



# DIESEL TECHNOLOGY

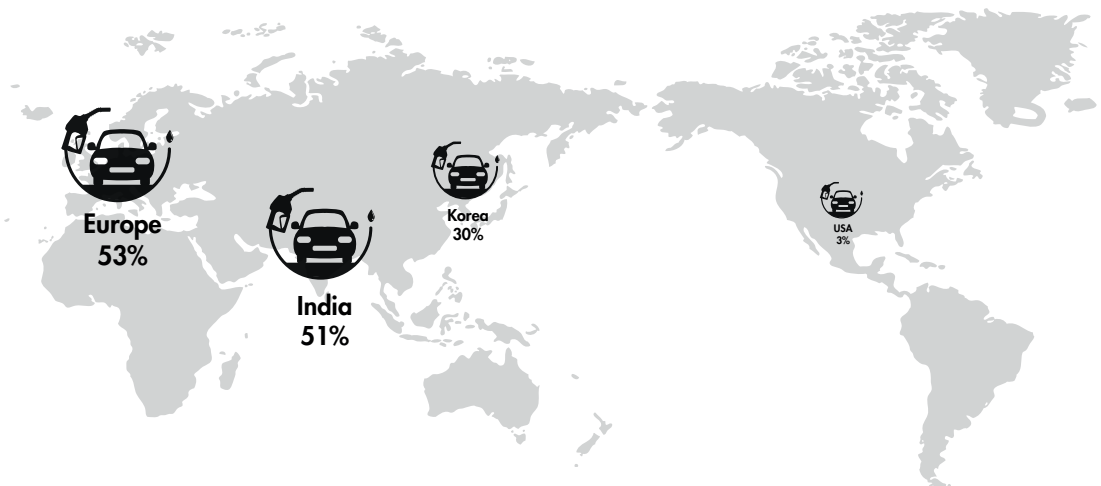
*Market share, emission testing and type approval procedure*

Diesel fuel is widely used in various industries whereby the transport sector represents a significant share in the total diesel demand. Diesel cars capitalise on extra fuel efficiency, but also contribute to the climate change mitigation as distance-based carbon emissions from diesel vehicles are lower than from petrol ones.

In addition, diesel vehicles normally travel higher mileages than the petrol ones as consumers enjoy the lower overall fuel cost due to the higher fuel economy.

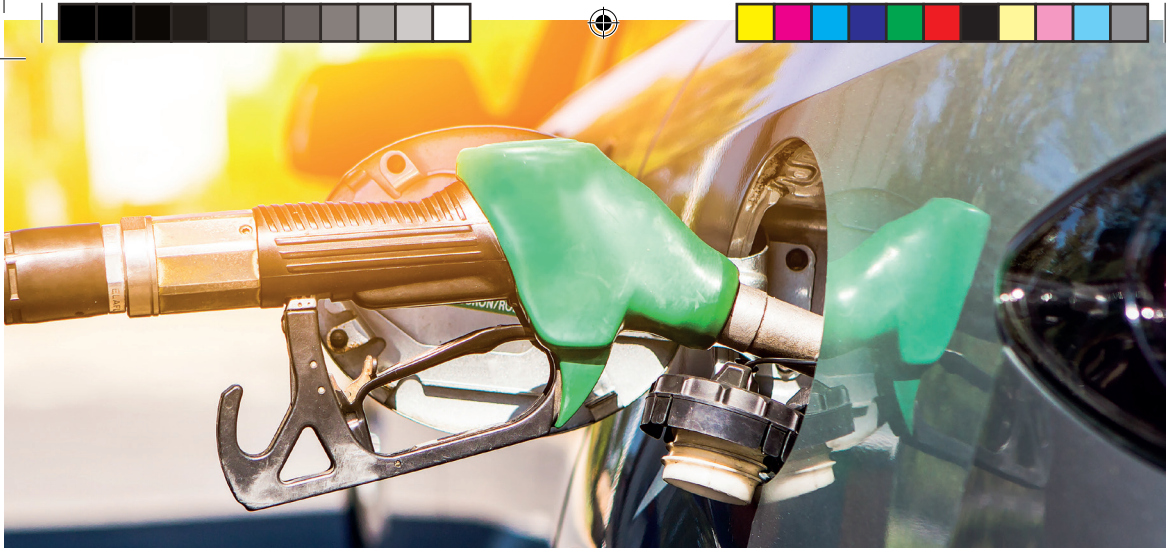
Market penetration of diesel cars in Europe is the highest among the world largest economies, accounting for 53% of all vehicles, phenomenon partially explained by the favourable tax policies to introduce diesel technology. European states are closely followed by India and South Korea, where the diesel share among other types of fuels is 51% and 30% respectively. In contrast to such high diesel penetration in Europe, the diesel market share in the USA is marginal, accounting only for 3%.

