GRPE A-LCA IWG
SG5(EoL) Meeting 005

12th Dec. 2023

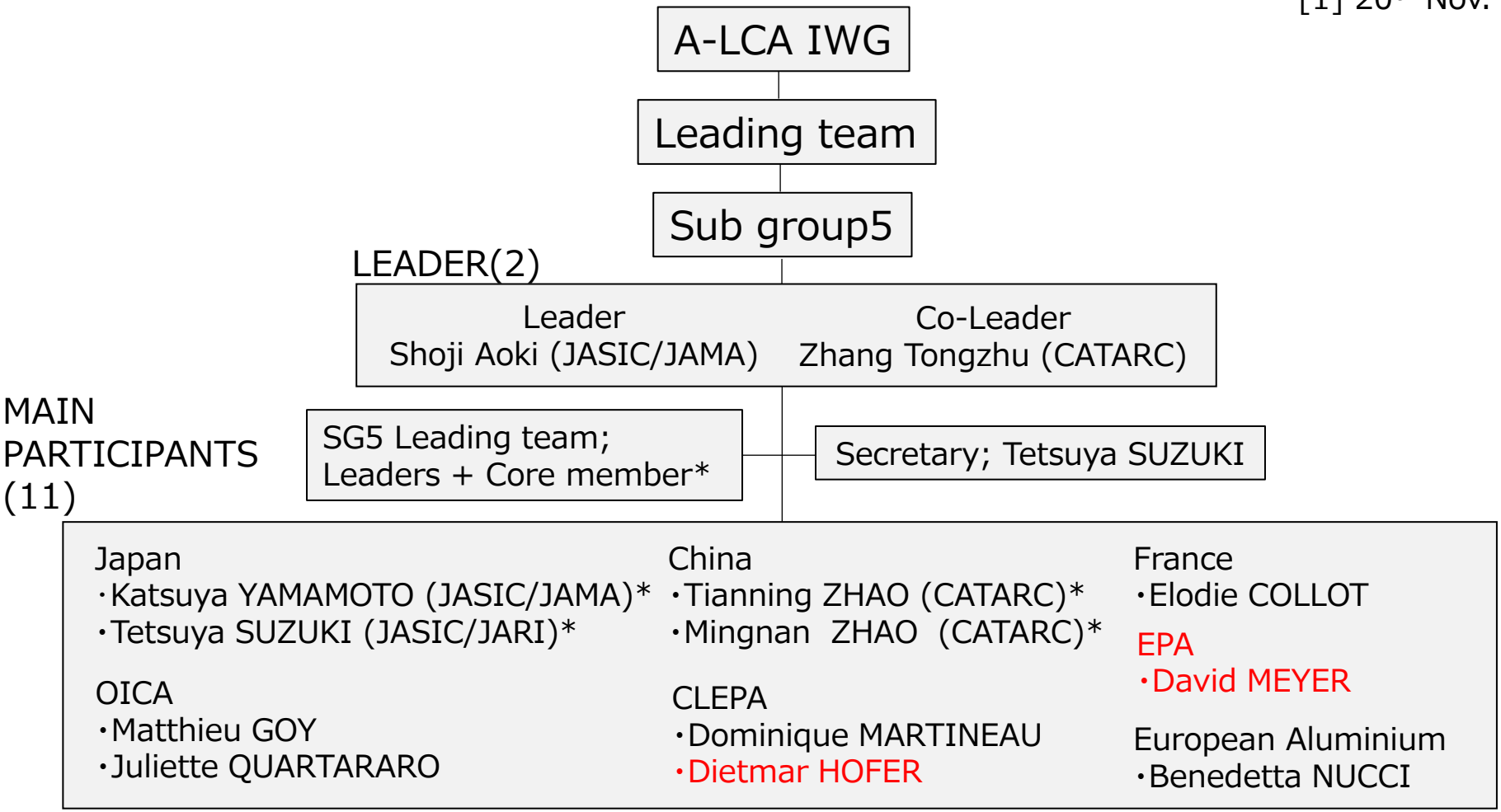
GRPE A-LCA IWG SG5
Leader ; Shoji Aoki (JASIC/JAMA),
Co leader; Zhang Tongzhu (CATARC)

Agenda

1. SG5 organization update
2. SG5 005 minutes & 005 agenda confirmation
3. EoL LCA discussion
   1) Material/Parts recycling modeling #3
   2) Controversial topics discussion #1
4. Next action

1. Organization -Organization Chart-

[1] 20th Nov. '23



David E. Meyer, PhD
Research Chemical Engineer
U.S. Environmental Protection Agency
Center for Environmental Solutions and Emergency Response
Land and Remediation Technology Division

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Minutes of GRPE A-LCA IWG SG5 meeting #5

Date and time: Monday, November 13, 2023, 9:00–10:35 (CET)
Location : Online (Teams)
Attendees : See attendee list

Agenda:

1. SG5 004 minutes & 005 agenda confirmation
2. EoL LCA discussion
   1) EoL system boundaries and processes with activity data & intensity data
      - EU regional information sharing (OICA ACEA)
   2) Material/Parts recycling modeling #2
3. Next action

Notes:

1. SG5 004 minutes & 005 agenda confirmation

- The minutes and the agenda were unanimously approved.

2. EoL LCA discussion
   1) EoL system boundaries and processes with activity data & intensity data
      - EU regional information sharing (OICA ACEA)

- Mr. Goy presented the European EoL process. The main questions and answers, and comments were as follows:
  - Yamamoto (JASIC): Does shredding also produce ferrous scrap?
  - Goy (OICA): It depends on the level of dismantling we can achieve. Some ferrous material comes from dismantling, and some from shredding. All of the ferrous material from the heavy residue goes to recycling, and some of it can be completely reused.

