Lessons Learned from Alternative Fuels Experience

Participants

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- Finland (VTT Technical Research Centre of Finland Ltd)
- Japan (Organisation for the Promotion of Low Emission Vehicles LEVO)
- Sweden (Swedish Transport Administration STA)
- USA (Argonne National Laboratory and U.S. Department of Energy)

Policy Relevance

Lessons can be learned from various, partly unsuccessful attempts to introduce alternative fuels and vehicles to the market and give recommendations for the successful implementation of renewable energy sources in the transport sector.

Major Conclusion

Consistent policy and integration of all stakeholders are both necessary to overcome implementation barriers for a successful market implementation of alternative fuels and propulsion systems.

There is the need for long-term and comprehensive policies, on national and international level, which include markets, stakeholders and different technologies to gain benefits for all types of stakeholders along the value chain of the transportation system.

Background

Decarbonizing the transport sector is one of the key goals of national and international climate change mitigation policies. Alternative fuels and propulsion systems are of particular importance in reducing GHG emissions from this area. Many countries are actively seeking to increase the share of renewable energy sources in the transport sector.

However, experience with various attempts to introduce alternative fuels and vehicles to the market has shown that this is not always successful. Several participants in the AMF TCP have therefore carried out a Task on lessons learned from market launch attempts.

There are many kinds of policies relating to private businesses, and the fuel and technology areas also face strong voices from various actors advocating their specific solutions. So, the evaluation of the policies is difficult and complicated. In order for each country to advance the commercialization of advanced motor fuels more efficiently and effectively, the commercialization policies carried out in each country should be synthesized together as unbiased information to be shared in member countries. Furthermore, it is desirable to develop a policy brief such as lessons learned and challenges on promoting advanced motor fuels.

The circumstances of the introduction of advanced motor fuels and the factors influencing their commercialization (resource, transport infrastructure, economic situation, etc.) in each country are different, and it is difficult to universally evaluate an advanced motor fuels policy. In other words, there is a possibility that a success story of a certain country does not work well in other countries. For this reason, this project clarifies the background and objective of the central government and local governments' introduction policy and specific measures on advanced motor fuels in the past, and summarizes the effectiveness, successes, and lessons learned regarding the promotion of advanced motor fuels in each individual case of introduction and commercialization.

Research Protocol

Task 59 analyzed particular case studies that take into account the specific framework conditions for each country. The first step was to identify relevant case studies for each participating country.

Task participants from Austria, China, Finland, Japan, Sweden and the United States collected data and information on past market introduction case studies and described these according to the developed template. In addition to the descriptions, representatives from different stakeholder groups like ministries / authorities, automotive industry, fuel manufacturers and advocacy groups / organizations in the participating countries were interviewed on prior market introduction attempts and their insights were collected.

The case studies' drivers for market implementation, country-specific circumstances, measures taken, and

stakeholders involved were checked against the result of the market implementation as part of the analysis. Success factors and show-stoppers as identified in the case study descriptions were supplemented with the results from analysis by the Task team.

Results and findings from the respective case studies were discussed in an expert workshop with experts from the AMF TCP and external experts. Based on the results and discussions of the expert workshop, the Task determined the final lessons learned and recommendations, described in the final report and summarised in the key messages.

Key Findings

The findings of the project led to the definition of 3 important pillars for a successful market introduction of alternative fuels: policy, inclusion and benefits. (Fig.1)

Policy

- **Long-term policies** with a **comprehensive strategy** are needed
- These policies need to be done at **national level** as well as on **EU/international scale**.
- This includes a **package of measures** with financial and non-financial incentives as support of different areas of the value chain (vehicles, infrastructure, use of biofuels).
- The **coordination of government, academia, and industry** within the implementation and also **evaluation processes** are essential.

Inclusion

- For a successful market introduction the major concerns of **all groups of stakeholders** must be adressed.
- The different groups include **automotive industry, motor fuels industry, fuel and vehicle marketers, customers, government and advocates.**
- **Implementation barriers** include technical issues, infrastructure, authorities, economics, consumers, public perception and country specific barriers.
- In particular for small countries with low domestic biofuel production, **larger and international markets** needs to be included.
- There is also the need for **improving the acceptance within the general public** and among other stakeholders by education work and information campaign.
- The future transport system should include **different alternative drive systems and fuels, suitable for different applications**. Existing infrastructure should be used with increased share of renewable drop-in fuels. New fuels and drive systems can complement drop-in fuels.

Benefits

- **All types of stakeholders need to be involved** and gain some kind of benefit from the market introduction of alternative fuels.
- **Visible benefits and cost benefits** essential to make the alternative fuel or propulsion system attractive.
- **A fair fuel price calculation** is necessary to make alternative fuels competitive to fossil fuels. **Benefits for low emissions and positive climate effects should be appreciated**.
- **Alternative fuels need to show benefits** regarding costs, domestic production or convenience compared to conventional fuels.

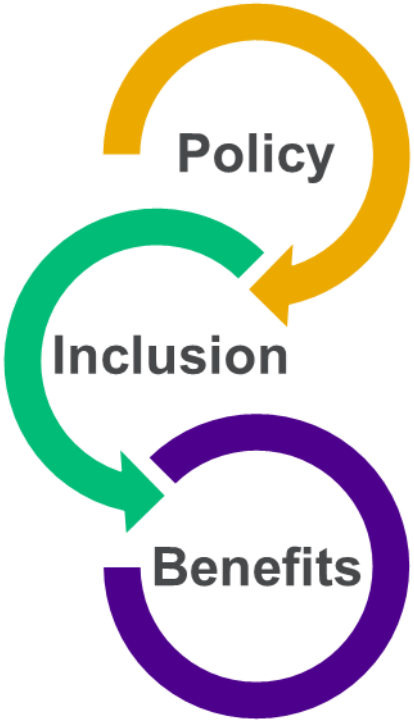

Figure 1: Important pillars created from lessons learned from alternative fuels experience