### GRPE A-LCA IWG SG5(EoL) Meeting 011

### 23<sup>rd</sup> May 2024

### GRPE A-LCA IWG SG5 Leader ; Shoji Aoki (JASIC/JAMA), Co leader; Zhang Tongzhu (CATARC)

- 1. SG5 010 minutes & 011 agenda confirmation
- 2. EoL LCA discussion
  - 1) Material/Parts recycling modeling discussion
    - Each CPs and NGOs position
    - Module D study final report and discussion
    - CFF or RCM application guideline 3<sup>rd</sup> draft
  - 2) Other controversial topics discussion
    - ELV management out of sale region
    - Incineration with energy recovery
    - EoL process modeling harmonization
- 3. SG5 Drafting plan
- 4. Interaction with other SG
- 5. Next action

#### Minutes of GRPE A-LCA IWG SG5 meeting #10

Date and time : Tuesday, April 23, 2024, 12:00–14:00 (CET) Location : Online (Teams) Attendees : See attendee list

Agenda:

- 1. SG5 009 minutes & 010 agenda confirmation
- 2. GRPE A-LCA IWG 15th session flash report
- 3. EoL LCA discussion
  - 1) Other controversial topics discussion
    - EoL secondary data availability investigation in EU
    - ELV management out of sale region
  - 2) Material/Parts recycling modeling discussion
    - Each CPs and NGOs position
    - Module D study interim report
    - CFF or RCM application condition
- 4. Next action

Notes:

- 0. Housekeeping announcement
- At this meeting, Ms. Caroline Mir (ADEME) replaces Ms. Elodie Collot (UTAC) as the representative of France.

#### 1. SG5 009 minutes & 010 agenda confirmation

• The minutes and agenda were approved unanimously.

#### 2. GRPE A-LCA IWG 15th session flash report

• An overview of the 15th IWG meeting was shared. There were no questions or comments.

#### 3. EoL LCA discussion

#### 1) Other controversial topics discussion

#### - EoL secondary data availability investigation in EU

- Mr. Patrone (JRC) explained the tables of secondary data on EoL and CFF parameters in Europe that JRC had studied.
  - The list of CFF parameters can be found in Part C of Annex II of the Environmental Footprint Recommendation 2021/2279. The European Commission regularly reviews the parameters. Typically, application-specific parameters are selected where possible, otherwise materialspecific parameters are selected.
  - Data on secondary materials are available as they are reported under the ELV regulation.
- The main questions and answers, and comments were as follows:
  - <u>Mir (ADEME)</u>: Regarding the allocation factors A and B, does the European Commission provide these parameters with the appropriate granularity for different types of metals and plastics? Or do you think we still need a proposal for factor A?

<u>Andreasi (JRC)</u>: In general, there is good granularity. There is a bit of a hierarchy. First, you have to check if there is an application-specific A value. If an application-specific A value is unavailable, the material-specific A value is used. Plastics are generally assigned an A value of 0.5, and metals are assigned an A value of 0.8. If a material-specific A value is unavailable, the user shall apply an A value of 0.5. And the B value as an allocation factor for energy recovery processes is currently zero.

• <u>Yamamoto (JASIC)</u>: Is there a specific automotive material CFF using the parameters in this annex?

<u>Andreasi (JRC)</u>: I mentioned before about A and B, which are mainly related to the market characteristics of the materials. I think that the standard could have automotive-specific parameters. The A and B are pretty strict. However, R1 and R2, which are recycling rates, are much more flexible, although they depend on the materials. The annex is like a generic framework, and it just gives parameters. In this case, it depends on the model. So, complete processes should be defined, and then you have to use secondary data sets to model them.

 <u>Yamamoto (JASIC)</u>: Secondary datasets related to the EoL process should be available in the EU ELV Regulation. Is it possible to present this to us?

<u>Patrone (JRC)</u>: More information will be given at the next meeting.

• The availability of secondary data in Europe will be followed up at the next SG5 meeting.

#### - ELV management out of sale region

- Mr. Yamamoto (JASIC) proposed the following compromise: option 3 (country of EoL) should be adopted, but if this is difficult, option 1 (country of sale) is acceptable. The main comments were as follows:
  - <u>Meyer (US/EPA)</u>: I'm for option 3 because it's better to model the countries where the process occurs. If you don't know the process of the export destination, you can use the global averages. However, it is hard to understand why option 1 is a backup plan, as the EoL process in the country where the vehicles were sold is entirely irrelevant.
  - <u>Goy (OICA)</u>: If a cut-off method is used, the problem does not arise. I'm in favor of option 3 because it could raise the issue of greenwashing, especially in Europe. The official position of OICA will be clarified at the next SG5 meeting.
  - <u>Nucci (European Aluminum)</u>: I support EPA's proposal. If there is no information on the destination of ELVs, a global average could be used as a default option. At least in Europe, there are many vehicles whose destinations are unknown. So, in this case, I think it could be an excellent option to require a global average recycling process.

- <u>Mir (ADEME)</u>: I'm in favor of option 3. If traceability is unavailable, use a worst-case dataset instead of global averages. And you don't have credits for recycling because you don't know if you recycle your vehicle.
- <u>Martineau (CLEPA)</u>: CLEPA is neutral. I think it's a little bit strange to take global averages.
   Another point is to promote flexibility and traceability as much as possible.
- Mr. Yamamoto asked the participants who are in favor of option 3 to clarify the traceability system in option 3.

