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Carbon Footprint of Products-Product Category Rules (CFP-PCR)

Bicycle

Version 4.0

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1. General Information

1.1 Applicable product categories

This document is a PCR for bicycles (four-digit commodity classification number: 8712). The CCC code of this product is classified as 8712.00.10.90-2 Other two-wheel bicycles.

The contents of this document have been developed in accordance with the guidelines published by the Ministry of Environment, Executive Yuan, R.O.C. (Taiwan) (hereinafter referred to as the Ministry of Environment) for the establishment of the Carbon Footprint of Products-Product Category Rules (CFP-PCR), and are intended for use in verification implementation cases conducted in accordance with the Regulations Governing Voluntary Product Carbon Footprint Verification, Labeling and Management.

1.2 Documentation organization

For other information related to this PCR, please contact Merida Industry Co., Ltd. (Tel.: +886-04-8526171 ext.600).

2. Scope

2.1 Product system boundaries

2.1.1 Product composition

The basic components of a bicycle are as follows:

1. Frame parts	◎Frame, top and down tubes, seat tube, head tube, bottom bracket shell, seat stay and chain stay, rear bracket, etc.
2. Frame components	●Head set □Front Fork ■Saddle ■Seat post ■Bottom bracket set ■Seat clamp, etc.
3. Wheel components	■Hub ■Outer and inner tires ■Rim ■Wheel set ■Spoke ■Valve, etc.

4. Transmission components	㉔Shift lever ⑳Crank ㉑Pedal ㉓Chain wheel ㉔Chain ㉕Sprockets ㉖Front derailleur ㉗Rear derailleur, etc.
5. Control parts	①Handlebar ②Grip ③Brake lever ⑤Stem ⑥Bar end ⑦Cable housing ⑩Front brake ㉘Rear brake, etc.
6. Packaging materials	Carton, divider, etc.

The weight percentage of the aforesaid basic components in general bicycle products shall have exceeded 90%. The details of the basic components are shown in the figure below:



2.1.2 Description of product functionality and characteristics

A bicycle refers to a vehicle propelled by the rider's own physical power (excluding power-assisted or power-driven bicycles) that complies with the following provisions:

1. With a frame structure of sufficient strength.

2. With two or more wheels.

3. With a seat for the rider.

4. With various devices including driving, control and braking devices.

2.1.3 Functional unit or declared unit of the product

The declared unit is one bicycle (wheel diameter * frame size). This declared unit is selected because bicycles are sold per unit.

2.2 Life cycle stages

2.2.1 Product life cycle flowchart

The life cycle of a bicycle covers raw material extraction stage, manufacturing stage, distribution stage, use stage, and end of life stage (Figure 1).

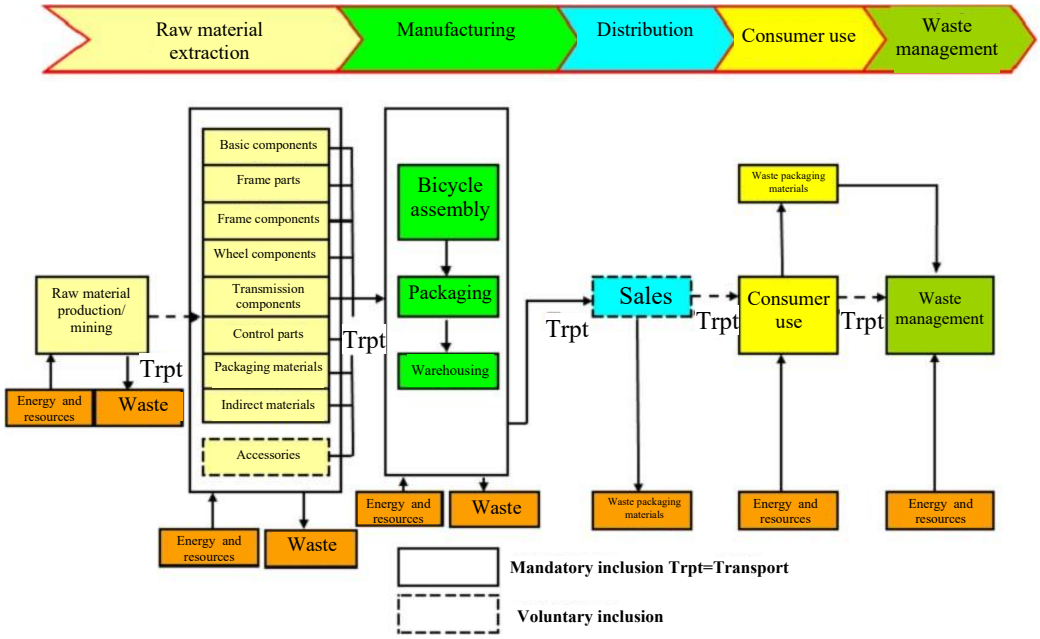


Figure 1 Product Life Cycle Flowchart

2.2.2 Scope of life cycle

The scope of this product's life cycle includes five stages, i.e., raw material extraction, manufacturing, distribution, use, and waste management. The implementation steps of each stage are described as follows:

2.2.2.1 Raw material extraction stage

The raw material extraction stage shall include the following parts:

1. GHG emissions related to the life cycle of manufacturing frame parts.

2. GHG emissions related to the life cycle of manufacturing frame components.

3. GHG emissions related to the life cycle of manufacturing wheel components.

4. GHG emissions related to the life cycle of manufacturing transmission components.

5. GHG emissions related to the life cycle of manufacturing control parts.

6. GHG emissions related to the life cycle of manufacturing packaging materials.

7. GHG emissions related to the life cycle of manufacturing indirect materials.

8. GHG emissions related to the life cycle of manufacturing accessories.

9. As listed above, including but not limited to other GHG emissions related to the life cycle of manufacturing raw materials.

10. GHG emissions related to the generation of oil consumption during the life cycle of transportation of the aforesaid raw materials to the factory for manufacturing.

11. GHG emissions related to the life cycle of disposing waste generated in the aforesaid manufacturing process (if the waste management method is recycling, such data will not be included into the calculation).

12. If the manufacturing place of the aforesaid raw materials and the manufacturing factory are in the same location, it shall be included in the calculation during the manufacturing stage. Since no transportation process is involved, item 10 above is not required.

2.2.2.2 Manufacturing stage

The manufacturing stage shall include the following parts:

1. Relevant processes at the manufacturing factory such as “Bicycle assembly” and “Packaging”.

2. Processes related to water supply.

3. Processes related to equipment maintenance and repair.

4. Processes related to waste gas treatment.

5. Processes related to wastewater and sewage treatment.

6. Processes related to waste management.

7. Processes related to the consumption and supply of fuel and electricity.

2.2.2.3 Distribution stage

The distribution stage shall include processes related to the transportation of this product from the bicycle manufacturing factory to the points of sale as well as its sales. The highlights of the aforesaid process specifications are as follows:

1. Relevant transportation from the bicycle manufacturing factory to first-stage distribution locations and warehouses.

2. The contents of the sales operations include storage, exhibition, sales, possible distribution, and other relevant processes.

3. Relevant transportation processes for consumer’s travel to and from points of sale shall not be included in calculation.

2.2.2.4 Use stage

The following data shall be collected in this stage:

1 Quantity of tires replaced.

2 Quantity of other maintenance data and consumables used.

2.2.2.5 End of life stage

In the end of life stage, assumptions shall be made according to the actual disposal and recycling conditions in Taiwan, or the data announced by the Ministry of Environment shall be adopted for the calculation of carbon emissions and collected data, including relevant processes of transport to the treatment facilities by the consumers. Evaluation and calculation shall be conducted according to relevant provisions of the government/programme.

