



## UNDERSTANDING CCQI SCORES

# Efficient Cookstoves

## Key CCQI findings

Emission reductions from projects supporting rural households to switch to an efficient stove for cooking are likely to be additional. Projects typically support poor households in developing countries, which would likely not be able to afford the high upfront costs of an efficient cookstove otherwise. High additionality risks exist for projects that support household in urban areas where efficient stoves are likely common practice.

A significant integrity risk lies with the methodologies used to quantify emission reductions. Due to their underlying assumptions and the permissible data, it is likely that emission reductions are overestimated substantially (by several hundred percent). Efficient cookstove projects have material non-permanence risks. Natural disasters in the surrounding forest areas could reverse the emission reductions that they achieve due to less fuelwood consumption.

One major advantage of the project type are its co-benefits. Projects support communities, particularly women, by reducing fuel costs, indoor air pollution, and freeing up time for other activities.

## What is this project type about?

Distribution of energy efficient fuel wood or charcoal cookstoves to households or institutions in developing countries, thereby replacing the use of less efficient cookstoves. The project type reduces emissions by reducing the use of non-renewable biomass.

## Carbon market background

Cookstove projects have been implemented under the carbon market for more than a decade. Historically, most project developers registered their projects with the Clean Development Mechanism (CDM) and the Gold Standard (GS). Starting in 2019, there is also an uptick in registrations with the Verified Carbon Standard (VCS).

Cookstove projects continue to draw interest, as they make up 15 percent of the project pipeline in the voluntary carbon market.<sup>1</sup>

<sup>1</sup> Source: University of California, Berkley (2022) [Voluntary Registry Offset database, v7.1](#).

## CCQI score summary

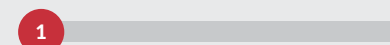
Additionality/Vulnerability



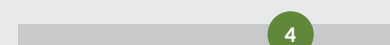
Quantification Methodologies



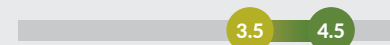
Non-permanence



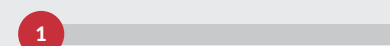
Compatibility with net zero



SDG Impacts



Double issuance due to indirect overlaps between projects



### Why do I see a range of scores for some quality objectives?

In these cases, scores differ between carbon crediting programs, quantification methodologies, countries or other circumstances. The range represents the spectrum that applies for all possible combinations.

## CCQI resources

- [CCQI Methodology & Definitions](#)
- [FAQ on our assessments](#)
- [Directory of assessment sheets](#)
- [Blogpost on efficient cookstoves](#)

[www.carboncreditquality.org](http://www.carboncreditquality.org)



# Main factors driving project type scores

## Additionality/Vulnerability



**Carbon credit revenues are likely to accelerate the market uptake of efficient cookstoves**

Here we assess the likelihood that the mitigation activity typically would not have taken place in the absence of the added incentive created by the carbon credits (additionality).

In cases where the market for the type of carbon credit has collapsed (e.g., CDM for some project types), we assess whether the mitigation activity typically is at risk of discontinuing greenhouse gas abatement without ongoing revenues from carbon credits (vulnerability).

### How do other project types score?



Graph shows the range of scores for nine project types assessed by CCQI.

Compared with other project types, the likelihood is high that carbon revenues have a substantial impact on overcoming barriers that hinder implementation of these projects. They typically support poor households in developing countries, which are likely not able to afford the high upfront cost of cookstoves, lack access to credit or working capital and are sometimes not familiar with the technology. Carbon credit revenues allow project developers to sell cookstoves at a reduced price or even distribute them for free. Project developers also use them for funding outreach, training and maintenance activities. While carbon credits might not be the only factor for the market uptake of efficient cookstoves, they are likely to accelerate their sale and use.

However, it is important to consider where projects are implemented. In urban areas, efficient cookstoves are far more likely to be common practice than in rural areas. This difference is also the main reason why you see the large range of scores for this project type.

## Quantification Methodologies

CDM AMS-II.G **1**  
Version 12.0

GS TPDDTEC **1**  
Version 3.1

**Emission reductions are very likely overestimated by a large margin**

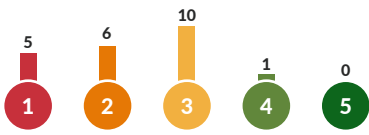
Carbon crediting programs adopt methodologies for calculating the emission impact of a project. The methodologies prescribe, inter alia, equations, data sources and monitoring approaches. Here we assess whether quantification methodologies mitigate overestimation risks by applying conservative approaches for estimating emission reductions.

Many projects use methodologies originating from the CDM (*AMS-II.G*) and the Gold Standard (*GS TPDDTEC*) to quantify emission reductions. We find that when applying the analyzed methodologies, it is very likely that emission reductions will be substantially overestimated, often by several hundred percent. This overestimation occurs due to the assumptions made for calculating emission reductions. These concern several parameters, the most important being the fraction of non-renewable biomass (fNRB) used in the cookstoves.





