

Possibility to tackle the Life Cycle Assessment (LCA) in GRPE

Background

The Paris Agreement stipulates that its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century. The global transport sector is a major polluter and road transport could be the biggest contributors in each country. Therefore it is important to take drastic measures to reduce CO₂ in the road transport sector toward the middle of this century.

In October 2020, the Government of Japan (GOJ) announced the Carbon Neutrality in 2050. In December 2020, the GOJ has formulated the “Green Growth Strategy through Achieving Carbon Neutrality in 2050”. This strategy is an industrial policy to lead the challenging goal of achieving carbon neutrality by 2050, and aims toward a positive cycle of economic growth and the environmental protection. Based on the strategy, the GOJ will promote the electrification of automobiles such as measures to make electrified vehicles including BEV, PHEV, HEV, FCV and ICV with bio- or e-fuel account for 100% of new passenger vehicles sold each year by 2035. It also promotes the technological development to reduce CO₂ throughout the life cycle of automobiles, and promote carbon-neutral measures throughout the automobile-related industry.

In July 2021, the European Commission adopted a package of proposals to make the EU's climate, energy, land use, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. This proposal includes stronger CO₂ emissions standards for cars and vans that will accelerate the transition to zero-emission mobility by requiring average emissions of new cars to come down by 55% from 2030 and 100% from 2035 compared to 2021 levels. As a result, all new cars registered as of 2035 will be zero-emission (BEV and FCV).

In August 2021, the President of United States signed an Executive Order that sets an ambitious new target to make half of all new vehicles sold in 2030 zero-emissions vehicles, including BEV, PHV or FCV. The Executive Order also kicks off development of long-term fuel efficiency and emissions standards to save consumers money, cut pollution, boost public health, advance environmental justice, and tackle the climate crisis.

In China, LCA regulation is under consideration at CATARC-ADC aiming to introduce the national regulation in 2025, which is the base year of the next fuel consumption regulation,

Measures toward carbon neutrality have become an urgent issue worldwide currently.

Need for start discussion on LCA assessment method in GRPE

LCA as an overall assessment from production to use and disposal is required to substantially reduce CO₂ emissions. If there is a difference of LCA method among countries, it can be a factor that delays development of low-carbon technologies. Carbon neutrality is a global issue, and it is desirable to utilize an internationally unified method when introducing LCA as a domestic regulation, incentive, etc. Japan thinks GRPE/WP.29 is the most appropriate place of international meetings for discussing LCA on automobiles since GRPE is an expert group meeting with analysis know-how of actual use of automobile. It is challenging to formulate the LCA method unified internationally so that it is needed to collect the knowledge and experience of each country. Matters related to carbon neutrality including LCA tend to be political issues, but GRPE should develop LCA method from the perspective to ensure technical neutrality. Formulating a UN-R, a GTR or a guideline is considered an output of this activity, but it is still open.

In addition, Korea is considering applying LCA assessment to greenhouse gas and fuel consumption efficiency, and as part of this, the Korean government is conducting a foundation study to develop well-to-wheel logic trees by vehicle power sources.

Japan and Korea would like to propose life cycle assessment to be included in the priority list and expect an IWG under GRPE to be established for starting discussion on LCA assessment method.

Table 4

Subjects under consideration by the Working Party on Pollution and Energy (GRPE)

GRPE						
Priority	Justification/Background information	References	Allocations /IWGs/TFs	Timeline	Chair /sponsor(s)	Comments
Improvement of exhaust emissions requirements to ensure real drive performance on the road	Revise technical requirements to allow technological progress, ensure technological neutrality by introducing consistent and long-lasting performance-based emissions measures, at type approval, in use and potentially over the lifetime of the vehicle.	UNR on RDE	IWG on RDE	June 2020	EC-JP-KR	Adopted in GRPE June 2020
		UN GTR on RDE	IWG on RDE	June 2023 (Phase 2)	EC-JP-KR	Directly to Phase 2
		08 Series to UN Regulation No. 83	GRPE	June 2022	EC	Delayed
		Amendment to UN Regulation No. 49 to reflect latest regulatory evolution	GRPE	January 2021	EC	Submitted earlier
Life Cycle Assessment	Quantify and monitor progress towards Carbon neutrality of road transport by 2050. Internationally-harmonized procedure to measure carbon footprint of different technologies for fuels and vehicles from production to use and disposal.	[tbd]	[IWG on LCA]	[2025]	[tbd]	to be discussed with GRPE
New propulsion energy	Develop technical regulation to ensure environmentally-friendly and level-playing market introduction of new form of propulsion energy, such as hydrogen and electricity.	UN GTR No. 21 on DEVP	IWG on EVE	June 2020	US-CAN	Adopted by WP.29 November 2020
		UN GTR on in Vehicle Battery durability	IWG on EVE	June 2021	US-CAN, China, EC, Japan	
		Heavy Duty Hybrids	GRPE	[2022]	[tbd]	
Particulate emissions:	Sub-23 nm exhaust particles for light- and heavy-duty	Amendments to UN GTR No. 15	IWG on PMP	June 2021	EC	Light duty laboratory adopted in GRPE June 2020 - still on-going for

Provisions to limit airborne particulates from different sources	applications, in the laboratory and on the road					PEMS-PN and heavy duty application
	Brake emissions	New UN GTR	IWG on PMP	January 2023	EC	
	Tyre wear emissions	tbd	IWG on PMP / GRPE	[June 2023]	[EC]	