



Annex 21

Methodological tool

“Tool for the demonstration and assessment of additionality”

(Version 06.0.0)

1. The use of the “Tool for the demonstration and assessment of additionality” is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.
2. Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.
3. Project activities with a start date before the date of validation shall specifically take into account the guidance provided in Chapter B “Specific guidelines for completing the Project Design Document (CDM-PDD)” section B, sub-section B-5. The “start date of a project activity” is as defined in paragraph 76 of thirty-third report of the Board.¹
4. Project activities that apply this tool in context of approved consolidated methodology ACM0002, only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity.

I. DEFINITION, SCOPE AND APPLICABILITY

5. **Applicable geographical area** covers the entire host country as a default; if the technology applied in the project is not country specific, then the applicable geographical area should be extended to other countries. Project participants may provide justification that the applicable geographical area is smaller than the host country for technologies that vary considerably from location to location depending on local conditions.
6. **Measure²** (for emission reduction activities) is a broad class of greenhouse gas emission reduction activities possessing common features. Four types of measures are currently covered in the framework:
 - (a) Fuel and feedstock switch;
 - (b) Switch of technology with or without change of energy source (including energy efficiency improvement as well as use of renewable energies);
 - (c) Methane destruction;
 - (d) Methane formation avoidance.³

¹ The Board agreed to clarify that the primary purpose of defining the start date of a project activity is to ensure that project activities submitted for registration comply with the requirements of paragraph 13 of Decision 17/CP.7. In this context, it has always been the Board’s view that the start date of a CDM project activity is the earliest of the dates at which the implementation or construction or real action of the project activity begins.

² The definition is taken from annex 8 of the EB 62 report.



7. **Output**⁴ is goods or services with comparable quality, properties, and application areas (e.g. clinker, lighting, residential cooking);

8. **Different technologies** in the context of “first of its kind” are technologies that deliver the same output and differ by at least one of the following (as appropriate in the context of the measure applied in the proposed CDM project and applicable geographical area):

- (a) Energy source/fuel;
- (b) Feed stock;
- (c) Size of installation (power capacity):
 - (i) Micro (as defined in paragraph 24 of Decision 2/CMP.5 and paragraph 39 of Decision 3/CMP.6);
 - (ii) Small (as defined in paragraph 28 of Decision 1/CMP.2);
 - (iii) Large.

9. **Different technologies** in the context of common practice are technologies that deliver the same output and differ by at least one of the following (as appropriate in the context of the measure applied in the proposed CDM project and applicable geographical area):

- (a) Energy source/fuel;
- (b) Feed stock;
- (c) Size of installation (power capacity):
 - (i) Micro (as defined in paragraph 24 of Decision 2/CMP.5 and paragraph 39 of Decision 3/CMP.6);
 - (ii) Small (as defined in paragraph 28 of Decision 1/CMP.2);
 - (iii) Large;
- (d) Investment climate in the date of the investment decision, inter alia:
 - (i) Access to technology;
 - (ii) Subsidies or other financial flows;
 - (iii) Promotional policies;
 - (iv) Legal regulations;
- (e) Other features, inter alia:
 - (i) Unit cost of output (unit costs are considered different if they differ by at least 20 %);

10. This tool provides for a step-wise approach to demonstrate and assess additionality. These Steps include:

- (a) Identification of alternatives to the project activity;
- (b) Investment analysis to determine that the proposed project activity is either: 1) not the most

³ An example of methane formation avoidance is the use (e.g. for energy generation) of biomass that would have been left to decay in a solid waste disposal site. The measure prevents the formation of methane.

⁴ The definition is taken from annex 8 of the EB 62 report.



economically or financially attractive, or 2) not economically or financially feasible;

- (c) Barriers analysis; and
- (d) Common practice analysis.

