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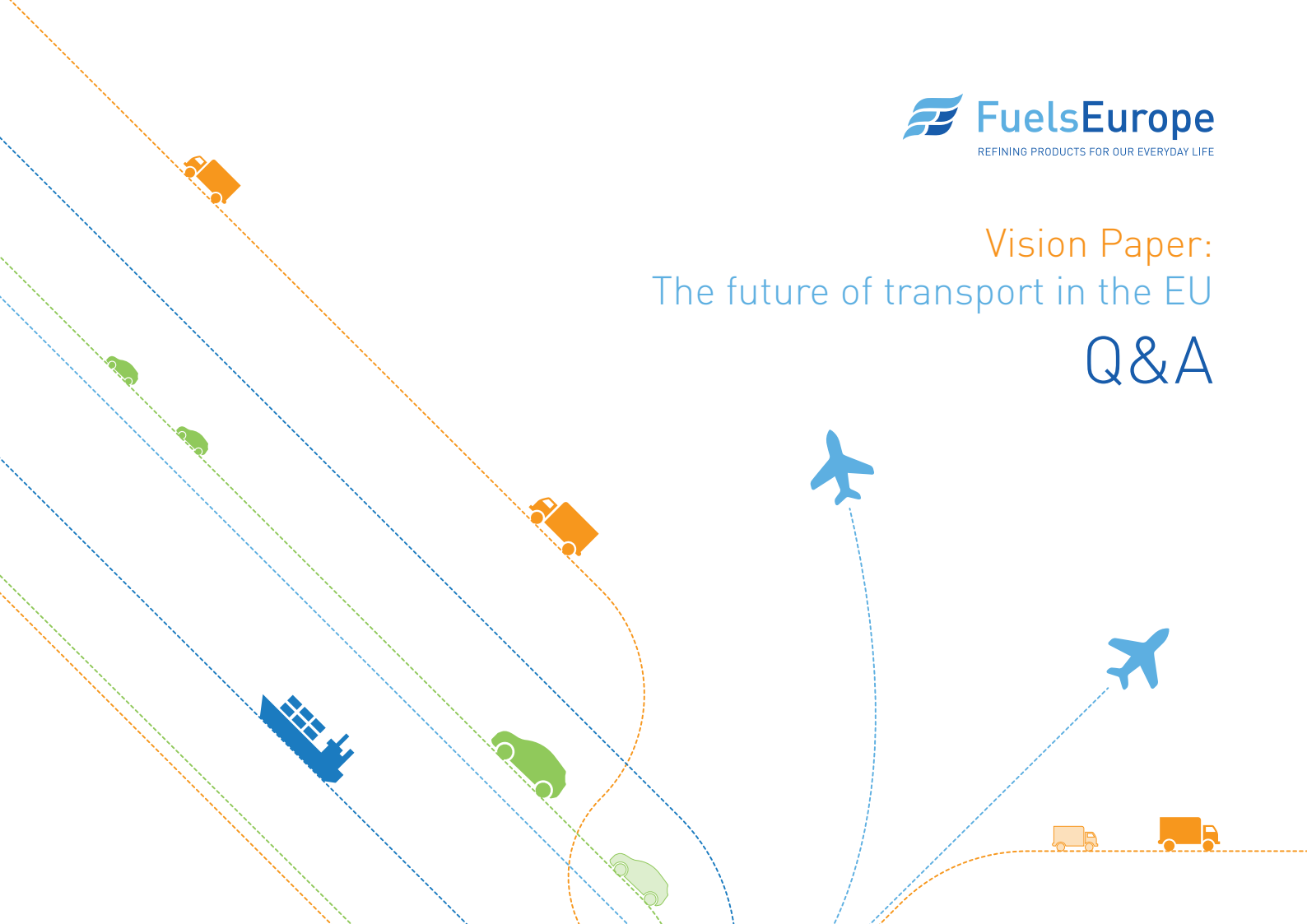
Vision Paper:
The future of transport in the EU
Q&A



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Can the transport sector play its part in reducing its GHG emissions?

