BEST
BioEthanol for Sustainable Transport

SUPPORTED BY THE EUROPEAN UNION

Report incentives

WP5-report: Incentives to promote Bioethanol in Europe and abroad

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This report is produced within the European project BEST - Bioethanol for Sustainable Transport.

BEST deals with the introduction and market penetration of bioethanol as a vehicle fuel, and the introduction and wider use of flexible fuel vehicles and ethanol cars on the market.

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Preface

The BEST project

The project BEST, Bioethanol for Sustainable Transport, focuses on the introduction and market penetration of bioethanol as a vehicle fuel, and the introduction and wider use of bioethanol cars and buses.

During the project more than 67,000 bioethanol cars and 140 bioethanol buses have been introduced, demonstrated and evaluated. Fuel stations for E85 and ED95 fuel have opened. Low blends with petrol and diesel have been developed and tested.

Through BEST, the participating cities and regions aimed demonstrate the prerequisites for a market breakthrough for bioethanol vehicles and bioethanol. Another objective was to inspire others to follow. During the project several incentives promoting bioethanol cars and buses and bioethanol fuels have been introduced locally and in some cases at the national level. Some of the sites faced barriers to the introduction of bioethanol in the beginning of the project and in certain locations these are still not solved. The barriers have mainly been taxation and regulation issues.

The participating cities/regions are: Biofuel Region (SE), Brandenburg (DE), Somerset(UK), Rotterdam (NL), Basque Country and Madrid (ES), La Spezia (IT) Nanyang (China) São Paulo (Brazil) Coordinating City is Stockholm (SE).

The project is co-financed by the European Commission within the 6th framework; Sustainable Energy Systems/Alternative Motor Fuels: Biofuel Cities. The project started in January 2006 and will continue to the end of 2009.

The work in the BEST project is split into 9 work-packages (WPs):

- WP1 - Cars
- WP2 - Buses
- WP3 - Low Blends
- WP4 - Distribution
- WP5 - Incentives
- WP6 - Coordination
- WP7 - Marketing and Dissemination
- WP8 – Transfer of knowledge
- WP9 - Evaluation

This report gives detailed information about all the work conducted within WP5 - Incentives in the BEST project. Similar wp-reports are compiled for all WPs except WP6. In the end of the project a Policy Report summarizing the results from the whole project will be published. Please refer to www.best-europe.org to find all reports from the project.

This report was written by John Akkerhuis, Workpackage-leader Incentives for the Rotterdam Region.

Rotterdam in May 2009.

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Executive Summary

This report highlights “The BEST incentives to promote bioethanol in Europe and abroad”. The report contains the results of WP5 Incentives, which comprised two tasks focusing on:

- task 1: *Strategy and implementation of local incentives*
- task 2: *Evaluation of existing incentives*

The results of these tasks have been analysed, in contrast to the original objectives of BEST and with reference to the contextual factors that affected the implementation of the tasks. This includes assessment of observed market developments, user attitudes, problems and opportunities that enable or hinder introduction of bioethanol cars, economic factors and sustainability. The major findings are summed up below.

The importance of incentives

- Incentives are very important to create a market breakthrough for bioethanol;
- To reach a self sustaining market the use of the incentive instrument is needed for a long time;
- The perspective for long term incentives is very important for investors;
- Incentives can be extinguished when the bioethanol production industry is fully grown;
- Incentives can particularly play a role in the implementing phase.

Good incentives

- The one most important incentive is to make sure the price of ethanol is equal or lower then petrol;
- Congestion charging is a second most important instrument to stimulate the use of clean vehices and bioethanol;
- Incentives on operational costs are more effective then incentives on the initial costs;
- An environmental bonus by car manufacturers proved to be very effective in the Netherlands.

Less effective incentives

- A competitive fuel price has the most positive impact on sales;
- A one-time national purchase subsidy promotes significantly less sales;
- Free residential parking is not very effective.

Other factors

- Local bioethanol production industry is a key factor for market breakthrough;
- Cooperation with the right stakeholders proved to be very important.

Recommendations to national and European policy-makers and guidance to other cities and regions interesting in working with bioethanol are also presented in the report.

For cities and regions the recommendations are especially focused on the choice, combination and timing of the incentives.

For national authorities recommendations are aimed at the long term policies and economic and environmental motivation to stimulate bioethanol. Recommendations to Europe are in the field of harmonisation and supportive policies.

Introduction

The purpose of the BEST project is to initiate a lasting development of bioethanol fuel all over Europe and to demonstrate the prerequisites for a market breakthrough for bioethanol-fuelled vehicles. Therefore, the BEST sites work for the introduction of vehicles and distribution lines combined with targeted information campaigns. This work is followed-up by studies on, for example, effects of different kinds of local, regional and national incentives.

This report investigates the activities, results and impacts of Work Package 5 of the BEST project, Incentives.

Objectives and evaluation incentives in BEST

An incentive is a factor that enables or motivates a certain action or a choice to an alternative. An incentive is an expectation that encourages people to behave in a certain way.

The objectives for the subject incentives in the BEST project were

- to have direct contacts with key decision makers and, on some sites, in close collaboration with companies, organizations and local governments to stimulate the development of effective incentives and incentives schemes;
- to have direct contacts with students, in high-school as for adult students;
- to study, implement and evaluate incentives as they are and how they could be.

From the evaluation point of view the drivers, targets, types, scope, and effectiveness of activities to promote production and use of bioethanol fuel and vehicles at the different BEST sites should be determined. The types of incentives to be monitored are:

Financial incentives for:

- FFV and buses (for companies, fleet managers, individuals);
- ethanol;
- infrastructure (production plants, pumps, fuel stations) ;
- others (e.g. free parking, exemption from congestion charge).

Non-financial incentives like:

- special lanes;
- special treatment (e.g. taxis);
- awards (environmental, green companies, etc.).

This report describes how these objectives were met, answers the evaluation questions and describes the use of incentives for a market development is.

Structure of the report

Within the BEST project the sites have been working on incentives in different ways. The typical situation at the sites influenced the success of the installation of incentives. In the description different aspects are highlighted in order to understand the results.

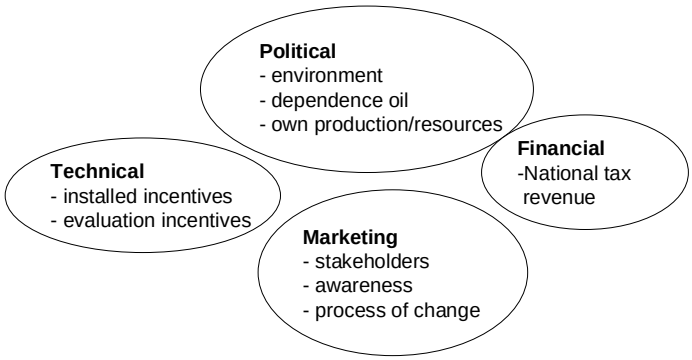


Figure 1: Different angles to describe incentives from

Incentives can be described from different angles:

- Political: how do incentives fit into political local, regional, national and even European programs;
- Financial: what are the costs and the long-term risks;
- Marketing: when to install what incentive in order to reach what target group;
- Technical: how to install what incentive.

Chapter 1 describes the policies around bioethanol and clean vehicles. How European policy is embedded at national and local level. In this chapter the political and financial angles are covered.

In Chapter 2 the actions and involvement of the BEST project and how the different sites operated in the countries is described. Cooperation with specific stakeholders, what factors speeded up or slowed down the introduction of bioethanol and what side effects were noticeable.

Chapter 3 is a more technical chapter where the different incentives for the different target groups are described, which incentives have been installed or why some incentives were not.

Chapter 4 describes the incentives out of experience and evaluation from front runners Sweden and Brazil.

Chapter 5 translates the conclusions into advices on European, on national and on local level.

1 Political environment and cooperation.

1.1 European policy environment, biofuels and clean vehicles

The use of biofuels is stimulated through different European targets and is touched by different European rules. Incentives can be used to achieve these targets. At European level the following policies affect the BEST project:

- The policies to reach in 2020 20% lower CO_2 emissions, a 20% share of renewables and a 20% saving in energy demand are important drivers for the stimulation of biofuelsI;
- CO_2 emissions of vehicles will be reduced to an average of 130 gr/km by 2012;
- Europe will apply sustainability criteria to all biofuels;
- Regulations and interests around the import of bioethanol is an important factor for the market development.

Energy security, solidarity and efficiency

The European Commission has proposed a wide-ranging energy package which gives a new boost to energy security in Europe and supports the climate change challenge.

The first priority identified in the second Strategic Energy Review[1] of November 2008 is to adopt and rapidly implement the measures to reach European Council energy policy targets for Europe aiming at a 20% reduction in greenhouse gas emissions, a 20% share for renewables in final energy consumption and a 20% saving in future energy demand by 2020. Cleaner, more diverse and more efficient energy will be good for Europe's energy supply and economy. The new rules will also create a more stable, consistent and transparent environment for new energy investments.

The second priority is to address the growing precariousness of Europe's energy supply security. Even when the renewable energy policy goals are reached, Europe is likely to be dependent on more imports than today. The EU needs to improve the current policies to achieve its energy efficiency objective. Moreover, the ability of the EU to respond together in a crisis needs to be strengthened.

Agreements car industry on CO_2 car emissions[2]

The EU target to reduce average new car emissions to 120 g/km was first proposed by Germany in October 1994.

It was presented as the ambition to lower fuel consumption of new petrol cars to 5 litres per 100 km and new diesel cars to 4.5 litres per 100 km. The target was formally announced in a European Commission communication in 1995 and represents a 35% reduction over 1995 levels. Originally the target date was set for 2005. Until now, the target has been postponed or weakened three times.

The actual proposal[3] strives to reduce the average CO_2 emissions from new cars to 130 g/km by 2012. The Commission's proposal does not contain any hint of a target after 2012.

Carmakers are responsible for delivering the reductions. But it should be remembered that the target is an average for all cars sold, not a fixed limit that no car may exceed. In fact, manufacturers can average the CO_2 emissions from all cars they produce.

CO_2 reduction by using biofuels is not accounted for.

[1] COM/2008/0781

[2] Reducing CO2 Emissions from New Cars: A Study of Major Car Manufacturers' Progress in 2007, European Federation for Transport and Environment, August 2008

[3] COM/2007/256

Sustainability criteria[4]

The EU has reached agreement on the renewable energy directive. An important part are the directive's biofuel sustainability requirements. The sustainability requirements will apply to all biofuels used to achieve the EU's renewables objectives.

The directive stimulates requirements for CO_2 performance in the biofuel chain. In addition, areas with a high degree of biodiversity, including old growth forests, are protected. Areas with a high carbon stock must retain this carbon stock. This means, for example, that wetlands may not be drained to produce biofuel crops. Cooperate environmental impact reporting requirements, addressing other effects on the environment, such as on the soil, water and air, will also be introduced. Reports will also address the recovery of depleted land, social aspects, food prices and land use rights. This last aspect is of particular importance to indigenous populations. In addition, the directive addresses the indirect effects and impact of displacement.

The European Commission will publish a biennial report on these aspects, including, for example, the methods for identifying the indirect consequences of CO_2. In addition, the reports will clarify the impact on food prices and the security of the food supply.

In 2006, the Netherlands initiated the development of sustainability criteria for biomass used for energy purposes (as part of what is known as the Cramer Commission). A similar process was underway in the UK. Both countries decided to combine efforts and were soon joined by Germany. This development in part motivated the European Commission to address the issue at EU level. This resulted at the start of 2008 in a proposal for a directive on renewables, which included sustainability criteria.

Import of bioethanol for transport in the EU[5]

The stakeholders and their interests

Many ethanol producers are on the verge of investing in new plants, but as European ethanol cannot compete with imported sugar cane ethanol in price, there is an inclination to raise trade barriers towards imported ethanol and hope that the fuels directive will force oil companies to use ethanol as low-blend, regardless of a price higher than petrol. E85/ED95 is lower on these stakeholders agenda, as European production capacity will not be enough to reach even the goal of the biofuels directives, much less produce a surplus for E85/ED95. Hence low-blend will absorb all of Europe's production capacity.

Many stakeholders interested in developing the market for E85 and ED95 realise however that high blends needs to be competitive with petrol and diesel respectively, and that it will be more difficult to produce European ethanol at competitive prices, also with total reduction of fuel taxes. Hence these stakeholders regard it essential for the development of E85/ED95 to import cheap ethanol.

Other concerns is the fear of importing cheap E85/ED95 excempted from ethanol tax to be processed into drinking ethanol. This fear might be real if E85 is not denatured enough – and some Member states definition of E85 include a rather mild form of denaturation.

In addition different environmentalists and NGOs point out higher energy- and CO_2-efficiency by sugar cane ethanol, possibilities for rural development and domestic job growth of the third world as pro-argument versus risk for loss of biological diversity, land degradation and neo-colonialism as contra-arguments.

[4] Dutch Ministry of Housing, Spatial planning, and the Environment, www.vrom.nl
[5] Import on Ethanol, J.Ericson, Clean Vehicles in Stockholm, Env & Health Adm., nov 2007,

The cost of importing ethanol for transport use

Bioethanol is produced mainly outside the European Union. This means bioethanol has to be imported into Europe. There are 3 main components that decides the cost of importing ethanol for transport use:

1. **Custom classification**
2. **Specification of E85/ED95**
3. **Taxes**

1. Custom classification

Custom classification is harmonised within the EU. Ethanol for E5, E85 or ED95 can be imported in three different ways, following different classification, called CN Code (Combined Nomenclature Code) in Council Regulation (EC) No 2501/2001. Low-blend ethanol could be imported under additional CN Codes, but with equal or higher Custom tariffs.

Category	CN Code	Commom Custom Tariff	Products
a) Undenatured ethyl alcohol of an alcoholic strength by volume of 80 % or higher	2207 10	19.20 €/hl	Ethanol and water
b) Ethyl alcohol and other spirits, denatured, of any strength	2207 20	10.20 €/hl	Products for general technical use and other denatured products without specific additives classifying the product under another CN Code.
c) … chemical products and preparations of the chemical or allied industries (including those consisting of mixtures of natural products), not elsewhere specified or included	3824 90 99 99	6.5 % of the value = ca 3.90 €/hl	e.g. products intended as fuel for transport – as E85 and E95 – provided that they fulfil all other specifications for chemical products

Table 1: EU custom classification

At the meeting of 8-10 Oct 2007 with the project group within the European Codex committee, section for Statistics and nomenclature, sector for alimentary chemistry there was a general agreement that ready-blended E85 and ED95 (called E92 by the project group), should be classified as CN 3824. The same opinion holds the World Custom Organisation.

A product for import or export receives a certificate of classification. This Binding Tariff Information (BTI) sets the classification of a certain product. If a Custom authority grants a specific classification for a product, this is binding for all Member states, and normally valid for 6 years. SEKAB holds a BTI for ED95 as a **fuel** classified in CN Code 3824, hence all Member states needs to recognise ED95 as not being ethanol that shall be taxed with a harmonized excise duty in Code 2207.

2. Specification of different ethanol qualities and products

The specification of ethanol qualities is a national matter and is not harmonised. This is often a trade barrier and could prevent using the most favourable Custom classification. It could force ED95/E85 to be classified as drinking alcohol with a minimum tax of 500 €/hl.

Denaturation

Ethanol can be un-denatured, denatured or completely denatured which basically reflects how difficult it is to turn it into drinking alcohol. Each member state has its own definition of what is needed for the different classifications, However, member states have to recognize the definition of other member states definitions for complete denaturation and for denaturation if the product is not intended for human consumption. The different definitions of complete denaturation is found in Commission Regulation (EC) No 3199/93. However the UK does not recognize other menber state definitions.

E85 definition

Ready-made E85, blended in one country might not be allowed to use in another country because of differences in the fuel-specifications. There is yet no harmonized definition of ready blended ethanol in petrol, E85, rather are the different definitions excluding each other, which makes it harder to import ready-made E85. The only possible way may then be to import (denatured) ethanol, pay a higher custom tariff and blend E85 inside the Member state according to local specifications.

ED95 definition

Only Sweden recognizes ED95 as a fuel. However, SEKAB holds a BTI on ED95 and is hence able to export it under CN Code 3824.

3. Taxes

The taxes on ethanol and other fuels are only partially harmonised. The EU sets a minimum with exceptions that are possibly be harmonised but connected with the national regulations on denaturation and often also combined with specific demands.

Ethanol taxes

Ethanol imported under CN Codes 2207 xx **shall** normally be taxed with a harmonized excise duty of 550 €/hl 100 % alcohol. However, according to directive 92/83/EEG Art 27.1 member states **shall** except certain products from harmonized ethanol excise duty, i.a.

(a) when completely denatured in accordance with the requirements of any member state,

(b) when both denatured in accordance with the requirements of any member state and used for the manufacture of any product not for human consumption;

According to Art 27.2 Member States **may** also exempt products from the harmonized excise duty, i.a.

(e) in the manufacture of a component product which is not subject to excise duty under this directive.

Member states can also withdraw the tax exemptions if someone is abusing the rule and produces drinking ethanol without paying the harmonized excise duty. In these cases, the European Commission decides after hearing the other member state (Art 27.5).

As described above, the UK does not recognise other member states definitions of neither completely nor denatured ethanol.

Fuel taxes

Within EU there are minimum levels for taxation of motor fuels and other fuels used e.g. for transport. Member states may however decrease or abstain from taxes within pilot projects for technical development of more environmentally friendly products or renewable fuels.

The possibility to use lower tax is also available for

• The renewable parts of products classified as CN Code 3824 90 99 (e.g. the bioethanol in E85, ED95);

• Non-synthetic products classified as CN Code 2207 20 00 (denatured bioethanol);

• Products made from biomass.

This means that tax reduction **can** be applied to almost all biofuels. The reduction shall be adapted to the cost of the feedstock in order to avoid over-compensating

Some member states set up certain rules for ethanol to be exempted from fuel tax. A common way is to request the E85 (or E5 or ED95) to be blended inside the union which means that the importer need to import ethanol either as CN Code 2207 10 (19.20 €/hl) or 2207 20 (10.20 €/hl). Other member states only give tax reduction to ethanol produced within EU, or even only within the country.

SEKAB and some other stakeholders has launched a compromise where ethanol for low-blend should be imported through CN code 2207 (the higher custom rates) while E85 and ED95 should still be imported as CN 3824 (same custom rate as biodiesel) and still be eligible for tax reductions. This solution is however opposed by stakeholders that fear that authorities will not have enough possibilities to keep track of the high-blends and that E85/ED95 should be diluted to E5 or E10, taking advantage of the low custom tariffs.

A more radical point of view is shown by the Swedish government which recently decided to cancel the obligation to import low-blend ethanol under code 2207 10 (highest custom duty tariff) to be eligible for tax reduction. The former obligation was a way to avoid over-compensation of state aid. The Swedish government now claims that importing under other CN codes does not imply over-compensation.

1.2 Policies in BEST countries

The different BEST countries have to deal with the European targets on energy security, solidarity and efficiency. Time will learn if all the EU member states will meet the EU-targets for CO_2 reduction and the use of renewals.

- In most countries the method of mandatory mixing low percentages of biofuels is used;
- In Spain, Sweden an Germany also financial benefits for using biofuels are installed.

The national policies to meet the EU-targets in relation to the support of biofuels are described below.

