Guidelines for green steel upon the application of the mass balance approach

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1. Outline

JISF proposes green steel upon the application of the mass balance approach. This is a method of pooling greenhouse gas (GHG) emission reductions or CO_2 emission reductions from emission reduction projects with additionality implemented by companies, allocating the reductions to any product, and supplying steel products with certificates that are capable of reducing customers' Scope 3 emissions.

This method consists of three steps. First, calculate the GHG emissions intensity of the specific steel products applying this method. Second, identify GHG emission reduction projects and determine their GHG emission reduction amounts. Third, issue reduction certificates not to exceed the total GHG emission reduction amounts and supply steel products with reduction certificates. All steps must be verified by third-party certification body.

This document clarifies the concept and the common rules of the method.

2. Why is JISF proposing green steel applying the mass balance approach?

JISF support's Japanese government's ambitious policy of achieving carbon neutrality by 2050 and will aggressively take on the challenge towards carbon neutrality. At the same time, customers are moving toward low-carbon and decarbonization throughout the supply chain, and steel companies are expected to respond to these needs.

However, many of the technologies for decarbonizing the steel manufacturing process are still in the long-term development stage, making it technically difficult to immediately supply steel products with significantly lower or zero GHG emissions intensity at this time. This is a common challenge worldwide. Nevertheless, there is a growing demand for steel supply with reduced emissions from a wide range of domestic and international customers. During the long and difficult decarbonization transition period of the steel industry, the mass balance approach is an important solution to exchange emissions reductions with economic value, enabling priority supply of green steel to customers who appreciate the value of the reductions. Many steel companies are beginning to adopt green steel brands or concepts upon the application of the mass balance approach.

JISF also positions the supply of green steel upon the application of the mass balance approach as an extremely important initiative in the transitional phase of the green transformation, to respond quickly and accurately to customer needs and to ensure a continuous investment cycle for the development and implementation of decarbonization technologies.

3. Calculation of GHG emissions intensity for steel products

1) Methodology to be applied

Calculate GHG emissions intensity without recycling effect of scrap complying with the methodology of ISO 20915 standard (JIS Q 20915: Life cycle inventory calculation methodology for steel products). GHG emissions intensity calculated for EPD (Environment Product Declaration) or that specially calculated for this purpose are used, but both are values from

which the reduction effect of the GHG project has been excluded. CO_2 emissions intensity may also be used as emissions intensity.

2) Requirements

(1) Use of actual data

The calculation uses actual data complying with ISO 20915 standard (JIS Q 20915). It is also possible to use data excluding the impact of reduction projects.

(2) Time-related coverage

In accordance with the ISO 20915 standard (JIS Q 20915), primary data should be within 5 years of the year of calculation and secondary data should be within 10 years. If older data is used, it should be clearly stated that the data is still valid and currently usable.

(3) Geographic coverage

In the calculation of GHG emissions intensity for steel products, product-specific manufacturing processes are used as a geographic boundary. Alternatively, GHG emissions intensity for steel products is calculated as an average value of an organization.

(4) Breakdown of GHG emissions intensity

The type of GHG gases included in the calculation results of the GHG emission intensity of steel products should be clarified.

3) Obtaining third-party certification

The calculation should be verified and certified by a third-party certification body based on the ISO 20915 standard (JIS Q 20915).

4. Calculation of GHG emission reductions

1) Methodology to be applied

Calculate GHG emissions reductions of the emissions reduction projects complying with the methodology of ISO 14064 standards (greenhouse gases). CO_2 emissions may also be used instead of GHG.

GHG emissions reductions from reduction projects are calculated based on how much GHG emissions have improved over a given time period after the application of the reduction projects, relative to the status before the application of the reduction projects (pre-application condition). The pre-application condition can be either actual results (referring to ISO 14064-1 standard) or a baseline or other method that can properly evaluate the pre-application condition (referring to ISO 14064-2 standard).

2) Requirements

(1) Requirements of emissions reductions projects

All of the following requirements (i) through (iii) must be met.

(i) Must be reduction projects within the organization

Reduction projects should, in principle, be implemented within an organization, provided that the project is planned by the organization itself, incurs additional costs, and is carried out responsibly under a consistent framework. In addition, activities of subsidiaries/affiliates, etc., where the organization has sufficient control over the management of those companies, may be included.