#### 2) Material/Parts recycling modeling discussion

#### - Each CPs and NGOs position

- Mr. Goy (OICA) presented a list of pros and cons of CFF and cut-off that OICA had studied. Feedback on this study will be considered at the next SG5 meeting.
- Mr. Aoki (JASIC) asked OICA to reach a consensus by June when we would start drafting.

#### - Module D study interim report

- Regarding the recycling model, the SG5 expert subcommittee has studied Module D twice in the past to develop a compromise between the CFF and the cut-off.
- Mr. Yamamoto (JASIC) presented the interim report of the Module D study. A summary of the second small meeting was as follows:
  - CLEPA presented its study on a new recycling model based on the Module D concept.
  - JRC did not support CLEPA's proposal because Module D didn't have an A factor. JRC suggested a compromise.
  - All parties agreed to do further study based on JRC's compromise.
- Dr. Nucci (European Alminium) presented Module D in the building sector, and Mr. Martineau (CLEPA) presented the CLEPA study.
- The compromise on Module D will be discussed again at the third small meeting in June.

#### - CFF or RCM application condition

- The leading team proposed a second CFF/RCM application guidelines draft at the March SG5 meeting. Mr. Yamamoto (JASIC) reviewed the main feedback from participants at that time.
- The draft will be updated as a third draft to reflect the discussions at the small meeting and shared at the May SG5 meeting.

#### 4. Next action

• The next SG5 meeting will be held online on Thursday, May 23, from 12:00 to 14:00 CET.

#### Appendix 1: Attendee list

| ANDREASI BAS (JRC-ISPRA)            | Ŕ | 은 Moosang Yu (유무상)                         | Ŕ |
|-------------------------------------|---|--|---|
|                                     | Ŷ | O Nicolle Giuliani                         | Ŕ |
| Benedetta Nucci                     | Ŕ | PAFFUMI Elena (JRC-ISPRA)                  | Ŕ |
| GOY Matthieu                        | Ŕ | PATRONE Gian (JRC-ISPRA)                   | Ŕ |
| Li Yang-CN ( <b>グスト)</b><br>会議のゲスト  | Ŕ | s Suzuki (JP/JARI) ( <b>グスト)</b><br>会議のゲスト | Ŕ |
| Martineau, Do (uid26846)            | Ŕ | Tongzhu ZHAN (ゲスト)<br>会議のゲスト               | Ŕ |
| O Meyer, David                      | Ŕ | e yamamoto, katsuya<br>開催者                 | Ŷ |
| MIR Caroline                        | Ŕ | YJ Chang ( <b>グスト)</b><br>会議のゲスト           | Ŕ |
| NIO Adam CN ( <b>グスト)</b><br>会議のゲスト | Ŕ |  |   |

### 1. SG5 010 minutes & 011 agenda confirmation

- 1) Material/Parts recycling modeling discussion
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#### Material/Parts recycling modeling Internal discussion summary of Cutoff and CFF

|                      |                      | Result   | Remarks   |  |  |  |  |  |
|----------------------|----------------------|--|---|--|--|--|--|--|
| Leading<br>Team      | China<br>(CATARC)    | •Both Cutoff and CFF methods<br>should be included in the<br>standard  | <ol> <li>CFF method: for the purpose of comparing<br/>different technical route without considering<br/>responsibilities;</li> <li>CUT-OFF method: for the purpose of comparing<br/>different individual products with same technical<br/>route.</li> <li>Detailed boundary and principle of these two<br/>methods presemted in SG5 006</li> </ol>            |  |  |  |  |  |
|                      | Japan<br>(JASIC)     | •Support CATARC proposal   | •Specific use case description on Cutoff or CFF<br>to be discussed respecting ToR of A-LCA  |  |  |  |  |  |
|                      | France               | •Both Cutoff and CFF methods<br>could be acceptable, CFF is<br>favorable •No strong position. A final official po-<br>will be taken at the next SG5 meeting  |   |  |  |  |  |  |
|                      | US(EPA)              | ·Both Cutoff and CFF methods are preferable  |   |  |  |  |  |  |
| Main<br>Participants | OICA                 | •OICA sees the potential of the CATARC proposal. However, it is needed to wait<br>for CLEPA to present their proposal too, and to get more detailed information on<br>the CATARC proposal.<br>•Secondly, To request of a clear definition/condition when to use which method |   |  |  |  |  |  |
|                      | CLEPA                | •Cradle-to-Gate, step 1 (level 3&4 ,reporting'): Support Cutoff<br>•Cradle-to-Grave, step 2 (level 1&2 ,technology comparison'): Support CFF<br>for selected parts and associated Materials  |   |  |  |  |  |  |
|                      | European<br>Aluminum | •Only CFF, need to study Scenario, could be acceptable   | but having both methodologies in A-LCA  |  |  |  |  |  |
| Observers            | JRC                  | •CFF approach is favorable.<br>Considering both methodologies<br>in the discussion according to the<br>scope could be acceptable   | European Commission Recommendation (EU)<br>2021/2279 on the use of the environmental footprint<br>methods to measure and communicate the life cycle<br>environmental performance of products and organisations, in<br>which Annex 1 e 2 refer to PEF (Product Environmental<br>Footprint) while Annex 3 e 4 to OEF (Organisation<br>Environmental Footprint). |  |  |  |  |  |

