Global Artisan C-Sink -
Clarification for Methane Emission Avoidance and Compensation

Methane compensation is a critical component of the Global Artisan C-Sink standard due to the urgent need to address the accelerating impacts of climate change. As one of the most potent greenhouse gases, methane possesses a global warming potential that is approximately 86 times greater than that of carbon dioxide (CO_2) over a 20-year period. This stark difference underscores the necessity of mitigating methane emissions to effectively manage climate change.

This document aims to provide further clarification on the corresponding chapter in the Global Artisan C-Sink standard and includes a flow chart outlining the most commonly used types of biomasses for projects. Additionally, it will explain the implementation of using the semi-persistent carbon (SPC) fraction from other projects and details the entries in the Global C-Sink Registry.

The recommended approach is for the C-Sink Manager to first seek approval for methane emission avoidance from either the avoidance of crop residue burning or biomass decomposition for each eligible feedstock. For feedstock that does not receive methane avoidance approval, methane emissions must be first compensated using its internal SPC fraction (CINK20). If the available internal SPC fraction (CINK20) is not sufficient, external SPC fraction (CINK20) from another project in the registry must be obtained. When both internal and external SPC fraction (CINK20) are exhausted, growing additional biomass must be used to compensate for the remaining methane emission.

1. Common Baseline Scenarios

Since the implementation of the Global Artisan C-Sink (with Version 1 published in October 2022), various feedstocks and types have been utilized by different Artisan C-Sink Managers.

Drawing from this knowledge and experience related to requests for methane emission compensation and their approval, the following baseline scenarios represent the most common cases. These baseline scenarios will indicate which feedstocks or scenarios are most likely to receive approval for methane compensation schemes and which are less likely to be approved.

It is also important to note that the comparison to a baseline cannot be made for an undefined future. When considering avoidance, the comparison can be a maximum of 10 years, depending on the specific case.