Germany

In 2002 the German Parliament decided to exempt biofuels from the gasoline tax to increase their competitiveness compared to conventional gasoline. The policy to promote biofuels is being justified by their allegedly positive effects on climate, energy, and agricultural policy goals. An increased use of biofuels would contribute to sustainable development by reducing greenhouse-gas emissions and the use of non-renewable resources. By gradually increasing the tax rates on biofuels the stimulation of the market will be build off. 2nd generation biofuels and E85 are exempted from tax until 2015.

Biofuel producers will in future enjoy fiscal and administrative support only if certain sustainability criteria are adhered to. With these measurements Germany is meeting up with the EU biofuel targets. But because of the public discussion on sustainability of biofuels the tempo has been slowed down.

The sustainability discussion of biofuels lead to a declining political support for high blends and confirmed government in it's focus on market introduction in low blends.

New vehicles that emit 100 g CO_2/km or less will no longer be subject to an annual tax, according to that plan released by the German government.

Spain

In 2006, bioethanol was only used in the Basque Country as a raw material for producing the antiknock additive ETBE to be added to conventional petrol.

More recently, in October 2008, the Spanish Ministry of Industry approved an order establishing a mechanism whereby the use of biofuels would be compulsory, with a target of 3.4% introduction by 2009 and 5.83% for 2010. This order gives the oil companies a certain degree of flexibility in choosing the biofuel with which they wish to fulfil the obligation.

In July 2007 it was defined what products shall be classed as biofuels and establishes annual targets (1,9% 2008, 3,4% 2009, 5,19% 2010).

Taxation of ED95 has been a discussion in Spain. Originally it was decided by the Spanish customs and tax authority to impose alcohol tax on the fuel. The authority decided that the chemicals used for

denaturation (to avoid drinking) of the bus ethanol (MTBE and Isobutanol) were not allowed to be used if the ethanol should be classified as a chemical in Spain. The authority therefore decided that the ethanol should be imposed with alcohol tax (28 €/litre). The customs authority was informed about the Swedish customs 12 classification of the fuel as an energy product under CN code 3824 90 98 99 in a Binding Tariff Information, BTI, which is legally binding in all member states. This lead to a reclassification of the fuel in Madrid and the product was totally exempted from tax, as all alcohol used for fuel in Spain is tax exempted.

Sweden

In Sweden a massive work with information, demonstration and a set of attractive incentives have resulted in a partial market breakthrough for clean passenger cars. The most popular are FFV's. Strong actors have been some pioneering cities, interest organisations but also national authorities and politicians on all levels. The support is now slowly withdrawn due to the already very good results achieved. The Swedish national government has set up a strong policy towards biofuels. The national government has installed the following incentives:

- No tax on renewable fuels until 2013;
- Lower tax on company cars if they are clean until 2011;
- Lower vehicle tax for clean cars;
- 100 % of all vehicles bought or leased by state administrations should be "clean" in 2009;
- 10 000 Skr (appr. € 1000,=) for private users buying a new clean car until mid 2009;
- All filling stations selling over 1.000 m3 petrol/diesel each year need to supply at least one renewable fuel;
- Clean vehicles were until December 31, 2008 free of charge in the congestion charging zone in the inner city of Stockholm.

Because of the rising cost and a changed political climate it was recently decided to withdraw certain incentives.

The Netherlands

The Netherlands are setting high ambitions on environment. Where for instance Europe is now aiming at 20% CO_2 reduction in 2020 the Netherlands claim to go even further towards 30%.

The Netherlands expect to meet the mandatory 5,75% in 2010. The Netherlands use a mandatory blending system for biofuels. The big fuel producers are obligated to add the EU regulated percentages of biofuels to the conventional fuels. Some oil companies are not producing or blending the fuels themselves. These companies have to buy the fuels without really knowing what biofuels exactly were mixed. Because of this it technically proved to be almost impossible to produce higher blendings. Besides this technical obstacle there is no reward for the non producing oil companies in offering high blends since the obligatory percentages of biofuels are to be met by the oil producers. So far the system proved to work contra productive for introducing high blends.

Biofuels are not strongly supported in the Netherlands. Only in 2006 a excise exemption for bioethanol existed. After that no national excise measurements on biofuels are in place which is why bioethanol cannot compete with the conventional fuels.

In 2008 a national subsidy for fuel stations to offer E85 and Natural gas was launched.

China

With rapid economic development, energy demand increases rapidly in China. China's total energy consumption already occupies the second place in the world. China's oil consumption and net imports increase annually.

The vehicular oil consumption will be the main cause of continuous increase consumption of petroleum in China. Compared with the vehicular oil consumption in 2000 which occupied about 1/3 of the total petroleum consumption, it is forecasted that it will rise to 43% and 57% by 2010 and 2020. In recent years, the number of motor vehicles has been growing rapidly in China, and it got to 160 million by the end of March 2008.

Greenhouse gas, emitted by different kinds of human activities including vehicles, has been leading to climate warming. This has become the issue that global human-being confront and should take immediate action to settle. China, as a responsible country, placed greater emphasis on energy saving and pollution discharge reduction.

Facing the above issues, China central government pays more and more attention to research and development of clean and renewable energy, and CO_2 discharge reduction.

In June 2007, in order to deal with the climate change before 2010, China issued the "China National Climate Change Program" officially.

In China, fuel ethanol is used in designed sites ordained by the government. Nanyang is one of the sites. So it is not needed to create a market. Only Tianguang Group is allowed to produce fuel ethanol in Nanyang.

United Kingdom

The UK policy framework supports the introduction of biofuels in low blend mixtures through the Renewable Transport Fuels Obligation. The Renewable Transport Fuel Obligation Programme will place an obligation on fuel suppliers to ensure that a certain percentage of their aggregate sales is made up of biofuels. The effect of this will be to require 5% of all UK fuel sold on UK forecourts to come from a renewable source by 2010. The 5% by volume target represents the maximum biofuel content allowed by European Specifications to be sold on the forecourts as standard petrol or diesel.

The rate of inclusion of all biofuels is limited to 2.5% from April 2008. The Department for Transport is currently consulting on a recommendation that the rate of increase in the percentage of biofuels should be slowed down, until sustainability criteria are met, to achieve a 5% vol. inclusion rate by 2013. The consultation on the draft RTFO obligations has lead to the decision to introduce legislation setting an obligation level for 2009/10 of 3.25%, which is in line with the Gallagher recommendations to reach 5% in 2013/14. The UK is also investigating how to work towards 10% renewable transport fuels by 2020.

Italy

The framework is not encouraging as the Italian Government has not demonstrated up to now a clear political will of promotions for biofuels, shown by a lack of proper regulations and long-term incentives.

In the Budget Law 2007 the indicative target values for biofuels were finally in accordance with the European Biofuel Directive 2003/30/EC, but the obligations set in the same law are lower than these reference values (e.g. for 2008 the indicative target value is 2.5% of biofuels within the total consumption of fuels and the obligation is 2%) and the economic sanctions are still not fixed.

Bioethanol for transport in Italy up to now has only been considered for use as ETBE, when it is added to petrol to increase the octane number. An Italian decree expected at the end of 2008 will utilize the excise duty reduction for a fixed amount of bioethanol produced in Italy from agricultural feedstock.

For many years Italy has been living with the experience of natural gas and GPL development: these fuels are very economical in comparison to gasoline and diesel but despite the low price there are many problems with expanding the fuel.

1.3 Policies BEST partners

The BEST sites are the first to introduce E85 in the countries. Joining the BEST project is a sign that the use of bioethanol fits into the policies. Other reasons for stimulating bioethanol are:

- High ambitious and taking responsibility of cities and regions environmental changes;
- Economic chances for local production of ethanol;
- Air quality problems of big cities.

In the beginning of the BEST project hardly any incentives were in place at the beginning sites. The incentives are described in chapter 4, in this paragraph the local policies are described.

Brandenburg

Starting point for the bioethanol production in Brandenburg/Cottbus was the need for an alternative use of rye after European subvention started to phase out. It was seen as an important change in agricultural policy to make use of the only grain that grows in vast areas of a country with many hectares of poor soil without grants. Selling rye at a fairly good price was a strong interest of farmers in 2006. The chance to sell transformed cereals in a market that was competitive due to tax exemption was an answer both to combat climate change and rural development. Verbio AG in Schwedt became established.

Basque Country

In the energy strategy of the Basque Country, that was approved by the Basque Government in 2003, specific targets for the production and use of biofuels were established. These targets are:

- Own production of biofuels to 2010: 270,000t.
- Use of 177,000 t/year of biofuels by 2010.
-

The BEST project contributes in reaching these targets.

Stockholm

Road traffic is one of the biggest polluters in Stockholm. However, there are environmental friendly alternatives to ordinary cars. Vehicles powered by renewable fuels such as ethanol and biogas means cleaner air and lower greenhouse gas emissions. The program Clean Vehicles in Stockholm is run by the City with the purpose of increasing the number of clean vehicles in Stockholm. The Stockholm City council has decided:

- To be fossil free by 2050 (a local ambition of Stockholm);
- To adopt a clean vehicle definition;
- 100 % clean vehicles in the city fleet by 2010;
- 35 % of all sold vehicles in Stockholm should be clean vehicles by 2010;
- 8 % of all fuels in Stockholm should be clean fuels by 2010.

BioFuel Region, BFR

Road traffic is one of the biggest polluters in BioFuel Region. BioFuel Region has decided:

- To adopt the national clean vehicle definition;
- 25 % of all sold vehicles in BR should be clean vehicles by 2009;
- 35% of all fuel stations should be offering at least one biofuel

Rotterdam

The Rotterdam region is one of the most densely inhabited areas in the Netherlands and has to deal with an extra load of local emissions from ships and road-distribution towards the harbour. This is one of the reasons the city of Rotterdam and the Rotterdam Region are front-runners in the Netherlands when it comes to activities to improve the air quality. Rotterdam has joined the Clinton Climate Initiative and wants to reduce 50% CO_2 emission in 2025. The Rotterdam Region aims at 40% CO_2 reduction. The support of biofuels and the use of clean vehicles like FFV's are embedded into programmes amongst other projects with different target groups, like ships.

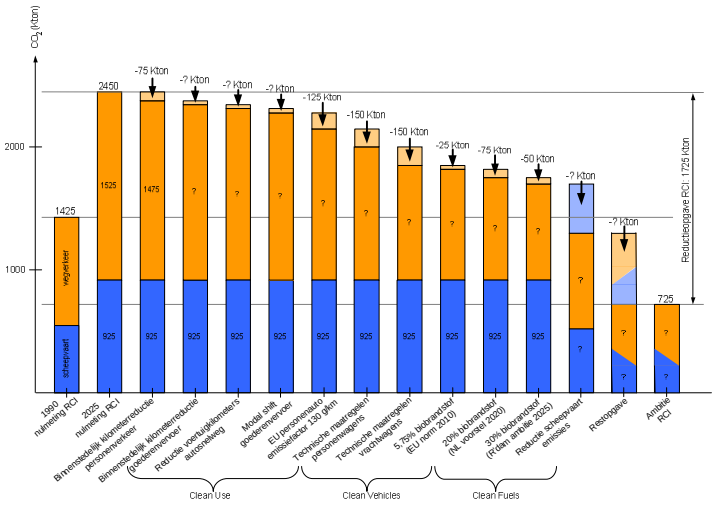


Figure 2: Projects on clean use, clean vehicles and clean fuels RCI Rotterdam.

Nanyang

In order to be well known as the first demonstration city of high blending of fuel ethanol, Nanyang local government is very supportive for BEST. It coordinates and tries to give any convenience for development of BEST.

Nanyang is one of the first cities demonstrating E10 in China. At the first of applying E10 in China, the petrol stations in downtown of Nanyang were retrofitted and converted into E10 stations at a time. Since Oct 2003, all petrol stations in whole Nanyang city has competed the shift from supplying petrol into only supplying E10. Until June 2008, there are 655 petrol stations in Nanyang. All of them sell E10. Now, all the gasoline vehicles in Nanyang are using E10 (except 10 FFV in BEST). Totally only five plants were approved by China central government to produce fuel ethanol. One of them is located in Nanyang, whose yield capacity is 500,000 tons/year.

There are no E85 or ED95 specifications in China and in China it will take a long time and a lot of testing work to organise this. For BEST the Nanyang local specifications were based on the EU and US specifications.

La Spezia

The Ligurian Regional Council, in February 2006, approved the "Regional Plan for the protection of the quality of the air and for the reduction of greenhouse gases". The Ligurian municipalities have to send a local plan to the region and request funding to realize it.

2 Experiences

In this chapter is described how the BEST project and the sites operated in the countries. How they cooperated with specific stakeholders, what factors speeded up, or slowed down the introduction of bioethanol and what side effects were noticeable.

2.1 Involvement / Actions

Not only the sites but also the BEST project has been active in the field of incentives.

BEST project

The BEST project has initiated several incentive actions:

EU action

The BEST project organised a meeting for the EC to stress the lack of excise measurements in Italy, the UK and the Netherlands. The result was that BEST was able to address the subject and the worries to different Members of the European Parliament.

As a striking demonstration of the differences BEST produced this picture, demonstrating that excise measurements are still necessary in Italy, the UK and the Netherlands. Driving a FFV on E85 is in these countries still to expensive which will certainly not stimulate a market breakthrough..

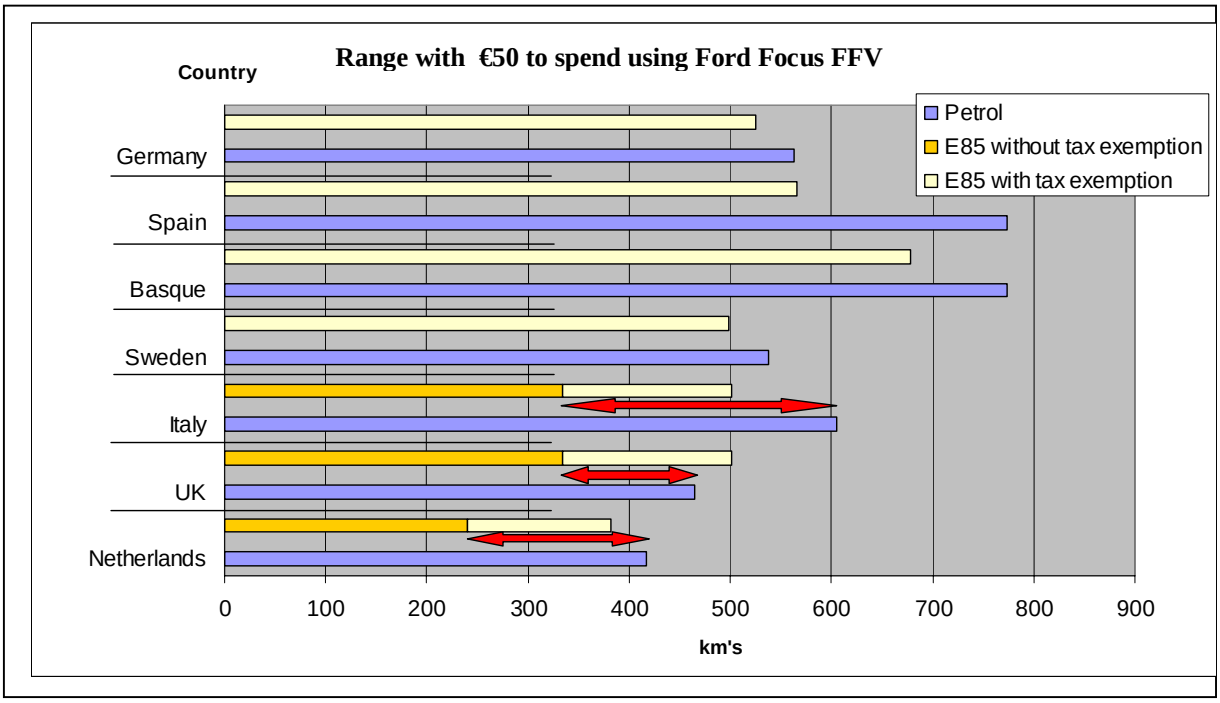


Figure 3: Travel range with E85 different countries with € 50 to spend

The tax exemption graph shows how far you would get in a FFV with 50 Euro's to spend in the actual situation and in the situation with no excise on the Ethanol part of E85, so with only 15% of the petrol excise.

BEST Newsletter
The BEST newsletter is regularly distributed to BEST Friends and other interested parties. This action is part of activities towards awareness and information.

Website

The BEST Website has been launched and is used to provide information to interested parties.

Lighthousetours

BFR organised lighthousetours for a representation of all the sites. In a lighthousetour a selected group of people is demonstrated all the factors a city/government will meet when introducing bioethanol as a new fuel. The tours are meant to be inspiring and were very useful for motivating and informing selected stakeholders. This is why a lighthousetour can be seen as a good incentive.

BEST sites

The sites demonstrated different activities in different way to stimulate the use of bioethanol and FFV's. The major type of activities was in the field of:

- Promotional activities for bioethanol and FFV's;
- Participation in the dialogue for public support of bioethanol;
- Reaching a cooperation with strategic stakeholders.

Brandenburg

Initial media coverage of the introduction of E85 and FFV's, assisted by Ford District East promotions team, was mostly favourable. This enabled local politicians to support the principal of market introduction for bioethanol and gave encouragement to CEBra GmbH in promotional activities and in efforts to discuss further public support for E85 with the national government.

Basque Country

In 2006 bioethanol was only used in the Basque Country as a raw material for producing the antiknock additive ETBE to be added to conventional petrol. There were no service stations in the region selling bioethanol blended directly with petrol. The Basque Government, through EVE, decided to commit to bioethanol, setting underway a series of actions geared towards activating the market for this new fuel type.

Stockholm/BFR

During BEST Stockholm continued the stimulation of ethanol as a fuel and intensively monitored the market. Monitoring and evaluating the effect on incentives was part of the work.

Rotterdam

Rotterdam has been active in discussing national stimulation of bioethanol since the start of the BEST project. The main issue was the extra excise income for the national government because of higher amount of litres E85 one has to fuel for the same distance. The other issue is whether the government should stimulate the use of bioethanol as a fuel because of its potential in the transition to sustainable transport. The first actions were undertaken through local politicians and contacts in Den Haag where the parliament is seated. Rotterdam brought up the discussion through the Mayor and even through the former prime minister who is the chairman of the Rotterdam Climate Initiative. Rotterdam delivered all the knowledge and arguments by providing the politicians with drafts for the official letters.

Nanyang

In spite Nanyang met some obstacles, Nanyang coorperates with Dongfeng Auto Company on FFV and ethanol bus supply, and with Tianguan Group on fuel ethanol supply. Until now, Nanyang has very close cooperation with Tianguan in BEST. The FFV and ethanol buses are used in Tianguan car fleet and bus fleet. Nanyang purchased 10 FFV's and 2 ethanol buses from Dongfeng and more FFV's and ethanol buses are expected to purchase. Though Nanyang can not use Scania ethanol buses due to many reasons, Scania finally demonstrates its ethanol bus in Beijing. Nanyang provided the fuel for the demonstration.

Somerset

Somerset has successfully demonstrated that the E85 fuel supply infrastructure and FFV technology can successfully operate in the UK road transport market.

Somerset put a lot of work in discussing stronger national fiscal support for bioethanol. Current fiscal support measures are not producing a wider breakthrough for the use of E85 in FFV's in the UK. It has been clear since the beginning of BEST that targeted incentives are required to ensure the successful introduction of bioethanol in high blend mixtures.