As of 23<sup>th</sup> April

Feedback for "OICA End-of Life methodology comparison Advantages & disadvantages for CFF and cut-off criteria methods – proposal"

# Advantages & disadvantages for CFF and cut-off criteria methods - proposal

|                                 | C                              | FF                         | cut                | off |
|---------------------------------|--------------------------------|----------------------------|--------------------|-----|
| Item                            | PRO                            | CON                        | PRO                | CON |
|                                 |                                |                            |                    |     |
| APPLICABILITY                   |                                |                            |                    |     |
| Complexity of the calculation / |                                |                            |                    |     |
| effort of application           |                                | Slightly higher effort     | Easier application |     |
| Complexity of the calculation / |                                | Highly complex / deep      |                    |     |
| intuitive approach              |                                | understanding is required  | Easy to explain    |     |
|                                 | -Upcoming CFF parameter        |                            |                    |     |
|                                 | data set for major             |                            |                    |     |
|                                 | Automotive materials (Steel,   |                            |                    |     |
|                                 | AL, Cu) in early 2024 for JPN, |                            |                    |     |
|                                 | Ev, E*v, Erec, ErecEoL in IDEA |                            |                    |     |
|                                 | database and A, R1, R2,        |                            |                    |     |
|                                 | Osin/On Osout/On in IANAA      | Not applied in vehicle ICA |                    |     |

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Module D study interim report

Reminder

#### <1<sup>st</sup> Meeting memo>

1. Meeting date; 7<sup>th</sup> March 2024

2. Attendee; Aoki-san, Zhang-san, Dominique-san, Goy-san, Nucci-san, Patrone-san, Elena-san, Yamamoto, SG5 leading team member

3. Discussion & Conclusion;

-EU Aluminum and JPN presented What is Module D in Construction industry.

-Each party agreed to study about Module D treatment in A-LCA internally

#### <2<sup>nd</sup> Meeting memo>

1. Meeting date; 9<sup>th</sup> April. 2024

2. Attendee; Aoki-san, Zhang-san, Dominique-san, Hofer-san, Goy-san, Nucci-san, Patrone-san, Elena-san, Yamamoto, SG5 leading team member

3. Discussion & Conclusion;

-CLEPA presented their study about new recycling modeling based on Module D concept.

-JRC didn't support CLEPA proposal because Module D didn't have A parameter and proposed a compromise, which was;

- Keep Module D separate structure.
- Replace Module D formular to relevant CFF modular to include A parameter.
- Include separated relevant CFF modular to total vehicle CFP following CFF philosophy.

-JRC compromise was confirmed as attached.

-Each party agreed to have further study based on JRC compromise and to have another SG5 small meeting 3 weeks later.

-In order to support further study, JRC are going to e-mail CFF parameter in EF compliant dataset by IWG @ Korea.

-This result will be shared in 23<sup>rd</sup> April SG5 meeting as an interim report.

### **CLEPA** proposal

### A-LCA SCOPE & EOL OPTION 'SEPARATE EOL MODUL'

RCM basis system boundary ing of power-/plants, roads, railways, etc. always cut-on. Ecosphere (A-LCA Modul A-LCA Modul A-LCA Modul A-LCA Modul Cradle-to-Gate-phases Use-phase EoL-phase 2nd life-cycle ,impact from gate raw materials extraction to finished vehicle (1st life product)' ,impact from gate ,impact from gate ELV ,impact from vehicle sale to ELV collection to ELV gate ELV 1st life Product system collection' disposal to 2nd disposal' (Complete Vehicle) life market') ·like EpD Modul D. letact calculation tbou Background system Background system Foreground system Foreground system Foreground system Background system Secondary data Secondary/primary data Primary data Primary data Homologation data Secondary data (upstream) (upstream) (Supplier manufacturing) (OEM car production) (downstream, aftermarket) (downstream) ╋ Transformation Transformation Bodyshop & Virgin raw End-of-Life Operation of material process from raw process from assembly of treatment of complete vehicle extraction material to intermediate to finished complete vehicle finished intermediate by (purchased) and its parts (purchased) part parts to tier n suppliers by tier 1 suppliers complete vehicle Inputs SG5 (material) Material Energy (Transportation) Cutputs HG emissions /aste or material/ ergy recovery) SG2 + SG3 SG4 SG5 (product) Transports (Well-to-Wheel approach) included between gates & inside gates (for inbound & outbound logistics)

Courtesy to Magna LCA team

6

4/9/2024

Module D basis

additional

boundary

system



### Module D study final report

#### <3<sup>rd</sup> Meeting memo>

- 1. Meeting date; 16<sup>st</sup> May 2024
- 2. Attendee; Aoki-san, Zhang-san, Dominique-san, Hofer-san, Goy-san, Nucci-san, Patrone-san, Elena-san, Yamamoto, SG5 leading team member
- 3. Discussion & Conclusion;
  - -Discussed about CLEPA proposed Module D concept with JRC compromise.
  - -As a result, JRC compromise Modlule D concept has been confirmed as provisional common position of SG5 small group on recycling modeling in A-LCA.
  - -Share this result and discuss further in the next SG5 with below homework, no more SG5 small meeting organized.
- CLEAP requested JRC not to apply Module D concept to all material type and EU Aluminum requested JRC to study this application to BAT. JRC agreed to study and will bring their idea to the next SG5 meeting on 23<sup>rd</sup> May.
- OICA will study JRC compromise Modlule D concept deeply to update and finalize their position as soon as possible.
  - -Based on this provisional common position, CFF or RCM(Cutoff) application guideline 003 was proposed prior to the next SG5.