## DIESEL CARS MARKET SHARE



"Diesel debate": FIA discussion paper





The United States and Japan still heavily rely on cheap petrol; the environmental concerns are instead addressed through the dissemination of hybrid and electric vehicle technologies.

Regulatory standards on diesel emissions also vary across regions, but the common trend was to make standards more stringent and harmonised. There is an ongoing effort to standardise the test cycles and introduce a transition to separate cycles on pollutants, CO<sub>2</sub> emissions and fuel consumption. In this light, the new Worldwide Harmonized Light vehicles Test Procedures (WLTP) has been developed to more realistically assesses driving styles.

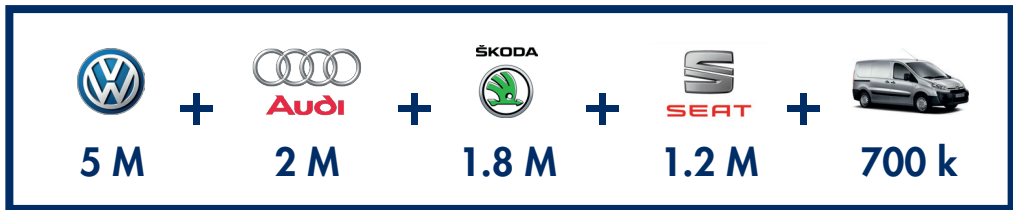
Currently, both the EU and the US pre-production vehicle testing procedures are carried out in laboratories by the accredited testing agency commissioned by a vehicle manufacturer. In the US, however, the self-certification system based on laboratory results is complemented by additional surveillance measures implemented under the auspices of the Environmental Protection Agency (EPA). This regulatory institution is responsible for executing independent in-service conformity testing as well as on-spot checks. Such re-testing measures have proved to be a good practice in ensuring maximum conformity with regulatory standards and are currently considered for adoption in the European states, especially in the context of VW "diesel case" when the notorious stringency of the US regulations was seen in action.



# THE "DEFEAT DEVICE"

In principle, the market share of diesel-fueled road vehicles and off-road machines would grow even further if the concern regarding real diesel emissions was not raised by the Volkswagen case. The revelation of VW's use of the defeat device to falsify the real emissions in everyday driving pointed to the limitations of laboratory testing. Non-admissible software was used to understate NO emissions and fuel consumption during the standards tests.

## TOTAL OF VEHICLES WORLDWIDE EQUIPPED WITH THE UNDECLARED DEFEAT DEVICE



**11 M VEHICLES**





VW admitted that around 11 million vehicles worldwide were equipped with the undeclared defeat device. Technical studies have showed that the NO emissions under real driving conditions exceed the standard imposed by testing laboratories by about 7 times, while real fuel consumption is at least 40% higher than the rate declared by car manufacturers. The total costs of the testing violations are extremely burdensome as they include the recall program – US\$33 bn, production loss – US\$8 bn, fines and liabilities – US\$32 bn. While the total loss in sales is yet to be determined, consumer trust has surely been affected.

