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Application of the Oeko-Institut/WWF-US/ EDF methodology for assessing the quality of carbon credits

This document presents results from the application of version 3.0 of a methodology, developed by Oeko-Institut, World Wildlife Fund (WWF-US) and Environmental Defense Fund (EDF), for assessing the quality of carbon credits. The methodology is applied by Oeko-Institut with support by Carbon Limits, Greenhouse Gas Management Institute (GHGMI), INFRAS, Stockholm Environment Institute, and individual carbon market experts. This document evaluates one specific criterion or sub-criterion with respect to a specific carbon crediting program, project type, quantification methodology and/or host country, as specified in the below table. Please note that the CCQI website Site terms and Privacy Policy apply with respect to any use of the information provided in this document. Further information on the project and the methodology can be found here: www.carboncreditquality.org

Sub-criterion:	1.1.3 Financial attractiveness
Project type:	Landfill Gas Utilization
Date of final assessment:	20 May 2022
Score:	4.28

Assessment

Relevant scoring methodology provisions

The methodology assesses the financial attractiveness of the individual project or project type to estimate the likelihood that economic actors would normally not pursue the respective mitigation activity in a given market and policy environment without carbon market revenues. The assessment considers three indicators that are important for determining financial attractiveness: The financial attractiveness without carbon credit revenues, the change in financial attractiveness due to carbon credit revenues, and the financial attractiveness with carbon credit revenues. Following the approach of the methodology the following steps are applied to derive the score:

Step 1: Decide whether to apply the methodology to an individual project or at the level of a project type.

Step 2: Collect the relevant data. Where the methodology is applied to an individual project, data provided by the project may be used, as long as this data can be reasonably verified. Where the methodology is applied at the level of the project type, different data sources could be used, including literature information or a sample of individual projects for which the necessary data is available. To the extent possible, the sample should represent different investment conditions and locations within the geographical scope

Step 3: Define the carbon credit price used in the calculation of the change in financial attractiveness due to carbon credit revenues. The methodology recommends using the current prices of the relevant markets the project is developed for. Assumptions made by the project proponent on expected carbon prices may be used if they are plausible. In absence of further information, the methodology recommends using a consistent proxy for all projects.

Step 4: Identify for each project the respective value for:

    a. The equity IRR without carbon credit revenues (IRR);

    b. The change in equity IRR due to carbon credit revenues (ΔIRR); and

    c. The equity IRR with carbon credit revenues.

Step 5: Identify for the project the relevant project category in the CDM Methodological Tool for Investment Analysis (CDM TOOL 27) according to the following table:

Group	Categories
1	Energy Industries; Energy Distribution; Energy Demand; Waste handling and disposal
2	Manufacturing industries; Chemical Industries; Construction; Transport; Mining/Mineral production; Metal production; Fugitive Emissions from fuels; Fugitive Emissions from production and consumption of halocarbon, and Sulphur hexafluoride; Solvent use; Carbon capture and storage of CO_2 in geological formations
3	Afforestation and reforestation; Agriculture

Step 6: Retrieve for each project the country-level expected return on equity (ROE) in the CDM methodological tool for investment analysis for the respective group identified in step 5 (The respective table can be found on page 12 of version 08.00 of CDM TOOL 27).

Step 7: Determine for each project the three indicators, by putting the IRR, the ΔIRR, and the sum of IRR and ΔIRR in relation to the expected return on equity (ROE).

Step 8: If the methodology is applied to a project type, calculate the average values for Indicator 1.1.3.1, Indicator 1.1.3.2, and Indicator 1.1.3.3 for the sample of projects.

Step 9: Apply the scoring approach in the methodology to determine the score for indicator 1.1.3.1.

Step 10: Apply the scoring approach in the methodology to determine the score for indicator 1.1.3.2.

Step 11: Apply the scoring approach in the methodology to determine the score for indicator 1.1.3.3.

Step 12: Apply the scoring approach in the methodology to determine the overall score for sub-criterion 1.1.3.

If a project or project type does not have revenues or cost savings other than carbon market revenues, an IRR cannot be calculated. As these projects fully rely on carbon market revenues, they are clearly not financially viable without carbon market revenues and are therefore assigned a score of 5.