Transport is clearly a significant contributor to GHG emissions in Europe, being responsible for 27 % of EU emissions, including aviation and maritime. Of course it also performs a fundamental service to society, is a key contributor to GDP and quality of life for citizens. The challenge is to reduce GHG emissions whilst maintaining fully these benefits.

All transport fuels and energy produce GHGs to a varying extent based on the emissions generated during their life cycle.

Road transport GHG emissions intensity in the EU are however already on a reducing trend as a consequence of vehicle efficiency which has been achieving significant improvements, including through contributions of high performance petroleum derived fuels and lubricants. We think that there are some further improvements to efficiency that are possible, although some of these may come at very high cost. We should also recognise that there are some limits from laws of physics. So the task is very complex, we thus have to be very careful in the way policies are developed.

Key figures:

In 2014, transport services in the EU accounted for about **696 billion €** (5%) of EU Gross Domestic Production while the transport sector at large employed more than 15 million people.

249.5 million cars, **37.6 million Heavy duty vehicles**, **36000 planes** (877 Million passengers) and **93000 ships** (4,3 Billion tonnes freight handled and transported) are reliably **fuelled at 94% by oil refined products** .

The taxation of petroleum products, and notably transport fuels at **€270 Billion of taxes** (ref. year 2014), represents a very significant revenue flow to the budget of Member States.

2

Transport does also generate some Air Quality issues, isn't this another reason to accelerate the penetration of alternative fuels?

Europe has regulated vehicle emissions since 1992 with the first standard Euro 1, setting target levels that have been progressively tightened right up to Euro 6 in 2014. Today's Euro 6 vehicles are really significantly cleaner than all vehicles before, such that emissions are not detectable by sight or odour almost all of the time without professional measuring equipment.

The Volkswagen scandal made us all aware that regulation targets are not always indicative of real emissions on the road. However it is worth bearing in mind two points: in EU the VW vehicles affected were Euro 5, not the latest technologies. , also that there is now a comprehensive set of measures being put in place, including the new WLTP drive cycle and Real Driving Emissions RDE testing, Furthermore, measures to prevent cheating or cycle beating are now being put in place, so there are good reasons to believe that such regrettable practices are a thing of the past.

Despite these improvements in new vehicles, non-compliance with the Ambient Air Quality Directive persists in several areas, in terms of the specific ambient air quality limit values set by the EU being breached in many cities. In some cities this is just a few occurrences a year, but in others it may be a regular annual exceedance.

A recent study commissioned by Concawe[1] has very carefully modelled the impact of vehicle fleet turnover (from a range of Euro 1 – 5 vehicles to Euro 6) under several scenarios, on each of the affected areas in Europe, over a timescale out to 2030.

[1] Study conducted by Aeris Europe, to better understand the air quality compliance issues for PM and NO_2 in the EU-27 countries, with a particular focus on the urban environment.

Primary PM emissions ($PM_{2.5}$ and PM_{10}) from road transport, are already today a small contributor to the total primary PM emissions, because Euro 4&5 has actually been very effective in reducing real emission levels of PM
The results from modelling for Particulate Matter PM show that this will keep decreasing between now and 2030. The major contribution to the total primary PM emissions is and will be the domestic sector (solid fuel, barbeques, garden fires)

We now know that by 2020, the major part of primary PM emissions from road transport will consist of non-exhaust emissions from tires, brake wear and road abrasion (add graph for the Q&A). So it will be independent of powertrain, or fuel.

For NO_x, we now recognize that the implementation of Euro standards has not been as successful as it has been at reducing PM. Reductions have been recorded in the official certification tests, but these same reductions have not been achieved in real "on-the-road" emissions. However, the recently implemented Euro 6 standard, including the new WLTP drive cycle and Real Driving Emissions RDE testing, will make significant reductions also in real life NO_x emissions.

The Concawe study has also modelled the evolution of urban NO_2 ambient levels and the compliance with air quality limit. The results anticipates that the number of non- or uncertain compliance zones will continue to decline between 2015 and 2030: A scenario that assumes regular fleet turnover to Euro 6 vehicles, with an average compliance factor of 2.8 showed that the percent population living in non-compliant areas falls from 31% to 7%.

