Fuji Electric
Innovating Energy Technology

# Fuji Electric
# Carbon Footprint of Products
# Procurement Guidelines

## Version 1.0

**October 2026**

**Fuji Electric Co., Ltd.**

# Introduction

Japan has set a goal of achieving carbon neutrality by 2050. To this end, it is important to reduce greenhouse gas (GHG) emissions not only at the individual company level, but across the entire supply chain. To reduce emissions, we must build a market that encourages customers to select decarbonized and low-carbon products (green products). As a foundation for such a market, it is crucial to establish mechanisms for visualizing GHG emissions per product (Carbon Footprint of Products, or CFP below).
In recent years, companies have been seeking ways to assess supply chain emissions in greater detail, monitor the results of reductions in emissions, and visualize efforts to reduce GHG emissions.

These guidelines are intended to help our business partners understand our decarbonization activities under Environmental Vision 2050, which we are implementing with the aim of achieving carbon neutrality. They also outline our requests to business partners to cooperate in CFP measures in terms of visualizing GHG emissions from business activities.
We ask our business partners to understand the purpose of these guidelines, agree to and implement them, and work with us to advance decarbonization efforts.

# Fuji Electric Purchasing Policy

Our procurement activities are guided by the principle of fair business dealings. As such, we seek a wide range of business partners all over the world who are competitive in terms of quality, pricing, delivery time, and services, and who are conscious of CSR. We are committed to maintaining and improving cooperative relationships with all business partners by building better partnerships and deepening mutual understanding through fair and equitable business dealings based on nondiscriminatory, free competition inside and outside of Japan.

# About These Guidelines

These guidelines are based on the Fuji Electric Corporate Code of Conduct, the Basic Environmental Protection Policy, and the Fuji Electric Purchasing Policy and have been compiled with reference to international standards such as ISO 14047 and the Greenhouse Gas Protocol. They cover the CFP measures for we seek our business partners' cooperation, including specific practices and examples.

- Fuji Electric Corporate Code of Conduct
  https://www.fujielectric.com/about/corporate/philosophy.html
- Basic Environmental Protection Policy
  https://www.fujielectric.com/csr/global_environment/
- Fuji Electric Purchasing Policy
  https://www.fujielectric.com/csr/social/supply_chain/procurement.html
- Environmental Vision 2050
  https://www.fujielectric.com/csr/global_environment/environment01/management_02_02.html
- ISO14067:2018
  https://www.iso.org/standard/71206.html(Not free)
- The Greenhouse Gas Protocol - A Corporate Accounting and Reporting Standard - Revised Edition
  https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf
- GHG Protocol Scope 2 Guidance
  https://ghgprotocol.org/scope-2-guidance

These guidelines will be revised as necessary in the future, taking into account the actual usage status of companies engaged in CFP efforts and the progress of discussions on international standards and guidelines.

# Requests to Business Partners

We ask our business partners to understand and agree to actively advance their decarbonization efforts.
In accordance with these guidelines, our requests are as follows. We appreciate your cooperation.

1. Efforts to reduce GHG emissions
2. Sharing information by providing responses on environmental matters in the CSR procurement self-assessment (efforts to reduce GHG emissions, status of CFP efforts, etc.)
3. Presenting CFP data for delivered products according to our requirements

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# I. Terminology

(1) CFP
Stands for “Carbon Footprint of Products.” This refers to figures displayed on products, or the system for displaying such figures, indicating GHG emissions throughout the entire life cycle of a product or service, from raw material procurement to disposal and recycling, converted into $CO_2$ emissions.

(2) GHG
Stands for “greenhouse gases,” which are types of gases that influence climate change. They can be either manmade or natural and are found in the atmosphere. They absorb and emit radiation at specific wavelengths in the infrared spectrum emitted by the Earth's surface, atmosphere, and clouds.

(3) GWP
Stands for “global warming potential.” It refers to the intensity of the greenhouse effect of a given greenhouse gas relative to that of $CO_2$.

(4) Cradle to Grave
Referring to all stages of the life cycle, encompassing raw material procurement to production, distribution, sales, use/maintenance, and disposal/recycling.

(5) Cradle to Gate
Refers to only the raw material procurement to production stages of the life cycle, which encompasses raw material procurement, production, distribution, sales, use/maintenance, and disposal/recycling.

(6) Cut-off criterion
Refers to the quantity of material or energy flows excluded from an investigation, or the criteria and requirements used to make decisions on the exclusion of specific unit processes or product systems.

(7) PCR
Stands for “product category rules.” Refers to rules and requirements for the development of a Type III environmental or CFP declaration for a product category.

(8) LCA
Stands for “life cycle assessment.” Refers to the compilation and assessment of inputs, outputs, and potential environmental impacts throughout the life cycle of a product system.

(9) EPD
Stands for “environmental product declaration.” This refers to an environmental declaration that communicates information about a product’s environmental impact. It serves as a framework for the environmental impact of a product throughout its life cycle to be quantitatively calculated and verified by a third-party organization (based on ISO 14025).

(10) Scope1

Refers to direct GHG emissions produced by companies and organizations due to fuel combustion and product manufacturing (Figure 1).

(11) Scope2

Refers to indirect GHG emissions resulting from the use of electricity, heat, and steam supplied by other companies.