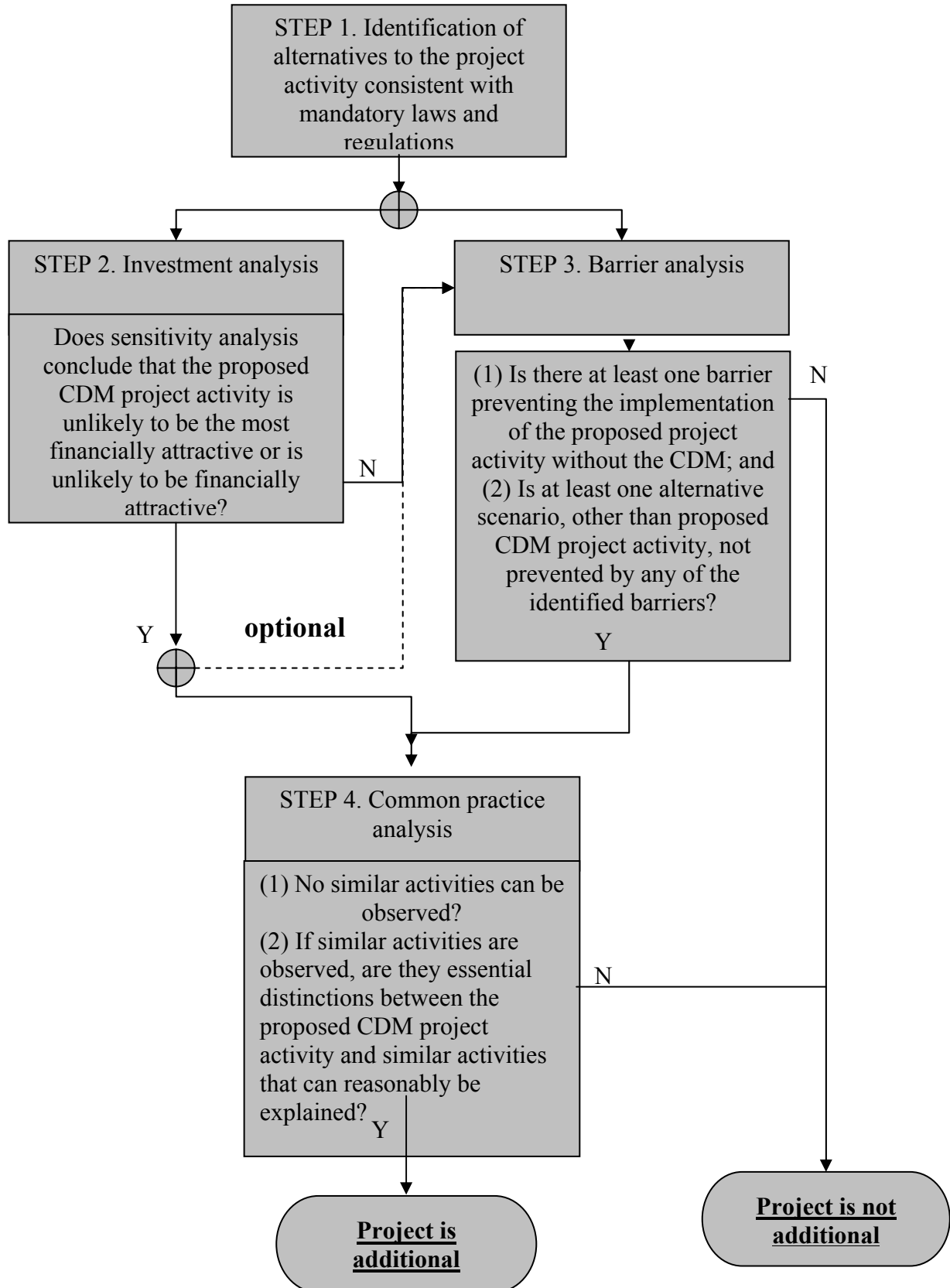
11. Based on the information about activities similar to the proposed project activity, the common practice analysis is to complement and reinforce the investment and/or barriers analysis.⁵ The Steps are summarized in the flow-chart on page 2 of this document.

12. The document provides a general framework for demonstrating and assessing additionality and is applicable to a wide range of project types. Some project types may require adjustments to this general framework.

13. This tool does not replace the need for the baseline methodology to provide a step-wise approach to identify the baseline scenario. Project participants that propose new baseline methodologies shall ensure consistency between the determination of additionality of a project activity and the determination of a baseline scenario. Project participants can also use the “Combined tool to identify the baseline scenario and demonstrate additionality”, which provides a procedure for baseline scenario identification as well as additionality demonstration.

14. In validating the application of this tool, Designated Operation Entities (DOEs) shall carefully assess and verify the reliability and creditability of all data, rationales, assumptions, justifications and documentation provided by project participants to support the demonstration of additionality. The elements checked during this assessment and the conclusions shall be documented transparently in the validation report.

