BEST
BioEthanol for Sustainable Transport

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Updated Sustainability Assessment: A comparison of BEST sites 2007-2008

June 2009, London

BEST Deliverable 9.23

Stockholm (SE), BioFuel Region (SE), Rotterdam (NL), Somerset (UK), Brandenburg (DE), Basque Country (ES), Madrid (ES), La Spezia (IT), Nanyang (CH), São Paulo (BR)

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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BioEthanol for Sustainable Transport

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SUMMARY

The project Bioethanol for Sustainable Transport (BEST) aims to demonstrate the use of bioethanol as a transport fuel. It aims at studying the prerequisites for an extensive substitution of fossil fuels (petrol and diesel) with bioethanol leading to a market breakthrough of bioethanol fuel across Europe. It also compares the experience of two additional countries (Brazil and China). One of the key aims of BEST is to test and improve the reliability and energy-effectiveness of bioethanol as a fuel, as well as assessing its environmental, economic and societal (sustainability) benefits. The sustainability assessment is in line with emerging EU and global assurance and certification systems.

The current report presents a comparison of the criteria selected for BEST sites in 2007 and 2008. This comparison shows the differences the sites have experimented in a two year period showing some advances in some sites (e.g. Stockholm, Madrid, Nanyang, Rotterdam) and some sites with no changes or few changes (e.g. La Spezia, Somerset, Brandenburg).

The final sustainability report will be able to present a more comprehensive assessment of all sites.

1. INTRODUCTION

World ethanol production has increased significantly in recent years and more than 40 countries have already introduced or are interested in introducing fuel ethanol programs of some sort. Currently, world production and consumption is dominated by the USA and who are responsible for 70% of world production. Table 1 shows a breakdown of world production of ethanol by major regions, from 2000 to 2004. It is important to notice that ethanol has many industrial applications other than fuel e.g. chemical and pharmaceutical applications. However, in recent years growth in demand has primarily been driven by the transport sector seeking alternatives to petrol. For example, global ethanol production in 2005 was about 45Bl of which at least 33Bl were used for fuel. And for 2006 of a world production of 51Bl, 39Bl were for fuel use (see Walter et al, 2008).

	2004	2003	2002	2001	2000
Europe	**4.01**	**4.27**	**4.08**	**4.03**	**3.56**
- EU-15	2.58	2.37	2.22	2.11	2.07
America	**29.32**	**26.23**	**23.26**	**20.68**	**19.26**
- Brazil	15.28	14.81	12.62	11.54	10.59
- USA	12.90	11.18	9.60	8.11	7.60
Asia	**6.64**	**6.65**	**6.23**	**6.05**	**5.90**
Oceania	**0.27**	**0.16**	**0.16**	**0.18**	**0.15**
Africa	**0.59**	**0.59**	**0.58**	**0.55**	**0.54**
South Africa	0.41	0.40	0.40	0.40	0.40
World	**40.73**	**38.30**	**34.71**	**31.89**	**29.81**

Source: Lichts, F (2004) in UNICA, 2004.

Table 1 World production of ethanol, 2000-2004, in billion litres (B/l)

Most of the increased production in recent years has occurred in the United States, with significant increases also in Brazil, France, Germany, and Spain. The United States became the leading fuel ethanol producer in 2006, with over 18Bl, jumping ahead of longstanding leader Brazil. Brazilian ethanol production increased to almost 18Bl in 2006, nearly half the world's total. All fuelling stations in Brazil sell both pure ethanol and gasohol, a 25 percent ethanol/75 percent gasoline blend1. Demand for ethanol fuels, compared to gasoline, was very strong in 2007, due to the introduction of so-called "flexible-fuel" cars by automakers in Brazil since 2003. Such cars are able to use either blend and have been widely embraced by drivers, with an 87 percent share of all auto sales in Brazil in 2008. In recent years, a significant global trade in fuel ethanol has emerged, between 3 to 3.5 Bl annually, with Brazil being the leading exporter.