Information sources considered

1. Climate Action Reserve Public Registry, Data accessed on 04 February 2022
https://thereserve2.apx.com/myModule/rpt/myrpt.asp?r=111

2. CDM Project Search. Data accessed on 04 February 2022
https://cdm.unfccc.int/Projects/projsearch.html

3. Gold Standard Impact Registry, Data accessed on 04 February 2022
https://registry.goldstandard.org/projects?q=&page=1

4. The Verra Registry – Verified Carbon Standard, Data accessed on 04 February 2022
https://registry.verra.org/

5. World Development Indicators – Lending interest rate (Indicator: FR.INR.LEND), Data accessed on 19 January 2022. https://databank.worldbank.org/source/world-development-indicators

6. Tax Foundation – Corporate Tax Rates around the World, 2021. Data accessed on 19 January 2022. https://taxfoundation.org/publications/corporate-tax-rates-around-the-world/

7. CDM TOOL27 Methodological tool: Investment analysis – Version 08.0
https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v8.pdf

8. United States Environmental Protection Agency: LFGcost-Web – Landfill Gas Energy Cost Model https://www.epa.gov/lmop/lfgcost-web-landfill-gas-energy-cost-model

Assessment outcome

The project type is assigned a score of 4.48

Justification of assessment

In accordance with the methodology, the following steps were conducted for the analysis of the financial attractiveness of the project type:

Step 1: Decide whether to apply the methodology to an individual project or at the level of a project type

The assessment is applied at the level of the project type. The project type is here defined as follows: "Capture and utilization of gas from an existing and closed solid waste disposal site. The collected gas is mainly used for energy purposes, such as for electricity and/or heat generation. A smaller fraction of the gas may be flared (e.g. during maintenance of an on-site electricity generation plant)."

Step 2:   Collect the relevant data

The assessment is conducted at the project type level which requires the construction of a data sample composed of several projects to determine the financial attractiveness of the project type. For this, the project databases of following carbon crediting programs were searched for landfill gas utilization projects:

- Climate Action Reserve

- Clean Development Mechanism

- Gold Standard

- Verified Carbon Standard

Basing the assessment only on projects that were submitted to carbon crediting programs might be subject to a selection bias because it is likely that projects that are economically viable without carbon credits do not apply for registration. However, a key purpose is to analyze how much carbon credits contribute to clearing the hurdle rate for the specific project type. Using project samples from carbon crediting programs is therefore still a viable source for conducting the assessment.

The degree of information available for each project varies between the programs. Not all programs require project proponents to provide financial analysis data, and some do not make public detailed information on the financial analysis conducted by the project proponent. This is relevant for the ability to use project data for the assessment. What information is available from each program is outlined in the following paragraphs.

The Climate Action Reserve registry (Source 1) subsumes landfill gas utilization projects under the project type name "Landfill Gas Capture/Combustion". As of 4 February 2002, the registry contained 117 entries for this project type. The registry lists key information such as the project name, project status, location etc. A dedicated "project documents" section provides key documentation such as the final project submittal form, verification reports and attestation of voluntary implementation. However, the Climate Action Reserve does not require projects to provide financial data, as additionality is tested through a standardized approach. Information on the financial analysis for the projects is therefore not available. For this reason, it was not possible to include CAR projects into the data sample.

The CDM "project search" (Source 2) allows downloading a "Database for PA and POAs"[1] (henceforth referred to as the CDM database) in Microsoft Excel format. This database contains comprehensive information on all aspects of individual projects, such as the project name, project status, location etc. In addition, key financial information is available in the data base. This includes the estimated IRR benchmark, the estimated IRR excluding CERs and the estimated IRR including CERs. Next to this database, detailed documentation for each project is available when opening individual project entries in CDM project search (Source 2). This includes the project design document (PDD) which is often complemented by excel sheets containing the financial analysis for the project.