3. Definitions

1. Indirect materials: Chemical substances that come into contact with products during the manufacturing process but do not appear in the raw material structure, such as chemical solutions, soldering flux, etc.

2. Frame parts: Parts constituting a frame, including frame, top tube, seat tube, down tube, head tube, bottom bracket shell, seat stay, chain stay, rear bracket, connector, reinforced tubes (plates), cable guide, shock absorber, and other accessories.

3. Frame components: Front fork, head set, stem top cap, bottom bracket spindle assembly, seat post, seat clamp, and other parts.

4. Wheel components: Wheel set, rim, outer and inner tires, front hub, rear hub, spoke, rim tape, and other parts.

5. Transmission components: Front derailleur, rear derailleur, shift lever, cassette (or freewheel), crankset, chain, pedals, shift inner cable, cable outer housing, housing end cap, cable ferrule, and other parts.

6. Control parts: Brake lever, brake, brake outer housing, brake inner cable or disc brake set, handlebar, stem, grip, bar end, saddle, and other parts.

7. Accessories: General screws, reflector, light set, bicycle bell, chain guard, fender, fender stay, kickstand, rear rack, water bottle, bottle cage, basket, training wheel, bike pump, horn, and other parts.

4. Data Collection Rules and Quality Requirements

4.1 Raw material extraction stage

4.1.1 Specifications for primary data and secondary data collection

4.1.1.1 Data collection

1. GHG emissions related to the life cycle of manufacturing frame parts.

2. GHG emissions related to the life cycle of manufacturing frame components.

3. GHG emissions related to the life cycle of manufacturing wheel components.

4. GHG emissions related to the life cycle of manufacturing transmission components.

5. GHG emissions related to the life cycle of manufacturing control parts.

6. GHG emissions related to the life cycle of manufacturing packaging materials.

7. GHG emissions related to the life cycle of manufacturing indirect materials.

8. GHG emissions related to the life cycle of manufacturing accessories.

9. As listed above, including but not limited to other GHG emissions related to the life cycle of manufacturing raw materials.

10. GHG emissions related to the generation of oil consumption during the life cycle of transportation of the aforesaid raw materials to the factory for manufacturing.

11. GHG emissions related to the life cycle of disposing waste generated in the aforesaid manufacturing process (if the waste management method is recycling, such data will not be included into the calculation).

If the manufacturing place of the aforesaid raw materials and the manufacturing factory are in the same location, it shall be included in the calculation during the manufacturing stage. Since no transportation process is involved, item 10 above is not required.

4.1.1.2 Primary data collection

1. Collection of primary data is not mandatory in the raw material extraction stage. However, primary data shall be adopted with priority.

2. If the organization implementing the PCR fails to achieve the following scenario in terms of the product's greenhouse gas emissions, the requirements for the collection of primary data must be included in the raw material extraction stage: "If the greenhouse gas emissions of the processes owned, operated or controlled by an organization (in the manufacturing stage) fail to reach the contribution rate of 10% or more of the total greenhouse gas emissions of the organization (in the manufacturing stage) and in the upstream raw material stage, the primary data collection must be included in the raw material extraction stage, until the greenhouse gas emissions collected by the organization (in the manufacturing stage) and the upstream suppliers exceed or equal to 10% of the contribution rate of the total greenhouse gas emissions in the raw material extraction stage."

4.1.1.3 Secondary data collection

For GHG emissions generated by relevant processes where collection of primary data is not required in this raw material extraction stage, the secondary data may be used.

4.1.1.4 Primary data or secondary data used in this stage

For the following data related to this stage, it is recommended that primary data be adopted with priority. However, when it is unavailable to collect primary data, the secondary data may also be applied.

1. GHG emissions related to the life cycle of manufacturing frame parts.

2. GHG emissions related to the life cycle of manufacturing frame components.

3. GHG emissions related to the life cycle of manufacturing wheel components.

4. GHG emissions related to the life cycle of manufacturing transmission components.

5. GHG emissions related to the life cycle of manufacturing control parts.

6. GHG emissions related to the life cycle of manufacturing packaging materials.

7. GHG emissions related to the life cycle of manufacturing indirect materials.

8. GHG emissions related to the life cycle of manufacturing accessories.

9. As listed above, including but not limited to other GHG emissions related to the life cycle of manufacturing raw materials.

10. GHG emissions related to the generation of oil consumption during the life cycle of transportation of the aforesaid raw materials to the factory for manufacturing.

11. GHG emissions related to the life cycle of disposing waste generated in the aforesaid manufacturing process.

12. GHG emissions arising from the life cycle of supplying fuel or electricity to the organizational boundaries of the raw material manufacturer.

4.1.2 Rules for collection of primary data

4.1.2.1 Data collection methods and requirements

There are two methods for the collection of primary data:

1. In accordance with the energy and resources allocated for the equipment or facilities needed in each process (Example: Operation time of equipment and facilities × Electricity consumption = Electricity input).

2. Allocation of energy resource consumption of each supplier within specific time to each product (Example: Allocation of the total annual fuel input to the target products manufactured).

The two data collection method above are acceptable in the raw material extraction stage of this PCR. If method 1 is adopted, the same allocation principle shall also be adopted for products manufactured in the same location but not targeted in this PCR. Therefore, the total of the measurement results of all products will not be excessively different from the value generated in the entire location.

If method 2 is adopted, one of the allocation methods specified in 4.1.2.4 shall be adopted. If the indirect energy resource consumption of the office central air-conditioning and lighting cannot be excluded from measurement, it may be included in the measurement range, and shall be included in the calculation range.

4.1.2.2 Data collection period

The data collection period shall be the most recent year. If the data of the most recent year hasn't been adopted, the reason therefor shall be indicated. Besides, it is required to guarantee the accuracy of the data not obtained from the most recent year.

4.1.2.3 Handling of acquisition of raw materials from multiple suppliers

If the inventory data of greenhouse gas emissions in the manufacturing stage does not achieve the contribution rate of 10% or more of the total greenhouse gas emissions collected by the organization (in the manufacturing stage) and the upstream suppliers, emission inventory shall be conducted towards some upstream suppliers to acquire the primary data. If the raw materials are acquired from multiple suppliers, it is advised that the primary data of all suppliers be collected; in case of a large number of suppliers, primary data shall be better obtained from more than 50% of the raw materials of the products obtained. Furthermore, the average value of data obtained from suppliers shall better be used as secondary data of suppliers from whom data cannot be obtained.

4.1.2.4 Allocation methods

With respect to the raw material allocation methods, actual quantities, weight and weighted values may be adopted as basic parameters for allocation. If other parameters other than actual quantities (e.g., economic value) are referenced, the basis for adopting such parameters shall be indicated.

4.1.2.5 Handling of regional differences and seasonal changes

No regional differences or seasonal changes are involved in this stage. The primary data may not be considered.

4.1.2.6 Handling of self-generated electricity

When electricity is self-generated at a location for the production of raw materials, the fuel input for electricity generation shall be collected as the primary data. The GHG emissions during the electricity self-generation process

shall be included as well.

4.1.3 Rules for application of secondary data

4.1.3.1 Contents and sources of secondary data

The contents and sources of secondary data available in this raw material extraction stage include:

1. Data prepared by persons who cite this document on condition that the evidence guaranteeing the validity of application of such data has been properly prepared. The validity of the data provided by the aforesaid persons shall be validated simultaneously upon the validation of the CFP calculation results.

2. Calculation data of carbon footprints of raw materials provided by the raw material suppliers through third-party verification, with relevant statement of verification available within its validity period.

3. Selected from product life cycle GHG emission data published by the government/programme, e.g., consumption and supply of fuel and electricity.

