

Submitted by Japan

Informal document **GRPE-86-17**  
86th GRPE, 30 May - 2 June 2022  
Agenda item 14

# LCA Methodology for Automobile towards Worldwide Carbon Neutrality

Japan

Quote from

“Informal document GRPE-85-29 Rev.1”

## Purpose

- For towards to achieve carbon neutrality, assessment of the life cycle CO<sub>2</sub> emission of automobiles needs to be clarified.

## Aim

- This activity aims to develop Carbon FootPrint - Product Category Rules for automobiles. (CFP-PCR (LCA Methodology))
- The CFP-PCR formulated by this activity may be used by CPs of both the 1958 and the 1998 agreements or by automobile manufacturers, as a guideline to assess the life cycle CO<sub>2</sub> emissions of automobiles for assistance in policy making or product development.

| Item  | Detail   | Scope     |
|---|--|-----------|
| <p><b>Methodology</b><br/>(Product Category Rule)</p> | <p>Development of automotive LCA methodology</p> <ul style="list-style-type: none"> <li>• Functional unit definition</li> <li>• System boundary definition</li> <li>• Activity/Intensity data definition</li> <li>• Requirement to Primary data (include data format)</li> <li>• Secondary data</li> </ul> | <p>✓</p>  |
| <p>Data Traceability System</p>                       | <p>Development of automotive LCA data traceability system</p> <ul style="list-style-type: none"> <li>• Data platform definition</li> <li>• Blockchain protocol definition</li> <li>• Workflow for certification</li> </ul>   | <p>NA</p> |

- ✓ Comparisons (e.g. powertrain systems ) based on the newly developed harmonized methodology under GRPE activities may be one of the tool for regional policy making or product development.
- ✓ Need further discussion regarding the LCA Regulatory requirements as a part of GRPE responsibilities

**Focus on discussion of methodology development**

# Direction of new methodology

※blue : Primary data

|              |               | Material Acquisition            | Production                       | Distribution                        | Use   | End of Life                     |
|--------------|---------------|---------------------------------|----------------------------------|-------------------------------------|---|---------------------------------|
| JAMA<br>2011 | Activity data | Weight of material[kg]          | Weight of processed material[kg] | Weight of distributed material[kg]  | Fuel economy [km/L]<br>Electricity economy [Wh/km]<br>Lifetime milage[km] | Weight of Vehicle[kg]           |
|              | Intensity     | Material intensity [kg-CO2e/kg] | Process intensity [kg-CO2e/kg]   | Distribution intensity [kg-CO2e/kg] | Fuel intensity [kg-CO2e/L]<br>Electricity intensity [kg-CO2e/kWh]         | Disposal intensity [kg-CO2e/kg] |



**Activity data (=weight of vehicle) cannot be ZERO.  
Need to develop methodology which intensity could be ZERO.**

|                |               |                                 |                                   |                                     |   |  |
|----------------|---------------|---------------------------------|-----------------------------------|-------------------------------------|---|--|
| New<br>Concept | Activity data | Weight of material[kg]          | Energy of processed material[kWh] | Weight of distributed material[kg]  | Fuel economy [km/L]<br>Electricity economy [Wh/km]<br>Lifetime milage[km] | Weight of recycled material[kg]<br>Weight of disposed material[kg] |
|                | Intensity     | Material intensity [kg-CO2e/kg] | Energy intensity [kg-CO2e/kWh]    | Distribution intensity [kg-CO2e/kg] | Fuel intensity [kg-CO2e/L]<br>Electricity intensity [kg-CO2e/kWh]         | Recycle intensity [kg-CO2e/kg]<br>Disposal intensity [kg-CO2e/kg]  |

**JAPAN is working on revision of automobile LCA methodology towards make it able to assess carbon neutrality activity.**

## ➤ Urgent

- It is urgent that fight against climate change.

## ➤ Life cycle perspective

- Towards carbon neutrality, it became more important to consider in life cycle perspective.

## ➤ Automobile LCA method in JAPAN

- In JAPAN we already developed transparency Automobile LCA method.
- It's able to assess CO<sub>2</sub> emissions, but now, we would like to **assess activities which towards carbon neutrality**.

## ➤ Worldwide harmonize

- Carbon neutrality cannot be achieved without worldwide government and private enterprise cooperation.
- **Let's discuss LCA methodology for Automobile at GRPE.**