In the CDM database, landfill gas utilization projects are listed under the project type "landfill gas" with the sub-type "landfill power". As of 4 February 2022, the database contains 193 entries with active reference numbers for the project sub-type landfill power. This includes mostly registered projects but also few projects that were rejected or withdrawn. All these projects have been selected for the further assessment and were transferred into the data sample for this assessment.

The Gold Standard Impact Registry (Source 3) subsumes landfill gas utilization projects under the project type category "biogas – electricity". It is not possible to further filter projects by sub-project type, or the quantification methodology used by individual projects. For this reason, landfill gas utilization projects had to be identified by hand within the biogas-electricity category. As of 4 February 2022, the registry contained 20 landfill gas utilization projects (either listed, certified design, or certified). The registry itself does not contain information on the financial analysis of projects, but for some projects, information is available in the key project information. Therefore, all 20 projects were transferred into the data sample.

The Verra Registry for the Verified Carbon Standard (Source 4) subsumes landfill gas utilization projects under the project type category "waste handling and disposal". As this category also contains other project types, such as biogas projects, the search results for this project type had to be further filtered. The registry does not provide an option to filter by sub-type. Landfill gas utilization projects were therefore identified by searching for projects applying the relevant methodologies ACM0001 and AMS-III.G. As of 4 February 2022, the registry contains 60 project entries (including projects under validation and under development). When navigating to the project pages of the individual projects, key project documentation, such as project descriptions or monitoring reports, are available. For some projects the project documentation includes key information on the financial analysis for the project. Therefore, all 60 projects are transferred for further analysis into the data sample.

The structure of the CDM database was used for building the data sample, as its header exhibits the most comprehensive list of information categories. For key information categories - such as reference number, status, methodology, country or country region - information from Verified Carbon Standard and Gold Standard projects was added either by merging excel excerpts from the respective project database or filling in information by hand. The resulting data sample from the three programs contains 273 entries.

The methodology uses the following three indicators to assess financial attractiveness:

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[1] PA = Project Activities; PoA = Programme of Activities

1.1.3.1   The internal rate of return (IRR) without carbon credit revenues, in relation to the relevant IRR benchmark

1.1.3.2   The change in IRR due to carbon credit revenues, in relation to the relevant IRR benchmark

1.1.3.3   The IRR with carbon credit revenues, calculated as the sum of IRR without carbon credit revenues and the change in IRR due to carbon credit revenues, in relation to the relevant IRR benchmark

The data sample was therefore further consolidated by removing projects for which neither of the following information was available:

- IRR without carbon credits (information required for calculating indicator 1.1.3.1 and 1.1.3.3.)

- IRR with carbon credits (information required for calculating indicator 1.1.3.2)

- IRR benchmark (information required for all three indicators)

For most CDM projects all three parameters are available as entries in the CDM database. For projects where this information was lacking, the project design documents, and key project information were searched. For Gold Standard and Verified Carbon Standard projects, each project design document was reviewed for this information and, where available, transferred to the data sample by hand.

Not all projects have information available on each of the three parameters listed above. Therefore, the number of projects that exhibit sufficient data for the calculation of the relevant indicator differ for each of the three indicators as summarized in Table 1 below.

Table 1   **Number of sample projects used to calculate the three indicators for financial attractiveness**

		1.1.3.1	1.1.3.2	1.1.3.3
Total # of projects		**133**	**112**	**99**
Programs				
	CDM	114	101	89
	GS	7	2	1
	VCS	12	9	9
Regions				
	Eastern Asia	69	67	62
	South America	17	7	4
	Central America	18	16	15
	Southern Asia	4	3	3
	Western Asia	2	3	2
	South-Eastern Asia	9	6	5
	Caribbean	1	0	0
	Southern Africa	4	5	4
	Southern Europe	1	0	0
	Europe	5	2	1
	North America	3	3	3
Selected Countries				
	China	65	64	60
	Mexico	15	12	12
	Brazil	12	2	1
	USA	3	3	3
	Turkey	5	2	1

Source: Own compilation.