La Spezia

The major action up to now realised by the Italian partners of the BEST project is to contact and stimulate dialogue among policy makers, associations and industry representatives to obtain tax reductions for bioethanol. Italian BEST partners are trying to do all that is possible for a breakthrough in the bioethanol market, but the work is hard and very difficult without the solution of the "key" of the excise duty. In parallel, the Italian partners of the BEST project are continuing to understand how to obtain the tax exemption of bioethanol.

The Municipality of La Spezia has presented to Liguria Region a plan for the development of bioethanol according to the BEST project. The points developed by the La Spezia local plan are:

- reduction of the ethanol price by mean regional funding to make competitive ethanol versus gasoline and diesel;
- reduction of the FFV price by means of regional funding to make competitive ethanol cars versus gasoline and diesel cars;
- promotion campaign addressed towards the possible buyers of flexi fuel vehicles.

Unfortunately, Liguria Region has decided not to fund the project.

2.2 Cooperation and sharing of knowledge

All the sites have described their own specific situations. In the following paragraphs is described how the sites have been operating in their surrounding.

- Cooperation with the right stakeholders is very important to achieve a market beakthrough;
- Most of the sites were able to find stakeholders to cooperate with, especially in the fields of feedstock, vehicles and distribution, but also with end users and regulations;
- Sharing knowledge, training and providing clear information is essential and proved to be very much appreciated;
- For big oil companies and their related businesses it is hard to support the introduction of high blend bioethanol.

Stakeholders

Each site has performed a stakeholder analysis. This is a way to visualize the stakeholders and to identify the stakeholders that are essential for the BEST project and if they are positive (green), negative (red) or neutral (orange) towards the aims of the project. The stakeholders are divided into "End Users", "Networks", "Interest groups" and "Suppliers".

The stakeholder analysis of the sites were combined into a total overview in order to see similarities. This is illustrated in the figure below. The most positive stakeholders were put into the centre, stakeholders in the outside are most negative.

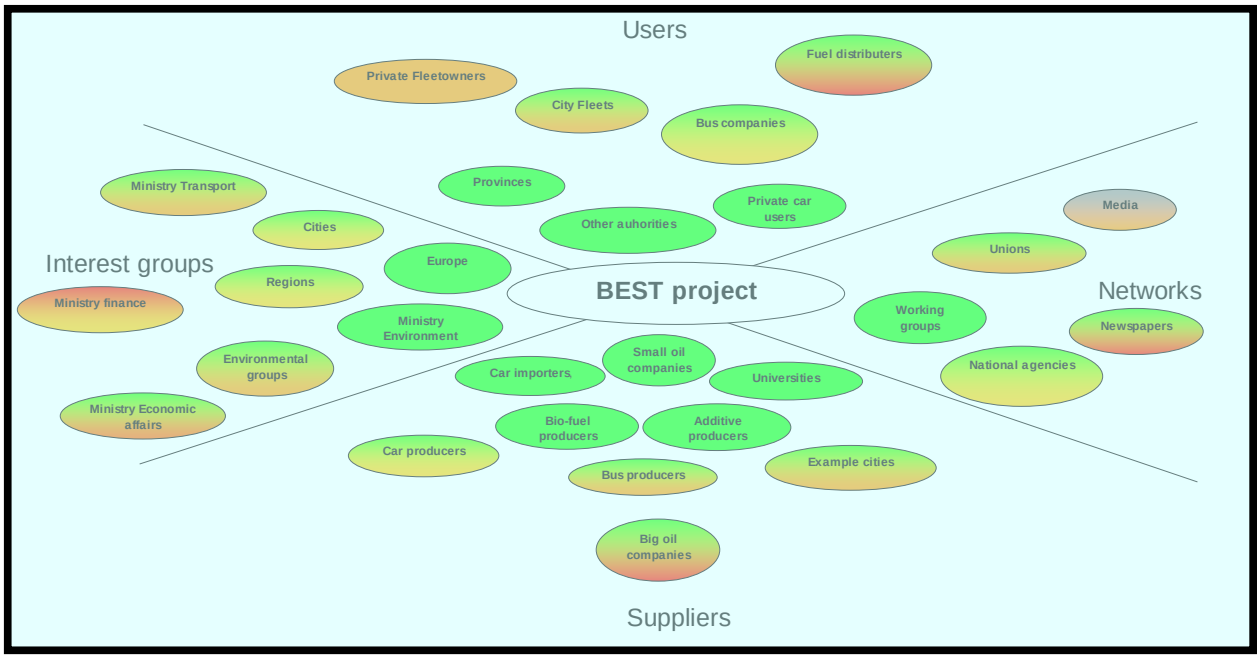


Figure 4: Map stakeholders BEST sites

From the overview it can be concluded that:

- In each quadrant positive stakeholders can be found to work with;
- Most negative stakeholders are found amongst big oil companies, fuel distributors, newspapers and finance ministries;
- Most positive stakeholders are amongst small oil companies, car importers, suppliers of biofuels, universities, environment ministries, local / regional authorities and working groups in which these positive stakeholders are combined;
- Private car users seem to be more positive than private fleet owners;
- The group in between are cities and their fleets, regions, unions, car producers and national agencies.

With the Introduction of an new technique and fuels stakeholders are drawn into a process of change. Based on experience of the BFR it is good to be aware of what phase of change a specific stakeholder is finding itself. For this the theory of the "Four rooms of change" can be used. This is a psychological theory, describing change as a move through four psychological stages or "rooms". In all change, we move from a Contentment, which is lost, via a period in Denial, which is a defence of the old, through Confusion, which ends when we give up whatever it is of the old that had to be given up. The giving up is the turning point, making us open to the possibilities, the new, whereby we move on to Renewal. BFR worked together with Stakeholders that find themselves in the rooms "Confusion" and "Renewal". (Figure 6)

The BEST partners defined for each of the stakeholders in their own situation:

- in what place in the chain of biofuel development (Figure 5 and 4.2) they fit in (Feedstock, Production, Vehicles, Distribution, Taxes and regulation, End users);
- in what "room" in the process of change the stakeholders find themselves;
- how influential they are;
- what their contribution to the market staircase is;
- what their attitude towards the BEST project and it's goals at the beginning of BEST was and is now;
- how has been cooperated with the stakeholders.

After this exercise the analysis of the result can be used for strategic cooperation with positive stakeholders and also to check if the known list of stakeholders is complete and to find out the opinion of the unknown stakeholders. As stakeholders will change their opinions and new stakeholders will enter the market this analysis should be updated regularly.

Adding up all of the stakeholderanalyses conducted by the BEST partners about 50% of the most important stakeholders turned out to be in the room of Confusion or Creativity, so very good to cooperate with. Not all the sites have cooperated with stakeholders in all the parts of the chain. One of the reasons for this is that no suitable stakeholder to cooperate with was found up until now. In the table below a summary with a general description of the stakeholders is given.

Chain	No	Kind	Room	Attitude
Feedstock	6	Universities and agricultural unions	Confusion and Creativity	Positive
Production	5	Big oil companies / bio-fuel producers	Satisfaction / Creativity	Against / Positive
Vehicles	8	Car producers	Satisfaction, Change, Confusion, Creativity	Positive
Distribution	10	Distributers and installers	Confusion / Creativity	Neutral / Positive
Taxes and regulations	10	Ministries and authorities	Confusion and Creativity	Positive / Against
End users	16	Media, City councils, unions	Satisfaction, Change, most in Confusion, Creativity	Positive / Against

Table 2: Summary stakeholders

All the links in the chain are closely connected within different areas of the biofuel development and a site should try to find stakeholders in each link. The stakeholders opinion towards the goals of the BEST project in the different links of the chain are illustrated in the figure below.

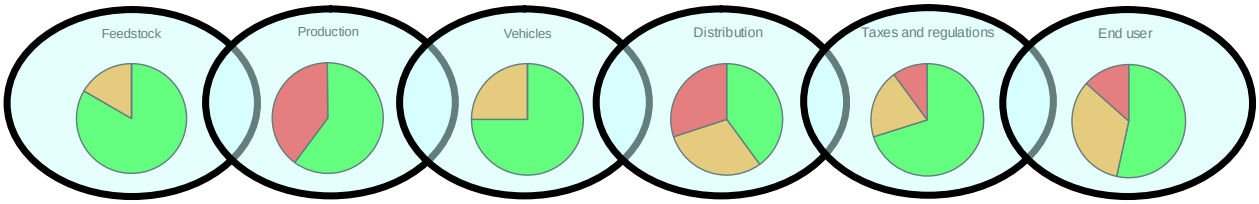


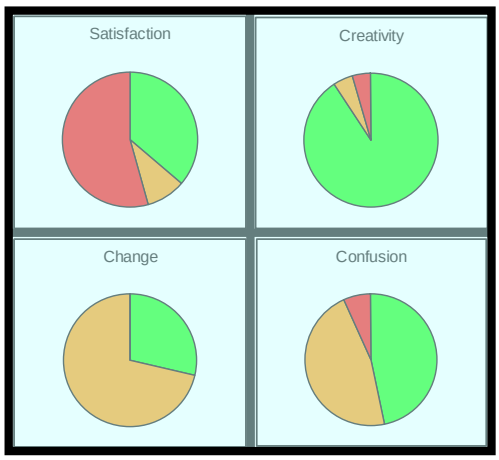
Figure 5: Opinions different stakeholders in the chain of biofuel development

The green share of the circles stand for thepercentage of the positive stakeholders. The orange and red stand for the neutral and negative stakeholders.

From the figure it can be concluded that:

- most of the resistance to bioethanol is in the links Production and Distribution;
- In all the links positive stakeholders can be found;
- The most positive stakeholders are found in the Feedstock link;
- The stakeholders in the distribution link are most divided.

If we look deeper and analyse what the attitudes of the stakeholders towards the goals of BEST are in the different rooms of the process of change we find the next picture.



From this picture it can be concluded that:

- Most opposition comes from stakeholders that are in the room of “Satisfaction”;
- The most positive stakeholders are in the rooms of “Confusion” and “Creativity”;
- The most neutral stakeholders are in the rooms of “Change” and “Confusion”.

Figure 6:Attitudes stakeholders in different rooms of change

Cooperation

In the field of incentives much work has been conducted in cooperation and involvement of other stakeholders.

Brandenburg

Brandenburg/Cottbus formed a partnership with private sector organisations. The participation demonstrated the existence of a production line based on local resources including benefits to the local economy. There has been good cooperation with other stakeholders in Germany as evidenced by the organisations who have joined German BEST Friends. In addition Brandenburg/Cottbus has been working with other local authorities and public sector organisations

Sharing of knowledge has started to be organised through the new CEBra GmbH website, through information leaflets, through press releases, publicity, events and conferences. Brandenburg has initiated information events for stakeholders from Northrhine-Westfalia, Hess, Mecklenburg-Pomerania and Bavaria and has also supplied information to other groups sympathetic to market breakthrough for high blends including the German Association for landscape care (DVL), County administrations and BEST Friends. Supporting partners remains the main element of Brandenburg’s efforts to achieve market introduction. CEBra-Centre for Energy Technology Brandenburg GmbH has now become the manager of the network of competence on biofuels Brandenburg-Berlin, with other supporters of E85 and FFV’s.

Initially the relevant government departments and ministers in Brandenburg were approached directly with the purpose of buying FFV cars in public procurements. the actions were carried out directly by CEBra GmbH as German Coordinator of the BEST Project, with information supplied by other stakeholders including Imperial College, Verbio AG and Ford District East. This approach did result in information from the BEST Project on support required for market introduction being presented in appropriate places but it did not produce the desired result.

Basque Country

EVE considered it to be particularly important that it should participate in drafting the new Ministerial Order that will establish mechanisms for compliance with the requirement on use of biofuels for the coming years. The result was that the order finally was promulgated, while not as beneficial to bioethanol as might have been wished, it opens the doors to the introduction of the product in a market in which oil companies are openly opposed to the marketing of the fuel. At the same time, work has

been ongoing with the Basque Government's Department of Industry on preparation of a guide to technical and safety aspects required of service stations applying for a licence to dispense bioethanol.

EVE has been very alone in stimulating Bioethanol and has collaborated with the most important positive stakeholders like the governments and energy agencies who are positive towards ethanol. The oil companies and most of their connected businesses are negative and no cooperation was possible with them. The end-users are neutral and confused towards E85. Clear information and dissemination is necessary to convince the end users.

Stockholm

Many stakeholders in Sweden are positive towards ethanol. However some important ones are not and during the course of the BEST project the support weakened in some instances among some stakeholders partially because of the debate on sustainability. The Ministry of Finance and a few well known motor journalists are against. Best Stockholm has developed a strategy to tackle this situation. This is partly done by the use of some other very important positive stakeholders.

Stockholm has been active in the several ways in order to influence decision-making for increasing development of clean vehicles and fuels in Stockholm and Sweden:

Local politicians and national politicians

- Vice Mayors of Stockholm, Gothenburg and Malmö have met with the Minister of Environment and Finance at three different times officially with media coverage;
- Informal contacts between national and local politicians were used;
- Provide local politicians with facts and figures and arguments, also when not of direct use.

Make sure that the right people meet each other

- provide contact information;
- create meeting places (i.e seminars, lunch meetings and the like).

Influence by providing information and arguments

- write reports;
- gather facts and figures;
- spread to the right people.

When receiving material for review and opinion

- spread your answer ahead of deadline to other important stakeholders, they might copy you!;
- keep media informed and make them do some of the work.

Stockholm cooperates with other cities/regions very extensive, especially with Gothenburg and Malmö but also with neighbouring municipalities and other cities all over Sweden. Stockholm has also had an extensive cooperation with other cities in Europe through many EC funded projects ever since 1996.

Rotterdam

Rotterdam has in different ways initiated cooperation with the specific stakeholders. In the beginning of BEST it was unknown what the position of some of the ministries towards the BEST project was. It turned out that the real resistance came from the ministry of Finance. Rotterdam is trying to use other positive ministries to achieve the project’s goals and together with local politicians the national parliament was informed. Some big influential companies are more or less threatened by E85 and are not prepared to change. Rotterdam decided not to fight them and even to cooperate, but also to find other friends to achieve the goals. One of the important conclusions of the Rotterdam stakeholder

analysis is that Rotterdam has to deal with a group of unions and environmental groups that are in confusion towards biofuels and clean vehicles and should not be against the BEST project. These unions represent a large number of people and companies. Rotterdam is trying to cooperate with the unions.

Together with Royal Nedalco and Energy Valley (the northern Dutch province also active in promoting ethanol) Rotterdam initiated a renewed discussion in close cooperation with fuel suppliers, car importers and all other interested parties. The knowledge was spread (and gained) through the national E85 working group of which most of the partners also were a member.

In the complicated sustainability discussion Rotterdam used the knowledge of Imperial College and the BEST position paper to provide key persons of the necessary arguments. Together with objective Dutch experts the issues were discussed with the alderman. This led to a position paper of the Rotterdam Climate Initiative.

Nanyang

At the beginning of BEST in 2006, the environment for biofuel development was better in China. Many organizations, companies and other cities showed interests in BEST. Tianguan Group, Sinopec, GM China, Dongfeng Auto Company, Zhaodong city which is also one of the first cities in China demonstrating E10, related departments in government, universities, etc, were invited to the BEST seminars and meetings. They all showed great interest in BEST which was regarded as a beginning of high blending of fuel ethanol in China. They wanted to be involved in this new demonstration.

In 2007 the situation was changed, many debates of biofuels were in many media and the central government released that no more food-based fuel ethanol was permitted. This resulted in the loss of interest in BEST of many organizations.

Still many stakeholders supported BEST but were not really able to help, such as GM and the Nanyang bus fleet. Many stakeholders mostly government departments and auto companies are neutral towards BEST and are very concerned of the environment and central government's attitude of biofuels. Some stakeholders opposed BEST project. The direct opposition came from Nanyang taxi fleet because adding new FFV taxi's will affect their benefits.

The Nanyang local government coordinated between crucial organizations to push on their cooperation on BEST project. Nanyang is now cooperating with Dongfeng Auto Company for the FFV's and ethanol busses and also with Tianguan Group for fuel ethanol supply.

Somerset

Somerset was particularly successful as a result of the local partnership of public and private sector organisations that had been developed to deliver the various economic, social and environmental benefits of bioethanol production and use. Partnership working remains a key element of Somerset efforts to achieve market breakthrough. Somerset County Council is now an active partner in the High Blends Group of the Biofuels section of the Renewable Energy Association under the direction of Clare Wenner. Contact with other groups Renewables East and the Low Carbon Vehicle Partnership has been through BEST and local project partners.

Most of the end users are positive towards E85 and many positive stakeholders were found in the networks. Most interest groups are in doubt. With some exemptions the most negative stakeholders are to be found amongst the fuel suppliers. The discussions were carried out directly by Somerset County Council as UK Coordinator of the BEST Project, with information supplied by other stakeholders. Somerset has also supplied information to other groups sympathetic to market breakthrough for high blends.

Somerset was successful in gaining interest in the technology on the part of other local authorities and public sector fleets as evidenced by the number of BEST Friends registered in the UK. Somerset has hosted information events for officers and members of the Welsh Assembly Government, and for

Cornwall County Council. Somerset County Council continues to provide information on the use of high blends and is working in networks to support the adoption of appropriate incentives to achieve market breakthrough in the UK.

La Spezia

To try and explain the national situation, it is important to highlight the political situation during the electoral year 2008 of the Italian government, because of the significant policy difference between the two parties of government regarding the national financial administration and environmental priorities in particular. After the change of the Italian government, Italian partners of the BEST project had to investigate and understand the new political guidelines. Also for the Municipality of La Spezia, there were local government elections during April 2007, for a change of mayor and councillors.

At local level cities, politicians and other stakeholders are positive towards the BEST objectives. Most unions and ministries are in doubt and neutral towards E85. The big oil companies are against.

Some of most important stakeholders and organizations were and are against or neutral with respect to liquid biofuels and bioethanol in particular, because they consider only a part of the production chain and its negative impact, without considering the general positive aspects of the production and utilisation of bioethanol. This is due to the lack of cooperation and collaborative approach for the resolution of the most important problems within the biofuels chain production, distribution and utilisation.

In this context, the main goal of La Spezia partners was and is the construction of a synergy among the different stakeholders and organizations involved in the all biofuels chain, in order to highlight the main problems and propose a possible solution. The major action up to now realised by the Italian partners of the BEST project is to contact and stimulate dialogue among policy makers, associations and industry representatives to obtain tax reductions for bioethanol. The strategic work with the most important stakeholders is turning into a bit more positive and cooperative attitude towards E85 but the negative publicity around biofuels is also leading to confusion and scepticism with some stakeholders.

The actions approved from the Municipality of La Spezia have been transmitted also to the municipalities of Portovenere, Lerici and Sarzana.

Training

The sites Rotterdam and BFR have been working actively in this field. Rotterdam used trainings as a way to raise awareness and also to expand the network. BFR organised trainings because their experience is that the need for information, knowledge and education is never satisfied.

Rotterdam

In Rotterdam trainings have been organised. A large number of registrations caused even more trainings than planned. The result of the trainings have been a growth of the network and a flow of the right information to the people who attended the trainings and the companies they represented.

Participants of the trainings were local and regional policy makers, fleet owners and other interested parties. The trainings were divided into an informative part in which clean vehicle techniques and biofuels were explained, a case study how to organise a transition toward a cleaner mobility and finally a test and drive part where people could experience the different clean alternatives themselves. For this last part different car companies put demonstration vehicles at disposal.

BFR

BFR has actively worked with information and education on three target groups:

- teachers and students of upper-secondary schools;
- all residents in the BFR member municipalities;

- politicians and higher civil servants as being key decision makers.

