

Position Paper EU 2nd Clean Mobility Package

Background

In order to deliver on the Paris Agreement all sectors will have to deliver their fair share. Even before the Paris agreement was signed, the European Union agreed on a 60% reduction in greenhouse gas (GHG) emissions (compared to 1990 levels) in the EU transport sector until 2050. Analysis¹ shows that achieving these commitments will require a close to complete decarbonization of the passenger car fleet. The more ambitious COP21-commitment, to limit temperature rises to 1.5°C, will even demand a complete decarbonization of transport by 2050². That implies that as of 2035 only zero emission cars and vans can be sold.

So far however, CO₂ emissions in the transport sector have not decreased. In 2015 EU transport emissions in Europe continued to grow with 1.6%³ in 2015. This implies that additional - and accelerating - action is needed.

To address road transport sector emissions, the European Commission published its [Second Clean Mobility Package on November 8, 2017](#). The package will set the way forward for reducing CO₂ emissions in Europe's road transport sector. The package includes a set of legislative and non-legislative proposals to deliver on emission reductions in Europe's road transport sector.

This paper will bring forward Vattenfall's position, and policy recommendations regarding the Second Clean Mobility Package and argue that more ambitious regulation is needed to deliver on emission reductions in the targets.

Content of the proposals from the EU Commission

Of the proposals from the EU Commission under the Clean Mobility Package, three of them are particularly relevant for the reduction of transport GHG emissions and the development of e-mobility:

- **Post-2020 CO₂ emission standards, (legislative):**
 - The European Commission's proposals is to reduce CO₂ emissions from cars and light duty vehicles with 30% between 2020 and 2030, with an intermediate target of -15% in 2025. Both targets are compared to the 2021 target.
 - For passenger cars, the emission reductions will have to be achieved compared to the existing target for 2020 of 95 grCO₂/km. And for light duty vans the comparable target is benchmarked against 147 grCO₂/km.

¹ For example the Impact Assessment (SWD,2017,650/954196) from the EU Commission, 2017 ([link](#))

² 80% decarbonisation overall means nearly full decarbonisation in power, road transport and buildings. ECF, Roadmap 2050, European Climate Foundation, 2011 ([link](#))

³ EU GHG emissions from transport increased, European Environmental Agency, 2017 ([link](#))

- Existing emission targets are based on the New European Driving Cycle (NEDC assessment). From 2021 specific emission targets will be based on the new World-wide harmonized Light vehicles Test Procedure (WLTP). Therefore, 2025 & 2030 targets (WLTP based) are expressed as percentage reductions rather than absolute values.
 - Just as under the current regulation, the requirement is set per manufacturer and only Tank-To-Wheel (TTW) tail-pipe emissions are counted.
 - Rather than (the rumored) mandatory sales quota for zero emission vehicles, the Commission proposes an incentive system (crediting mechanism) that allows manufacturers to sell vehicles with higher CO2 emissions if they sell more than 15% share of Low Emission/ Zero Emission Vehicles by 2025 and more than 30% by 2030.
 - Finally, the EU Commission is empowered to introduce market surveillance methods allowing it to collect, publish and monitor real world consumption data, as well as creating an obligation to report deviations linked to correction mechanisms. In the case of deviations detected through surveillance, the ability to correct reported CO2 emission values.
- **A revision of the Clean Vehicles Directive, (legislative):**
 - The directive promotes clean mobility solutions in public procurement tenders, thereby stimulating their demand and deployment.
 - The directive provides a clear definition of clean vehicles based on tailpipe emission thresholds for light duty vehicles, and by alternative fuels considering heavy duty vehicles. This includes tightening emission standards between 2025 & 2030 (considering CO2, particulates and NOx) for light duty vehicles. The revision now includes more stringent requirements for public procurement to buy zero or low emission cars, buses and lorries via minimum procurement targets for both light & heavy duty vehicles.
 - **A revision of the Alternative Fuels Infrastructure Directive (non-legislative):**
 - The proposals from the EU Commission include a range of investment solutions for the trans-European deployment of alternative fuels infrastructures, as well as common standards.
 - An additional EU financial support of up to EUR 800 million is being made available with this action plan for investments into alternative fuels infrastructure; the focus being on e-mobility fast-charging infrastructure along major cross border transport axis in Europe.
 - In addition and extra EUR 200 million is made available to support European battery development and innovation.