(12) Scope3

Refers to GHG emissions from the upstream (procurement of raw materials and parts, etc.) and downstream (use and disposal of products, etc.) of a company's supply chain when it sells goods or services.

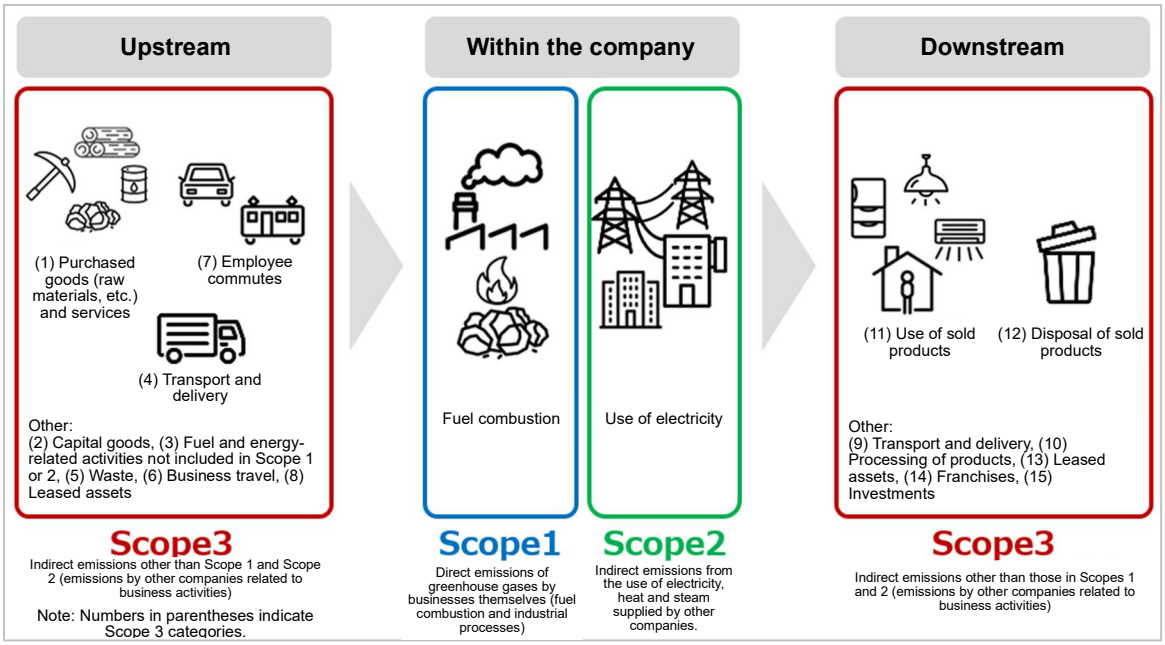



Figure 1. Scope 1, 2, and 3

# II. Significance and Purpose of CFP Efforts

## 1. Significance and Purpose of CFP Efforts

CFP is calculated by converting GHG emissions at each stage of a product's life cycle into $CO_2$ emissions and aggregating them for each product (Figure 2).

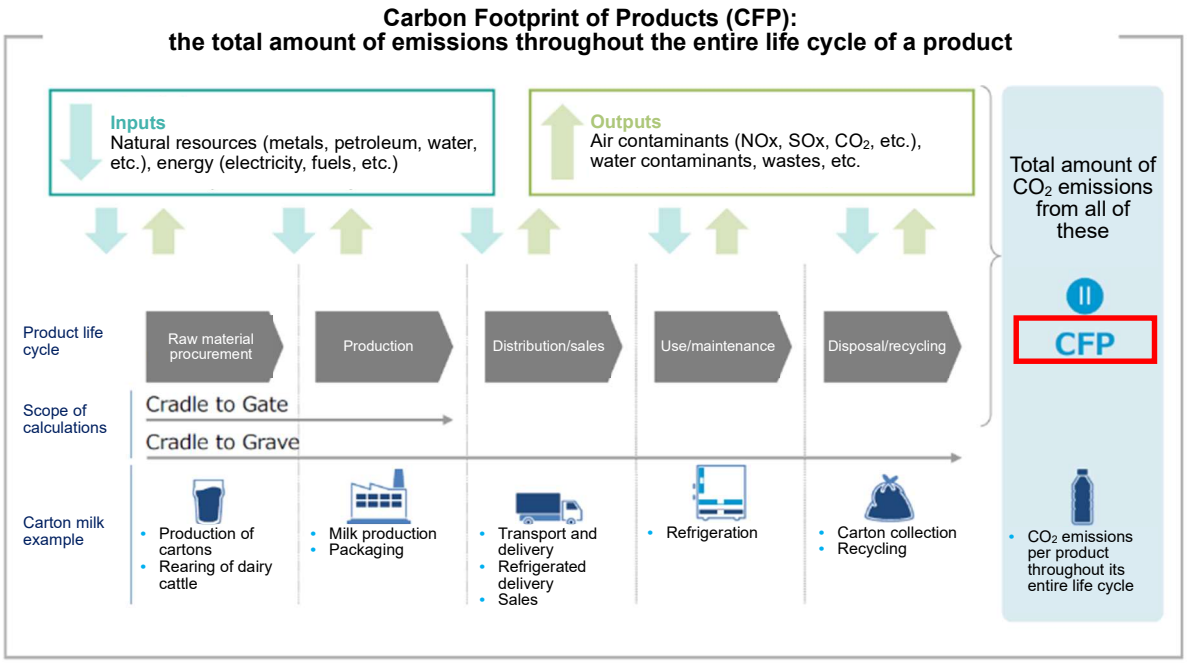



Figure 2. What is CFP?

