What is the carbon footprint of products (CFP)?

You know about it, don’t you? Carbon footprint of products (CFP) - its meaning, its significance.

All the products (goods and services) that we purchase and consume require large amounts of energy throughout their product life cycles - from the time they are made through to the time they are disposed of. That energy is obtained mainly from fossil fuels such as oil, coal and natural gases, and all of these release carbon dioxide (CO₂) into the atmosphere, which is a cause of global warming.

The carbon footprint of a product is calculated by combining the total greenhouse gas (GHG) emissions emitted at each stage of the product’s life cycle to find out its overall emissions, and then converting this figure into the equivalent amount of CO₂ emitted.

The point is to calculate emissions for the whole product life cycle!

The CO₂ emitted when the raw materials for the product are acquired

The CO₂ emitted when the product is produced

The CO₂ emitted when the product is used

The CO₂ emitted when the product is transported

The CO₂ emitted when the product is disposed of

The total CO₂ emissions (CFP)

123g

The sign is this label!

The CFP label is based on weighing scales and was designed to get across an image of an intentional attempt to weigh the invisible CO₂ emissions.

Let’s look at the example of the life cycle of a can of orange juice!

Raw material acquisition

Making the raw materials

Production

Producing the product

Transport

Transport & sale*

Use/maintenance

Use

Disposal/recycling

Disposal

18.5g

123g

30.8g

43.1g

18.5g

12.1g

The CO₂ emissions of the product

CO₂

Carbon Footprint

in the past there was a tendency for people’s attention to focus solely on the production stage, but under the CFP system you can clearly see exactly how much CO₂ is emitted throughout the entire life cycle of a product – from production, use, disposal and recycling.
Background to the creation of CFP

To gain the cooperation of as many people as possible in CO₂ reductions, the carbon footprint of products (CFP) was created.

In the Kyoto Protocol, Japan committed to reducing its domestic greenhouse gas (GHG) emissions by 6% of the 1990 level by the year 2012. As a concrete measure for achieving this target, discussions started towards the development of a carbon footprint mechanism that would “visualize” the CO₂ emissions of products.

The life cycle of products depends not just on the manufacturers but also on the many other operators involved at the stages of raw material acquisition, production, transport, use and maintenance, disposal and recycling. Furthermore, consumers are also involved in the stages of the use as well as disposal and recycle of products. CFP is a tool with the theme of products for getting both operators and consumers to think about reducing GHG emissions, and involving them in these efforts.

CFP is a “common scale” for enabling the visualization of CO₂ that is unseeable.

1. If we think about the CO₂ emissions in the life cycle of a product… many operators and consumers are involved.

2. In order to obtain the cooperation of more people in reducing CO₂ emissions… it is vital to visualize those CO₂ emissions.

3. And that’s how CFP was created.

Transition and Outlook of Japan’s Greenhouse Gas Emissions

Promotion of further measures required
Reductions in domestic emissions
3.8% by the promotion of forest carbon-sink measures
1.6% by the Kyoto mechanism
-6% compared to Base Year (Reduction commitments under the Kyoto Protocol)

Japan’s CO₂ emissions by sectors

- Residential sector: 14%
- Commercial sector (offices, etc.): 19%
- Commercial and residential sector: 33%
- Transport sector: 20%
- Industries sector: 34%
- Total CO₂ emissions in 2009: 1.145 billion tons

As you can see, the CO₂ emissions from residential and commercial sectors are quite large. So not only operators, but consumers and society as a whole, need to play a part in reducing CO₂ emissions.

Source: Japan’s National Greenhouse Gas Emissions for Fiscal Year 2009 (Final Figures) from the Ministry of the Environment
How CFP is calculated

To visualize CO₂ emissions, we integrate CFP calculation methods.

CFP is calculated according to product category rules (PCR) that set the rules for these calculations in each product category. Moreover, by running checks on the calculation method with a committee of third-party experts, a system that secures fairness and reliability has been constructed.

**Step 1** Detailed life cycle assessment of products
What sort of stages the product’s life cycle consists of is assessed - from raw material acquisition through to disposal.

**Step 2** Calculation of CO₂ emissions at each stage
CO₂ emissions for each stage are calculated by multiplying the active volume at each stage by the CO₂ emissions emitted at a certain level of activity (the basic unit of CO₂ emissions).

**Step 3** CFP calculation
The amount of the CO₂ emissions at each stage are added up and CFP is calculated.

Calculations for each stage are standardized and integrated.

Per product category + Product category rules (PCR) = Fairness & reliability

**Let’s look at the example of hams and sausages!**

*NB. The following presents an example of the way of thinking behind the calculations. It has been abbreviated and does not exactly coincide with the actual meticulous calculations.*

**Step 1** The whole life cycle looks like this.

Pigs are reared. → Hams and sausages are made. → They are transported and taken to homes. → They are kept and eaten. → Their containers are disposed of.

**Step 2** Now we take a close look at each stage.

- **Feed given to pigs.**
  - Methane gas generated.
  - Feces treated. etc.

**Step 3** CO₂ emissions are calculated by multiplying the active volume by the CO₂ emissions emitted at a certain level of activity (the basic unit of CO₂ emissions). If trucks are used for transport...

Active volume (e.g. the amount of gasoline used by the truck)

Basic unit of CO₂ emissions (e.g. the volume of emissions per liter of gasoline)

CO₂ emissions

The amount of the CO₂ emissions at each stage are added up and CFP is calculated.

A life cycle flow chart is completed by precisely assessing each stage. (This is explained on the next page.)
Making hams and sausages

Raw materials acquisition stage
- Rearing of pigs
- Seasonings
- Containers and packaging
- Extras (sachets of mustard, etc.)

Production stage
- Manufacture of hams and sausages
  - Storage/consignment
  - Mixing
  - Processing
  - Storing
- Water
- Energy such as electricity

Transport stage
- Transport
- Store
- Storage
- Cooking
- Empty packages
- Transport

Use & maintenance stage
- Energy such as electricity

Disposal & recycling stage
- Disposal/recycling & treatment

Life cycle flow charts are... As we explained on the previous pages, by minutely mapping out what sort of processes occur from the acquisition of the raw materials for a product right through to its disposal and recycling, a product life cycle flow chart is produced.

N.B. The shop sales process (the part in the dotted circle in the diagram) has been provisionally discounted from the calculations. Certain parts of the PCR life cycle flow chart have been shown in an abbreviated form.
Why don’t you join us in spreading the message, in using CFP to make an eco-society?

Carbon footprint labeling enables us to select products based on a new indicator, the “environment”. Moreover, business operators too can use the label as an indicator of their environmental management and corporate social responsibility (CSR) efforts. By spreading and expanding the CFP concept even wider and deeper we can create a future in which everybody participates together in the creation of an eco-society. We sincerely hope that everyone will continue to support the CFP label.

CFP spreading across the world

Measures to promote CFP activities are underway all over the world – in European countries such as Britain, France, and Germany, in the U.S. and Canada, and in Asia and Oceania. In tandem with this movement, the international standardization of CFP is also being pursued as a part of the ISO 14000 series.