Vattenfall analysis and positioning

The fact that car manufacturers have classified the targets as ‘excessive’ and greener groups have stated that the proposals from the EU Commission are ‘a gift to car manufacturers’, seems to imply that the EU Commission has tried to strike a compromise with their proposal. From Vattenfall’s perspective however the Package does not go far enough to tackle the rising emissions from road transport in Europe and support countries to deliver on the goals of the Paris Agreement. The level of ambition is too weak to trigger the necessary paradigm shift to clean mobility across Europe, most efficiently implemented via electric powertrains.

We therefore believe that the following main changes to the proposals are necessary:

1. **More ambitious and absolute CO₂ tailpipe emission targets for 2025 and 2030** that apply to all light duty vehicles (both passenger cars & vans), which do not only deliver CO₂ reductions on paper and in testing cycles, but also on the road. The targets should ensure that the (road) transport sector also delivers in line with the commitments of the Paris agreement.
2. **The inclusion of energy efficiency and noise as criteria under the Clean Vehicle Directive** – energy efficiency being a critical enabler towards clean transportation, and noise as already recognized under the Environmental Noise Directive (Directive 2002/49/EC).
3. **Opening up EU charging infrastructure funding also for normal (and not only fast) charging solutions.** Equally, the funding should be available for both the public and private domain. All segments being equally important for the adoption of electric vehicles.

1. Vattenfall position on CO₂ standards for cars and light duty vehicles (LDVs)

- **Ambition level.** EU policy for maximum emission levels for cars is probably the single most important driver for car manufacturers to produce clean cars. We therefore call for *more ambitious CO₂ emission limits (at the very least minus 35%) for all types of road transport*, starting with passenger vehicles. CO₂ emission limits are equally needed for vans, trucks and buses outside of publicly procured transportation.
The European Parliament has previously supported a 18-28% cut by 2025 and -40% by 2030. Seven EU countries⁴ have written to the Commission supporting a cut of 40% by 2030. This gives some upward negotiation room, but it will be very important to convince Germany to support tougher targets.
Without ambitious CO₂ emission standards the European automotive industry risks to lose its competitive edge to foreign car makers that more aggressively invest in e-mobility and other cleaner technologies. Furthermore, without more ambitious targets it is likely that the EU will miss delivering on commitments towards the Paris Agreement.
- **Target structure.** *It will be crucial that the CO₂ reduction targets that are agreed for 2025 and 2030 will deliver an absolute drop of actual driving emissions* compared to 95 grCO₂/km target for passenger cars and 147 grCO₂/km for vans that have already been agreed for 2020. Main problem is that the Commission's proposal for 30% emission reductions between 2021 and 2030 is based on the new WLTP driving test. While this new WLTP test will be more accurate than the existing NEDC EU driving test – which can only be supported - it also means that the baseline for the 2030 emission reductions target is substantially increased. We know that actual on-the-road driving emissions are at the moment about 30-40% higher than the emissions under the current NEDC EU driving test. A 30% reduction target for 2030 thus basically means that the emission target for 2030 will be the same as the one for 2020 (+30% for the new WLTP test and then -30% until 2030). Main difference being; the 2020 target will only be achieved on paper as a result of the existing NEDC faulty driving test and there are better hopes that the 2030 target will be reached in practice⁵.
- **Testing procedures.** The proposal includes provisions to compliment WLTP type-approval targets (laboratory based) with in-service conformity testing. The proposal to monitor and correct deviations via surveillance & empowerment methods, for example in-service conformity checks is a welcome proposal. However, the details of the in-service conformity testing for CO₂ are yet to be defined. Testing vehicle CO₂ emissions on the road, rather than in a laboratory environment—as the Real Driving Emissions (RDE) regulation began to require for air-pollutant

