

Draft meeting minutes of SG3's 3rd meeting

On-line only

5th September 2023, 12:15 PM to 13:45 PM cet.

Meeting documents available at:

[https://wiki.unece.org/display/trans/3rd meeting](https://wiki.unece.org/display/trans/3rd+meeting)

Agenda

Meeting Information				
Date	5th September, 2023			
Time	12:00 AM CET			
Venue	On-line			
Link				
Time	No.	Agenda Item	Lead	Purpose or Target
12:00 ~	1	Welcome and introduction	NIER	Information share
~ 12:10	2	Adoption of the agenda	NIER	Agreement
~ 12:20	3	Adoption of the last meeting minutes	NIER	Agreement
~ 13:00	4	Discussion topics 1) Leveling concept - Examples of each level 2) How to interconnect with other SGs	Participants	Discussion
~ 13:10	5	Any other Business	Participants	-
~ 13:15	6	Closing	NIER	-

Meeting minutes

Agenda Item 1: Welcome and introduction

The leader started the A-LCA IWG SG3 Teams meeting at 12:10 (cet.) and welcomes the participants.

Agenda Item 2: Adoption of the agenda

The meeting agenda was presented and reviewed.

No comments

Agenda Item 3: Adoption of the last meeting minutes

The leader briefly explained the contents of the meeting, explained one by one, and received questions and comments. The contents of the meeting were explained in the order of leveling concept, overarching aspects, and meeting plan.


No comments

Agenda Item 4: Further discussion (leveling concept, overarching aspects)

1. Discussion topic 1: Examples of leveling concept

1.1. Presentation/documentation

○ Possible comparison

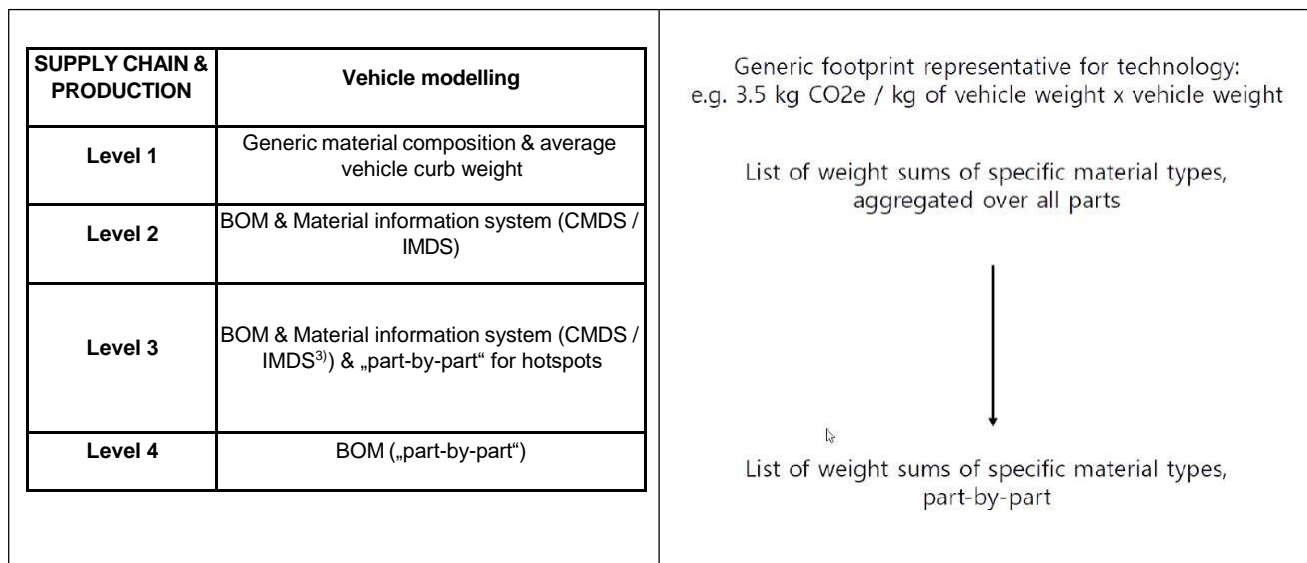
SUPPLY CHAIN & PRODUCTION	Possible Comparison ¹⁾	
Level 1	General concept of drivetrains (e.g. BEV vs. ICEV)	Technology-to-technology comparison  Vehicle-to-vehicle comparison
Level 2	General concept of drivetrains (e.g. BEV vs. ICEV) based on exemplary „real“ car vehicle model	
Level 3	A representative vehicle of OEM A VS A representative vehicle of OEM B [e.g. OEM A's BEV fleet Europe vs. OEM B's BEV fleet Europe]	
Level 4	e.g. OEM A's BEV model vs. OEM B's BEV model	

