



Argonne National Laboratory

International cooperation in the field of transportation fuels

TransSmart final seminar 16.2.2017
Nils-Olof Nylund, Research Professor



Finland, a land of solutions

Strategic Programme of
Prime Minister Juha Sipilä's Government
29 May 2015

Ten-year objective:

- Finland is a pioneer in the bioeconomy, circular economy and cleantech. By developing, introducing and exporting sustainable solutions we have improved the balance of current accounts, increased our self-sufficiency, created new jobs, and achieved our climate objectives and a good ecological status for the Baltic Sea.

Transport:

- The use of imported oil will be cut in half during the 2020s
- The share of renewable transport fuels will be raised to 40 per cent* by 2030

<http://valtioneuvosto.fi/en/sipila/government-programme>

The Finnish 2030 energy and climate strategy

- In the long run, the whole transport system should work with very low emissions
- By the year 2030, the emissions from transport should be reduced by some 50 % compared to the level in 2005
- The emission reduction measures will be focused in road transport, as this sector has the highest potential for emission reductions
- Replacing oil-based fuels with renewable and/or low-emission alternatives:
 - The energy contribution of biocomponents in road transport fuels will be increased to 30 % by 2030

Essence of international cooperation

YOU HAVE TO GIVE A LITTLE TO GET A LITTLE

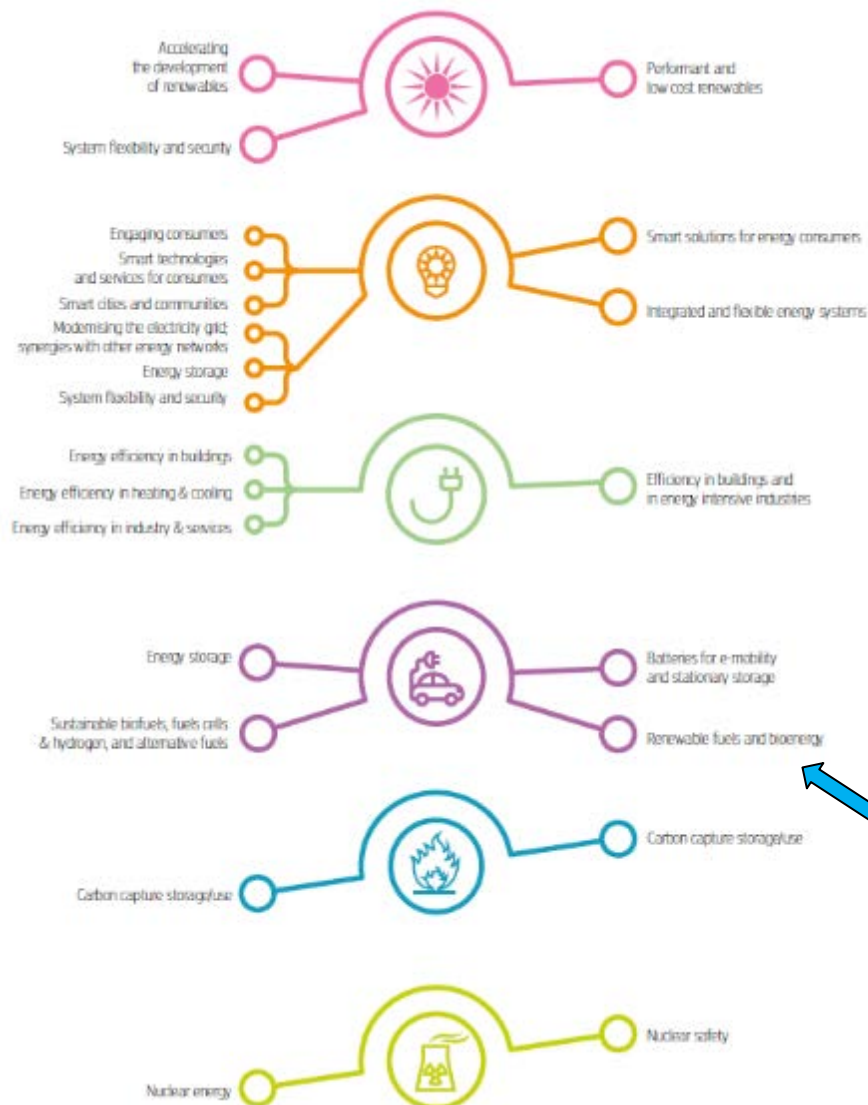
New ideas, best practices,
pooling information and resources,
lessons learned