- Yamamoto (JASIC): Is data on reused parts available? For example, which parts are reused, and how many parts are reduced?
- Goy (OICA): No. Because the data definitely depends on the environment in which the recyclers operate. The more recyclers there are around them, the more effort they will put into dismantling vehicles to get parts.
- Hofer (CLEPA): We assume that in the near future, there will really be mandatory dismantling parts. And there will be a clear list of parts.
- Goy (OICA): There are significant efforts not only to promote recycling, but to go one step further and promote the circular economy. And that means more and more parts to be reused.
- Hofer (CLEPA): How will dismantled parts be registered or reported to the European Commission? If there is no reporting of those parts that have to be dismantled to an authority, I don't see that we will get good data that we can input in the EoL phase of our LCA models.
- Nucci (European Aluminium): That's a very interesting question. Because the current ELV directive has a target at the vehicle level, and then you have the reporting from the member states, but it's in a different directive. If it's going to be mandatory, I'm sure the Commission will look at how to make sure that it's implemented and tracked. At the moment, it is the fractions of materials that are reported, but it could be extended to parts in the future.
- Paffumi (JRC): I can try to verify this kind of information with my colleagues. If I find some information, I will share it with the SG5 members. I will try to gather information before the next meeting.
- Martineau (CLEPA): It is good to have this information. What I want are two things: recycling material and dismantling parts. Because I really make the difference between what should be dismantled in order to make the reuse possible or to facilitate the recycling and what should be at least pure material recycling.

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- Aoki (JASIC): The comments so far are important, and we would like to deepen the discussion. However, this IWG is only developing guidelines, not regulations. Therefore, the regulatory scenario is a separate issue.
- Yamamoto (JASIC): We should also discuss the modeling of material recycling and parts reuse. In particular, we should discuss whether to include parts reuse modeling as a controversial topic from November or December.
- Martineau (CLEPA): Regarding the cut-off, we need to assess how important it is to consider reuse.
- Hofer (CLEPA): Right. We should really find out if reuse has the deep impact that is expected or not.

- Several participants pointed out the need to study the impact of reusing parts.

2) Material/Parts recycling modeling #2

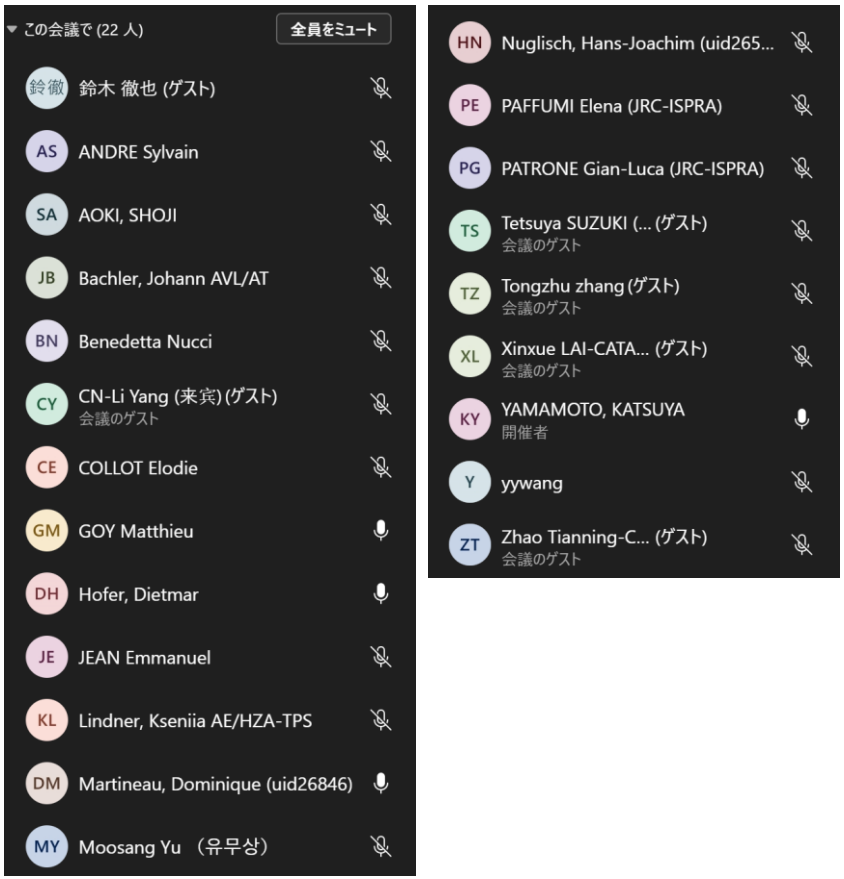
- In response to the CATARC proposal, the positions of each CP and NGO were confirmed and completed in the table on slide 15 as follows:
  - China: No update from the original proposal. The detailed boundary and principles of these two methods need to be discussed further.
  - Japan: Support CATARC proposal. Specific use case description on cut-off or CFF to be discussed with respect to the ToR of A-LCA.
  - France: Under review until next week. There is no strong position.
  - OICA: OICA sees potential in the CATARC proposal. However, it is necessary to wait for CLEPA to present its proposal as well and to get more detailed information on the CATARC proposal. Second, to ask for a clear definition/condition of when to use which method.
  - CLEPA: Reconsider the position of the EoL allocation method. The cut-off is preferable until CLEPA concerns are resolved. For example, the responsibility of EoL CFP shares between OEM and parts supplier.

- European Alminium: CFF only, need to study scenario.
- JRC: Under study until the next SG5 meeting.

- Any additional comments from each CP and NGO will be added to the table by November 19.
- Each CP and NGO will continue to discuss about the position and bring it to the next SG5.

3. Next action

- The next SG5 meeting will be held online in December. The secretary will schedule the date and time with a meeting scheduling tool.
- Dr. David Meyer, who is the new member of SG5 and representative of the US EPA, plans to attend the meeting and present EoL status in the US.



