

Advanced Motor Fuels Technology Collaboration Programme

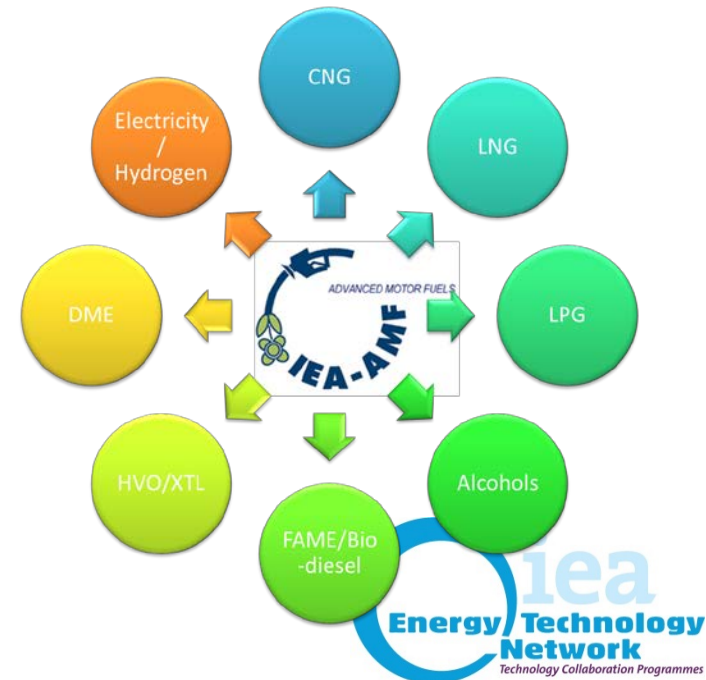
EUWP workshop

Gaps and Barriers for Energy Technology Development and
Deployment - a view from the Technology Collaboration
Programmes (TCPs) in the End-Use Sector

20 March 2017

Scope of AMF

- AMF works on the entire spectrum of fuels from feedstock, through fuel processing, distribution, and, finally, end use in vehicles.
- AMF (try to) work closely with other related TCPs either through the End Use Working Party or by way of direct interaction.
- “Advanced motor fuels” encompass alternative fuels as well as advanced petroleum-based fuels, fulfilling one or more of the following criteria:
 - Low local emissions
 - Improved life cycle efficiency
 - Reduced greenhouse gas emissions
 - Enabling high energy efficiency
 - Enabling fuels for new propulsion systems
 - Contribute to sustainability
 - Contribute to energy security

