

Decarbonisation of Transport: Powered Two-Wheelers (PTWs) on the road to 2050

With the Green Deal launched in December 2019, the EU took the political commitment to become climate neutral by 2050. The European Climate Law sets the 2050 target and the direction of travel for all EU policy.

The subsequent EC Communication on Sustainable and Smart Mobility Strategy (December 2020) states that a clear path is needed to achieve a 90% reduction in transport-related greenhouse gas emissions by 2050. This is the effort required from transport to ensure the EU becomes the first climate-neutral continent by 2050, as outlined in the European Green Deal.

Building on these strategies, the European Commission presented a package of legislative proposals in July 2021 that aim to achieve the EU's goal of reducing emissions by at least 55% before the end of 2030, in order to put Europe on track to reach climate neutrality by 2050.

The European Association of Motorcycle Manufacturers (ACEM) acknowledges the EU's ambition of achieving net zero carbon emissions by 2050.

For the EU to achieve the ambitious goal of net zero carbon emissions by 2050, ACEM members are committed to delivering L category vehicles that contribute to the decarbonisation of transport in a sustainable timeframe which supports jobs, growth and the environment.

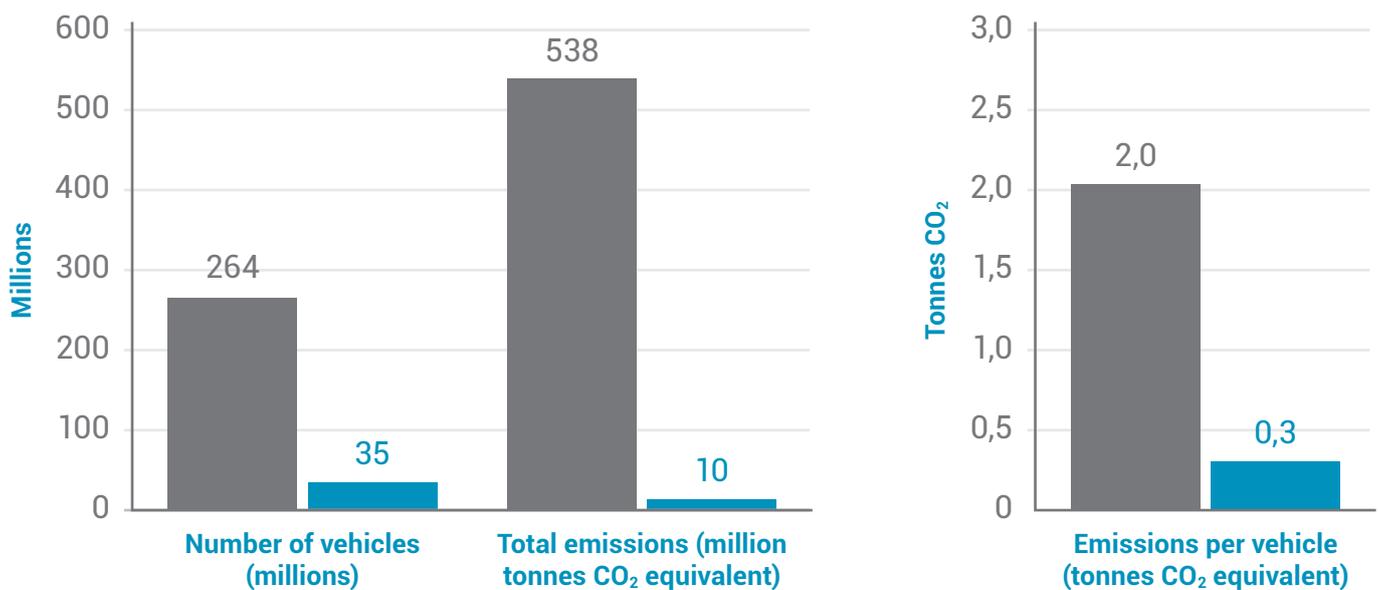
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“Right vehicle, right place, right energy carrier” – Multi pathway to decarbonisation

Today, ACEM manufacturers continue to working on exciting, sustainable individual mobility, leisure and personal transport solutions for now and in the future; ensuring safe, clean, smart, fun and efficient mobility for all.