Our best practices, our best products,
influencing EU policies and actions



EU Strategic Energy Technology Plan



Strategic Energy Technology Plan



The European Strategic Energy Technology Plan (SET-Plan) aims to accelerate the development and deployment of low-carbon technologies. It seeks to improve new technologies and bring down costs by coordinating national research efforts and helping to finance projects.

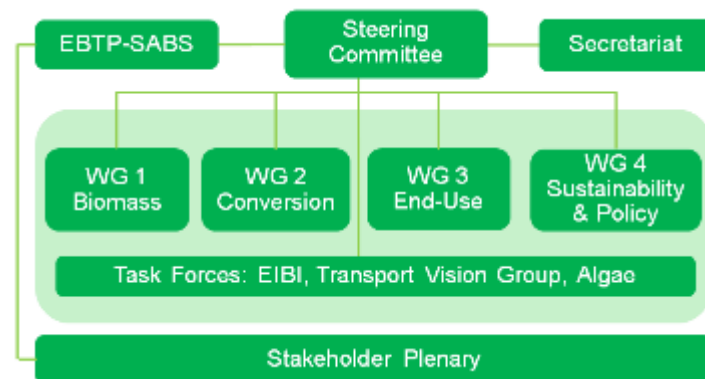
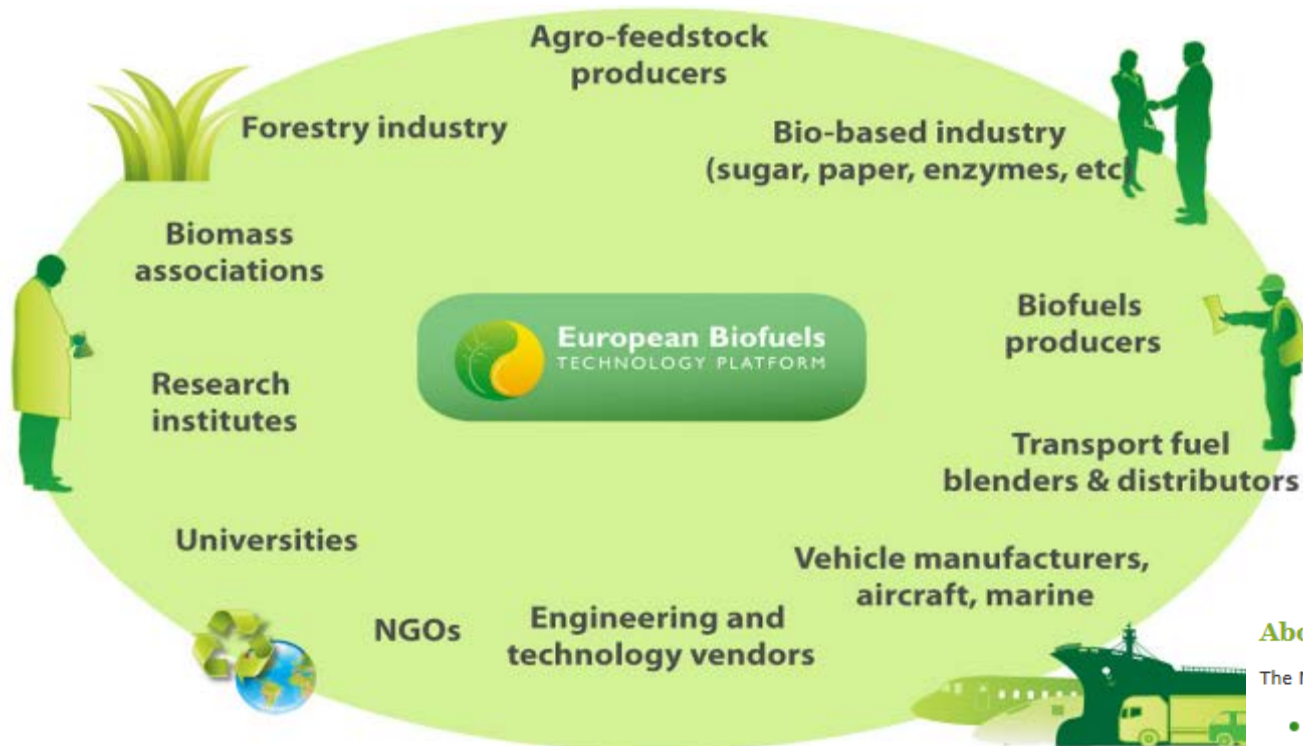
The SET-Plan promotes research and innovation efforts across Europe by supporting the most impactful technologies in the EU's transformation to a low-carbon energy system. It promotes cooperation amongst EU countries, companies, research institutions, and the EU itself.