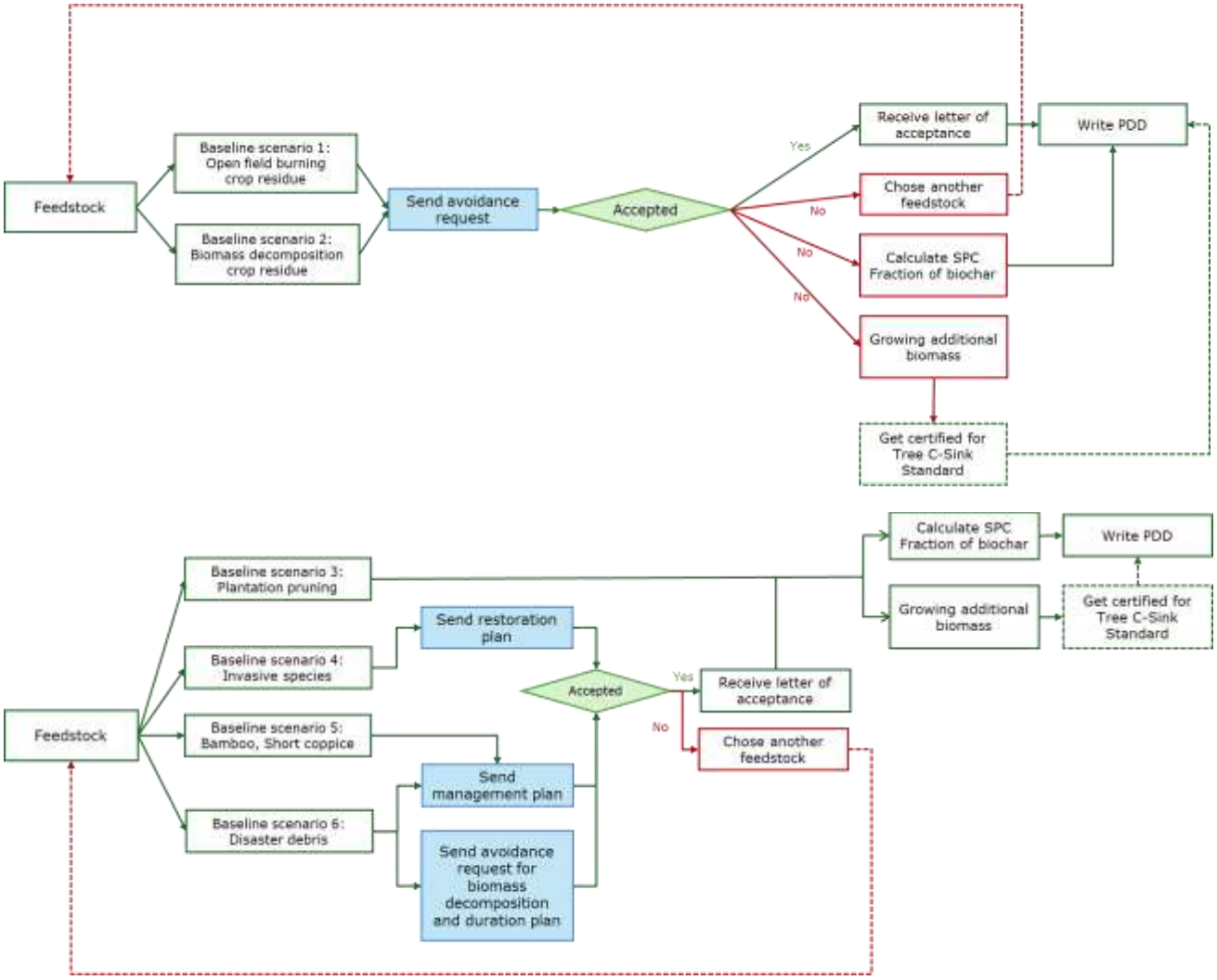


Figure 1. Usual baseline scenario *of feedstock and its additional requirements.*

2. Avoiding GHG Emissions from Burning Crop Residues and Biomass Decomposition

As mentioned in the Global Artisan C-Sink in chapter 14.6, crop residues are burnt directly in the fields in many tropical countries. While it has some positive effects on farming (ash fertilization, some pyrogenic carbon, elimination of pests), emissions of such practices are massive. Besides significant emissions of particulate matter that cause smog (the main reason for air pollution), methane and carbon monoxide emissions are very high due to the uncontrolled combustion of mostly wet or humid residues.

Based on the published data summarized in the Global Artisan C-Sink Standard, it is assumed that the overall climate impact of pyrolysis within Global Artisan C-sink is in any case not worse than direct burning of crop residues in the field. Therefore, abandoning crop residue burning can be accounted as an offset for emissions of Kon-Tiki-pyrolysis within the limits specified below.

While this methane compensation scheme can be requested by any Artisan C-Sink Manager and for any feedstock, certain types are more likely to gain approval. Examples of feedstocks that are more likely to be approved include corn cobs, stalks (such as those from cotton or corn), as well as cocoa cobs. Conversely, feedstocks such as invasive species or various forms of pruning (e.g., from coffee or other plantations) are less likely to receive approval.

The avoidance request must be submitted to Carbon Standards International before the validation of the PDD begins to minimize waiting time and prevent duplicate work. For example, if the avoidance is not granted and a different feedstock is selected by the Artisan C-Sink Manager, it could lead to delays.

2.1. Request submission

A single feedstock may only be assigned to one avoidance pathway, either avoidance of open field burning or avoidance of biomass decomposition, not both. If both baseline scenarios occur at the same location, the dominant scenario must be selected.

A request must be submitted officially, including the date, project ID (GSCPxxxx), company logo, page number and the signature of the Artisan C-Sink Manager, in pdf. The request should address at least the following aspects:

- Name of the feedstock (Local/ English and Latin).
- Current Practice: Describe the existing practice of burning crop residues after harvest.
- Effect on Environment/Health: Detail the environmental and health impacts caused by burning, such as air pollution, greenhouse gas emissions, and respiratory issues.
- With Biochar Intervention: Explain how biochar can be used as an alternative, its role in improving soil health, sequestering carbon, and reducing harmful emissions.
- Justification for Avoidance: Provide a rationale for granting avoidance, focusing on the long-term benefits to environmental sustainability, public health, and climate change mitigation.
- Pictures.
- Example for a farmer declaration: Please find the template here.

3. Offsetting Methane Emissions with the SPC-fraction of Biochar

The global warming effect of methane emissions caused by a Kon-Tiki or TLUD can be partially offset by the global cooling effect of the semi persistent carbon (SPC) fraction of biochar during the first 20 years.

To ensure correct compensation, the annual global cooling of the SPC over 20 years must be equal to the Accumulated Global Warming Potential of methane emissions over 100 years (AGWP100). This 20-year averaged SPC fraction is referred to as **CINK20**, which can be used to compensate for methane emissions (Figure 2).