## How do methodologies for other project types score?



Graph shows the score distribution for all 23 quantification methodologies assessed by CCQI.

Biomass is non-renewable if the harvest rate in the region exceeds annual growth rates. The higher this factor is, the more surrounding forests are assumed to be depleted and the larger the calculated emission reductions. Applying the procedures prescribed in methodologies, most projects assume that 80 percent or more of collected firewood is non-renewable. Modelling results of independent researchers based on satellite data however suggest that a global average of 30 percent is more realistic. This discrepancy could lead to an overestimation by up to several hundred percentage points. In 2022, the CDM introduced a global default value of 30 percent, but its application is optional, allowing project developers to continue to calculate their own values. This often leads to an overestimation by several hundred percent. There are more parameters where faulty assumptions or poor data can distort the results, such as the amount of firewood households consume before the project is implemented, the actual usage and efficiency of the cookstoves, and others. **Research** indicates that Gold Standard's new Metered and Measured methodology may involve lower risks of overestimation. However, CCQI has yet to assess this methodology.

## Non-permanence

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**There is a material non-permanence risk that is unaddressed**

Non-permanence means that emission reductions or removals achieved by a project are later reversed, e.g., due to a natural disaster or project mismanagement.

We assess whether the project type has significant non-permanence risks.

For project types that do have significant non-permanence risks we assess the robustness of carbon crediting program provisions to address these risks.

Efficient cookstove projects aim to reduce the demand for non-renewable biomass, and thus preserve carbon stocks in forests or other land areas. Forests are, however, inherently in jeopardy of being destroyed or degraded, and thus releasing the stored carbon back into the atmosphere, for example through land conversion or wildfires. Therefore, there is a material non-permanence risk. None of the major carbon crediting programs (CDM, GS, VCS) currently addresses this risk.

## How do other project types score?



Graph shows the range of scores for nine project types assessed by CCQI.





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## Compatibility with net zero

**Efficient cookstoves are a technology that generates emission reductions, but methodologies do not prescribe using best available technology**

Here we assess whether the technology or practices applied by the project type facilitate the transition towards net zero emissions.

### How do other project types score?



*Graph shows the range of scores for nine project types assessed by CCQI.*

Efficient cookstoves reduce the consumption of biomass and can thereby reduce deforestation and forest degradation. There are, however, different stove models whose energy efficiency differs substantially. Quantification methodologies usually define stove models that are eligible for carbon crediting projects. Our assessments find that the stove models referred to in the methodologies are not necessarily the best available technology.

## SDG Impacts

3.5

4.5

**Efficient cookstoves have many social and forest-related benefits**

Here we assess whether the project type contributes to the achievement of the Sustainable Development Goals (SDGs).

Note that projects implemented in Small Island Developing States (SIDS) and Least Developed Countries (LDCs) receive an upgrade to the score by one point due to the special circumstances of these countries.

### How do other project types score?



*Graph shows the range of scores for nine project types assessed by CCQI.*

Efficient cookstoves increase energy efficiency. Their use improves access to adequate and safe housing and basic services (cooking) while reducing energy poverty by making cooking more affordable. The project type contributes to reducing local deforestation and habitat degradation by reducing demand for fuelwood and charcoal. Efficient cookstoves particularly benefit women, as they are mainly responsible for preparing food in developing countries. They profit from a significant reduction of household indoor air pollution compared to traditional stoves. As efficient cookstoves consume less fuelwood, women spend less time for wood collection, freeing time for other tasks (e.g., pursuing education or taking on occupational opportunities). Where cookstove production takes place in the project areas, the projects also create income and job opportunities along the stove value chain. For households that rely on buying fuelwood or charcoal for cooking, efficient cookstoves reduce fuel expenses.





## Double issuance due to indirect overlaps between projects

1

### Carbon crediting programs might accidentally issue credits for the same emission reductions to cookstove projects and forest projects

Here we assess whether the project type has low risks to overlap with other project types in the carbon market.

For project types where we identified a high risk, we also assess if carbon crediting programs have robust provisions in place that avoid that the same credit is issued twice for the same emission reduction in the case that two projects.

#### How do other project types score?



Graph shows the range of scores for nine project types assessed by CCQI.

The risk of double issuance due to indirect overlaps between projects is oftentimes overlooked for cookstove projects. Double issuance can happen when a cookstove and a forestry project operate in the same area. The cookstove project reduces the use of non-renewable biomass and thereby preserves carbon stocks in surrounding forest areas. If a project to reduce deforestation or improve forest management is implemented on the same forest area, it might claim the same emission reductions.