KEY ACTION 8: RENEWABLE FUELS AND BIOENERGY*

Scope

The aim is to prioritise the production of advanced biofuels (based on non-food biomass feedstocks, residues and wastes) and to also address the sustainable production of solid, liquid and gaseous fuels based primarily but not exclusively on biomass. Targets on improving greenhouse gas (GHG) savings and fostering market penetration of advanced and renewable fuels remain a central activity. The production of intermediary energy carriers, such as hydrogen from biomass and other renewable sources is also taken into account.

Setup of the European Biofuels Technology Platform



About the EBTP

The Mission of the European Biofuels Technology Platform has been to contribute to:

- the development of cost-competitive world-class biofuels value chains,
- to the creation of a healthy biofuels industry, and
- to accelerate the sustainable deployment of biofuels in the EU

European Biofuels Technology Platform -> **European Technology and Innovation Platform Bioenergy**



AMF

IMPLEMENTING AGREEMENT FOR ADVANCED MOTOR FUELS

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Welcome to the Advanced Motor Fuels Technology Collaboration Programme

Advanced Motor Fuels (AMF) is one of the International Energy Agency's (IEA) transportation related Technology Collaboration Programmes. Technology Collaboration Programmes (TCPs) are multilateral technology initiatives that encourage technology-related activities that support energy security, economic growth and environmental protection.

AMF provides an international platform for co-operation to promote cleaner and more energy efficient fuels and vehicle technologies. On this website you will find information on advanced motor fuels, details about AMF projects, publications and more.

AMF welcomes interested parties to make contact and to become members of the AMF family.

Search



NEWS

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PROJECTS

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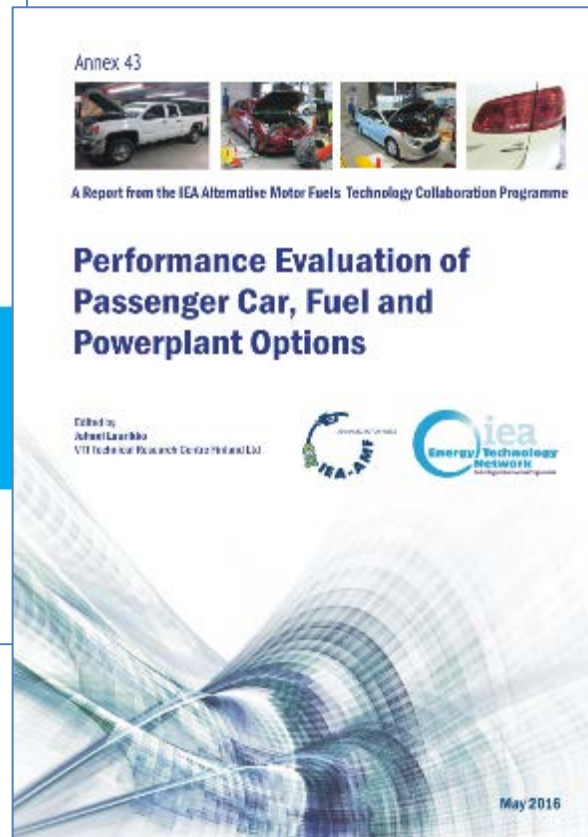
FUEL INFORMATION

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www.iea-amf.org

Scope of AMF

- AMF works on the entire spectrum of fuels from feedstock, through fuel processing, distribution, and, finally, **end use in vehicles**.
- AMF works 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



VTT has been running AMF Annexes (projects) continuously since 1990!