Many efforts coincide: information is also education, key decision-makers are also residents, etc.

During the first period, the BioFuel Region was successful in motivating and involving but less successful in activating stakeholders. The school efforts were most successful in terms of activating teachers and students. Worth mentioning is the meeting between students and politicians/civil servants in the municipality of Umeå about the statement of intent of the city and the BFR and how to relate this to the students and their possibility to contribute to the efforts of Umeå. Students have also been active in spreading information at filling stations on different locations and thereby taken a great part in the task of spreading and communicating results and challenges. The BioFuel Region has also been successful in activating key decision-makers in the public sector and in the academic structures and also with a number of industrial stakeholders, such as forest owners, in the region.

The demand for BFR's activities remains very high, particularly among municipal managers. At the moment the demand for information and talks is much higher than the BFR can meet. This has led to a conflict of interest within the BFR on were and how to spend the limited time that the "staff" in the BFR have. The model of how the BFR works can be transferred to other regions, both nationally and internationally. Since it is a bottom-up perspective it needs to be repeated in other regions, in order to get a smooth transition to biofuels.

2.3 Catalysts, Barriers and Side effects

The success of installing incentives has proved to be quite dependent of the typical circumstances in which sites have to operate in. These catalysts, barriers and side effects are described for each site.

Catalysts

The following catalysts are identified at the sites and can be used as arguments to install incentives:

- Ethanol is a strong alternative for rye and wheat and an economic chance for agricultural areas;
- Keeping up the reputation of a clean city or area;
- The combination of high industry and densely inhabited areas forces cities to work on local air quality;
- Joining initiatives with other big cities like the "Clinton Climate Initiative";
- National and Local targets and initiatives for sustainable transport and local air quality;
- Major economic chances in the transhipment and large scale production of biofuels;
- Rapid economic development forces countries to search for alternative fuels.

Brandenburg

Germany has a strong policy in meeting the European biofuel targets and Germany is ahead in the availability of biofuels and excise incentives. There is a great number of biofuel pumps available. Brandenburg is situated in a Agricultural area. Producing biofuels from the feedstock is an economic opportunity for the region. The chance to sell transformed cereals in a market that was competitive due to tax exemption was an answer both to combat climate change and rural development.

Stockholm

Stockholm has long had the reputation of being one of the cleanest capital cities in the world but is, as every other large city, also facing the environmental threats that every large city in the world faces. The City must be sustainable and an attractive place for people to live and work. Stockholm has been appointed the Green Capital of Europe 2010 by the European Commission as the first city ever.

Rotterdam

The Rotterdam region is one of the most densely inhabited areas in the Netherlands and has to deal with an extra load of local emissions from ships and road-distribution towards the harbour. This is one of the reasons the city of Rotterdam and the Rotterdam Region are front-runners in the Netherlands. Rotterdam has joined the Clinton Climate Initiative and wants to reduce 50% CO_2 emission in 2025. The Rotterdam Region aims at 40% CO_2 reduction. The port of Rotterdam wants to become the Energy Port of Europe. Within this ambition also biofuel producers are attracted. This economic value underlines the importance of biofuels.

The Netherlands did play a leading role in the creation of European sustainability criteria and a second subsidy arrangement has lead to about one hundred fuelling points of biofuels all over the country in 2009.

Nanyang

With rapid economic development, energy demand increases rapidly in China. China's total energy consumption already occupies the second place in the world. China's oil consumption and net imports increase annually. Facing the above issues, China central government pays more and more attentions to research and development of clean and renewable energy, and CO_2 discharge reduction.

Somerset

The presence in the partnership of regional grain dealer, Wessex Grain, with planning consent for a bioethanol plant, demonstrated the concept of the full life cycle benefits of bioethanol production, including benefits to the local economy. The UK government has established the Renewable Fuels Agency to ensure that biofuels entering the UK market are sustainably produced. The RFA is providing clear evidence that it is possible to monitor sustainability of bioethanol production across a range of social, environmental and technical criteria. It has also become evident from the work of the RFA that UK production of bioethanol can meet these strict sustainability criteria, with the potential to deliver lifecycle carbon emissions savings of up to 70%.

Barriers

The following barriers were identified at the local level and delayed or even stopped the installation of incentives for bioethanol:

- Concerns with politicians, journalists and environmental groups about biofuel sustainability issues;
- Small local budgets to finance incentives;
- Opposition of the main oil companies because of a petrol surplus, controlling the tempo of the introduction of biofuels or strategies to promote other "clean" fuels;
- Compulsory bioethanol replacements remain below 5%;
- The lack of regulations on technical and safety aspects required for service stations;
- The high price of bioethanol;
- The lack of knowledge on fuels and vehicles;
- Scarce availability of vehicles and models;
- Custom duties for importing vehicles;
- No real economical value because of the lack of local production;
- Lack of national political will;
- Unclear national policies on clean vehicles and –fuels;
- Lack of long term guarantees for long term investments;

Brandenburg

Principally the Brandenburg ministry for rural development, environment and consumer protection offered a grant scheme for emission reduction which was used to build up an infrastructure for natural gas based filling stations. At the beginning of the BEST project it was expected that this scheme would be used for introduction of ethanol pumps as well.

The main obstacle for its use became the financing source from structural funds and from the Brandenburg budget which enabled only public institutions as receivers. Other problems arose due to the missing legal framework for ethanol as a fuel based on quality aspects, water protection and explosion prevention. Availability of E85 therefore became a major obstacle in achieving market introduction for FFV's in Brandenburg/Cottbus.

Finally national concerns about bioethanol sustainability issues expressed through the media have eroded the local political support necessary to implement these incentives.

Basque Country

The introduction of bioethanol in service stations is made particularly complicated in Spain by the declared opposition of the main oil companies. Spain currently has a deficit of diesel production and surpluses of petrol due to the "dieselization" of the automobile fleet. Oil companies feel that the introduction of bioethanol would further increase their petrol surplus.

The Spanish Ministry of Industry approved an order establishing a mechanism whereby the use of biofuels would be compulsory, with a target of 3.4% introduction by 2009 and 5.83% for 2010. However, this order gives the oil companies a certain degree of flexibility in choosing the biofuel with which they wish to fulfil the obligation, but it requires that at least 2.5% in 2009 and 3.9% in 2010 of petrol consumption should be covered by bioethanol. These percentages are below the figure of 5% bioethanol that can be incooperated into petrol without requiring it to be labelled as another product and this requirement is therefore unlikely (at least in these initial years) to help encourage the sale of blends of over 5% (E10 and E85 for example) in filling stations.

To ensure that volumes of bioethanol are sufficiently represented among overall petrol sales, EVE has decided to incentify low blends as well as E85. Low blends offer only a small percentage contribution of bioethanol per litre, the number of vehicles potentially using these products is much greater than the current fleet of flexible-fuel vehicles capable of running on E85.

The lack of regulations on technical and safety aspects required of service stations applying for a licence to dispense bioethanol delays the opening of new points of supply.

Stockholm/BFR

In 2006 BEST Stockholm identified the following barriers for using flexi-fuel vehicles or using ethanol as a fuel.

- Lack of suitable vehicle models (e.g van or large family car);
- Lack of automatic transmission;
- Increased consumer price of ethanol;
- Risk for cold start disadvantages in cold climate;
- High production costs for European bioethanol;
- Public lack of awareness/knowledge;
- Not enough local production of ethanol;
- Debate on potential for ethanol and sustainability;
- Higher purchasing or incremental costs;

- Higher operational costs (service needed more often);
- Unsure second hand market creating an uncertainty in depreciation of the vehicles (ethanol vehicles are higher priced on the second hand market, compared to a petrol equivalent. However, this is unknown to most people);
- Low interest/knowledge among car dealers/car manufacturers.

Other reasons for not buying a clean car are budget cuts, company decisions to take away all company cars and the lack of enough fuelling stations.

Rotterdam

In the Netherlands very strong forces are controlling the market of transportation fuels. On the background these forces seem to control the tempo of the introduction of biofuels. Without the support of these parties it is very hard to get enough political support.

Nanyang

In 2007, considering the food security, China central government decided not to permit fuel ethanol from food anymore. Argues about relationship of biofuel and food security were going on all around China.

China central government encourages new energy vehicle development in China. There are many funds supporting the research of new energy vehicles, such as electric vehicle and fuel cell vehicle. But there are no detailed policies in the market. Many auto companies are very concerned about the government's direction about the biofuels.

Nanyang has to pay custom duties if a FFV or ethanol bus is bought from EU countries. In China, customs are very strictly managed. Nanyang worked with many departments to apply for an exempt of custom duty for the Scania bus and Ford's FFV's. However, Nanyang did not have enough power and support to get the incentives.

Somerset

The initial main problem identified in achievement of market breakthrough is the lack of targeted national fiscal support for the price of E85.

Besides this it is clear that the Road Transport Fuel Obligation for the introduction of biofuels is not producing a breakthrough for E85 and FFV's in the UK. Biodiesel is currently cheaper than bioethanol and fuel suppliers are for the most part choosing to meet their obligations under the RTFO for 2.5% inclusion of biofuels through the use of biodiesel in B5 blends.

La Spezia

The general Italian situation is not in favour for expanding the use of bioethanol as a fuel for transport. The greatest problem is the final cost at the pump, due to the new fuel being too expensive to realistically compete with the other "classic" fuels.

One other issue not in favour of the development for bioethanol is the press campaign, fuel versus food, which is very widespread in the general mass media and led to a negative opinion about ethanol of many political parties and environmental associations.

Finally the majority of Italian people feels that ethanol is a high cost, non-competitive fuel with problems of social sustainability.

It is important to underline that in the law, it is not stated that the biofuel targets have to be for both petrol and diesel, but that biofuels have to be a certain percentage of the total amount of fuel placed on the market from the previous year. With regard to incentive measures, only a limited amount of

bioethanol (about 1 million hectolitres) can get an excise duty reduction, used mainly for ETBE production. This is the only way Italian oil companies accept bioethanol in transport. The absence of clear safety and fiscal regulations for bioethanol as a fuel for transport, the uncertainty of the legislative framework, dependence of the changes of the political/financial climate, contribute at hindering the market development, and thus preventing long-term investments from the industrial and agricultural sectors.

Other barriers for bioethanol use in Italy are absence of a supply and distribution infrastructure and the scarce availability of vehicles and models.

Side effects

Some interesting side effects were identified at the different sites.

- Because of the power of the main oil companies only the independent unbranded or white branded service stations are the stakeholders to work with to sell bioethanol;
- For successful front runners financial incentives are going to be too expensive;
- The activities of the sites are attracting new stakeholders to demonstrate with them;
- Stakeholders are getting involved in other biomass projects;
- National research on support mechanisms is starting up;
- Producers are ready to increase production capacity.

Basque Country

Oil companies have brought significant pressure to ensure the greatest possible flexibility in the choice of biofuels to be used in meeting the Spanish biofuel targets. At the moment Spain has a petrol surplus and a diesel shortage. Because of this an bio-alternative for diesel is much more welcome than an bio-alternative for petrol (E85). That's why the big oil companies are against high blend bioethanol in Spain.

This opposition is similarly reflected in all the service stations operating under these operators' brand. This makes it really complicated to find points where bioethanol can be introduced, and means that it is limited to unbranded or "white brand" service stations.

Stockholm/BFR

The success story of Sweden is leading to high costs for the subsidies. There is currently a struggle to be able to keep all the incentives installed. Three incentives are taken out mainly due to financial reasons:

- In Stockholm no congestion charging tax will only be valid for clean vehicles registered before December 31 2008. This is also due to the fact that clean vehicles also take up space and are adding to the congestion.
- The trial period of free parking for clean vehicles in Stockholm ended on December 31 2008. The politicians of the City of Stockholm decided that this will not be extended further.
- Also in BFR the incentive free parking was installed. Recommendations have been sent out to partners in BFR regarding how long to keep the free parking as an incentive. The recommendation is to continue until the total car fleet contains of at least 5% celan vechicles.
- The national 10 000 Skr (app. € 1.000) government grant for private people purchasing a clean car will be taken out ahead of schedule and will stop at June 31 2009. There is now a proposed new incentive to be installed instead and that is no vehicle tax for clean cars for the first five years together with increased vehicles tax for non clean cars.

Rotterdam

Because of BEST and Rotterdam Climate Initiative stakeholders see Rotterdam as a good place to start a demonstration of their product, like new fuels (HE15, DME) or new vehicles (hybrid Buses and hybrid Waste Collection).

Somerset

It is worth noting that although construction of the Wessex Grain Bioethanol Production Plant is on hold, Wessex Grain Directors are now variously involved in other biomass energy projects.

It is encouraging to note that Government has recently commissioned the Transport and Travel Research Consultancy Ltd to carry out research on support mechanisms to achieve deployment of high blend biofuels.

La Spezia

In spite of the many barriers identified for bioethanol market development, many alcohol producers are ready to increase their production capacity if the proper conditions are in place and a strong interest has risen from many stakeholders.

3 Demonstration of incentives in BEST

In BEST different incentives were installed at the sites. Also at some sites certain incentives were not possible to organise, the reasons for this are described as well. An overview of the incentives is given in Annex I

3.1 Incentives on production

The activities on incentives for production took place at the sites with own local economical benefits for the production of biofuels. The activities were much into cooperation with producers and fuel companies. Nanyang is stimulating the production of ethanol financially.

Brandenburg

The chance to sell transformed cereals in a market that was competitive due to tax exemption was an answer both to combat climate change and rural development. In 2006 the Schwedt bioethanol factory "Verbio AG" became established. The VERBIO group is now the leading producer and supplier of biofuels and also the only industrial-scale producer of both biodiesel and bioethanol in Europe. Because of a changing international ethanol market incentives on planting or processing bioethanol from rye seem to be no solution. It would be much more in line with economy that farmers would start to cooperate with the producers more closely. During high price times they could loose when selling at competitive prices for ethanol production but during low price times they would gain more.

Biofuel producers will in future enjoy fiscal and administrative support only if certain sustainability criteria are adhered to.

Rotterdam

At the moment there is hardly any bioethanol feedstock industry in the Netherlands. One small national subsidy was elaborated for innovative ways to produce second generation biofuels and was installed in 2008. The conditions were tough and the production methods have to be viable after the first years.

The Rotterdam harbour wants to become Europe's energy port and is attracting Ethanol producers. Amongst these, Abengoa and BER (Bio Enery Rotterdam) plan to produce bioethanol in 2009/2010 with a future strategy towards second generation bioethanol with Dutch feedstock. Rotterdam is also the biggest European import harbour for biofuels. This active policy can be seen as an incentive to get bioethanol available in the Netherlands and in Europe.

Somerset

Somerset has worked closely in partnership with Wessex Grain/Green Spirit Fuels in discussing incentives on production of biofuels. In all the discussions specific reference was made to the benefits to the rural and national economy from the development of local bioethanol production.

Nanyang

In Nanyang one of the five government approved plants to produce fuel ethanol is situated and Nanyang is one of the first demonstrating E10. In order to stimulate the production of ethanol the value-added tax of denatured fuel ethanol is levied first, and then given back to the provider (Tianguan Group). Also an allowance of 1373 Chinese yuan (appr. € 150) per ton of denatured fuel ethanol is paid to provider.

3.2 Incentives on vehicles

Most of the incentives for vehicles were into green procurement. Only in Sweden and the Basque country straight financial incentives for FFV's were installed. Also private companies can organise very effective incentives, like Ford-Netherlands, who has offered an environmental benefit for FFV buyers.

For incentives on vehicles it is important to be able to define what the policy makers recognise to be a clean vehicle. Sweden has been able to organise a national definition of a clean vehicle. The local government of La Spezia considers an FFV as a clean vehicle. Rotterdam is working on a definition.

Brandenburg

Costs for a FFV-car are not higher than for a normal car and often 10-20% discounts are given to new buyers. Advertising with available cheap fuel or environmental benefits would be more valuable than offering extra discounts as incentives.

Basque Country

Since July 2008, EVE has offered a grant of €400 for purchase of vehicles of energy class A with CO_2 emissions of under 120g/km. This category includes most of the flexi-fuel vehicles currently marketed in the Basque Country. FFV's are favoured for CO_2 reduction according to the procedure specified by AENOR (Spanish Association for Standardisation and Certification).

Stockholm

Stockholm has demanded clean transport in the procurement of all transport services, taxi's, public transport, goods distribution, waste collection, internal mail deliveries and courier services and security services. Stockholm has been able to adopt the common accepted national clean vehicle definition.

BioFuel Region

BFR has been able to adopt the common accepted national clean vehicle definition.

Rotterdam

As a part of BEST the extra cost for FFV's were subsidized. Since there were no, or hardly any extra costs Rotterdam did not continue with this incentive. After continued collaboration with the car manufacturers especially Ford offered FFV's with an environmental bonus. The actual sales figures are proving this is a very effective incentive.

Rotterdam has taken the lead in the Netherlands to make a definition of a clean vehicle. There was no Dutch definition. Rotterdam strengthened the already existing network to share this definition with in order to get maximum basis.

Nanyang

China central government encourages new energy vehicle development in China. There are many funds supporting the research of new energy vehicles, such as electric vehicle and fuel cell vehicle. But there are no detailed policies nor incentives for vehicles in the market.

Somerset

The work of the Somerset Biofuel Project on incentives on vehicles has been to provide supporting evidence and an example of best practice to partner organisations Imperial College, Ford Motor Co and Green Spirit Fuels who have representatives on the Low Carbon Vehicle Partnership (LVCP).

LCVP is an action and advisory group, with over 280 organisations, to take a lead in accelerating the shift to low carbon vehicles and fuels in the UK. The LCVP is the man body advising government on the introduction of low carbon vehicles.

A national 2% reduction on company car tax for FFV's has been installed in March 2007.

La Spezia

In most cases, for all the traffic restrictive measures, ethanol cars will be considered like other low emission vehicles (LPG, natural gas, electric, etc.).

3.3 Incentives on distribution

Most incentives on distribution are to compensate some extra cost for the modification of service stations in order to offer bioethanol. In Sweden offering of bioethanol is mandatory for bigger stations, BFR guaranteed a minimal amount of E85 sales. The Basque country has been able to bring down the price through negotiations and coordination of ethanol transports.

Brandenburg

One of the key elements in Brandenburg's activities has been to discuss better regulations. Several licensing procedures for different settings have successfully been managed. The knowledge is ready to be spread to followers.

Basque Country

EVE negotiated a ten year contract with a bioethanol producer which guarantees very advantageous purchase conditions for the product. These conditions are available for all service stations in the Basque Country and has made it possible to keep the sale price of E85 up to 28% lower than petrol, with differences of between 2 and 6 eurocent in the price of the E5 and E10 blends as compared to 95-octane petrol.

Service stations are buying only small amounts of ethanol. Given that the ethanol has to be transported more than 1,000 km from the plant in Abengoa in Cartagena (Murcia), as not to increase the price of the product it is essential to optimise transport and bring loads with full tankers. This needs coordination on the logistics of transport and is performed by EVE at no cost whatsoever for the service stations.

EVE gives financial support for alterations to the service stations that decide to offer the three blends of bioethanol EVE has decided to market: E5, E10 and E85. In exchange, the owner of the service station makes the following commitments:

- To guarantee the availability of E5, E10 and E85 in their filling stations for the next 10 years;
- To use the branding provided by EVE (including the BEST project and EC logos) for the next 10 years;
- To agree with EVE on a competitive price for E85.

