

CDM-EB90-AA-A15

Concept note

Further development of the CDM in urban sectors (jointly by MP, SSC WG and secretariat)

Version 01.0



United Nations
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1. Procedural background

1. At its eighty-second meeting (EB82), the Executive Board of the clean development mechanism (CDM) (hereinafter referred to as the Board) mandated the secretariat to prepare a concept note to explore the need for new approaches and/or the broadening of existing methodological approaches in a city context (EB 82 report, para. 40).
2. The secretariat prepared a concept note with input from the Methodologies Panel (MP) and the Small-Scale Working Group (SSC WG).
3. At EB86 the Board considered a concept note on the use of the CDM in the urban sectors¹ and requested the secretariat, together with the MP and SSC WG, to develop a joint document with proposals whether to develop specific new methodologies or to further improve or broaden the applicability of the current methodologies, including resource estimates and taking into account the feedback provided (para 38 of EB 86 report).
4. This work relates to the activity '244 Top down development of Methodologies/Standardized baselines and tools' under 'Objective 1(c): Develop simplified and user - friendly standards and procedures that increase efficiency and ensure environmental integrity' with a resource allocation as referred to in table 4 on page 15 of the CDM two-year business plan 2016–2017 and management plan 2016 (EB87, annex 1).

2. Purpose

5. The purpose of this document is to: (a) assess whether it is more appropriate to develop a framework methodology (based on existing stand-alone methodologies) or utilize the existing PoA approach in the context of cities; and (b) answer the question of whether to develop specific new methodologies or further improve or broaden the applicability of the current methodologies in the context of cities.

3. Key issues and proposed solutions

3.1. Introduction

6. So far, the CDM has been mostly applied at the project level or to specific technologies within a programme of activities (PoA). The need is growing for more comprehensive approaches which can be widely applicable to several sectors/technologies and which can accommodate different types of mitigation actions.
7. Implementing mitigation actions on a city-wide basis provides an excellent opportunity for scaling such actions up. Many activities with high mitigation potential occur in cities, for example, activities relating to transport, energy efficiency and waste management.
8. The current CDM framework/infrastructure should refine the tools at its disposal, taking into consideration the fact that countries are scaling up emission reductions and transitioning onto low carbon pathways.

¹ CDM-EB86-AA-A11.

9. The current PoA framework could provide a good starting point for a city-wide approach, provided that the process can be simplified and that it can include increased standardization.

3.2. Analysis

10. There are some international initiatives, such as the Covenant of Mayors for Climate and Energy, which bring together city authorities committed to reducing carbon dioxide emissions on their territory. Those commitments are supported by action plans where mitigation activities planned in a city are combined into programmes. Such programmes vary from city to city but have similar pillars, such as energy efficiency, transport and waste management. A single CDM methodology cannot exhaustively cover a city-based mitigation programme due to the broad nature of such programmes. Therefore, this document examines two options for moving forward.
11. **Option1** is the development of a new framework methodology which can accommodate all measures, including those which are not currently covered, such as waste minimization and recycling.
12. **Option2** is the development of guidelines for CDM projects in a city context, including a template programme of activities design document (PoA-DD) and a case study, which can accommodate all types of activities, including those relating to energy efficiency, waste, transportation, etc., that can be implemented in a city-wide context.
13. The MP and the secretariat recommend option 2 for the following reasons:
- (a) The development of option 2 will rely on existing procedures within the CDM, which implies less time and effort for the process to move forward;
 - (b) The development of guidelines for CDM projects in a city context will assist municipalities that might not have the relevant CDM expertise or capacities to develop an integrated programme for a city and will reduce transaction costs associated with PoA development;
 - (c) The implementation of a city-wide approach using option 2 can be done using existing methodologies without delay;
 - (d) The development of a framework methodology (option 1) would require enormous effort in comparison with option 2 since the measures that can be implemented within a city context are many and diverse in nature;
 - (e) Due to the variety of city-based mitigation action plans, a new framework methodology (option 1) would not be used in its totality, therefore, an additional guidance on how to navigate through the methodology would be needed.
14. Furthermore, utilising option 2 would allow the process to be initiated using existing methodologies without needing to develop new top-down methodologies, which would take time and effort. This would allow for the immediate application of the approach to a city-wide context without delays that would result from the development of a new methodology framework or even the development of stand-alone methodologies.
15. For the gaps identified in the current methodologies, the MP and the secretariat advise that developing a plan for filling such gaps and introducing any new methodology into the PoA-DD should be done based on demand, as elaborated in the section below.