According to the FAO (2008), in 2007 around 85 percent of the global production of liquid biofuels was in the form of ethanol (Table 2) with the major contributions from Brazil and the USA (representing nearly 90 percent of total production). The remainder comes from Canada, China, the EU (mainly France and Germany) and India. Table 2 shows the major producers of both biodiesel and ethanol in the World. Biodiesel production is concentrated primarily in the EU (with around 60 percent of the total), followed by USA China, India, Indonesia and Malaysia (FAO, 2008).

[1] The blend varies between 20 and 25 percent. With the FFVs the blend varies more widely, depending on the price of ethanol and gasoline

Country	Fuel ethanol	Biodiesel
	billion liters	
1. United States	34	2.0
2. Brazil	27	1.2
3. France	1.2	1.6
4. Germany	0.5	2.2
5. China	1.9	0.1
6. Argentina	—	1.2
7. Canada	0.9	0.1
8. Spain	0.40	0.3
9. Thailand	0.3	0.4
10. Colombia	0.3	0.2
11. Italy	0.13	0.3
12. India	0.3	0.02
13. Sweden	0.14	0.1
14. Poland	0.12	0.1
15. United Kingdom	—	0.2
EU Total	**2.8**	**8**
World Total	**67**	**12**

Table 2 Ethanol and biodiesel production by country in 2008 (REN21, 2009)

Current ethanol installed capacity is far greater than actual production, that is, 4.38 Bl. This means that almost two-thirds capacity remains idle. On the top of the table, we find France with close to 1.2 Bl installed capacity, followed by Germany with about one 1Bl, Spain with 558 Ml and Italy with 320 Ml. There is also a further 3.77 Bl under construction, according to EBIO (www.ebio.org). Of the EU-27 MS, 16 are currently building new ethanol plants

There are also new comers in this market such as the UK with 840 Ml capacity under construction, and the Netherlands with 580 Ml. These two countries have little tradition in bioethanol production. France follows with 425 Ml, then Spain with 265 Ml and Germany with 218 Ml.

United States is currently the largest consumer of ethanol fuel; it had 130 operating ethanol plants and production capacity of 26Bl/year in 2007, a 60 percent increase over 2005. A further 84 plants were under construction or expansion, which when completed would almost double production capacity. Brazil continues its ethanol expansion plans which begun in 2005, and when completed, would more than double its production capacity by adding 22 billion litres/year of from new sugar plantations by 2012. Total investment required in Brazil during 2006–2012 may exceed $15 billion (REN21, 2007).

It is extremely difficult to predict what will be future energy demand. As for the transportation sector, it is generally accepted by most experts that demand will continue to grow faster than any most other sectors. As with regard to the possible share of biofuels in the transport sector, there have been many attempts to estimate what could be this contribution, which ranges from about 2 percent to over 30 percent of the world gasoline and diesel demand (Diaz-Chavez & Rosillo-Calle, 2009). Walter et al (2008) have estimated ethanol fuel demand in 2005 and 2030 based on current trends in the transport sector (see Table 3).

Country/region	Consumption (Bl) in 2005	Consumption (Bl) in 2030	Annual growth rates 2005-2010	Annual growth rates 2005-2030
USA	15.3 (46.4%)	55.3 (20.3%)	8.4%	5.3%
EU-25[2]	1.6 (4.9%)	36.0 (13.2%)	26.0%	13.2%
Japan[3]	0.5 (1.5%)	9.3 (3.4%)	34.3%	12.5%
China[4]	1.0 (3.0%)	21.6 (7.9%)	20.4%	13.1%
ROW-BR[b]	1.3 (3.9%)	100.2 (36.8%)	60.8%	19.0%
Brazil[6]	13.3 (40.3%)	50.0 (18.3%)	8.6%	5.4%
World	33.0	272.4	15.1%	8.8%

Source: Walter et al (2008). See the source for further details of calculations and additional sources

