CLEAN DEVELOPMENT MECHANISM

CDM-EB94-AA-A05

Information note

Use of the principle of discounting in existing approved methodologies

Version 01.0

United Nations
Framework Convention on
Climate Change

1. Procedural background

1. The Executive Board of the clean development mechanism (CDM) (hereinafter referred to as the Board) at its ninetieth meeting (EB 90) requested the secretariat to prepare an information note assessing whether the existing approved methodologies have used the principle of discounting emission reductions and, in case such a principle was used, to prepare a list of the methodologies applying the principle, including a description of the approaches therein.[1] The Board requested the above assessment in the context of its consideration of another concept note at EB 90, on approaches for additionality demonstration.[2]

2. The present information note contains an assessment of whether the existing approved CDM methodologies have used the principle of discounting emission reductions.

2. Purpose

3. This information note aims to inform decision-making by the Board, in particular by:

   (a) Assessing whether the existing approved CDM methodologies have used the principle of discounting emission reductions; and

   (b) Listing examples of the methodologies using the term 'discount' and other terms with similar implications, including a description of the approaches therein.

3. Key issues

3.1. Analysis of CDM methodologies that refer to the term "Discount"

4. The requirement to render the estimation of emission reductions conservative arises from the relevant provisions in the CDM modalities and procedures. The CDM modalities and procedures stipulate that a baseline "shall be established … in a transparent and conservative manner regarding the choice of approaches, assumptions, methodologies, parameters, data sources, key factors and additionality, and taking into account uncertainty". Further, the "Terms of reference for establishing guidelines on baselines and monitoring methodologies" provide that "the standardization of methodologies" should "be conservative in order to prevent any overestimation of reductions in anthropogenic emissions".

5. A complete analysis of the approved large-scale CDM methodologies, small-scale CDM methodologies, and CDM methodological tools shows that the term 'discount' has been used in these standards with the following different connotations:

   (a) Reduce/adjust estimation parameters, baseline emissions or emission reductions by multiplying these by a fraction/percentage (often called 'discount factor');

   (b) Deduct/subtract from an estimation parameter or estimated baseline emissions a certain amount thereof;

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[1] CDM-EB90, paragraph 54 (b).

[2] CDM-EB90-AA-A14.

(c) Exclude from accounting certain emissions or a certain part of a monitoring period.

6. The purpose of discounting estimation parameters, baseline emissions or emission reductions in the methodologies mentioned in paragraph 5 above is to safeguard against the overestimation of emission reductions by rendering the estimation of emission reductions conservative.

7. Apart from the use of the word 'discount' with the different connotations mentioned above in paragraph 5, the CDM methodologies have also used other terms in order to ensure conservativeness in estimating emission reductions. Such terms include 'net-to-gross adjustment factor', 'model correction factor', 'uncertainty adjustment', and 'autonomous improvement factor'.

8. The appendix to this note contains examples illustrating how the word 'discount' in its different connotations, and other terms mentioned above, have been used in the CDM methodologies with a view to ensuring the conservativeness of estimated emission reductions. It will be seen from the examples presented in the table in the appendix that:

(a) Some CDM methodologies require the use of a 'conservativeness factor' to address uncertainties in the calculation of emission reductions. These are also called 'model correction factors' or 'uncertainty adjustments'; (eg: methane avoidance and methane destruction methodologies;

(b) Other CDM methodologies use discounting factors to address the issue of shifting baselines or baselines that are difficult to establish. For example, in sectors with rapidly changing technologies, the methodologies apply 'autonomous improvement factors' or include a market share of the technology as a parameter in the baseline equations (e.g. liquid crystal display (LCD) methodologies, dynamic power management);

(c) A few CDM methodologies apply 'net-to-gross adjustment factors' in order to address the influence of exogenous factors within the project boundary (project emissions) or outside it (leakage emissions) when such factors influencing the project or leakage emissions are identified and when their monitoring would incur higher transaction cost for the project participants in comparison to the significance of the emissions (e.g. e-taxing methodology, lighting methodology).

3.2. Conclusion

9. The Board, in its mandate for the present note, requested an assessment of whether the 'principle of discounting emission reductions' has been used in CDM methodologies. Whether the use of the term 'discount' and the use of other terms mentioned above amounts to use of the 'principle of discounting' would depend upon the precise meaning of the term 'principle of discounting'.

10. In conclusion, the present assessment finds that to date under the CDM, discounting has been implemented exclusively at the pre-issuance (or supply) level. These discounts have not been applied at the already estimated emission reductions level, but rather on/as parameters that affect baselines, project emissions or leakages and are typically

embedded within the baseline and monitoring methodologies in order to achieve only the following two objectives:

(a) To reduce/adjust estimation parameters, baseline emissions or emission reductions in order to make emissions reductions conservative;

(b) To reduce the burden on project participants in cases where the project and leakage emission sources are marginal but expensive to monitor and quantify, that is to simplify the monitoring requirements for project participants.

11. No post issuance discounts are applied in the CDM methodologies.

4. Impacts

12. The information presented in this note helps present how the CDM uses the term 'discount' in different connotations with the sole aim of ensuring conservativeness and environmental integrity.