16. The Board also requested the development of top-down transport methodologies for the improved operation of public transportation and for lightweight, two- or three-wheeled personal transportation infrastructure (EB89 report, para. 33). Measures in the urban transport sector are one of the key measures for reducing GHG emissions in cities. Thus, the development of guidelines for CDM projects in a city context should integrate the urban transport methodology approach being developed.
17. As a next step, the MP and the secretariat recommend the development of standardized values to simplify the methodological aspects in the development of the guidelines. For example, the possible use of the default values that could be obtained from existing registered projects and other sources should be examined and recommended for use in the guidelines.

3.3. Gap analysis

18. Current approved large-scale and small-scale CDM methodologies cover a broad range of mitigation activities that apply to a city context. Appendix 1 provides a list of such methodologies.
19. The table in Appendix 1 provides an analysis of measures that are covered by existing methodologies and those that are not. It is clear from the table that the majority of mitigation actions are covered. However, there are still gaps that need to be addressed.
20. There is room for improving existing methodologies and developing new methodologies to cover gaps between city-relevant potentials and the existing CDM framework. Prioritizing the development of new methodologies or expanding current ones can be based on the following criteria:
 - (a) Current demand for the methodology in the market;
 - (b) Viability to utilize CDM to the measure;
 - (c) Opportunities for collaboration with other climate change mitigation platforms.
21. The recommendation of the MP and secretariat would provide a viable solution supported by current demand. If accepted, the guidelines for CDM projects in a city context, including a template PoA-DD, can be developed without the immediate need for new methodologies or the expansion of current methodologies; this can be done at a later stage as needs arise.
22. When need arises for the expansion of existing methodologies or the development of new methodologies, the following should be thoroughly assessed:
 - (a) Activities/measures that are not represented in the existing methodologies;
 - (b) Methods/approaches to incorporate such activities/measures in existing methodologies or new methodologies;
 - (c) The measures that cannot be considered because of restrictions in the CDM modalities and procedures and the need for a decision by the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol to cover such issues, for example smart city planning or urban policies.

3.4. Issues to be considered in the proposed guidelines

3.4.1. Cross-effects

23. The issue of cross-effects between measures has to be addressed when implementing several mitigation action types within the same PoA. Existing guidance approved by the Board on how to handle cross-effects should be used in this regard.
24. An initial analysis of cross-effects between different methodologies has been conducted and is presented in Appendix 2. A mark in the table indicates where an action in the row will impact the action in the column. As can be seen from the table, most of the actions affect the other actions within the same sector.
25. The definition of the city boundary is crucial as this impacts what measures to include in the analysis of the cross-effects of the measures.
26. While developing the guidelines for CDM projects in a city context, the issue of cross-effects must be addressed based on the initial analysis done in Appendix 2.

3.4.2. Double-crediting of reductions

27. Some of the measures used in cities to reduce emissions could lead to the double-crediting of emission reductions if adequate safeguards are not included.
28. The guidelines for CDM projects in a city context should address this issue, and this could be based on precedents established by other similar producer vs. consumer situations addressed in CDM methodologies.

3.4.3. Existing tools/databases

29. Appendix 1 presents some of the existing tools/databases that may be useful in the development of standardized emission factors to be used with the guidelines for CDM projects in a city context. Existing information from such databases/tools, for example the Common Carbon Metric (CCM) and the CURB (Climate Action for Urban Sustainability) Tool of the World Bank, may be helpful for methodologies where there are not enough registered projects to develop such factors.
30. The CCM encourages measuring and reporting in kWh/m²/yr or kWh/occupant/yr. The Energy Consumption Guide 087 by Carbon Trust (ECG 087) provides methods to establish benchmarks for electricity and fuel consumption separately for different building applications (i.e. usage) and adjustment factors for climatic zones based on degree days and base temperatures. Providing similar approaches to determine benchmark baselines in such a format would complement energy efficiency and fuel switch efforts. In providing a further benchmark for per capita emissions of a building/city dweller, utilising tCO₂/m²/year or tCO₂/person/year may further simplify and streamline all possible city measures² in the building sector or even city-wide.
31. Even if the data obtained from such databases are deemed not useful for the purposes of this work, the surveying methodologies utilized by such tools may provide insight for filling the gaps in existing methodologies that may be developed in the future.