4. Selected from the LCA software database recognized by the international community or the government/programme. The basis for adopting this software shall be indicated if it is not recognized by the international community or the government/programme.

4.1.3.2 Scenarios

With respect to transportation of goods shipped by suppliers, it is basically recommended that transportation scenario be defined in consideration of transportation distance, mode of transportation, loading rate, tonne-kilometer (tkm), freight costs or average fuel prices.

4.1.4 Cut-off rules

If the emission contribution from any single greenhouse gas source accounts for ≦1% of the GHG emissions within the product's expected life cycle, the emission can be ignored. However, the emission contribution included in evaluation shall at least include 95% of the total GHG emissions within the whole life cycle except for the use stage.

4.1.5 Calculation of recycled materials and reused products

When recycled or reused raw materials are used for input, the GHG emissions associated with their manufacturing and transportation shall include GHG emissions associated with the recycling process (collection, pretreatment, recycling, etc.) and reuse process (collection, cleaning, etc.).

Processes related to the recycled materials and reused products above will be evaluated according to the following priorities:

1. Inventory data provided by suppliers of recycled materials and reused products.

2. When the government/programme has announced GHG emission coefficients of relevant processes, calculation and evaluation shall be conducted as specified.

3. When the government/programme hasn't announced GHG emission coefficients of relevant processes, the LCA software database recognized by the international community or the government/programme will be used for calculation and evaluation.

4.2 Manufacturing stage

4.2.1 Specifications for primary data and secondary data collection

4.2.1.1 Data collection

In the manufacturing stage of this PCR, it is required to collect data including but not limited to:

GHG emissions generated by input and output.

1. GHG emissions related to bicycle manufacturing.
2. GHG emissions related to tap water supply.
3. GHG emissions related to fuel consumption and supply.
4. GHG emissions related to electricity consumption and supply.
5. GHG emissions related to waste gas treatment.
6. GHG emissions related to wastewater and sewage treatment.
7. GHG emissions related to waste management.

4.2.1.2 Primary data collection

With respect to the following data related to this stage, primary data shall be adopted.

1. Output of bicycles.
2. GHG emissions related to bicycle manufacturing.
3. Input of tap water.
4. Fuel consumption
5. Electricity consumption
6. Waste gas treatment volume.
7. Waste output
8. Wastewater and sewage discharge volume.

4.2.1.3 Secondary data collection

The secondary data available for input and output related to this manufacturing stage includes:

1. Life cycle GHG emission coefficient related to the tap water supply.
2. Life cycle GHG emission coefficient related to fuel consumption and supply.
3. Life cycle GHG emission coefficient related to electricity consumption and supply.
4. Life cycle GHG emission coefficient related to waste gas treatment.
5. Life cycle GHG emission coefficient related to wastewater and sewage treatment.
6. Life cycle GHG emission coefficient related to waste management.
7. Fugitive volume of refrigerants.

4.2.1.4 Primary data or secondary data used in this stage

For data related to the manufacturing stage of this PCR, it is recommended that primary data be adopted with

priority. However, the secondary data may also be applied.

1. Life cycle GHG emission coefficient related to the tap water supply.

2. Life cycle GHG emission coefficient related to fuel consumption and supply.

3. Life cycle GHG emission coefficient related to electricity consumption and supply.

4. Life cycle GHG emission coefficient related to waste gas treatment.

5. Life cycle GHG emission coefficient related to wastewater and sewage treatment.

6. Life cycle GHG emission coefficient related to waste management.

7. Fugitive volume of refrigerants.

4.2.2 Rules for collection of primary data

4.2.2.1 Data collection methods and requirements

There are two methods for the collection of primary data:

1. In accordance with the energy and resources allocated for the equipment or facilities needed in each process (Example: Operation time of equipment and facilities × Electricity consumption = Electricity input).

2. Allocation of energy resource consumption of each supplier within specific time to each product (Example: Allocation of the total annual fuel input to the target products manufactured).

The two measurements method above are acceptable in the manufacturing stage of this PCR. If method 1 is adopted, the same allocation principle shall also be adopted for products manufactured in the same location but not targeted in this PCR. Therefore, the total of the measurement results of all products will not be excessively different from the value generated in the entire location.

If method 2 is adopted, one of the allocation methods specified in 4.1.2.4 shall be adopted. If the indirect energy resource consumption of the office central air-conditioning and lighting cannot be excluded from measurement, it may be included in the measurement range.

4.2.2.2 Data collection period

The data collection period shall be the most recent year. If the data of the most recent year hasn't been adopted, the reason therefor shall be indicated. Besides, it is required to guarantee the accuracy of the data not obtained from the most recent year.

4.2.2.3 Handling of manufacturing at multiple manufacturing places

If manufacturing takes place at more than one manufacturing place, the primary data of all such places shall be collected. In case of a large number of manufacturing places, the average value of the primary data of important manufacturing places can be used as the secondary data of all other places only on condition that the gross manufacturing volume of these important manufacturing places exceeds 95% of the total manufacturing volume.

4.2.2.4 Allocation methods

Since differences may exist due to different process parameters adopted by each CFP applicant in the process of the product targeted in this PCR, each person citing this document shall independently determine the parameters to be referenced (e.g., quantities, weight, working hours, etc.) and indicate the basis for adopting such parameters with respect to the allocation basis for each input and output as well as emissions in the manufacturing stage.

4.2.2.5 Handling of regional differences and seasonal changes

No regional differences or seasonal changes are involved in this stage. The primary data may not be considered.

4.2.2.6 Handling of self-generated electricity

When electricity is self-generated at a location for the production of products, the fuel input for electricity generation shall be collected as the primary data. The GHG emissions during the electricity self-generation process shall be included as well.

4.2.3 Rules for application of secondary data

4.2.3.1 Contents and sources of secondary data

The contents and sources of secondary data available in this manufacturing stage include:

1. Data prepared by persons who cite this document on condition that the evidence guaranteeing the validity of application of such data has been properly prepared. The validity of the data provided by the aforesaid persons shall be validated simultaneously upon the validation of the CFP calculation results.

2. Calculation data of carbon footprints of raw materials provided by the raw material suppliers through third-party verification, with relevant statement of verification available within its validity period.

3. Selected from product life cycle GHG emission data published by the government/programme, e.g., consumption and supply of fuel and electricity.

4. Selected from the LCA software database recognized by the international community or the government/programme. The basis for adopting this software shall be indicated if it is not recognized by the international community or the government/programme.

4.2.3.2 Scenarios

With respect to transportation of waste from the manufacturing factory, evaluation will be conducted according to the following priorities:

1. When the government/programme has announced GHG emission coefficients of relevant processes, calculation and evaluation shall be conducted as specified.

2. When the government/programme hasn't announced GHG emission coefficients of relevant processes, the LCA software database recognized by the international community or the government/programme will be used for calculation and evaluation. With respect to the transportation of product waste, it is basically recommended that primary data related to transportation distance, mode of transportation, and loading ratio be collected.

4.2.4 Cut-off rules

If the emission contribution from any single greenhouse gas source accounts for ≦1% of the GHG emissions within the product's expected life cycle, the emission can be ignored. However, the emission contribution included in evaluation shall at least include 95% of the total GHG emissions within the whole life cycle except for the use stage.

4.2.5 Calculation of recycled materials and reused products

When recycled or reused raw materials are used for input, the GHG emissions associated with their manufacturing and transportation shall include GHG emissions associated with the recycling process (collection, pretreatment, recycling, etc.) and reuse process (collection, cleaning, etc.).