Table 3 Fuel ethanol consumption in the world (estimates for 2005 and for 2030)

In December 2008 the European Parliament adopted the Directive on the promotion of energy from renewable sources. This Directive set the targets by 2020, to cut greenhouse gas emissions by 20%, to establish a 20% share for renewable energy, and to improve energy efficiency by 20% (20-20-20). These agreements also included reporting obligations for the Commission on the impact on social sustainability in the EU and in third countries of increased demand for biofuels. In addition, the EU biofuel policy also established the assessment on the impacts on the availability of food at affordable prices, in particular for people living in developing countries. Based on the results of these Commission reporting obligations on social sustainability, a revision of the Renewable Energy Directive is foreseen to possibly include additional criteria ensuring the socio-economic sustainability of (biomass and) biofuels (EC, 2008).

2. ASSESSMENT PROPOSAL

The assessment made in this report follows the proposal and objectives explained in the report of the deliverables Deliverable No 9.11 & 9.15 of Work Package 9. In place with the Evaluation as a continuing process throughout the whole project with continues reviews of the main outcomes and activities specified in the project. Figure 6 shows the approach and activities for the sustainability appraisal.

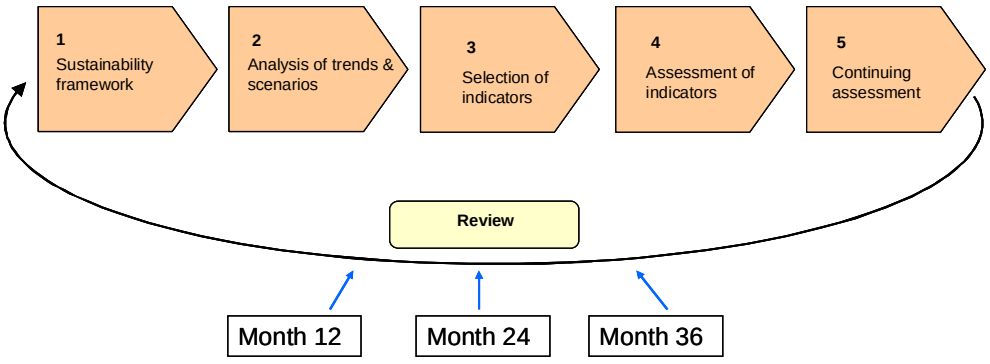


Figure 1 Sustainability work proposal

2.1 Framework for Sustainability Assessment

The methodology followed for the sustainability assessment in BEST was explained in the report of Deliverables No 9.11 and 9.15. This involved the selection of some indicators (explained below) under a sustainability framework defined for the BEST project based on Diaz-Chavez 2006.

The sustainability assessment for BEST is based on the project's general objectives, as well as the objectives and particular activities of working groups (particularly WKP 1 - 5, 7 and 9, according to the milestones of the project).

This has also involved the review of best practices and available certification systems suitable to the characteristics of the BEST project.

TASKS	Information	Source	E	S	Ec	P
WP1						
1. 2.Cars Fleets & private	Air pollution and lifecycle GHG	Reports to IC WP6 and WP9	√			
3. Conversion of petrol vehicles	Emissions GHG		√			
5. Energy	GHG		√			
WP2						
1 Ethanol buses	GHG, NOx, PMs		√			
2. Installation Fuel stations E95	Performance and reliability		√		√	√
3. E95 study	Production by Nedalco		√	√	√	√
WP3						
1. E-diesel	GHG, NOx, CO, PM, HC		√			
2. Introduction E10	Production by Nedalco		√	√	√	√
	Public attitude			√		
WP4						
1. Ethanol distribution	Ethanol distribution		√		√	√
3. Long term supply of ethanol	Production and supply of ethanol		√	√	√	√
WP7						
1.-4 Communication and dissemination	Communication and dissemination			√		√
WP9						
5. Sustainability provision of Biofuels to Bioethanol	BFR report and cities					
5. Potential Certification system	BEST project partners		√	√	√	√
M9.4	Generation of wealth and jobs			√		

E = environmental; S = social; Ec = economic; P = policy and institutional

Table 4 Baseline information according to BEST tasks

3. CHARACTERISTICS OF BEST SITES

The following section presents the updated characterisation of the sites according to the indicators selected by WP9 compared to the report on the deliverables No 9.11 and 9.15 to assess the changes in 2 years of the project.