⁴ The transport and environment ministers of Luxembourg, Austria, Belgium, the Netherlands, Portugal, Ireland and Slovenia signed the letter ([link](#))

⁵ This will in reality depend on the correlation parameters defined via implementation of the proposed article(s), or in gross terms the NEDC-WLTP adjustment factor. At best with the currently proposed 30% target, we will see a reduced rate of CO₂ emission decrease, than with pre-2020 reduction target trends. At worst case we would end up in a pretty much position neutral with minimal actual emission reductions delivered through to 2030, while we need to be accelerating the rate of actual CO₂ reduction in order to meet climate targets.

emissions in 2017—is not foreseen in the current proposal. *Vattenfall is of the opinion that real world CO2 emissions must be monitored in addition to laboratory based tests.* It is critically important to avoid another Diesel-gate. Such a monitoring & reporting regime must provide transparent overview to CO2 emissions on the road; be robustly enforced; be timely in nature; and publicly visible (accepting the need for de-personalise data for dissemination in the public domain).

The Commission must be empowered to amend the WLTP test procedure should real world emissions be found to diverge significantly from the laboratory environment. This is to avoid a repeat of the flaws in the NEDC test procedure where less than half (30-40%) of the CO2 cuts measured in official figures have actually been delivered on the road since the current regulation was adopted in 2009

- **ZEV mandate.** Vattenfall would preferably see ambitious CO2 targets in line with the commitments to the Paris Agreement (i.e. -35% absolute CO2 reductions compared to the 95 grCO2/km target for 2020) to drive clean vehicles sales. However when ambitious targets turn out to be politically unfeasible *a Zero Emission Vehicle (ZEV) mandate/ target can be a viable alternative to push the market for Zero Emission Vehicles.* The EU Commission has for that reason already proposed a target for zero emission vehicles of 30% of new sales in 2030 and mid-term target for 2025. *The failure to apply penalties for missing the targets, would however render it largely ineffective.*
- **Summarizing.** It is clear that such a target formulation will clearly not be enough to let the transport sector deliver on the Paris commitments. More importantly for the market, it will not be enough to let car makers produce sufficient zero-emission vehicles that are needed to make our e-mobility offers fly and to deliver on the transport sector targets in our core markets. We therefore call upon policy makers to increase the 30% ambition, introduce monitoring and reporting requirements to ensure the WLTP test continues to deliver accurate testing results, and – where no ambitious CO2 targets are agreed – introduce an effective penalty structure for not delivering on the ZEV target.

2. Clean Vehicle Directive

- **Scope.** *Vattenfall welcomes the extended scope to forms of procurement other than purchase, namely vehicle lease, rent or hire-purchase, and to public service contracts.* It is important that the directive fully represents the nature of transport contracts placed by the public actors/ bodies, so that for example also vehicles used for waste use collection and taxis are included. The proposed tightening emission regulation on CO2 emissions between 2025-2030 is essential to achieving a decarbonised light duty vehicle fleet, and also in driving technology transfer towards the private transport sector.
- **Heavy duty vehicles.** *Procurement standards for vehicles under the Clean Vehicle Directive, needs to be extended to also include a wider range of vehicle classes/ weights.* It is recognised that the Commission has adopted a delegated act to be able to change this approach to an emissions-based threshold approach (once CO2-emission performance standards for heavy-duty vehicles have been adopted at EU level), however *this process needs to accelerate rapidly now; especially towards publicly procured vehicles.* Vattenfall is of the view that the minimum share of clean, heavy-duty trucks in public procurement defined at Member State level is far too conservative, and will not drive the market to deliver the required solutions/ platforms. Given the longer lifetimes of heavy duty vehicles this is also a direct threat to delivering the required decarbonisation of the transport fleet to meet both European and Paris commitments.
- **Well-to-tank information.** Vattenfall supports the introduction of a definition of 'clean vehicles' that is based on tailpipe emissions (CO2, particulates & nitrogen oxides) for light duty