Companies that have engaged in CFP efforts can use this information as the basis to identify the points at which emission reductions should be given priority. This will allow them to consider effective emission reduction measures and monitor the effects of emission reduction efforts.

## 2. Diversification of CFP utilization

In light of the growing interest in climate change issues in recent years, a wide range of corporate stakeholders have been making CFP-related requests to companies for various purposes. As such, CFP is becoming one of the factors that determines the competitiveness of companies. The CFP requirements from various stakeholders are assumed to be as shown in Figure 3. [1] through [6] in Figure 3 are described below.

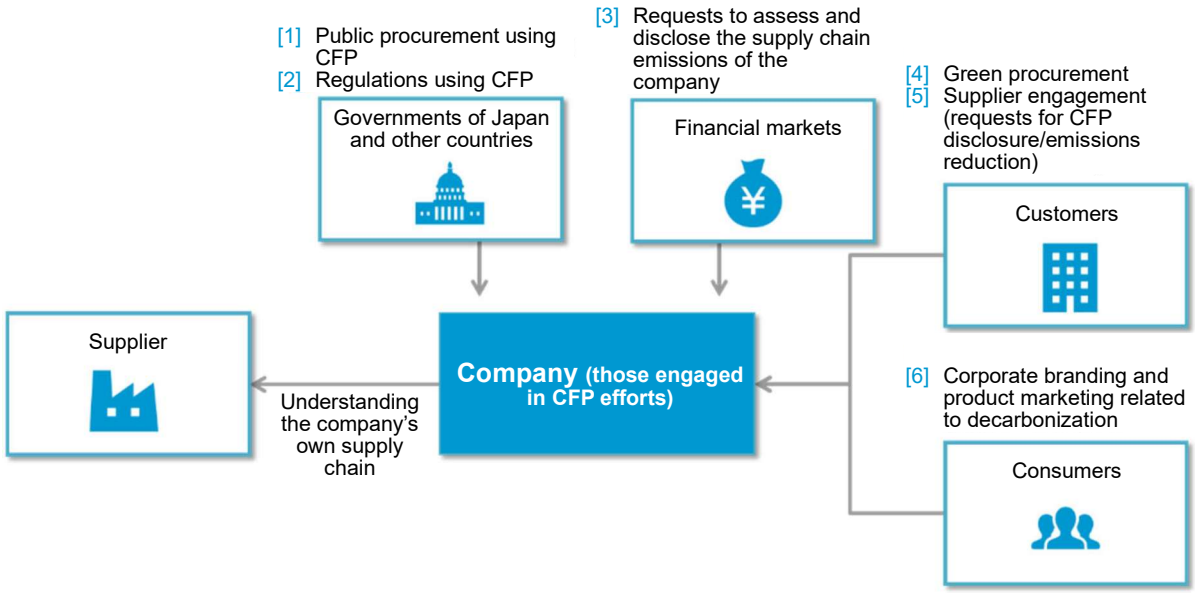



Figure 3. CFP requirements from diverse stakeholders

(1) Public procurement using CFP

In Europe, standards have been developed to provide specific benefits related to public procurement for companies engaged in CFP efforts. Other examples include mandatory implementation of LCA and environmental product declaration certification in procurement standards, and the adoption of systems that add points based on LCA implementation and EPD certification in procurement standards.

(2) Regulations using CFP

As part of the efforts to achieve greenhouse gas reduction targets, the European Commission is working to establish regulations on CFP. The regulations were prompted by efforts to promote reduced emissions in industries with high emissions, the relocation of manufacturing bases outside the EU, where regulations on greenhouse gas reduction are lax, and concerns about an increase in imports from outside the EU.

(3) Request to assess and disclose the supply chain emissions of the company in financial markets

In the future, the disclosure of climate change risks will highlight the strengths and weaknesses of each company, facilitating the selection processes of investors. Competition among companies to attract ESG investment is expected to accelerate greenhouse gas reductions. In response, there is a growing trend in financial markets to require or recommend disclosures related to emissions. In addition to Scope 1 and Scope 2, there is increasing demand for disclosures regarding Scope 3, for which information on emissions per product is important.

(4) Green procurement by customers

Leading companies incorporate CFP and EPD certification in their supplier selection policies, motivating suppliers to calculate CFP and disclose reductions.

(5) Supplier engagement among customers (requests for CFP disclosure/emissions reduction)

In recent years, companies are expected to calculate and reduce emissions throughout the entire supply chain, including those of Scope 3, with an emphasis on cooperation across entire supply chains. The CFP of products procured from suppliers is important for assessing Scope 3 emissions. Accordingly, an increasing number of companies have been making CFP-related requests to suppliers and encouraging them to reduce emissions. Some leading companies are not only asking suppliers to disclose their CFP and reduce emissions but also supporting them in their CFP assessment and reduction efforts.