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【Reminder】
Recycling modeling Benchmarking #1 in last SG5 meeting

<Conclusion>
CATARC, PFA, EU Aluminium and JASIC study were well acknowledged and Pros/Cons of Cut off and CFF method were deeply discussed.
As a result, following CATARC proposal was tentatively agreed as SG5 favorite plan.
Each group take CATARC proposal back as for a more widely internal discussion and discuss again in the next meeting.

[CATARC proposal]
Both methods should be in the standard:
-First is CFF method for the purpose of comparing different technical route
-Second is CUT-OFF method for the purpose of comparing different individual products

Material/Parts recycling modeling#2
Internal discussion summary

		Result	Remarks
Leading Team	China (CATARC)	・No update from original proposal	・Detailed boundary and principle of these two methods need to be discussed further
	Japan (JASIC)	・Support CATARC proposal	・Specific use case description on Cutoff or CFF to be discussed respecting ToR of A-LCA
Main Participants	France	・Under study until end next week	・No strong position
	OICA	・OICA sees the potential of the CATARC proposal. However, it is needed to wait for CLEPA to present their proposal too, and to get more detailed information on the CATARC proposal. ・Secondly, To request of a clear definition/condition when to use which method	
	CLEPA	・Re-assess the position on EoL allocation method	・Cut off preferable until CLEPA concern resolved e.g. EoL CFP responsibility share between OEM and Parts Supplier,,,
	European Aluminum	・Only CFF, need to study Scenario	
Observers	JRC	・CFF approach is favourable	European Commission Recommendation (EU) 2021/2279 on the use of the environmental footprint methods to measure and communicate the life cycle environmental performance of products and organisations, in which Annex 1 e 2 refer to PEF (Product Environmental Footprint) while Annex 3 e 4 to OEF (Organisation Environmental Footprint).

CFF method and CUT-OFF method

in LCA methodology

<CATARC Recommendation>

Both methods should be **included** in the standard

- **First is CFF method** for the purpose of comparing different technical route
- **Second is CUT-OFF method** for the purpose of comparing different individual products

The Function Unit of Vehicle，consists of several declared unit，including declared unit of Vehicle production，Vehicle operation，Vehicle energy，Vehicle recycling and so on。

Carbon footprint in the Vehicle Product system should be responsible by different Company，

for example，the OEM should be responsible for the Vehicle carbon footprint from the “cradle-gate”，and the oil Company should be responsible for the oil carbon footprint from the “well-tank”，and the Grid Company should be responsible for the Grid carbon footprint from the “cradle-gate”，and transportation Company should be responsible for the transportation service carbon footprint from all the transportation process，and recycling Company should be responsible for the recycled Product carbon footprint from “ELV - recycled Product”。

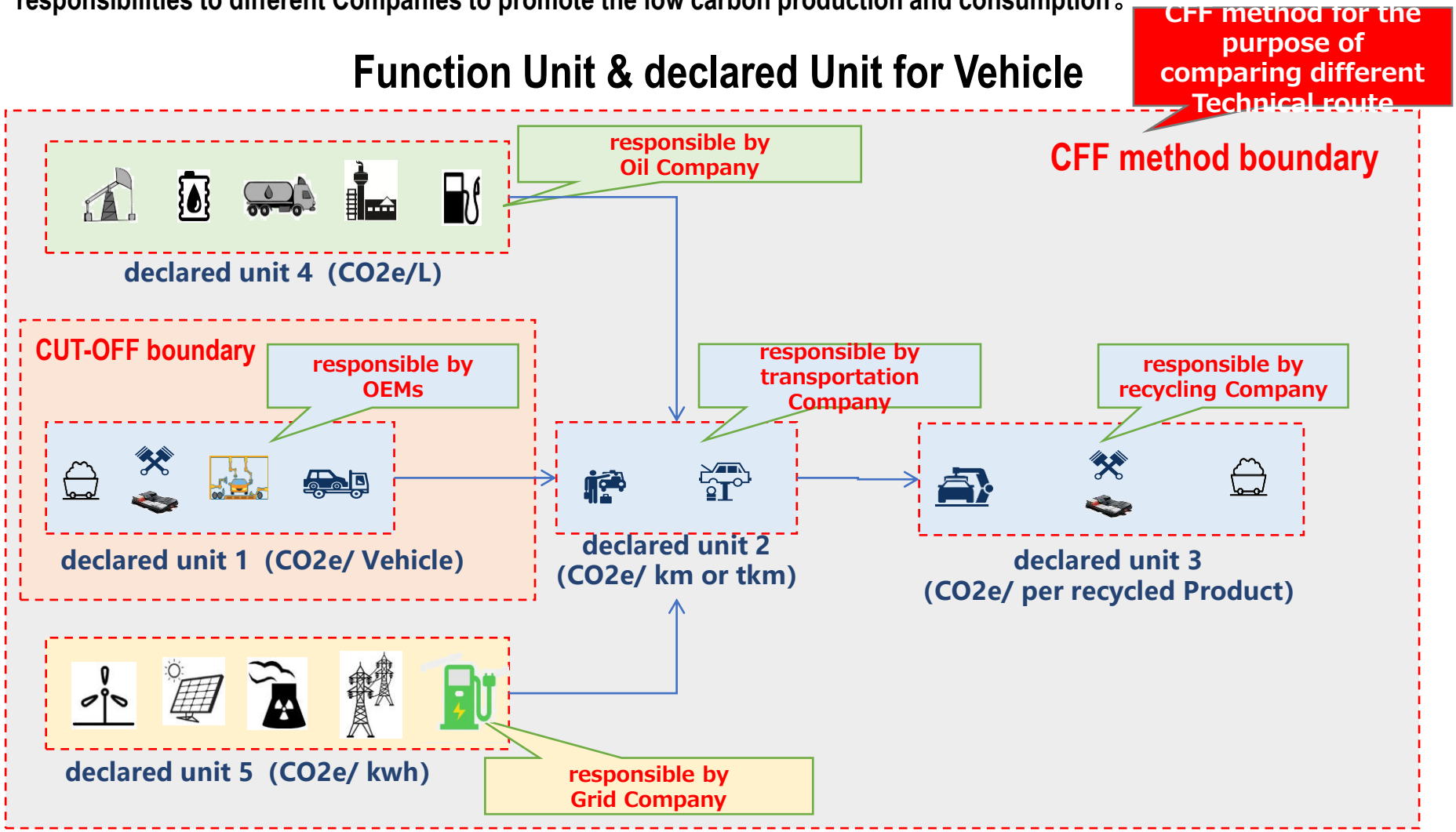
1、CFF method：for the purpose of comparing different Technical route，using secondary data to calculate Vehicle whole life cycle carbon footprint，this work is statistical scientific research，without considering who is responsible for the carbon emission。The result can help government making policies to promote the development of low carbon Technical route