Stockholm/BFR

National legislation demands that filling stations selling more than 1 000 m3 diesel or petrol each year have to supply at least one renewable fuel.

BFR

On top of the nationally compulsorily offering of biofuels for bigger fuel stations BFR installed an incentive that gave guaranteed 10 or 20 m3 ethanol sales to the pump owners.

Rotterdam

The price of E85 is too high in the Netherlands, the oil company Tamoil uses its communication/PR budget to lower the E85 price.

A national subsidy arrangement has lead to applications for about one hundred fuelling points of biofuels all over the country in 2009.

Rotterdam installed a local subsidy arrangement for new or adaptation of a limited number of fuelling stations to offer E85 and natural (bio)gas.

Nanyang

In Nanyang, Sinopec blends and distributes E10. All the fuel stations in Nanyang had been retrofitted to E10 fuel stations. The E10 ethanol fuelling stations are all rebuilded from the existing ones. To lower the fuel price, the ethanol producer receives compensation from the government.

In China, only Sinopec and Petro China can blend and distribute fuel ethanol (E10). The fuel ethanol sold to them is at the price of (911% of the manufacturer's price of regular petrol).

Somerset

Somerset County Council has worked in partnership with Wessex Grain and Ford Motor Co to support the establishment of an E85 network of fuel pumps in the County. The Refuelling Infrastructure Grant Programme has provided adequate support for the introduction of fuel pumps. Availability of E85 has not been a major constraining factor in achieving market breakthrough for FFV's in Somerset.

3.4 Incentives on taxes and regulation

Incentives on taxes and excise reduction to get the price of ethanol competitive with other fuels are the strongest incentives to implement in order to achieve a market breakthrough. The problem is that this is a national matter and that it directly affects the national treasury. In order to achieve these kind of measurements it takes time, influence, endurance and strong discussions.

Germany, Sweden and Spain took sufficient national excise measurements to make Ethanol competitive at the pump. The UK, Italy and the Netherlands did not. In these last three countries the focus of the sites has been on discusion with the national government.

Brandenburg

In 2002 the German Parliament decided to exempt biofuels from the gasoline tax to increase their competitiveness compared to conventional gasoline. The policy to promote biofuels is being justified by their allegedly positive effects on climate, energy and agricultural policy goals. An increased use of biofuels would contribute to sustainable development by reducing greenhouse-gas emissions and the use of non-renewable resources. By gradually increasing the tax rates on biofuels the stimulation of the market will be build off. 2nd generation biofuels and E85 are exempted from tax until 2015.

Basque Country

The most significant incentive currently in force is the application of a zero rate hydrocarbon excise duty on biofuels. This measure is helping biofuels to compete in price terms with conventional fuel.

Stockholm/BFR

The Swedish government decided to raise no tax on renewable fuels until 2013. Also the vehicle tax and the company taxes are lower for clean vehicles.

Rotterdam

With the start of BEST it was foreseen that the national government would make a start in 2007 for supporting the growth of flexi-fuel vehicles and the use of E85 in the year 2008. However, in the taxation plan for 2008 nothing has been mentioned in this direction. A renewed discussion was initiated in close cooperation with fuel suppliers, car importers and all other interested parties to interest national politicians for alternating the taxation plan 2008 in favour of bioethanol. This attempt has had some effect, because Rotterdam and other national partners working on the introduction of FFV's and E85 have now been informed that the taxation plan for 2009 will integrate supporting measures for FFV's and E85.

A change of the excise on biofuels according to their energy value was supported by the responsible ministries at technical level. The proposal seems to be blocked at political level by the Minister of Finance. The main argument is that there is too much insecurity about the justification of the use of biofuels at the moment. Rotterdam and all other interested parties in E85 are certain that fear for lack of income from excise duty is the main part of this governmental reluctance.

Together with Italy and Somerset, Rotterdam has even brought the problems to European Parliament level.

In expectation of national excise measurements the Rotterdam region tried to install a temporarily local subsidy to compensate the extra cost of E85. Because of the risk of market interference and the risk of being accused of illegal state support no political support was gained.

Nanyang

The excise of denatured fuel ethanol (5%) is exempted. This is the incentive for E10 and also effective in BEST. The fuel tax in China has been discussed for many years. A decision for an excise of 30-50% of the fuel price is expected soon. If the fuel tax is issued and fuel ethanol can get the exempt of it, this is expected to push fuel ethanol development greatly in China.

Every vehicle in China has to pay for road maintenance. For 10 FFV and ethanol 2 buses in BEST in Nanyang now, the local government relieved road maintenance cost.

Somerset

A fuel duty derogation of 20 pence per liter (app. € 0,20) on bioethanol is in force in the UK. Unfortunately this is not enough to make E85 competitive with petrol because the derogation is based on volume instead of energy content. E85 has a lower energy content with the result a FFV needs more litres E85 for the same distance, without this correction on energy content it is still 10% more expensive to fuel high blend ethanol. The majority of the work of Somerset County Council on Incentives has been focussed on taxes and regulation to achieve fuel price parity of E85 with fossil fuels. Halfway BEST is was decided that work on national discussions was not thought to be able to deliver a result in the duration of the BEST Project. Somerset nevertheless continues to participate with other supporters in the High Blends Group of the Biofuels Division of the Renewable Energy Association, which is leading on efforts to promote incentives on taxes and regulation. Somerset has also gained a leading position in the Local Government Association for its work on promoting the use of high blend biofuels in the UK.

La Spezia

Every year Italy sets the excise duty reduction on the fuel for a fixed amount of bioethanol produced in Italy from agricultural feedstock. No incentives on taxes and regulation are installed. Neither are incentives for production, flexi fuel vehicles and fuel distribution. The Italian partners of the BEST project are continuing to understand how to obtain the tax exemption of bioethanol.

3.5 Incentives for the end users

Most sites have shown perseverance by taking the lead, not waiting for the government and setting an example. Sites have been able to organise local incentives for end users in different ways. Besides this many good ideas are to be worked out. The local incentives differ from motor tax rebate , local purchase grants, access to restricted areas and free parking. Also information activities, demonstration and test facilities are organised. FFV's are embedded into restrictive measurement policies.

Brandenburg

In Germany many possibilities are seen for incentives for end users.

A user friendly car-insurance from a "green" oriented insurance. A possible development could count the carbon dioxide that is produced on the way to the job and reductions could be incentified in the income tax. Free parking for FFV cars could become a good chance especially for the large cities like Munich or Berlin. Reduction in 2 yearly emission test cost for clean vehicles. A special sticker to drive in the centre of larger cities also for FFV cars.

Neither of these incentives are expected to be sufficient to encourage market introduction in the absence of enhanced national incentives on taxes and regulation.

Basque

Some Basque municipalities have decided to apply a 50% rebate on the annual motor tax for certain types of vehicles including flexi-fuel vehicles. These vehicles were added to the list at EVE's proposal. An attempt will be made to introduce this incentive progressively in the other municipalities in the region.

Stockholm/BFR

In Sweden some incentives for end-users were initiated by the national government and some were initiated on local level.

The national government of Sweden has set up a national subsidy of 10 000 Skr (app. € 1.000,=) for private users buying a new clean car until mid 2009. The government also decided that clean vehicles were for the first years, free of charge in the congestion charging zone in the inner city of Stockholm.

The city of Stockholm used to have free residential parking and free parking for delivery vehicles. The city of Stockholm also has a broad information policy regarding clean vehicles and fuels:

- sales promotion & market research activities
- web-portal: www.miljofordon.se
- newsletter with 4-6 issues/year
- test fleet in cooperation with local car dealers were in place during year 2000 until 2005. After this the clean cars were known to most people and there was no longer a need for test fleets any more.

At the Stockholm airport Arlanda clean taxi's can profit from a special lane, closest to the terminal, to pick up customers. This incentive was introduced by the airport authority.

The BioFuel Region organised many information activities regarding clean vehicles and fuels e.g.:

- free parking in five cities
- a ten-minute-guide on green procurement of clean vehicles
- web-portal: www.biofuelregion.se and www.baff.info
- newsletter with 12-15 issues/year

Volvo offered eco-driving training to FFV buyers.

Rotterdam

Incentives like free parking and environmental zoning have been made part of the local air quality and CO_2 reduction programmes.

Trainings have been organised by Rotterdam. The target groups were fleetowners, policy makers and local politicians. A large number of registrations caused even more trainings than planned. The result of the trainings have been a growth of the network and a flow of the right information to the people who attended the trainings and the companies they represent.

Rotterdam launched a informative website www.schonevoertuigenadviseur.nl. The site also contains a automated clean vehicle advisor.

Nanyang

Although parking is not a very serious problem in Nanyang FFV's in Nanyang got the incentive of free parking. Demonstration of new vehicles and fuel in public fleet is the main and effective way in China.

Like Nanyang demonstrated E10 first in the taxi fleet and later in other vehicles Nanyang also planned to demonstrate FFV first in the a taxi fleet as an demonstration incentive. This way of working was easily accepted by the citizens and the private car owners. Nanyang government coordinated related departments, taxi association and taxi fleet owners. But because the existing taxies have not reached their life expectancy and the government and taxi association have not reached on the scale of adding new taxi's (including FFV). Nanyang still did not receive the authorization to set up a FFV taxi fleet.

Somerset

Somerset County Council considered employing incentives for the end user only when the avenue for the discussions of incentives on national taxation and regulation were exhausted. Incentives considered included an enhanced mileage rate for officers using FFV's on Council business and free car parking for FFV's.

Neither of these incentives would have been sufficient to encourage market breakthrough in the absence of enhanced national incentives on taxes and regulation. National concerns about bioethanol sustainability issues expressed through the media have eroded the local political support necessary to implement these incentives and they will not be implemented by Somerset in the BEST Project.

La Spezia

Considering that there are no incentives for the end users in Italy, Municipality Committee of La Spezia has deliberated some local incentives for the whole duration of the BEST project.

To facilitate the introduction of local incentives for flexi fuel vehicles in La Spezia, the Municipality and Province established a grant for all the flexi fuel vehicles marked with the BEST logo. FFV's will have access to Limited Traffic Zones (restricted access areas) and will have the possibility to use lanes reserved for taxis and buses. FFV's will be listed in a special register are allowed to be parked in almost all the parking places.

If the number of flexi fuel cars will increase too much it won't be possible to keep free parking for all the flexi fuel vehicles because this could significantly reduce the income for the public company ATC Mobilità and Parcheggi, which manages the parking places. However La Spezia has decided to support ethanol and this will continue after the end of the project, therefore other kinds of incentives will be studied (e.g. a parking pass with a lower cost compared to gasoline and diesel vehicles).

In most cases, for all the traffic restrictive measures, ethanol cars will be considered like other low emission vehicles (LPG, natural gas, electric, etc.).

The actions approved from the Municipality of La Spezia have been transmitted also to the municipalities of Portovenere, Lerici and Sarzana.

4 Evaluation of existing incentives

A very important aspect of the BEST project is to learn from front runners. The BEST partners Stockholm and BFR evaluated their experiences with incentives in Sweden[6]. Also São Paulo provided good information from the very long Brazilian experience[7]. In the following abstract the major findings are described.

4.1 Experiences Stockholm

Introduction

Since 1994 the City of Stockholm has run a Clean Vehicle Project through the Environment and Health Protection Administration. *Clean Vehicles in Stockholm* acts as an umbrella for diverse projects promoting clean vehicles and renewable fuels. A wide range of methods have been used, such as: market incentives, dissemination and awareness-raising (newsletters, seminars etc), joint procurement, investment support, infrastructure development and use of environmental criteria in procurement.

These experiences give a lot of information to learn from. The figure below shows introduction dates of incentives and the development of clean vehicle registration in Sweden.

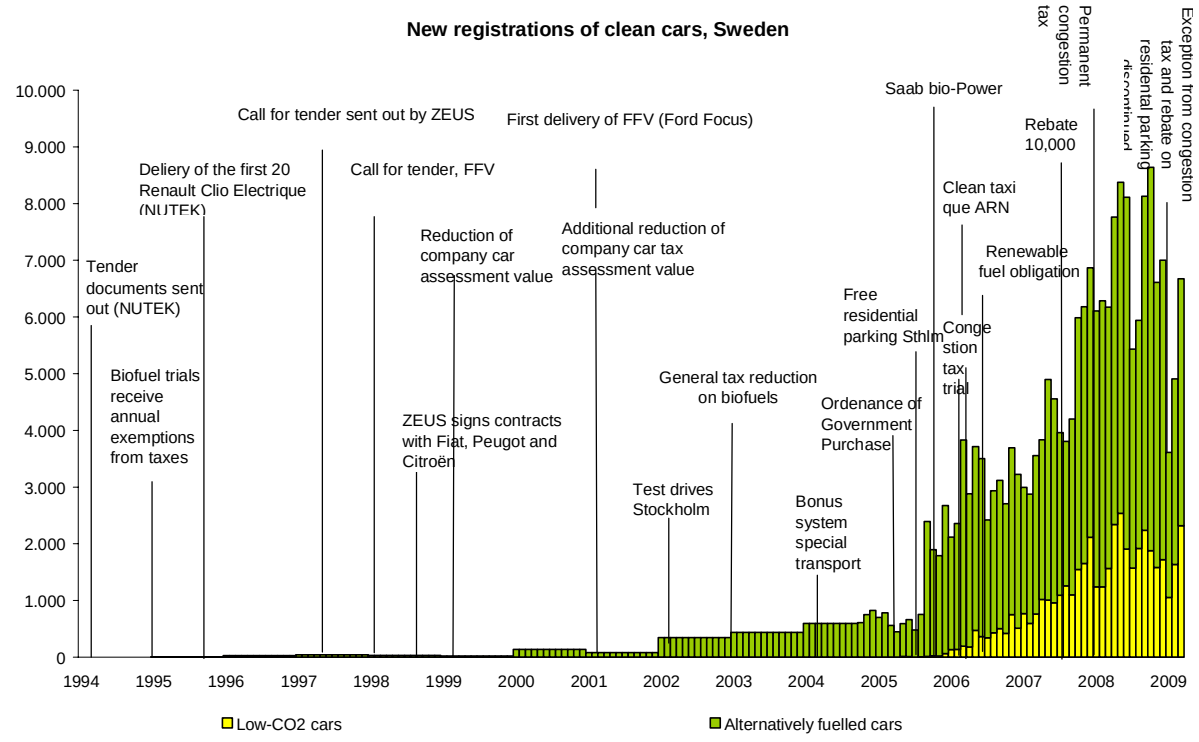


Figure 7: Incentives and development of clean vehicles Sweden

The introduction of clean vehicles began with replacement of conventional vehicles in the city fleet. This work led to a number of complementary activities in order to reduce market barriers such as the lack of clean vehicles, missing fuel infrastructure, punishing taxes and absent regulations.

In 2008 sales of clean cars grew to record levels, also in comparison to other European countries. Between January and October 2008 32 percent of all cars sold in Stockholm were alternatively fuelled vehicles. In comparison to other European cities Stockholm has achieved remarkable developments.

[6] BEST deliverables D5.12 from BFR and Stockholm
[7] Sugarcane as an Energy Source in Brazil, Jayme Buarque de Hollanda and Alan Dougals Poole, Inee

The Clean Vehicles work in Stockholm and national policies in Sweden are used as a case study how different factors influence the market spread of clean vehicles. Increased knowledge will help to design future polices, and meet national and European Union goals for alternative fuels and vehicles.

Ranking the impact of various incentives has been one central theme of the analysis. Another analysis concerns policy recommendations based on the lessons learned by the Clean Vehicles in Stockholm project. A third issue has been to consider the relevance of the S-curve for predicting technology introduction of clean cars (Figure 8).

Impact

Statistics indicate that exemption from congestion charges in Stockholm has been the most important incentive[8]. Its impact increased sales of alternatively fuelled vehicles by about 23 percent in Stockholm County in 2008. Low relative prices for renewable fuels between January and October 2008 likely had a similar positive impact on sales. Free parking incentives influenced the number of clean cars to a lower degree. A national purchase subsidy of SEK 10,000 (€ 1.000) promoted sales, but significantly less. This incentive has mainly affected sales of petrol and diesel powered low-CO_2 cars.

An especially interesting result of this study is that incentives affecting operating cost seemed to be highly effective and the eminent discontinuation of these policies is expected to lead to a sharp drop in clean vehicle sales. Previous studies of car buying behaviour have argued that consumers tend to ignore operating cost when making purchase decisions. Stockholm's experience suggests that the influence of operating costs in all types of car buying behaviour deserves further study.

Policy recommendations

Public policies in Stockholm and developments in Sweden have also been analysed statistically and qualitatively. These analyses are translated to policy recommendations to other cities. These suggestions about how to design a strategy for creating a market for clean vehicles focuses on city actions, the choice of strategic partners and the selection of market segments during different stages.

These recommendations relate to the different phases in the market development. The market of clean vehicles can be said to go through the following phases before it becomes self-sustaining:

- Beginner (pre-market)
- Market introduction
- Market development and partial market breakthrough
- Market breakthrough

In the figure below the are these phases illustrated against the so called "S-curve".

[8] BEST deliverable D 5.12 Promoting Clean Cars Report Stockholm

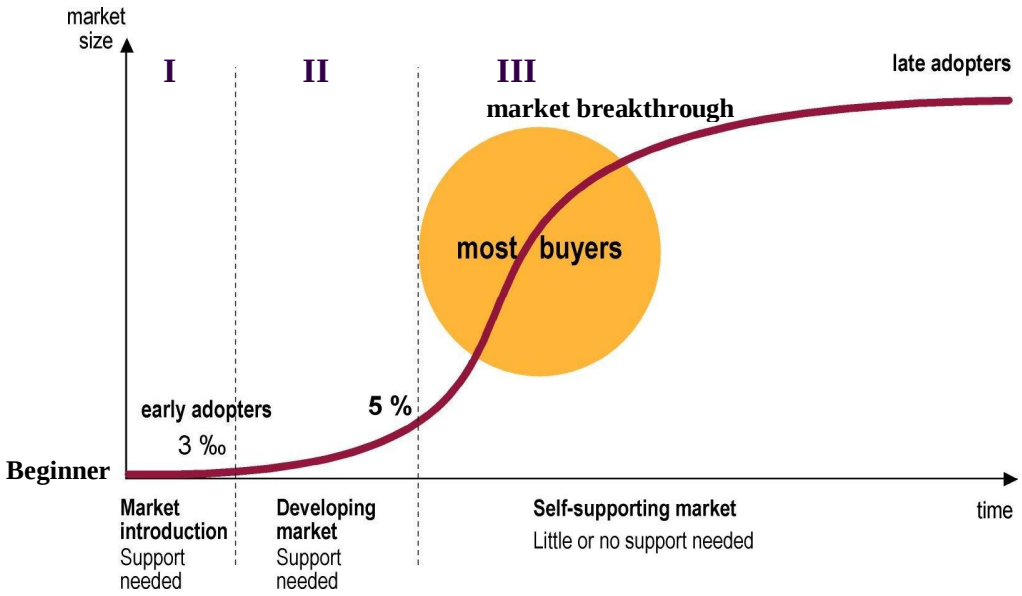


Figure 8: Market introduction curve

The S-curve describes the development of markets for many new technologies, including computers and mobile phones. When new technologies are first introduced to the market, most consumers are reluctant to purchase them. The product is considered too unusual, or unproven. The market is dominated by so-called "early adopters" which are buyers with a special interest in new technologies or in the particular qualities of a specific technology (such as lower environmental impact). Slowly, the volume of product in the market increases, new suppliers enter the market and the technology continues to develop. Market barriers including high purchase price, missing information or perceived shortcomings in quality diminish and demand increases, prompting producers to add new models to the market. When the new product has reached wider availability and the market has reached a so called acceptance level or critical mass, mainstream consumers begin to be interested in it. Having reached this level of wider acceptance, market share begins to increase rapidly until it reaches a maximum penetration and is considered a mature product offering.