Our industry ambition, based on the “right vehicle, right place, right energy carrier” concept, is to continue to offer the market a variety of powertrains, each of which will contribute to decarbonisation.

Whilst PTWs represent less than 2% of the vehicle fleet on EU roads, they provide a wide spectrum of vehicles, often used for very specialised purposes. Motorcycles emit significantly less greenhouse gases than cars. According to the European Commission’s Directorate-General for Mobility and Transport (DG MOVE), the average car emits 2.0 tonnes of greenhouse gas emissions (CO₂ equivalent) each year, compared to just 0.3 tonnes for motorcycles.



Source: DG Move

■ Cars ■ Motorcycles

The average emission factor for motorcycles, petrol and diesel cars in each European Emission Standard class (COPERT) confirm that PTWs fare well, compared to cars, in terms of CO₂.

CO ₂ (g/km)	Euro 0	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6c	Euro 6d
Motorcycle/moped(125cc)	91	73	66	53	53	53		
Motorcycle (250cc-750cc)	134	118	109	187	144	144		
Motorcycle (750cc)	152	148	146	186	144	144		
Petrol car	228	224	220	219	224	216	210	213
Diesel car	234	209	214	204	201	196	193	193

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PTWs are a smaller, lighter and more efficient mobility solution for personal transport and light goods delivery, which should be encouraged for the part they can play - today and in the future - in a multimodal transport system, especially within an urban environment and for short range mobility. PTWs are also leisure vehicles, providing recreational opportunities such as long-range touring and sports.

While CO₂ emissions from traditional ICE propelled PTWs continue to be reduced with new technology and design, the Industry will continue to place more and more electric vehicles on the market every year.



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Prioritising decarbonisation of urban mobility

Factually, urban mobility accounts for 40% of all CO₂ emissions of road transport and up to 70% of other pollutants from transport. European cities increasingly face problems caused by transport and traffic. The need for sustainable (in three dimensions: economical, social and environmental) mobility has been receiving increasing attention and is at the heart of the powered two-wheelers industry's constant efforts to deliver products capable of mitigating the impact of traffic in cities and surrounding areas, while promoting welfare for all, in all aspects of their day to day lives.

Within the above multi-pathway approach, the PTW industry clearly understands that electromobility will play a key role in the future mobility of people and goods. ACEM Manufacturers are progressively increasing the availability of electric models designed to meet these new consumer mobility and citizens' needs, within or around cities.

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Taking note of the ambitions of the European Green Deal and looking forward to the revision of the Urban Mobility Package, ACEM members are committed to working with cities to increase access to and availability of (electric) Powered Two Wheelers in order to increase mobility and accessibility for citizens. With the right enabling conditions, ACEM expects the predominant share of the urban mobility PTW market to be electric by 2030.

Using the full potential of low and zero carbon fuels

Policy makers should also recognize that, due to their already limited impact on climate change compared to other vehicles, PTWs with conventional internal combustion engines (ICE) still have an important role to play in the foreseeable future, notably in market segments that are hardest to electrify such as leisure PTWs. This is due to the weight of suitably sized electric propulsion batteries, and the effect these may have on handling and dynamics. Necessary trade-offs between weight, range, costs and consumer expectations are still determining niche-level market volumes for leisure orientated electric PTWs.

Nevertheless, ICE technology has come a long way, with improved fuel injection systems and innovative technologies such as ultra-low friction engine, variable cylinder management and variable valve timing, allowing significant improvements. Beyond decarbonisation, PTWs have also reduced air pollutants dramatically in accordance with European EURO Stages. Since 1999, in the course of the development of the "Euro steps", the reduction process between Euro 0 and Euro 3 achieved a considerable 94% reduction of carbon monoxide and hydrocarbon emissions, and a 50% reduction of nitrogen emissions.

Moreover, this drastic reduction of the limit values has been coupled with more rigorous test cycles. After another major step was reached in 2016 with Euro 4 (25% reduction over Euro 3), on 1 January 2020, the Industry became compliant with Euro 5 (a further 25% reduction), with pollutant emission limit levels equivalent to Euro 6 for cars.

Looking ahead to 2030 - 2050, further decarbonisation is possible provided low and zero carbon fuels are readily available and accessible.