None of the assessed carbon crediting programs (CDM, GS, VCS) applies systematic checks for identifying and avoiding overlaps between efficient cookstove and other carbon market projects.





## Starting points for further due diligence

This factsheet summarizes key risk factors for the quality of carbon credits from this project type, as identified in CCQI's detailed assessments. Individual projects might outperform any of our scores by making project-design choices that mitigate these risks. CCQI scores therefore do not apply to individual projects. They can however inform further due diligence when assessing the quality of individual projects. Questions to ask might include:

- Is the project implemented in a rural or an urban area? Is it common practice in the area? If it is implemented in urban areas or common practice, the project might have high additionality risks.
- Does the project assume a fraction of non-renewable biomass that is backed by independent scientific literature for the respective region?
- Are the values selected for other parameters when calculating emission reductions consistent with conservative default values, as provided by the methodology, or does the project use significantly less conservative values?
- Does the project area overlap with a forestry project? If yes, do both projects take measures to avoid the risk of double issuance?
- Do the stoves used under the project represent best available technology?
- Does the project have a robust (preferably electronically measured) approach to collect information on actual stove usage?

For assessments of specific projects, you may contact specialized rating agencies such as [BeZero](#), [Calyx Global](#) or [Sylvera](#).



[www.carboncreditquality.org](http://www.carboncreditquality.org)

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## About CCQI

The Carbon Credit Quality Initiative (CCQI) was established to provide free, transparent information on the quality of different types of carbon credits, enabling users to understand what types of carbon credits are more likely to deliver actual emission reductions as well as social and environmental benefits.

CCQI was founded and is managed by Environmental Defense Fund (EDF), World Wildlife Fund (WWF-US) and Oeko-Institut, a leading European research and consultancy institution working for a sustainable future. Scores published by CCQI are derived from applying the CCQI assessment methodology. The assessment is led by Oeko-Institut, with support from experienced carbon market experts from Carbon Limits, Greenhouse Gas Management Institute (GHGMI), INFRAS and Stockholm Environment Institute (SEI). Draft results are reviewed by the full CCQI team before public release. All experts involved in CCQI have deep expertise in carbon markets and are not employed by project developers or carbon crediting programs.

*This factsheet was commissioned by*



[www.allianz-entwicklung-klima.de](http://www.allianz-entwicklung-klima.de)

## How does CCQI assess quality?

CCQI assesses quality aspects of different types of carbon credits. The following main features define a type for our assessments:

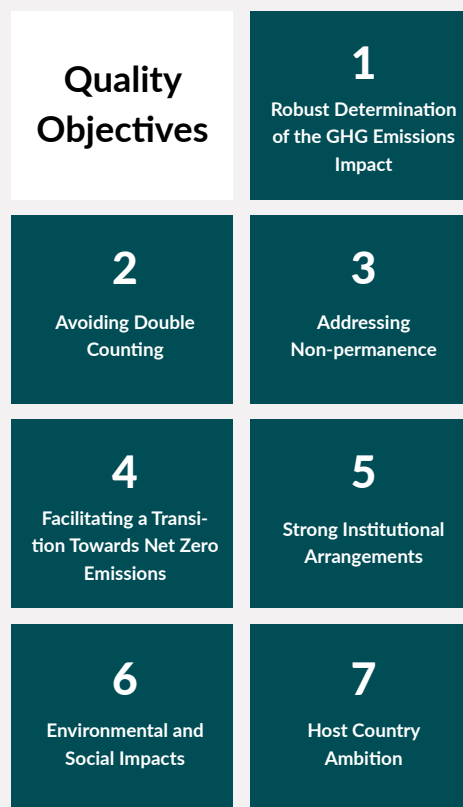
- The type of project (e.g., landfill gas utilization)
- The carbon crediting program (e.g., Verified Carbon Standard)
- The quantification methodology used to estimate emission reductions for the project activity
- The country in which the activity takes place

We assess each type against several criteria, sub-criteria and indicators that are clustered around seven quality objectives.

Each assessment follows our publicly available methodology.

In this factsheet we present results for selected quality objectives, criteria and sub-criteria whose scores depend primarily on characteristics of the type of project.

To see how this project type scores against all our criteria, explore our scoring tool.



VISIT CCQI SCORING TOOL

[www.carboncreditquality.org/scores.html](http://www.carboncreditquality.org/scores.html)



## How to interpret CCQI Scores?

Our scores use an interval scale from 1-5, with 5 representing the highest score.

Scores are risk-based and indicative of the confidence or likelihood that the assessment subject meets the quality objective.

We do not provide an aggregated score for types of carbon credits to provide users with a nuanced picture on different quality aspects.

### CCQI Score Scale

Level of confidence that the assessment subject meets the criterion or quality objective