### **COSTS OF THE TESTING VIOLATIONS FOR VOLKSWAGEN**



**\$33 bn**

**RECALL  
PROGRAM**



**\$8 bn**

**PRODUCTION  
LOSS**



**\$32 bn**

**FINES &  
LIABILITIES**



Volkswagen UK head office







Clubs are encouraged to advocate for transparent and fair policies that will ensure diesel's position in the market under a new safe and clean label that will be easily decoded by consumers. Any delay in the introduction of appropriate regulations will inevitably affect the stand of the automotive industry in the environmental agenda and further deteriorate the diesel market share.

In the meantime, Clubs shouldn't let the recall programs be implemented with no direct monitoring and assessment, as technical adjustments might directly affect engine performance, overall comfort and fuel efficiency. Consumers must be aware of their rights to preserve all the technical features of their personal vehicles while also ensuring a sufficient resale value.





# THE POLICY RESPONSE

The flaw in emission testing has sent an alert to regulatory agencies worldwide. In Europe, for example, the proposal to implement complimentary market surveillance measures is now being reviewed at an accelerated pace. There is a strong opinion that the laboratory-based emission testing procedure has to be coupled with an on-road assessment to demonstrate real fuel consumption and emission performance.



Clubs should reaffirm their role of finding the right nexus between policy development, consumer interest and industry capacity and complimenting the efforts of various international agents to push for a more robust regulatory framework focused on real driving conditions. New regulations can easily translate into additional costs imposed on consumers in the form of higher taxes or additional production costs. Clubs should make a step forward in balancing out cost-benefit implications of the new regulatory standards while raising consumer awareness of the "state of play" in the world of diesel technologies.

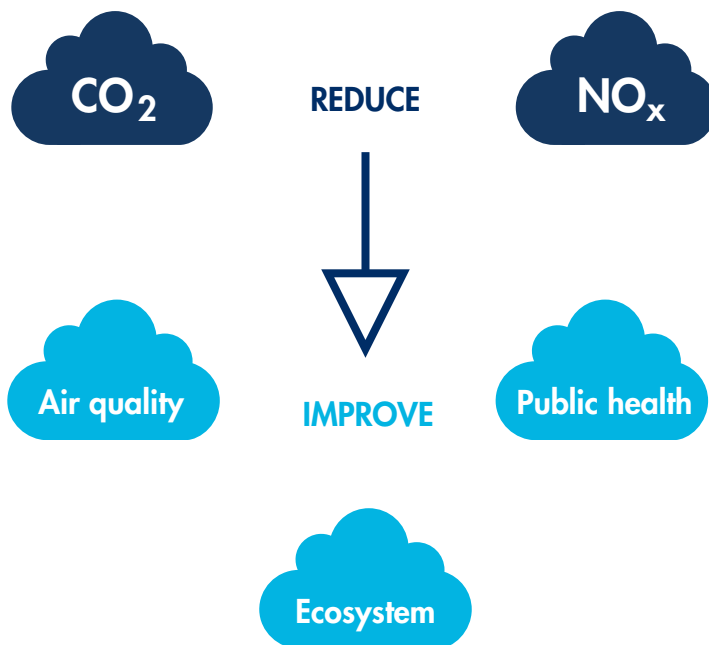




# LESSONS LEARNED AND FURTHER RECOMMENDATIONS

Clean diesel cars are not a myth if robust technologies with a proven track record are brought into production. Clubs should take a proactive role in backing clean technology solutions which are prerequisites for air quality improvement and hence public health protection.

Retrofitting old diesel vehicles with advanced emission control devices, introducing stricter engine pollution control, fuel consumption and fuel quality standards, can effectively reduce harmful tailpipe emissions, thus improving the public health ecosystem at city level. The diesel case and revealed inconsistencies in regulatory practices have reaffirmed the essential role that Clubs have to play in optimizing diesel car performance and ensuring sound public policies.





