

The European Biofuels Technology Platform

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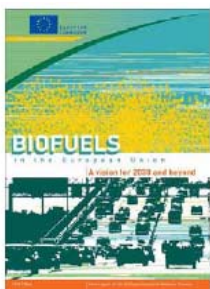
Mission Statement



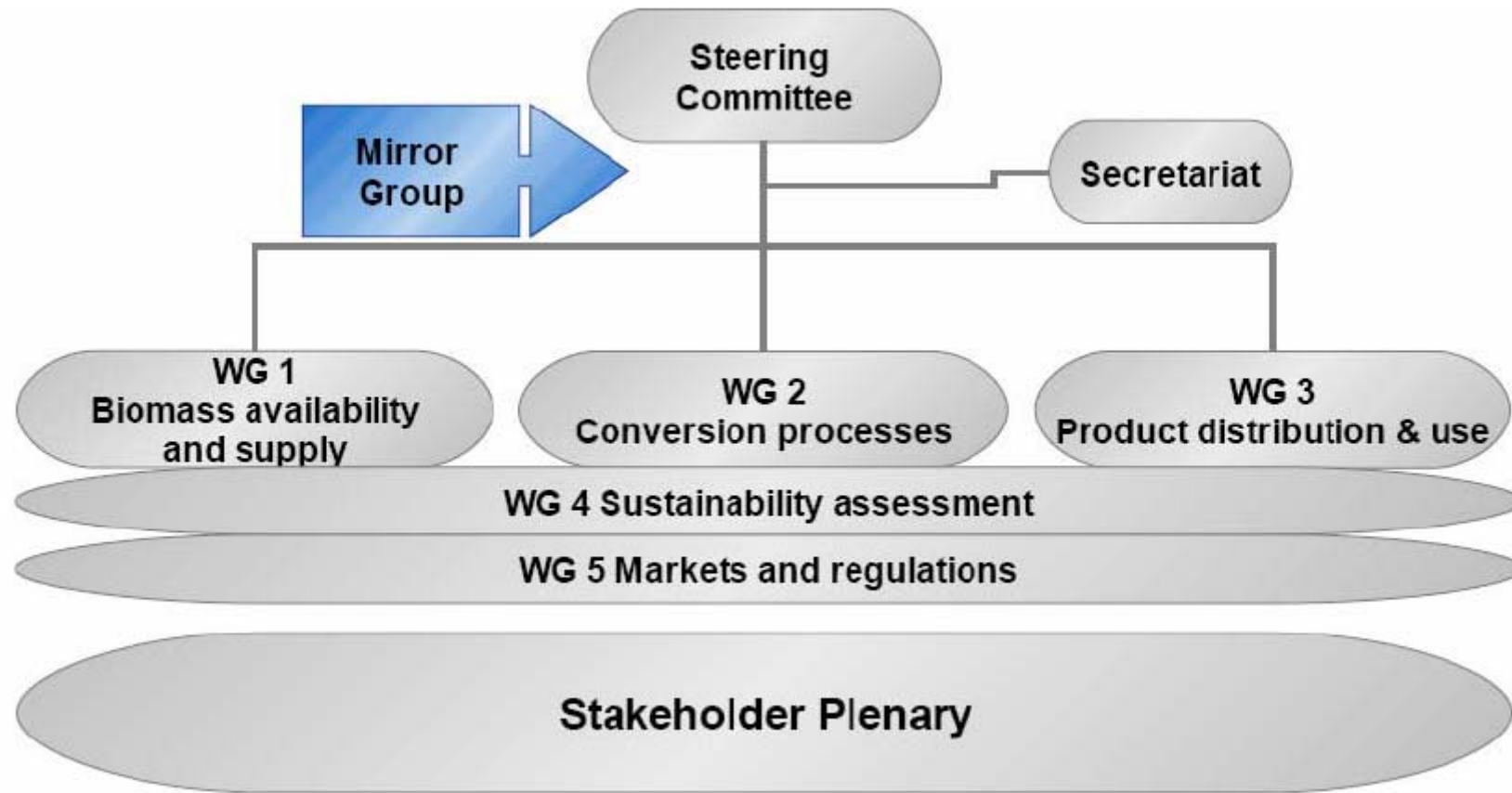
The Mission of the European Biofuels Technology Platform is to contribute to the development of:

- Cost-competitive world-class biofuels technologies,
- A healthy biofuels industry supplying sustainable biofuels in the European Union

through a process of guidance, prioritization and promotion of research, development and demonstration.