In general, we move from level 1 comparing technology to technology to level 4 comparing vehicle to vehicle. It means that the level of detail or segmentation that is compared depends on the level. Of course, level 1 does not mean that it is a bad quality LCA. It just means having a different focus.

- (Level 1: Battery electric vehicle vs. internal combustion engine vehicle)
- (Level 2: Battery electric vehicle vs internal combustion engine vehicle (realistic vehicle model))
- (Level 3): Compare representative vehicles by manufacturer
- (Level 4): Comparison between the same vehicle models

For example, there are lightweight options for electric vehicle batteries and fuel-combustion engine vehicles, or vehicles that I've generally compared, which are not suitable for a particular vehicle model of a particular vehicle manufacturer, but are generally meaningful in applying that technology or technology. This corresponds to Level 1. If so, what can be compared with level 4 would be a vehicle-to-vehicle comparison that compares one producer's specific battery electric vehicle model with another.

o Vehicle modeling










It depends on how specifically or generally the vehicle is modeled.

- (Level 1) For example, suppose you know about the general material combination of vehicles through literature or paper publications. And you know this, assuming that a vehicle generates 3.5 kg of carbon dioxide per kilogram of weight. And you're modeling that carbon footprint by multiplying the weight of the vehicle. Of course, it would be a very practical and often applied very general approach, and it would be appropriate for Level 1. This is very useful in general technology comparisons.
- (Level 2) Starting with a list of specific materials extracted from material information systems, such as CMDS and IMDS, and the sum of the weights by type. This sum of weights is aggregated across

all parts. Therefore, the weight of certain aluminum alloys in the car is about 120 kg. It is not important to discover which parts were used. We can only say that the weight of certain aluminum alloys in this car is 120 kg.

- (Levels 3, 4) Level 4 has a list of weight totals by part of a particular material type. For example, we can see how much aluminum alloy is used in the battery, and aluminum alloy is used in tires and other parts. As you can see, we can get much more granular and more detailed information. This is the basic core that we use when assigning LCA studies to different levels.

○ Representativeness

SUPPLY CHAIN & PRODUCTION	Representativeness ²⁾	Global	Regional	Individual
Level 1	Global average / regional			
Level 2	Global average / regional			
Level 3	Regional & individual SC for hotspots			
Level 4	individual SC			

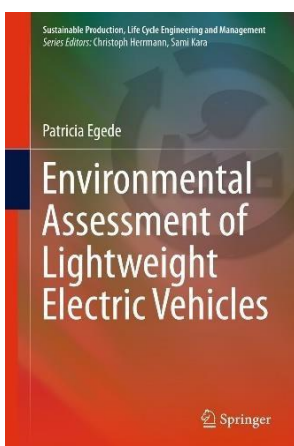
- (Levels 1 and 2) For Level 1 and Level 2, this LCA can be said to be a representative study case. So, we do research for many different countries or for certain regions. Of course, it is possible to do so for an area. For example, if you want to study a specific area, you can study whether it is reasonable to have a battery electric vehicle, or whether it is more useful to have an internal combustion engine vehicle with a specific fuel. For example, you can study in the United States, Australia, or elsewhere. Of course, you can do that for a region or a particular country.
- (Level 3) At least a local unit is required and there should be a separate supply chain for the model. And at level 3, hotspots are included. For example, if you're using a battery, you have a battery cell manufacturer in your country, and there's a specific process. This allows you to model the hotspot supply chain individually for a particular car.
- (Level 4) No longer local level. However, we draw individual supply chains using specific cars produced in specific factories and with specific supply chains as the subject of our research. That's the idea. We have to consider it or keep in mind a number of different parameters and aspects. This will help you understand what level of research and comparison you think is better suited. Of course, if you go a step further, how you model the aforementioned supply chain modeling and the