² For example, appliance efficiency, building efficiency, carbon intensity of energy supply (fuel switch), choice of products consumed, waste, waste transport and public transport.

3.4.4. Additionality

32. Existing additionality procedures in the current PoA guidelines should be utilized to develop the necessary eligibility criteria for the mitigation actions that will be implemented. In doing so, simplified approaches should be used as much as possible, for example positive lists or benchmarks.
33. Innovative ways for demonstrating additionality on a city-wide basis could be explored under another mandate by the Board (EB85 report, paragraphs. 37 and 38) or adopted from the transportation methodologies.
34. Urban CDM opens the door for strong public–private partnerships. In such cases, additionality may not be based on investment analysis, as such projects are sometimes implemented by different actors pursuing different goals, for example sustainable development, social security, profit, etc.

4. Recommendations to the Board

35. The MP and the secretariat recommend the development of guidelines for the development of CDM projects in a city context. The guidelines would include the template PoA-DD with an example (i.e. case study), provide an easy approach for project developers and be immediately usable, which would reduce effort and transaction costs. This would allow for the utilization of existing infrastructure and procedures within the current CDM framework with minimum effort.

5. Budget and costs

36. A total of 70 days of efforts is estimated. Taking into account the number of MP and SSC WG meetings taking place over the year, the template PoA-DD could be delivered for the Board's consideration by the end of 2017.

Appendix 1. Existing CDM methodologies that can be applied in a city context with gaps identified

Table 1. Gap analysis

Sector relevant for the urban CDM	Measures covered	Available CDM methodologies	Scopes not covered by methodologies	Sources to draw possible lessons from to expand scopes	Measures not covered
Buildings <u>Coverage (from construction to demolition)</u> <ul style="list-style-type: none"> • Building materials production and transport • Space heating • Space cooling and ventilation • Cooking • Lighting • Water heating • Other appliances <u>Measures can cover:</u> appliance efficiency, energy-efficient buildings, low-carbon energy, low-carbon buildings)	<ul style="list-style-type: none"> • Energy-efficient appliances • Energy-efficient system • Energy-efficient building materials (for efficient heating) • Energy-efficient building design (for efficient heating) • Renewable energy (Generation both at supply end and by the users themselves) 	AM0046; AM0091; AM0094; AMS-I.I.; AMS-II.C.; AMS-II.E.; AMS-II.J.; AMS-II.M.; AMS-III.AE.; AMS-III.AR.; AM0113; AMS-I.K.; AMS-II.O.; AMS-I.J.; AMS-II.R.; AM0060; AM0086; AMS-II.K.; AMS-II.L.; AMS-III.AV.; AMS-II.N.; AMS-II.Q.	Standardization of baselines to use kWh/m ² /yr, kWh/occupant/yr, tCO ₂ /m ² /yr or tCO ₂ /person/yr Standardization of baselines and/or positive lists based on "U-value" of building materials	Common Carbon Metric (CCM) UNEP- Sustainable Buildings and Climate Initiative (UNEP-SBCI) Chartered Institution of Building Services Engineers (CIBSE) Beddington Zero Energy Development (BedZED) Good Practice Guide 290 (GPG 290)	<ul style="list-style-type: none"> • Smart city planning and policy • Low-carbon mechanical ventilation equipment (solar air conditioning, solar or mechanical fans)
Waste	<ul style="list-style-type: none"> • Recycling 	AM0020; ACM0001;	<ul style="list-style-type: none"> • Reduced emissions 		<ul style="list-style-type: none"> • Reduced