5. Subsequent work and timelines

13. No further work is anticipated in this regard.

6. Recommendations to the Board

14. The secretariat recommends that the Board take note of this information and provide any subsequent guidance as necessary.

Appendix. Examples of the use of the term 'discount' and other terms in CDM methodologies used to render the estimation of emission reductions conservative

Meaning/type of 'discount'	Methodology/tool	How discounting occurs
Reduce/adjust an estimation parameter, baseline emissions or emission reductions by multiplying by certain fraction/percentage	AM0007: Analysis of the least-cost fuel option for seasonally-operating biomass cogeneration plants, version 1.0	"The percentage of used biomass shall be used as a proxy for the leakage due to the project. E.g., if 30% of the biomass serves other social or economic needs, the amount of emission reductions shall be discounted by 30%."
	AM0105: Energy efficiency in data centres through dynamic power management, version 1.0	A discount factor DFY is used ensures that emission reductions from the electricity saving resulting from shifting of workload to new servers or other data centers and replacement of servers with higher capacity servers, and possible adoption of the new technology in the baseline, are not accounted as emission reductions under the project activity.
	ACM0023: Introduction of an efficiency improvement technology in a boiler, version 1.0	"For example, if technology is to be applied on a weekly basis and one application is missed, emission reductions shall be discounted for two weeks - one week before the missed application and one week after."
	AM0111: Abatement of fluorinated greenhouse gases in semiconductor manufacturing, version 1.0	"5.3.2 Calculation of baseline emissions 25. Baseline emissions are obtained by multiplying emissions of each eligible F-GHG I ($E_{i,in,y}$) by the appropriate global warming potential for that gas, and summing up emissions of each eligible F-GHG during crediting year *y*. A discount factor compensates for increase in the emissions intensity of the manufacturing plant."
Conservativeness factor	AM0042: Grid-connected electricity generation using biomass from newly developed dedicated plantations, version 2.1	"…for the purpose of providing conservative estimates of emission reductions, a conservativeness factor must be applied to the CH_4 emission factor."

Meaning/type of 'discount'	Methodology/tool	How discounting occurs
	ACM0018: Electricity generation from biomass residues in power-only plants, version 3.0	"…for the purpose of providing conservative estimates of emission reductions, a conservativeness factor must be applied to the CH_4 emission factor."
Model correction factor	Methodological tool: Emissions from solid waste disposal sites Version 7.0	"The model correction factor (φ_y) depends on the uncertainty of the parameters used in the FOD model. If project or leakage emissions are being calculated, then $\varphi_y = \varphi_{default} = 1$. If baseline emissions are being calculated, then project participants may choose between the following two options to calculate φ_y".
	AMS-III.H.: Methane recovery in wastewater treatment, version 18.0	Model correction factor to account for model uncertainties (0.89 and 1.12).
Net-to-gross (NTG) adjustment factor	AM0116: Electric taxiing systems for airplanes, version 2.0	The net to gross adjustment factor is introduced to account for uncertainty associated with: (a) climate impact of additional emissions from the project aircrafts' engines during the landing/take-off cycle and cruise due to the increased weight of the airplane after installing the e-taxiing devices; (b) possible longer taxiing time in the project scenario due to the e-taxi equipment speed limitations; (c) possible longer taxiing time of other airplanes and associated with this additional emissions due to the congestion at taxiway caused by low taxiing speed of the project airplane.
	AMS-II.J.: Demand-side activities for efficient lighting technologies, version 7.0	Calculate the annual net electricity saving (NES), for each year of the assumed crediting period, by correcting the gross electricity savings for leakage, a net-to-gross adjustment (NTG) factor, transmission & distribution losses, and Lamp Failure Rate.
(Technology/autonomous) Improvement factor	AMS-III.C.: Emission reductions by electric and hybrid vehicles, version 15.0	The default value of the technology improvement factor for all baseline vehicle categories is 0.99.

Meaning/type of 'discount'	Methodology/tool	How discounting occurs
	AM0070: Manufacturing of energy efficient domestic refrigerators, version 3.1	It is assumed that the energy efficiency of refrigerators produced by the manufacturer would increase over time due to technical improvements in the absence of the project activity. To reflect this in the calculation of the baseline emissions, an autonomous technical development rate ($ATD_{manufacturer}$) is introduced, which expresses the annual autonomous improvement in energy efficiency in the absence of the project activity.
Exclude from accounting certain emissions or a certain part of a monitoring period	AMS III E Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/thermal treatment	If the produced RDF/SB is not used in captive facilities but sold to consumers outside the project boundary as a fuel, a default 5 per cent of the baseline emissions shall be deducted as leakage to account for these potential methane emissions, unless project proponents can prove otherwise (how to provide otherwise is elaborated in methodology).
	Sampling standard	Choices of lower bound and upper bound including options when confidence and precisions is not met. Among many options one of such options is to discount the emission reductions by no less than three times (x3) the percentage precision points missed (see para 17 of the sampling standard version 5).

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