(6) Corporate branding and product marketing related to decarbonization for consumers

Efforts to communicate product-level CFPs to consumers are gaining momentum primarily in Europe across all levels, including governments, consortia, and individual companies. While some consortium efforts are industry-specific, there are also cases in which retailers and consumer goods manufacturers in various fields, regardless of industry, work together to develop rules for calculating and indicating environmental impact.

# III. Guidelines for CFP Efforts

## 1. Procedures for CFP efforts

CFP is calculated by converting GHG emissions over the life cycle of a product into $CO_2$ emissions. The calculation method is shown in Figure 4. The following are descriptions of ① through ③ in Figure 4.

① All stages from raw material procurement to disposal and recycling are broken down into processes (materials and operations).
② GHG emissions are calculated based on the activity data and emission factor for each process.
③ CFP is calculated by aggregating GHG emissions from each process.

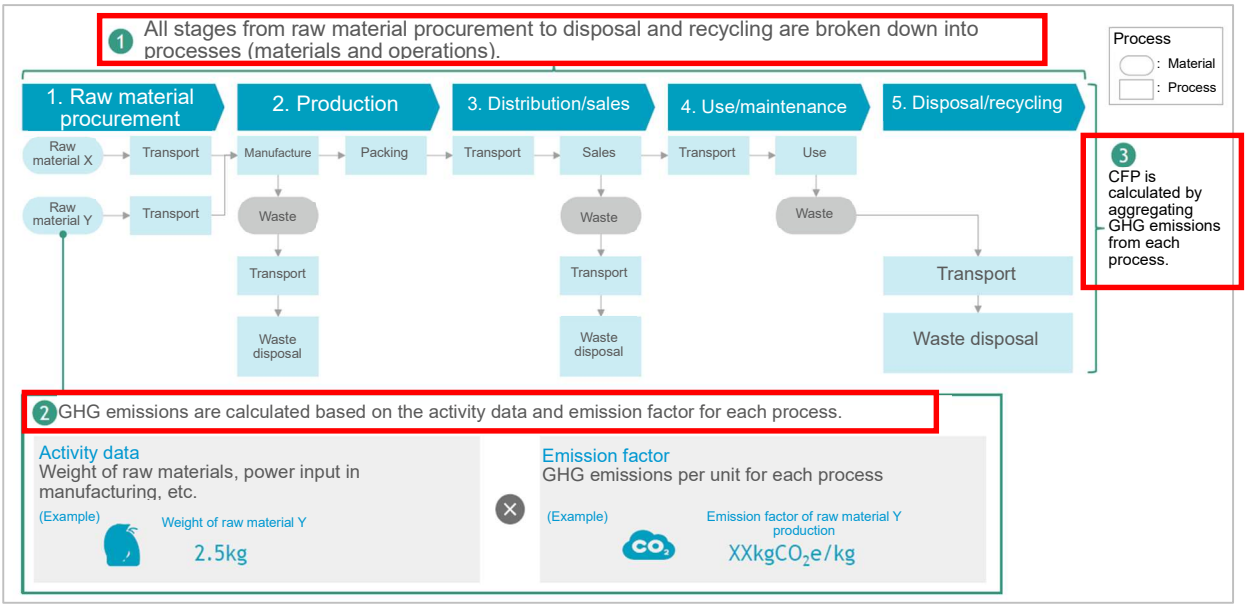



Figure 4. CFP calculation

Specifically, CFP calculations are carried out through the following steps.

Step 1: Evaluation of Calculation Policies
Step 2: Determining the Scope of Calculations
Step 3: Calculating CFP
Step 4: Verification and Reporting

## 2. Efforts in each step

### 2-1. Step 1: Evaluation of Calculation Policies

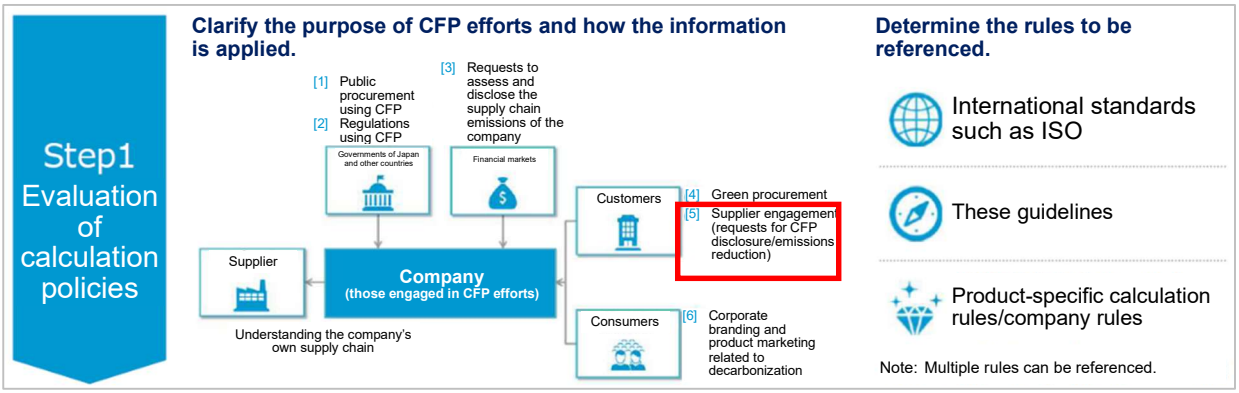



Figure 5. Step 1 (Evaluation of Calculation Policies)

(1) Clarify the purpose of CFP efforts and how the information is applied.
- The CFP to be submitted to us will be used for "[5] Supplier engagement (requests for CFP disclosure/emissions reduction)" in Figure 5.

