



Annex 9

Methodological tool

“Combined tool to identify the baseline scenario and demonstrate additionality”

I. SCOPE AND APPLICABILITY

This tool provides for a step-wise approach to identify the baseline scenario and simultaneously demonstrate additionality.

This tool is applicable if all potential alternative scenarios to the proposed project activity are under control of project participants.¹ This applies, for example, to project activities that make modifications to an existing installation that is operated by project participants, such as, for example:

- energy efficiency improvements at existing installations operated by project participants;
- fuel switch at existing installations operated by project participants;
- changes in waste management practices at existing solid waste disposal sites operated by project participants;
- reduction of N₂O, HFC-23 or PFC emissions at existing installations operated by project participants.

However, this does not apply if one or more alternative scenarios to the proposed project activity are under control of third parties. For example:

- In case of newly built projects, i.e. project activities that establish new installations, such as new power, biofuel, cement or aluminum plants, a credible and plausible alternative to the project activity could be the production of power, fossil fuels (instead of biofuel), cement or aluminum in new or existing installations operated by third parties;
- In case of programs that address multiple stakeholders, e.g. a program to disseminate or encourage the use of energy efficient appliances by multiple end-users, a credible and plausible alternative to the project activity could be that the end-users (i.e. third parties) continue to use existing appliances and/or start using more efficient appliances – which are not under the control of project participants.

¹ In cases where one or more alternatives are not under the control of project participants, a different procedure would be required to demonstrate additionality and identify the baseline scenario than provided here. Such cases might include grid-connected power projects (where an alternative might be electricity produced by other facilities not under the control of project participants) or other projects that increase the delivery of a given product to a local, regional or global market. In such cases, baseline scenarios might be rather complex (such as the combined margin scenario in ACM0002), and the methods for comparing alternatives may differ from those provided here (e.g. benchmark analysis or other methods that utilize information about the markets in which such projects might compete). The Meth Panel is considering whether ; expanding this tool to cover all cases would be appropriate. In the meantime, methodologies that typically involve alternatives are not under the control of project participants can continue to use, if desired, the additionality tool (provides benchmark and other tools), and provide their own methods to develop and/or assess baseline scenario. .



The tool provides a general framework for identifying the baseline scenario and demonstrating additionality. In some cases particular project types may require adjustments or additional explanations to this framework. This could include, *inter alia*, a listing of relevant alternative scenarios that should be considered in step 1, any relevant types of barriers other than those presented in this tool and guidance on how common practice should be established. Project participants may also propose other procedures or tools for the identification of the baseline scenario and assessment and demonstration of additionality to the CDM Executive Board (EB) for its consideration.