2、CUT-OFF method：for the purpose of comparing different individual Product made by different Company，using Primary data or punitive secondary data to calculate Vehicle partial life cycle carbon footprint，divide different responsibilities to different Companies to promote the low carbon production and consumption。

1、CFF method：for the purpose of comparing different Technical route， using secondary data to calculate Vehicle whole life cycle carbon footprint， without considering who is responsible for the carbon emission；

2、CUT-OFF method：for the purpose of comparing different individual Product made by different Company， using Primary data or punitive secondary data to calculate Vehicle partial life cycle carbon footprint， divide different responsibilities to different Companies to promote the low carbon production and consumption。

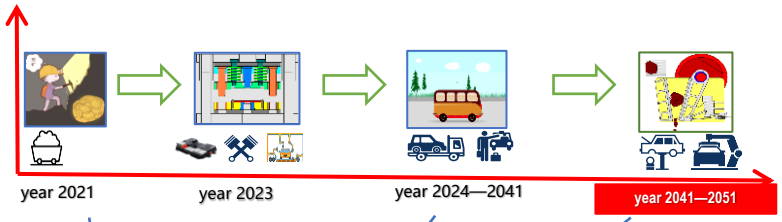
Function Unit & declared Unit for Vehicle



Function Unit for Vehicle Product (Kg CO2/km or Kg CO2/t*km or Kg CO2/ person*km)

For the purpose of comparing different technical routes

CFF method



one person， sitting in office

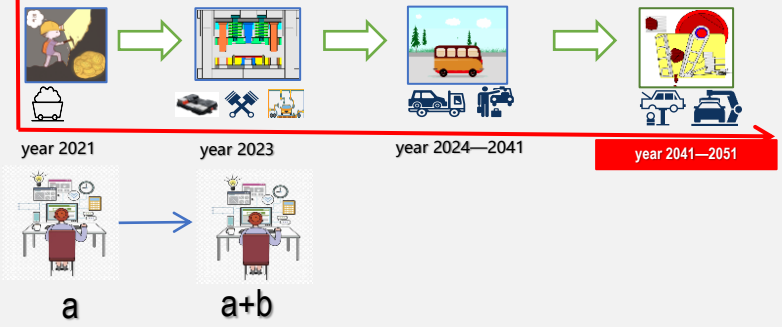
calculate the PCF through all the Vehicle life cyle using secondary data

scientific research,to promote the development of low carbon technology

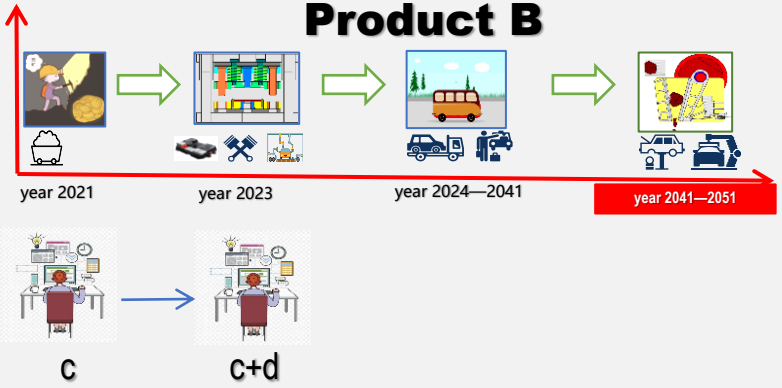
For the purpose of comparing different individual products

cut-off method

Product A



Product B

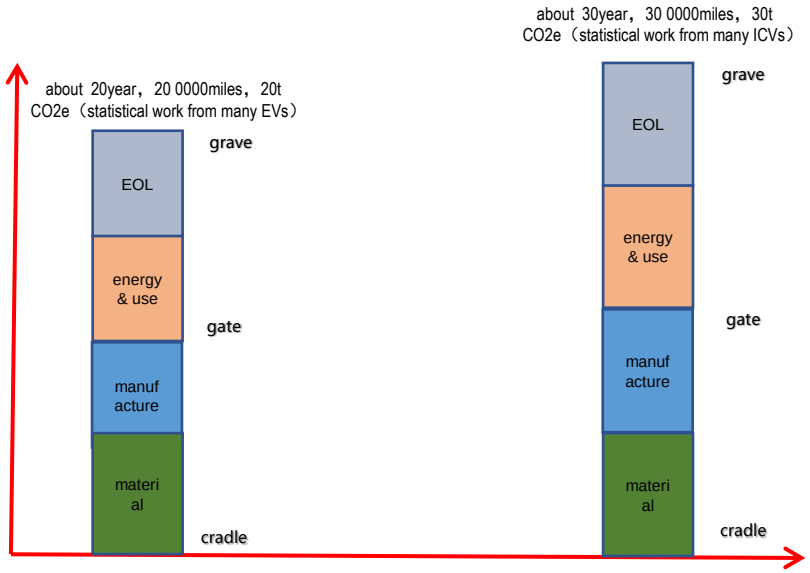


a lot of person， in their companies

calculate the PCF through Vehicle partial life cyle using Primary data and some secondary data