⁵ Project participants can use either investment analysis or barrier analysis step. They may, if they so wish, use both investment and barrier analysis step.





II. METHODOLOGY PROCEDURE

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

15. Define realistic and credible alternatives⁶ to the project activity(s) through the following Sub-steps:

Sub-step 1a: Define alternatives to the project activity:

16. Identify realistic and credible alternative(s) available to the project participants or similar project developers⁷ that provide outputs or services comparable with the proposed CDM project activity.⁸ These alternatives are to include:

- (e) The proposed project activity undertaken without being registered as a CDM project activity;
- (f) Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services (e.g., cement) or services (e.g. electricity, heat) with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;
- (g) If applicable, continuation of the current situation (no project activity or other alternatives undertaken).

17. If the proposed CDM project activity includes several different facilities, technologies, outputs or services, alternative scenarios for each of them should be identified separately. Realistic combinations of these should be considered as possible alternative scenarios to the proposed project activity.⁹

18. For the purpose of identifying relevant alternative scenarios, the project participant should include the technologies or practices that provide outputs (e.g. cement) or services (e.g. electricity, heat)

⁶ Reference to “alternatives” throughout this document denotes “alternative scenarios”.

⁷ For example, a coal-fired power station or hydropower may not be an alternative for an independent power producer investing in wind energy or for a sugar factory owner investing in a co-generation, but may be an alternative for a public utility. Alternatives are, therefore, related to technology and circumstances as well as to the investor.

⁸ For example:

- In the case of a project reducing emissions in the aluminum or cement production, the output provided by the alternative scenarios should be the production of the same quality of aluminum or the production of a cement type that can be used in the same applications as the cement type produced by the project activity.
- In the case of a project improving the energy efficiency of motors in a facility, the service provided is mechanical energy. Different scenarios to produce the same quantity of mechanical energy should be considered.
- In the case of a landfill gas capture project, the service provided by the project includes operation of a landfill. Alternative scenarios to the project could include different ways to operate the landfill, such as no capture of methane, capture and flaring of the methane or capture and combustion of the methane for energy generation.

⁹ For example:

- In case of a cogeneration project activity, alternative scenarios for heat and electricity generation should be established separately.
- In case of a project that improves energy efficiency in several boilers with rather different characteristics (e.g. size, technology, age, etc), alternative scenarios should be established for each boiler or for types of boilers with broadly similar characteristics.



with comparable quality, properties and application areas as the proposed CDM project activity and that have been implemented previously or are currently being introduced in the relevant country/region.

Outcome of Step 1a: Identified realistic and credible alternative scenario(s) to the project activity

Sub-step 1b: Consistency with mandatory laws and regulations:

19. The alternative(s) shall be in compliance with all mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution. (This Sub-step does not consider national and local policies that do not have legally-binding status.)

20. If an alternative does not comply with all mandatory applicable legislation and regulations, then show that, based on an examination of current practice in the country or region in which the law or regulation applies, those applicable legal or regulatory requirements are systematically not enforced and that noncompliance with those requirements is widespread in the country. If this cannot be shown, then eliminate the alternative from further consideration;

21. If the proposed project activity is the only alternative amongst the ones considered by the project participants that is in compliance with mandatory regulations with which there is general compliance, then the proposed CDM project activity is not additional.

Outcome of Step 1b: Identified realistic and credible alternative scenario(s) to the project activity that are in compliance with mandatory legislation and regulations taking into account the enforcement in the region or country and EB decisions on national and/or sectoral policies and regulations.

“Proceed to Step 2 (Investment analysis) or Step 3 (Barrier analysis). (Project participants may also select to complete both Steps 2 and 3.)”

Step 2: Investment analysis

22. Determine whether the proposed project activity is not:

- (a) The most economically or financially attractive; or
- (b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).

23. Please note that the latest version of the “Guidelines on the assessment of investment analysis”, available on the UNFCCC website, shall be taken into account when applying this step.

24. To conduct the investment analysis, use the following Sub-steps:

Sub-step 2a: Determine appropriate analysis method

25. Determine whether to apply simple cost analysis, investment comparison analysis or benchmark analysis (Sub-step 2b). If the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income, then apply the simple cost analysis (Option I). Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III).

***Sub-step 2b: Option I. Apply simple cost analysis***

26. Document the costs associated with the CDM project activity and the alternatives identified in Step 1 and demonstrate that there is at least one alternative which is less costly than the project activity.