Biofuels TP: organization



Three main areas of technology development are critical to ensure successful development of sustainable biofuels in the European Union:

- **FEEDSTOCKS**

- managing competition for land resources (food and fodder vs. bioenergy) and for different biomass applications (transportation fuels, heat, industrial raw materials)

- **CONVERSION TECHNOLOGY**

- Developing energy efficient and reliable biomass-to-fuel conversion processes with feedstock flexibility and high quality product.

- **LOGISTICS AND END-USE TECHNOLOGIES**

- Optimization of fuel-engine environmental and energetic performance ensuring compatibility with existing and future infrastructure and vehicles.

Present Status

Current biofuels generate logistics challenges, probably more than some advanced biofuels:

- Chemistry of today bio-components like FAME based biodiesel and ethanol increases the potential for materials incompatibility, contamination in manufacturing and transport, especially when blended at higher concentrations.
- Some future biofuels (BTL, HVO) are expected to have less impact on distribution system because of higher chemical similarity and better compatibility with fossil fuels.

Technical solutions to these logistics issues are mostly based on proper materials selection and fuel strict quality control at different stages of the logistics chain.

R&D demand

Research issues arise with increasing biofuels content, penetration of new fuel types and/or wider array of feedstock

- SI engine fuels: pipeline distribution of very high biocontent fuels
- CI and gas engine fuels: supply and distribution of biogas and H₂

End-Use in vehicles

Fuel supply system	Engine		Exhaust gas treatment	Vehicle
	Combustion	Mechanics		
<p>Long-term fuel storage</p> <p>Material compatibility with:</p> <ul style="list-style-type: none"> ▪ fuel tank ▪ seals/gaskets ▪ hoses/pipes <p>Compatibility with:</p> <ul style="list-style-type: none"> ▪ fuel filters ▪ fuel pumps ▪ fuel reformer 	<ul style="list-style-type: none"> ▪ Engine power ▪ Fuel efficiency ▪ CO2 efficiency (TTW) ▪ Emissions ▪ Cold start ability ▪ Hot driving performance ▪ Noise ▪ Compatibility with existing engine technology ▪ Potential for late homogenization (diesel engine) 	<ul style="list-style-type: none"> ▪ Injector cleanliness ▪ Combustion chamber cleanliness ▪ Friction ▪ Engine oil compatibility ▪ Overall reliability ▪ Overall durability 	<ul style="list-style-type: none"> ▪ Oxidation catalyst ▪ DPF performance ▪ DPF regeneration ▪ Three-way catalyst ▪ Advanced TWC ▪ SCR catalyst ▪ NOx storage catalyst ▪ Sensors (NOx, λ) 	<ul style="list-style-type: none"> ▪ Driving range ▪ Health ▪ Safety

1. Determination of future fuels requirements

The impact of fuel properties on CI and SI engine and vehicle issues (previous table) is not yet fully known and understood. Fundamental research is essential for expanding the basic knowledge on this field to provide a basis for the definition of future fuels requirements.

2. Verification of future biofuel options

The suitability of biofuels (neat or as blend) with respect to future fuels requirements according to the previous item has to be investigated.

- Investigations have to be conducted on currently known potential biofuels like biodiesel, HVO and BTL. Compliance of these biofuels with future requirements has to be checked. Studies should consider the biofuels as neat fuel or blended to fossil diesel.
- Furthermore, focus should be set on the development of new types of biofuels with improved fuel properties.