vehicles. This technology neutral approach can provide the necessary framework to ensure that public authorities lead by example. Performance comparisons between different technologies, should however also incorporate the whole value chain (well-to-wheel) and include the efficiency and CO2 emissions in the fuel production process (be it gasoline, biofuels, hydrogen, electricity or any other fuel). *It is important that public stakeholders are presented with both (the currently proposed emission metric) tank-to-wheel, and well-to-tank information so that informed selections can be made based on overall well-to-wheel emissions.* This would for example show the higher efficiency of electric cars that are fuelled with 'green' renewable electricity in comparison to fuel cell vehicles that are fuelled with hydrogen produced with 'grey' electricity (where both the electricity- and hydrogen production is less efficient. Public actors & cities are key drivers of the transition to decarbonised transport, this is critical information that must be available to inform decision making.

- **Energy efficiency & noise.** *Energy efficiency and noise targets should be added to the public procurement process* in driving decarbonization (vehicle design) & in delivering public health benefits. This is especially important considering heavy duty vehicles operating in the public fleet.
- **Summarizing.** With the increasing scope; a stronger focus on heavy vehicles; as well as well-2-wheel information; and energy efficiency & noise as procurement criteria, the revised Clean Vehicles Directive can make a positive impact. A target for public authorities to only procure clean vehicles by 2030 – were cost efficient - will allow a real effect.

3. Action plan for alternative fuels

- **Development of charging infrastructure.** Vattenfall welcomes that the Communication on an Action Plan for Alternative Fuels recognises the importance of investments in charging infrastructure to support the widespread deployment of electric vehicles, and *stresses the key benefits of smart charging* (charging in reaction to real-time wholesale market price signals). More (smart) charging infrastructure will allow for the integration of much larger quantities of RES electricity in the transport sector.

We have heard that car manufacturers may have indicated that charging-infrastructure may not be ready in time, if Europe implements ambitious 2025 and 2030 targets. However, *we can ensure you that we as energy companies are ready and have the experience and expertise needed for charging infrastructure development.* With stricter 2025 & 2030 regulations, a more solid investment climate would be created to base infrastructure investments on.

The technology behind charging is relatively simple so that infrastructure can be rolled-out quickly when the demand for electric vehicles increases and policy bottlenecks have been removed. Also, prices for charging boxes have the potential to further reduce, both due to sales increase and technology development. At Vattenfall we are convinced that towards 2030 smart home charging solutions will be available for a much smaller cost than a basic charge box today. *In the Netherlands we are already building public charging infrastructure without government support.* This is mainly due to the large scale of the tender (2500 charging poles will be installed), the long contract period (10 years), standardized requirements and government commitment to e-mobility. A key insight is that cities & municipalities need to be engaged to develop charging infrastructure.

- **Normal charging.** With more electric cars on the road and a clear government policy on clean-mobility the market can much more pro-actively invest in charging infrastructure. *For the market take up phase, government funding will help to solve the chicken-egg problem.* The 800 MEUR from the EU Commission that focus on fast charging are a good start here. As 85-90% of charging takes place with normal chargers at destination (mainly at home and at the office where cars stand still longest), *the Commission should not get normal charging out of*

sight. Funding should also be available for normal charging projects along and beyond the TEN-T corridor. The increased visibility of available charging infrastructure would also help customers with range anxiety to make the step from Plug-in Hybrid Vehicles to fully Battery Electric Vehicles. Vattenfall therefore proposes a 50/ 50 split of the funding between fast and normal charging.

