View Paper on

The EU's Strategy for Low-Emission Mobility

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The proposal for a Low-emission mobility strategy introduces the European Commission's action plan towards a low-carbon, circular economy. The proposal relies on three main objectives: increasing the efficiency of the transport systems, making progress towards low-emission transport and speeding up the zero-emission vehicle policy. Coupled with other transversal initiatives, the EU wants to fulfil its goals in relation to the Energy Union Strategy and the Paris Agreement, while preserving the sector competitiveness.

Since 1990, **road transportation is the only key sector that has experienced an emission increase, accounting for 24% of the EU's GHG emissions in 2014**.[1] At the same time, transport demand in modern society is unlikely to decrease. If we want to reduce transport emissions, we need to keep in mind that the energy needed for transportation is inter alia directly linked to the weight of vehicles. In this regard, **lightweight materials are a key enabler for reducing CO_2 emissions from transportation, without compromising the safety of passengers.**

The transport sector plays a crucial role in the development of our climate policy. The automotive industry in particular already started this shift towards low emission vehicles. In the last decade, it has undertaken big transformations to provide society and consumers with solutions meeting their expectations. Keeping the weight of a car at a minimum is an important element in reducing emissions. This will become even more important for electric vehicles, carrying heavy components such as batteries. In addition, more autonomous and more connected vehicles for future smart mobility imply additional computing components adding weight, potentially resulting in greater power consumption. To unlock the full potential of lightweight technology, improved facilitation of innovation is required. And lightweight engineering requires highly skilled expertise; therefore, Europe needs an ambitious strategy for research, training and innovation not to risk losing its leader position.

[1] Annual European Union greenhouse gas inventory 199020132014 and inventory report 2016. - Full report (EEA), p84

Key messages

1. Lightweight technology should be considered in future low emission mobility strategy

The weight of the car has a direct effect on the consumption of fuel in all driving and weather conditions, throughout the entire life of the car and beyond any test cycle.

2. Weight reduction solutions are an enabler for a safe, smart and electrified mobility

In order to preserve the positive outcome of the decarbonisation strategy against a potential weight increase of vehicles, a smart policy should give the right incentives to reduce the vehicle weight.

3. Lightweight innovation is a strategic choice to boost innovation and skilled jobs

Lightweighting solutions "made in EU" need further stimulation through strategic R&D projects at EU level. They will further strengthen the internal market and provide job opportunities for new and qualified employees.

1. Lightweight technology should be considered in future low emission mobility strategy

The use of innovative **lightweight materials in cars helps the automotive industry to reduce greenhouse gas emissions**. Replacing heavier materials by lightweight materials is critical to reduce CO_2 emissions and fuel consumption. **Considering primary and secondary fuel savings effects, reducing the weight of an average car by 100 kg can reduce CO_2 emissions up to 8.4 g/km,** equalizing a reduction in fuel consumption of around 0,3 litres per 100km for passenger cars[2]. Furthermore, by reducing the weight of the car, an energetic gain of up to 15% in 2030 and about 25% in 2050 can be achieved[3]. On top, a lighter vehicle is more efficient in all driving and weather conditions, throughout the entire life of the car and beyond any test cycle.

The current EU legislation does not sufficiently encourage automotive industry towards a new generation of lightweight vehicles. A proper assessment of several policy options is needed to find the right approach towards integrating lightweight technology in the vehicle design.

Lightweight technology will help Europe to decouple economic growth from growing GHG emissions from transport. This can only happen with a smarter CO_2 legislation that encourages lightweight solutions.

2. Weight reduction solutions are an enabler for a safe, smart and electrified mobility

The European Strategy for Low-Emission Mobility lists electrified transportation as a promising alternative that will place the EU at the forefront of the transportation sector. However, independent from the energy source which will power future mobility, **it is of vital importance to maintain the focus on EU's climate targets.**

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[2] Aluminium in Cars; Full report (European Aluminium); p4; 09.2013; URL: http://www.european-aluminium.eu/media/1326/aluminium-in-cars-unlocking-the-lightweighting-potential.pdf

[3] Cambridge Macroeconomics, *Fueling Europe's Future*, 2013 http://www.camecon.com/Libraries/Downloadable_Files/Fuelling_Europe_s_Future-_How_auto_innovation_leads_to_EU_jobs.sflb.ashx

The future of mobility will incorporate numerous innovations, such as deeply interconnected transportation systems or electrified individual mobility. The deployment of such innovative technology could have significant benefits in terms of efficiency and climate protection. Nevertheless, it should always be paired with an aim to decrease the weight of the transport solution.

As carbon-based fuels will be substituted with alternative energy sources, the total energy consumption of vehicles could eventually increase by the introduction of heavy components. **Clever weight-reducing solutions are needed to strike the right balance.**

Lightweight innovative solutions are not sufficiently encouraged by the EU policy. On the contrary, emission limits are currently set according to the mass of vehicle, using a limit value curve. **This limit value curve implies that heavier cars are allowed higher emissions compared to lighter cars while preserving the overall fleet average. As a result, lightweight materials have not reached their full potential and outreach.** The European Strategy for Low-Emission Mobility should paired with a lightweight policy, aim at cutting final energy consumption.