Available data and assessment are focused mainly on the second and third year of the project (months 12-36) as the sustainability report was considered to start at a later stage when the BEST project was more consolidated. The indicators are presented in Table 5.

Based on indicators from data linked to the selected issues was analysed per site. (Table 6) considered for the sustainability assessment of the project (see Table 5). The data was provided by site managers and completed with a brief literature review.

Criteria	E	S	Ec	P
Local Government Programme component	√			√
Geographical Application	√			
BEST objectives (vehicles)	√	√	√	
BEST related to other EU projects	√			√
Local PPPs related to biofuels				√
Number of vehicles using biofuels (2006)	√		√	
Number of cars (light vehicles) registered (2006)	√		√	
Barriers	√	√	√	√
Public attitude	√	√	√	√

Table 5 Data baseline criteria and sustainability issues

The data gathered is compared between 2007 and 2008. Some sites showed changes and some others continued with the same criteria. The tables with the criteria for each site are presented next.

Brandenburg is not included in this report as the site did not provide information. Somerset presents a single view as it presented the information only for 1008. Nevertheless a short comparison of the changes occurred in the site is presented within the table.

3.1 Biofuel Region (BFR), Sweden

Criteria	2007	2008
Local Government Programme component	The Region through local authorities (County councils, Municipalities, etc.) and companies.	
Geographical Application	County of Västerbotten (AC) and county of Västernorrland (Y) 77 100 km^2	
BEST objectives (vehicles)		2500 Flexi Fuel cars
BEST related to other EU projects	The BEST project is yet to be taken into account by any legal or political framework. One of the main objectives is an integration of BFR (indirectly BEST) with the local political framework within local policies, regulations and plans. • NILE (FP6) New Improvements for Ligno-cellulosic Ethanol • NILE is a 4-year integrated project addressing the topic "New and advanced concepts in renewable energies - Biomass". Its overall objective is to develop cost effective production of clean bioethanol from lignocellulosic biomass (LCB), enabling its use as a transport biofuel. NILE will develop, investigate and evaluate new technologies for efficient conversion of lignocellulose to bioethanol. These technologies will be verified using a unique and fully integrated pilot plant providing reliable data for global socio-economic and environmental assessments and for the design of a future demonstration unit. • SEKAB is a partner in the project. (Imperial College is also a partner in the project.)	Forest power. Bothnia Atlantica. The Botnia-Atlantica programme is a cross-border cooperation programme intended to co-fund projects within the Botnia-Atlantica area. The programme is one of several European territorial Cooperation programmes, co-funded by the European Regional Development Fund. The project objectives are: • To help reach the renewable energy goals and greenhouse gas emission levels set by the EU *1997-White Paper for Renewable Energy* and the *Renewable Energy Road Map* by increasing the share of sustainable and renewable energy sources from the forests in Bothnia Atlantica area, up to the highest level in EU. • To increase the value and quality of products and services within the forest fuel supply, feed-stock conversion and combustion chains. • To increase the general knowledge about the renewable forest energy sources and utilization within the Bothnia Atlantica area
Local PPPs related to biofuels	Within the two counties there are objectives in the area of transport and air quality. Those objectives are sub-objectives from the national environmental objectives. The two counties do not have any policy, programme or plan exclusively regarding biofuels. The different members within BFR have different policies. For example, some of the municipalities have transport policies regulating the usage of biofuels.	The vision of BioFuel Region has been updated and is to be a world-leading region in sustainable transport based on biofuels and bioproducts from renewable raw materials. Therefore we focus on being in the forefront of societal change, industrial and regional development, and to increase the availability of renewable raw materials

