



## Methodological tool

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

(Version 03.0.0)

#### I. SCOPE AND APPLICABILITY

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

Methodologies using this tool are only applicable if the potential alternative scenarios to the proposed project activity available to project participants cannot be implemented in parallel to the proposed project activity.<sup>1</sup>

In some cases, methodologies referring to this tool may require adjustments or additional explanations. 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 (the Board) 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 consequent 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;

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<sup>1</sup> For example, in the following situations a methodology could refer to this tool:

- For an energy efficiency CDM project where the identified potential alternative scenarios are: (a) retrofit of an existing equipment, or (b) replacement of the existing equipment by new equipment, or (c) the continued use of the existing equipment without any retrofits;
- For a CDM project activity related to the destruction of a greenhouse gas in one site where the identified potential alternative scenarios are: (a) installation of a thermal destruction unit, or (b) installation of a catalytic destruction system, or (c) no abatement of the greenhouse gas.

In these cases, the project proponents could not implement the three alternatives in parallel but they could only implement one of them.

However, the tool is, for example, not applicable in the following situation: The CDM project activity is the installation of a Greenfield facility that provides a product to a market (i.e. electricity, cement, etc.) where the output could be provided by other existing facilities or new facilities that could be implemented in parallel with the CDM project activity.



- 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) which can be the baseline scenario via the following Sub-steps:

#### ***Step 1a: Define alternative scenarios to the proposed CDM project activity***

Identify all alternative scenarios that (a) are available to the project participants, (b) cannot be implemented in parallel to the proposed project activity, and (c) provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity.<sup>2</sup> These alternative scenarios shall include:

- S1: The proposed project activity undertaken without being registered as a CDM project activity;
- S2: Where applicable, no investment is undertaken by the project participants but third party(ies) undertake(s) investments or actions which provide comparable outputs or services to users of the project activity, for example:
- In the case of a greenfield power project, an alternative scenario may be that the project participants would not invest in another power plant but that power would be generated in existing and/or new power plants in the electricity grid.
- S3: Where applicable, the continuation of the current situation, *not* requiring any investment or expenses to maintain the current situation, such as, *inter alia*:
- The continued venting of methane from a landfill;
  - The continued release of N<sub>2</sub>O from adipic or nitric acid production.
- S4: Where applicable, the continuation of the current situation, requiring an investment or expenses to maintain the current situation, such as, *inter alia*:
- The continued use of an existing boiler involving expenses for operation and maintenance;
  - The continued use of a specific fuel mix for power generation in an existing power plant.
- S5: Other plausible and credible alternative scenarios to the project activity scenario, including the common practices in the relevant sector, which 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;

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<sup>2</sup> 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.



S6: Where applicable, the “proposed project activity undertaken without being registered as a CDM project activity” to be implemented 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.<sup>3</sup>

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. However, the relevant geographical area should include preferably 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 may be expanded to an area that covers if possible, ten such facilities (or projects). In cases where the above described definition of geographical area is not suitable, the project proponents should provide 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 scenario(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.<sup>4</sup> (This Sub-step does not consider national and local policies that do not have legally-binding status).

If an alternative scenario 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 scenario from further consideration.

<sup>3</sup> 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 specific 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.

<sup>4</sup> 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.



If the proposed project activity is the only alternative scenario 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 Board 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 alternative scenarios are prevented by these barriers. Apply the following Sub-steps:

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

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 scenario 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.

**Outcome of Step 2:** If there is only one alternative scenario that is not prevented by any barrier, and if this alternative scenario 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 scenario 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 scenario with the lowest emissions<sup>5</sup> (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***

The objective of Step 3 is to compare the economic or financial attractiveness of the alternative scenarios remaining after Step 2 by conducting an investment analysis. The analysis should include all alternative scenarios remaining after Step 2, including scenarios where the project participants do not undertake an investment (S2 or S3).

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. If one of the alternative scenarios remaining after Step 2

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<sup>5</sup> For alternative scenarios where the project participants do not undertake investments (i.e. scenarios as described in S2 or S3), the respective emissions should be determined in accordance with the underlying methodology.





corresponds to the situation described in S2 or S3, then use either the NPV or the IRR as financial indicator in the analysis.

Calculate the suitable financial indicator for all alternative scenarios remaining after Step 2. Include all relevant costs (including, for example, investment operations and maintenance costs), and revenues (including subsidies/fiscal incentives,<sup>6</sup> ODA, etc. where applicable), and, as appropriate, non-market costs and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.

