list differentiated for LDCs from DCs is developed.
12. [14] suggests adoption of market penetration test as done by Regional Greenhouse Gas Initiative (RGGI) in the US, RGGI adopted 5% penetration for a few cases, however CDM should not have a rigid penetration rate index, other indicators (e.g., low income households) should be considered if penetration rates have exceeded. Positive list was popular among a range of stakeholders of CDM during its development (off grid applications, stoves, biogas digester etc should be included).
13. [15] states that SSC modalities were developed to reduce transaction costs but have only limited success to date, modalities for additionality of VSSC projects could unintentionally make it more difficult for the regular SSC projects if not addressed carefully. Requirement to access multiple sources of third party data, need for surveys (sometimes), lack of existence of third party evidence (at times) are some of the difficulties with the present barrier tests. A checklist based test using the existing list of four types of barriers with a yes/no option is suggested for VSSC but also to regular SSC projects. A ‘yes’ answer would deem the project additional. Checklist Q for investment barrier is ‘is the majority (>50%) of the income to the project from carbon finance?’, for technology barrier, Q could be ‘does the project performance exceed the government standard,

regulation or benchmark?', Q for barriers due to prevailing practice is 'does the technology employed by the project appear on a positive list of technology types deemed to be additional?' Positive list to be developed by EB (possibly under guidance from SBSTA). It should be region specific, technology specific, linked to market penetration etc. Projects developed through microfinance should be additional.

14. In [16] it is argued that a narrow interpretation of VVM and annex 13 EB 50 has blurred the distinction between large and small scale projects and analysis of impact of barrier on investment decision or investment analysis is insisted upon by the regulators. Further it is stated rationale for 5 MW and 20 GWh threshold is not clear, all SSC projects should benefit from the simplified procedures. A yes/no based flow chart based assessment is provided taking into account widely published documentation from the WB group and UN agencies (e.g., MDG reports) to move away from project specific assessment. Separate flow charts for RE and EE are provided. RE flow chart makes the following RE projects automatically additional:

- Off grid projects supplying to households/communities;
- On grid projects in LDCs;
- On grid non LDC projects with no government support;
- On grid non LDC projects with govt support but in special zones (based on X economic indicator or Y type of consumer or Z share of poor communities).

15. Flow chart for EE is also similar and provides automatic additionality to:

- LDC projects;
- Non industrial residential/public sector/commercial sector project located in special zones (based on X economic indicator or Y type of consumer or Z share of poor communities) or following international standards or 4/5 star national energy labelled technology;
- Industrial projects with technologies >10% efficient or >20% costlier than the baseline technologies.

Illustration with specific examples of projects are provided.

No.	Submission author	Affiliation
01	G.Subramanyam	Siri Exergy & Carbon Advisory Services (P) ltd.
02	Jiwan Acharya	Asian Development Bank
03	Yuji MIZUNO	Institute for Global Environmental Strategies (IGES)
04	Zheng Zhaoning	Goldchina Consultancy International Co., Ltd.
05	Martin Campbell	KPSR Construction 2006 Ltd
06	n.a	China Environmental United Certification Center Co., Ltd.
07	Hajime Watanabe	Mitsubishi UFJ Securities Co., Ltd.
08	Zhao-jing Li	Beijing Wenhui Economic Consult Centre
09	Vince Reardon	REEEP
10	1. Florian Zerzawy 2. Sabine Bock	1. Atmosfair 2. WECF
11	Christiaan Vrolijk	n. a
12	Anne Arquit Niederberger	PolicySolutions
13	Christoph Sutter & Francois Beaurain	South Pole Carbon Asset Management Ltd.
14	Steven Kaufman	Sunrise Technologies Consulting, LLC

No.	Submission author	Affiliation
15	1. Henry Derwent 2. Leo S. Perkowski	1. International Emissions Trading Association (IETA) 2. Project Developer Forum
16	Rama Chandra Reddy	The World Bank

Annex 2

COMPARISON OF THE MOST PERTINENT FEATURES OF ADDITIONALITY TESTS OF ALL OFFSET PROGRAMS, PROTOCOLS AND STANDARDS

(Retrieved from *carbon offset research & education*, stockholm environment institute at <http://www.co2offsetresearch.org/policy/ComparisonTable.html>)

Name of Program	Additionality and Related Requirements	Quantification(Baseline/Monitoring) Protocols
International offset mechanisms		
Clean Development Mechanism	Project specific CDM additionality tool • Step 1: Identification of alternatives to the project activity consistent with mandatory laws and regulations • Step 2: Investment analysis or • Step 3: Barrier analysis, • Step 4: Common practice analysis, Steps 1, 4 and either 2 or 3 are must be fulfilled	Baselines defined by methodologies (proposed by project proponents, reviewed by Methodology Panel), many using standardized equations, some based on project-specific parameters. No standardized protocol for monitoring. Monitoring is done in accordance with the process laid out in the registered Project Design Document (PDD).
Joint Implementation	Either the same as CDM requirements, or can be demonstrated by: • Using an approved CDM baseline and methodology • Applying the CDM additionality tool • Providing information on a previously ‘successfully determined’ comparable project that has already been implemented	CDM principles and process for quantification applies
Offset features of mandatory cap-and-trade systems		
European Union Emissions Trading Scheme	CDM and JI requirements apply	CDM and JI requirements apply
Regional Greenhouse Gas Initiative	• Regulatory surplus test • No credits for electric generation unless legal rights to renewable energy credits are transferred to RGGI • No funding from any system or customer benefit fund • No credits or allowances awarded under any other mandatory or voluntary GHG program.	Standardized approach: Baseline and monitoring protocols are outlined in detail for each eligible offset project type in the RGGI Model Rule.
Western Climate Initiative	Under development	Under development