Looking at the future, now

While electric PTWs will be the predominant solution for urban mobility in the future, PTWs with conventional internal combustion engines (ICE) still have an important role to play. It is important that the EU continues to support the adaptation of the PTW industry, by continuing to fund the research and development of low carbon technologies. PTW manufacturers have smaller economies of scale to support the transition from internal combustion to electric powertrains. More time will be needed for these businesses to research and develop the most robust and technically reliable, as well as attractive, EV systems, in order to provide consumers with high quality products that reflect the higher costs of applying this new technology, and to continue to meet their expectations and demands.

More precisely, the following enabling conditions are necessary:

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Energy: combining battery technology and low carbon liquid fuels to maximise decarbonisation

ACEM welcomes and encourages investments in breakthrough battery policies. New battery chemistry aimed at greater energy density and consequently greater range for the same battery volume, applicable to all battery types, including dedicated swappable batteries for L-category vehicles, are needed to drastically accelerate the design, manufacturing and market uptake of electric powered two-wheelers. The recent EU battery value chain policy orientation is a first step in the right direction. ACEM supports the work of the European Battery Alliance, in which individual ACEM manufacturers are invited to play active roles themselves.

Besides active support for electrification, ACEM also requests and supports the European refinery industry's efforts and aim to accelerate the development of Low-Carbon Liquid Fuels to enable all road transport, including ICE and advanced hybrid, to become carbon neutral by 2050. ACEM particularly welcomes FuelsEurope's commitment to ensure every litre of liquid fuel for transport sold in the EU becomes climate neutral by 2050. On the pricing of energy, ACEM believes that the future revision of the Energy Taxation Directive should lead pricing to be dependent on carbon content.

ACEM also encourages other carbon neutral energy carriers' innovations. E-fuel, in particular, should be developed with a production volume that supports decarbonization for products for which electrification is not expected to be possible in the medium to long term (leisure orientated products for example). ACEM would especially welcome the introduction of a %/volume mandate of low/zero carbon content fuels for road transport, as part of the coming Renewable Energy Directive revision.



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Policy orientations: leaving political principles aside for a workable pragmatic approach

Policy makers are called to take a technology neutral approach. Decarbonisation is too important to restrict it to electrification only. A transitional process will necessarily cross different stages: imposing specific technologies means limiting choice and therefore creating a true constraint on innovation.

ACEM believes a more appropriate approach is to leave it to the industry and market to develop and accept the appropriate solution(s). All decarbonisation pathways should be supported and exploited.

ACEM also calls on policy makers to further promote a circular economy approach through regulatory measures and financial instruments to ensure better access to critical raw materials and the development of an EU battery value chain.

Finally, ACEM takes this opportunity to stress that taxation and incentive policy orientations should not be limited to electrified vehicles but linked to CO2 as a technology-neutral parameter.

Infrastructure: a key to decarbonization of transport

In addition to all the efforts of vehicle manufacturers to bring electric vehicles to the markets, it is essential to prepare the way to support market uptake of these vehicles. After a missed opportunity in the first version of the Alternative Fuel Infrastructure Directive, ACEM now urges EU policy makers to include a mandatory number of electric vehicles charging points throughout the EU, in the Directive revision.

ACEM members are fully committed to the further decarbonisation of road transport and believe that the EU as well as its Member States should play a key role in removing obstacles to the electrification of vehicles and ensuring favourable market conditions for the uptake of all low and zero carbon new mobility technologies.



ACEM members progressively widen their product range with electric vehicles. This effort should be accompanied by a fast deployment of charging infrastructure.

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About ACEM

The European Association of Motorcycle Manufacturers (ACEM) represents manufacturers of mopeds, motorcycles, three-wheelers and quadricycles (L-category vehicles) in Europe.

ACEM members include 18 manufacturing companies: BMW Motorrad, Bombardier Recreational Products (BRP), Ducati Motor holding, Harley-Davidson, Honda, Kawasaki, KTM, Kymco, MV Agusta, Peugeot Scooters, Piaggio, Polaris Industries, Qooder, Royal Enfield, Suzuki, Triumph Motorcycles, Yamaha and Zero Motorcycles.

ACEM also represents 20 motorcycle industry associations in 17 different European countries. About 300,000 jobs depend on the L-category industry in Europe. There are more than 39 million motorcycles and scooters on Europe's roads (2019 estimate).

To find out more about ACEM please visit www.acem.eu