# REGAINING CONSUMER TRUST: 5 RECOMMENDATIONS FOR FIA CLUBS

1. Clubs should call on governments to implement the World-Harmonized Light Vehicles Test Procedures (WLTP) to strengthen the procedure for measuring fuel consumption and emissions. In addition, an effective market surveillance system is to be introduced with the goal of controlling the conformity of cars already in circulation.

The WLTP test defines a global harmonised standard for determining the level of pollutants, CO<sub>2</sub> emissions and fuel or energy consumption of passenger cars. If adopted in accordance with regional specifications, WLTP represents a step forward in replicating more realistic vehicle driving performance. Harmonising the test methodology is a practical solution to increase emission testing transparency and reduce vehicle certification costs for producers as well as consumers. Further market surveillance activities will provide better information about the compliance of vehicles already in service.







2. Clubs should monitor regulations relating to environmental performance of vehicles and urge public authorities to consider consumer benefits in the policy-making process.

The role of regulations governing the vehicle emissions and fuel consumption is not only to offset environmental impact, but also to ensure maximum benefits for consumers. The impact of legislative action can translate into higher production and compliance costs and consequently, higher vehicle market prices. While regulations on vehicle environmental standards are to be robust and efficient, the potential cost for consumers should be taken into account when determining policies.

3. Clubs should support independent consumer assessment programmes to better inform consumers about the divergence between real-world and laboratory emissions values, ensuring a better guidance in consumer choices.

Independent consumer testing programmes have proven to be extremely effective in improving industry standards and the overall quality of the products on the market. They can also effectively contribute to building consumer trust, as well as encouraging purchase decision-making.





4. Clubs should undertake proactive measures to inform consumers about emerging technologies in a timely and comprehensive manner so that vehicle owners can benefit from customised innovative solutions.

Clubs can promote demonstration programs, seminars, on-line database, case stories, among other awareness raising initiatives, to channel information on new technologies in the automotive industry. With specific regard to diesel technology, Clubs should continue to deliver transparent and updated information on developments in emissions control systems under all operating conditions to enable consumers to comply with environmental regulations in the most efficient way.

5. Clubs should take an active position in monitoring the recall programme launched by VW.

In countries, where regional branches of VW have not yet published information on specific retrofitting measures in these respective markets, Clubs should act as mediators between the manufacturer and the consumers and aim to inform vehicle owners of appropriate measures associated with the recall program.

In countries where VW has launched the recall programme, Clubs should consider the assessment of practical implications for retrofitted vehicles, notably fuel consumption, engine performance and emission limits.

Clubs should advocate for the mitigation of any potential damages caused by the recall program with the objective of protecting consumer rights throughout the entire process of bringing affected vehicles up the regulatory standards.





# NEXT STEPS



Following the recommendation of the Policy Commission, the FIA will support an independent consumer testing programme to ensure the VW recall program has no adverse effects on the engine output, fuel consumption and performance of retrofitted vehicles. The test results will be made available to all FIA Clubs.

The testing will be carried out in two phases in accordance with the VW recall schedule. During the first phase, four vehicles with 2.0-liter TDI engines will be tested. The dissemination of results to all Clubs is scheduled for June. In the second phase, the refit of 1.6-liter vehicles will be tested and followed by the presentation of results to FIA Members. In addition to laboratory testing, Clubs envisage to conduct the Real Driving Emission testing to ensure consistency between laboratory and in-use scenarios.

The FIA believes that there is a need for an independent and comprehensive approach to protect consumer interests at every stage of VW recall program. It is, therefore, essential to make sure all Clubs can use the results of independent consumer testing to better serve the interests of the motorist community.





This brochure is a summary of the full “Diesel Debate” discussion paper prepared by FIA Mobility to serve the interests of Club members, and consumers in general, who have been affected by the VW emissions fraud.

The paper is subject to the endorsement by the World Council for Automobile Mobility and Tourism on 13 May 2016.

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