Midwest Greenhouse Gas Reduction Accord	Recommended requirements: - Regulatory surplus test - Reductions/removals must exceed baseline scenario	Standards-based quantification protocols recommended
Canada's Offset System for Greenhouse Gases	- Regulatory surplus test - Reductions/removals must exceed baseline scenario	Standardized approach, all projects must be quantified using protocols that are pre-approved by Environment Canada.
Australian Carbon Pollution Abatement Scheme	Under development	Under development
New South Wales Greenhouse Gas Reduction Scheme	Performance standard approach, based on positive technology list and established baseline scenarios	Standardized approach: Explicit rules and instructions for baseline quantification provided in GHG Benchmark Rules for each type of project activity.
Offset features of voluntary cap and trade systems		
Chicago Climate Exchange	- Regulatory surplus test - Defined as new project - Common Practice test	Standardized approach: CCX-developed pre-defined baselines and methodologies for each specific project type
Offset features of other GHG systems		
Alberta Offset System	- Regulatory surplus test - Real (specific and identifiable actions that reduce or remove GHGs) - Demonstrable (demonstrate a net reduction in GHGs) - Quantifiable	Quantification protocols are developed by Alberta Environment or proposed by project developers and reviewed and approved by Alberta Environment
State power plant rules	- Regulatory surplus test - Offsets must be "real"	Regulation provides guidance for required documentation for quantification.
	Offsets must be "real"	No specific requirements
	- Regulatory surplus test - Offsets must be "real"	Regulation provides guidance for required documentation for quantification
British Columbia Emission Offset Regulation	- Baseline scenario must include consideration of regulatory requirements and incentives - Financial barriers analysis	Quantification protocols from recognized protocols may be proposed. BC-specific protocols are expected to be developed.
Climate Leaders	- Regulatory surplus test - Performance standard approach	Standardized approach: Baseline and monitoring protocols are outlined in detail for each eligible offset project type.
GHG Accounting Protocols		
WBCSD/WRIGHG Protocol for Project Accounting	Project-based and performance standard approaches guidelines provided. No requirements	Generic guidelines for project-specific and performance standard baseline quantification and monitoring protocols. No requirements.
ISO 14064-2	Project-based and performance standard approaches guidelines provided. No requirements	General guidance offered for baseline quantification and monitoring protocols. No requirements.

Voluntary standards for offset projects and retailers		
Climate Action Reserve	- Performance standard approach where possible - Regulatory surplus test	Performance standards used where possible and general project-specific monitoring protocols developed
Gold Standard	- CDM additionality tool (latest version) and - Previous announcement checks	GS CERs: all methodologies approved by CDM EB GS VERs: all methodologies approved by CDM EB, Small Scale Working Group (SSCWG), United Nations Development Program (UNDP) Millennium Development Goals (MDG) Carbon Facility New methodologies must be approved by GS Technical Advisory Committee.
Voluntary Carbon Standard 2007	- Regulatory surplus test - Implementation barriers test - Common practice test Performance-based and positive technology list-based approaches will be eligible in the future. No performance tests or technologies have yet been approved by VCS.	All CDM methodologies approved. New project-specific quantification protocols must be independently approved by two different auditors.
VER+	Project based: - follow specific additionality rules of an approved CDM methodology or - in all other cases, apply the most recent version of the CDM Additionality Tool.	All CDM-approved baselines and methodologies are allowed. The latest versions of the CDM methodologies must be used. New methodologies are reviewed on a project by project basis. Project methodologies must be based on “guidance on criteria for baseline setting and monitoring” as defined for JI activities.
American Carbon Registry	Either performance-based and regulatory additionality test or project-based test: - exceed regulatory / legal requirements; - go beyond common practice; - overcome 1 of 3 barriers: institutional, financial or technical.	CDM, EPA Climate Leaders, and VCS protocols approved. ACRs own protocols include: a forest carbon project standard and project-specific protocols for landfill methane, livestock waste management (biodigester) and industrial gas substitution. Several others sector standards and protocols in various stages of development. New protocols are reviewed on a project by project basis.
Climate Community and Biodiversity Standards	Project-based, specified by individual methodologies. - Regulatory surplus test - Barriers test	Relies on methods and tools developed by other organizations and standards for their baseline calculations. Projects must use 'IPCC's 2006 <i>Guidelines for National GHG Inventories for Agriculture, Forestry and Other Land Use</i> (IPCC 2006 GL for AFOLU) or a more robust and detailed methodology' ie updated from IPCC GPG.
Plan Vivo	Project-based: Barriers test	Baselines are calculated at the project level and also modeled at the regional scale. Methodologies for the carbon potential of each land use system are commissioned by the Plan Vivo Foundation.

Social Carbon Methodology	No definition of additionality criteria: relies on the outside standard to do so	Relies on methods and tools developed by outside standards.
Green-e Climate Protocol for Renewable Energy	- Regulatory, legal, institutional surplus test and; - Timing test (project start date) - Technology test and performance test	Standardized methodologies
Green-e Climate Program	Requirements of each approved standard apply	Requirements of each approved standard apply
Carbon Finance Funds		
World Bank Carbon Finance Funds	CDM and JI requirements apply	CDM and JI requirements apply

History of the document

Version	Date	Nature of revision
01	EB xx, Annex # dd mm 2010	Initial adoption.
Decision Class: Regulatory Document Type: Guideline Business Function: Methodology		