SG5 leading team requested participants to bring their FB in the next SG5.

-CATARC will contact IWG Leading team to discuss about "use case" treatment in A-LCA.

### 2. Secondary data availability -EU CFF parameter-

|   |   |                           |  | · · · · · · · · · · · · · · · /                    |   | _        |
|---|---|---------------------------|--|--|---|----------|
|   | Region ; EU   |                           |  |  | EU  |          |
|   | CFF parameter   |                           | Data set<br>availability                 | Data set information                               | Remarks   |          |
| • | CLEAP reque<br>type and EU<br>JRC agreed<br>on 23 <sup>rd</sup> May | ested<br>I Alum<br>to stu | JRC not to<br>ninum reque<br>udy and wil | apply Module<br>ested JRC to s<br>I bring their io | D concept to all material study this application to BA dea to the next SG5 meetir | ר.<br>שו |
|   | Ev  |                           | $\checkmark$                             |  | Part C of Annex II of EC Recommendation 2021/2279                                 |          |
|   | E*v   |                           | $\checkmark$                             |  | Part C of Annex II of EC Recommendation 2021/2279                                 |          |
|   | Erecycled   |                           | $\checkmark$                             |  | Part C of Annex II of EC Recommendation 2021/2279                                 |          |
|   | ErecyclingEoL   |                           | $\checkmark$                             |  | Part C of Annex II of EC Recommendation 2021/2279                                 |          |
|   | Eer   |                           | $\checkmark$                             |  | Part C of Annex II of EC Recommendation 2021/2279                                 |          |
|   | LHV   |                           | $\checkmark$                             |  | Part C of Annex II of EC Recommendation 2021/2279                                 |          |

For detail CFF and CFF parameter confirmation, please refer to the European Commission Recommendation (EU) 2021/2279 t https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021H2279&from=EN

 $\checkmark$ 

 $\mathbf{v}$ 

 $\checkmark$ 

 $\checkmark$ 

 $\checkmark$ 

Energy

(ASR thermal

recovery etc)

 $X_{ER,heat}$ 

ESE, heat

XER,elec

ESE, elec

Part C of Annex II of EC Recommendation 2021/2279

Part C of Annex II of EC Recommendation 2021/2279

Part C of Annex II of EC Recommendation 2021/2279

Part C of Annex II of EC Recommendation 2021/2279

Part C of Annex II of EC Recommendation 2021/2279

$$\begin{array}{ll} \mbox{material} & (1-R_1)E_{\nu} + R_1 \times \left(AE_{recycled} + (1-A)E_{\nu} \times \frac{Q_{Sin}}{Q_P}\right) + (1-A)R_2 \times \left(E_{recyclingEoL} - E *_{\nu} \times \frac{Q_{Sout}}{Q_P}\right) \\ \mbox{energy} & (1-B)R_3 \times \left(E_{ER} - LHV \times X_{ER,heat} \times E_{SE,heat} - LHV \times X_{ER,elec} \times E_{SE,elec}\right) \\ \mbox{disposal} & (1-R_2 - R_3) \times E_D \end{array}$$

### CFF or RCM(Cutoff) application guideline -Draft 003-

- Circular Footprint Formula (CFF) or Recycled Content Method (RCM) should be applied to the evaluation of material/parts recycling.

- In cases where obtaining appropriate data for CFF parameter setting is difficult, Recycled Content Method (RCM) may be applied.

- In case of CFF application, 1) Production burden should be evaluated in the material production stage. Both 2) Burdens and benefits related to secondary materials input and 3) Burdens and benefits related to secondary materials output should be evaluated and merged in the disposal/recycling stage as *Module D* (*naming t.b.d.*). *Module D* should be separately reported and included into total vehicle CFP.

#### Circular Footprint Formula

$$(1 - R_1)E_V + R_1 \times \left(AE_{recycled} + (1 - A)E_V \times \frac{Q_{Sin}}{Q_p}\right) + (1 - A)R_2 \times \left(E_{recyclingEoL} - E_V^* \times \frac{Q_{Sout}}{Q_p}\right)$$

$$\longrightarrow Module \ D \ structure \ (naming \ t.b.d.)$$

1) Production burdens  $(1 - R_1)E_V + R_1 \times E_{recycled}$ 2) Burdens and benefits related to secondary materials input  $-(1 - A)R_1 \times \left(E_{recycled} - E_V \times \frac{Q_{sin}}{Q_P}\right)$ 3) Burdens and benefits related to secondary materials output  $(1 - A)R_2 \times \left(E_{recyclingEoL} - E_V^* \times \frac{Q_{sout}}{Q_P}\right)$ 

Product Environmental Footprint Category 1 Rules Guidance 2 Version 6.3 – May 2018