(ii) Projects must fulfill “additionality” requirements

A project with additionality refers to a project that would not be viable without the objective of GHG emissions reductions and additional economic benefits, such as the sale of certificates for the value of emission reductions.

Examples of projects with additionality include

- Projects with technical innovations
- Projects must meet criteria such as J-Credit Scheme, which are set by governments or public authorities for the same purpose as additionality. (Reference: For example, the J-Credit Scheme require that the payback period for a project is at least three years and that running costs increase after project implementation.).

(iii) Actual reductions must be reasonably calculable

GHG emissions reductions from a project can be calculated as the improvement in GHG emissions over a certain time period after the project is applied, based on the pre-application status of the project. It is necessary that the functions and boundaries before and after the application of the project are equivalent, and that each is reasonably calculated, as verified and certified by a third-party certification body.

When using a methodology that alternatively assess pre-application conditions such as baselines, the establishment of baseline emissions must be transparent, quantitative, and conservative in terms of the selection of key factors such as approach, methodology, parameters, and data sources, and must be verified and certified by a third-party certification body.

(Reference information)

The Ministry of Economy, Trade and Industry (METI) has developed the technology roadmap for transition finance in the steel sector to provide specific transition directions toward achieving carbon neutrality in 2050 in certain industrial sectors, including steel. The roadmap includes a list of "low-carbon and decarbonization technologies for carbon neutrality.

(2) Time range of reduction project

(i) Certification period

- The period covered by the certification is the period during which the reduction project is viable, i.e., the period during which internal credits can be generated.
- The start date of the reduction project is allowed to be applied back to 2013 if the requirement in 4.2) (1) is maintained. However, the generation of internal credits is only allowed up to the reduction effect of the previous year in which the verification is carried out.
- Conditions of 4. 2) (1) (i) through (iii) are the requirements for the continuation of the reduction project. Confirmation of the requirements of the reduction project should be made for each of its emission reduction certifications. Projects must be terminated when it becomes clear that one of the respective requirements is not met.

(ii) Calculation period

- The calculation period refers to the data period used to calculate GHG emissions reductions of a reduction project.
- The calculation period can be arbitrarily set for 3 months, 6 months, 1 year, etc., but the maximum period is 1 year.

(iii) Expiration date of internal credit

- The expiration date of internal credits should be arbitrarily set and properly managed.

3) Calculation of GHG emissions reductions

GHG emissions reductions from a reduction project should be calculated based on the GHG emission reductions before the application of the reduction project and how much GHG emissions have been improved during the calculation period in 4.2) (1) (ii) after the application of the reduction project.

In doing so, GHG gas types included in the GHG emissions reduction calculation results should be clarified.

4) Management of multiple reduction projects

If multiple reduction projects are implemented within the same time period, their effects may be cumulated. However, GHG emission reductions should be calculated so as not to double-count the effects of multiple reduction projects.

5) Obtaining third-party certification

Calculation results should be verified and certified by a third-party certification body.

5. Supply of steel products with reduction certificates

1) Methodology to be applied

Refer to the methodology specified in 5.4.2 Mass balance model of the ISO 22095 standard. GHG emission reductions correspond to the 3.2.5 specified characteristic of the ISO 22095 standard and are subject to allocation.

GHG emission reductions to be allocated are separated from the manufacturing process, pooled and managed within the organization, and allocated to any products. Products should be supplied with a certificate of the emission reductions and a document stating the GHG emission intensity of the steel products as calculated in 3. Calculation of GHG emissions intensity for steel products.

Customers who purchase "Green steel upon the application of the mass balance approach" can reduce their company's Scope 3 emissions equivalent to the amount of the certificate. The reduction certificates by themselves should not be distributed in the market.

2) Requirements for internal management of emissions reductions

(1) Account setup and management

An account is used to accumulate and manage the emissions reductions from a reduction project as calculated in 4. Calculation of GHG Emission Reductions.

In the account, appropriate control should be made over the balance between the reductions from the reduction project and the reductions allocated to steel products, as well as the expiration date of the reductions as specified in 4. 2) (2) (iii) Expiration date of internal credits.

(2) Calculation period

Refer to 4. 2) (2) (ii) Calculation period

(3) Allocation period of emission reduction effect

Refer to 4. 2) (2) (iii) Expiration date of internal credits

(4) Geographic boundary

Since GHG emission reductions are calculated and accumulated within an organization, they can be assigned to any steel product manufactured within the same organization, even across sites.