Processes related to the recycled materials and reused products above will be evaluated according to the following priorities:

1. Inventory data provided by suppliers of recycled materials and reused products.

2. When the government/programme has announced GHG emission coefficients of relevant processes, calculation and evaluation shall be conducted as specified.

3. When the government/programme hasn't announced GHG emission coefficients of relevant processes, the LCA software database recognized by the international community or the government/programme will be used for calculation and evaluation.

4.3 Distribution stage

4.3.1 Specifications for primary data and secondary data collection

4.3.1.1 Data collection

Relevant records on the transportation of this product from the bicycle manufacturing factory to the sales locations as well as the product sales shall be used together with the LCA software database recognized by the international community or the government/programme. The following data shall be collected:

1. Product transportation distance.

2. Types of transport vehicle.

3. Product transportation quantity.

4. Transportation-related processes: Processes related to the transportation from the manufacturing factory to the customer's designated place.

4.3.1.2 Primary data collection

This stage is a product downstream stage that involves relatively complicated scenario assumptions and data collection. Therefore, no primary data is required. The primary data is not specifically required in this stage. However, when primary data is collected as needed, the provisions of 4.3.2 shall be followed.

4.3.1.3 Secondary data collection

With respect to the following related to this stage, the secondary data may be adopted:

GHG emissions from the first-stage distribution and transportation processes regarding the transportation from the factory to the regional logistics service provider and wholesaler (e.g., from the factory to the logistics warehouse or from the manufacturer to the distribution location, etc.)

4.3.1.4 Primary data or secondary data used in this stage

With respect to the following related to this distribution stage, the application of primary data and secondary data (including scenario applications) is acceptable:

1. Product transportation distance.

2. Types of transport vehicle.

3. Product transportation quantity.

4. GHG emissions per unit mileage of product transportation.

4.3.2 Rules for collection of primary data

4.3.2.1 Data collection methods and requirements

The primary data may be acquired using the following methods.

1. Distribution distance: Listing the transportation distance of the target product from the bicycle manufacturing factory to the designated place of receipt of each customer.

2. Types of transport vehicle: Listing the type and tonnage of each transport vehicle used for the transportation of the product to the designated place of receipt of each customer.

4.3.2.2 Data collection period

The data collection period shall be the most recent year. If the data of the most recent year hasn't been adopted, the reason therefor shall be indicated. Besides, it is required to guarantee the accuracy of the data not obtained from the most recent year.

4.3.2.3 Handling of the product with multiple transportation routes and sales locations

If the product is transported via more than one transportation route, the data of all routes shall be collected, and then weighted average shall be calculated according to the transportation volume. In case of a large number of transportation routes, it is advised that the weighted average of the transportation routes of the sales locations with a high transportation volume be calculated. Besides, the weighted average of the data collected from the routes shall be better adopted as the secondary data for the routes where data cannot be acquired.

If the primary data is unavailable, the GHG emissions may be calculated by multiplying the transportation distance per trip (measured with mapping tools), transport weight per unit of product, and the transportation emission coefficient obtained from the LCA software database.

4.3.2.4 Allocation methods

It is recommended that physical methods including actual quantities, weight and weighted values be used with priority as the basic parameters for allocation. If such physical methods are unavailable, other parameters other than actual quantities (e.g., economic value) may be referenced, and the basis for adopting such parameters shall be indicated.

4.3.2.5 Handling of regional differences and seasonal changes

No regional differences or seasonal changes are involved in this stage. The primary data may not be considered.

4.3.2.6 Handling of self-generated electricity

When electricity is self-generated at a sales location for the sales of the product, the fuel input for electricity generation shall be collected as the primary data. The GHG emissions during the electricity self-generation process shall be included as well.

4.3.3 Rules for application of secondary data

4.3.3.1 Contents and sources of secondary data

The contents and sources of secondary data available in this distribution stage include:

1. Data prepared by persons who cite this document on condition that the evidence guaranteeing the validity of application of such data has been properly prepared. The validity of the data provided by the aforesaid persons shall be validated simultaneously upon the validation of the CFP calculation results.

2. Selected from product life cycle GHG emission data published by the government/programme, e.g., consumption and supply of fuel and electricity.

3. Selected from the LCA software database recognized by the international community or the government/programme. The basis for adopting this software shall be indicated if it is not recognized by the international community or the government/programme.

4.3.3.2 Scenarios

4.3.3.2.1 Transportation scenario of the product

1. With respect to the transportation scenario of the product, it is recommended that the transportation scenario be defined by transportation distance, mode of transportation, loading ratio, tonne-kilometer (tkm) (standard calculation unit for transportation environment impact), freight costs or average fuel prices.

2. The actual reasonable circumstances shall be taken into account regarding the storage of the product during distribution, sales and retail. Therefore, life cycle GHG emissions are not involved.

4.3.3.2.2 Transportation scenario of waste packaging materials

For processes related to the transportation of relevant waste packaging materials from shops to treatment facilities, it is recommended that the transportation scenario be defined by transportation distance, mode of transportation, loading ratio, tonne-kilometer (tkm), freight costs or average fuel prices.

4.4 Use stage

4.4.1 Specifications for primary data and secondary data collection

4.4.1.1 Data collection

In this use stage, the following data shall be collected:

1. Quantity of tires replaced.

2. Quantity of other maintenance data and consumables used.

4.4.1.2 Primary data collection

It is not required to collect primary data for this product.

4.4.1.3 Secondary data collection

With respect to the following related to this stage, the secondary data may be adopted:

1. Quantity of tires replaced.

2. Quantity of other maintenance data and consumables used.

4.4.2 Rules for collection of primary data

Rules for collection of the activity data in this stage: None.

4.4.3 Rules for application of secondary data

4.4.3.1 Contents and sources of secondary data

The contents and sources of secondary data available in this use stage include:

1. Data prepared by persons who cite this document on condition that the evidence guaranteeing the validity of application of such data has been properly prepared. The validity of the data provided by the aforesaid persons shall be validated simultaneously upon the validation of the CFP calculation results.

2. Selected from product life cycle GHG emission data published by the government/programme, e.g., consumption and supply of fuel and electricity.

3. Selected from the LCA software database recognized by the international community or the government/programme. The basis for adopting this software shall be indicated if it is not recognized by the

international community or the government/programme.

4.4.3.2 Scenarios

The consumers' use of this product shall be estimated through reasonable scenario assumption to calculate the life cycle GHG emissions caused due to repair and maintenance during the use stage. The recommended scenarios assumptions are set as follows:

1. Tire replacement: Assume that the product is used by the consumer for five years after purchase, during which the front and rear tires shall each be replaced once. Therefore, the life cycle GHG emissions of the front and rear tires (including inner and outer tires) replaced shall be calculated.

2. Other maintenance items and consumables: The life cycle GHG emissions from the replacement of other relevant maintenance items and consumables are defined as data not mandatorily included in the inventory.

4.4.4 Cut-off rules

No cut-off rules are involved in this use stage.

4.5 End of life stage

4.5.1 Specifications for primary data and secondary data collection

4.5.1.1 Data collection

In this end of life stage, the GHG emissions shall be calculated according to the actual recycling conditions (e.g., recycling rate). The data collected includes but is not limited to:

1. GHG emissions related to the transportation of waste packaging materials associated with bicycles to the disposal location.

2. Weight of waste packaging materials associated with bicycles incinerated at the disposal location.

3. Weight of waste packaging materials associated with bicycles landfilled at the disposal location.

4. Related GHG emissions upon incineration at the disposal location (deduction of GHG emissions generated by waste packaging materials)

5. Related GHG emissions upon incineration of waste packaging materials at the disposal location.

6. Related GHG emissions upon landfilling at the disposal location.

- During the calculation of related GHG emissions upon incineration of waste packaging materials at the disposal location in item 5 above, GHG emissions will not be included into calculation if they come from biomass.