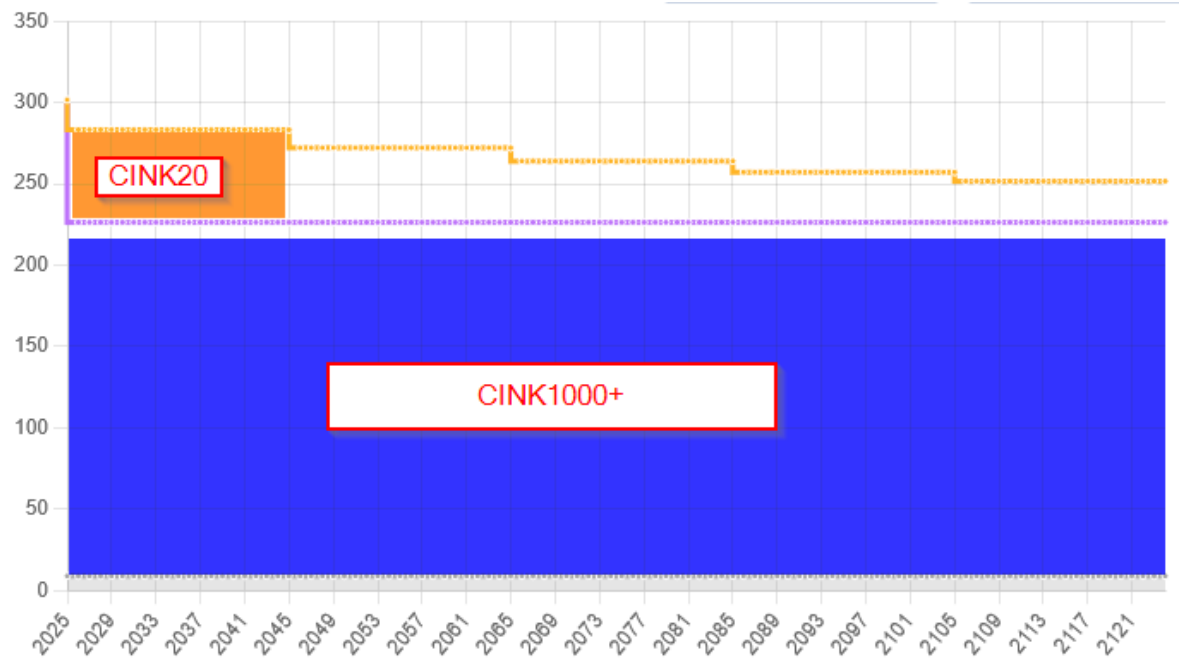


Figure 2. Visualization of CINK20 and CINK1000+*. The y-axis represents issuance (t CO_2e), and the x-axis represents time. Orange lines illustrate semi persistence carbon (SPC) decaying throughout the year, while the purple line represents long-term persistence over 1000+ years (PAC). The orange box labeled CINK20 indicates the fraction available for methane compensation for this batch.*

In most cases, CINK20 from biochar is not sufficient to fully compensate the methane emission from the project. Therefore, additional CINK20 must be sourced from other registered biochar C-sinks in the Global C-Sink Registry.

When using third-party C-sinks, a contractual agreement is required. The corresponding SPC shares must be formally retired before use. This process aligns with the procedure for retiring a permanent carbon sink.

To determine how much of SPC fraction available in the batch, CSI Calculator should be used. This tool calculates both Absolute Global Warming Effect (AGWE100) of emitted Methane over 100 years and the proportion of Absolute Global Cooling Effect (AGCE20) from the SPC fraction available in the batch.

The important conversion rate can be found below:

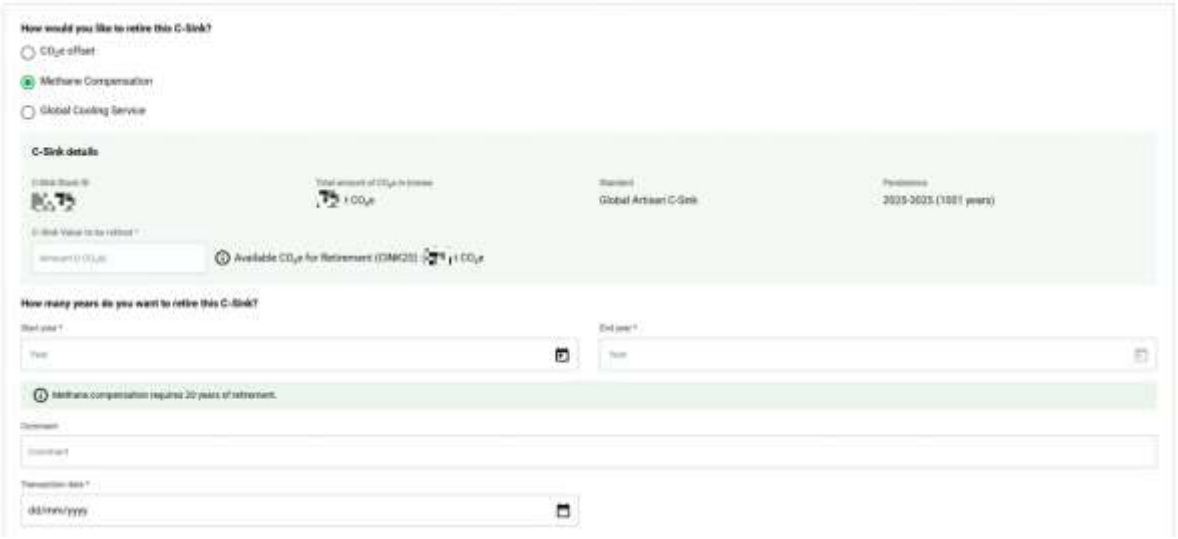
Important conversion rates:
- 1 t CH4 = 1270 t ACO2 of AGWP
- 1 t CH4 = 110.81 t CO2e SPC
- 1 t CH4 = 83.74 t CO2e CINK20
- 25% SPC averaged over 20 years of SPC decay result in 18.89316% CINK20

3.1. CINK20 Transfer from Another Project in the Registry

In many cases, the internal CINK20 available within a project is not sufficient to fully compensate for methane emissions. In such cases, additional external CINK20 must be sourced from another registered project.

The retirement of external CINK20 can only be carried out by an endorsed C-Sink Trader to ensure proper traceability and retirement within the Global C-Sink Registry. The required steps are listed below:

1. In the C-Sink Tool, C-Sink Manager needs to assign a C-Sink Trader. Once C-Sink Trader is assigned, C-Sink Trader will be able to retire the C-sink on behalf of C-Sink Manager. This includes retiring CINK20 for methane compensation.
2. C-Sink Trader select the corresponding C-Sink Unit in the C-Sink Tool.
3. Select the required amount of CO_2e and choose "Methane compensation."
4. Pick the start year the end year will be filled in automatically.



5. Enter the beneficiary details as shown in the screenshot below, only replace the placeholders. C-Sink Trader must fill out the respective fields for the beneficiary as shown below, in case retirements from other entries in the Global C-Sink Registry are required. The information between #...# should be adjusted to align with the Artisan C-Sink Manager and the specific project. Please be careful with the "Reason for retirement" and state the correct information: "Compensation for methane emissions for C-Sink Unit #external Stock ID# and #ProjectGCSPxxxx#".

6. A certificate of retirement will be issued and shall be submitted to VVB for C-sink verification.

4. Methane Emissions Compensation by Growing Additional Biomass

To offset methane emissions, the Global Artisan C-Sink accepts the planting of trees to create forest gardens on fallow land, silvo-pastures on pastures, agroforestry on annual and perennial crop land, re- and afforestation. Replacing existing older trees in a tree-crop or forest garden cultivation cannot be accounted for methane offsets. However, the active management of natural regeneration of eroded, deforested steppe land where natural regrowth of trees is promoted through measures such as scrub removal, weeding, irrigation, pruning, etc., and can equally be accepted for methane offsets.

A prerequisite for counting tree plantings toward methane offsets is that they are verified according to the Global Tree C-Sink Standard. In order for the relevant carbon sinks to be utilized, they must be verified and listed in the registry; the underlying project must therefore have already been successfully validated and verified.

If, for resource-related reasons, it is not possible to plant one's own biomass, Tree C-Sinks may also be purchased from third parties in exceptional cases. A prerequisite for this is prior approval by CSI as well as proof that the purchased sinks originate from a project that has already been verified according to the Tree C-Sink Standard.

For more information, please book an introduction call with Global Tree C-Sink Standard.