(2) Determine the rules to be referenced.
- Any CFP calculation rules you have established should be given priority.
- Any published product-specific calculation rules (PCR) that you can use should be given priority.
- If neither has been established, we recommend that you refer to international standards such as "ISO 14067:2018".–

(3) Determine the relevant greenhouse gases.
- When calculating the CFP, it is necessary to consider other GHGs in addition to $CO_2$, as they have a significant impact on the calculation (examples: HFC, PFC, SF6, NF3). If these gases are used in production processes, etc., they should be included in the calculation.

## 2-2. Step 2: Determining the Scope of Calculations

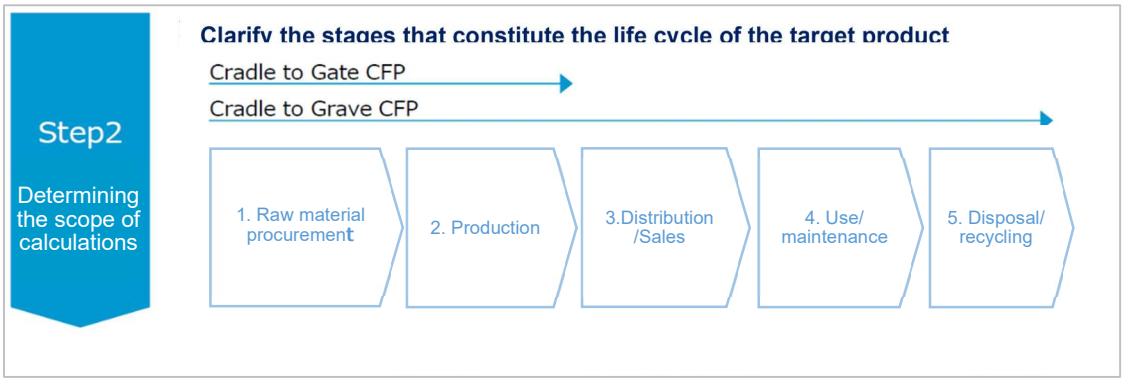



Figure 6. Step 2 (Determining the Scope of Calculations)

(1) Determine the calculation unit.

- Determine the CFP calculation unit according to the functions and characteristics of your product. Examples of appropriate units include units or pieces for assembled products and kg or $m^3$ for materials.

(2) Determine the life cycle stages to be included in the calculation.

- The life cycle of a product consists of five stages: raw material procurement, production, distribution, sales, use, and disposal/recycling (Figure 6).The scope covering all five life cycle stages is termed "Cradle to Grave," whereas the scope from raw material acquisition to production is called "Cradle to Gate."

(3) Determine the processes to include in the calculation.

- One effective way of clarifying the processes to include in the calculation is to create a life cycle flow diagram (Figure 7) and summarize the inputs and outputs related to GHG emissions in an easy-to-understand manner. Please create a life cycle flow diagram when calculating the CFP for us.

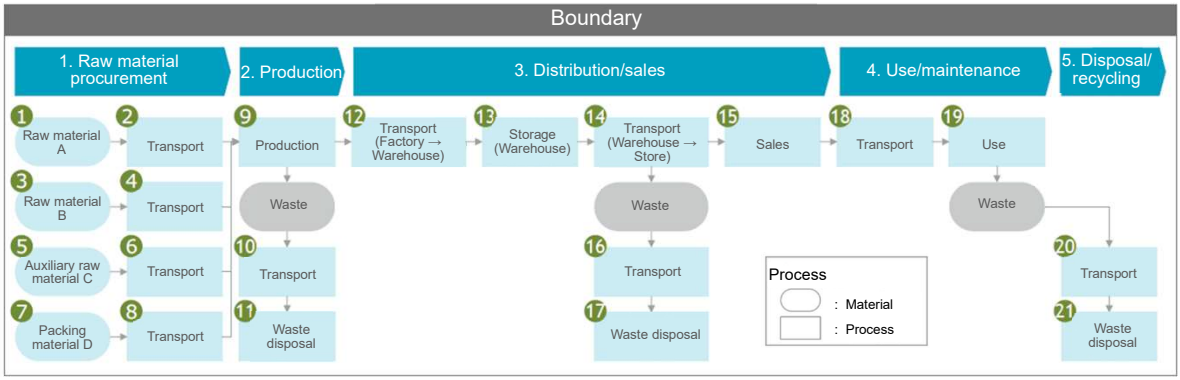



Figure 7. Example of a life cycle flow diagram

- Processes directly related to the production of the product should be included in the calculation. The following are examples of processes that should be included in the calculation.