1、For the purpose of comparing different technical routes（EVs & ICVs）

CFF method



EVs

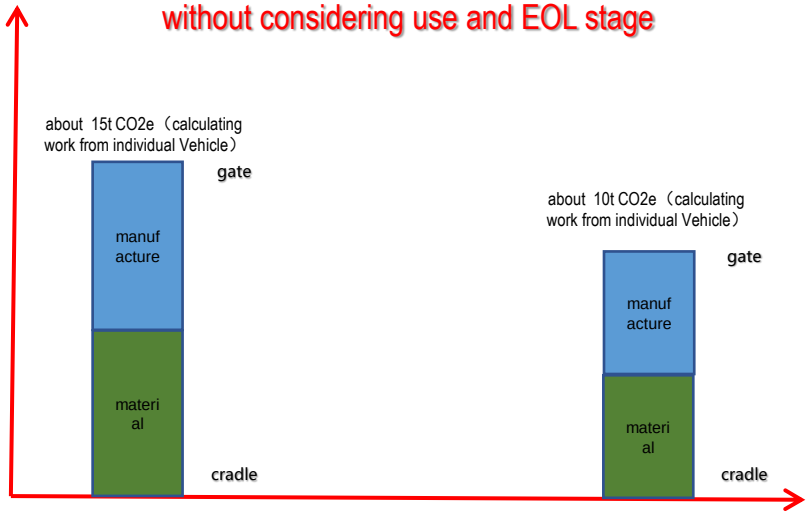
VS

ICVs

Government
encourage the development of EVs

2、For the purpose of comparing different individual Vehicles（EV a & EV b）

cut-off method



EV a

VS

EV b

Government
encourage EVs made by Company B

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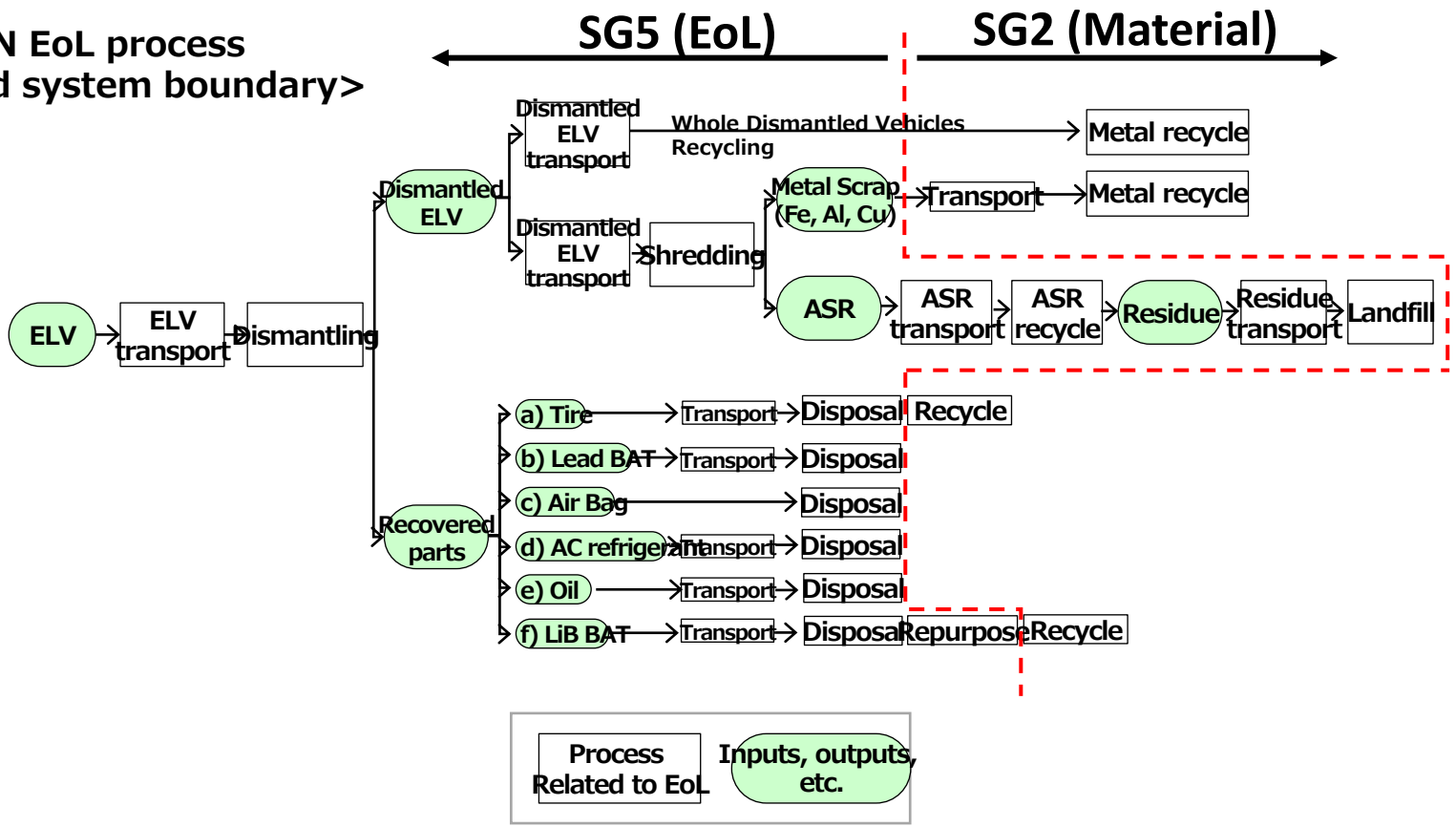
SG5 Controversial topics list

