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Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

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

Criterion:	1.2 Vulnerability
Project type:	Leak repair in natural gas transmission and distribution systems
Date of final assessment:	31 January 2023
Score:	3

Contact
info@oeko.de
www.oeko.de

Head Office Freiburg
P. O. Box 17 71
79017 Freiburg

Street address
Merzhauser Straße 173
79100 Freiburg
Phone +49 761 45295-0

Office Berlin
Borkumstraße 2
13189 Berlin
Phone +49 30 405085-0

Office Darmstadt
Rheinstraße 95
64295 Darmstadt
Phone +49 6151 8191-0

Assessment

Relevant scoring methodology provisions

In market situations where the supply of carbon credits from already registered and implemented projects considerably exceeds the current and expected future demand for carbon credits, the purchase of carbon credits does not necessarily trigger further emission reductions. The methodology therefore evaluates for carbon credits in collapsed markets whether the projects would continue to reduce GHG emissions even without carbon credit revenues, or whether they are at risk of discontinuing GHG abatement without these revenues. In the latter case, they are classified as vulnerable projects. The methodology employs a stepwise approach for assessing the vulnerability of the respective project type or individual project:

Step 1: Evaluate whether the relevant market of the carbon credit can be characterized as collapsed (see methodology for further details). Note that currently, this situation only applies to the CDM.

Step 2: Identify potential continuation and discontinuation scenarios. If applied on the project type level a representative sample of projects can be assessed.

Step 3: Evaluate how applicable legal requirements affect the feasibility of the scenarios identified in step 2. Apply this step to both continuation and discontinuation scenarios. Remove scenarios that could not be pursued due to applicable laws and regulations. This step may be applied at project or project type level in the context of a specific host country or at the level of the carbon crediting program (see methodology for further details).

Step 4: Assess financial benefits and costs and rank the remaining scenarios in order of their financial attractiveness by performing a cost-benefit analysis of each scenario. The financial attractiveness of a project depends on whether its income exceeds the operational expenditure in the absence of carbon credits. Only OPEX and benefits are therefore considered in the analysis. Exclude costs and benefits that occur under all scenarios in a uniform manner.

Step 5: Assess whether any of the scenarios faces non-financial barriers that exclude it from being the course of action. For conducting the barrier assessment, the same approach described in section 1.1.4 is applied using an expert judgement. Remove all scenarios that face non-financial barriers and are scored at 5 or 4 from further consideration.

Step 6: Determine the most likely project scenario. The highest ranked remaining scenario is the likely course of action. If this is a continuation scenario, the project is deemed to have a low vulnerability to discontinue GHG abatement (score of 1). If the scenario is a discontinuation scenario, and it is either the only remaining scenario or any other scenarios are financially significantly less attractive, then the vulnerability is deemed to be high (score of 5). In other instances, e.g. where a continuation and discontinuation scenario may be equally plausible, no clear conclusion can be drawn on vulnerability (score of 3).

Degree of Vulnerability	Score
High Vulnerability	5
Vulnerability not conclusive	3
Low Vulnerability	1

Information sources considered

1 ICF International (2014). *Economic Analysis of Methane Emission Reduction Opportunities in the U.S. Onshore Oil and Natural Gas Industries*. Report prepared for Environmental Defense Fund. https://www.edf.org/sites/default/files/methane_cost_curve_report.pdf

2 EDF (2017). Find and Fix: Job creation in the emerging methane leak detection and repair industry. Report prepared by Datu research. https://www.edf.org/sites/default/files/find-and-fix-datu-research.pdf

3 Cheadle, L.C., Travis, T., Nyarady, F. Lozo, C. (2022). Leak detection and repair data from California's oil and gas methane regulation show decrease in leaks over two years. Environmental Challenges, Volume 8, 100563 https://www.sciencedirect.com/science/article/pii/S2667010022001202

4 Scott, R.P., Scott, T.A., and Greer, R.A. (2022). Who owns the pipes? Utility ownership, infrastructure conditions, and methane emissions in United States natural gas distribution. RPR, Volume 39, Issue 2. https://onlinelibrary.wiley.com/doi/epdf/10.1111/ropr.12463

5 Ravikumar & Brand (2017). Designing better methane mitigation policies: the challenge of distributed small sources in the natural gas sector. *Environ. Res. Lett.* **12** 044023. https://iopscience.iop.org/article/10.1088/1748-9326/aa6791/meta

