

BEST

BioEthanol for
Sustainable Transport

Proposal to 6th Framework, Sustainable Energy Systems/Alternative Motor Fuels: BioFuel Cities

Europe needs Bioethanol

The Kyoto Protocol states that the EU should decrease its greenhouse gas emissions by 2010. The Biofuel Directive is one of the tools used to reach that goal. The European Commission has also suggested the policy objective of 20 % alternative motor fuels by 2020.

All this calls for large changes in the transport sector. There is an obvious need to take firm steps towards higher blends of biofuels, dedicated vehicles and platforms that enable consumers to express their concern and take conscious decisions towards a sustainable future.

No single biofuel has yet the capacity to replace all the fossil fuel used in transport in Europe, however, according to OECD/IEA, bioethanol has the potential to be the dominant biofuel for the next 15 years. Some of the advantages are:

- Bioethanol is renewable and does not contribute to the emissions of greenhouse gases.
- Local emissions are lower, particularly when substituting for diesel.
- Bioethanol is a liquid fuel which can be handled in the modern fuel supply infrastructure.
- Bioethanol is biodegradable, less explosive, less poisonous and easier to extinguish if burning, than petrol or diesel.
- Bioethanol vehicles have been in use for many years in North and South America, where they have proven to be cost efficient and technically fit for large-scale deployment.
- All European countries can produce bioethanol in large volumes from grain, and potentially in much larger quantities from lignocellulose, thereby reducing dependency on oil.
- Bioethanol production will create work in a range of sectors including agriculture, industry and services.

Bioethanol towards a market breakthrough

Experience from the introduction of new technology shows that while the initial uptake is very slow, the introduction becomes self-supporting when a market share of about 5 % is achieved. In order to reach a 5 % market share, different support mechanisms are required.

Take the first step

To achieve any advantage from introducing or buying bioethanol vehicles, a developed fuelling infrastructure is needed, together with a fuel price competitive with petrol and diesel for the end user. Additionally, a substantial number of ethanol

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vehicles are needed to generate a profit from operating an ethanol filling station. This is an example of the chicken and egg situation common to the introduction of most biomass technologies.

Neither the filling stations nor the car industry can take the first step on their own. Municipalities and public bodies are generally too small, and fleet owners too scattered, to generate the necessary momentum to break the ice in a regional or national market. National governments can create a momentum by tax discounts, but have proved reluctant to do this without being sure of the availability of vehicles, and fuel supply infrastructure. A joint effort by several stakeholders, in several countries is required to break this deadlock and achieve the necessary critical mass for market breakthrough.

BEST is the solution

The BEST proposal will demonstrate an extensive substitution of petrol and diesel to bioethanol in both light and heavy vehicles. The project will simultaneously introduce bioethanol for transport on a large scale in several European countries, in order to achieve market breakthrough for ethanol-fuelled vehicles. The demonstrations of bioethanol vehicle fleets in BEST will be carried out in close co-operation between cities/regions, fleet owners, car manufacturers, fuel producers and fuelling stations.

BEST demonstrations

Site	N° of flexi fuel cars	N° of E95 buses	Low-blend Petrol	Low-blend Diesel	N° fuel stations	Fuel stations for E95
Stockholm	4 500	60			23	5
Biofuel Region	2 500	20		E-diesel	55	4
Rotterdam	950	3	E10	E-diesel	12	1
Somerset	200		E10		5	
Dublin	100		E10		1	
Basque Country	200		E10		4	
Nanyang	105	6			50	1
Madrid	250	30			2	1
La Spezia	100	3	E10	E-diesel	2	1
Total	8 900	127			154	13

The objectives of BEST are:

1. to prove and further improve the technical reliability, energy-efficiency, environmental and societal benefits of bioethanol as a fuel
2. to perform large-scale demonstrations in order to initiate a market development and to evaluate performance and costs under different climatic, geographical and traffic conditions, using
 - innovative ways of introducing known bioethanol techniques
 - innovative ways of using bioethanol
 - innovative ways of transfer of knowledge
 - innovative ways of marketing and of providing incentives
3. to benchmark and evaluate the different innovative ways
4. to obtain followers that further increase the impetus towards a market development
5. to give recommendations for standards and policies

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