“If it is concluded that the proposed CDM project activity is more costly than at least one alternative then proceed to Step 4 (Common practice analysis)”.

Sub-step 2b: Option II. Apply investment comparison analysis

27. Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service (e.g., levelized cost of electricity production in \$/kWh or levelized cost of delivered heat in \$/GJ) most suitable for the project type and decision-making context.

Sub-step 2b: Option III. Apply benchmark analysis

28. Identify the financial/economic indicator, such as IRR, most suitable for the project type and decision context.

29. When applying Option II or Option III, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer. Only in the particular case where the project activity can be implemented by the project participant, the specific financial/economic situation of the company undertaking the project activity can be considered.¹⁰

30. Discount rates and benchmarks shall be derived from:

- (a) Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data;
- (b) Estimates of the cost of financing and required return on capital (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers views and private equity investors/funds' required return on comparable projects;
- (c) A company internal benchmark (weighted average capital cost of the company), only in the particular case referred to above in paragraph 5. The project developers shall demonstrate that this benchmark has been consistently used in the past, i.e. that project activities under similar conditions developed by the same company used the same benchmark;
- (d) Government/official approved benchmark where such benchmarks are used for investment decisions;
- (e) Any other indicators, if the project participants can demonstrate that the above Options are not applicable and their indicator is appropriately justified.

¹⁰ For example, when the project activity upgrades an existing process or uses a resource (i.e. some waste) available on the project site and that is not traded.



Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III):

31. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly including *inter alia* subsidies/fiscal incentives,¹¹ ODA, etc, where applicable), and, as appropriate, non-market cost and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.

32. Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD, so that a reader can reproduce the analysis and obtain the same results. Refer to all critical techno-economic parameters and assumptions (such as capital costs, fuel prices, lifetimes, and discount rate or cost of capital). Justify and/or cite assumptions in a manner that can be validated by the DOE. In calculating the financial/economic indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions (e.g. insurance premiums can be used in the calculation to reflect specific risk equivalents).

33. Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.

34. Present in the CDM-PDD submitted for validation a clear comparison of the financial indicator for the proposed CDM activity and:

- (a) The alternatives, if Option II (investment comparison analysis) is used. If one of the other alternatives has the best indicator (e.g. highest IRR), then the CDM project activity can not be considered as the most financially attractive;
- (b) The financial benchmark, if Option III (benchmark analysis) is used. If the CDM project activity has a less favourable indicator (e.g. lower IRR) than the benchmark, then the CDM project activity cannot be considered as financially attractive.

Sub-step 2d: Sensitivity analysis (only applicable to Options II and III):

35. Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions. The investment analysis provides a valid argument in favour of additionality only if it consistently supports (for a realistic range of assumptions) the conclusion that the project activity is unlikely to be the most financially/economically attractive (as per Step 2c para 11a) or is unlikely to be financially/economically attractive (as per Step 2c para 11b).

Outcome of Step 2: If after the sensitivity analysis it is concluded that: (1) the proposed CDM project activity is unlikely to be the most financially/economically attractive (as per Step 2c para 11a) or is unlikely to be financially/economically attractive (as per Step 2c para 11b), then proceed to Step 4 (Common practice analysis).¹²

¹¹ See EB guidance on the consideration of national/local/sectoral policies and measures for the baseline setting.

¹² If the project participants so wish, they may apply the Step 3 (Barrier analysis) as well.



Otherwise, unless barrier analysis below is undertaken and indicates that the proposed project activity faces barriers that do not prevent at least one alternative from occurring, the project activity is considered not additional.

Step 3: Barrier analysis

36. This step serves to identify barriers and to assess which alternatives are prevented by these barriers. Please note that the latest approved version of the “Guidelines for objective demonstration and assessment of barriers”, available on the UNFCCC website, shall be taken into account when applying this step.

37. If this Step is used, determine whether the proposed project activity faces barriers that:

- (a) Prevent the implementation of this type of proposed project activity; and
- (b) Do not prevent the implementation of at least one of the alternatives, if the project is not “first of its kind” according to the definition provided in paragraph 40(c)(i).

38. For barriers other than barriers due to project being “first of its kind” as defined in paragraph 40(c)(i), the identified barriers are only sufficient grounds for demonstration of additionality if they would prevent potential project proponents from carrying out the proposed project activity undertaken without being registered as a CDM project activity.