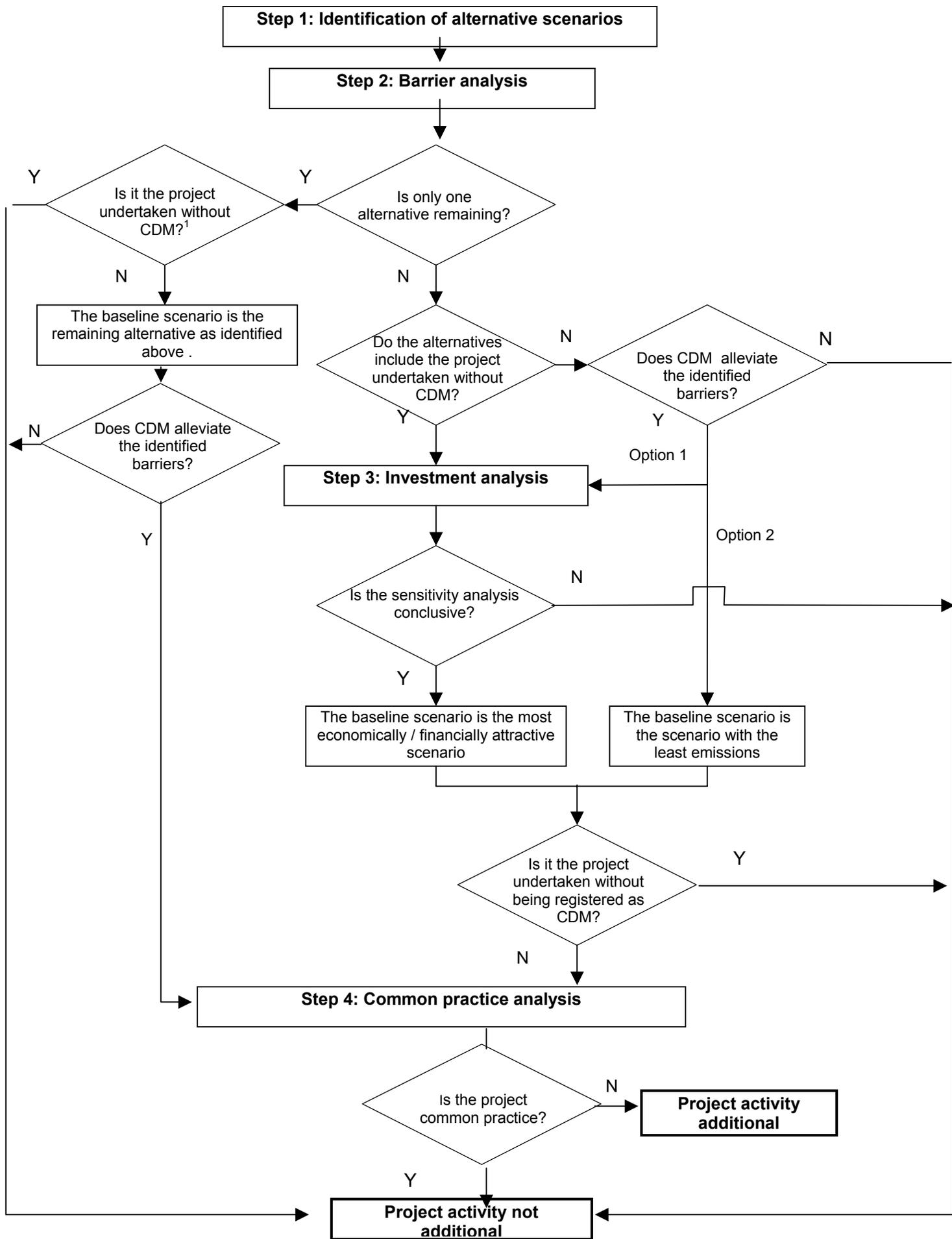
In validating the application of this tool, Designated Operational Entities (DOEs) should carefully assess and verify the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by project participants to support the selection of the baseline and demonstration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

II. METHODOLOGY PROCEDURE

Project participants shall apply the following four steps:

- STEP 1. Identification of alternative scenarios
- STEP 2. Barrier analysis
- STEP 3. Investment analysis (if applicable)
- STEP 4. Common practice analysis

The procedure is summarized in the indicative flowchart below. For more specific detail regarding the flowchart please refer to the text.





STEP 1. Identification of alternative scenarios

This step serves to identify all alternative scenarios to the proposed CDM project activity(s) that can be the baseline scenario through the following sub-steps:

Step 1a. Define alternative scenarios to the proposed CDM project activity

Identify all alternative scenarios that are available to the project participants and that provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity². These alternative scenarios shall include:

- The proposed project activity undertaken without being registered as a CDM project activity;
- All other plausible and credible alternative scenarios to the project activity scenario, including the common practices in the relevant sector, that deliver outputs or services (e.g. electricity, heat or cement) with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;
- If applicable, continuation of the current situation and, where relevant, the “proposed project activity undertaken without being registered as a CDM project activity” undertaken at a later point in time (e.g. due to existing regulations, end-of-life of existing equipment, financing aspects).

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.³

For the purpose of identifying relevant alternative scenarios, provide an overview of *other* technologies or practices that provide outputs or services (e.g. electricity, heat or cement) with comparable quality, properties and application areas as the proposed CDM project activity and that have been implemented previously or are currently underway in the relevant geographical area. The relevant geographical area should in principle be the host country of the proposed CDM project activity. A region within the country could be the relevant geographical area if the framework conditions vary significantly within the country.

² For example:

- In the case of a project reducing emissions in the aluminium or cement production, the output provided by the alternative scenarios should be the production of the same quality of aluminium 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. Alternatives 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.

³ 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.



However, the relevant geographical area should include at least ten facilities (or projects) that provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity. If less than ten facilities (or projects) that provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity are found in the region/host country, the geographical area shall be expanded to an area that covers at least ten such facilities (or projects). In cases where the above described definition of geographical area is not suitable, the underlying methodology should provide and justify an alternative definition of geographical area. Other registered CDM project activities are not to be included in this analysis. Provide relevant documentation to support the results of the analysis.