It took Sweden 14 years to reach a market breakthrough. The specific recommendations for the different phases are described below.

Beginner (pre-market)

In short, the recommendations for the beginner phase include:

- recognition that a city strategy for clean vehicles and fuels is a long-term commitment
- demonstration of a limited number of clean vehicles in real world situations
- information collection in order to document barriers to clean vehicles and actions to reduce them e.g. by communication to concerned actors
- promotion of fuel distribution by co-operating with strategic partners relevant to the city context
- actions in order to promote market introduction of clean vehicles

At the outset cities need to focus on creating or promoting the supply of vehicles, fuel provision and fuel infrastructure. Cities should recognise that their clean vehicle strategy is a long run commitment. It is also important to prepare for the next stage by identifying and reducing legal barriers. In order to

identify barriers it is essential to test and demonstrate vehicles in real world situations, but putting large numbers of vehicles into operation is neither feasible nor desirable at this stage.

It is not uncommon for projects to run into difficulties during the beginner stage. General difficulties experienced by the partners include high purchase costs, technical problems, an underdeveloped refuelling network, difficulties with fuel supplies, requirements such as double inspections and tax disadvantages. Project management and project partners need strong commitment to its goals.

In the pre-market phase, the city primarily needs to focus on replacing a restricted number of vehicles in its own fleet. It is useful to co-operate with other partners who test vehicles, but the choice should be limited to devoted pioneers who are prepared to cope with possible difficulties. The number of vehicles is of secondary importance until barriers have been overcome. It is much more important to co-operate with strategic partners, including other cities, fuel producers and providers. Other key partners include vehicle suppliers, service providers and test centres.

The city needs to collect information and experiences from its own fleet managers, test drivers and partners in order to identify complicating circumstances. These experiences should be documented and communicated to relevant actors at the national, regional and local levels.

In order to promote fuel distribution, there is a need to identify strategic partners, including producers, providers and retailers and to initiate cooperation. To some extent market mechanisms can help cities develop refuelling capacity. Existing infrastructure for petrol and diesel can be converted to supply liquid fuels like ethanol and RME at a relatively small cost. Cities will need to identify existing fuel suppliers interested in committing themselves to supply alternative fuels.

Joint procurements have proved to be a powerful tool when vehicles are missing or when the cost of existing clean vehicles is high. Buying in bulk together with other cities can raise volumes to a level at which producers can offer lower purchase or lease costs and in Sweden this led to the introduction of new clean cars to the market. Market research to find available vehicles among car dealers and general agents should be carried out before engaging in joint procurement.

Since there is a need to develop interaction between vehicle sales and fuel supply it is advisable to try to find ways to co-operate with car producers or general agents and fuel suppliers.

Market Introduction (I)

In short, the recommendations for the market introduction phase include:

- intensification of support to develop refuelling infrastructure
- actions that help to put a popular clean car model on the market
- information provision about clean vehicles and fuels
- promotion of introduction of monetary incentives
- activities to encourage external actors to replace conventional vehicles with clean vehicles
- production of template guidelines for green procurement and travel policies
- initiation of green vehicle networks

The transition between the pre-market phase and the market development phase is difficult to distinguish. One important signal of this transition is that driving a clean car is in all relevant aspects identical to or better than driving a conventional car. Regulations are in place and car dealers supply a variety of models. Clean cars may still be more expensive to purchase, their second hand value lower, and accessibility to alternative fuels disadvantageous, but apart from these possible drawbacks the performance and reliability of a clean car is close to or comparable to a conventional car.

Monetary incentives and reliable information become powerful tools in the market development phase. It is also important to keep track of the development of supporting infrastructure including networks for refuelling and vehicle service. The city will need to intensify its work with vehicle supply and continue supporting fuel market developments. At the same time market introduction phase adds new actions to the agenda. This is when cities should begin to work externally in order to convince early adopters to choose clean vehicles instead of conventional vehicles. There is a need to identify target groups, encourage them to buy clean vehicles and provide them with reliable information about the costs and specifications of clean vehicles.

Launching a popular existing model as an alternatively fuelled vehicle has a positive impact on sales of clean vehicles. In order to achieve this, cities may consider initiating a joint procurement process. As a first step, it is advisable, to conduct a market study to gauge interest among potential buyers parallel with a market survey that identify vehicle models already on the market and their price. The second step should intend formation of a buyers' consortium. The final step is the procurement itself, with a tender invitation to vehicle manufacturers. The tender documents will need to specify certain requirements for vehicle performance, prices etc. It is also advisable to include safety requirements in technical specifications.

The activities that started in the beginner phase to provide fuel infrastructure should continue. New partners may need to be invited to co-operate. If developments are slow, it is worthwhile to apply for additional financing from national programmes or European funds. However, using legal requirements to increase supply may have potential negative side effects, including technology lock-in effects and financial hardship for small refuelling stations.

The city should engage in external activities to spread information and encourage other actors to replace conventional vehicles with clean vehicles. This work will require a market study to identify target groups. Households are generally difficult to approach in an early market phase, so companies should be the focus of external activities. Company buyers also represent a wide group of potential buyers. Potential buyers may be identified via interviews or questionnaires. Companies providing transport services and other companies with large fleets are expected to be represented in these target groups. Employers providing a large number of company cars represent another potential target group.

The city should invite potential buyers to seminars and distribute objective information about clean vehicles' technical performance, political conditions affecting clean cars and their financial costs. Publicly produced information is most often perceived as neutral and trustworthy. Cities are, therefore, potential providers of web resources for facts about clean vehicles and renewable fuels.

Cities can initiate clean vehicle networks and aid companies in finding partners that have already bought clean vehicles. In Stockholm market expansion developed via green travel and procurement policies in companies and in the public sector. In order to speed such developments cities can prepare template guidelines for actors who want to implement green policies. Although cities seldom have direct authority over monetary incentives other than parking, cities can propose monetary incentives to regional or national authorities.

Market Development and Partial Market Breakthrough (II)

In short, the recommendations for the market development and partial market breakthrough include:

- reduce external activities to encourage external target groups to put a popular clean car model on the market
- continue monitoring developments of vehicle markets and supply of renewable fuels
- help government policy makers to evaluate and design new policies to support vehicles and - fuels
- continue informational activities and development of webpages
- aim at new target groups like households

These phases are distinguished by positive sales developments. Interest in clean vehicles will grow among fleet managers and expertise will spread to leasing management companies. In this phase cities can reduce the intensity of external activities that aim at encouraging external target groups to buy clean vehicles such as seminars and information campaigns.

Instead, cities will need to continue monitoring developments of vehicle markets and supply of renewable fuels. This work should form a base for an analysis that identifies missing links. These missing links should become a platform for continued city actions. Actions to address missing links can be a continuation of work that started in earlier phases or concern new activities. Cities may need to intensify earlier partnerships or to find new strategic partners for cooperation.

Monetary incentives will be important part at this stage. If not yet in place, it is critical at this stage to develop a national long run strategy for clean vehicles and renewable fuels. Cities can help government policy makers evaluate and design new policies that support both vehicles and new fuels.

Information provision and development of webpages needs to continue. Targeting information for new consumer groups, including households should be considered.

Market Breakthrough (III)

In short, the recommendations for the market breakthrough include:

- continue monitoring developments of vehicle markets and supply of renewable fuels
- take caution when phasing out policies, do it step-by-step

Market breakthrough with self-sustaining growth cannot be realized until there is dynamic reinforcement between consumer considerations, vehicle supply and refuelling infrastructure. There is a need to monitor developments and the interactions between these markets. However, our understanding of the complex dynamic interactions between markets is still at a very early stage and needs to be developed in order to make predictions about when markets reach self-sustaining growth. Since it is difficult to assess when growth is self-supporting, it is important to take caution when phasing out policies. Phasing out should be done in a step-by-step manner so that discontinuation does not result in major disturbances.

The future development of a clean car market in Stockholm and Sweden will continue to provide an important example for other European cities and indeed cities worldwide. In particular, the phasing out of key incentives such as congestion charge exemption will help us understand whether or not clean cars are on a path to self-sustainability or require additional support.

4.2 Experiences BFR

Introduction

The goal of the BioFuel Region is to become a world-leading region for the transition of the transport sector to biofuels. This will create new jobs and a leading source of expertise. The goal is to replace petrol and diesel with renewable fuels (ethanol, biogas, and FT diesel) using raw materials from forests and farming. BFR's members should serve as a good example for others.

Within the public sector in Sweden today, there are clean vehicles for most needs. Sweden together with Brazil and the United States are world leading in the sale of clean vehicles. In 2008, in the BioFuel Region, BFR, about 30 percent of the new car purchases are clean vehicles.

In figure 9 the growth of the number of FFV's in the BFR and the incentives is shown.

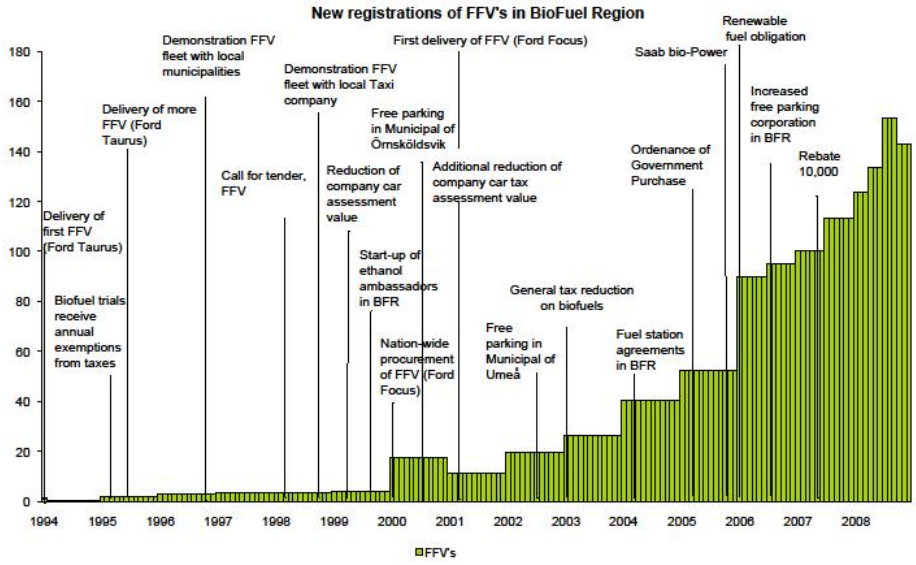


Figure 9: Incentives and development of clean vehicles BFR

The BFR-work for this achievement is organized in relatively independent groups, which are closely connected within different areas of the BioFuel developmental chain. Several work groups have been formed, with in total, approximately 150 participants.

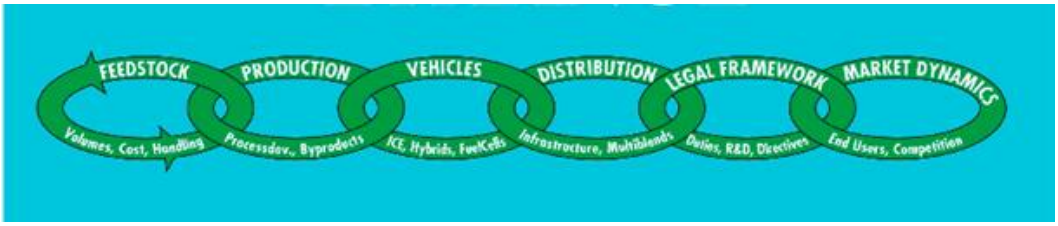


Figure 10: The BioFuel chain; Feedstock - Production - Vehicles - Distribution - Legal Framework - Market Dynamics.

Today the BFR is a popular organisation from whom groups want to learn about the transition to renewable transport systems, particularly for its system approach that includes all stakeholders and levels in society.

The transition to a sustainable transport sector is achieved through three strategies:

- Minimize transports;
- More efficient vehicles and driving manners;
- A fast transition to renewable fuels.

Different incentives can be used to facilitate transition in the three strategies. Incentives can also be used to stimulate more environmental friendly alternatives of vehicles, travels etc. Furthermore, incentives can lead to development by mobilising, involving, and activating as many potential development forces as possible in the region. For example at national level, incentives (or governing tools) as taxes, laws, eco car subsidies or fees can be used. At regional or local level incentives as free parking, ethanol ambassadors, information campaigns or training of, employees are more common. To get most result out of the incentives, probably a mix of them has to be used.

Within the BEST-project and in this report the primary focus has been on the third strategy "A fast transition to renewable fuels".

Impact

- Pulling measures are more accepted than restrictive measures
- A combination of different incentives creates larger changes than a set of individual incentives
- Make direct contacts with key decision makers, students, and citizens
- Use a communication plan to structure the approach and the funding of the work

The major findings from the evaluation BFR conducted in december 2008 are that incentives play a quite important role and that national and local/regional incentives can strengthen each other. Incentives can also particularly play a role in the implementing phase, until then the market goes by itself. Another conclusion is that it is difficult to evaluate how efficient different incentives are.

It is important to create and combine several different incentives in order to influence the public in an optimal way.

In early 2006, the incentive Fuel Station Agreements seem to have affected the introduction of a market for ethanol in the sparsely populated areas in Northern Sweden since fuel station operators stated that it would have been too expensive to finance a flexi fuel pump by them selves. Later on, given the fact that 16 out of the 22 municipalities signed the Statement of Intent and in different stages of implementing actions, this incentive seems to have been an important incentive for the participating municipalities when accomplishing their visions.

Umeå University conducted a study about the acceptance for different incentives. The result shows that pulling measures as improved public transport and improved possibilities for cycling and walking, information or subsidies for renewable fuels are more positive experiences than measures as taxes or car free cities.

Researchers have shown that the most important factors costumers address when buying new cars are security, comfort, road-holding characteristic, costs for service and maintenance, and fuel consumption. The environment and low CO_2-emissions seems to be semi-important factors.

Another study, done by the Swedish KFB in 1999, shows that the effect of incentives as free parking is lower than a separate traffic lane for clean vehicles.

The impact of the incentives in BFR in figure 9 have not statistical been ranked. Interviews with the local Ford and Saab representatives asking about their views and explanations for the sales trends in BioFuel Region and their opinions of the effects of existing incentives and recommendations for future incentives gave the following results. The most important incentive for them has been the 10.000 SEK rebate on clean vehicles. The nation-wide procurement of FFV has played an important roll. Free parking was important, but probably only had a small effect on new car sales in BFR.
The incentives on the fuel (tax reduction, fuel station agreement, etc.) are thought to have a bigger impact on fuel sales then on car sales. It was stated that these incentives are important though and a competitive ethanol price will be very important in the future.

Policy recommendations

- A fuel station agreement with a sales guaranty can be very useful, especially for fuel stations in sparsely populated areas

- The incentive of ethanol ambassadors to promote FFV sales is a good starting point to influence the public to choose more environmentally friendly cars and –fuels
- Combination of several different incentives gives the biggest impact
- Free parking is less effective then a separate traffic lane for clean vehicles
- Green procurement is a strong actor for the introduction of ethanol vehicles, broad support and clear guidelines are essential
- The need for information, knowledge and education is never satisfied and the same holds true for dialogue and building support
- Provide clear information directed to specific actors
- A Statement of Intent with municipalities make it easier to work structured and systematically towards a sustainable transport system, evaluate their membership in the region and allows the use external support
- A ten-minute-guide is useful as a quick and easy way for purchase officers to give guidance for an active choice
- Local events are useful to build knowledge and also that "seeing is believing"
- It is very effective to communicate consistent and persistent through media, relationships and personal contacts with newspapers and journalist.

The experience of BFR is that incentives on the individual level are not enough to achieve larger changes. Instead different incentives should be combined. It can also be important to get rid of obstacles. About information as an incentive it is important that the information is clear. The incentives can also be directed to actors in the market, i.e. sales personnel.

Direct contacts with key decision makers, students, citizens and information and communication activities are particularity important. Also continuous education, information, and training to employees are needed.

An important conclusion is that due to the lack of a communication plan to structure efforts around, many efforts took place ad-hoc. Since one of the most important tasks of the BFR is to expand knowledge, and thereby increase the speed of the transition from fossil to bio-based fuels, communication activities are essential. Evaluation of the first three years led to the conclusion that coordination of communication activities had to be prioritized.

The conclusions are based on experiences with the following incentives:

Fuel station agreements

On top of the nationally compulsorily offering of biofuels for bigger fuel stations BFR installed an incentive that gave guaranteed 10 or 20 m3 ethanol sales to the pump owners. Although it is difficult to say how powerful this incentive "fuel station agreements" is, the incentive is expected to be successful. Especially for small fuel stations where it is quite expensive to finance a flexi-fuel pump by themselves, investments should be directed to fuel stations in sparsely populated areas. This conclusion is based on both legally requirements and lack of financial possibilities.

Ethanol ambassadors

A number of people have been recruited to promote FFV's and bioethanol through price reduction and sales bonuses for FFV's. The incentive of ethanol ambassadors have been a good starting point regarding influencing the public to choose more environmentally friendly cars as well as more environmentally friendly fuels.

Free parking

Free parking was launched across the BFR, in five cities free parking permits were given.

Whether free parking can be an incentive for buying a clean vehicle was investigated. The researchers' conclusion is that free parking has a minor effect. 82 percent of the answering persons do not consider free parking as an incentive to buy a clean vehicle, but they think that it is a good initiative that gives an added value in acting environmentally friendly.

Green procurement

Information and training efforts on green procurement of vehicles have been aimed at key decision-makers and purchasers.

Initially, the region was a very strong actor for the introduction of ethanol vehicles (cars and buses) on the Swedish market. These efforts stalled over time and the region has lost its active role and position in the procurement processes. Given the background and the indirect work that BFR have done regarding green procurement in the public sector, a direct approach will now be added towards policy makers, procurement officers and end users to further influence and change the procurement process. Important factors at procurement of clean vehicles proved to be:

Broad support is the most important factor for success in a purchasing is broad support at all relevant levels:

- Political level - the lack of environmental goals and similar guidelines can prevent the purchasing of clean vehicles.
- Purchasing unit - Clear guidelines, authorization, and an understanding of the importance of purchasing green have proven crucial for purchasers. The unit also needs tools to allow purchasing to include environmental aspects in the same way that financial and safety aspects.
- Suborders - Many units have budgeting responsibility and suborder their own vehicles based on applicable procurements. Because the cost of the vehicle is an important part of the budget, it is important to have good information and guidelines on clean vehicles even for those who suborder vehicles.

Statement of intent

One way for a decision-maker in a small municipality to see their role is in the "Statement of Intent" that each member in the BFR will produce. In their "Statement of Intent" each member address their intentions for their membership in the BFR. Here is a perfect opportunity to include the "greening" of the procurement process and set objectives for clean vehicles and biofuels. The purpose of the Statement of Intent is to make it easier for:

- The municipality to work structured and systematically towards a sustainable transport system.
- The municipalities to evaluate their membership in BioFuel Region.
- The BioFuel Region to support the municipalities.