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### SG5 Controversial topics -Progress and actions-

| Торіс                                      | Option 1  | Option 2   | Option 3  |  |
|--|---|--|---|--|
| 0.Material/Part<br>s recycling<br>modeling | Recycled<br>content method<br>(Cutoff)                                      | Closed Loop<br>Approximation<br>Method (CLAM)                                | Circular<br>Footprint<br>Formula (CFF)                      |  |
| 1.Boundary conditions                      | Agree with LTM  | -SG5 common position   | n confirmed   |  |
| 2.Secondary data                           | -Secondary data availa<br>in Japan. China, US and<br>-Propose EoL process r | bility of each EoL proce<br>d EU confirmed. Follow<br>nodeling harmonizatior | ss and CFF parameter<br>up EU actual data.<br>1             |  |
| 3.Second life<br>parts                     | ond life  |  |   |  |
| 4.Logistics                                | (Include) -Pr<br>-Wa  | oposed as one of overa<br>ait for SG1 direction                              | rching aspects in IWG.                                      |  |
| 5.ELV<br>management out<br>of sale region  | Take into account<br>process of country of                                  | Take into account<br>global average  | Take into account<br>process of country                     |  |
| 6 Recycle process                          | •Fo   | llow up the compromise   | #3 draft  |  |
|  |   | -SG5 common positio  | on confirmed  |  |
| 7. Incineration<br>with energy<br>recovery | Incineration only   | Incineration and<br>thermal/electricity<br>recovery by CFF                   | -New topics for ASR,<br>Tire and Oil<br>disposal evaluation |  |

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| Торіс                             | Option 1   | Option 2                            | Option 3  |
|-----------------------------------|--|-------------------------------------|---|
| ELV management out of sale region | Take into account<br>process of country of<br>sale | Take into account<br>global average | Take into account<br>process of country<br>of EoL |
| Neutral<br>CLEPA                  | JPN  |                                     | JRC CHI   |
|                                   | Or,EU AL   | Or,EU AL                            | EPA   |

FRA

OICA

#### Japan End-of-Life Vehicle Recycling and Treatment Flow



| Торіс                             | Option 1   | Option 2                            | Option 3  |  |  |  |  |
|-----------------------------------|--|-------------------------------------|---|--|--|--|--|
| ELV management out of sale region | Take into account<br>process of country of<br>sale | Take into account<br>global average | Take into account<br>process of country<br>of EoL |  |  |  |  |
| Neutral<br>CLEPA                  | JPN  |                                     | JRC CHI   |  |  |  |  |
|                                   | Or,EU AL   | Or,EU AL                            | EPA   |  |  |  |  |

<Request from the minutes> Mr. Yamamoto asked the participants who are in favor of option 3 to clarify the traceability system in option 3.

![](_page_21_Figure_3.jpeg)

OICA

FRA

| Торіс                                | Option 1   | Option 2                            | Option 3  |
|--------------------------------------|--|-------------------------------------|---|
| ELV management<br>out of sale region | Take into account<br>process of country of<br>sale | Take into account<br>global average | Take into account<br>process of country<br>of EoL |
| Neutral<br>CLEPA                     | JPN  |                                     | JRC CHI   |
|                                      | Or,EU AL   | Or,EU AL                            | EPA   |

#### April version ; to be updated

FRA

ΟΙCΔ

<New proposal draft> The EoL GHG emission of vehicles exported from the country where they were sold/used should be evaluated by the EoL process of the country where they were exported and disposed/recycled, but if the country to which they were exported cannot be tracked or it is difficult to grasp the EoL process of the country where they were exported and disposed/recycled, they may be evaluated by the EoL process of the country where they were sold/used originally.

Exported Used Car: 1,344,000 units in '21

Exported Used Car

| Торіс                                | Option 1   | Option 2                            | Option 3  |
|--------------------------------------|--|-------------------------------------|---|
| ELV management<br>out of sale region | Take into account<br>process of country of<br>sale | Take into account<br>global average | Take into account<br>process of country<br>of EoL |
| Neutral<br>CLEPA                     | JPN  |                                     | JRC CHI   |
|                                      | Or,EU AL   | Or,EU AL                            | EPA   |

#### New version ; JPN updated

FRΔ

ΟΙCΔ

The EoL GHG emission of vehicles exported from the country where they were sold/used should be evaluated by the EoL process of the country where they were exported, used and disposed/recycled. However, if the country to which they were exported cannot be tracked or it is difficult to grasp the EoL process of the country where they were exported, used and disposed/recycled, the EoL process of the country in which the new car was sold/used may be provisionally applied as not being exported.

Exported Used Car

<New proposal draft>

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### 7. Incineration with energy recovery

![](_page_25_Figure_1.jpeg)

### energy $(1-B)R_3 \times (E_{ER} - LHV \times X_{ER,heat} \times E_{SE,heat} - LHV \times X_{ER,elec} \times E_{SE,elec})$

**B:** allocation factor of energy recovery processes: it applies both to burdens and credits.

**R**<sub>3</sub>: it is the proportion of the material in the product that is used for energy recovery at EoL.

**EER:** specific emissions and resources consumed (per unit of analysis) arising from the energy recovery process (e.g. incineration with energy recovery, landfill with energy recovery, …).

**E**<sub>SE,heat</sub> **and E**<sub>SE,elec</sub>: specific emissions and resources consumed (per unit of analysis) that would have arisen from the specific substituted energy source, heat and electricity respectively.

**X**<sub>ER,heat</sub> **and X**<sub>ER,elec</sub>: the efficiency of the energy recovery process for both heat and electricity. **LHV**: Lower Heating Value of the material in the product that is used for energy recovery.