Outcome of Step 1a: List of plausible alternative scenarios to the project activity

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

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.⁴ (This sub-step does not consider national and local policies that do not have legally-binding status.)

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 mandatory law or regulation applies, those applicable mandatory legal or regulatory requirements are systematically not enforced and that non-compliance with those requirements is widespread in the country. If this cannot be shown, then eliminate the alternative from further consideration;

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

Outcome of Step 1b: List of alternative scenarios 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 (Barrier analysis)*

STEP 2. Barrier analysis

This step serves to identify barriers and to assess which alternatives are prevented by these barriers. Apply the following sub-steps:

Sub-step 2a. Identify barriers that would prevent the implementation of alternative scenarios:

⁴ For example, an alternative consisting of an open, uncapped landfill would be non-complying in a country where this scenario would imply violations of safety or environmental regulations pertaining to landfills.



Establish a complete list of realistic and credible barriers that may prevent alternative scenarios to occur. Such realistic and credible barriers may include:

- Investment barriers, other than insufficient financial returns as analyzed in Step 3, *inter alia*:
 - 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 geographical area, as defined in sub-step 1a above.
 - No private capital is available from domestic or international capital markets due to real or perceived risks associated with investments in the country where the project activity is to be implemented, as demonstrated by the credit rating of the country or other country investment reports of reputed origin.
- Technological barriers, *inter alia*:
 - Skilled and/or properly trained labor to operate and maintain the technology is not available in the relevant geographical area, which leads to an unacceptably high risk of equipment disrepair, malfunctioning or other underperformance.
 - 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).
 - 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.
 - The particular technology used in the proposed project activity is not available in the relevant geographical area.
- Lack of prevailing practice:
 - The alternative is the “first of its kind”:
- Other barriers, preferably specified in the underlying methodology as examples.

Outcome of Step 2a: List of barriers that may prevent one or more alternative scenarios to occur.

Sub-step 2b. Eliminate alternative scenarios which are prevented by the identified barriers:

Identify which alternative scenarios are prevented by at least one of the barriers listed in sub-step 2a, and eliminate those alternative scenarios from further consideration. All alternative scenarios shall be compared to the same set of barriers. The assessment of the significance of barriers should take into account the level of access to and availability of information, technologies and skilled labour in the specific context of the industry where the project type is located. For example, projects located in sectors with small and medium sized enterprises may not have the same means to overcome technological barriers as projects in a sector where typically large or international companies operate.

Outcome of Step 2b: List of alternative scenarios to the project activity that are not prevented by any barrier.



In applying sub-steps 2a and 2b, provide transparent and documented evidence, and offer conservative interpretations of this evidence, as to how it demonstrates the existence and significance of the identified barriers and whether alternative scenarios are prevented by these 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 from the company or institution developing or implementing the CDM project activity or the CDM project developer, such as minutes from Board meetings, correspondence, feasibility studies, financial or budgetary information, etc;
- (f) Documents prepared by the project developer, contractors or project partners in the context of the proposed project activity or similar previous project implementations;
- (g) Written documentation of independent expert judgements from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others.

→ ***If there is only one alternative scenario that is not prevented by any barrier, and if this alternative is the proposed project activity undertaken without being registered as a CDM project activity, then the project activity is not additional.***

→ ***If there is only one alternative scenario that is not prevented by any barrier, and if this alternative is not the proposed project activity undertaken without being registered as a CDM project activity, then this alternative scenario is identified as the baseline scenario. Explain – using qualitative or quantitative arguments – how the registration of the CDM project activity will alleviate the barriers that prevent the proposed project activity from occurring in the absence of the CDM. If the CDM alleviates the identified barriers that prevent the proposed project activity from occurring, proceed to Step 4, otherwise the project activity is not additional.***

→ ***If there are still several alternative scenarios remaining, including the proposed project activity undertaken without being registered as a CDM project activity, proceed to step 3 (investment analysis).***

→ ***If there are still several alternative scenarios remaining, but which do not include the proposed project activity undertaken without being registered as a CDM project activity, explain – using qualitative or quantitative arguments – how the registration of the CDM project activity will alleviate the barriers that prevent the proposed project activity from occurring in the absence of the CDM. If the CDM alleviates the identified barriers that prevent the proposed project activity from occurring, project participants may choose to either:***

- ***Option 1: go to step 3 (investment analysis), or***
- ***Option 2: identify the alternative with the lowest emissions (i.e. the most conservative) as the baseline scenario, and proceed to step 4.***



If the CDM does not alleviate the identified barriers that prevent the proposed project activity from occurring, then the project activity is not additional.