For alternative scenarios that correspond to the situation described in S2 or S3 and that do not involve any investment costs, operational costs or revenues, use the following values for the financial indicator to reflect such a situation:

- If the financial indicator is the NPV: Assume a value of NPV equal to zero;
- If the financial indicator is the IRR: Use as the IRR the financial benchmark, as determined through the options (a) to (e) below.

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. In the particular case where the project activity can only be implemented by the project participant, the specific financial/economic situation of the company undertaking the project activity can be considered.<sup>7</sup>

The discount rate (in the case of the NPV) or the financial benchmark (in the case of the IRR) 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 banker's views and private equity investors/funds' required return on comparable projects;
- (c) A company internal financial benchmark (weighted average cost of capital of the company), only in the particular case that the project activity can only be implemented by the project participant. The project developers shall demonstrate that this financial benchmark has been consistently used in the past, i.e. that project activities under similar conditions developed by the same company used the same financial benchmark;
- (d) A government/officially approved financial benchmark where it can be demonstrated that such financial 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.

<sup>6</sup> Note that according to guidance by the EB (EB 22, Annex 3), subsidies and incentives may be excluded from consideration in certain cases.

<sup>7</sup> 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.



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. Refer to 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 scenario 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.

If the sensitivity analysis is not conclusive, then the alternative scenario 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. If not, 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 and 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. 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.

**Outcome of Step 4:** 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.



## GUIDELINES ON THE ASSESSMENT OF INVESTMENT ANALYSIS

(Version 03.1)

### *Background*

1. In consideration of issues identified through request for reviews and reviews of requests for registration the Executive Board considers it necessary to provide project participants and DOEs with guidance on the preparation, presentation and validation of investment analysis.
2. This general guidance is to be considered as a complement to existing materials in this area including, the “Tool for the demonstration and assessment of additionality”, “Combined tool to identify the baseline scenario and demonstrate additionality” and “Non-binding best practice examples to demonstrate additionality for SSC project activities”. The general guidance will be revised as appropriate to reflect the evolution of knowledge and best practice in this area.

### *General issues in calculation and presentation*

3. **Guidance:** The period of assessment should not be limited to the proposed crediting period of the CDM project activity. Both project IRR and equity IRR calculations shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime), or – if a shorter period is chosen – include the fair value of the project activity assets at the end of the assessment period. In general a minimum period of 10 years and a maximum of 20 years will be appropriate. The IRR calculation may include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment. Project participants are requested to justify and DOEs are requested to validate the appropriateness of the period of assessment in the context of the underlying project activity, without reference to the proposed CDM crediting period.  
**Rationale:** The purpose of undertaking an investment analysis is to determine whether or not the project activity would be financially viable without the incentive of the CDM. The actual project activity is not limited in time to the crediting period being requested.
4. **Guidance:** The fair value of any project activity assets at the end of the assessment period should be included as a cash inflow in the final year. The fair value should be calculated in accordance with local accounting regulations where available, or international best practice. It is expected that such fair value calculations will include both the book value of the asset and the reasonable expectation of the potential profit or loss on the realization of the assets.  
**Rationale:** Net Present Value (NPV) or Internal Rate of Return (IRR) calculations are designed to calculate the return on the cost of investment, in cases where the capital expenditures have not been fully devalued this should be reflected as a cash inflow. Not to apply a residual value would imply that the project must repay the full value of the capital expenditure before the value of this expenditure had been consumed.
5. **Guidance:** Depreciation, and other non-cash items related to the project activity, which have been deducted in estimating gross profits on which tax is calculated, should be added back to net profits for the purpose of calculating the financial indicator (e.g. IRR, NPV). Taxation should only be included as an expense in the IRR/NPV calculation in cases where the benchmark or other comparator is intended for post-tax comparisons.  
**Rationale:** Depreciation is not an actual expense incurred by the company and as such does not directly affect the financial viability of the project. To treat both the capital cost of the assets and their



depreciation as an expense to the project would be a double counting of this cost. Taxation can only be considered a relevant expense if the indicator used for comparison purposes is intended for post tax comparisons.

6. **Guidance:** Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. The DOE is therefore expected to validate the timing of the investment decision and the consistency and appropriateness of the input values with this timing. The DOE should also validate that the listed input values have been consistently applied in all calculations.