[Examples of Cradle to Gate]

a. Raw materials purchased (corresponding to ①, ③, ⑤, and ⑦ in Figure 7)

b. Transportation of raw materials from suppliers to the factory (corresponding to ②, ④, ⑥, and ⑧ in Figure 7)

c. Operation of equipment for production (corresponding to ⑨ in Figure 7)

[Examples of Cradle to Grave]

In addition to the Cradle to Gate scope, please include the following processes related to distribution/sales, use/maintenance, and disposal/recycling in the assessment:

d. Transportation from factories to warehouses, customers, and places of use (corresponding to ⑫, ⑭, and ⑱ in Figure 7)

e. Product use (corresponding to ⑲ in Figure 7)

f. Transportation and disposal of post-use products (corresponding to ⑳ and ㉑ in Figure 7)

[Examples of Excluded Processes]

Processes estimated to have an extremely minor impact on total GHG emissions may be excluded from the calculation, provided the reasons are explicitly stated.

g. Transportation and disposal of waste generated during production and distribution (corresponding to ⑩, ⑪, ⑯, and ⑰ in Figure 7)

h. Storage and Sales activities (corresponding to ⑬, ⑮ in Figure 7)

Additionally, processes not directly related to raw material acquisition or product manufacturing may be excluded from the scope of calculation.

i. Manufacturing and installation of the production equipment itself
j. Lighting, air conditioning, etc., not directly related to production (except when they significantly affect the performance of the product, e.g., air conditioning where temperature control affects product quality)
k. Indirect business activities not directly related to production (R&D, administration functions, etc.)
l. Employee commutes and business trips

(4) Determine the data collection period.

- Data should be collected for a period of six months to one year so that an average CFP can be calculated.
- When submitting the CFP result to us, please clearly indicate the data collection period used for calculation (e.g., April 2024 to March 2025 (one year)).

## 2-3. Step 3: Calculating CFP

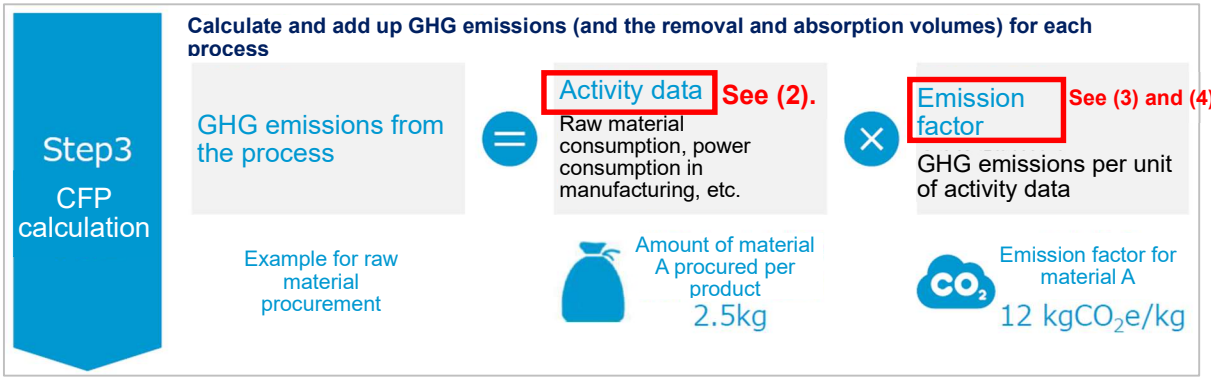



Figure 8. Step 3 (Calculating CFP)

(1) CFP calculation method

- CFP is calculated by multiplying the activity data by the emission factor for each target process for calculation (Figure 8).
- For example, to calculate CFP in the life cycle flow diagram shown in Figure 7, calculate the GHG emissions of the 21 processes including (1) (Raw material A), (2) (Transportation), and (3) (Raw material B) shown in Figure 7 by respectively multiplying the activity data figure by the emission factor, then add the results together.

(2) Collection of activity data

- Activity data refers to, for example, the amount of raw materials required to produce one product, the amounts of electricity and gas used at a business partner's factory to produce one product, or the product of the weight and distance (transportation ton-kilometer) when transporting one product from the business partner's factory to our factory.
- There are four methods (a to d) for collecting activity data as shown below.

**a. Acquisition of primary data**: In principle, for activity data related to equipment and processes under your ownership or management, collect primary data (your own data, such as the actual value of the amount of electricity consumed by the equipment, the actual value of the weight of raw materials used, etc.). For the transport process, use the following formula to determine the transportation ton-kilometer figure.

Transportation ton-kilometer = Weight of cargo (t) x Transport distance (km)

**b. Calculation by allocation**: If a factory produces multiple types of products and only the power consumption of the entire factory is known, activity data calculated through allocation may be used. Allocation is a method in which data from a factory or site is allocated to multiple processes based on the operating hours, production volume (quantity, weight, etc.), etc. (Figure 9).