STEP 3. Investment analysis

This step serves to determine which of the alternative scenarios in the short list remaining after step 2 is the most economically or financially attractive. For this purpose, an investment comparison analysis is conducted for the remaining alternative scenarios after step 2. If the investment analysis is conclusive, the economically or financially most attractive alternative scenario is considered as the baseline scenario.

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.

Calculate the suitable financial indicator for all alternative scenarios remaining after step 2. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (including subsidies/fiscal incentives⁵, ODA, etc. where applicable), and, as appropriate, non-market costs and benefits in the case of public investors.⁶

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 PDD, so that a reader can reproduce the analysis and obtain the same results. Include 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 indicator, the risks of the alternative scenarios 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). Assumptions and input data for the investment analysis shall not differ across alternative scenarios, unless differences can be well substantiated.

Present in the CDM-PDD submitted for validation a clear comparison of the financial indicator for all alternative scenarios and rank the alternative scenarios according to the financial indicator.

Include a sensitivity analysis to assess whether the conclusion regarding the financial attractiveness is robust to reasonable variations in the critical assumptions. The investment comparison analysis provides a valid argument in identifying the baseline scenario only if it consistently supports (for a realistic range of assumptions) the conclusion that one alternative is the most economically and/or financially attractive.

Outcome of step 3: Ranking of the short list of alternative scenarios according to the most suitable financial indicator, taking into account the results of the sensitivity analysis.

⁵ Note that according to guidance by the EB (EB22, Annex 3), subsidies and incentives may be excluded from consideration in certain cases.

⁶ In the case that (a) there are only two alternatives remaining after Step 2, which include the proposed CDM project activity and one other alternative, (b) both scenarios do not incur any revenue other than CDM related revenue or incur exactly the same revenue other than CDM related revenue and (c) the project incurs costs and the other remaining alternative does not incur costs, then a simply cost analysis can be applied. In this case it is sufficient to document that the proposed project activity undertaken without being registered as a CDM project incurs costs.



- *If the sensitivity analysis is not conclusive, the alternative to the project activity with least emissions among the alternative scenarios is considered as baseline scenario. If the sensitivity analysis confirms the result of the investment comparison analysis, then the most economically or financially attractive alternative scenario is considered as baseline scenario.*
- *If the alternative considered as baseline scenario is the “proposed project activity undertaken without being registered as a CDM project activity”, then the project activity is not additional. Otherwise, proceed to step 4.*

STEP 4. Common practice analysis

The previous steps 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 geographical area. This test is a **credibility check** to demonstrate additionality which complements the barrier analysis (Step 2) and, where applicable, the investment analysis (Step 3).

Provide an analysis to which extent similar activities to the proposed CDM project activity have been implemented previously or are currently underway. Similar activities are defined as activities (i.e. technologies or practices) that are of similar scale, take place in a comparable environment, *inter alia*, with respect to the regulatory framework and are undertaken in the relevant geographical area, as defined in sub-step 1a above, subject to further guidance by the underlying methodology. Other registered CDM project activities 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 geographical area.

If similar activities to the proposed project activity are identified, then compare the proposed project activity to the other similar activities and assess whether there are essential distinctions between the proposed project activity and the similar activities. If this is the case, point out and explain the essential distinctions between the proposed project activity and the similar activities and explain why the similar activities enjoyed certain benefits that rendered them financially attractive (e.g., subsidies or other financial flows) and which the proposed project activity can not use or why the similar activities did not face barriers to which the proposed project activity is subject.

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-step 4 is satisfied, i.e. (i) similar activities cannot be observed or (ii) similar activities are observed but essential distinctions between the proposed CDM project activity and similar activities can reasonably be explained, then the proposed project activity is additional.*



→ *If Sub-step 4 is not satisfied, i.e. similar activities can be observed and essential distinctions between the proposed CDM project activity and similar activities cannot reasonably be explained, then the proposed CDM project activity is not additional.*