Therefore by 2030 the population living in 'likely compliant' zones increases to 93% and the pattern of residual non-compliance takes the form of discrete islands of non-compliance.

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Are there any solutions
for the remaining air quality
non-compliant areas?

The fact that these remaining non-compliance zones are located in urban areas strongly supports the implementation of targeted, specific mitigation measures rather than sweeping or wide-ranging measures

We would propose explicit measures such as support for the turnover of the vehicle fleet in order to accelerate the uptake of EURO 6/RDE compliant vehicles; a targeted use of low or ultra-low emission zones in a technology neutral way; and targeted measures – including retrofitting – for fleets operating in the urban area, such as buses and taxis. In addition to these measures, we would focus on checks on vehicle maintenance and removal from the road of the most polluting and poorly maintained vehicles.

4

What Policy proposal does the refining industry suggest in order for the transport sector to become more sustainable and play its fair share in reducing emissions?

We need to build a transport system that addresses climate and air quality issues, but one that also remains effective and competitive for businesses and individuals. We will need to pursue a full range of options: lower carbon fuels and vehicles, measures to improve the efficiency of traffic demand, infrastructure, and driver training. We should also consider maintenance checks, especially to support air quality improvement. Those policies should be cost-effective, technology neutral, and predictable to ensure safeguarding of the internal market.

VEHICLE REGULATION

Efficiency in all forms of use of fuel and energy remains a highest priority, and we believe some further improvements are possible. Current regulation for cars and light vehicles efficiency successfully driven some major improvements over the last few years. They are now driving some GHG reduction at costs that are extremely high, due to very high carbon price signals in the regulation. We believe it would be expensive and unwise to simply extrapolate the current regulation unchanged.

We believe that there are some further efficiency improvements that are possible from cars and light vehicles, that can be achieved through careful regulation. We do support a further development of efficiency targets on vehicles, respecting of the technology neutrality principle, with cost-effective and realistically set targets and achievable through different technologies. We should recognise that at some point there will be some hard limits to further improvements, from the laws of physics.

To ensure a fair comparison between transport energy sources and vehicles, it is important to take account of life cycle analysis of GHG emissions entering the atmosphere. To avoid the highest cost solutions the current carbon price signal should be reduced (from the current at 100x the ETS price), and an alternative marginal compliance route for carmakers should be introduced, by payment of a penalty possibly linked to carbon markets.

DIGITAL TECHNOLOGY IN TRANSPORT

There is significant potential for the connected vehicle, together with automated and assisted driving technologies to contribute to operational efficiencies and therefore achieve useful GHG emission reductions.

LIQUID FUELS

We believe there will remain inherent advantages in a liquid fuel, and these will remain essential for many decades for many sectors of transport. We will need to have as many options as possible to reduce the GHG intensity of liquid fuels, and so we will have an intensive dialogue with the Commission about how to support the development and implementation of lower carbon liquid fuel technologies over the longer timeframe necessary for these. For all policy and regulation in transport we believe it is essential to have transparency of costs so that we can ensure we drive cost-effective solutions, considered against the GHG mitigation costs that are possible in non-transport sectors.

LONGER TERM POLICY

For the long term, effectively reducing GHG emissions will be more cost-effective for the whole EU economy if we implement an economy-wide / cross-sectorial approach to decarbonisation instead of a sectorial one. We believe we will need to converge carbon price signals in our whole economy, across what is currently the ETS sector, and also across transport, agriculture and buildings. However this is a far-reaching idea that we discuss further with stakeholders.

This will deliver value for the planet at the lowest cost for citizens. The current sectorial approach currently in place has as a result that the implicit cost for decarbonisation in transport can be much higher than in other sectors due to technological immaturity of alternatives.