The methodology further suggests applying a single carbon price for all projects in the data sample when calculating the indicators. To be able to perform calculations for all projects with a single carbon price, detailed financial information on a project is required in order to be able to reproduce the financial analysis with a different price than assumed by the project proponent. For each project in the consolidated data sample, key project documentation was reviewed for the availability of such detailed information. This review showed that only for 47 CDM projects such detailed financial information is available. Each of these projects provides a separate excel file with detailed financial data (see Table 2).

Table 2   **Number of projects with sufficiently detailed financial information to perform calculations with a single carbon price**

	All indicators
Total # of projects	**47**
Regions	
Central America	9
South-Eastern Asia	2
Eastern Asia	32
Southern Asia	1
Southern Africa	2
South America	1
Selected Countries	
China	31
Mexico	6

Source: Own compilation.

The coverage of countries and regions in this data sample is lower than in the sample that also contains projects that do not provide detailed financial information. Furthermore, there is a high concentration of projects in China and Central America, which form 85 percent of the data sample (see further elaborations on this point below).

Step 6 of the methodology further suggests selecting the IRR benchmark from the country-level expected return on equity (ROE) outlined in the CDM methodological tool for investment (see CDM TOOL 27). This benchmark does, however, only apply to projects that use an equity IRR in their financial analysis. For projects that use a project IRR as the financial indicator, the appropriate benchmark is the weighted average cost of capital (WACC).

To prepare the data sample for calculating the indicators with the correct benchmark, the project design documents for each of the 47 projects were reviewed to determine whether equity or project IRR was used for the financial analysis.

There is no publicly accessible data base for WACC across industries and countries. The WACC for an individual firm can be calculated using the following formula:

$$WACC = r_e \times W_e + r_d \times W_d \times (1 - T_c)$$

Where:
r_e = Cost of equity
W_a = Percentage if financing that is equity
r_d = Cost of debt
W_d = Percentage of financing that is debt
T_c = Corporate tax rate

The most accurate way of calculating a WACC benchmark would be to build a peer group of companies active in a particular country and industry related to the project type and calculate the average WACC that applies among that group. This would require very comprehensive data. The

second-best option is to calculate the benchmark by using country specific data for the parameters listed in the formula above. This option was used for the assessment.

The required data for each of the parameters were sourced as follows:

- Cost of equity: Data from the CDM TOOL27 was used.

- Cost of debt: The "World Development Indicator DataBank" includes a time series on the lending interest rate for meeting short- and medium-term financing needs of the private sector (Source 5). The data description specifies that when reporting these data, countries should use effective and not nominal interest rates. These data were used, taking into account the host country and the start date of the project activity. For some countries data on the lending interest rate are not available. These projects were therefore removed from the analysis.

- Corporate tax rate: The "Tax Foundation" maintains a time series with the relevant data (Source 3) that was used for the analysis.

The result of this data collection are two different samples of projects:

- **Sample 1:** This data sample includes only those projects for which detailed financial information is available, consisting of CDM projects only (see Table 2).

- **Sample 2:** This data sample includes those projects for which high-level data on the financial attractiveness of projects are available. It consists of projects from three carbon crediting programs (see Table 1).

Only the second data sample allows the application of all steps of the methodology, while the first data sample has a more comprehensive coverage in terms of countries, regions and programs. The three indicators are therefore determined separately for both data samples. The results of the two analyses are then compared for deriving the final score for the project type. Steps 3-12 of the methodology are therefore applied twice and separately for each data sample.

Assessment with Sample 1

As described above, this data sample consists of those CDM projects that have submitted detailed financial information in form of a separate excel sheet. These sheets provide information on the IRR without carbon credits, the IRR with carbon credits, the carbon price used to calculate the latter as well as other cash-flow related data and calculations.

Step 3: Define the carbon credit price used in the calculation of the change in financial attractiveness due to carbon credit revenues.

The methodology recommends either using the carbon price estimated by the project proponent if it can be considered as plausible or setting a single carbon credit price applicable to all projects. Here, both approaches are implemented and then compared.

The single carbon credit price for the assessment is set at EUR 10 per ton/CO_2e. This value is chosen with the expectation that carbon credit prices will surge in the future and because the performance of projects at these higher values is of most interest when looking at the financial attractiveness of the project type.