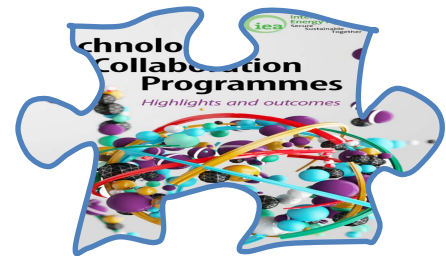


Local, Regional or Global

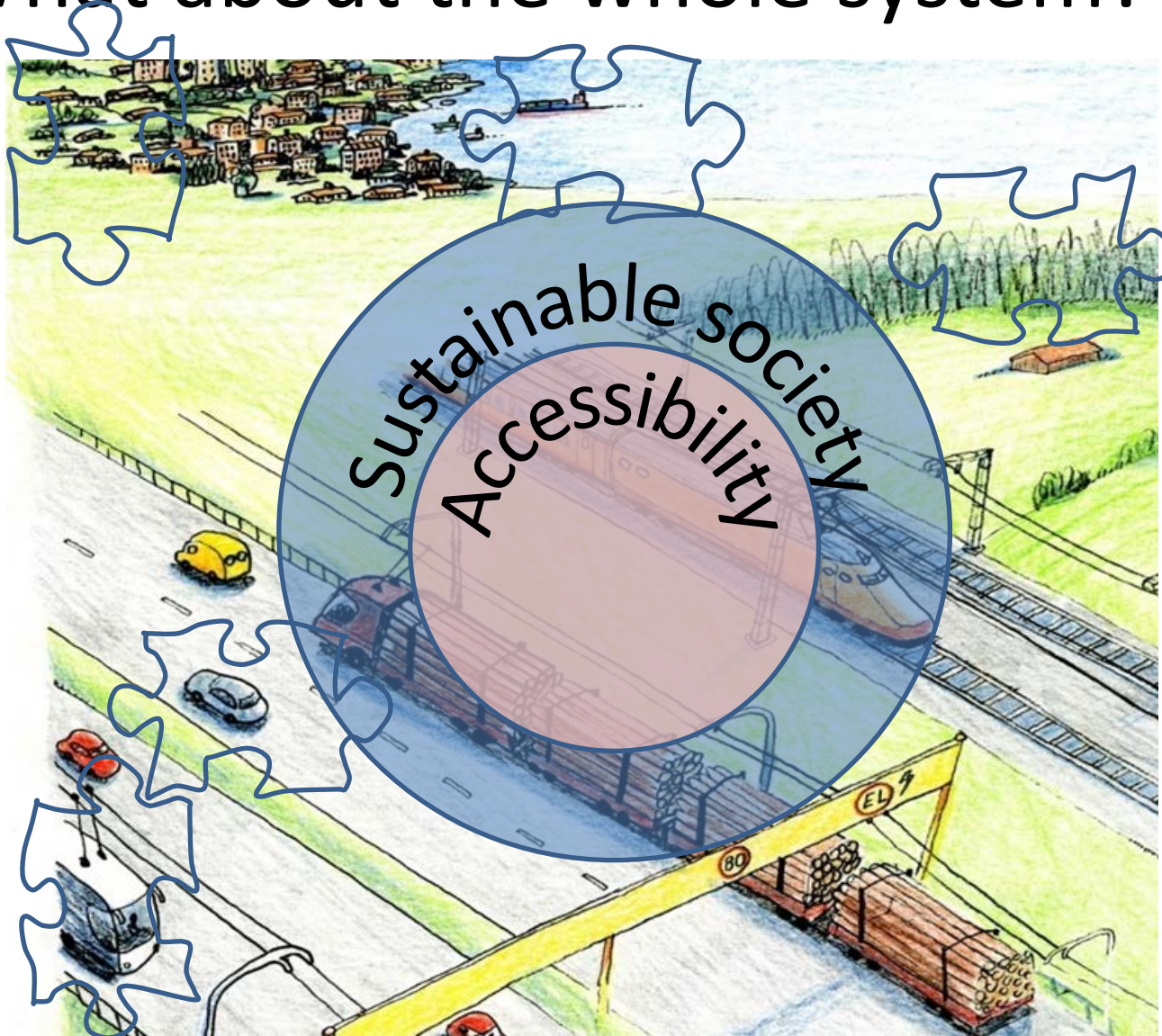
- Within AMF new projects can be initiated by any three contracting parties that want to contribute
 - The scope of the project is defined by the participants
 - Addresses areas of interest of the participants
 - Often local or regional reasons behind participation
 - Clearly defined projects that is closed when the final report has been published
- Difficult to address
 - Global issues
 - Local and regional issues beyond the participants
- Additional members needed
 - Point of contact (EUWP/IEA)
 - Funding of participations (EUWP/IEA)
 - Dissemination of results (EUWP/IEA)

AMF offer an arena for cooperation

- Independent, un-biased platform, complementary to other TCPs
 - focus on end use aspects of fuels
- Gap
 - Inform potential new members of this possibility
 - EUWP/IEA network
 - Identify advanced motor fuels of global interest
 - Complementary to the analysis made by current contracting parties of AMF TCP

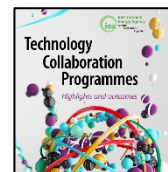


What about the whole system?