Sector relevant for the urban CDM	Measures covered	Available CDM methodologies	Scopes not covered by methodologies	Sources to draw possible lessons from to expand scopes	Measures not covered
(liquid waste, solid waste) “Cradle to Cradle” (from production to consumption to waste or reuse/recycling)	<ul style="list-style-type: none"> • Methane avoidance (end-of-pipe approach) • Landfill gas capture for energy generation • Capture of biogas from wastewater treatment plants 	AM8003; AM0093; AMS-III.G.; AMS-III.AF.; ACM0022; AMS-III.AX.; AMS-III.AO.; AM0053; AM0057; AM0069; AMS-III.E.; AMS-III.F.; AMS-III.L.; AMS-III.O.; ACM0014; AM0080; AMS-III.H.; AMS-III.I.; ACM0024; AM0112; AMS-III.AO.	from reduced waste transport <ul style="list-style-type: none"> • Reduced emissions from water conservation from the reuse of treated wastewater for recreational irrigation 		consumption <ul style="list-style-type: none"> • Reuse of reclaimed or demolition materials
Energy (includes energy generated and consumed within a city boundary)	<ul style="list-style-type: none"> • Energy efficiency in energy generation • Fuel switch (to lower-emission fuels) • Renewable energy • Street lighting and related services (e.g. installing efficient lights including solar powered lights) • District heating and cooling systems • Co/tri-generation 	ACM0002; AM0019; AM0072; AMS-I.A.; AMS-I.B.; AMS-I.C.; AMS-I.D.; AMS-I.F.; AMS-I.J.; AM0100; ACM0006; ACM0018; AM0007; AM0036; AMS-I.E.; AMS-II.G.; AM0058; ACM0012; AM0049; AMS-III.Q.; ACM0007; ACM0013; AM0014; AM0048; AM0061; AM0062; AM0084; AMS-II.B.; AMS-III.AC.; AMS-III.AL.; AMS-III.B.; AMS-III.AG.; AMS-III.AH.; AMS-III.AM.; ACM0020; AMS-III.AS.	<ul style="list-style-type: none"> • Automatic motion-sensing street lighting 		<ul style="list-style-type: none"> • Energy-efficiency policy for new energy capacity development • Efficient energy supply programmes for energy providers (training or performance targets) • Energy monitoring practices (and subsequent targeting)
Transport	Covered in detail in another stream of work.				

Appendix 2. City-based mitigation actions, available CDM methodologies and cross-effects

Table 2. Available CDM methodologies and cross-effects

Mitigation actions coverage and cross-effects				1	2a	2b	3a	3b	4	5	6	7	8	9a	9b	10	11	12	13	14	15	16	17
Methodologies																							
	District heating	AMS-II.B, AM0044, AM0058, AM0072	1		x	x																	
	Heat for cooking, water and space	AMS-I.I, AMS-I.J, AMS-I.K, AMS-III-AC	RE ³ (2a)	x																			
		AMS-II.A, AMS-II.K,	EE (2b)																				
	District cooling		RE (3a)																				
			EE (3b)																				

³ RE- renewable energy; EE – energy efficiency.

Mitigation actions coverage and cross-effects		Methodologies		1	2a	2 b	3a	3 b	4	5	6	7	8	9a	9 b	10	11	12	13	14	15	16	17
Energy use	Public utilities	AMS-II.L	Street lighting (4)																				
		AMS-III.H, AMS-II.I, AM0080, ACM0014	Waste-water treatment (5)																				
		AMS-II.AV, AM0020	Water supply (6)																				
	Buildings	AMS-II.C, AMS-II.E, AMS-II.J, AMS-III-M, AMS-II.N, AMS-II.O, AMS-II.Q, AMS-II.R, AMS-III-AV, AM0046, AM0070 ⁴ , AM0091, AM0113, AM0060, AM0086	Appliances (7)										x	x	x								
		AMS-III.AE, AM0091	Building design (8)																				
		AMS-III-AE, AM0091	Renewable energy (9a)										x										
			Fuel switch (9b)										x										
	Transport sector	AMS-III.C, AMS-III.S, AMS-III.T, AMS-III.AK, AMS-III-AQ, AMS-III-AY	Fuel switch (10)														x						
		AMS-III.U, ACM0016, AM0031	Modal shift (11)																				
		AMS-III.AA, AMS-III-AP, AMS-III-AY, AMS-III-BC	Vehicular efficiency (12)														x						
			Urban design (13)														x						
			Non Motorized Ttransport (14)																				

⁴ AM0070 is for credits for manufacturers of efficient appliances. If the appliance is used in a building there could be a double crediting.

Mitigation actions coverage and cross-effects		Methodologies		1	2a	2b	3a	3b	4	5	6	7	8	9a	9b	10	11	12	13	14	15	16	17
	Waste management	AMS-III-AJ, AMS-III-BA	Reduce (15)																			x	x
		AMS-III-AJ	Recycle (16)																				x
		AMS-III.E, AMS-III.F, AMS-III.G, AMS-III.O, AMS-III.AF, AMS-III-AO, AM0053, AM0057, AM0069, AM0083, AM0093, AM0112, ACM001, ACM0022, ACM0024	MA ⁵ /WTE (17)																				

⁵ MA - Methane avoidance.

Document information

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