4.5.1.2 Primary data collection

No primary data collection is involved in this end of life stage.

4.5.1.3 Secondary data collection

In this end of life stage, the secondary data shall include the following data:

1. GHG emissions related to the transportation of waste packaging materials associated with bicycles to the disposal location.

2. Weight of waste packaging materials associated with bicycles incinerated at the disposal location.

3. Weight of waste packaging materials associated with bicycles landfilled at the disposal location.

4. Related GHG emissions upon incineration at the disposal location (deduction of GHG emissions generated by waste packaging materials)

5. Related GHG emissions upon incineration of waste packaging materials at the disposal location.

6. Related GHG emissions upon landfilling at the disposal location.

4.5.1.4 Primary data or secondary data used in this stage

Since no primary data collection is involved in this end of life stage, the secondary data may just be used.

4.5.2 Rules for collection of primary data

4.5.2.1 Data collection methods and requirements

"Weight of product-related packaging materials and accessories" of bicycles, etc.

4.5.2.2 Data collection period

The calculation period shall be one year. If the data of one year/the most recent year hasn't been adopted during calculation, the reason therefor shall be detailed, and the data accuracy must be confirmed.

4.5.2.3 Handling of the product with multiple waste or recycling facilities

The primary data may not be considered regarding the treatment method of the product at multiple waste or recycling facilities.

4.5.2.4 Allocation methods

It is not required to consider any allocation methods for the product in this stage.

4.5.2.5 Handling of regional differences and seasonal changes

No regional differences or seasonal changes are involved in this stage. The primary data may not be considered.

4.5.3 Rules for collection of secondary data

4.5.3.1 Contents and sources of secondary data

In this end of life stage, the secondary data shall include the following:

1. GHG emissions related to life cycle during the treatment of waste packaging materials.

2. GHG emissions from fuel consumption during transportation of waste packaging materials, calculated by tonnage-kilometers.

3. GHG emissions related to the incineration of waste packaging materials.

4.5.3.2 Scenarios

4.5.3.2.1 Transportation scenario of waste

During the calculation of GHG emissions from the transportation of waste packaging materials of bicycles to the disposal location, it is recommended that the secondary data be collected, e.g., weighted average transportation distance in each region, weight, etc.

4.5.3.2.2 Treatment scenario of waste

It is recommended that the secondary data be acquired based on the actual circumstances during waste treatment through the use of waste treatment methods.

5. Declaration Information

5.1 Form, location and size of label

1. The declared unit of this product is defined as one bicycle (wheel diameter * frame size).
2. The format and size of the carbon label shall comply with the “Regulations Governing Voluntary Product Carbon Footprint Verification, Labeling and Management”, and shall be revised according to the actual circumstances at the time.
3. The icon of the carbon label shall not be deformed, or added with any extra words except that the product carbon footprint data and measurement unit shall be marked according to the actual values in the heart-shaped area. However, the icon may be enlarged or reduced in equal proportion.
4. The carbon label shall be affixed to the bicycle frame and other easily identifiable positions.
5. Relevant information shall be added beneath the product carbon label and words including Carbon Label No. ○○○○ and labelling unit shall be marked. See the example in the diagram below:



Carbon Label No. ○○○○

One Bicycle (Wheel Diameter 26” * Frame Size 18”)

Example of Carbon Label

5.2 Additional information

The description of the additional information shall comply with the “Regulations Governing Voluntary Product Carbon Footprint Verification, Labeling and Management” and “Directions for the Promotion of Product Carbon Footprint Management (MOENV)”, and only the content reviewed and recognized by the Ministry of Environment can be used as additional information. Furthermore, please evaluate the future reduction targets in the raw material and manufacturing stage first, and specify them in the application form when applying for the carbon footprint label for the product.

6. References

1. Ministry of Environment, Regulations Governing Voluntary Product Carbon Footprint Verification, Labeling and Management, published in 2025.
2. Ministry of Environment, Key Points for the Ministry of the Environment's Promotion of Product Carbon Footprint Management, published in 2025.
3. Environmental Protection Administration, Executive Yuan, Guidelines for Establishing, Referencing, and Revising Product Category Rules for Carbon Footprints, published in 2020.
4. Environmental Protection Administration, Executive Yuan, Guidelines for Carbon Footprint Calculation of Products and Services, published in 2010.
5. CNS10764 Classification and Essential Characteristics of Bicycles.
6. Industrial Development Bureau, Ministry of Economic Affairs, Technical Manual of Bicycles.
7. BSi, PAS 2050:2008 Specification for the assessment of the life cycle greenhouse gas emissions of goods and services, 2008.
8. BSi, Guide to PAS 2050 How to assess the carbon footprint of goods and services, 2008.

7. Consultation Comments and Responses

Entity	Consultation Comment	Response
Environment and Development Foundation	It is recommended that the note of excluding electric bicycles be added to the description of product functionality and characteristics.	It is agreed to explicitly add the description of "not including electric bicycles" in 2.1.2. The amended content is as follows: 2.1.2 Description of product functionality and characteristics A bicycle refers to a vehicle propelled by the rider's own physical power (excluding power-driven bicycles) that complies with the following provisions: 1. With a frame structure of sufficient strength. 2. With two or more wheels. 3. With a seat for the rider. 4. With various devices including driving, control and braking devices.
Environment and Development Foundation	It is recommended that basic specification information such as type, size or material be added to the declared unit, and such information be disclosed in the label description content in 5.1.	Add a textual description of "One bicycle (wheel diameter * frame size)" as the declared unit in 2.1.3 Declared unit and add the functional unit (wheel diameter * frame size) to the label description content in 5.1. The amended content is as follows: 2.1.3 Functional unit or declared unit of the product The declared unit is one bicycle (wheel diameter * frame size). This declared unit is selected because bicycles are sold per unit. 5.1 Form, location and size of label 1. The format and size of the carbon label shall comply with the "Regulations Governing Voluntary Product Carbon Footprint Verification, Labeling and Management", and shall be revised according to the actual circumstances at the time. 2. The icon of the carbon label shall not be deformed, or added with any extra words except that the product carbon footprint data and measurement unit shall be marked according to the actual values in the heart-shaped area. However, the icon may be enlarged or reduced in equal proportion. Besides, the width and the height shall not be less than 0.5cm and 0.6cm, respectively. 3. The carbon label shall be affixed to the bicycle frame or outer packing box, etc. 4. Relevant information shall be added beneath the product carbon label and words of carbon label number and functional unit as well as website of the Environmental Protection Administration, Executive Yuan shall be marked. See the example in the diagram below:  Carbon Label No. ○○○○ 1 Unit (26" *18")