A ten-minute-guide on green procurement of clean vehicles

Within the BEST-project a ten-minute-guide on green procurement has been produced. This guide is aimed at procurement officers within the public sector. The purpose is to promote a green approach during the next procurement process. The idea with the ten-minute-guide is that it shall be a quick and easy way to give guidance for an active choice. This guide is built around the principle "what, why and how", i.e. trying to give short argues for why clean vehicles should be chosen and finally give some suggestions on how to proceed with this issue. In Annex VI the guide is attached.

Local events

A number of information activities with special focus have also been organised including a seminar and study visit for all participants in the public bus transport in the region. Another event has been to invite the participants from the training courses to make study visits to different good examples in the region. The purpose of this is to build knowledge and also that "seeing is believing".

Local Networks

Two networks were formed by the BFR. The Bio Energy Network with the local energy company and six municipalities had the purpose to build knowledge in area of bio energy with special focus on biofuels. Another network for further development of the BioFuel process was formed. The purpose of the network was to offer the opportunity for all interested and involved organisations to participate in the development of BioFuel Region.

Newspapers and media

Press releases and many news items have been published or broadcasted in regional and national media about BioFuel Regions activities. One lesson learnt is that in order to gain good publicity you need a media strategy where you consistently and persistently communicate and build relationships with media. Another lesson learnt is that press releases on their own are not enough to gain attention from the media. Personal contacts with journalists are very important.

Another important activity was to publish debate articles in the editorial pages of the major daily papers in northern Sweden.

Activities towards upper-secondary schools

Upper-secondary students have been viewed as a potential success factor in the BFR process since they are at the threshold of future studies or work and eventually will become future politicians, researchers and business people, i.e. future decision-makers.

Activities towards citizens

One of the BFR's issues has been to create incentives for citizens to choose clean vehicles when buying new cars. Regional and local incentives as information or free parking places can influence partly, but national incentives as taxes, insurances fees and the Eco Car Subsidy are often more important as incentives. Another strategy has been to use adult education with the unique training material such as a prioritised tool to reach citizens. It is difficult to measure the impact made on citizens. The clearest result, however, was that 96 percent of respondents thought it was important that the BFR work with alternatives to fossil fuels.

Adult education and unique study material

- Adult education relates to both the work being done at upper-secondary schools through the study material and to key decision-makers. The BFR, however, focuses its adult education and unique study material primarily on citizens.

Activities towards key decision-makers

Major commitments and actions by the region's key decision-makers at all levels are needed to achieve these goals. Lessons learned from these efforts toward key decision-makers include:

- Visit the key decision-makers' own forums and events. Don't wait for an invitation.
- Get an invitation by being an interesting and attractive party for internal and external stakeholders.
- When invitations come, make sure to always attend and take part.
- Active participation is also a form of information and marketing.

4.3 Experiences Brazil

Introduction

The sugarcane industry is operating in a very distorted and unstable international sugar market. In many countries the production of sugar is subsidized. In order to create a more stable production in Brazil excess production was converted into ethanol. Maximal 24% of the ethanol was blended with petrol.

In order to reduce the country's dependence on oil imports during the oil crisis of 1970 the government created the PROÁLCOOL program to increase sugar-cane alcohol production to use as a substitute of gasoline.

In reaction to the second shock in 1979, the government intensified the program, the development of new production plantations and the development hydrous alcohol- fuelled vehicles was promoted. Also incentives to finance the creation of a great number of distilleries were given and the distribution of the new fuel all over Brazil was secured. National coordination of the ethanol production was needed to secure a stable supply of ethanol. The program induced a strong response and the ethanol year production rose to 15 million m3 in 1987 and the petrol sales dropped sharply.

The installation and extinguishing of incentives

The incentives and subsidies for the program were meant to be transitory. It was expected that high oil prices would finally make the ethanol competitive and the marginal costs for the renewable fuel would decline. When in 1986 the oil price became lower then before the oil crisis, the program became a major headache for successive governments. Subsidies were expensive, but a discontinuation would have a great impact on the economy.

In 1989 the program suffered a major setback due to an ethanol shortages in some of the main consuming centres. The Gulf War made the government to decide not to terminate the program, but consumers lost confidence and the ethanol sales began a steady decline to 5.1 million m3 in 2000.

Major changes in fuel pricing policy took place in 1998. The petrol prices were freed to be set by the market. The ethanol subsidies were gradually extinguished and the prices were also allowed to fluctuate with the market.

Actual situation

In Brazil most of the tax incentives have changed into mandatory blending. The national agro-industrial plan, the Brazilian PROÁLCOOL program can be seen as THE incentive that made the ethanol more competitive than gasoline today. Because of the steady and long term production growth ethanol has been able to become competitive with petrol now. Because of the fully developped sugarcane bioethanol industry it is now 25-50% cheaper to drive ethanol instead of petrol.

At the moment these incentives are still in force in Brazil:

- Reduction in registration fee for ethanol vehicles;
- Mandatory alcohol vehicles in official fleet (the "green fleet");
- Several tax incentives are still installed;
- Tax exemptions for taxis;
- A mandatory blend of anhydrous alcohol in petrol from 20% in 1975 up to 30% in 2003;
- A minimum blend 3 percent anhydrous alcohol in diesel;
- A new FFV ‘green fleet’, including taxis and government-owned cars.

For the utilisation of ED95 as a fuel, there are currently no Governmental incentives. Since the introduction of the fist ED95 bus in São Paulo however, there are several incentives under negotiation.

4.4 Effectiveness and timing of incentives

The experience from the Swedish and Brazilian partners have given the BEST project a unique chance to draw some conclusions on the effectiveness of incentives. With different incentives Sweden has been able to reach an substantial market penetration of clean vehicles. In Brazil a true self supporting ethanol marked has been created.

It should be noted that incentives are not the only key to success. A transition to a sustainable transport sector is achieved through three strategies: minimisation of transports, more efficient vehicles and driving manners and a faster transition to renewable fuels. By using the biofuel chain and the system approach, the importance of combining incentives, or actions, can be understood.

Incentives on the individual level are not enough to achieve larger changes. Instead different incentives should be combined. The research of BFR concludes that combination between pulling and pushing actions seems be most efficient.

Although it is found to be difficult to evaluate how efficient different incentives are in this paragraph the major findings are described.

Financial incentives

A competitive fuel price is no only expected to have, but also proved to have a positive impact on sales. These kind of incentives can be transitionary until, like in Brazil happened, the market is fully developed. Research in BFR has shown that the costs for service and maintenance and fuel consumption are the most important factors costumers address when buying new cars. Also Stockholm states that in contradiction to previous studies operating cost seems to be an important factor in car buying behaviour. Low relative prices for renewable fuels likely had a positive impact on sales. Statistical analyses indicate that exemption from congestion charges in Stockholm has been the most important incentive along with a favourable price of E85.

In Sweden a national purchase subsidy of € 1.000 turned out not to be very effective. The subsidy has promoted sales, but significantly less. In the Netherlands a subsidy for offering alternative fuels was very succesfull. The fixed budget of € 3 million lead to 69 E85 fuelling stations and 31 natural gas stations.

Influence of fuel prices

The relative price of E85 needs to be sufficiently lower than petrol to make E85 a preferred option.

In Sweden “petrol equivalent” prices are used to compare bioethanol and petrol prices. The red lines in Figure 11 show petrol equivalent prices of E85 calculated to reflect higher fuel consumption (assumed to be 30-40%, but tests within BEST show the actual consumption to range from 20-30% more than petrol). In 2005 and during the time period April 2006-October 2008 the petrol equivalent price of E85 was higher than petrol. The graph is showing when the petrol price is below 10-12 SEK (appr. € 1,00 to € 1,20) per litre excise exemption is not enough to keep E85 competitive. Most of the 4 years the petrol prices were higher and the excise reduction could have been lower.

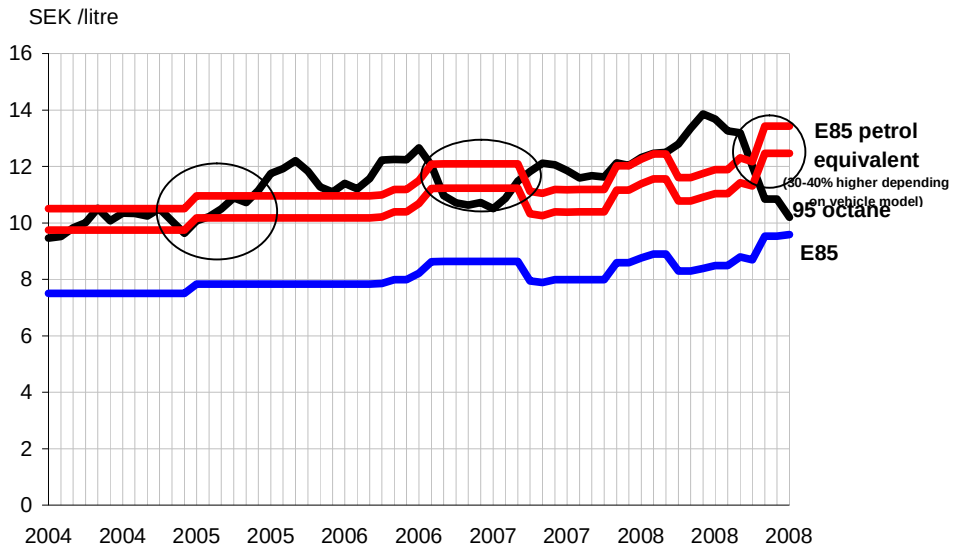


Figure 11: The Swedish price of petrol (lead free 95 octane) and the price of E85, monthly averages (Statoil)

In the long term ethanol can be competative with petrol. The Brazillian 40 year experience has lead to a fully grown ethanol production industry. Because of the steady and long term production growth ethanol has been able to become competitive with petrol now. The petrol price is freed to be set by the market and the ethanolprice is also allowed to fluctuate with the market. Almost all of the incentives are extinguished. It is now 25-50% cheaper to drive ethanol instead of petrol.

Non-financial incentives

Swedish experience is showing that free parking incentives influenced the number of clean cars to a lower degree and is less effective. Environmental aspects are just semi-important when buying new cars. Pulling measures as improved public transport and improved possibilities for cycling and walking, information or subsidies for renewable fuels are more positive experiences than measures as taxes or car free cities.

Timing of incentives

Incentives could play a quite important role, national and local/regional incentives can strengthen each other. Incentives can particularly play a role in the implementing phase.

Reaching a self sustaining market and the use of incentives can be needed for a long time. After almost 30 years Brazil has been able to phase out most of the incentives and ethanol has been able to become competitive with petrol now. Guaranteed purchases by the state-owned oil company Petrobas, low-interest loans for agro-industrial ethanol firms and fixed gasoline and ethanol prices started up the market. The economic competitiveness of Brazilian Ethanol is a reality for several years already. Today, the Brazilian ethanol market is fully capable of competing with the gasoline market. In the past, the exact percentage of mandatory Ethanol blend was continuously identified on basis of effective Ethanol production figures. Due to the high number of available models, the flex-fuel vehicles became a commercial success in Brazil and allowed Ethanol fuel consumption to achieve a 50% market share of the gasoline-powered fleet by February 2008.

If translated into the different market development phases of the S-curve the incentives should be timed as follows:

Beginner

In this phase of market introduction the focus should be on embedding a long term strategy for clean vehicles and fuels.

Incentives like **demonstration** of a limited number of clean vehicles and **testing** the in the real world will provide insight in the barriers that need to be reduced. **Promotional activities** in cooperation with strategic partners should start in this phase.

Market Introduction

The support of **refuelling infrastructure** should be intensified. Stimulation of the availability of **more models** of clean vehicles is important now. **Informational and promotional activities** should continue. The first **financial incentives** are to be introduced now and **private fleet owners** should be encouraged to buy clean alternatives.

Market Development and Partial Market Breakthrough

In this phase the encouragement to buy clean vehicles should **shift** from private fleet owners **to households**. The market needs to be **monitored** continuously. **Information** spreading needs to continue. By this time national policies will be formed and the **policy makers should be supported** with knowledge.

Market Breakthrough

When a market breakthrough has been reached **incentives can be taken out** carefully together with a **continuous monitoring** of the effects.

5 Conclusions and Recommendations

5.1 Conclusions

The importance of incentives

- Incentives are very important to create a market breakthrough for bioethanol;
- To reach a self sustaining market the use of the incentive instrument is needed for a long time;
- The perspective for long term incentives is very important for investors;
- Incentives can be extinguished when the bioethanol production industry is fully grown;
- Incentives can particularly play a role in the implementing phase.

Good incentives

- The one most important incentive is to make sure the price of ethanol is equal or lower then petrol;
- Congestion charging is a second most important instrument to stimulate the use of clean vehices and bioethanol;
- Incentives on operational costs are more effective then incentives on the initial costs;
- An environmental bonus by car manufacturers proved to be very effective in the Netherlands.

Less effective incentives

- A competitive fuel price has the most positive impact on sales;
- A one-time national purchase subsidy promotes significantly less sales;
- Free residential parking is not very effective.

Other factors

- Local bioethanol production industry is a key factor for market breakthrough;
- Cooperation with the right stakeholders proved to be very important.

Objectives

The objectives for the subject incentives in the BEST project were

- to have direct contacts with key decision makers and, on some sites, in close collaboration with companies, organizations and local governments to stimulate the development of effective incentives and incentives schemes;
- to have direct contacts with students, in high-school as for adult students;
- to study, implement and evaluate incentives as they are and how they could be.

It can be concluded that the objectives in the project were met. All the sites strengthened their network and have discussed incentives at several levels and with different stakeholders. Especially the BioFuel Region worked intensively with students, concluding that the need for information, knowledge and education is never satisfied and that coordination of the communication activities is necessary.

Also incentives were studied, implemented and evaluated. Incentives play a quite important role, national and local/regional incentives can strengthen each other. The experience from the Swedish and Brazilian partners have given the BEST project a unique chance to draw some conclusions on the effectiveness of incentives. By using the biofuel chain and the system approach, the importance of combining incentives, or actions, can be understood.

At some sites certain incentives were not possible to organise, the main reason for this was the lack of enough political support for excise measures. Also the sustainability discussion complicated the market introduction. Cooperation with stakeholders proved to be very important. By performing a stakeholder analysis BEST demonstrated a way to find out where to find stakeholders and with what stakeholders should be cooperated with.

Most sites have shown perseverance by taking the lead and organised local incentives for end users. The sites did not wait for the government to set an example, instead they lead the way. The local incentives differ from motor tax rebate, local purchase grants, access to restricted areas and free parking. Also information activities, demonstration and test facilities are organised. FFV's are embedded into restrictive measurement policies.

Which incentives work

The one most important incentive is to make sure the price of ethanol is lower or equal to petrol for a long time. This can be achieved by a tax exemption for the ethanol fuel. The price at the pump will decide, the focus needs to be on price mechanism of the different transport fuels. Along with this Congestion charging is a second most important instrument to stimulate the use of clean vehices and bioethanol. A one-time national purchase subsidy promotes significantly less sales as well as the free residential parking.

The importance of incentives

To reach a self sustaining market the use of incentives is needed for a long time. After almost 30 years Brazil has been able to phase out most of the incentives and ethanol has been able to become competitive with petrol now. Incentives proved to be very important when it comes to create a market breakthrough for ethanol cars. The perspective for long term incentives is very important. Financial incentives can be transitionary and can be taken out when the market is fully developed.

Installed incentives

Incentives for production

The presence of a local bioethanol production industry is a key factor in achieving appropriate national incentives for market breakthrough. The activities on incentives for production took place at the sites with own local economical benefits for the production of biofuels. The activities were much into cooperation with producers and fuel companies. Nanyang is stimulating the production of ethanol financially.

Incentives for vehicles

Most of the incentives for vehicles were into green procurement. Only in Sweden and the Basque country straight financial incentives for FFV's were installed. Also private companies can organise very effective incentives, like Ford-Netherlands, who has offered an environmental benefit for FFV buyers and Volvo offered eco-driving training to FFV buyers. For incentives on vehicles it is important to be able to define what the policy makers recognise to be a clean vehicle. Sweden has been able to organise a national definition of a clean vehicle. The local government of La Spezia considers an FFV as a clean vehicle. Rotterdam is working on a definition.

Incentives for distribution

Most incentives on distribution are to compensate some extra cost for the modification of service stations in order to offer bioethanol. In Sweden offering of at least one renewable fuel is mandatory for bigger stations, BFR guaranteed a minimal amount of E85 sales. The Basque country has been able to bring down the price through negotiations and coordination of ethanol transports.

Incentives through excise and taxes

Incentives on taxes and excise reduction to get the price of ethanol competitive with other fuels are the strongest incentives to implement in order to achieve a market breakthrough. The problem and the challenge is that this is a national matter and that it directly affects the national treasury. In order to achieve these kind of measurements it takes time, influence, endurance and strong discussions. Germany, Sweden and Spain took sufficient national excise measurements to make Ethanol more competitive at the pump. The UK, Italy and the Netherlands did not. In these last three countries the focus of the sites is on discussions with the national government.

Incentives for end users

Sites have been able to organise local incentives for end users in different ways. Besides this many good ideas are to be worked out. The local incentives differ from motor tax rebate , local purchase grants, access to restricted areas and free parking. Also information activities, demonstration and test facilities are organised. FFV's are embedded into restrictive measurement policies. Besides security, comfort and road-holding characteristic the costs for service and maintenance and fuel consumption are the most important factors costumers address when buying new cars.

5.2 Recommendations to cities and regions

• Don't wait for national government, instead lead the way; • Right timing of incentives in the market introduction phases is important:			
Beginners	**Market introduction**	**Market development and partial breakthrough**	**Market breakthrough**
embed a long term strategy; organize test rides; demonstrate low number in real world; start to promote; find stakeholders to work together.	more support refuelling infrastructure; more models of clean vehicles; continue promotion; introduce first financial incentives; aim at private fleetowners.	shift to households as well; monitor the market development; continue promotion; support policy makers with knowledge.	take out incentives carefully; monitor the market development.

If translated into the different market development phases of the S-curve the incentives should be timed as follows:

Beginner: The focus should be on embedding a long term strategy for clean vehicles and fuels. A stake holder analysis is a helpful tool in the development of the strategy. In rural areas partnerships can be formed. Incentives like demonstration of a limited number of clean vehicles and testing the in the real world will provide insight in the barriers that need to be reduced. Local and region governments can lead the way by being the early adapter. Promotional activities in cooperation with strategic partners should start in this phase.

Market introduction: The support of refuelling infrastructure should be intensified. Find independent service stations to work with. Stimulation of the availability of more models of clean vehicles is important now. Informational and promotional activities should continue. The first financial incentives are to be introduced now and private fleet owners should be encouraged to buy clean alternatives. Set a clear objective how long the incentive will be in place and when it will be taken away and communicate this clearly.

Market Development and Partial Market Breakthrough: In this phase the encouragement to buy clean vehicles should shift from private- and public fleet owners to households. The market needs to be monitored continuously. Information spreading needs to continue. By this time national policies will be formed and the policy makers should be supported with knowledge.

Market Breakthrough: When a market breakthrough has been reached incentives can be taken out carefully together with a continuous monitoring of the effects.

Most sites have shown perseverance by taking the lead and organised local incentives for end users. The sites did not wait for the government to set an example, instead they lead the way. The local incentives differ from motor tax rebate, local purchase grants, access to restricted areas and free parking. Also information activities, demonstration and test facilities are organised. FFV's are embedded into restrictive measurement policies.

Side effects like the attraction of new stakeholders, other bio-mass projects and interest to increase the bio-mass production capacity in rural areas can be expected.