**Rationale:** The use of investment analysis to demonstrate additionality is intended to assess whether or not a reasonable investor would or not decide to proceed with a particular project activity without the benefits of the CDM. This decision will therefore be based on the relevant information available at the time of the investment decision and not information available at an earlier or later point. Any expenditures occurred prior to the decision to proceed with the investment in the project will not impact the final investment decision as such expenses sunk costs which remain unaffected by the decision to proceed or not with a project activity.

7. **Guidance:** In the case of project activities for which implementation ceases after the commencement and where implementation is recommenced due to consideration of the CDM the investment analysis should reflect the economic decision making context at point of the decision to recommence the project. Therefore capital costs incurred prior to the revised project activity start date can be reflected as the recoverable value of the assets, which are limited to the potential reuse/resale of tangible assets.<sup>1</sup>

**Rationale:** At the point of taking a decision to restart implementation of a project as a CDM project activity, the key issue of interest to an investor is the costs and revenues including the incentives from the CDM accruing from continuation of the investment.

8. **Guidance:** Project participants should supply spreadsheet versions of all investment analysis. All formulas used in this analysis be readable and all relevant cells be viewable and unprotected. The spreadsheet will be made available to the Executive Board, UNFCCC secretariat and others contracted to assess the request for registration on behalf of the Board including assigned members of the Registration and Issuance Team. In cases where the project participant does not wish to make such a spreadsheet available to the public an exact read-only or PDF copy shall be provided for general publication. In case the PP wishes to black-out certain elements of the publicly available version, a clear justification for this shall be provided to the UNFCCC secretariat by the DOE when requesting registration.

**Rationale:** Paragraph 6 of Step 2 of the Tool for the demonstration and assessment of additionality (version 4) requires that investment analysis be presented in a transparent manner, to the extent that the reader can reproduce the results.

*Specific Guidance on the Calculation of Project IRR and Equity IRR*

9. **Guidance:** The cost of financing expenditures (i.e. loan repayments and interest) should not be included in the calculation of project IRR.

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<sup>1</sup> Capital expenditures should be included not at the original investment costs but at the market fair value at the point of the decision to proceed with the investment, demonstrating the value through assessments done by chartered specialists.



**Rationale:** The purpose of the project IRR calculation is to determine the viability of the project to service debt. Therefore to include the cost of financing as an expense in this calculation would result in a double counting of this cost in the ultimate analysis.

10. **Guidance:** In the calculation of equity IRR only the portion of investment costs which is financed by equity should be considered as the net cash outflow, the portion of the investment costs which is financed by debt should not be considered a cash outflow.

**Rationale:** The purpose of the equity IRR calculation is to determine the final return on the initial equity investment. In such calculations cost of servicing debt (interest and principle payments) are considered as costs. Therefore to consider all investment costs to be a cash outflow would double count the cost of debt to the equity investor.

11. **Guidance:** Due to the impact of loan interest on income tax calculations it is recommended that when a project IRR is calculated to demonstrate additionality a pre-tax benchmark be applied. In cases where a post-tax benchmark is applied the DOE shall ensure that actual interest payable is taken into account in the calculation of income tax. In such situations interest should be calculated according to the prevailing commercial interest rates in the region, preferably by assessing the cost of other debt recently acquired by the project developer and by applying a debt-equity ratio used by the project developer for investments taken in the previous three years.

**Rationale:** In general project IRR calculations should be conducted independently of the source of financing. This guideline provides information on how to conduct calculation if a post tax benchmark is used.

#### *Selection and Validation of Appropriate Benchmarks*

12. **Guidance:** In cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR. Required/expected returns on equity are appropriate benchmarks for an equity IRR. Benchmarks supplied by relevant national authorities are also appropriate if the DOE can validate that they are applicable to the project activity and the type of IRR calculation presented.

**Rationale:** For the same project activity the project IRR and equity IRR will be different, therefore the benchmark shall be appropriate to the type of calculation applied.

13. **Guidance:** In the cases of projects which could be developed by an entity other than the project participant the **benchmark** should be based on publicly available data sources which can be clearly validated by the DOE. Such data sources may include local lending and borrowing rates, equity indices, or benchmarks determined by relevant national authorities. The DOE's validation of such benchmarks shall also include its opinion of the suitability of the benchmark applied in the context of the underlying project activity.

**Rationale:** If the project could be developed by a different entity the unwillingness of one investor to assume the associated risks is not sufficient evidence that the project is additional, as this may be based on the subjective profit expectations of that investor. The applied benchmark must be suitable for the specific proposed project activity. It is not suitable to compare the return of low risk investments with the returns achieved or achievable by higher risk investments.