Key R&D&D priorities



- Establish conditions for compatibility of biofuels and biofuel blends with existing logistics as well as existing and new power trains, develop vehicle modifications for neat biofuels and high blends for specific market needs
- Generate engine-fleet test data and set **sound quality standards for biofuels**
- Develop in-depth understanding of relationship between biofuel quality and engine performance for future fuel/power train systems in order to deliver superior combined performance

- A coherent, long term and harmonized political and open market framework to secure confidence of investors in capital-intensive innovative technologies
- Joint public/private financing for R&D and demonstration of new biofuels production routes and end-use applications. Additional public funding for higher risk large-scale demonstration facilities
- Biofuels quality standards based on sound science while not creating unnecessary barriers for biofuel deployment
- A simple, coherent and global certification system to ensure environmental, economic and social sustainability of biofuels production chains
- Social awareness and acceptance gained by open communication on benefits as well as on potential limitations on biofuels

- R&D is the key to bring costs down and to multiply the biofuel yield per acreage in order to avoid competition with food production
- Social acceptance is crucial, taking ethical considerations and environmental consequences into account. A certification system is needed to guarantee sustainability standards as foreseen in EU directive.
- Predictable framework conditions are needed to establish confidence of investors to implement capital-intensive innovative technologies.
- Efficient information system needed to avoid data misinterpretation.
- Even if national policies are different due to structural and climatic differences, member states are united by the common goal of a sustainable transport and energy system and the targets set on the EU-level for greenhouse gas emissions reduction.

- Mapping of main ongoing biofuels R&D projects vis-à-vis the Biofuels Technology Platform Strategic Research Agenda.
- Focusing the Strategic Research Agenda on most critical priorities, selected with sustainability based criteria and in coherence with the European context.
- Developing communication activities and involvement of stakeholders: thematic workshops, website, etc.
- Strengthening collaboration with other Technology Platforms and with Member States (through Mirror Group)

A3PS Austrian Agency for Alternative Propulsion Systems (www.a3ps.at)

- Providing and compiling information by evaluating technology foresight and assessment studies, analyzing technological trends, lectures, workshops, conferences, travel reports,...).
- Stimulating the co-operation of complimentary partners, building up interdisciplinary research co-operations and trans-sectoral demonstration projects.
- Creating supportive framework conditions (funding budget for R&D-Programs, privileged access to sensitive areas, fuel taxation, codes, emission targets or technical standards) to avoid barriers for innovation.
- Marketing for Austrian technology expertise and the engineering and product know-how of the 27 members by publications and presentations at conferences.

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27 Partners

Industrial Partners:

- Magna Steyr
- AVL List
- OMV Refining & Marketing
- Plansee SE
- GE Jenbacher
- Fronius International
- Austria Tech



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University Institutes:

- University of Natural Resources and Applied Life Sciences
- TU Vienna - Institute for ICE and Automotive Engineering
- TU Vienna - Institute of Chemical Techn. and Analytics / Electrochemistry
- TU Vienna - Institute of Electrical Power Systems and Energy Economics
- TU Vienna - Institute for Thermodynamics and Energy Conversion- ITE
- TU Vienna - Institute of Chemical & Process Engineering
- TU Graz - Institute for ICE and Thermodynamics
- TU Graz - CD - Laboratory for Fuel Cell Systems
- TU Graz - Institute of Electrical Measurement and Signal Processing

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SME's and Research Institutes:

- ALPPS Fuel Cell Systems GmbH
- Bitter GmbH
- HyCentA Research GmbH
- Joanneum Research
- Arsenal Research
- Austrian Research Centers GmbH – ARC
- ECHEM -Centre for Applied Electrochemistry
- Profactor GmbH
- Austrian Bioenergy Centre – ABC
- Biovest Consulting GmbH
- Austrian Hydrogen Association - OEWV