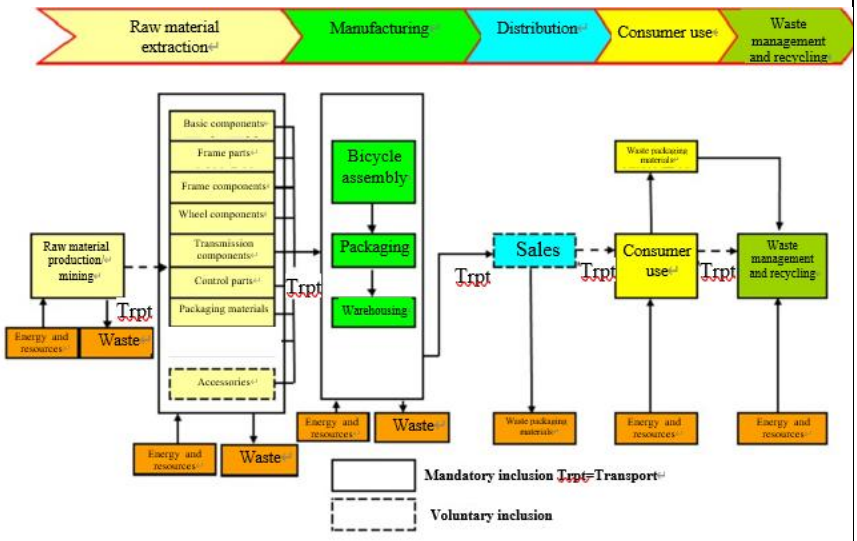
<table>
<tr><td></td><td></td><td>http://www.epa.gov.tw
Example of Carbon Label</td></tr>
<tr><th>Entity</th><th>Consultation Comment</th><th>Response</th></tr>
<tr><td>Giant Manufacturing Co., Ltd.</td><td>In the product life cycle flowchart, the process of “Sales” is indicated with dotted line in the distribution stage. Does it represent voluntary inclusion?</td><td>The process of “Sales” from the manufacturing stage to the distribution stage in 2.2.1 Product life cycle flowchart as indicated with dotted line has been corrected as solid line. The amended content is as follows:
2.2.1 Product life cycle flowchart
The life cycle of a bicycle covers raw material extraction stage, manufacturing stage, distribution stage, use stage, and end of life stage (Figure 1).


Figure 1 Product Life Cycle Flowchart</td></tr>
<tr><td>Environment and Development Foundation</td><td>In the product life cycle flowchart, the process of “Transportation” is indicated with dotted line in the distribution stage. Does it represent voluntary inclusion?</td><td>Frame and wheel set have already been added to frame parts and wheel components in the basic components of a bicycle in 2.1.1 Product composition, and they have also been added to the frame parts and wheel components in Definitions. The amended content is as follows:
2.1.1 Product composition
The basic components of a bicycle are as follows:
<table>
<tr><td>1. Frame parts</td><td>Frame, top and down tubes, seat tube, head tube, bottom bracket shell, seat stay, chain stay, rear bracket, etc.</td></tr>
<tr><td>2. Frame components</td><td>Front fork, head set, bottom bracket spindle assembly, seat post, seat clamp, etc.</td></tr>
<tr><td>3. Wheel components</td><td>Wheel set, rim, outer and inner tires, front hub, rear hub, spoke, rim tape, etc.</td></tr>
<tr><td>4. Transmission components</td><td>Front derailleur, rear derailleur, shift lever, sprockets, crankset, chain, etc.</td></tr>
<tr><td>5. Control parts</td><td>Brake lever, brake, handlebar, stem, grip, saddle, etc.</td></tr>
<tr><td>6. Packaging</td><td>Carton, divider, etc.</td></tr>
</table></td></tr>
</table>

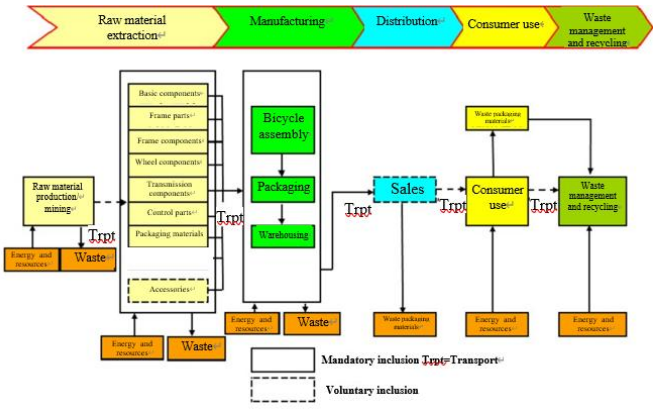
<table>
<tr><td></td><td></td><td>
<table>
<tr><td>materials</td><td></td></tr>
<tr><td>7. Accessories</td><td>Reflector, general screws, etc.</td></tr>
</table>
The weight percentage of the aforesaid basic components in general bicycle products shall have exceeded 90%.
Definitions:
1. Indirect materials: Chemical substances that come into contact with products during the manufacturing process but do not appear in the raw material structure, such as chemical solutions, soldering flux, etc.
2. Frame parts: Parts constituting a frame, including frame, top tube, seat tube, down tube, head tube, bottom bracket shell, seat stay, chain stay, rear bracket, connector, reinforced tubes (plates), cable guide, shock absorber, and other accessories.
3. Frame components: Front fork, head set, stem top cap, bottom bracket spindle assembly, seat post, seat clamp, and other parts.
4. Wheel components: Wheel set, rim, outer and inner tires, front hub, rear hub, spoke, rim tape, and other parts.
5. Transmission components: Front derailleur, rear derailleur, shift lever, cassette (or freewheel), crankset, chain, pedals, shift inner cable, cable outer housing, housing end cap, cable ferrule, and other parts.
6. Control parts: Brake lever, brake, brake outer housing, brake inner cable or disc brake set, handlebar, stem, grip, bar end, saddle, and other parts.
7. Accessories: General screws, reflector, light set, bicycle bell, chain guard, fender, fender stay, kickstand, rear rack, water bottle, bottle cage, basket, training wheel, bike pump, horn, and other parts.
</td></tr>
<tr><td>A-Team</td><td>For the content of the basic composition of a bicycle: Some frames and wheelsets are purchased from suppliers, which is not included in the manufacturing process. It is recommended that the content of the basic composition be modified to expand the scope of application.</td><td>
The original processes of the manufacturing stage in 2.2.1 Product life cycle flowchart have already been changed from “Original frame manufacturing → Frame coating → Assembly → Packaging → Warehousing” to “Bicycle assembly → Packaging → Warehousing”, and the processes of the manufacturing factory have been corrected from “Frame Manufacturing”, “Frame Coating” and “Assembly” to “Bicycle Assembly”, “Packaging”, etc. in 2.2.2.2. The amended content is as follows:
2.2.1 Product life cycle flowchart
The life cycle of a bicycle covers raw material extraction stage, manufacturing stage, distribution stage, use stage, and end of life stage (Figure 1).


Figure 1 Product Life Cycle Flowchart
2.2.2.2 Manufacturing stage
</td></tr>
</table>

		The manufacturing stage shall include the following parts: 1. Relevant processes at the manufacturing factory such as “Bicycle assembly” and “Packaging”. 2. Processes related to water supply. 3. Processes related to equipment maintenance and repair. 4. Processes related to waste gas treatment. 5. Processes related to wastewater and sewage treatment. 6. Processes related to waste management. 7. Processes related to the consumption and supply of fuel and electricity.

8. Review Comments and Responses

<table>
<tr><th>Review Comment</th><th>Response</th></tr>
<tr><td>Manager Huang, Ying-Chieh from the Industrial Technology Research Institute
In 2.1.1 and 2.2.1, if the three terms, i.e., basic composition, main components, and main composition, refer to the same thing, their names shall be unified.</td><td>A resolution has been made to unify three terms as basic components. The amendment content is as follows:
2.1.1 Product composition
The basic components of a bicycle are as follows:
<table>
<tr><td>1. Frame parts</td><td>Frame, top and down tubes, seat tube, head tube, bottom bracket shell, seat stay and chain stay, rear bracket, etc.</td></tr>
<tr><td>2. Frame components</td><td>Head set
Front Fork
Saddle
Seat post
Bottom bracket set
Seat clamp, etc.</td></tr>
<tr><td>3. Wheel components</td><td>Hub
Outer and inner tires
Rim
Wheel set
Spoke
Valve, etc.</td></tr>
<tr><td>4. Transmission components</td><td>Shift lever
Crank
Pedal
Chain wheel
Chain
Sprockets
Front derailleur
Rear derailleur, etc.</td></tr>
<tr><td>5. Control parts</td><td>Handlebar
Grip
Brake lever
Stem
Bar end
Cable housing
Front brake
Rear brake, etc.</td></tr>
</table></td></tr>
</table>

6. Packaging materials	Carton, divider, etc.

The weight percentage of the aforesaid basic components in general bicycle products shall have exceeded 90%. The details of the basic components are shown in the figure below:



2.2.1 Product life cycle flowchart

The life cycle of a bicycle covers raw material extraction stage, manufacturing stage, distribution stage, use stage, and end of life stage (Figure 1).