Decarbonisation of transport

- Ambitious decarbonising targets globally:
 - 135 of 197 Parties to the Convention have ratified the Paris Agreement (2017-03-19)
- National examples on decarbonising of transport from AMF TCP contracting parties
 - Sweden: 70% reduction of transport sector related GHG emissions by 2030 (proposal)
 - Finland: 50% reduction of transport sector related GHG emissions by 2030
 - Germany: 40% reduction of non-ETS sector by 2030
- Gap
 - Analysis of the national targets and activities of the Parties that have ratified the Paris Agreement (EUWP/IEA)
 - Guidance on gaps, barriers and needs on global level (EUWP/IEA)
 - Transpose the result from AMF TCP to other countries (EUWP/IEA)



Clear messages

TIPS FOR COMMUNICATING

Here's the current situation

- 'Information overload' and 'news bytes'
 - Less time to read, less patience
 - Prioritising is a necessity



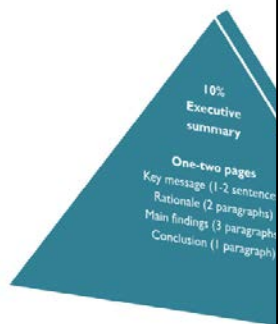
What is the solution?

- Communicate **effectively** and **quickly**
 - Provide information that is clear and concise

How can I do that?

- Synthesise key messages
- Prioritise the information
- Keep your target audience in mind

THE EXECUTIVE SUMMARY



The Executive Summary is the 'calling card' for the publication and should draw the reader to want to know more.

Without a compelling key message the reader will move on.

EXAMPLES OF KEY MESSAGES

Policy makers and lay persons

Common language, simple messages that draw the reader to want to know more

The new XYZ uses less petrol - and it helps to protect the environment

Industry standards for new technologies ensures consumers have access to quality products at lower cost

Fusion science is advancing, resulting in ever greater capabilities

Analysts and informed readers

Some technical or scientific language, key facts and figures

The new XYZ is energy efficient, reducing CO₂ emissions by 5%

Pre-normative standards such as ISO 111.1 have facilitated market penetration and increased deployment

The device capabilities were extended, with higher ion temperatures, high-beta plasma and greater magnetic field strength

Engineers and scientists

Any/all technical or scientific language and facts and figures

The new ICE XYZ is equipped with ABC catalytic converter and is ignition timing which increases efficiency by 10% and reduces emissions by 5% under on-road conditions.

Following the EU legislative industries adopted the pre-standard ISO 111.1, re-production harmonised components (including R88-2 and C-6).

The device has further parameter regime, has exceeded 90 million deuterium plasma production field strength (3.7 T) and heating power (1 MW heating power) injected into

The left column could be the heading of an article, or reduced to a Twitter feed.

Key Messages from AMF Research

February 2016

Annex 46

Alcohol Application in CI
Technical University of Denmark
Danish Technological Institute
VTT Technical Research Centre
Scania AB, Sweden.

Major Conclusion

New ignition improves for alcohol
these were tested together with
ignition improvers have been to
improve with a very high compo

Key Messages from AMF Research

10/2016

Annex 49

"COMVEG": Fuel and Technology Alternatives for Commercial Vehicles
Operating Agent: VTT Technical Research Centre of Finland Ltd
Partners: Canada, Chile, China, Denmark, Japan, Korea, Sweden and Thailand

Main Conclusions

There is a clear need to reduce regulated emissions, as well as greenhouse gas emissions, from commercial vehicles that will be dependent on internal combustion engines for many years to come. Measurements within COMVEG show that the latest generation of vehicles (Euro VI) have significantly reduced regulated emissions, including during testing under conditions that correspond to real life operation. These findings should be used as a guide in countries with less stringent emission regulations and also for procuring transport services. The recommendation is to leapfrog directly from less sophisticated technology to Euro VI. Advanced renewable fuels will help to reduce greenhouse gas emissions in applications for which electrification is not feasible.