3) Emissions reduction allocation (Issuance of certificates)

(1) Allocation method

Organizations may issue certificates with GHG emission reductions withdrawing from the GHG emission reductions accumulated in the account and link them to any steel products by using a mass balance approach. However, GHG emissions reductions exceeding the total amount of reductions accumulated in the account cannot be allocated, nor can certificates be issued.

Also, the GHG gas type of allocation should be clarified.

(2) Maximum allocations of emissions reductions to steel products

No more GHG emissions reductions must not be allocated to steel products than their GHG emissions intensity.

The maximum emission reductions that can be allocated to the steel product is the GHG emissions intensity corresponding to the scope of the reduction project calculated in 4. Calculation of GHG emission reductions.

For example, the reductions from a project associated with the organization's Scope 1 and 2 emissions can only be allocated up to the amount corresponding to Scope 1 and 2 of the GHG emissions intensity of steel products (in the case of EPD, the value of the items listed as production process, etc.).

(3) Handling of steel products to which reductions are not allocated

When EPDs etc. are used as GHG emission intensity of steel products, the emission intensity calculated after the application of this method includes the effect of the reduction project. Therefore, double counting of reduction effects must be appropriately prevented.

As a way to do so, for example, steel companies could take the following actions

- Make it known that EPDs of steel products without emissions reduction allocation cannot be applied to the customer's Scope 3 emissions and that if they are applied, a correction value should be used.
- Terminate the application of the mass balance approach to the project after updating GHG emission intensity of steel products.
- Use the actual value if a process equivalent to the baseline exists.

4) Obtaining third-party certification

Internal management and allocation of GHG emission reductions should be verified and certified by a third-party certification body.

6. Others

Organizations should notify their customers that they cannot use GHG emissions shown in EPDs when calculating customers' Scope 3 emissions associated with steel products, and should present the appropriate GHG emissions separately.

Annex I Terms and Definitions

1) Steel products:

A steel product sold to customers

Examples of steel products: Hot-rolled sheets, heavy plates, sections, bars, wire rods, cold-rolled sheets, hot dipped galvanized sheets, electro-galvanized sheets, welded pipes and tubes, forged pipes, seamless pipes, stainless steel, titanium, transportation equipment (rails, wheels, etc.)

2) Organization:

A boundary of an activity is defined as a single company. Decisions about manufacturing activities are made in a consistent manner within an organization. An organization can have more than one steel mill and two or more steel mills can manufacture a steel product with the same specifications. An organization does not include affiliated companies or other companies within the same group. However, two different companies operating on the same premises under the same governance can be regarded as one organization.

In addition, when two or more steel mills are producing an identical steel product, the steel product can be defined by using a weighted average based on the production volume of each mill.

3) Internal credits:

Certifications of GHG emission reductions verified by a third-party certification body for internal management purposes. The certificates will be used only for internal management of GHG emissions reductions and will not be sold as internal credits alone.

In contrast, "external credits" refer to certificates of emissions reductions outside the organization, which are not used in this mass balance approach.

4) Mass balance approach:

A method of assigning specified characteristics of input materials to outputs/products when mixing raw materials with different characteristics, in general.

The steel industry utilizes the mass balance approach in the form of pooling GHG or CO_2 emission reductions from reduction projects within the organization and allocating the reductions to any product to be supplied along with certificates.

5) EPD (Environment Product Declaration):

A "Type III Environmental Label" in accordance with ISO 14025, an environmental program that provides quantitative disclosure of the environmental impact of a product or service throughout its life cycle, from procurement of raw materials to disposal and recycling.

6) GHG (Green House Gas):

Gases that absorb infrared radiation and emit it back to the earth's surface, thereby warming the atmosphere near the earth's surface.

Note: GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6).

7) Scope 1, 2, and 3 (GHG protocol):

Scope 1 refers to the direct emissions from an organization's owned operations. Scope 2 refers to indirect emissions from purchased electricity, steam, heating, and cooling. Scope 3 refers to all other indirect emissions generated throughout an organization's value chain. See the GHG Protocol for more details.

8) Boundary:

Activity limits used to calculate the GHG emission intensity of steel products, GHG emission reductions, and assign emission reductions to any steel products.

Revision History

Version	Date of issue
Version 1.0	September 29, 2022
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