manufacturing processes of OEM plants and suppliers will depend on all the other aspects of the past. As a result, levels 3 and 4 may include individual decarbonization measures performed by specific players or OEMs in the supply chain.

- Supply chain modeling, OEM manufacturing processes, Supplier manufacturing process, individual decarbonization measures

SUPPLY CHAIN & PRODUCTION	Supply chain modelling	OEM manufacturing Processes	Supplier manufacturing process	Individual decarbonisation measures
Level 1	generic footprint per kg of vehicle curb weight			none
Level 2	global secondary data material footprints (incl. generic information for production processes)			none
Level 3	primary information for the vehicle hotspot parts	Optional: primary data for OEM's inhouse hotspot processes	primary information for the manufacturing of vehicle hotspot parts	included
	secondary information for the rest	Secondary information for the rest or average values per vehicle from OEM's Scope 1 & 2 emissions	secondary information for the rest	
Level 4	regional or primary data based part (& material) footprints	included	included	included

(case 1)




About this book

This monograph addresses the challenge of the environmental assessment of lightweight electric vehicles. It poses the question whether the use of lightweight materials in electric vehicles can reduce the vehicles' environmental impact and compares the environmental performance of a lightweight electric vehicle (LEV) to other types of vehicles. The topical approach focuses on methods from life cycle assessment (LCA), and the book concludes with a comprehensive concept on the environmental assessment of LEVs. The target audience primarily comprises LCA practitioners from research institutes and industry, but it may also be beneficial for graduate students specializing in the field of environmental assessment.

Here's a study by Patricia Egede. A Study on the Environmental Evaluation of Lightweight Electric Vehicles. She questions whether applying lightweight structures to battery electric vehicles makes

sense from a carbon footprint perspective in some countries, whether using lightweight materials in electric vehicles can reduce environmental impacts, and compares the environmental performance of lightweight electric vehicles to other types of vehicles. So, it's not an assessment of any particular model, it's a very comprehensive concept. Therefore, this is the first step as the main key to conducting research at a certain level.

(case 2)



Determining the environmental impacts of conventional and alternatively fuelled vehicles through LCA

Ricardo Energy & Environment

Determining the environmental impacts of conventional and alternatively fuelled vehicles through LCA | viii

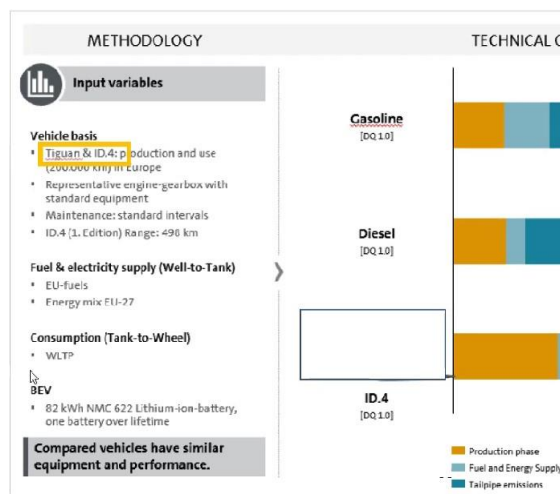
Results from the application of the methodology

The implementation of the developed methodology has provided results for the study covering:

- Two **high-level scenarios** based on analysis supporting the Commission's Long-Term Strategy (Commission Communication COM(2018) 773), i.e. Baseline and a lower carbon future - Tech1.5 scenario, consistent with the EU contribution to meeting the Paris Agreement objective of keeping global temperature increase to a 1.5 °C max).
- 14 different **electricity production chains**, covering the EU28 and its individual Member States (relevant for vehicle manufacturing, and electric vehicle operation), and five other world regions (China, S. Korea, Japan, the US and the global average) (for manufacturing only).
- 60 different **liquid and gaseous fuel production chains**, covering 5 fuel categories, 21 feedstocks, and over 20 processes, plus two fuel mix/blend scenarios for each fuel category.
- 65 different generic **vehicle type/powertrain combinations**, across six light- and heavy-duty vehicle body types.
- 14 different **sensitivities** exploring the significance and impacts of key assumptions and uncertainties for the comparative analysis of different vehicles/powertrain and fuel types.

This is an example of a study by Ricardo. It is a very well-known study in Europe that determines the environmental impact of conventional and alternative fuel vehicles through LCA. Here, 65 different general vehicle types and power train combinations were evaluated, and based on this, six light and heavy vehicle types were analyzed through a summary in several ways. It was not for a specific truck of a particular producer, but for a truck of a particular size or for an average truck. Therefore, this corresponds to level 1.

(case 3)



I brought one example of a comparison of Tiguan and ID 4 from the Volkswagen Group. They have different engines, as you can see here. Both are equivalent vehicles. They are similar in performance to the equipment related to the engine, and all other parameters are the same or similar and externally verified. Material information from the collected Material Billing (BOM) and IMDS was used for modeling and supply chain modeling of battery electric vehicle hotspots. Battery cell production used primary data from specific cell producers. Therefore, this study can be classified as a level 3 study. Here, we actually compared two specific vehicle models, and one OEM compares two different cars, not between different OEMs. The vehicle model is so specific that the two cars can be compared.

1.2. Questions / Comments:

(Christ Ansgar / CLEPA) From the examples that Tina showed, we clearly **see the differences between the four levels**. However, **not** each study will exactly **fit to** these four levels. If you look closely at Ricardo's research, it is mainly **level 1**. However, the composition of **material** data is slightly more detailed than we define **as level 1**. So it's rather **a level two type approach in that respect**. Therefore, **you could look at it as a level 1.5**. I think to distinguish between the four levels as described is very illustrative and comprehensive. However not each analysis will exactly stick to these levels. I think **we need to allow for** a certain amount of freedom and that we should **not** put too much effort into defining **every** detail on what is needed for an analysis on level 1, 2, 3, and 4.

(Dettmer, Tina / OICA) Of course it is. I don't think I need to be dogmatic about this. We should not compare the overall results of the Level 1 study with those of the Level 4 study. And I don't think we should make a car-to-car comparison, for example in a level 2 study, and I think this will help.

(Francois Cuenot / UN) So at level 4 is only vehicle-to-vehicle comparison relevant in the same area? For example, below level 4, certain vehicles in the United States will not be able to compare with certain vehicles in Japan?

(Dettmer, Tina / OICA) Yes, I think it would be a fair comparison if we drove in the same market. But it's not a fair comparison for me to understand because if it's a car produced in the United States and driven in the United States and a car produced in Japan and driven in Japan, the stages of use will be very different. Perhaps the driving cycles applied are different, or the kilometers applied are different, and of course it will not be fair. The mix of electricity can be really different but of course that's the main thing I understand but I think we can discuss everything here.

(Christ Ansgar / CLEPA) Is it not fair or is it not meaningful?

(Dettmer, Tina / OICA) Yes, meaningless might be a better word. But what do we get from that

comparison?

(Xin Sun / China) Can you explain about level 2? What is the difference between level 1 and 2?