### 1. SG5 010 minutes & 011 agenda confirmation

- 1) Material/Parts recycling modeling discussion
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### EoL process modeling harmonization

Smelting

-EoL processes in each region is almost the same

-Propose JPN EoL process as a harmonized EoL process modeling for A-LCA drafting

![](_page_27_Figure_3.jpeg)

#### 【CHI】

#### 2 Dismantling parts processing of EoL vehicle EoL vehicle dismantling (SG5) Check and Register Fuel tank Ferrous waste Temporary storage Primary dismantling Primary dismontling Competitions Primary Prima

| L | dismantling              | Catalytic                         | Waste catalytic                | Recycle    | Crushing &                   | ┣     | Smelting                      | Þ        | leaching                  | Ъ   | purification             | 7-1-     | Precious meta                      |
|---|--------------------------|-----------------------------------|--------------------------------|------------|------------------------------|-------|-------------------------------|----------|---------------------------|-----|--------------------------|----------|------------------------------------|
|   |                          | Liquid gas t                      | ank - Waste liquid<br>gas tank | Disposal   | Liquid residue<br>extraction | ┣     | Valve<br>dismantling          | )<br> •[ | Pyrolysis                 | ┣   | Packing & briquetting    | 1        | Ferrous waste                      |
|   |                          | Lead-acio<br>battery              | Waste lead-<br>acid battery    | Recycle    | Electrolyte<br>extraction    | ]•[   | Crushing                      | •        | Multiple<br>screening     | ]•[ | Smelting                 | <u>-</u> | Secondary lead                     |
|   |                          | Glass                             |                                | Recycle    | Crushing                     | ]▶[   | Mixing with stock             | ┣[       | Melting                   | ]•[ | blowing                  | ]-       | Product mad<br>of secondary        |
|   |                          | Tyre                              |                                | Recycle    | Purification                 | •     | temperature<br>cracking       | •        | Gas-liquid<br>separation  | •   | Condense                 | ]>       | Oil                                |
|   |                          | Plastics                          | > Waste plastics               | Recycle    | Crushing                     | •     | Rinsing                       | •        | Melting &<br>Extrusion    | •   | Cooling &<br>pelletizing | ]        | Plastics pelle                     |
| Г | Secondary<br>dismantling | Frame and<br>suspension<br>system | -> Waste metal                 | Recycle    | Shearing                     | •     | Electrolyte<br>extraction     | •        | Packing &<br>briquetting  | •   | Smelting                 | ]+       | Secondary me<br>(ferrous and nonfe |
| - |                          | Assembly* ar<br>other             | nd R                           | Reus       | Checking                     |       | Rinsing                       | •[       | Parts<br>replacement      | •   | Testing                  | ]        | Remanufactu<br>g product           |
|   | Ļ                        | component                         | s                              | e          | No additional process        | _     |                               |          |                           |     |                          |          | Reusage<br>product                 |
|   | Delivery                 | Traction batt                     | ery                            | e          | Pretreatment                 | •     | Leaching and<br>concentration | •        | Precursor<br>synthesizing | •   | Sintering                | <b>}</b> | cathode<br>material                |
|   |                          |                                   |                                | e          | Pack<br>disassembly          | ▶     | Cell testing                  | •        | Recombination             |     | Welding & assembly       | ┣        | Repurposing<br>battery             |
|   |                          | Other part                        | s                              | Disposal   | To be added                  |       |                               |          |                           |     |                          |          |                                    |
|   | Common process           | Fuel Vehicle-                     | EV-specific                    | Assembly I | naine Steerina ae            | ar Tr | ansmission From               | ot a     | ind rear ayles. Fr        | ame | etc                      |          |                                    |

### Secondary data availability summary

-[D1]ELV treatment and [D3]ASR treatment; The secondary date are available in EU, JPN and CHI.

-[D2]Recovered parts treatment; Some secondary data are not available depending on parts in JPN and CHI

|             |   |                        | Activity data              | Intensity data availability<br>(Secondary data) |                |                 |             |  |  |
|-------------|---|------------------------|----------------------------|---|----------------|-----------------|-------------|--|--|
| EoL process |   |                        | (Primary data)             | EU<br>(JRC)                                     | JPN<br>(JASIC) | CHI<br>(CATARC) | US<br>(EPA) |  |  |
| [D1]ELV     | Dismantling                                 |                        | ELV weight [kg]            | ~   | ~              | ~               | -           |  |  |
| treatment   | Shredding                                   |                        | Dismantled ELV weight [kg] | >   | ~              | ~               |             |  |  |
| [D2]        | a)Tire                                      | Disposal               | Parts weight [kg]          | >   | ~              | (~)             |             |  |  |
| Recovered   | b)Lead BAT                                  | Disposal               | Parts weight [kg]          | ~   | ~              | (~)             |             |  |  |
| treatment   | :)Air Bag Disposal Parts weight [kg]        |                        | ~                          | ~   | -              | -               |             |  |  |
|             | d)AC refrigerant Disposal Parts weight [kg] |                        | Parts weight [kg]          | ~   | ~              | (~)             | -           |  |  |
|             | e)Oil Disposal                              |                        | Parts weight [kg]          | ~   | ~              | (~)             | _           |  |  |
|             |   | Parts Remanufactuaring | Parts weight [kg]          | ~   | -              | -               | -           |  |  |
|             |   | Parts Reuse            | Parts weight [kg]          | ~   | -              | -               | -           |  |  |
|             |   | Parts Repurpose        | Parts weight [kg]          | ~   | *              | -               | -           |  |  |
|             |   | Disposal               | Parts weight [kg]          | ~   | ~              | (~)             | -           |  |  |
|             | Other Parts                                 | Disposal/Recycle       | Parts weight [kg]          | ~   | -              | -               | -           |  |  |
| [D3]ASR     | ASR Recycle (The                            | rmal recovery)         | ASR weight [kg]            | ~   | ~              | ~               | _           |  |  |
| trearment   | ASR Residue land                            | fill                   | Residue weight [kg]        | ~   | ~              | ~               | —           |  |  |

