

TECHNOLOGY COLLABORATION PROGRAMME
ON ADVANCED MOTOR FUELS
STRATEGIC PLAN 2025–2030





AMF TCP Strategic Work Plan 2025–2030

AMF TCP is helping the transport sector achieve sustainability and reduce the impacts of the sector on the environment. Established in 1984, AMF TCP has a strong international network that fosters collaborative research, development, and deployment of advanced motor fuels and provides unbiased information on clean, energy-efficient, and sustainable fuels and related engine and vehicle technologies.

Reducing greenhouse gas (GHG) emissions has recently become a main driver for the development of a sustainable, efficient transport sector. The sector is shifting toward electric vehicles and toward low-carbon fuels for internal combustion engines (ICEs). Although passenger cars are anticipated to be electrified in the EU, North America, and other markets, globally the number of ICE vehicles is still increasing, and new ICE vehicles and the legacy fleet will continue to use fuels for a long time. For these vehicles, advanced motor fuels offer a low-carbon alternative, and their sustainability is demonstrated through life-cycle GHG emission accounting.

A key challenge is finding solutions for reducing GHG emissions in the Global North and the Global South, since each has unique markets and needs. AMF TCP has members across the globe, and they observe that a solution for reducing GHG emissions of the light-duty and medium-duty sector in the Global North is electric vehicles powered by increasingly low-carbon electricity, while there are countries and regions that continue to rely on fuels as the main means of providing transport services. As for the Global South, where most of the growth in global transport takes place, ICE vehicles may play an important role in providing affordable mobility, and so the solutions pursued in the Global North may not be directly applicable to the context of the Global South.

The Future of Advanced Motor Fuels

Although the Global North and Global South do have different needs, they both continue to depend on ICE vehicles. AMF TCP anticipates that ICEs will remain relevant in many regions and applications, and operation on low-carbon fuels will reduce GHG emissions and other harmful impacts on the environment. In particular, ICE applications are desirable when high power and autonomous mobility are required, as they are in on-road, long-haul heavy-duty trucks; equipment for forestry, agriculture, and heavy construction; ocean-going vessels; and intercontinental flights. Although there is progress in electrifying some of these applications, the need for fuels will remain for the foreseeable future.

Many different routes can produce advanced motor fuels, either based on biomass or residues (biofuels) or CO₂ and hydrogen (e-fuels/PtX). Most of these fuels can be used in existing vehicles and distributed in existing fuel distribution infrastructure. The future transport sector will be diverse, incorporating biofuels and e-fuels/PtX as well as hybrid and electric drivetrains. The combination of all powertrain options and energy supplies in the transport sector can deliver immediate and effective reduction of GHG emissions in the sector. As vehicle fleet turnover takes a long time, liquid fuels with low-GHG performance can reduce GHG emissions from current on-road vehicle fleets as well as new ICE vehicles during the period in which nascent technologies build market share.

AMF TCP will continue working on advanced and emerging motor fuels, with a focus on subsectors that continue to rely on combustion engines. The scope of AMF TCP covers fuels that can reduce GHG emissions and criteria air pollutant emissions, have been or can be sustainably and (cost-) efficiently produced, and are efficient to use in engines.

AMF TCP considers sustainability to include environmental, social, and economic aspects, and engines to cover combustion engines and turbines, applied in all transport sectors, as well as in non-road mobile machinery. AMF TCP work will contribute to the availability of viable fuels in the on-road, long-haul, heavy-duty transport sector and non-road applications (such as forestry, agriculture, mining, and construction, as well as marine and aviation transportation) and in regions that continue to rely on fuels. As a result, AMF TCP enables clean, low-carbon, and efficient passenger and freight transport, economic development, and energy security for all countries around the globe.

AMF Strategic Objectives and Plan

Given the current state and future direction of advanced motor fuels, the strategic objectives of AMF are to:

1. Address the technical, environmental, economic, and social effects of advanced motor fuels, while considering the impact of various policies in the transport sector.
2. Explore varied combustion technologies and the best use of advanced motor fuels.
3. Encourage activities of advanced motor fuels in all modes of transport and assess the optimal allocation of different fuels in different transport subsectors.
4. Promote cooperation among countries and TCPs in all aspects of motor fuels throughout the value chain, from fuel production to the final end-use.
5. Support overcoming barriers for the deployment of advanced motor fuels.

AMF TCP will address these strategic objectives by working on the key topics mentioned below, organized into three priority research areas. AMF TCP will further strengthen the collaboration with other TCPs through selected Tasks, joint events, and regular information exchange. Also, AMF TCP will continue reaching out to additional countries that have a strong interest in fuels and growing transport activity.

Work Plan 2025–2030	
<p>Requirements for supplying sufficient advanced motor fuels</p> <ul style="list-style-type: none"> • Potential volumes that can be supplied and potential demand • Addressing regions for which it is beneficial to continue to rely on fuels as the main means of providing transport services • Strategies for the fueling of legacy vehicles 	<p>Ongoing Tasks¹:</p> <p>Tasks under preparation:</p> <ul style="list-style-type: none"> • White Paper on Sustainable Fuels for Combustion (with Combustion and Bioenergy TCPs)
<p>Social, environmental, and economic impacts</p> <ul style="list-style-type: none"> • GHG emissions of advanced motor fuels <ul style="list-style-type: none"> ○ Recommended LCA methodologies and relative merits of different motor fuels ○ Assessment of critical issues affecting sustainability performance of different fuels • Air pollutant emissions and control strategies of use of advanced motor fuels • Factors influencing the affordability of fuels 	<p>Ongoing Tasks¹:</p> <ul style="list-style-type: none"> • Remote Emission Sensing • Input to the IEA GREET+ <p>Tasks under preparation:</p> <ul style="list-style-type: none"> • N/A
<p>R&D on production, properties, and applicability of advanced motor fuels, with a focus on on-road long-haul and non-road sectors</p> <ul style="list-style-type: none"> • Hydrogen application in ICE engines • Low-carbon fuels for non-road mobile machinery • Biomethane application in ICES • Biodiesel and renewable diesel application in ICES • Ammonia application in ICES • Exhaust aftertreatment systems • Fuels for marine and stationary engines • Sustainable Aviation Fuels 	<p>Ongoing Tasks¹:</p> <ul style="list-style-type: none"> • Wear in Engines Using Alternative Fuels • E-Fuels and End-Use Perspectives • Powertrain Options for Non-road Mobile Machinery <p>Tasks under preparation:</p> <ul style="list-style-type: none"> • Exhaust Aftertreatment Systems (with Combustion TCP) • Recent Progress in SAF Research (with Bioenergy TCP)

A key activity is communication and dissemination of information developed through the AMF TCP. AMF TCP already maintains a successful website that includes AMF TCP Task final reports and country reports, as well as basic information on motor fuels; produces a quarterly newsletter that is distributed widely; conducts at least one public online seminar at the end of each Task; and disseminates information through the national networks of its delegates, including by email and social media. This activity will be maintained and further strengthened through Task 28: Information Service and AMF Website.

¹ As of May 2024