39. For barriers other than barriers due to project being “first of its kind” as defined in paragraph 40(c)(i), *if the CDM does not alleviate the identified barriers that prevent the proposed project activity from occurring, then the project activity is not additional.*

Use the following Sub-steps:

Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity:

40. Establish that there are realistic and credible barriers that would prevent the implementation of the proposed project activity from being carried out if the project activity was not registered as a CDM activity. Such realistic and credible barriers may include, among others:

- (a) Investment barriers, other than the economic/financial barriers in Step 2 above, *inter alia*:
 - (b) For alternatives undertaken and operated by private entities: Similar activities have only been implemented with grants or other non-commercial finance terms. Similar activities are defined as activities that rely on a broadly similar technology or practices, are of a similar scale, take place in a comparable environment with respect to regulatory framework and are undertaken in the relevant country/region;
 - (c) No private capital is available from domestic or international capital markets due to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country or other country investments reports of reputed origin.
1. Technological barriers, *inter alia*:
 - (a) Skilled and/or properly trained labour to operate and maintain the technology is not available in the relevant country/region, which leads to an unacceptably high risk of equipment disrepair and malfunctioning or other underperformance;



- (b) Lack of infrastructure for implementation and logistics for maintenance of the technology (e.g. natural gas can not be used because of the lack of a gas transmission and distribution network);
 - (c) Risk of technological failure: the process/technology failure risk in the local circumstances is significantly greater than for other technologies that provide services or outputs comparable to those of the proposed CDM project activity, as demonstrated by relevant scientific literature or technology manufacturer information;
 - (d) The particular technology used in the proposed project activity is not available in the relevant region.
2. Barriers due to prevailing practice, *inter alia*:
The project activity is the “first of its kind”.
- (a) For the measures identified under paragraph 6, a proposed project activity is the First-of-its-kind in the applicable geographical area if :
 - (ii) The project is the first in the applicable geographical area that applies a technology that is different from any other technologies able to deliver the same output and that have started commercial operation in the applicable geographical area before the start date of the project; and
 - (iii) Project participants selected a crediting period for the project activity that is “a maximum of 10 years with no option of renewal”;
 - (b) For the measures identified under paragraph 6, a proposed project activity that was identified as the First-of-its-kind project activity is additional and Sub-step 3 b does not apply.
 - (c) For other measures, the project proponents shall propose approach for demonstrating that a project is a “first-of-its-kind” and Sub-step 3 b applies.
3. Other barriers, preferably specified in the underlying methodology as examples.

Outcome of Step 3a: Identified barriers that may prevent one or more alternative scenarios to occur or conclusion that the project is additional.

Sub-step 3b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity):

41. If the identified barriers also affect other alternatives, explain how they are affected less strongly than they affect the proposed CDM project activity. In other words, demonstrate that the identified barriers do not prevent the implementation of at least one of the alternatives. Any alternative that would be prevented by the barriers identified in Sub-step 3a is not a viable alternative, and shall be eliminated from consideration.

42. In applying Sub-steps 3a and 3b, provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence and significance of the identified barriers and whether alternatives are prevented by these barriers. Anecdotal evidence can be included, but alone is not sufficient proof of barriers. The type of evidence to be provided should include at least one of the following:

- (a) Relevant legislation, regulatory information or industry norms;



- (b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc) undertaken by universities, research institutions, industry associations, companies, bilateral/multilateral institutions, etc;
- (c) Relevant statistical data from national or international statistics;
- (d) Documentation of relevant market data (e.g. market prices, tariffs, rules);
- (e) Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others.

“If both Sub-steps 3a – 3b are satisfied, proceed to Step 4 (Common practice analysis)”.

“If one of the Sub-steps 3a – 3b is not satisfied, the project activity is not additional”.

Step 4: Common practice analysis

43. Unless the proposed project type has demonstrated to be first-of-its kind (according to Sub-step 3a), and for measures different from those listed in paragraph 6 the above generic additionality tests shall be complemented with an analysis of the extent to which the proposed project type (e.g. technology or practice) has already diffused in the relevant sector and region. This test is a **credibility check** to complement the investment analysis (Step 2) or barrier analysis (Step 3). Identify and discuss the existing common practice through the following Sub-steps:

Sub-step 4a: Analyze other activities similar to the proposed project activity:

44. Provide an analysis of any other activities that are operational and that are similar to the proposed project activity. Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc. Other CDM project activities (registered project activities and project activities which have been published on the UNFCCC website for global stakeholder consultation as part of the validation process) are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.