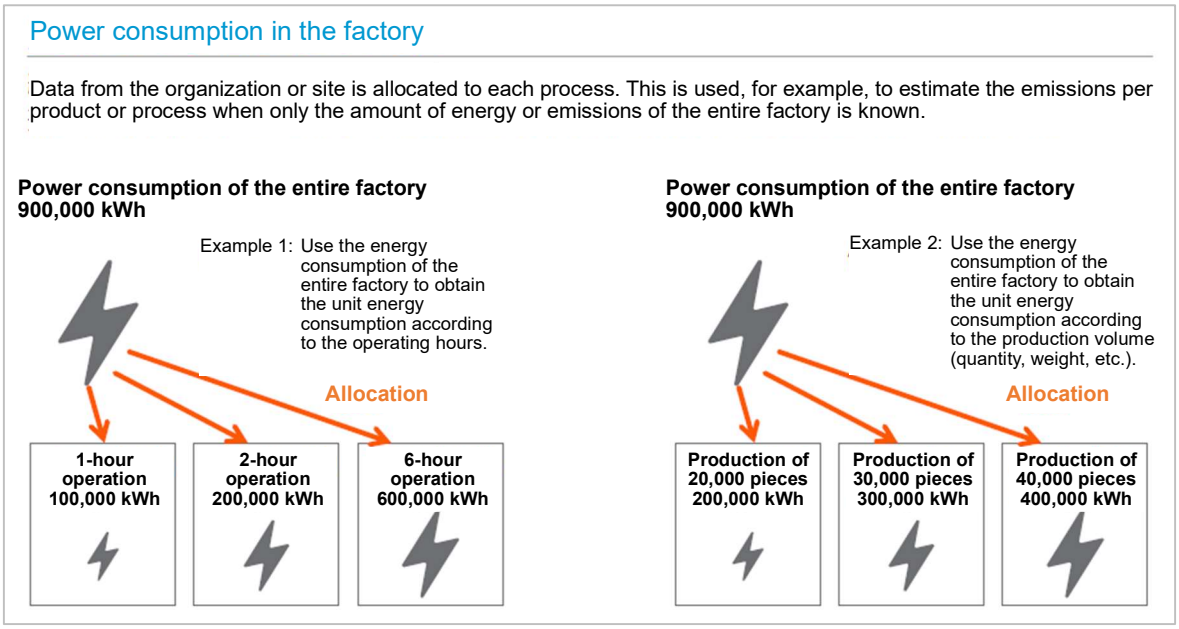



Figure 9. Example calculation of activity data through allocation

**c. Calculation by scenario**: If it is difficult to obtain data on certain activity data, it can be estimated using a set of appropriate assumptions (scenario).

**d. Cut-offs**: Cut-offs refer to omissions in GHG emissions calculations in cases where activity data for some of the processes included in the “2-2. (3) Determine the processes to include in the calculation” step above is not collected. Cut-offs are allowed for processes for which it is difficult to collect and calculate the activity data and where GHG emissions are estimated to be extremely low. Possible processes include, for example, the storage process for a product that is stored together with other products in a warehouse without air conditioning or the transport process for an auxiliary material that is purchased from multiple manufacturers and used in small quantities. When applying for a cut-off, please clearly indicate the omitted processes and why.

(3) Emission factor databases

- An emission factor (also called emission intensity) is a numerical value that represents GHG emissions per unit of activity data. If primary data cannot be obtained directly for the processes included in the calculation, publicly available and reliable emission factor databases (secondary data) should be utilized.

・Secondary data shall be justified and documented with references in the CFP study report. A CFP study should use data that reduces bias and uncertainty as far as practical by using the best quality data available. Data quality shall be characterized by both quantitative and qualitative aspects. Characterization of data quality should address the following(※1):

a) time-related coverage: age of data and the minimum length of time over which data should be collected;
b) geographical coverage: geographical area from which data for unit processes should be collected to satisfy the goal of the CFP study;
c) technology coverage: specific technology or technology mix;

・Companies with global operations will have to respond to an array of state, national, or regional regulations and requirements that address GHGs from operations or facilities within a specific geographic area (※2). As a rule, priority should be given to using country/region-specific databases (local data) published or recommended by the government or public institutions of the operating country. Examples of recommended databases for each country and region are shown in Table 1.

※1）ISO 14067:2018 (6.3.5 Data and data quality)
※2）The Greenhouse Gas Protocol (Chapter 8 Accounting for GHG Reductions)

Table1. Country and Region Emission Factor Database List

| Country Region | Emission Factor Database | Operating Authority |
|---|---|---|
| European Union | -Environmental Footprint Database | -European Commission、Joint Research Centre |
| United States of America | -Federal LCA Commons<br>-Emissions & Generation Resource Integrated Database | -Department of Energy<br>-Environmental Protection Agency |
| China | -National Greenhouse Gas Emission Factor Database<br>-Tiangong LCA Database<br>-Chinese Life Cycle Database | -Ministry of Ecology and Environment<br>-National Bureau of Statistics<br>-Tiangong Initiative<br>-IKE Environmental Technology |
| Thailand | -Thai National Life Cycle Inventory Database | -National Science and Technology Development Agency<br>-National Metal and Materials Technology Center |
| Malaysia | -Malaysia Life Cycle Inventory Database | -SIRIM Berhad |

| Country Region | Emission Factor Database | Operating Authority |
|---|---|---|
| Korea | -Korea National Life Cycle Inventory Database | -Ministry of Climate, Energy and Environment<br>-Ministry of Trade, Industry and Energy |
| Taiwan | -Taiwan Carbon Footprint Emission Factors Database | -Climate Change Administration, Ministry of Environment |
| Others | -Official databases exist in countries and regions.<br>-ecoinvent database. | -ecoinvent Association |

(4) Requirements for applying environmental value certificates (such as renewable energy certificates)