Annex Number and Title	Annex 49 Fuel and Technology Alternatives for Commercial Vehicles
Operating Agent (institution)	VTT, Finland
Start and End Date	1.7.2013-31.12.2016
Participants	Canada, China, Chile, Denmark, Finland, Japan, South Korea, Sweden, Thailand
Task Sharing	Canada, China, Chile, Denmark, Finland, Japan, South Korea, Sweden, Thailand
Total Budget	approximately 900 000 €
Project Leader (name and email)	Nils-Olof Nylund nils-olof.nylund@vtt.fi

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



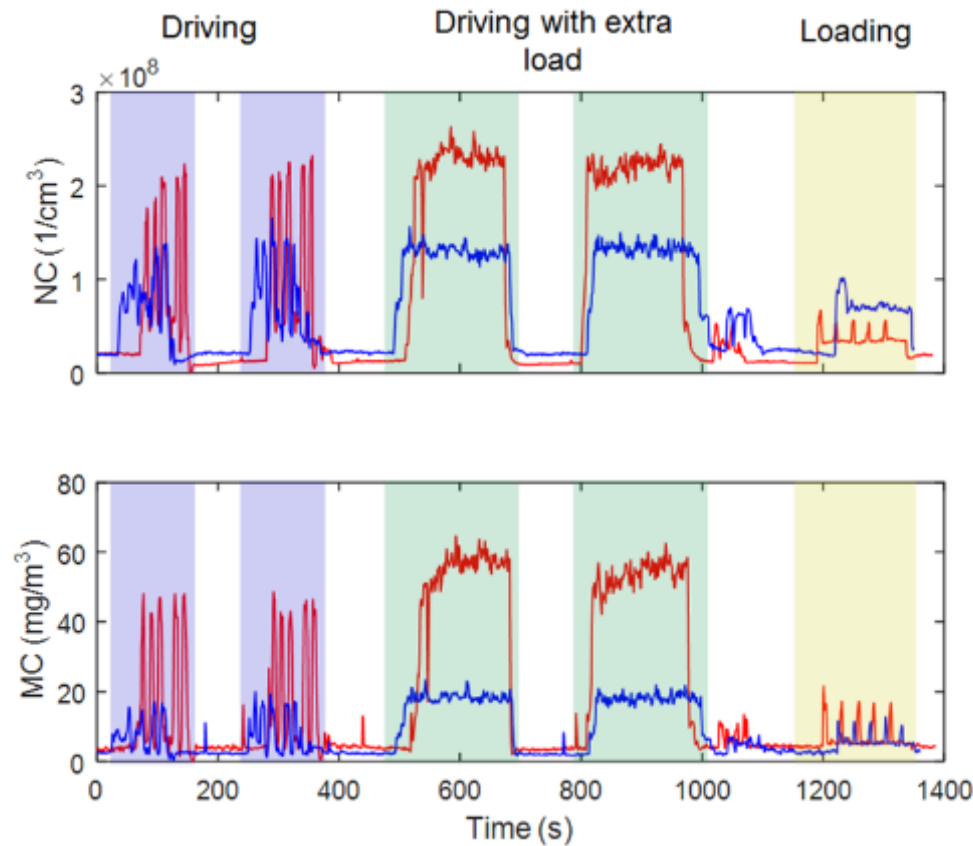


Finland's contribution to AMF Annex 50: Fuel and Technology Alternatives in Non-Road Engines



June 2016
**Matti Kytö, Timo Murtonen &
Nils-Olof Nylund**

Exhaust particle number concentration (NC) and mass concentration (MC) during the measurement cycle from the smaller 355b loader using **EN590 B7 (red line)** and paraffinic renewable diesel (blue line).



Co-operation with Agco Power, Neste, Proventia Emission Control and Stara (City of Helsinki)

International cooperation

- Be active!
- Create networks!
- Learn from others!
- Show what you can!
- Try to influence policies!
- Make our industry and products known!





TECHNOLOGY «FOR» BUSINESS