14. **Guidance:** Internal company benchmarks/expected returns (including those used as the expected return on equity in the calculation of a weighted average cost of capital - WACC), should only be applied in cases where there is only one possible project developer and should be demonstrated to have



been used for similar projects with similar risks, developed by the same company or, if the company is brand new, would have been used for similar projects in the same sector in the country/region. This shall require as a minimum clear evidence of the resolution by the company's Board and/or shareholders and will require the validating DOE to undertake a thorough assessment of the financial statements of the project developer – including the proposed WACC – to assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects.

**Rationale:** Paragraph 4 of the Tool for the demonstration and assessment of additionality (version 3) requires that benchmarks should not include the subjective profitability expectations or risk profile of a particular project developer.

15. **Guidance:** Risk premiums applied in the determination of required returns on equity shall reflect the risk profile of the project activity being assessed, established according to national/international accounting principles. It is not considered reasonable to apply the rate general stock market returns as a risk premium for project activities that face a different risk profile than an investment in such indices. **Rationale:** The required rate of return for any project activity will necessarily reflect the underlying risk profile of this project. To apply generalized risk profiles may result in an over statement of the rate of return required to attract investment in a specific project type.

*Investment comparison analysis and benchmark analysis*

16. **Guidance:** If the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services, a benchmark analysis is not appropriate and an investment comparison analysis shall be used. If the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate. **Rationale:** The purpose of an investment analysis in the context of the CDM is to determine whether the project is less financially attractive than at least one alternative in which the project participants could have invested. In cases where the alternative requires investment anyhow and baseline emissions are based on that alternative, the only means of determining that the project activity is less financially attractive than at least one alternative is to conduct an investment comparison analysis. The benchmark approach is therefore suited to circumstances where the baseline does not require investment or is outside the direct control of the project developer, i.e. cases where the choice of the developer is to invest or not to invest.

*Sensitivity analysis*

17. **Guidance:** Only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation (all parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude), and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets. Where a DOE considers that a variable which constitute less than 20% has a material impact on the analysis they shall raise a corrective action request to include this variable in the sensitivity analysis. **Rationale:** The initial objective of a sensitivity analysis is to determine in which scenarios the project activity would pass the benchmark or become more favorable than the alternative.
18. **Guidance:** The DOE should assess in detail whether the range of variations is reasonable in the project context. Past trends may be a guide to determine the reasonable range. As a general point of departure variations in the sensitivity analysis should at least cover a range of +10% and –10%, unless this is not deemed appropriate in the context of the specific project circumstances. In cases where a



scenario will result in the project activity passing the benchmark or becoming the most financially attractive alternative the DOE shall provide an assessment of the probability of the occurrence of this scenario in comparison to the likelihood of the assumptions in the presented investment analysis, taking into consideration correlations between the variables as well as the specific socio-economic and policy context of the project activity.

**Rationale:** The ultimate objective of the sensitivity analysis is to determine the likelihood of the occurrence of a scenario other than the scenario presented, in order to provide a cross-check on the suitability of the assumptions used in the development of the investment analysis.

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#### History of the document

Version	Date	Nature of revision(s)
03.0.0	EB 60, Annex 7 15 April 2011	Revision to: <ul style="list-style-type: none"> <li>• Include situations in which not all potential alternative scenarios to the proposed project activity are available options to the project participants. To that end, Sub-step 1a was revised with the inclusion of scenarios S2, S3 and S4. And, Step 3 was revised with the inclusion of procedures to assess scenarios S2 and S3 through a benchmark analysis;</li> <li>• Broaden applicability;</li> <li>• Further ensure consistency with the “Tool for the demonstration and assessment of additionality”;</li> <li>• Include editorial improvements;</li> <li>• Update the annex “Guidance on the assessment of investment analysis”, to the latest approved version of 03.1.</li> <li>• Format changes.</li> </ul>
02.2	26 August 2008	Addition of the “Guidance on the assessment of investment analysis”, version 2, as an annex to the tool.
02.1	21 February 2007	The revision was made to version 2 to clarify the flow diagram of the tool.
02	EB 28, Annex 14 15 December 2006	The revision was made to expand the applicability of the tool to newly built facilities where the alternative scenarios to the project activity are available options to project participants.
01	EB 27, Annex 9 01 November 2006	Initial adoption.
<b>Decision Class:</b> Regulatory <b>Document Type:</b> Tool <b>Business Function:</b> Methodology		