- **Interoperability standards.** We believe it should be attractive and easy to switch from fossil mobility to electrified mobility. Charging infrastructure needs to be readily available & easily found. For this reason Vattenfall develops roaming services. The Interoperability between us and 3rd parties will ensure easy access anywhere in Europe. To roll-out a technical network between market players, *connections need to be standardized based on open protocols, available for any company.* Many market-players have implemented the open protocol OCPI⁶. The standard is open and enables to charge everywhere with clear information about location, availability and price of charging stations, roaming costs are minimized and EV drivers can get maximum benefit and access to added services. The OCPI standard reduces costs for every charge-point operator, further stimulating the industry to grow.
- **Open data.** Furthermore, *measures need to be taken to ensure that relevant data is shared. Rules at EU level should avoid that only one party has access to all relevant data.* Only when car data (which often only car makers can access) and grid data (which is generally under control of grid operators) is combined, it will be possible to offer more intelligent charging services, that are useful for EV drivers, secure grid stability and help to integrate intermittent renewable power production. It would help the e-mobility market, if car manufacturers need to share battery information over an open protocol. For this, it would be very helpful when car manufacturers start sharing battery info like 'state of charge in %' over the cable.
- **Open standards.** To facilitate more data exchange, Vattenfall is a big advocate of open standards developed by Open Charge Alliance. The first being OCPP (for hardware communication to charge point operators) and the other being OSCP (for roaming between charge point operator and distribution system operators). The latter allows DSO and TSO organizations to communicate their flexibility over standards as well.

⁶ For more information on the open OCPI protocol, check out the website of the NKL ([link](#))

Background information

The benefits of e-mobility

The development of e-mobility solutions can help to tackle a wide range of problems in the energy sector:

- When electric vehicles are powered with electricity from 100% renewable sources they have zero CO₂ emissions per kilometre and are 60% more efficient than conventional cars.⁷ Even with the current Dutch/German electricity mix, **electric vehicles emit ~25% less CO₂ and are 25% more efficient** than their fossil fired counterparts.⁸ These numbers will only improve with when RES and CO₂ policies in the electricity sector materialize further. In Sweden, where power generation already is 98% fossil-free, switching to e-mobility, already results in primary energy savings of ~40%.
- An increasing penetration of e-mobility also implies a **reduction of oil demand and higher security of supply**. Two thirds of final demand for oil is currently being used for transport, while 88% of all crude oil is imported; mostly from instable regions.
- **Electric vehicles will help to reduce air- and noise pollution in our cities** and ensure that (EU) Air Quality targets are being met. Big improvements can be made when also heavy vehicles like busses are electrified. Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to secondary particles and ozone can be traced back to excess NO_x emissions from diesel cars, vans and light commercial vehicles. Thousands of premature deaths could be avoided annually if NO_x pollution is strongly reduced and avoided⁹
- **Electric vehicles can help to increase the flexibility of the power system** when real time market prices reach the customer, *and* distribution tariffs & taxes (which generally make up 2/3 of the electricity bill), move in tandem with the wholesale market price.

Vattenfall position on the Zero Emission Vehicle (ZEV) mandate

Vattenfall first and foremost argues for the need to adopt ambitious, 2030, CO₂ reduction targets for light duty vehicles (both passenger cars & vans), with an intermediate target in 2025. Where agreement on such ambitious targets turns out to be impossible, the introduction of Zero Emission Vehicle (ZEV) mandate, can be an alternative.

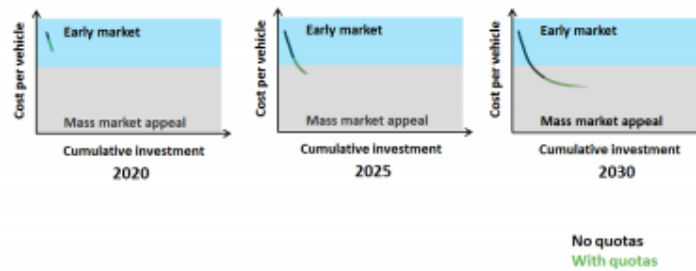
A ZEV mandate is a temporary policy to accelerate early Electrical Vehicle (EV) investments and commercialization to overcome initial barriers. It will help to speed-up market uptake.