Topic	Option 1	Option 2	Option 3
0.Material/Parts recycling modeling ☆ to be discussed today	Recycled content method (Cutoff)	Closed Loop Approximation Method (CLAM)	Circular Footprint Formula (CFF)
1.Boundary conditions ☆	SG 5	SG 2	
2.Secondary data	Global harmonised	Region by region	Country by Country
3.Second life parts ☆	Include	Exclude	-
4.Logistics ☆	Include	Exclude	-
5.ELV management out of sale region	Take into account process of country of sale	Take into account global average	Take into account process of country of EoL
6.Recycle process	Current process	Future process	-

1. SG5 system boundary including SG2 boundary

1) From ELV transport to Disposal (e.g. Incineration or Landfill)
2) Material recycling
   -SG5(EoL) ; to Scrap generation
   -SG2(Material) ; From Material recycling
3) Parts reuse/repurpose
   -SG5(EoL) ; to reuse/repurpose parts generation

<JPN EoL process and system boundary>

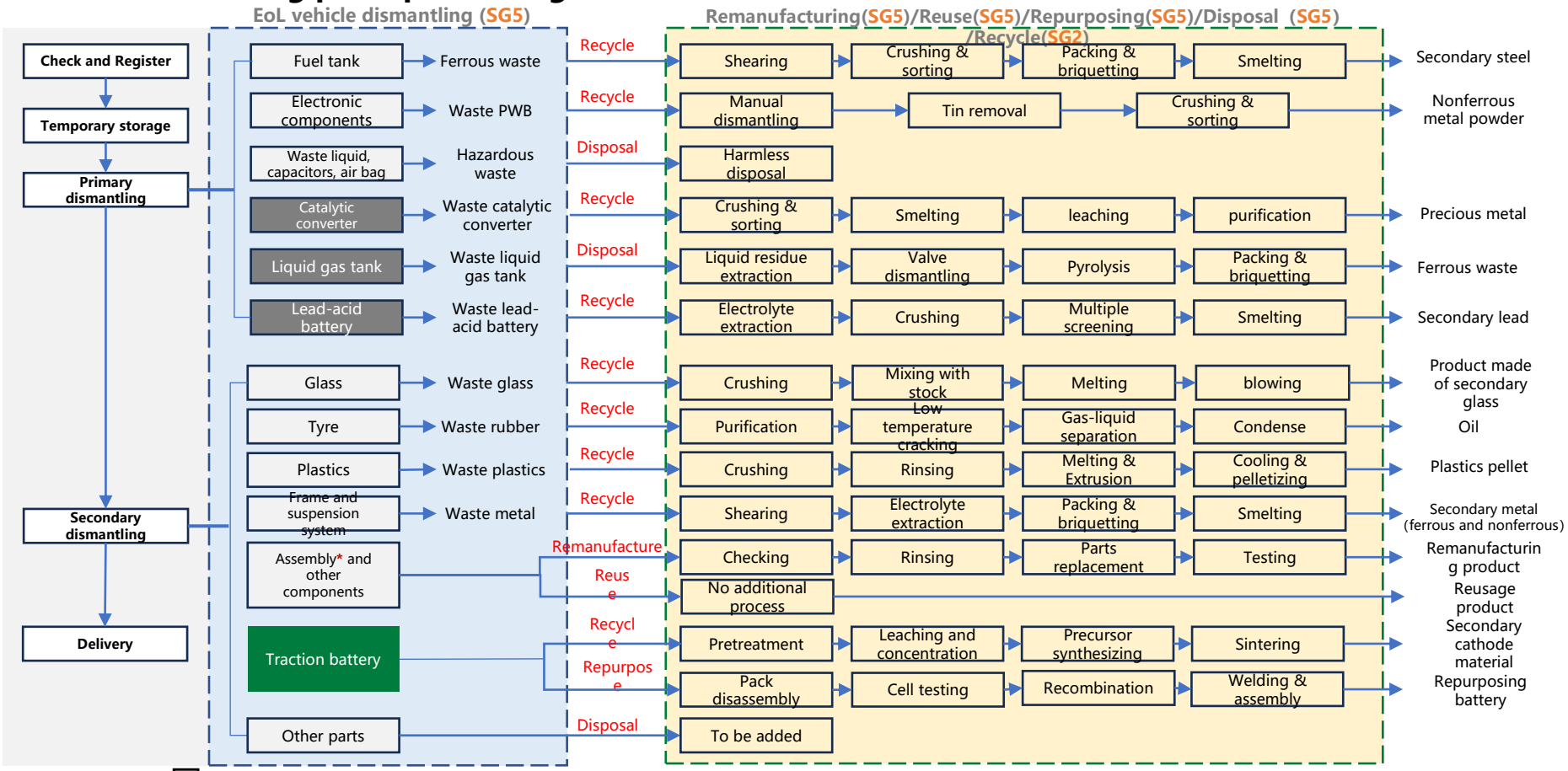


3. Second life parts

Topic	Option 1	Option 2	Option 3
Second life parts	Include	Exclude	-

- Include in case that Second life parts traceability confirmed

<China Dismantling parts processing of EoL vehicle>

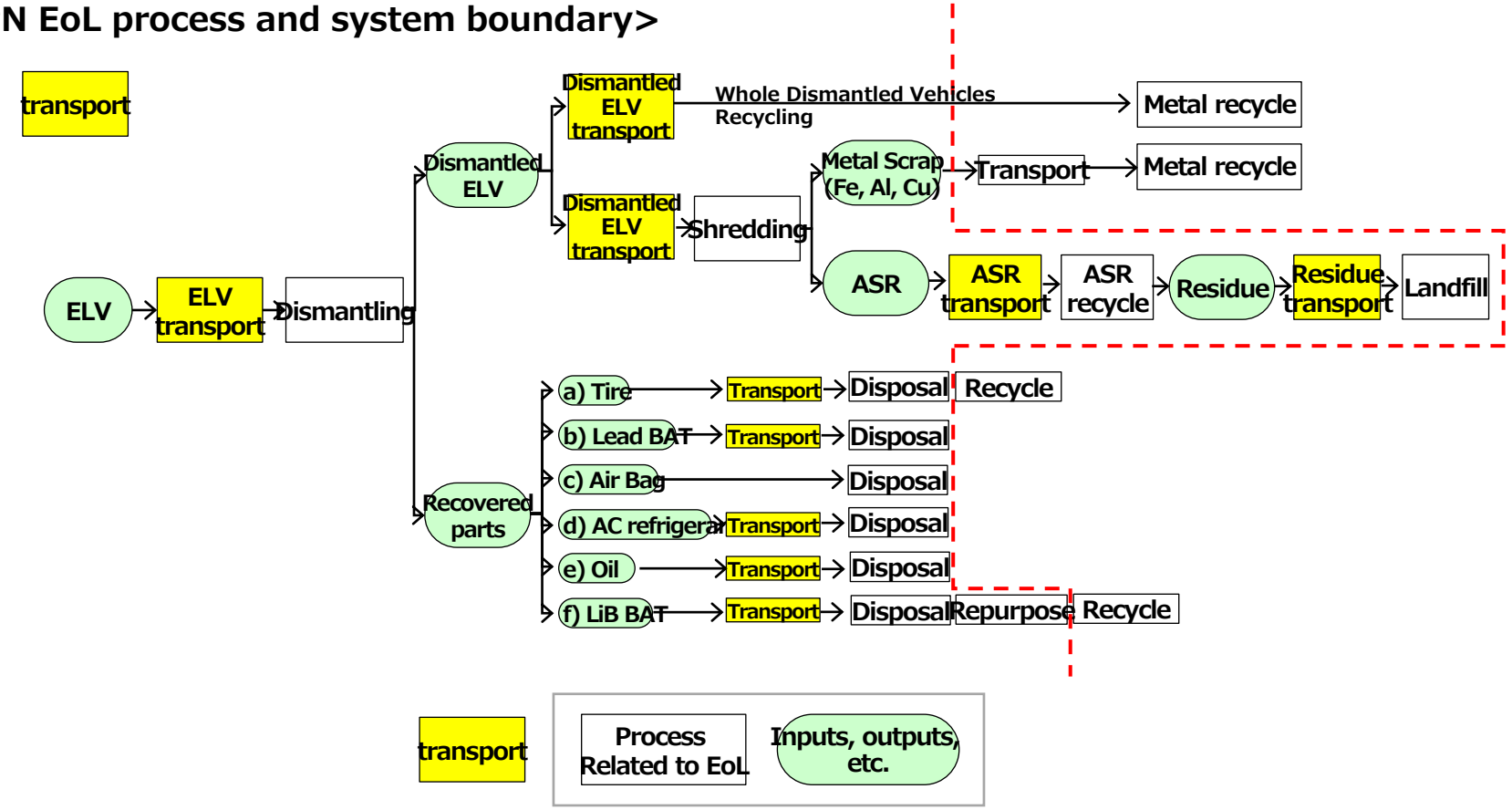


4. Logistics

Topic	Option 1	Option 2	Option 3