### 1. SG5 010 minutes & 011 agenda confirmation

### 2. EoL LCA discussion

- 1) Material/Parts recycling modeling discussion
  - Each CPs and NGOs position
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- 2) Other controversial topics discussion
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  - Incineration with energy recovery
  - EoL process modeling harmonization

### 3. SG5 Drafting plan

- 4. Interaction with other SG
- 5. Next action

### IWG Drafting Schedule

![](_page_30_Figure_1.jpeg)

### SG5 6 months schedule for Drafting

|   |                               | 2024   |  |                                   |                       |                       |       | 2025    | 2026         |           |
|---|-------------------------------|--|--|-----------------------------------|-----------------------|-----------------------|-------|---------|--------------|-----------|
|   | 6                             | 7  | 8  | 9                                 | 10                    | 11                    | 12    | 1       |              | 3         |
| Main activities                               |                               | Finaliz  | ing Me   | thodol                            | ogies a               | nd Dra                | fting |         |              |           |
| GRPE A-LCA IWG                                |                               |  |  | ☆<br>26,27                        |                       |                       |       |         | ☆ 10<br>GRPE | ☆<br>₩P29 |
| SG7 activities                                | 1                             | <b>A</b>   |  | \$X                               |                       |                       |       | \$\$    |              |           |
| SG5 Meeting                                   | ゼズ<br>17                      | ☆<br>9   |  | ☆<br>25                           | $\overleftrightarrow$ | ☆                     | ☆     | হর      |              |           |
| Con<br>top<br>1. Methodologies<br>development | ntrovers<br>bics<br>alization | ial  | 1  | st Draft                          |                       |                       | Fir   | nal Dra | aft          |           |
| Ta<br>Ca<br>2. Drafting                       | able of<br>ontents            | -Overal<br>Layout<br>Confirm<br>-1 <sup>st</sup> SG5<br>Presen | I<br>ation<br>draft<br>tation<br>Study<br>by each<br>CPs and<br>NGOs | 1 <sup>st</sup> Draft<br>Discussi | 2nd<br>on<br>Draft    | 3rd<br>☆<br>finalizat | 4th   | Final   | sion         |           |

### Request from IWG Chair

## 1st phase of SG7

• Target:

To update "Table of Contents" of PCR

Subgroups are requested;

- To submit draft "Table of Contents" of relevant section(s) to SG7
- To submit outline of contents of relevant section(s) to SG7
- SG3 to draft "words glossary (definition of technical terms) "

Deadline 21st of June 2024 (Coordination between SGs will follow.)

### 1. SG5 010 minutes & 011 agenda confirmation

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### **Result of interaction**

| Interaction<br>with | Result   | Next action                             |
|---------------------|--|---|
| SG1                 | <ul> <li>An overarching scenario for logistics</li> <li>Determining the cut-off criteria for<br/>whether the logistic impact of EoL is<br/>eliminated</li> </ul> | SG1 to capture in overarching aspect    |
| SG2                 | <ul> <li>Environmental burden for recycle<br/>material</li> </ul>  | SG5 to share recycle modeling           |
| SG3                 | EoL allocation   | SG3 and SG5 to conduct separate meeting |
| SG4                 | <ul> <li>How to treat maintenance parts</li> </ul>   | SG4 and SG5 to conduct separate meeting |
| SG6                 | <ul> <li>For emission factor of electricity and<br/>fuel, which future scenario values or<br/>current values are used in the EoL<br/>calculation?</li> </ul>     | SG5 to send request to<br>SG6           |

### Shared topics among SGs "Tournament"

|      | SG 1                                | SG 2   | SG 3  | SG 4   | SG 5   | SG 6 |
|------|-------------------------------------|--|---|--|--|------|
| SG 1 |                                     |  |   |  |  |      |
| SG 2 | Database criteria                   |  |   |  |  |      |
| SG 3 | Verification                        | Handover point,<br>multifunctionalit<br>y, chain of<br>custody |   |  |  |      |
| SG 4 | FU for 2nd use (non-<br>automotive) | (none)   | Repres. vehicle.,   |  |  |      |
| SG 5 | Timing of LCA<br>Logistics          | EoL allocation<br>(e.g.CFF<br>param.)                          | EoL allocation,<br>waste trace/<br>treatment, 2nd<br>life           | EoL of<br>maintenance<br>part, reuse of<br>parts |  |      |
| SG 6 | Database criteria                   | Dataset critera,<br>data collection,<br>handover point         | Dataset critera,<br>g<br>reen energy req,<br>multifunctionalit<br>y | Conversion<br>factor                             | Dynamic<br>modell.,<br>emission<br>factors, regional<br>/ global |      |

### SG1 - SG5

- Transportation and logistics are part of overarching aspects
  - for efficiency reason, consider current available methodologies
- Scenario depends on region
- Purpose of IWG ; individual product vs product system
- A-LCA includes all powertrains
- The timing of LCA determination is one of open issues (preuse timing is temporally default timing)

### SG2 – SG5

- EoL allocation:
  - Cut-off for SG2
  - Cut-off & CFF for SG5
  - EoL is required at each life stage of the product
- Specific discussion on CFF parameters

Meeting 16th May 11:00 – 13:00 (CET)

### SG3 – SG5

- EoL allocation
  - Clarify which impact the EoL allocation on SG3
- Trace & treatment of production waste
- 2nd Life & all related extended life
- Polluter pays principle?
  - How to count / how to handle / creditable or not?