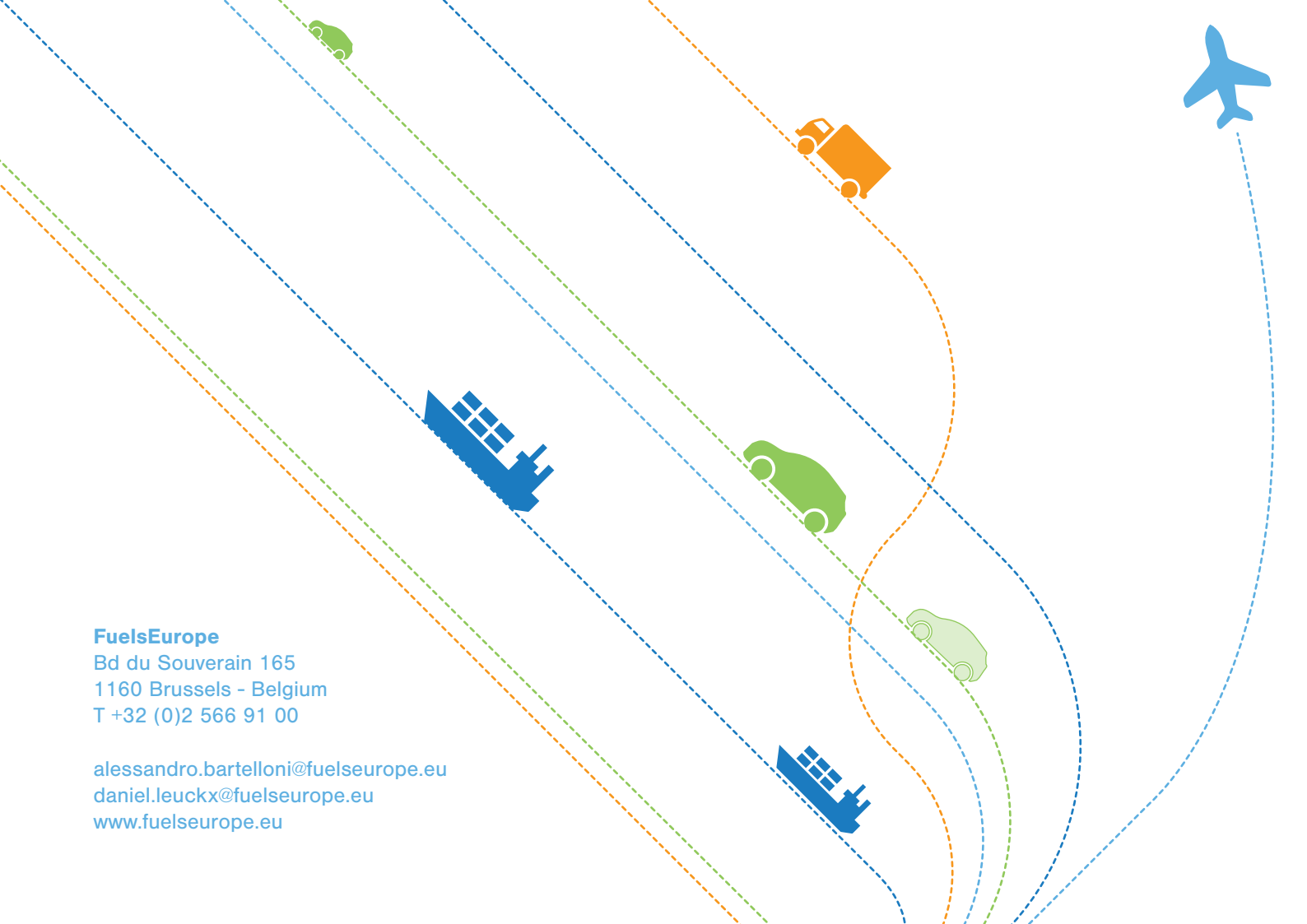
SUPPORT FOR NEW TECHNOLOGIES

A key objective of many of the incentives and mandates in transport policy is to drive new technologies. However regulation that strongly drives implementation (often at high costs) does not appear to be an effective way of supporting new technologies, instead it drives implementation of the current generation technologies.

It is key that stronger technology support is provided earlier in the development cycle, to help create the new technologies in vehicles, fuels, infrastructure and operations that will be needed. We propose to have a dialogue with key EU stakeholders about how this can be achieved.

Europe should focus on technologies that can be effective globally and will not need long term incentives.

This means focussing on those technologies that show they can become cost effective routes to GHG reduction at scale. By doing this, we can also turn our response to the challenge to reduce GHG, into an industrial opportunity for Europe.



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