Step 4: Identify for each project the respective value for

a) the IRR without carbon credit revenues (IRR);

b) The change in IRR due to carbon credit revenues (ΔIRR); and

c) The IRR with carbon credit revenues, calculated as the sum of IRR without carbon credit revenues and the change in IRR due to carbon credit revenues (IRR+ΔIRR).

The respective values are calculated both using, as outlined above:

- The original carbon credit price assumed by project proponents as available in the CDM database.

- The single carbon credit price of EUR 10 per ton/$_{CO2}$.

<u>Step 5: Identify for the project the relevant project category in the CDM Methodological Tool for Investment Analysis (CDM TOOL 27):</u>

Landfill gas utilization falls within project category 1 of the Methodological Tool for Investment Analysis.

<u>Step 6: Retrieve for each project the country-level expected return on equity (ROE) in the CDM methodological tool for investment analysis for the respective group identified in step 5 (The respective table can be found on page 12 of version 08.00 of CDM TOOL 27).</u>

The respective values are retrieved for each project as outlined in Step 2 above.

For most projects no information is available in the project design document or other key project documentation on the distribution of debt and equity for the project. An assumption was therefore made that the percentage is 50 percent for each source of financing. This assumption is guided by the respective guidelines in CDM TOOL 27 that recommends this procedure for cases where information is not available (see paragraph 25 on page 9).

Moreover, the respective indicator values were determined separately using two different benchmarks:

- The original benchmark applied by the project proponents in their financial data.

- An adjusted benchmark that is either based on the expected return on equity for the project type in the respective country (based on the CDM TOOL27) or on the WACC applying in the respective country at the time of the start date for the project as calculated using the formula specified in Step 2. Most projects do not specify whether they conducted the investment analysis in nominal or in real terms. For calculating the adjusted benchmark, it is here assumed that projects used real terms instead of nominal terms for their financial data. Therefore, no adjustment for inflation was applied to the return on equity values of CDM TOOL27. As described above, the lending interest rates used for calculating WACC are also based on effective interest rates.

<u>Step 7: Determine for each project the three indicators, by putting the IRR, the ΔIRR, and the sum of IRR and ΔIRR in relation to the benchmark IRR.</u>

For each of the 47 projects the three indicators were derived by putting the respective IRR, ΔIRR and sum of IRR and ΔIRR to the respective benchmark.

In doing so, different combinations of benchmarks values (original or adjusted) and carbon credit price (original and adjusted) were used respectively. Table 3 below provides an overview of the scoring results for each combination.

Indicator 1.1.3.1 is not affected by changes in the carbon price, which is why here only two values were calculated; one based on the original benchmark and another on the adjusted benchmark. For indicators 1.1.3.2 and 1.1.3.3 values for all four different combinations have been calculated.

Step 8-12: Calculation of the values for the indicators and the scores

Values for each of the three indicators were calculated for each of the 47 projects using the combinations for benchmarks and carbon credit prices outlined in Table 4 below. After this the values were used to derive the scorings for each indicator using the respective scoring formulas outlined in the methodology. Finally, average scores were determined for each indicator.

Table 3 below summarizes the results of the analysis. The analysis shows a high performance of the project type for all three indicators. The overall score for sub-criterion 1.1.3 for the project type landfill gas utilization on a global level is 4.62 (applying the combination with the adjusted price and the adjusted benchmark). Scorings are higher when applying the single carbon price of EUR 10 per ton/CO_2 because most projects used lower prices in their investment analyses. Scorings are lower when applying the adjusted benchmark because for most projects the adjusted benchmark is lower than those applied by projects in their investment analyses.

Regional differences exist for some of the scores. A regional differentiation of scores is however not feasible because of the low numbers of projects in the sample size for some of the regions.

Table 4 below provides a detailed overview of the score distribution across the indicators.

The assessment was repeated using the full data sample as presented in Table 1 above. The restriction with this data sample is that it is not possible to adjust the benchmark and carbon price. It does however include more projects and carbon crediting program. The description of the second assessment starts after the results table below.