5.3 Recommendations to national authorities

- bioethanol should be stimulated because of it's potential to reduce greenhousegas emissions;
- incentives for a competative fuelprice work;
- they have to be long term;
- tax exemption or excise reduction is needed for bioethanol for the time the break even point with petrol has not been reached;
- a national coordinated support programm is needed;
- the industrial and agricultural sector is waiting for clear, stable and certain legislation;
- a combination of pulling and pushing actions seems most effective;
- develop a common national definition of a clean vehicle;
- find the right stakeholders at all levels and in all the links of the biofuel chain.

The use of bioethanol has clear benefits. I has a high potential to reduce greenhousegas emissions and is already available. Especially if used in high blends it can really help a country to reach the CO_2 reduction targets. The flexifuel technique in which the high blend bioethanol is used is ideal for the transition towards low- or zero carbon transport and the fuel is already available. A government can act with the statement of these positive facts and can lead the way towards market introduction.

The key incentive for a market introduction of bioethanol is to make sure the price of ethanol is lower or equal to petrol for a long term. This perspective is very important for investors. A national coordinated support programm for bioethanol is needed to ensure this.

At the moment the price of bioethanol is higher then petrol in Europe and tax exemption or excise reduction for the ethanol fuel is necessary to be competative with petrol. This can be temporarely, with rising oil prices and bigger E85 production volumes a break even point will be reached.

Both the industrial and agricultural sector are waiting for a signal of clear political will of biofuel promotion. A clear, stable and certain legislative framework regarding incentives and supporting measures is necessary as a guarantee for long term investments.

Incentives on the individual level are not enough to achieve larger changes. Instead different incentives in all the links of the biofuel chain should be combined. A combination between pulling and pushing actions seems be most efficient.

There is a need for a common definition of what a clean car is. There is a risk of many definitions which will be very confusing. The one harmonisation of incentives that has first priority should be a common clean vehicle definition.

The right stakeholders at different levels should be brought together, encouraged and involved in an early stage. Especially the agricultural sector has got much to gain for the national and world markets.

5.4 Recommendations to Europe

- take the lead in the development of a common definition of a clean vehicle;
- make sure national car registers are fully adopted to be able to identify a clean vehicle;
- provide member states with clear and binding criteria for all biofuels;
- create a fuel taxation system same for all memberstates based on WTW CO_2 emission;
- make sure import regulations is not slowing down the markeet introduction of bioethanol.

Europe must take greater responsibility to ease/steer the production and the use of bioethanol in order to be able to reduce CO_2 emission. In the end the price at the pump will decide. At the moment the price difference between bio- and fossil fuel is still to big. A fuel price mechanism based on well to wheel CO_2 emission could be a solution and also a way to create a European ethanol market development.

Europe can facilitate and identify solutions for issues like fuel specifications, environment protection, duties and taxes, standards, classification. The pace of the EU shouldn't be an excuse for others to sit and wait though.

In order to start up a market and incentify the use of clean vehicles is essential to understand what a clean vehicle is. This is a complicated issue with a risk that many different definitions will pop up in the different member states. Europe should take the lead into this definition and make sure the national car registers are fully adopted to be able to identify a clean vehicle by register plate.

The same goes for the sustainability criteria for biofuels The sustainability discussion became a major obstacle for the introduction of bioethanol and FFV's. Europe should provide member states clear and binding criteria which all the biofuels used in Europe should meet, either if they are produced in- or outside the European Union. The implementation of sustainability criteria should be parallel to the development of biofuels. It is important not to slow down the market introduction. Import and production of biofuels should continue.

Annex I Installed incentives within BEST

	Production	Vehicles	Distribution	Taxes and regulations	End Users
Brandenburg	No incentives	No incentives	No incentives	National: - Tax rates biofuels from zero gradually increased except for 2nd generation biofuels until 2015	No incentives
Rotterdam	National: - Small subsidy to demonstrate innovative ways to produce 2nd generation biofuels	Regional: - Definition Clean Vehicle Ford: - Environmental bonus for FFV	National: - Subsidy on E85 and CNG pumps Rotterdam: - Local subsidy on E85 and Biogas pumps Tamoil: - Subsidy to make price E85 same as petrol	No incentives **Contraproductive:** - Fuel taxation E85 per liter - Trade system biofuels is not stimulating high blend biofuels	Local: - Free parking and access to environmental zone in air quality programmes Regional: - Trainings
Somerset	No incentives	National: - Company car tax reduction of 2% for FFV's	National: - Grant for alternative refuelling points	National: - Fuel duty derogation of 20 pence/litre (app. € 0,20) - A mandatory buy out price if biofuel mixtures are not met. **Contraproductive:** - Fuel taxation per litre, also with the duty derogation - RTFO is no stimulation for high blend biofuels	No incentives
Nanyang	National: - Fuel tax goes back to producer - 150€/ton fuel ethanol from government to producer	National: - Many research funds **Contraproductive:** - No clear direction government which technique to invest in	Local: - Compensation for rebuilding pumps to E10 - E10 is sold for 0.91xmanufacturer's price of regular petrol	Local: - No excise for denatured fuel ethanol - No road maintenance cost for 10 FFV's and 2 ethanol buses **Contraproductive:** - Custom duties on imported cars and buses	Local: - Free parking - Demonstration models E10

Stockholm	National: - Subsidies/investment grants to production plants	Local: - Green procurement National: - Definition Clean Vehicle	National: - Mandatory supply high blend biofuels at bigger stations	National: - No energy or CO_2 tax on biofuels until 2013; - Lower vehicle tax and company taxes for clean vehicles.	National: - 10 000 SEK (app €1.000) investment grant Local: - Priority lane at Armanda (Taxi) - No congestion charge - City (and county) procurement requires clean vehicles in contracts
La Spezia	No subsidies	Local: - Ethanol cars considered like other low emission vehicles	No incentives	No incentives **Contraproductive:** - Fixed amount duty reduction Italian bioethanol just enough to replace ETBE	Local: - Investment grant - Access to limited zones and taxi/bus-lanes - Free parking in almost all parking spaces
Basque	No subsidies	Regional: - € 400 purchase grant for vehicles with CO2<120g/km	Regional: - Long term contract with favourable conditions offered to stations - Coordination of transport/supply of E85 - Financial support for flexi pumps	National: - No hydrocarbon excise duty on biofuels	Local: - 50% rebate on annual motor tax

Annex II References

D 5.01	Report on recommendations to UK Strategy
D 5.04	10 min guide on green procurement of clean vehicles
D 5.05	Green pruchasing and the public sector – what can and has been done in BFR
D 5.10	Report incenives Brandenburg
D 5.11	Information and education activities in the BioFuel Region
D 5.12	Evaluation existing incentives BFR
D 5.12	Promoting Clean Cars Report Stockholm
D5.13	Report incentives Basque
D5.13	Report incentives La Spezia
D5.13	Report incentives Nanyang
D5.13	Report incentives Rotterdam
D5.13	Report incentives Somerset
D5.13	Report incentives Stockholm

Annex III Some examples of different legislation regarding Ethanol fuels

Hungary

To be eligible for reduced taxes, ethanol must be produced within EU, from feedstock grown within EU, be denatured under supervision of the relevant authority, notifying date and time.

Low-blend ethanol must be denatured with 1% ETBE

E85 must be denatured with1% isobutanol and 1% tertiärbutanol – but not using ETBE

No standard for ED95, i.e. ED95 is only allowed for pilot tests

Belgium:

To be eligible for reduced taxes, ethanol must be produced in Belgium by an approved company. 3 companies are approved, none of them has any production. Approval is only open for application every 6th year.

No low-blend, E85 nor ED95 can be sold if not made from ethanol from these 3 companies

UK:

Ethanol for low-blend, E85/ED95 needs to fulfil UK denaturing standards. Other MS standards are not recognised

Poland

To be eligible for reduced taxes, ethanol must be produced within EU

No standards for E85/ED95.

France

To be eligible for reduced taxes, ethanol must be produced within France.

A national E85 standard including 3 version summer/autumn/winter

Ireland

To be eligible for reduced taxes, ethanol must be produced within Ireland.

Austria:

To be eligible for reduced taxes, ethanol in E85 must be blended within Austria.

ANNEX IV Clean Vehicle definition Stockholm

The Clean Vehicle Definition for the City of Stockholm.

Passenger cars with a maximum of four seats plus the driver's seat

This definition of clean vehicles with a maximum of four seating places in addition to the driver's seat is in conformance with the regulation SFS 2006:1572 for state purchase and leasing of clean vehicles. This is automatically updated if/when the government updates or adjusts their definition for procurement of clean vehicles. This implies that cars with a first registration date after the new regulations come into effect are automatically assessed in accordance with the new definition.

Petrol or diesel cars

According to information in the Swedish Road Administration's listing, a passenger car complying with at least environmental class 2005 and equipped to run only on petrol or only on diesel may not exceed 120 grams per kilometre of carbon dioxide emissions in mixed driving conditions. Also in the Swedish Road Administration's information, particle emission in passenger cars equipped with compression ignited engines must be lower than 5 milligrams per kilometre.

Clean vehicles that can run on alternative fuels, except LPG

Fuel consumption per 100 kilometres may not exceed 9.2 litres petrol [9], 8,4 litres diesel or 9,7 cubic metres of gas[10] in mixed driving conditions in cars complying with at least environmental class 2005 and equipped with technology to run totally or partially with fuels other than petrol, diesel or LPG. The most advantageous value applies for passenger cars that can be run on two different fuels.

Should the vehicle not be approved for the specific alternative fuel, the information from the manufacturer or agent must ensure the vehicle running on that fuel will comply with at least the environmental class 2005 requirements and, should the vehicle run on a compression ignited engine, that the particle emission is lower than 5 milligrams per kilometre (at least environmental class 2005PM).

The maximum levels mentioned in the first paragraph above for petrol and diesel run clean vehicles, apply for passenger cars that cannot be run on fuel mixtures in which the alternative fuel is not predominant, calculated on the fuel's energy content.

An automatic gear passenger car is considered to meet the maximum levels indicated in the first paragraph, if it's identical with a manual gear passenger car which meets the applicable values.

For a car to be classified as environmental class Electricity, the information from the car manufacturer or agent for cars, must state the electrical energy consumption does not exceed 37 kilowatt hours per 100 kilometres.

[9] At the moment E85 is not certified vehicle fuel. The fuel consumption requirements for ethanol cars are therefore set as for the petrol.

[10] The most advantageous consumption value of either gas or petrol can be used in gas operated models approved for both gas and petrol fuels.

Passenger cars with a minimum of five seats plus the driver's seat

Definition

Passenger cars/mini-vans with a minimum of five seats in addition to the driver's seat are considered clean if equipped with either of the following technology:

a) Passenger/mini-van run partially or entirely on electricity.

b) Passenger car/mini-van equipped with technology to operate totally or partially with fuels other than petrol, diesel or LPG.

Vehicles with compression ignited engines must meet the particle requirements for at least environmental class 2005PM according to the listings in the Swedish Road Administration.

Vehicles run on electricity (Category A) must be of environmental class Electricity or Hybrid.

Vehicles with alternative fuels (Category B) must be run with a fuel mixture in which the alternative fuel is predominant, calculated on the fuel's energy content. It must be classified for at least environmental class 2005/2005PM or higher. If the vehicle is not approved for the alternative fuel, the information from the manufacturer or agent must assure that the vehicle meets the requirements of at least environmental class 2005/2005PM running on this fuel.

Light trucks or buses
up to 3.5 tons of total weight

Definition

Transport vehicles registered as light trucks or busses are considered as clean vehicles if they are equipped with either of the following technologies:

a) Light trucks or busses which are run totally or partially on electricity.

b) Light trucks or busses equipped with technology to operate totally or partially with fuels other than petrol, diesel or LPG.

Vehicles with compression ignited engines must meet the particle requirements for at least environmental class 2005PM according to the listings in the Swedish Road Administration.

Vehicles run on electricity (Category A) must be of environmental class Electricity or Hybrid.

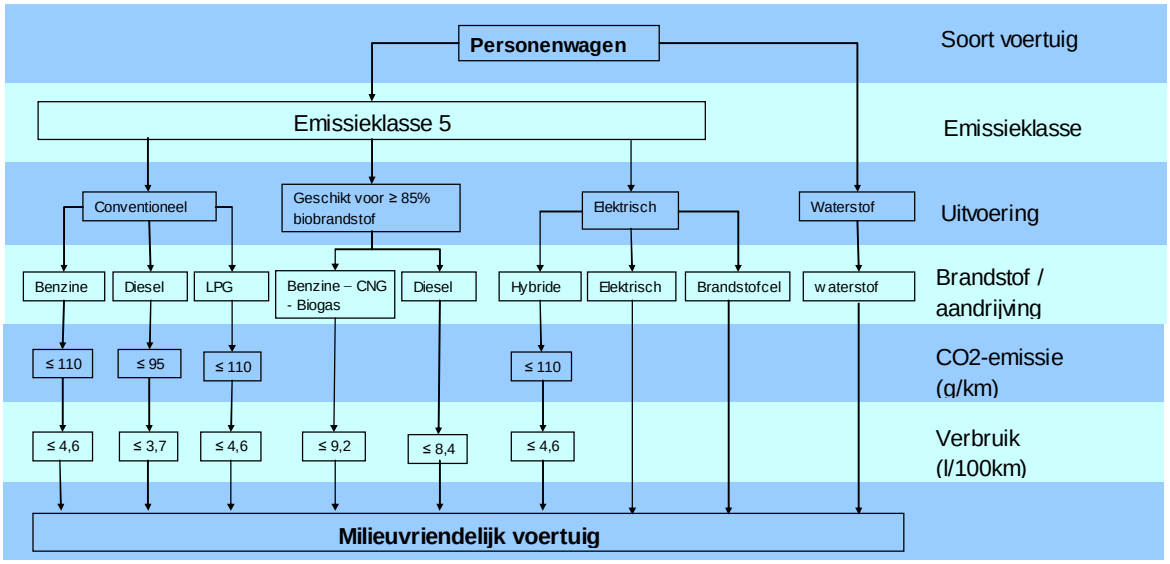
Vehicles with alternative fuels (Category B) must be run with a fuel mixture in which the alternative fuel is predominant calculated on the fuel's energy content. It must be classified for at least environmental class 2005/2005PM or higher. If the vehicle is not approved for the alternative fuel, the information from the manufacturer or agent must assure the vehicle meets the requirements of at least environmental class 2005/2005PM running on this fuel.

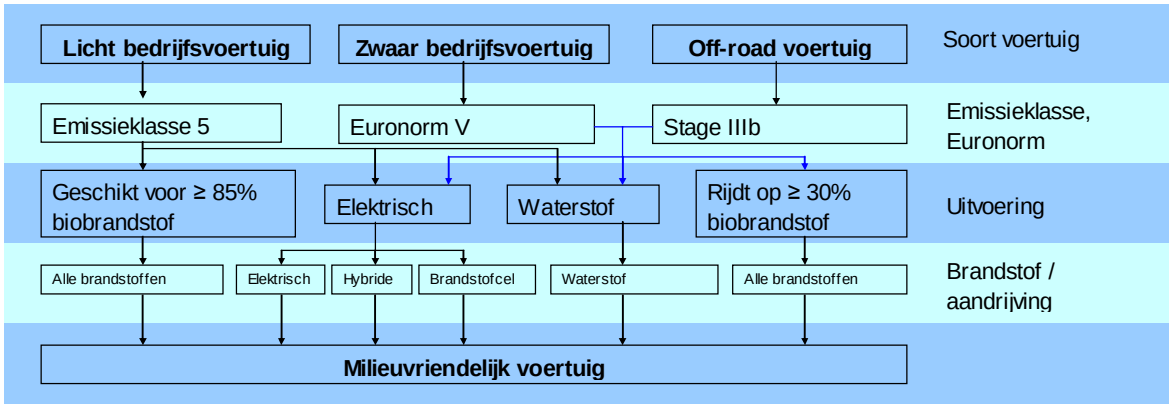
User Requirements – applicable to all the above vehicle categories

Vehicles operated on alternative fuels must be driven on the alternative fuel at least half of the driving distances to be considered clean. The requirement applies to the yearly average value. It must run as much as possible on the fuel presented as a renewable energy source.

To drive half the driving distance, 45% of the fuel volume in cubic meters must be gas, compared with petrol calculated in litres. To drive half the driving distance on E85, 60% of the purchased fuel must be made up of E85.

Annex V Clean Vehicle definition Rotterdam





Annex VI A ten-minute-guide green procurement

Ten minutes for greener transports – A guide to procurement of clean vehicles from the BioFuel Region (BFR)

This guide is aimed at procurement officers within the public sector. The purpose is to promote a green approach during the next procurement process.

You determine the results
The goal of the BioFuel Region is to become a world-leading region for transitioning the transport sector to the biofuel. This includes creating jobs and being a knowledge leader. The goal is to replace petrol and diesel with renewable fuel (ethanol, biogas, FT diesel) from raw materials from forests or fields. You and all other members of BFR are important in efforts to become an example for others.

There are three strategies for the transition of the transport sector, i.e. a sustainable transport system:

- Fewer transports
- More efficient vehicles and driving methods
- Faster transition to renewable fuels

Within the public sector in Sweden today, there are clean vehicles for most needs. Sweden together with Brazil and the United States are world leading in the sale of clean vehicles. The government in Sweden has decided that 85 percent of new vehicles purchased or leased by state authorities are to be clean vehicles. In the BFR, 10 to 12 percent of new car purchases are clean vehicles. The public sector is both behind the private and government sector, which is why your choices are so important.

Why clean vehicles?

- **Membership in BFR**

Purchasing clean vehicles is living as you learn.

- **The Environment**

Clean vehicles reduce local emissions as well as CO_2 from fossil fuels.

- **Energy**

Access to fossil fuel is limited.

- **Price**

The price for fossil fuel is expected to increase because of international instability and limited resources while renewable fuels are expected to stabilise.

- **A good example**

Purchasing clean vehicles is
- A way of contributing to a greener second-hand market for your citizens.
- A way of credibly showing you are taking responsibility for the environment and health.

How – a few words

- **Focus**
  Direct the initial procurement decision based on a strategy for a sustainable transport system.
- **Needs**
  What needs are there in terms of areas of use, size and number? What need can be covered by other means of transport, such as clean carpools and/or green taxis and/or buses?
- **Markets and infrastructure**
  What renewable fuels are available today and what will be available in the future?
- **Evaluation**
  How should the results of purchases be verified and evaluated?
- **Requirements and recommendations**
  What classes of vehicles need what requirements?

Differentiate between vehicles and fuel
For vehicles, the same requirements as normal apply (environmental, safety and ergonomics).

For renewable fuels, new requirements may be needed. The requirements can specify either renewable fuel in general or require specific fuel types[11].

The ability to consider environmental aspects is primarily determined through the technical specification, selection criteria, and allocation criteria.

Support for BFR members

- BFR offers process support, political influence and support. Organisation support (e.g. formulate a plan for procurement).
- BFR offers competence development

More information

- BioFuel Region, www.biofuelregion.se
- Swedish Road Administration, www.vv.se
- Clean vehicles, www.miljofordon.se
- Green drivers, www.gronabilister.se
- ”Procurement guide for environmentally friendly and safe transports”, www.stockholm.se
- Mikael Brändström, BioFuel Region, 070-662 89 38 alt. mikael@esam.se

[11] Today there is no legal obstacle in the Public Procurement Act to require a certain type of fuel since there are several competing types of vehicle models on the market.