GLOBAL FUEL ECONOMY INITIATIVE
FOR ZERO CARBON VEHICLES BY 2050

VEHICLE EFFICIENCY AND ELECTRIFICATION: A GLOBAL STATUS REPORT

EXECUTIVE SUMMARY

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The world needs an urgent transition to zero emission mobility. GFEI has set out ambitious decarbonisation targets for passenger cars, trucks, buses and motorcycles, all directed towards achieving zero carbon mobility by 2050. Meeting these comprehensive targets and the Paris Climate Agreement aims of limiting temperature rises to 1.5 degrees will require a significant shift to electric vehicles and decarbonisation of the electricity grid, as well as substantial moves towards active shared and public transport where possible.

This report outlines the state of play globally in achieving these GFEI targets, the on-going challenges which we face in achieving them, and the essential policy changes and conditions which are required to underpin progress. It identifies very clearly how undeniably urgent the transition to zero carbon vehicles remains, how much further work there is still to do in this regard, and the commitment of GFEI and its partners to support this urgent transition with practical and expert capacity-building support.

STATE OF PLAY

It is clear that global progress is inadequate in terms of the more conventional fuel economy improvements. Average fuel economy of passenger vehicles globally has improved by 18% since 2005 (10% since 2010) – still a long way from our targets of a 50% improvement by 2030, and 90% cut in CO_2 emissions by 2050. Key drivers of fuel consumption include fuel price, regulations such as standards, which affect technology uptake, as well as vehicle size and power. The recent shift to larger vehicles, particularly SUVs in many markets, has also increased average fuel consumption leading to higher emissions.

However, there is significant potential for a rapid reduction in emissions from a widespread shift to electric vehicles (EVs). EVs have experienced tremendous sales growth around the world over the past 10 years. By the end of 2019, electric vehicles had been deployed in over 100 countries. Cumulative passenger electric vehicle sales surpassed 7 million in 2019. Annual sales of electric cars topped 2.1 million globally in 2019, accounting for 2.6% of global car sales in 2019. However, overall a significant acceleration in the transition to zero-emission vehicles is needed to achieve GFEI's 2030 and especially our 2050 targets, across all modes.

CHALLENGES

Ten governments across the world have established or proposed fuel economy or greenhouse-gas emission standards for passenger vehicles, while 6 have them in place for heavy duty vehicles. Many countries also have other forms of fuel economy policy, including taxes and labelling to promote more efficient vehicles. To date, 17 countries have announced 100% zero-emission vehicle sales targets or the phaseout of internal combustion engine (ICE) vehicles by 2050. However, few of the standards in the largest markets are stringent enough to achieve the GFEI 2030 fuel economy targets or the necessary longer-term CO_2 and EV uptake targets.

By the same token, a range of policy instruments related to the promotion of EVs have been adopted in major global markets. These include regulations to ensure high EV model availability, financial incentives to make EVs cost competitive, charging infrastructure to ensure EVs are convenient, and campaigns to increase consumer awareness. In countries such as Norway that have developed a comprehensive and ambitious approach, EVs have gained significant market share - but there is more that others can do, particularly as the costs of EVs continue to fall and technological improvements increase driving range.

City centre traffic in Santiago, Chile.

RECOMMENDATIONS

1. First and most importantly, governments must set targets for CO_2 reduction from the vehicle fleet and integrate EV sales targets with wider fuel economy and vehicle efficiency policies.

2. Eliminating current subsidies on fossil fuels is a foundational step that all countries should undertake as soon as possible.

3. To promote EV sales:

    - Governments should adopt regionally and internationally consistent electric vehicle and charging system standards and protocols.

    - Government vehicle procurement programmes must be carefully reviewed in order to ensure that they support the transition to zero carbon vehicles.

    - Strong investments in and promoting of infrastructure deployment are needed to ensure that this keeps up with the rising number of EVs in use.

    - EV purchase incentives will be needed until the market is clearly self-sufficient. Higher vehicle purchase or in-use taxes should be set at least for the most polluting, gas-guzzling ICE vehicles, compared to much cleaner vehicles like hybrids, PHEV, and BEVs.

    - EV credits should be included within fuel economy standard systems, though managed so as not to reduce incentives for ICE vehicle fuel economy improvements.

    - Zero-emission vehicle (ZEV) sales requirements can be an important component, typically as a percent of OEM's total sales in a jurisdiction. These should rise over time with a 100% target set for some point in the future to signal the overall transition plan.

    - Policies to promote fuel economy and electrification for two/three-wheelers are also important. China leads on both standards and restrictions for ICE two/three-wheelers; restrictions and price incentives can be used in all countries to promote the most efficient and clean options, with electrification targeted over time.

    - Policies will also need to ensure that EVs battery materials are sustainably sourced and produced minimising GHG emissions and that structural changes in governmental revenues from fuel taxation are addressed.

4. A range of policies to support and extend existing fuel economy policy are also recommended:

    - Current fuel economy / vehicle CO_2 standards should be extended to at least 2030 or even 2035 as soon as possible, as long lead times give manufacturers much better opportunities to plan for and innovate to meet the standards.

    - Fuel-economy-related fiscal policies are also important. All countries can use a combination of taxes or fees on vehicles and fuels that are low CO_2 fuel economy and high CO_2 emitting, along with incentives for those that are high fuel economy and low emitting.

    - Achieving a realistic, uniform approach to testing vehicle fuel economy is very important, so countries should adopt the Worldwide Harmonized Light Vehicle Test procedure (WLTP).

    - A range of policies, such as promoting vehicle maintenance, improving roads and reducing traffic congestion, can help achieve a better fleet fuel economy in real world conditions.

    - In addition to light-duty, policies are needed to promote fuel economy of heavy-duty vehicles (trucks and buses). Fuel economy standards should be set and extended in major markets, with fiscal measures to promote clean trucks an important option in all markets.

    - Polices should also address the importation of 2nd hand vehicles, such as emissions limits or efficiency requirements.ICE sales bans, the "mirror image" of ZEV sales requirements, can be helpful to set the long-term trajectory but must be part of a broader strategy.

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6. EV integration with the rapidly decarbonizing electric sector - with greater use of renewables - is critical.

7. Ultimately the promotion of non-motorised modes and the avoidance of some journeys altogether – the avoid/shift approach – is essential to meet the Paris targets.

GFEI SUPPORT

GFEI partners provide in-depth support and capacity building to enable countries to develop and implement appropriate policies in accordance with these recommendations. This includes in-country training and support for policymakers, regional and global networks, and an online repository of tools and case studies – the GFEI toolkit which has recently been completely updated and re-launched.

GFEI has so far provided support to around 70 developing countries in developing fuel economy policies. Around 16 of these countries are included in a new GEF project on electric mobility being led by GFEI partners IEA and UNEP. GFEI also supports the G20 Transport Task Force, and a number of regional initiatives, including support to ASEAN and ECOWAS. GFEI is committed to continue to support countries in this way.

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