Table 3   **Scoring for sub-criterion 1.1.3 for the project type landfill gas utilization**

Sub-criterion 1.3.3	Sample Size	Original Price Original Benchmark				Original Price Adjusted Benchmark				Adjusted Price (EUR 10) Original Benchmark				Adjusted Price (EUR 10) Adjusted Benchmark			
		1.1.3.1	1.1.3.2	1.1.3.3	**Score**	1.1.3.1	1.1.3.2	1.1.3.3	**Score**	1.1.3.1	1.1.3.2	1.1.3.3	**Score**	1.1.3.1	1.1.3.2	1.1.3.3	**Score**
Global	47	4.70	4.70	4.91	**4.65**	4.42	4.78	4.91	**4.53**	4.70	4.89	4.91	**4.59**	4.42	4.93	4.91	**4.62**
Regions																	
Central America	9	4.39	5.00	5.00	4.66	3.51	5.00	5.00	4.09	4.39	4.93	5.00	4.62	3.51	4.99	5.00	4.09
South-Eastern Asia	2	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Eastern Asia	32	4.78	4.70	4.87	4.69	4.67	4.81	4.88	4.69	4.78	4.89	4.87	4.79	4.67	4.96	4.87	4.77
Southern Asia	1	4.87	4.92	5.00	4.89	4.80	4.99	5.00	4.89	4.87	4.49	5.00	4.64	4.80	4.90	5.00	4.84
Southern Africa	2	4.11	3.55	5.00	3.60	3.40	4.72	5.00	3.86	4.11	4.87	5.00	4.41	3.40	4.99	5.00	4.01
South America	1	4.98	3.40	5.00	4.00	4.99	1.40	4.83	2.44	4.98	4.94	5.00	4.96	4.99	3.31	5.00	3.95
Selected Countries																	
China	31	4.80	4.69	4.87	4.69	4.67	4.81	4.87	4.68	4.80	4.88	4.87	4.80	4.67	4.96	4.87	4.76
Mexico	6	4.41	5.00	5.00	4.67	3.64	5.00	5.00	4.18	4.41	4.91	5.00	4.63	3.64	4.98	5.00	4.17

Source: Own calculations.

Assessment with Sample 2

As described in step 2, this data sample contains all projects that provide information on the benchmark IRR used as well as on at least one of the following parameters:

- The IRR without carbon credits

- The IRR with carbon credits

Before conducting the assessment, the data sample was further separated into three sub-samples as described below:

- Sub-sample 1 containing projects that provide all information required for calculating indicator 1.1.3.1 (which is the IRR without carbon credits and the benchmark IRR).

- Sub-sample 2 containing projects that provide all information required for calculating indicator 1.1.3.2 (which is the IRR with carbon credits and the benchmark IRR).

- Sub-sample 3 containing projects that provide all information required for calculating indicator 1.1.3.3 (which is the IRR without carbon credits, the IRR with carbon credits and the benchmark IRR).

As shown in Table 1, the size of the sub-samples varies, with sub-sample 1 containing 133 projects, sub-sample 2 containing 112 projects and sub-sample 3 containing 99 projects.

To ensure the maximum coverage of projects for each indicator it was decided to use a separate sample for the assessment of each indicator. The advantage of this approach is that this enhances the coverage of projects for indicators, especially for indicator 1.1.3.1 including a few projects in the United States and Turkey.

For each indicator the assessment was conducted following the steps in the methodology as described below, using the respective sub-sample.

Step 3: Define the carbon credit price used in the calculation of the change in financial attractiveness due to carbon credit revenues.

As the assessment will rely on the estimated carbon price by the project proponent, no further adjustments to the data sample are required.

Step 4: Identify for each project the respective value for:

a. The IRR without carbon credit revenues (IRR);

   The IRR without carbon credits was integrated into the data sample using the process outlined in step 2 above.

b. The change in IRR due to carbon credit revenues (ΔIRR); and

   The data sample contains two values for the IRR with carbon credits:

   The IRR with carbon credits was integrated into the data sample using the process outlined in step 2 above.

c. The IRR with carbon credit revenues.

The change in IRR was calculated by subtracting the value for the IRR without carbon credits from the value for the IRR with carbon credits.