(Dettmer, Tina / OICA) I think we don't know exactly about that yet. Level 1 probably means a study based on some statistical data or general information obtained from a journal paper on the material composition of a vehicle. Level 2 is based on a specific vehicle's material bill(BOM) released by any producer or you may have them, and you can get that information. A general comparison of level 2 can be made based on one car actually sold. And I can say it's representative. For example, Volkswagen uses GOLF as a representative vehicle, and many comparisons and technical evaluations have been made based on the GOLF model. If we do a technical evaluation based on GOLF, we think we can rely on it because it is a representative car. At level 1, it is still general information, and level 2 is specific information about vehicles already selected or available for evaluation. Also, I think the main job in the automobile industry right now is probably level 2. But of course, as you said, if you have any research, please send it to us and if you need it, please evaluate the level yourself. If you have any further questions about the concept or how to apply it, please email us.

2. Discussion topic 2: How to proceed with the meeting with sub-groups 2 and 4

2.1. Questions / Comments:

(Chong, Hwansoo / NIER) I'm going to propose to have a meeting between different subgroups at the IWG meeting on September 7th, do you all agree? Because the other subgroup did not reply to the email, so we can't keep waiting. Setting boundaries is very important and each subgroup will discuss setting boundaries for their part of the project. However, it is important to discuss the boundaries in advance because each subgroup works separately.

(Hans Nuglisch) If there is no answer yet, this issue should be raised at the IWG after tomorrow. You can have one-on-one meetings with specific subgroups, or you can imagine meetings with all SG leaders. This issue will have to be raised at the IWG meeting on Thursday.

(Christ Ansgar / CLEPA) If I can answer Hans right away, I think it would be more effective to have a one-on-one meeting because many of these problems can affect only two groups, and it would not be efficient to discuss all issues in that one meeting. So I think there may be other opinions on that point.

(Hans Nuglisch) Ansgar is right. You must have a one-on-one meeting. SG1 can also be added to the meeting.

(Chong, Hwansoo / NIER) I agree with Ansgar. I think it's better to have a meeting with a subgroup that can have a meeting first, either SG2 or SG4, and then proceed with a meeting with another subgroup sequentially. **If there is no other opinion, I will suggest what we discussed today about the inter-subgroup meeting in IWG.**

(Dettmer, Tina / OICA) **The question we have is whether we can have a list of studies by Thursday.**

(Chong, Hwansoo / NIER) **Does Thursday mean the 7th of this week? Or do you mean the 14th? Are you saying that you will collect it by the 14th and explain it at the next meeting?**

(Dettmer, Tina / OICA) **Tomorrow and the day after tomorrow are difficult due to different schedules, so when I gather additional LCA studies, to illustrate level concepts I would prefer to do that at the next meeting. Therefore, not the day after tomorrow, then I need two weeks or one week after the tomorrow meeting.**

(Christ Ansgar / CLEPA) Tina, this question **referred** to topics that we should discuss in our bilateral meetings, as well as a topics that we should discuss with other subgroups. Of course it is necessary to discuss that topic and I would recommend that we make a list of all the topics we need to discuss. **The list of topics needs to be compiled from both parties, SG3 and SG2, SG4 or SG6.**

(Dettmer, Tina / OICA) **We already have that list, don't we?**

(Christ Ansgar / CLEPA) **We have one maybe it's not complete but at least we have one yesterday.**

(Tongzhu ZHANG / CATARC) If we list the things we need to discuss with other SGs and ask other SGs what we want to discuss, I think we can have a meeting with a specific SG.

(Chong, Hwansoo / NIER) If you let me know what you think should be discussed with SG2 or SG4, I will request a meeting with SG2 and SG4.

(Christ Ansgar / CLEPA) At the next meeting, I think that sharing an agenda on what to discuss before the meeting should give all participants a chance to prepare for what to discuss. I think it is **the leading team's** task to provide information on the content of the agenda before the meeting itself.

(Dettmer, Tina / OICA) I understand that there are many participants and it is not easy to actively participate. Maybe you could think of creating a question that's easy to vote on and doing a poll of

them. Maybe this is an idea for the next opportunity and I think it can help more participants join the meeting.