Logistics	Include	Exclude	-

- Align with other SG following overarching topics conclusion

<JPN EoL process and system boundary>



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4. SG5 12 months Schedule

Today

			2023						2024					
			7	8	9	10	11	12	1	2	3	4	5	6
Main activities			**Develop Methodologies**											
GRPE A-LCA IWG			☆10		☆7	☆ 17-18			☆					☆
SG5 leading team Meeting (LTM)			☆11 ☆26	☆23	☆6 ☆20	☆12 ☆25	☆9 ☆22	☆5 ☆	☆ ☆	☆ ☆	☆ ☆	☆ ☆	☆ ☆	☆ ☆
SG5 Meeting		☆26	☆12		☆4	☆19	☆ 13	☆ **12**	☆	☆	☆	☆	☆	☆
Objectives	**1. Level concept Definition & Initial target**		☆12											
	2. System boundary with activity data & Intensity data based on each regional EoL process				**Reginal info. sharing** ☆ JPN, CHI	☆ EU#1	☆ EU #2		☆ **US**	☆ **#1** ▪▪▪▪▪▪▪▪▪▪ **(Regional Study)**	Harmonization ☆ **#2**	☆ **Final**		
	3. Contro versial topics	**1) Material/Parts recycling modeling**	☆JRC CFF intro.		☆ JAMA CFF intro.	**Common Pros/Cons Discussion** ☆ #1	☆ #2	☆ **#3**	CFF Application Study & Road Map	☆ **#1**	☆ **#2**	**Final**		
		2) Other			Boundary Conditions#1 ☆			**1.Boundary #2 3. 2nd life Parts 4. Logistics** ☆	☆	2.Secondary data 5. ELV management out of sale region 6. Recycle process ☆	☆	☆		
	4. Summary for drafting													☆

Rec.