Step 5: Identify for the project the relevant project category in the CDM Methodological Tool for Investment Analysis (CDM TOOL 27):

This step is not required for the assessment as it relies on the benchmarks by the project proponent.

Step 6: Retrieve for each project the country-level expected return on equity (ROE) in the CDM methodological tool for investment analysis for the respective group identified in step 5 (The respective table can be found on page 12 of version 08.00 of CDM TOOL 27).

This step is not required for the assessment as it relies on the benchmarks by the project proponent.

Step 7: Determine for each project the three indicators, by putting the IRR, the ΔIRR, and the sum of IRR and ΔIRR in relation to the benchmark IRR.

The calculations were performed for each indicator according to the methodology.

Steps 8-12: If the methodology is applied to a project type, calculate the average scores for Indicator 1.1.3.1, Indicator 1.1.3.2, and Indicator 1.1.3.3 for the sample of projects.

Average scores were calculated for each of the three indicators using the equations outlined in the methodology.

Conclusion of the assessment

The results for the second sample are summarized in Table 5. The overall score for indicator 1.1.3 varies between 4.53 and 4.65 for sample 1, depending on the choice of data used (see Table 4). For sample 2 the score is 4.28. The overall score for sub-criterion 1.1.3 is 0.37 score points lower in sample 2 when comparing it with the corresponding combination of original price / original benchmark in sample 1. This is mainly driven by the fact that projects in this sample on average score lower for indicators 1.1.3.1 and 1.1.3.2.

Regional differences exist for some of the scores of sample 2 (see Table 5). A regional differentiation of scores is for both samples however not representative because of the low numbers of projects in the sample size for some of the regions.

Table 4　　　　**Comparison between results of sample 1 and sample 2**

	Sample 1 Original Price Original Benchmark	Sample 1 Original Price Adjusted Benchmark	Sample 1 Adjusted Price Original Benchmark	Sample 1 Adjusted Price Adjusted Benchmark	Sample 2 Original Price Original Benchmark
1.1.3.1	4.70	4.42	n/a	n/a	4.46
1.1.3.2	4.70	4.78	4.89	4.93	4.27
1.1.3.3	4.91	4.91	4.91	4.91	4.99
1.1.3	**4.65**	**4.53**	**4.59**	**4.62**	**4.28**

Source: Own calculations.

Considering that sample 2 is larger and more diverse with regard to carbon crediting programs, countries and regions, and following the principle of conservativeness (as sample 2 scores are lower), the scores of sample 2 are selected for the overall score for the project type.

Table 5   **Scoring results for sub-criterion 1.1.3 for the project type landfill gas utilization**

	Sample Size			Indicator Scores			Score 1.1.3
	1.1.3.1	1.1.3.2	1.1.3.3	1.1.3.1	1.1.3.2	1.1.3.3	
Global	**133**	**99**	**112**	**4.46**	**4.27**	**4.99**	**4.28**
Regions							
Eastern Asia	69	62	67	4.57	4.34	4.99	**4.39**
South America	17	4	7	4.52	3.39	5.00	**3.74**
Central America	18	15	16	4.46	4.70	5.00	**4.53**
Southern Asia	4	3	3	4.58	2.61	4.85	**3.17**
Western Asia	2	2	3	2.84	2.59	5.00	**2.04**
South-Eastern Asia	9	5	6	4.61	4.53	5.00	**4.52**
Caribbean	1	0	0	4.80			
Southern Africa	4	4	5	4.53	4.32	4.93	**4.33**
Southern Europe	1	0	0	5.00			
Europe	5	1	2	3.21	2.09	5.00	**1.93**
North America	3	3	3	3.63	4.62	5.00	**3.96**
Selected Countries							
China	65	60	64	4.61	4.38	5.00	**4.43**
Mexico	15	12	12	4.44	4.64	5.00	**4.49**
Brazil	12	1	2	4.46	1.75	5.00	**2.48**
USA	3	3	3	3.63	4.62	5.00	**3.96**
Turkey	5	1	2	3.21	2.09	5.00	**1.93**

Source: Own calculation