Sub-step 4b: Discuss any similar Options that are occurring:

45. If similar activities are widely observed and commonly carried out, it calls into question the claim that the proposed project activity is financially unattractive (as contended in Step 2) or faces barriers (as contended in Step 3). Therefore, if similar activities are identified above, then it is necessary to demonstrate why the existence of these activities does not contradict the claim that the proposed project activity is financially/economically unattractive or subject to barriers. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and explaining essential distinctions between them that explain why the similar activities enjoyed certain benefits that rendered it financially/economically attractive (e.g., subsidies or other financial flows) and which the proposed project activity cannot use or did not face the barriers to which the proposed project activity is subject. If necessary data/information of some similar projects are not accessible for PPs to conduct this analysis, such projects can be excluded from this analysis. In case similar projects are not accessible, the PDD should include justification about non-accessibility of data/information.



46. Essential distinctions may include a serious change in circumstances under which the proposed CDM project activity will be implemented when compared to circumstances under which similar projects were carried out. For example, new barriers may have arisen, or promotional policies may have ended, leading to a situation in which the proposed CDM project activity would not be implemented without the incentive provided by the CDM. The change must be fundamental and verifiable.

“If Sub-steps 4a and 4b are satisfied, i.e. (i) similar activities cannot be observed or (ii) similar activities are observed, but essential distinctions between the project activity and similar activities can reasonably be explained, then the proposed project activity is additional)”.

“If Sub-steps 4a and 4b are not satisfied, i.e. similar activities can be observed and essential distinctions between the project activity and similar activities cannot reasonably be explained, the proposed CDM project activity is not additional.”

47. For measures that are listed in paragraph 6:

Step 1: Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity.

Step 2: In the applicable geographical area, identify all plants that deliver the same output or capacity, within the applicable output range calculated in Step 1, as the proposed project activity and have started commercial operation before the start date of the project. Note their number N_{all} . Registered CDM project activities and projects activities undergoing validation shall not be included in this step¹³;

Step 3: Within plants identified in Step 2, identify those that apply technologies different that the technology applied in the proposed project activity. Note their number N_{diff} .

Step 4: Calculate factor $F=1-N_{diff}/N_{all}$ representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity.

The proposed project activity is a “common practice” within a sector in the applicable geographical area if both the following conditions are fulfilled:

- (a) the factor F is greater than 0.2, and
- (b) $N_{all}-N_{diff}$ is greater than 3.

¹³ This should be subject to further review.



History of the document

Version	Date	Nature of revision
06.0.0	EB 65, Annex 21 25 November 2011	Inclusion of requirements from the Guidelines on additionality of Foik projects activities and the Guidelines on common practice.
05.2.1	27 June 2011	Editorial amendment to: <ul style="list-style-type: none">Remove the "Guidelines on the assessment of investment analysis" as an annex within this document and instead add it as a reference;Add reference to the "Guidelines for objective demonstration and assessment of barriers";Implement other minor editorial improvements.
05.2	26 August 2008	Updated with version 2 of the annex "Guidance on the assessment of investment analysis".
05.1	25 July 2008	Addition of the "Guidance on the assessment of investment analysis" as an annex to the Additionality Tool.
05	EB 39, Annex 10 16 May 2008	<ul style="list-style-type: none">Changes in scope and applicability;Clarity in the conditions under which different approaches, provided in Step 2: Investment analysis can be applied;Clarity in the appropriate choice of the benchmark for the assessment of additionality when using benchmark analysis;Footnote 6 deleted.
04	EB 36, Annex 16 30 November 2007	Footnote 7 revised.
03	EB 29, Annex 05 16 February 2007	<ul style="list-style-type: none">Removed Step-0 and Step-5 from Tool and other small changes done;The tool is aligned with the Combined Tool.
02	EB 22, Annex 08 25 November 2005	Footnote 2 added providing clarity on evidence for the incentive from CDM to be submitted by project proponents as per Step-0 1b).
01	EB 16, Annex 01 22 October 2004	Initial adoption.
Decision Class: Regulatory Document Type: Tool Business Function: Methodology		