	The main objective in BFR is to be a world-leading region in the process of implementing a renewable transport system based on biomass. • Self sufficient in transport fuels in 2020 • Regional and industrial growth • Leading in knowledge, 2020	
Original conditions	There are no statistics available the period before BEST of vehicles using other the ethanol.	
Number of vehicles using biofuels (2006)	1539 total numbers of clean cars in traffic in BFR (2005/2006) 786 (AC) total number of cars in traffic (2005/2006) 753 (Y) total number of cars in traffic (2005/2006)	**Clean cars (ethanol, biogas, biodiesel, electric, low consumption gasoline vehicles)** 1649 total numbers of clean cars in traffic in BFR (2005/2006) 826 (AC) total number of clean cars in traffic (2005/2006) 823 (Y) total number of clean cars in traffic (2005/2006) 2565 total numbers of clean cars in traffic in BFR (2006/2007) 1320 (AC) total number of clean cars in traffic (2006/2007) 1245 (Y) total number of clean cars in traffic (2006/2007) 3796 total numbers of clean cars in traffic in BFR (2007/2008) 1921 (AC) total number of clean cars in traffic (2007/2008) 1875 (Y) total number of clean cars in traffic (2007/2008) **Ethanol cars** 1475 total numbers of ethanol cars in traffic in BFR (2005/2006) 744 (AC) total number of ethanol cars in traffic (2005/2006) 731 (Y) total number of ethanol cars in traffic (2005/2006) 2248 total numbers of ethanol cars in traffic in BFR (2006/2007) 1183 (AC) total number of ethanol cars in traffic (2006/2007) 1065 (Y) total number of ethanol cars in traffic (2006/2007) 3313 total numbers of ethanol cars in traffic in BFR (2007/2008) 1697 (AC) total number of ethanol cars in traffic (2007/2008) 1616 (Y) total number of ethanol cars in traffic (2007/2008)

		Biofuels other than ethanol (biodiesel, biogas, pure plant oils) 19 total numbers of other biofuel cars in traffic in BFR (2005/2006) 11 (AC) total number of other biofuel cars in traffic (2005/2006) 8 (Y) total number of other biofuel cars in traffic (2005/2006) 23 total numbers of other biofuel cars in traffic in BFR (2006/2007) 14 (AC) total number of other biofuel cars in traffic (2006/2007) 9 (Y) total number of other biofuel cars in traffic (2006/2007) 32 total numbers of clean cars in traffic in BFR (2007/2008) 17 (AC) total number of cars in traffic (2007/2008) 15 (Y) total number of cars in traffic (2007/2008) **Electric cars** 64 total numbers of electric cars in traffic in BFR (2005/2006) 42 (AC) total number of electric cars in traffic (2005/2006) 22 (Y) total number of electric cars in traffic (2005/2006) 105 total numbers of electric cars in traffic in BFR (2006/2007) 55 (AC) total number of electric cars in traffic (2006/2007) 50 (Y) total number of electric cars in traffic (2006/2007) 153 total numbers of electric cars in traffic in BFR (2007/2008) 83 (AC) total number of electric cars in traffic (2007/2008) 70 (Y) total number of electric cars in traffic (2007/2008)
Number of cars (light vehicles) registered (2006)	242541 total numbers of cars in traffic in BFR (2005/2006) 119551 (AC) total number of cars in traffic (2005/2006) 122990 (Y) total number of cars in traffic (2005/2006)	242541 total numbers of cars in traffic in BFR (2005/2006) 119551 (AC) total number of cars in traffic (2005/2006) 122990 (Y) total number of cars in traffic (2005/2006) 244105 total numbers of cars in traffic in BFR (2006/2007) 120494 (AC) total number of cars in traffic (2006/2007) 123611 (Y) total number of cars in traffic (2006/2007)