- A ZEV mandate would imply that car makers selling vehicles within the European Union will have to comply with minimum quotas for the production and sales of zero emission vehicles. Assuming these quotas are set higher than the optimal pathway for car makers to meet the emission standard, this will generate economies of scale in an earlier stage, bringing the tipping point to mass-market appeal.

⁷ Internal combustion engines have an average efficiency of about 30%. If you charge an electric car with an cable its final energy efficiency is about 95%. This means 95% of the electric energy used to charge the battery is transformed into motion energy by the electric motor.

⁸ When electric vehicles are not powered by 100% RES electricity, the emissions and efficiency losses from power production also need to be taken into account. Because every country has a different generation mix, these numbers also differ from country to country. In general: the cleaner the electricity, the higher the emission reductions and efficiency improvements. The German Ministry of Environment ([BMU](#)) has calculated that CO₂ reductions from switching to EVs already now add up to 23%. Vattenfall estimates show that emission reductions in the Netherlands are ~30% (having a higher share of clean gas generation), while Sweden's low CO₂ mix achieves emission reductions >80% and primary energy savings of ~40%

⁹ 5000 deaths annually from Diesel-gate in Europe, International Institute for Applied System Analysis, 2017 ([link](#))



The figure¹⁰ visualises the impact of ZEV quotas. With ZEV quotas market rollout of ZEVs will enter the mass market stage (indicated by the grey zone) earlier. Quotas can be phased out once mass-market appeal is achieved, as by that time ZEVs will have become an economically viable option.

For cars, ZEVs are not predicted to be necessary to meet the 95 gCO₂ (NEDC) target in 2021, however will be necessary from 2022 to achieve the trajectory in WLTP emissions required to meet the -30% Climate Goal. To meet the 75 gCO₂/km target in 2025 and 50 gCO₂/km in 2030, it is expected that ZEV market shares of 10% and 32% will be needed respectively.¹¹

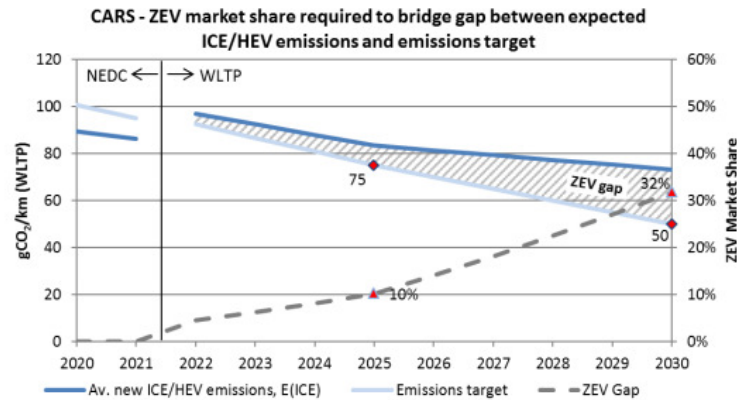


Figure 16: Illustration of the car ZEV gap between the forecasted emissions of conventional vehicles and targets of 75gCO₂/km in 2025 and 50 gCO₂/km in 2030

Experience with EV quota in other markets

In California, an e-mobility quote similar to a ZEV-mandate has been introduced increasing from 2% in 1998 to 22% in 2025.¹² China has also announced that it will also introduce an electric vehicle quota. As of 2018, car manufacturers need to make sure that 8% of their total passenger vehicle sales are fully electric or hybrid. If the quota is not met, penalties need to be paid.

Without ambitious CO₂ emission standards or an EV quota in Europe, the continent risks to miss the development to future mobility. A risk that cannot and should not be taken.

¹⁰ Policy options to maximise zero-emissions vehicle sales in 2035, ECN study ([link](#))

¹¹ Towards a European Market for Electro-Mobility ([link](#))

¹² California Air Resource Board, Zero Emission Vehicle Program, 2017 ([link](#))