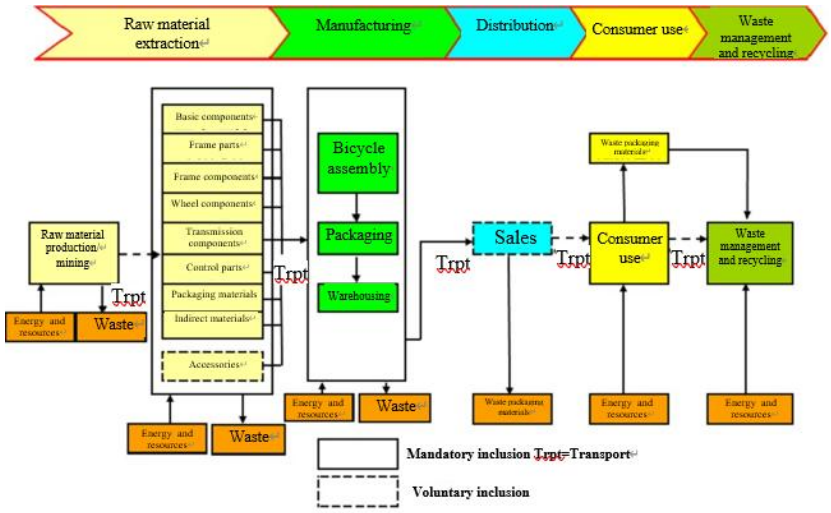


Figure 1 Product Life Cycle Flowchart

Manager Huang, Ying-Chieh from the Industrial Technology Research Institute It is advised that the input of "Indirect materials" be added to Figure 1 in 2.2.1, 2.2.2.1 Raw material extraction stage, 4.1.1.1 Data collection, and 4.1.1.4 Primary data or secondary data used in this stage.	The content of indirect materials has been added to Figure 1 in 2.2.1, 2.2.2.1 Raw material extraction stage, 4.1.1.1 Data collection, and 4.1.1.4 Primary data or secondary data used in this stage for amendment as recommended. The amended content is as follows: 2.2.1 Product life cycle flowchart The life cycle of a bicycle covers raw material extraction stage, manufacturing stage, distribution stage, use stage, and end of life stage (Figure 1).

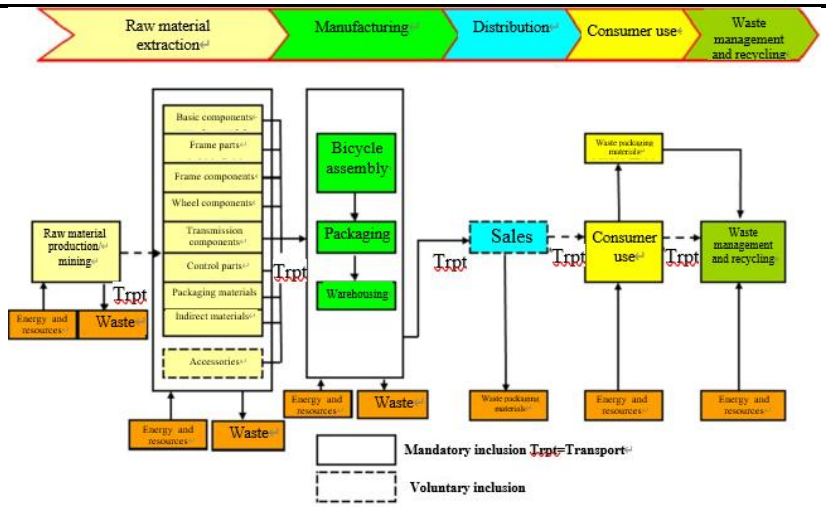


Figure 1 Product Life Cycle Flowchart

2.2.2.1 Raw material extraction stage

The raw material extraction stage shall include the following parts:

1. GHG emissions related to the life cycle of manufacturing frame parts.

2. GHG emissions related to the life cycle of manufacturing frame components.

3. GHG emissions related to the life cycle of manufacturing wheel components.

4. GHG emissions related to the life cycle of manufacturing transmission components.

5. GHG emissions related to the life cycle of manufacturing control parts.

6. GHG emissions related to the life cycle of manufacturing packaging materials.

7. GHG emissions related to the life cycle of manufacturing indirect materials.

8. GHG emissions related to the life cycle of manufacturing accessories.

9. As listed above, including but not limited to other GHG emissions related to the life cycle of manufacturing raw materials.

10. GHG emissions related to the generation of oil consumption during the life cycle of transportation of the aforesaid raw materials to the factory for manufacturing.

11. GHG emissions related to the life cycle of disposing waste generated in the aforesaid manufacturing process (if the waste management method is recycling, such data will not be included into the calculation).

12. If the manufacturing place of the aforesaid raw materials and the manufacturing factory are in the same location, it shall be included in the calculation during the manufacturing stage. Since no transportation process is involved, item 10 above is not required.

4.1.1.4 Primary data or secondary data used in this stage

For the following data related to this stage, it is recommended that primary data be adopted with priority. However, when it is unavailable to collect primary data, the secondary data may also be applied.

1. GHG emissions related to the life cycle of manufacturing frame parts.

2. GHG emissions related to the life cycle of manufacturing frame components.

3. GHG emissions related to the life cycle of manufacturing wheel components.

4. GHG emissions related to the life cycle of manufacturing transmission components.

5. GHG emissions related to the life cycle of manufacturing control parts.

6. GHG emissions related to the life cycle of manufacturing packaging materials.

<table>
<tr><td></td><td>7. GHG emissions related to the life cycle of manufacturing accessories.
8. As listed above, including but not limited to other GHG emissions related to the life cycle of manufacturing raw materials.
9. GHG emissions related to the generation of oil consumption during the life cycle of transportation of the aforesaid raw materials to the factory for manufacturing.
10. GHG emissions related to the life cycle of disposing waste generated in the aforesaid manufacturing process.
11. GHG emissions arising from the life cycle of supplying fuel or electricity to the organizational boundaries of the raw material manufacturer.</td></tr>
<tr><td>Manager Yen, Chia-Liang from the Cycling & Health Tech Industry R&D Center
Graphical illustration shall be added as content of the basic components of a bicycle so that the owner can understand its meaning. The accessories shall not belong to basic components, and it is recommended that the content of accessories be deleted.</td><td>The graphical illustration has been added at the lower edge of 2.1.1 Product composition. The amended content is as follows:
2.1.1 Product composition
The basic components of a bicycle are as follows:
<table>
<tr><td>1. Frame parts</td><td>⑨Frame, top and down tubes, seat tube, head tube, bottom bracket shell, seat stay and chain stay, rear bracket, etc.</td></tr>
<tr><td>2. Frame components</td><td>⑧Head set
⑪Front Fork
⑱Saddle
⑲Seat post
㉒Bottom bracket set
㉙Seat clamp, etc.</td></tr>
<tr><td>3. Wheel components</td><td>⑫Hub
⑬Outer and inner tires
⑭Rim
⑮Wheel set
⑯Spoke
⑰Valve, etc.</td></tr>
<tr><td>4. Transmission components</td><td>④Shift lever
⑳Crank
㉑Pedal
㉓Chain wheel
㉔Chain
㉕Sprockets
㉖Front derailleur
㉗Rear derailleur, etc.</td></tr>
<tr><td>5. Control parts</td><td>①Handlebar
②Grip
③Brake lever
⑤Stem
⑥Bar end
⑦Cable housing
⑩Front brake
㉘Rear brake, etc.</td></tr>
<tr><td>6. Packaging materials</td><td>Carton, divider, etc.</td></tr>
</table>
The weight percentage of the aforesaid basic components in general bicycle products shall have exceeded 90%. The details of the basic components are shown in the figure below:</td></tr>
</table>