Background

Commercial goods vehicles, light-, medium- and heavy-duty vehicles, together represent some 25 % of the total energy used in transport, and are the second largest segment after passenger cars. Therefore, this vehicle category is important, not only for its contribution to economic activities, but also for its share of energy use and emissions. The COMVEG project was set up to complement previous IEA-AMF work on alternative fuels and vehicle technologies for buses (Annex 37), trucks (Annexes 38 & 39) and passenger cars (43). With data covering all road vehicle technologies for road transport, meaning that alternative technologies can be allocated in the most effective way.

Research Protocol

In the "COMVEG" project, eight partners from four continents teamed up to generate performance data (energy efficiency, exhaust emissions) for commercial vehicles. Altogether, 30 different vehicles were tested on chassis dynamometers, with vehicles ranging from light commercial vehicles (vans) to heavy-duty vehicles for trailer combinations. In addition, one engine installed in an engine dynamometer was tested. The World Harmonized Vehicle Cycle (WHVC) was used in vehicle testing and the World Harmonized Vehicle Cycle (WHVC) for performance testing. For the chassis dynamometer measurements, the recommended load was set at 50 % of full load. All tests were carried out with fully warmed-up engines. Tank-to-wheel (vehicle performance) data was combined with well-to-tank data from the JEC - Joint Research Centre-EUCAR-CONCAWE collaboration, to form well-to-wheel performance data.

Key messages – Annex 49

“COMVEC”