6 Levi Marks (2022). The Abatement Cost of Methane Emissions from Natural Gas Production. Journal of the Association of Environmental and Resource Economists Volume 9, Number 2 https://www.journals.uchicago.edu/doi/abs/10.1086/716700

7 IEA (2021) Driving Down Methane Leaks from the Oil and Gas Industry – A regulatory roadmap and toolkit. International Energy Agency. https://www.iea.org/reports/driving-down-methane-leaks-from-the-oil-and-gas-industry

8 IEA (2022). Global Methane Tracker https://www.iea.org/data-and-statistics/data-tools/methane-tracker

9 ERIA (2022). Technology List and Perspectives for Transition Finance in Asia. Economic Research Institute for ASEAN and East Asia. https://www.eria.org/uploads/media/2022_September_ERIA_Technology-List-and-Perspectives-for-Transition-Finance-in-Asia.pdf

10 Carbon Limits (2014) Quantifying Cost effectiveness of Systematic Leak Detection and Repair Programs Using Infrared Cameras

https://www.carbonlimits.no/wp-content/uploads/2015/06/Carbon_Limits_LDAR.pdf

Assessment outcome

The project type is assigned a score of 3.

Justification of assessment

Step 1: Per the guidance in the methodology the CDM market is collapsed. There are currently 18 registered projects under the CDM. All other markets relevant for this assessment (ACR, CAR, GS and VCS) are considered functioning.

Step 2: The following continuation or discontinuation scenarios have been identified:

- Scenario 1: Mitigation activity continues as originally designed and implemented, and at the same scale.
- Scenario 2: Mitigation activity continues but overall emissions reductions of the activity will be at a smaller scale as project owners will cease to survey upstream locations where gas has a lower value (only appliable to cases where owner of the gas also operate the transmission and distribution lines).
- Scenario 3: Mitigation activity continues but overall emissions reductions of the activity will be at a smaller scale as project owners will move to a less frequent survey schedule.
- Scenario 4: Mitigation activity discontinues as transmission and distribution line operators will not continue surveying their lines.

Step 3: Analysis performed by the International Energy Agency shows that out of 12 producing countries, currently only two countries (United States and Canada) have prescriptive regulations on leak detection and repair. Many other countries do however have in place mandatory permitting requirements and technology standards for natural gas pipelines.[1] The EU is currently not regulating methane emissions in the energy sector but has started the process of developing a regulatory framework that would also require companies to improve detection and repair of leaks.[2] At COP 26 in 2021 the Global Methane Pledge was launched through which more than 100 countries pledged to reduce more than 8 gigatons of CO_2e emissions from anthropogenic methane sources by 2030.[3] Implementing this pledge will likely require additional regulatory measures. It is therefore deemed likely that there might be regulations that require the implementation of this project type in more countries in the near future. New regulation would have an impact on the likelihood of scenario 3 and 4. The assessment of the project type did however not identify evidence that would exclude these scenarios on a global level. The assessment therefore proceeds with step 4.

Step 4: As outlined in the assessment sheet for criterion 1.1.4 one of the main reasons hindering the implementation of the project are non-financial barriers. The assessment therefore continues with step 5.

Step 5: The table below outlines the barriers that were identified for the project type, using the approach outlined in the methodology for the assessment of sub-criterion 1.1.4 (for a discussion of

[1] IEA (2021) Driving Down Methane Leaks from the Oil and Gas Industry – A regulatory roadmap and toolkit https://iea.blob.core.windows.net/assets/465cb813-5bf0-46e5-a267-3be0ccf332c4/Driving_Down_Methane_Leaks_from_the_Oil_and_Gas_Industry.pdf

[2] Abnett and Nasrilla (2021) Exclusive: Gas infrastructure across Europe leaking planet-warming methane; Reuters; https://www.reuters.com/business/environment/exclusive-gas-infrastructure-across-europe-leaking-planet-warming-methane-video-2021-06-24/

[3] https://www.globalmethanepledge.org/

the barriers please see the respective assessment sheet on the CCQI website). For each scenario an assessment is made on the likelihood of any of the barriers preventing it from being the likely course of action.