**Meeting 5th June 11:00 – 13:00 (CET):** Discuss the topics & agree on next steps/discussions

### SG4 – SG5

- System boundary: handover point is already agreed.
- EoL of maintenance parts.
- Re-use of parts : overarching topic and need guidance from IWG

Meeting 16th May 11:00 – 12:00 (CET)

### SG5 – SG6

• Requests from SG5 will be shared with SG6

### 1. SG5 010 minutes & 011 agenda confirmation

- 1) Material/Parts recycling modeling discussion
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### 3. SG5 12 months Schedule

|                                |  |  | 2023                   |           |                  |   | 2024                              |                      |         |   |  |                   |                                    |                    |    |
|--------------------------------|--|--|------------------------|-----------|------------------|---|-----------------------------------|----------------------|---------|---|--|-------------------|------------------------------------|--------------------|----|
|                                |  |  | 7                      | 8         | 9                | 10  | 11                                | 12                   | 1       | 2   | 3  | 4                 | 5                                  | 6                  |    |
| Main activities                |  |  | Develop Methodologies  |           |                  |   |                                   |                      |         |   |  |                   |                                    |                    |    |
| GRPE A-LCA IWG                 |  | <b>☆</b> 10                                |                        | ☆7        | ☆<br>17-18       |   | 숬4                                | 公<br>7-8             | 公<br>20 |   | ☆<br>18-19                                   |                   |                                    |                    |    |
| SG5 leading team Meeting (LTM) |  | ☆11<br>☆26                                 | ☆<br>23                | ☆6<br>☆20 | ☆12<br>☆25       | ☆9<br>☆22   | <b>☆</b> 5<br>☆21                 | ☆18<br>☆31           | ☆21     | ☆<br>☆  | ☆<br>☆                                       | ☆<br>☆            | 77<br>*                            | ž                  |    |
| SG5 Meeting ☆ 26               |  | 公12  |                        | ☆4        | ☆19              | ☆13   | 숬12                               | 숬23                  | ☆<br>22 | 公<br>26   | ☆<br>23                                      | ☆                 | 77                                 | •                  |    |
|                                | 1. Level co<br>Definiti  | oncept<br>on & Initial target              | ☆12                    |           |                  |   |                                   |                      |         |   |  |                   |                                    |                    |    |
|                                | 2. System boundary with<br>activity data & Intensity<br>data based on each<br>regional EoL process |  | Reginal info. shari    |           |                  | sharin  | Beneficial Harmonization          |                      |         |   |  |                   |                                    |                    |    |
| Objectives                     |  |  |                        |           | ☆<br>JPN,<br>CHI | ☆<br>EU#1   | ☆<br>EU#2                         |                      |         | ☆<br>US   | ☆ ■'<br>#1<br>Re                             | gional 2<br>cudy  | ••• <sub>☆</sub><br>#2<br>2ndary ( | ່າ<br>Fina<br>data | al |
|                                | 1) Material<br>recycling<br>modeling3. Contro<br>versial<br>topics2) Other                         | 1) Material/Parts<br>recycling<br>modeling | ☆ JRC                  | 0.        | ☆<br>JAMA        |   | Common<br>Pros/Cons<br>Discussion |                      | s<br>n  |   | CFF or RCM<br>Application<br>condition Study |                   |                                    |                    |    |
|                                |  |  | intro.                 |           | CFF<br>intro.    | ☆<br>#1   | ☆<br>#2                           | ☆<br>#3              | ☆<br>#4 | ☆<br>#5   | ☆<br>#1<br><b>2</b>                          | ☆<br>#2<br>Second | ☆<br>#3<br>arv data                | Fina<br>Fina       | al |
|                                |  | 2) Other                                   | Boundary<br>Conditions |           |                  | 1.Boundary #<br>3. 2 <sup>nd</sup> life Par<br>4. Logistics |                                   | ry #2<br>Parts<br>cs |         | 5. ELV management<br>out of sale region<br>6. Recycle process |  |                   |                                    |                    |    |
|                                |  |  |                        |           |                  |   |                                   | ☆                    | ☆       | ☆   | ☆  | ☆                 |                                    |                    |    |
|                                | 4. Summary for drafting  |  |                        |           |                  |   |                                   |                      |         |   |  |                   |                                    | ম                  | •  |

Next

### - Next SG5 meeting

- 1. Date ; 2hours, middle June
- 2. Venue; Online
- 3. Attendee; all SG5 member
- 4. Agenda; according to SG5 12 months schedule
  - Material/Parts recycling modeling
    - Focus on SG5 common position finalization
  - Other controversial topics finalization
  - Drafting "Table of Contents"
  - Interaction with other SG
  - Next action

<Proposal>

- -June SG5 ; 17<sup>th</sup> June from 12:00 to 14:00 @CET
- -July SG5 ; 9<sup>th</sup> July from 12:00 to 14:00 @CET
- -Sept SG5 ; Before IWG on 25th Sept in person, EU