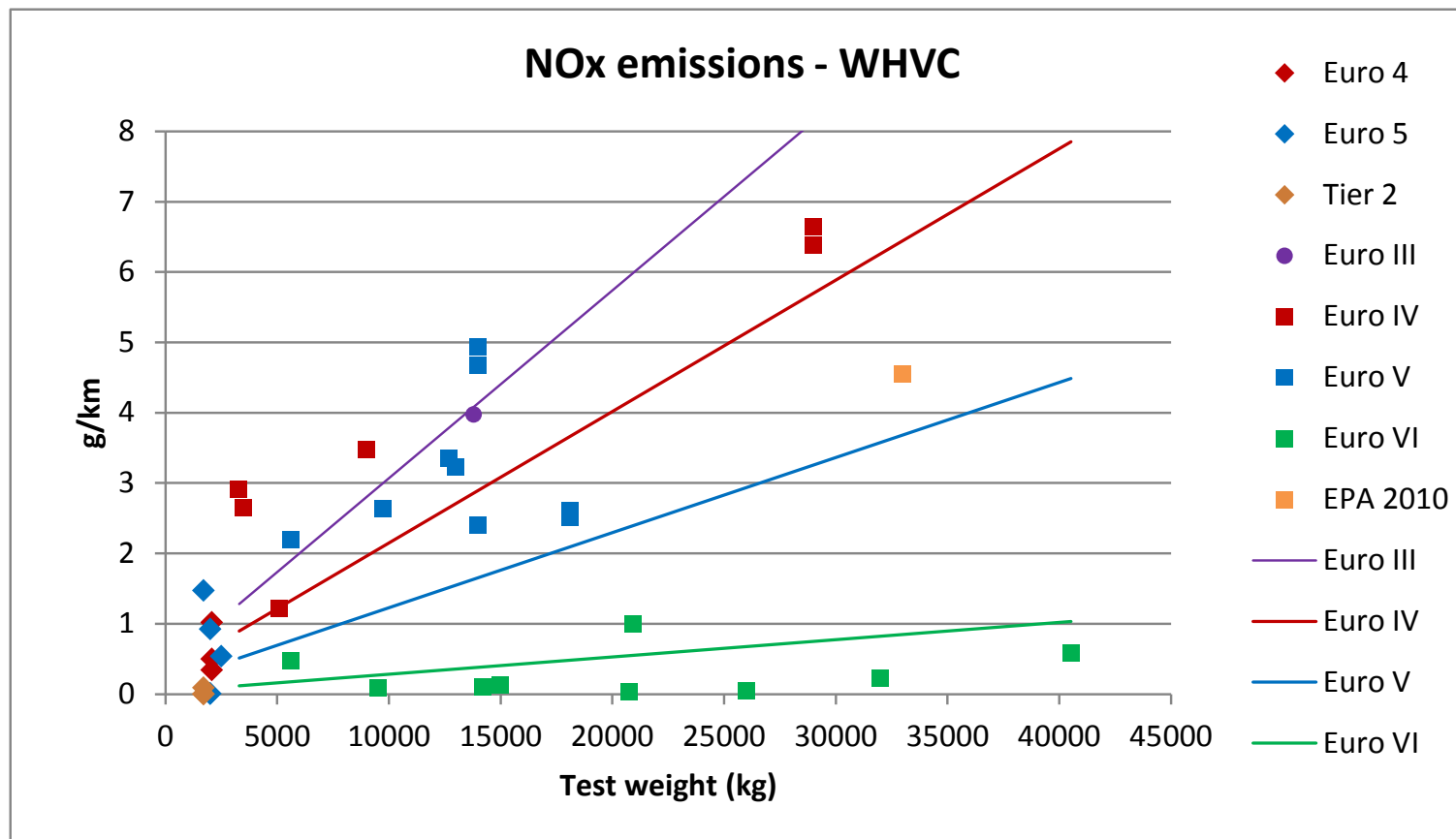


- If you really want to reduce regulated emissions from commercial vehicles, don't go from Euro II or Euro III to Euro IV or Euro V, leapfrog directly to Euro VI or US 2010 to get real-life low emissions
 - Also think about transport service procurement
- The regulated emissions of a vehicle are first and foremost determined by the emission control technology, not the fuel
- The carbon intensity of the fuel or the energy carrier is decisive for well-to-wheel CO2 emissions, not vehicle technology
- CO2 assessment should be carried out on a well-to-wheel basis, not looking at tailpipe CO2 emissions only
- Electrification with low-carbon electricity is a good option for local emissions as well as WTW CO2 emissions
 - one should keep in mind that all applications are not suitable for electrification
- Euro VI (alternatively US 2010) in combination with a renewable fuel is a good option for the local environment as well as the climate



Key results – Annex 49

“COMVEEC”



HD Euro VI vehicles are really clean!

Ideas for cooperation

- Advanced Biofuels – a bypass lane to mitigation of GHG emissions from the current vehicle fleet
 - Describe GHG and local emission reductions and energy efficiency improvements possible with modern (Euro 6/VI) engine technology and advanced biofuel combinations
 - Estimate production ramp-up of advanced biofuels and when to transition from biofuels for passenger cars to biofuels for heavy duty and aviation
 - Possible cooperation with Bioenergy Task 39 and HEV

Ideas for cooperation

- Energy efficiency, resource usage and environmental impact of passenger cars
 - The list of possible technology pathway for passenger cars are long
 - ICE with various fuels, Fuel cells with various fuels, Hybrids, Plug-in hybrids, Batter electric, etc
 - The all offers the same basic service – but with different inputs and external effects
 - Compare the various technology pathways
 - Possible cooperation with Bioenergy Task 39, HEV, Hydrogen and AFC

Barriers for cooperation

- All TCP's are unique
 - Different contracting parties
 - Funding of activities
 - Task – Annex – Projects are all managed differently
- Possible solution
 - Integrated Transport System TCP
 - Common sets of deliverable (to be discussed)
 - Potential of certain technology in different applications
 - Degree of penetration at different times
 - Energy efficiency and CO2 reduction potential
 - Total cost of ownership
 - Cost of CO2 reduction
 - Expected total impact (local environment, climate, energy conservation, cost for society)



AMF Contacts

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