・When applying contractual instruments (such as renewable energy certificates) to accounting under the market-based method, the instruments must reliably convey the environmental attributes of the energy and be uniquely assigned to a single purchaser. Strict tracking is required across the issuance, ownership, and redemption phases to prevent double counting or double claiming by completing redemption/cancellation procedures under the company's own name. Additionally, procurement must align with the corresponding geographic and temporal boundaries of energy consumption. (※3)

・Standard certificate schemes recognized in each operating region are as follows:

- North America: REC (Renewable Energy Certificate)
- Europe: GO (Guarantees of Origin)
- China: GEC (Green Electricity Certificate), I REC
- Other Regions: I-REC (International REC), TIGR, etc.
-Japan: Non-Fossil Certificate (with Renewable Designation), J-Credit, Green Power Certificate

※3） GHG Protocol Scope 2 Guidance: Section 7.5 (Scope 2 Quality Criteria)

(5) Emissions of GHGs other than $CO_2$

•If GHGs other than $CO_2$ are emitted, use the following formula to calculate $CO_2$-equivalent emissions. Non-$CO_2$ GHG emissions (kg) × global warming potential (GWP) of the gas = $CO_2$-equivalent emissions (kg-$CO_2$eq)

• For GWP, use the latest “100-year GWP” value (GWP100, a measure of the impact of specific substances on global warming over a 100-year period) from the report of the Intergovernmental Panel on Climate Change (IPCC). Appendix 3 shows GWP100 factors. The factors in Appendix 3 will be updated as new IPCC reports are being issued. Please download and use the latest version of these guidelines.

## 2-4. Step 4: Verification and Reporting

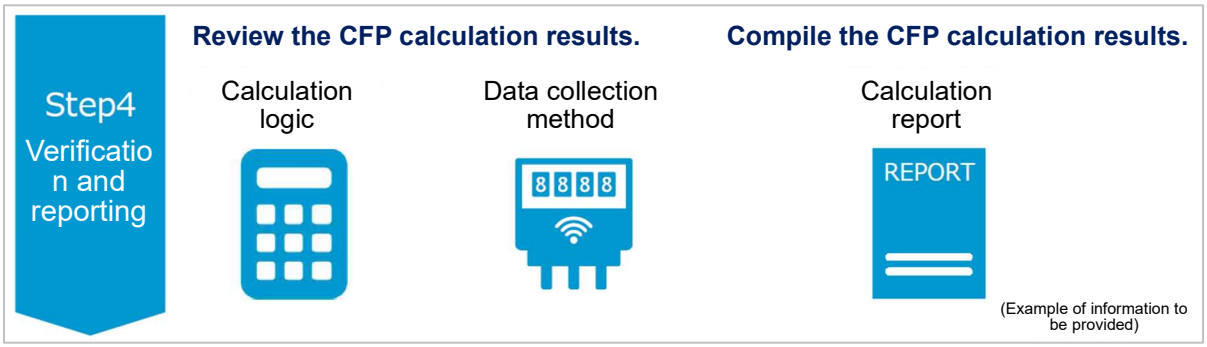



Figure 10. Step 4 (Verification and Reporting)

(1) Verification of calculation results

- The CFP calculated by a business partner must be verified by a third party or internally by the business partner.
- The following is an example of the scope of verification.
  - ✓ Validity of the calculation method for data (activity data and emission factors) acquired under in-house management
  - ✓ The appropriateness of the selection (when emission factors are obtained from a secondary database)

(2) Reporting of calculation results

- Report the CFP calculation results using our prescribed form (the “Form for submission of CFP calculation results” Excel file attachment).
- Table 2 shows an example of a completed form.

  This sheet is available on our website, so please feel free to download and use it.

Table 2. Form for submission of CFP calculation results (entry example)

This sheet can be downloaded from our official website for your use.

## Carbon Footprint of Products Calculation Results

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### Basic Information

| | |
|---|---|
| Business partner name (primary manufacturer name) | Name of your company: **XXXX Shoji Co., Ltd.**<br>Primary manufacturer (if your company is a trading company): **YYYY Kako Co., Ltd.** |
| Target product | Examples: Product name, model, etc.<br>**10 kVA three-phase transformer (model: ABC-123)** |
| Calculation unit | Examples: Per piece, per unit, per kg, etc.<br>**Per unit** |
| Data collection period | Examples: April to September 2024, etc.<br>**April 2024 to March 2025** |
| Product components | (O) Body (product itself)<br>(O) Packing<br>(O) Accessories, etc.: **Instruction manual** |
| Referenced standards | (O) ISO14067<br>( ) GHG Protocol:<br>( ) Other: |
| Emission factor database used | ( ) ecoinvent<br>(O) Other: Environmental Footprint Database |
| Remarks (cut-offs, changes from the previous submission, etc.) | |

### CFP calculation results

| Life cycle stage | $CO_2$ emissions ($kg\text{-}CO_2eq$) |
|---|---|
| Raw material procurement (required) | 120 |
| Production (required) | 30 |
| Distribution* (optional) | 2 |
| Use/maintenance (optional) | – |
| Disposal/recycling (optional) | – |
| Total | 152 |

Note: If the product is an intermediate product, it must be transported to our designated location.