	
Manager Yen, Chia-Liang from the Cycling & Health Tech Industry R&D Center 2.2.2.1 When the raw material manufacturing place and the manufacturing factory are in the same location, the description of the manufacturing stage shall be better included.	Amendments have been made to 2.2.2.1 and 4.1.1.1. The amended content is as follows: 2.2.2.1 Raw material extraction stage The raw material extraction stage shall include the following parts: 1. GHG emissions related to the life cycle of manufacturing frame parts. 2. GHG emissions related to the life cycle of manufacturing frame components. 3. GHG emissions related to the life cycle of manufacturing wheel components. 4. GHG emissions related to the life cycle of manufacturing transmission components. 5. GHG emissions related to the life cycle of manufacturing control parts. 6. GHG emissions related to the life cycle of manufacturing packaging materials. 7. GHG emissions related to the life cycle of manufacturing indirect materials. 8. GHG emissions related to the life cycle of manufacturing accessories. 9. As listed above, including but not limited to other GHG emissions related to the life cycle of manufacturing raw materials. 10. GHG emissions related to the generation of oil consumption during the life cycle of transportation of the aforesaid raw materials to the factory for manufacturing. 11. GHG emissions related to the life cycle of disposing waste generated in the aforesaid manufacturing process (if the waste management method is recycling, such data will not be included into the calculation). 12. If the manufacturing place of the aforesaid raw materials and the manufacturing factory are in the same location, it shall be included in the calculation during the manufacturing stage. Since no transportation process is involved, item 10 above is not required. 4.1.1.1 Data collection 1. GHG emissions related to the life cycle of manufacturing frame parts. 2. GHG emissions related to the life cycle of manufacturing frame components. 3. GHG emissions related to the life cycle of manufacturing wheel components. 4. GHG emissions related to the life cycle of manufacturing transmission components. 5. GHG emissions related to the life cycle of manufacturing control parts. 6. GHG emissions related to the life cycle of manufacturing packaging materials. 7. GHG emissions related to the life cycle of manufacturing indirect materials. 8. GHG emissions related to the life cycle of manufacturing accessories. 9. As listed above, including but not limited to other GHG emissions related to the life cycle of manufacturing raw materials. 10. GHG emissions related to the generation of oil consumption during the life cycle

	of transportation of the aforesaid raw materials to the factory for manufacturing. 11. GHG emissions related to the life cycle of disposing waste generated in the aforesaid manufacturing process (if the waste management method is recycling, such data will not be included into the calculation). If the manufacturing place of the aforesaid raw materials and the manufacturing factory are in the same location, it shall be included in the calculation during the manufacturing stage. Since no transportation process is involved, item 10 above is not required.
Manager Huang, Ying-Chieh from Industrial Technology Research Institute It is recommended that the word "or" in the content of "The carbon label shall be affixed to the bicycle frame or outer packing box, etc." in item 3 of 5.1 be changed to "and".	Amendment has been made to item 3 in 5.1 as recommended. The amended content is as follows: 5.1 Form, location and size of label 1. The format and size of the carbon label shall comply with the "Regulations Governing Voluntary Product Carbon Footprint Verification, Labeling and Management", and shall be revised according to the actual circumstances at the time. 2. The icon of the carbon label shall not be deformed, or added with any extra words except that the product carbon footprint data and measurement unit shall be marked according to the actual values in the heart-shaped area. However, the icon may be enlarged or reduced in equal proportion. Besides, the width and the height shall not be less than 0.5cm and 0.6cm, respectively. 3. The carbon label shall be affixed to the bicycle frame and other easily identifiable positions. 4. Relevant information shall be added beneath the product carbon label and words of carbon label number and functional unit as well as website of the Environmental Protection Administration, Executive Yuan shall be marked. See the example in the diagram below:  Carbon Label No. ○○○○ 1 Unit (26" *18") **錯誤! 超連結參照不正確。** www.epa.gov.tw Example of Carbon Label
Manager Huang, Ying-Chieh from Industrial Technology Research Institute It is recommended that the description of "(excluding power-driven bicycles)" in 2.1.2 be amended as "excluding power-assisted or power-driven bicycles".	Amendment has been made to 2.1.2 Description of product functionality and characteristics as recommended. The amended content is as follows: 2.1.2 Description of product functionality and characteristics A bicycle refers to a vehicle propelled by the rider's own physical power (excluding power-assisted or power-driven bicycles) that complies with the following provisions: 1. With a frame structure of sufficient strength. 2. With two or more wheels. 3. With a seat for the rider. 4. With various devices including driving, control and braking devices.
Manager Huang,	Relevant content has been amended as recommended, and the amendment results are

Ying-Chieh from Industrial Technology Research Institute In 4.1.1.2, the phrase "in the upstream raw material stage" mentioned in "If … owned by an organization (in the manufacturing stage) fail to reach the contribution rate of 10% or more of the total greenhouse gas emissions in the upstream raw material stage" shall be "the organization (in the manufacturing stage) and in the upstream raw material stage" according to the requirements of Taiwan's corresponding calculation guidelines. Amendment is therefore recommended in this regard.	as follows: 4.1.1.2 Primary data collection 1. Collection of primary data is not mandatory in the raw material extraction stage. However, primary data shall be adopted with priority. 2. If the organization implementing the PCR fails to achieve the following scenario in terms of the product's greenhouse gas emissions, the requirements for the collection of primary data must be included in the raw material extraction stage: "If the greenhouse gas emissions of the processes owned, operated or controlled by an organization (in the manufacturing stage) fail to reach the contribution rate of 10% or more of the total greenhouse gas emissions of the organization (in the manufacturing stage) and in the upstream raw material stage, the primary data collection must be included in the raw material extraction stage, until the greenhouse gas emissions collected by the organization (in the manufacturing stage) and the upstream suppliers exceed or equal to 10% of the contribution rate of the total greenhouse gas emissions in the raw material extraction stage."
Manager Huang, Ying-Chieh from Industrial Technology Research Institute In 4.1.2.3, the word of "overall" mentioned in "If the inventory data…is less than overall life cycle…: shall be better confirmed whether it is an upstream error. It shall be amended according to the requirements of Taiwan's corresponding calculation guidelines.	Relevant content has been amended as recommended, and the amendment results are as follows: 4.1.2.3 Handling of acquisition of raw materials from multiple suppliers If the inventory data of greenhouse gas emissions in the manufacturing stage does not achieve the contribution rate of 10% or more of the total greenhouse gas emissions collected by the organization (in the manufacturing stage) and the upstream suppliers, emission inventory shall be conducted towards some upstream suppliers to acquire the primary data. If the raw materials are acquired from multiple suppliers, it is advised that the primary data of all suppliers be collected; in case of a large number of suppliers, primary data shall be better obtained from more than 50% of the raw materials of the products obtained. Furthermore, the average value of data obtained from suppliers shall better be used as secondary data of suppliers from whom data cannot be obtained.