Table 1 Assessment of barriers impact on likelihood of different scenarios being the course of action

Barrier	Assessment and justification
Split incentives	Split incentives occur when the operator of the transmission and distribution lines is not the same as the owner of the gas. Operators will therefore not be able to monetize the gas that they save through more effective leak detection and repair programs. In cases where revenue streams from carbon credits cease to flow there is no further income that operators can generate by continuing the activity. The impact on the likelihood of the scenarios is assessed as follows: Scenario 1: This barrier is deemed likely to hinder scenario 1. It is unlikely that an operator will continue with the activity at the same scale as initially planned when there are no more revenues from carbon credits. Scenario 2: As this scenario only applies to cases where the operator of the transmission or distribution lines also owns the gas it is deemed unlikely that this barrier would hinder scenario 2 to be the likely course of action (as in this case project owners can still generate revenues by monetizing the gas savings achieved through leak detection and repairs). Scenario 3: The same applies as for scenario 1, however project operators still might pursue this scenario despite this barrier because they attach non-financial value to the activity e.g., demonstrating that the company pursues climate action. As this scenario has less costs than scenario 1 and due to the issue of diminishing returns (see below) operators might already have realized a large portion of the emission reductions at the point of market collapse it might still be attractive in some cases to continue the activity with a less frequent schedule. Scenario 4: This barrier does not constitute a hinderance for scenario 4
Diminishing returns	Advanced leak detection and repair projects face diminishing returns. As the first survey will achieve most of the emission reductions, this will be when large leaks will be detected for the first time. While the cost for additional surveys remains the same, their contribution to overall emission reductions will be less. Scenario 1: This barrier is deemed likely to hinder scenario 1. As the operator might have been able to realize a large portion of the emission reductions after the initial survey, there might be less incentives to continue a high frequency survey schedule, even in cases where the operator of the transmission and distribution lines and the owner of the gas are the same. Scenario 2: The same as in scenario 1 applies. It is likely that operators chose this scenario as a reaction to this barrier.

Barrier	Assessment and justification
	Scenario 3: The same as in scenario 1 applies. It is likely that operators chose this scenario as a reaction to this barrier. Scenario 4: This barrier does not constitute a hinderance for scenario 4
Lack of awareness about global warming impact of methane emissions	It is assumed that once a project has entered its implementation stage, project owners are aware about the impact of methane emission on climate change. Hence, it is unlikely that this barrier impacts any of the four scenarios.
Unfamiliarity with leak detection and repair technologies	It is assumed that once a project has entered its implementation stage, project owners are aware about available technologies. Hence, it is deemed unlikely that this barrier impacts any of the four scenarios.
Cost of capital and competing priorities	The cost of capital is not relevant for the assessment, as it is considered as sunk cost once a project has been implemented (see methodology for further details). The assessment of sub-criterion 1.1.4 has shown that the institutional framework that carbon credits provide, can contribute to operators attaching a higher priority to leak detection and repair projects as the independent verification of the emission reductions achieved enables them to make their climate action more transparent and credible. It is unlikely that this barrier will become relevant again once revenues from carbon credits cease to flow as even without these revenues operators can still use the participation in the carbon crediting program to verify their emission reductions. It is therefore deemed unlikely that this barrier impacts any of the four scenarios.
Upfront investment cost	This is a financial barrier and therefore not applicable for the assessment.

Step 6: The barrier analysis in step 5 shows that barriers are likely preventing scenario 1 to be the likely course of action. The barrier *split incentives* might also be relevant for scenario 3 (partial continuation due to a less frequent survey schedule). There might however be cases where operators continue with scenario 3 e.g., for reputational or other corporate strategic reasons that attach non-financial values to the activity (e.g.; as a means to showcase that the company is pursuing climate action). The assessment is therefore that scenario 3 might still be a likely course of action despite the barrier *split incentives*. Scenarios 2 and 3 (partial continuation) further are deemed to be likely courses of actions that operators might chose in response to the barriers of *split incentives* and *diminishing returns* that prevent scenario 1. As none of the barriers prevents scenario 4 (discontinuation of the activity) this scenario is equally plausible to be the likely course of action as are scenarios 3 and 4. Hence, as both continuation and discontinuation scenarios are plausible, no clear conclusion can be drawn on vulnerability and a score of 3 applies according to the methodology.