- Next SG5 meeting

1. Date ; 2hours, the middle of Jan.
2. Venue; Online
3. Attendee; all SG5 member
4. Agenda; according to SG5 12 months schedule
   - US EoL process sharing
   - Material/Parts recycling modeling #4
   - Controversial topics discussion #2
   - Next action

Appendix

2. Secondary data

Topic	Option 1 <Level2>	Option 2 <Level3>	Option 3 <Level3>
Secondary data	Global harmonised	Region by region	Country by Country

- Challenge to Option 2 <Level 3>

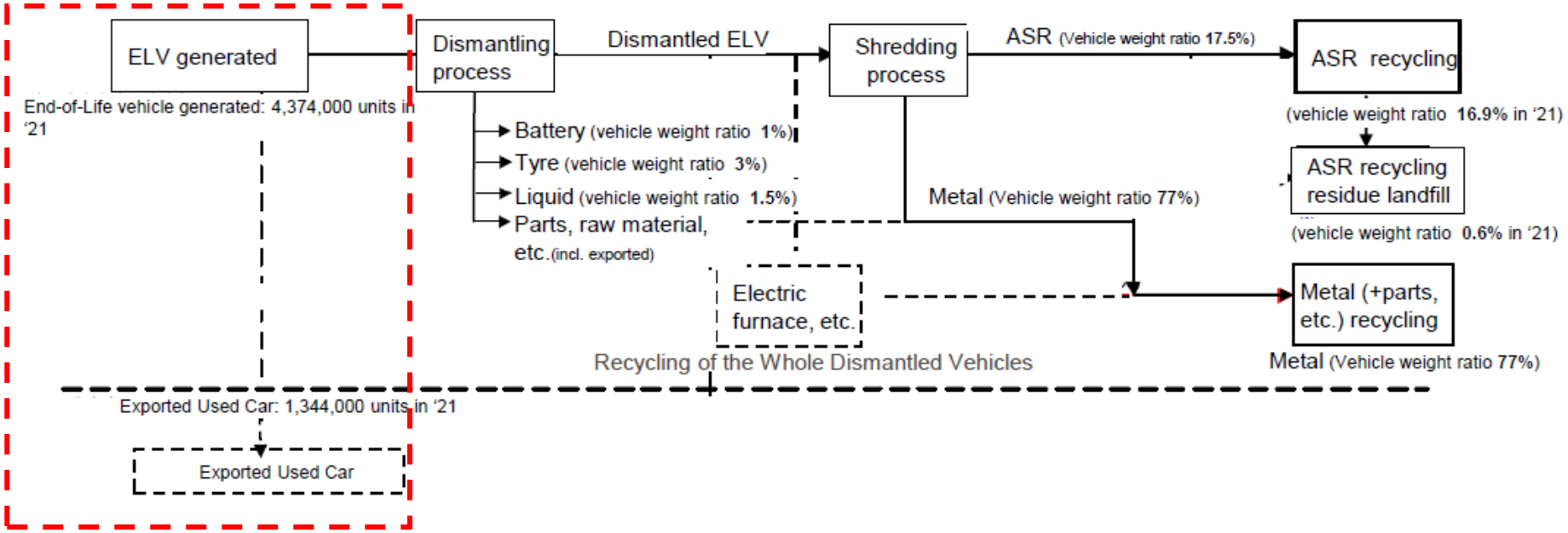
EoL process			Activity data (Primary data)	Functional unit												
				Level 2	Level 3					Level 4						
				Secondary	Secondary					Primary						
				Global	NA	PRC	EU	IND	JPN	US	PRC	FRA	GR	KR	IND	JPN
ELV treatment	ELV transport		ELV weight [kg]	*	**	**	**	**	**	***	***	***	***	***	***	***
	Dismantling		ELV weight [kg]	*	**	**	**	**	**	***	***	***	***	***	***	***
	Dismantled ELV transport		Dismantled ELV weight [kg]	*	**	**	**	**	**	***	***	***	***	***	***	***
	Shredding		Dismantled ELV weight [kg]	*	**	**	**	**	**	***	***	***	***	***	***	***
Recovered parts treatment	1. Tire	Disposal/Recycle	Parts weight [kg]	*	**	**	**	**	**	***	***	***	***	***	***	***
		transport	Parts weight [kg]							***	***	***	***	***	***	***
	2. Lead BAT	Disposal	Parts weight [kg]		**	**	**	**	**	***	***	***	***	***	***	***
		transport	Parts weight [kg]							***	***	***	***	***	***	***
	3. Air Bag	Disposal	Parts weight [kg]		**	**	**	**	**	***	***	***	***	***	***	***
		transport	Parts weight [kg]							***	***	***	***	***	***	***
	4. Lubricant	Disposal	Parts weight [kg]		**	**	**	**	**	***	***	***	***	***	***	***
		transport	Parts weight [kg]							***	***	***	***	***	***	***
	5. AC refrigerant	Disposal	Parts weight [kg]		**	**	**	**	**	***	***	***	***	***	***	***
		transport	Parts weight [kg]							***	***	***	***	***	***	***
	6. LiB BAT	Repurpose/Recycle/Disposal	Parts weight [kg]	*	**	**	**	**	**	***	***	***	***	***	***	***
		transport	Parts weight [kg]							***	***	***	***	***	***	***
	7. Other Parts	Disposal/Recycle	Parts weight [kg]		**	**	**	**	**	***	***	***	***	***	***	***
		transport	Parts weight [kg]							***	***	***	***	***	***	***
ASR trearment	ASR transport		ASR weight [kg]		**	**	**	**	**	***	***	***	***	***	***	***
	ASR Recycle		ASR weight [kg]	*	**	**	**	**	**	***	***	***	***	***	***	***
	Residue transport		Residue weight [kg]		**	**	**	**	**	***	***	***	***	***	***	***
	Landfill		Residue weight [kg]	*	**	**	**	**	**	***	***	***	***	***	***	***

5. ELV management out of sale region

Topic	Option 1	Option 2	Option 3
ELV management out of sale region	Take into account process of country of sale	Take into account global average	Take into account process of country of EoL

- JAMA decided to take Option 1 because of no data about EoL treatment of exported used car

Japan End-of-Life Vehicle Recycling and Treatment Flow



6. Recycle process

Topic	Option 1	Option 2	Option 3
Recycle process	Current process	Future process	-

- Take Option 1 respecting the discussion about “4. Recycle technology scenario” in Level concept @12th July SG5(EoL) Meeting 002

FB summary from 12th July SG5(EoL) Meeting material