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HAS THE WHEEL ALREADY BEEN INVENTED? HOW TO SELECT POLICIES TO STIMULATE ALTERNATIVE FUELS AND ALTERNATIVE TECHNOLOGIES SUCCESSFULLY

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OVERVIEW

Currently, passenger road transport is very much dependent on fossil fuels. Yet, the use of fossil fuels has adverse effects, ranging from energy security issues to a contribution to global warming. A reduction of passenger kilometres travelled (e.g. demand reduction, modal shift) and an improvement of efficiency (e.g. vehicle efficiency, driver efficiency) can provide some reduction of the dependence on fossil fuels. However, substantial reductions, such as necessary to meet ambitious climate policy targets, require the introduction of alternative fuels (AFs) and motor technologies (AAMTs) [1].

The aim of WP5 of the EU ALTERMOTIVE project is to analyze policy measures targeted at the introduction of AFs and AAMTs[1]. AFs and AAMTs need to overcome barriers before they can compete with conventional technologies. Policy measures may help address these barriers. This paper attempts to answer the questions (i) which policy measures are available to advance the introduction of AFs and AAMTs, and (ii) how these measures can be applied effectively.

METHODS

The analysis is divided into three parts. The first part is an analysis of the innovation process that the various AFs and AAMTs are expected to go through (illustrated in Fig. 1) [2]. Each of the AFs and AAMTs will encounter technology-specific barriers in this process.

The second part is a survey of policies on road passenger transport. The survey draws on existing policy measures in the EU-27, as well as a literature review on possible measures. The measures can be categorised as generic (e.g. CO_2-based tax differentiation) or technology-specific (e.g. subsidies for electric vehicles).

The final part is a historical analysis of the effectiveness of the policies of the EU-27. Partly, this concerns a quantitative analysis of the impact of cost-related measures (primarily fiscal policy). Measures that could not be assessed quantitatively (e.g. because the market share of the particular AF or AAMT is nonexistent) have been analyzed semi-quantitatively. Input for this analysis has been provided by a survey of 80 case studies of demonstration projects.

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[1] The AFs and AAMTs studied in the context of the ALTERMOTIVE project are bioethanol, biodiesel, biogas, compressed natural gas (CNG), liquefied petroleum gas (LPG), hydrogen, and electricity.

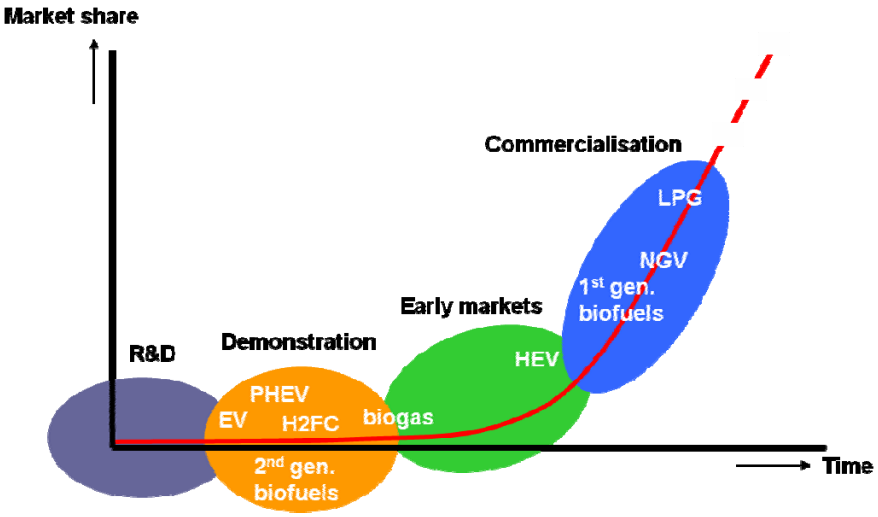

Fig. 1. AFs and AAMTs are in various development stages

RESULTS

The first result is a historical overview of policies that have been implemented to promote AFs and AAMTs in the EU-27. Additionally, an assessment of the effectiveness of these measures is presented.

Based on this result, recommendations on effective policy measures to stimulate the introduction of AFs and AAMTs in the future are provided. These recommendations are placed in the framework of the innovation process, i.e. the various development stages and technology-specific barriers to be overcome. The results will also be available in the form of a policy toolbox for policy makers.

CONCLUSIONS

Work is still in progress, so currently only preliminary conclusions can be provided. In general, comprehensive and well-timed policy packages appear most successful. In line with the innovation framework, these are packages that address multiple barriers at the appropriate moment in time. Conversely, individual measures can become unsuccessful if they are not substituted by a more appropriate measure in time (i.e. as the technology moves to the next stage of development). Furthermore, it appears that a single barrier can persist throughout development stages, but can be addressed in different ways at different points in time. Different ways to address the limited range of electric vehicles (e.g. new battery chemistries, battery exchange, behavioural change of consumers) and associated policies present an example.

Conclusions based on quantitative analysis are to follow. It is expected that all results will be available upon date for full submission.

REFERENCES

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