Agenda Item 5: Any other business

1. Presentation (IWG meeting) : Progress Status of SG3

1.1. Presentation/documentation

Slide illustrates the progress status of SG3

Leveling concept

Share a Life Cycle Assessment (LCA) analysis as good examples of the different levels we are discussing

* Cases performed in various regions

SUPPLY CHAIN & PRODUCTION	Possible Comparison ¹⁾	Vehicle modelling	Representativeness ²⁾	Supply chain modelling	OEM manufacturing Processes	Supplier manufacturing process	Individual decarbonisation measures
Level 1	General concept of drivetrains (e.g. BEV vs. ICEV)	Generic material composition & average vehicle curb weight	Global average / regional	generic footprint per kg of vehicle curb weight			none
Level 2	General concept of drivetrains (e.g. BEV vs. ICEV) based on exemplary „real“ car vehicle model	BOM & Material information system (CMDS / IMDS ³⁾)	Global average / regional	global secondary data material footprints (incl. generic information for production processes)			none
Level 3	A representative vehicle of OEM A VS A representative vehicle of OEM B	BOM & Material information system (CMDS / IMDS) & „part-by-part“ for hotspots	Regional & individual SC for hotspots	primary information for the vehicle hotspot parts	Optional: primary data for OEM's inhouse hotspot processes	primary information for the manufacturing of vehicle hotspot parts	included
				secondary information for the rest	Secondary information for the rest or average values per vehicle from OEM's Scope 1 & 2 emissions	secondary information for the rest	
Level 4	e.g. OEM A's BEV model vs. OEM B's BEV model	BOM („part-by-part“)	individual SC	regional or primary data based part (& material) footprints	included	included	included

1) a column describing comparable objects to help you understand the concepts at each level, giving hints about how to access them by level and what data to find

2) data information characteristics that can be used for evaluation

3) (CDMS) Chinese Material Data System, (IMDS) International Material Data System

Overarching aspects

Interconnection among other SGs

- Need to accurately define the point of responsibility for each subgroup so that there are no gaps in the different stages
- Need to define the boundaries of supply chain between SG2 and SG4
- * SG2: SG3 suggestion for handover point from SG3 to SG4 is outbound gate for the product of the first shaping manufacturing process for a homogeneous material, e.g. steel bar, aluminum ingot, plastic granulate
- * Still waiting for SG2's reply to our meeting suggestion
- * SG4: SG3 suggestion for handover point from SG3 to SG4 is the OEM-showroom

Interconnection among other SGs

- Need to discuss the materiality limit
- Need to discuss the end of life allocation / allocation in case if recycling
- Hold separate bilateral meeting between the two subgroups (SG2, SG4) and share the results with the entire informal working group to have a discussion between all subgroups
- Need to align on the calculation of transport emissions.

Other issues

1. Defining a representative vehicle

- Need to defining criteria to ensure a representativeness of vehicles for Level 3

2. Dealing with hot spot components

- Example, battery:
 - * (Level 1) average battery configuration (no detailed information)
 - * (Level 2) vehicle-specific amount of material in batteries (generic data)
 - * (Level 3, 4) analyze detailed information about the battery itself, including materials, production and sub-parts (primary data)
- Hot spot components to be included in analysis at all levels, but higher level of detail applied compared to other components.

3. Others

- Prepare various **hotspot information** for different types of vehicles by OICA
- Our approach must be **flexible** to accommodate multiple scenarios and objectives
- Need to **define priorities** of the discussion and **ensure access** between all groups
- Need consideration of **regular reporting** in the future (ex, provide data on battery using in EU)

More details: [wiki.unece.org/display/trans/SG3-2nd meeting](http://wiki.unece.org/display/trans/SG3-2nd+meeting)

1.2. Questions / Comments:

No questions and comments.

Agenda Item 5: Closing

No any other business.

The meeting was closed at 13:45 PM. cet.