3. Lightweight innovation is a strategic choice to boost innovation and skilled jobs

Europe's transport ambition and leadership should not be weakened. New and improved solutions need to provide better, safer and environmental-friendly mobility solutions.

Other important regions may invest more in lightweight innovations, putting Europe's competitive advantage at risk. **EU legislation should encourage material innovation, a key issue for the competitive position of Europe's automotive industry in the coming decades.**

Furthermore, these new applications should be matched with skilled professionals that can meet a challenging sector in constant evolution. The transport industry already counts for 7% of EU's total employment[4], is employing 15 million workers and is renowned for its high quality. It sets the European Union in the avant-garde on safety and innovation. The transition to a low-emission economy requires new skills. The application of lightweight materials needs new designs, know-how, skilled workers and a proper infrastructure. **Given the constant investments of European automotive industry in R&D, EU's low-emission mobility strategy needs an ambitious strategy for research, training and innovation**.

Conclusion:

The European Strategy for Low-Emission Mobility faces the double challenge to meet climate objectives while assuring future mobility needs to be met. As the vehicle mass is a fundamental determinant of the vehicle efficiency, development of advanced materials and mass-optimized designs should be a major strategic technology priority, essential for the affordability of the next automotive generations. Lightweight materials can contribute to the European Strategy for Low-Emission Mobility by enhancing innovation as well as providing resource efficient solutions. Lightweight materials bring a new option to the table by reducing EU's transport emissions and energy consumption.

We therefore call for a fair and smart strategy with lightweight initiatives for achieving EU's goals on the reduction of fuel consumption and CO_2 emissions.

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[4] EC, *Communication on low emission mobility* 20 July 2016 http://ec.europa.eu/transport/themes/strategies/news/doc/2016-07-20-decarbonisation/com(2016)501_en.pdf

Our policy recommendations:

The weight-based parameter used in Annex I of Regulation (EC) 443/2009 is not encouraging the car industry to lightweight new generation of vehicles. This can be corrected by simple changes in the regulation when setting a 2025 CO_2 target:

Option 1: Change the utility parameter of Annex I to footprint instead of mass

Option 2: Base a CO_2 target on a fixed percentage reduction in relation to the manufacturers' individual 2021 CO_2 target.

Option 3: Consider lightweight technology as eco-innovation and compensate for the trade-off caused by the current mass-correlation in the existing CO_2 fleet calculation methodology (i.e. 3.3 g CO_2 / 100 kg)[5]

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About European Aluminium:

European Aluminium, founded in 1981 and based in Brussels, is the voice of the aluminium industry in Europe. We actively engage with decision makers and the wider stakeholder community to promote the outstanding properties of aluminium, secure growth and optimise the contribution our metal can make to meeting Europe's sustainability challenges. Our 80+ members include primary aluminium producers; downstream manufacturers of extruded, rolled and cast aluminium; producers of recycled aluminium and national aluminium associations are representing more than 600 plants in 30 European countries. Aluminium products are used in a wide range of markets, including automotive, transport, high-tech engineering, building, construction and packaging. For further information, visit our website: www.european-aluminium.eu or email us at communications@european-aluminium.eu.

About ISOPA

ISOPA represents the manufacturers of aromatic diisocyanates and polyols, the main raw materials for polyurethanes in Europe. ISOPA promotes the highest standards of best practice in the distribution and use of diisocyanates and polyols in Europe and ensures that all stakeholders can easily access accurate and up-to-date information on these substances. ISOPA shows how polyurethanes help fulfil society's present & future needs. To do so, ISOPA develops guidelines on how to use diisocyanates and polyols correctly and safely, and sponsors initiatives on recovery, recycling and product stewardship of polyurethanes both in Europe and in the rest of the world.

About PlasticsEurope:

PlasticsEurope is one of the leading European trade associations with centres in Brussels, Frankfurt, London, Madrid, Milan and Paris. We are networking with European and national plastics associations and have more than 100 member companies, producing over 90% of all polymers across the EU28 member states plus Norway, Switzerland and Turkey. The European plastics industry makes a significant contribution to the welfare in Europe by enabling innovation, creating quality of life to citizens and facilitating resource efficiency and climate protection. More than 1.5 million people are working in approximately 60,000 companies (mainly small and medium sized companies in the converting sector) to create a turnover above 340 bn EUR per year. The plastics industry includes polymer producers - represented by PlasticsEurope, converters - represented by EuPC - and machine manufacturers - represented by EUROMAP. For further info see the web links: www.plasticseurope.org, www.plasticsconverters.eu, www.euromap.org

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[5] The slope of the mass based curve in the 2021 CO2 emission regulation for cars. The Parameter a in the equation in Annex I. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0333&from=EN