



**Proposed new carbon capture and storage baseline and monitoring  
methodology form  
(Version 02.0)**

**INFORMATION TO BE COMPLETED BY THE SECRETARIAT AND CCS WG**

<b>Date and number of CCS Working Group meeting:</b>	
<b>CDM-CCS-NM-FORM doc ID number:</b>	CDM-CCS-NM
<b>Date when the form was received at UNFCCC Secretariat:</b>	
<b>Date of transmission to the EB:</b>	
<b>Date of posting in the UNFCCC CDM web site:</b>	

**Proposed new carbon capture and storage baseline and monitoring  
methodology form  
(CDM-CCS-NM-FORM)  
(Version 2.0)**

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**Instructions for using this form**

In using this form, please follow the guidance established in the following documents:

- Guidelines for completing the project design document for carbon capture and storage CDM project activities (CDM-CCS-PDD);
- Guidelines for completing proposed new baseline and monitoring methodologies form for carbon capture and storage (CCS);
- Relevant methodological guidance by the Executive Board.

This guidance can be found at <<https://cdm.unfccc.int/Reference/Guidclarif/index.html>>

**Formatting Instructions:**

- This template shall not be altered. It shall be completed without modifying/adding headings or logo, format or font.
- The form provides the formatted headings which should be used throughout the document;
- Please note that each paragraph in section C and D should have a paragraph number, as demonstrated through example. When adding further paragraphs, please ensure it is numbered;
- Please use word equation editor to write equations;
- Please format figures, tables and footnotes to update automatically;
- Please note the footnotes have a separate format (Times New Roman - size 10).<sup>1</sup>

Please complete sections B to E. In section C, the text shaded in grey shall not be changed, whereas other text is used as an example and may be changed or deleted.

<sup>1</sup> Format for footnotes.

**Section A. Recommendation by the CCS Working Group (to be completed by the CCS Working Group)**

**1. Recommendation (approve/reject/preliminary recommendation)**

>>

**2. Major changes required**

>>

**3. Minor changes required**

>>

**Section B. Summary and applicability of the CCS baseline and monitoring methodology**

**1. Methodology title, submission date and version number**

>>

**2. If this methodology is based on a previous submission or an approved methodology, please state the reference numbers (NMXXXX/AMXXXX/ACMXXXX) here. Explain briefly the main differences and their rationale.**

>>

**3. Summary description of the methodology**

>>

## Section C. Proposed new carbon capture and storage baseline and monitoring methodology

### Draft baseline and monitoring methodology CCSAMXXXX

#### “Methodology title”

## I. SOURCE, DEFINITIONS AND APPLICABILITY

### 1. Sources

This consolidated baseline and monitoring methodology is based on [elements from] the following [approved baseline and monitoring methodologies and] proposed new methodologies:

- CCS-NM0XXX “Title of the methodology” prepared by ###;

This methodology also refers to the latest approved versions of the following tools (please delete those not applicable and other applicable tools):

- Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion;
- Tool to calculate project emissions from electricity consumption;
- Tool for the demonstration and assessment of additionality;
- Combined tool to identify the baseline scenario and demonstrate additionality;
- Tool to determine project emissions from flaring gases containing methane.

For more information regarding the proposed new methodologies and the tools as well as their consideration by the Executive Board please refer to <http://cdm.unfccc.int/goto/MPappmeth>.

### 2. Selected approach from paragraph 48 of the CDM modalities and procedures

1. “Existing actual or historical emissions, as applicable”
2. “Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment”
3. “The average emissions of similar project activities undertaken in the previous five years, in similar social, economic, environmental and technological circumstances, and whose performance is among the top 20 per cent of their category”

### 3. Definitions

4. For the purpose of this methodology, the following definitions apply:
  - **Carbon dioxide capture and storage (CCS).** The capture and transport of carbon dioxide from anthropogenic sources of emissions, and the injection of the captured carbon dioxide into an underground geological storage site for long-term isolation from the atmosphere;

- **Geological storage site.** A paired geological formation, or a series of such formations, consisting of an injection formation of relatively high porosity and permeability into which carbon dioxide can be injected, coupled with an overlying cap rock formation of low porosity and permeability and sufficient thickness which can prevent the upward movement of carbon dioxide from the storage formation;
- **Operational phase.** The period that begins when carbon dioxide injection commences and ends when carbon dioxide injection permanently ceases;
- **Closure phase.** The phase that follows the operational phase and is the period that begins when carbon dioxide injection permanently ceases and ends when the geological storage site has been closed.
- **Closure.** The completion of the sealing of the geological storage site, including the appropriate plugging of wells relating to the geological storage site;
- **Post-closure phase.** Means the phase that follows the closure phase and is the period that begins when the geological storage site has been closed;
- **Seepage.** Transfer of carbon dioxide from beneath the ground surface or seabed ultimately to the atmosphere or ocean;
- **Site development and management plan.** Documented description of how a geological storage site will be operated and managed;
- **History matching.** The process of comparing observed results from the monitoring and measurement of a geological storage site with the results of the predictive numerical modelling of the behaviour of carbon dioxide injected into the geological storage site, and the use of the observed results to calibrate and update numerical models and modelling results. It can involve multiple iterations;
- **Remedial measures.** Actions and measures intended to stop or control any unintended physical leakage or seepage of carbon dioxide, to restore the integrity of a geological storage site, or to restore long-term environmental quality significantly affected by a CCS project activity.

**4. Applicability conditions**

5. This methodology applies to project activities that... (describe what is the project activity)
6. The methodology is applicable under the following conditions:
  - (a) Geological storage site conditions:
    -
  - (b) Behaviour of the injected CO2 in the proposed geological storage site conditions:
    -
  - (c) Conditions of use of the geological storage site:
    -
  - (d) Other conditions:
    -

7. In addition, the applicability conditions included in the tools referred to above apply.
8. Finally, this methodology is only applicable if the application of the procedure to identify the baseline scenario results in that ### is the most plausible baseline scenario.

## **II. BASELINE METHODOLOGY PROCEDURE**

### **1. Project boundary**

9. The **spatial extent** of the project boundary encompasses...
10. The greenhouse gases included in or excluded from the project boundary are shown in Table 1.

Table 1: Emissions sources included in or excluded from the project boundary

Source		Gas	Included?	Justification / Explanation
Baseline	Source 1	CO <sub>2</sub>	Yes	
		CH <sub>4</sub>	No	
		N <sub>2</sub> O	No	
	Source 2	CO <sub>2</sub>	Yes	
		CH <sub>4</sub>	No	
		N <sub>2</sub> O	No	
Project activity	Source 1	CO <sub>2</sub>	Yes	
		CH <sub>4</sub>	No	
		N <sub>2</sub> O	No	
	Source 2	CO <sub>2</sub>	Yes	
		CH <sub>4</sub>	No	
		N <sub>2</sub> O	No	

**2. Identification and characterization of the geological storage sites**

11. Project participants shall apply the following steps to characterize the geological site:
12. Step 1...
13. Step 2...
14. Step 3...
15. The project participants shall, for each verification period, carry out history matching and, where necessary, update the numerical models used to characterize the geological storage site by conducting new simulations using the monitored data and information. The numerical models shall be adjusted in the event of significant deviations between observed and predicted behaviour.

**3. Identification of the most plausible scenario**

16. Project participants shall apply the following steps to identify the baseline scenario:

*Identify plausible alternative scenarios*

17. >>

>>

**4. Additionality**

- 18.

**5. Baseline emissions**

19. Baseline emissions include...
20. Please define the steps to estimate for baseline emissions



- 21. “Baseline emissions are calculated as follows:
- 22.
- 23. Baseline emissions are calculated in the following steps:

***Step 1. Determination of CO<sub>2</sub> emissions avoided from storage in a geological storage***

**6. Project emissions**

- 24. Project emissions include...
- 25. Please define the steps to estimate for project emissions, as per the examples below
- 26. “Project emissions are calculated as follows:

$$PE_y = PE_{FC,y} + PE_{EC,y} + PE_{SP,y} \tag{1}$$

Where:

- PE<sub>y</sub> = Project emissions in year y (t CO<sub>2</sub>/yr)
- PE<sub>FC,y</sub> = Project emissions from fossil fuel combustion in year y (t CO<sub>2</sub>/yr)
- PE<sub>EC,y</sub> = Project emissions from electricity consumption in year y (t CO<sub>2</sub>/yr)
- PE<sub>SP,y</sub> = Project emissions from seepage in year y (t CO<sub>2</sub>/yr)

- 27. Equations are numbered automatically. Just copy the equation with nomenclature above to produce other equations. Present equations as in the example above
- 28. Project emissions are calculated in the following steps:

Step 1: Determination of project emissions from fossil fuel combustion

Step 2: Determination of project emissions from electricity consumption

Step 3: Determination of project emissions from seepage

***Step 1: Determination of project emissions from fossil fuel combustion***

29.

***Step-2 : Determination of project emissions from electricity consumption”***

30.

***Step 3: Determination of project emissions from seepage***

- 31. Project Participants, please note that if further enumerations are required, use the following format:
  - (a) First issue
  - (b) Second issue

**7. Leakage effects**

32. Leakage emissions include...

- 33. Please define the steps to estimate for leakage emissions, as per the examples below
- 34. “Leakage emissions are calculated as follows:
- 35.

**8. Emission reductions**

36. Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \tag{2}$$

Where:

- ER<sub>y</sub> = Emission reductions in year y (t CO<sub>2</sub>e/yr)
- BE<sub>y</sub> = Baseline emissions in year y (t CO<sub>2</sub>e/yr)
- PE<sub>y</sub> = Project emissions in year y (t CO<sub>2</sub>/yr)
- LE<sub>y</sub> = Leakage emissions in year y (t CO<sub>2</sub>/yr)

**9. Changes required for methodology implementation in 2<sup>nd</sup> and 3<sup>rd</sup> crediting periods**

37.

**10. Data and parameters not monitored**

38. In addition to the parameters listed in the tables below, the provisions on data and parameters not monitored in the tools referred to in this methodology apply.

<b>Data / parameter:</b>	
Data unit:	
Description:	
Source of data:	
Measurement procedures (if any):	
Any comment:	

**III. MONITORING METHODOLOGY**

- 39. Monitoring requirements are distinguished for the operational phase, closure phase and post-closure phase of the project.
- 40. All data collected as part of monitoring should be archived electronically and be kept at least for 22 years after the end of the last crediting period. 100% of the data should be monitored if not indicated otherwise in the tables below. All measurements should be conducted with calibrated measurement equipment according to relevant industry standards.
- 41. In addition, the monitoring provisions in the tools referred to in this methodology apply.

**Data and parameters monitored**

<b>Data / parameter:</b>	Parameters related to geological storage site
Data unit:	
Description:	
Source of data:	Entity or Party that is liable for the geological storage site, or by an entity that is under contractual arrangement with the liable entity or Party.
Measurement procedures (if any):	
Monitoring frequency:	
QA/QC procedures:	
Any comment:	

**IV. REFERENCES AND ANY OTHER INFORMATION**

**Section D. Explanations / justifications to the proposed new carbon capture and storage baseline and monitoring methodology**

**Selected approach from paragraph 48 of the CDM modalities and procedures**

42.

**Definitions**

43.

**Applicability conditions**

44.

**Project boundary**

45.

**Characterization of the geological storage site**

46.

**Identification of the baseline scenario**

47.

**Additionality**

48.

**Baseline emissions**

49.

**Project emissions**

50.

**Leakage**

51.

**Emission reductions**

52.

**Changes required for methodology implementation in 2<sup>nd</sup> and 3<sup>rd</sup> crediting periods**

53.

<b>Monitoring methodology, including data and parameters not monitored</b>
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54.

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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
02.0	7 October 2013	Revised to remove the row for date and signature of the chair and vice chair of the CCS Working Group for simplification.
01.0	1 April 2013	Initial publication. This document supersedes and replaces the form " <i>Proposed new carbon capture and storage baseline and monitoring methodology form for CDM project activities (CCS Working group recommendation to EB)</i> " (F-CDM-CCS-NM) (version 01.0).

Decision Class: Regulatory

Document Type: Form

Business Function: Methodology

Keywords: approving methodologies and tools, carbon capture and storage