		246302 total numbers of cars in traffic in BFR (2007/2008) 121682 (AC) total number of cars in traffic (2007/2008) 124620 (Y) total number of cars in traffic (2007/2008)
Barriers	• Economical • Time • Quality • Acceptance • Supply of cars, fuel, pumps, among others	No change. Survey of barriers can be found in deliverable D1.3 Decision-makers attitudes
Public attitudes	There are no surveys available about current attitudes regarding the use of biofuels in BFR	Deliverable - D9.4 Consumers and clean cars in Sweden - D9.5 Site comparisons of consumer data - D1.3 Decision-makers attitudes - D9.24 A comparative report about consumers' attitudes, worldviews and purchase intentions for clean vehicles Includes information about public attitudes towards biofuels

3.2 Stockholm, Sweden

Criteria	2007	2008
Local Government Programme component	Environment and Health Administration	Environment and Health Administration
Geographical Application	Stockholm County	Stockholm County
BEST objectives (vehicles)	• 125 FFVs, 27 ethanol long buses, 100 standard buses, 5 fuel stations	100 FFVs, 27 ethanol long buses, 100 standard buses, 5 fuel stations
Legal or political framework	The Stockholm City council has decided: • To be fossil free by 2050 • All new vehicles that are bought to the city fleet in Stockholm should be clean • 60 % clean vehicles in the city fleet by 2006 • 4 % of all sold vehicles in Stockholm should be clean vehicles • 5 % of all fuels in Stockholm should be clean fuels	The Stockholm City council has decided: • To be fossil free by 2050 • All new vehicles that are bought to the city fleet in Stockholm should be clean • 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 • 10 % renewable fuelled trucks by 2014
BEST related to other EU projects	On going: • BiogasMax • Nisches (FP6 – 2003 transport 3/DG Research) • It is also related to the finalised projects • Trendsetter (Civitas) • CUTE	Yes the BEST project is related to the ongoing projects: • BiogasMax • Nisches (FP6 – 2003 transport 3/DG Research) • Catalist It is also related to the finalised projects • Trendsetter (Civitas) • CUTE
Local PPPs related to biofuels	• No tax on renewable fuels - 2013 • Lower tax on company cars if they are ”clean” - 2011 • From April 2006 all large fuelling stations need to provide one renewable fuel - 700 stations in 2006 - 2 400 (out of 4 000) stations in 2009	• No tax on renewable fuels - 2013 • Lower tax on company cars if they are ”clean” - 2011 • From April 2006 all large fuelling stations need to provide one renewable fuel - 700 stations in 2006 - 2 400 (out of 4 000) stations in 2009 • State funding programs

	• State funding programs ´- production of fuel and demonstration of vehicles • 75 % of all vehicles bought by state administrations should be ”clean”	- production of fuel and demonstration of vehicles 85 % of all vehicles bought by state administrations should be ”clean” (in 2009 this figure was raised to 100%)
Original conditions		
Number of vehicles using biofuels	(2006) • Biogas, City of Stockholm: 2920 • Biogas, Stockholm County council: 3714 • Electric hybrid, City of Stockholm: 1342 • Electric hybrid, Stockholm County council: 2810	(2007)* Biogas, City of Stockholm: 2 621 Biogas, Stockholm County council: 3 639 Electric hybrid, City of Stockholm: 2 054 Electric hybrid, Stockholm County council: 3 951
Number of cars (light vehicles) registered	(2006) City of Stockholm: 317 798 Stockholm County council: 838 717	(2007) City of Stockholm: 296 207 Stockholm County council: 783 417
Incentives	• National and Local incentives: • Local include: • vehicles - common procurement activities • free parking • no congestion charging (to be extended?) • information(- web-site, newsletter, test fleet, sales promotion) • Low blending: • 5% in all petrol • 5 % FAME in all diesel	National incentives: • No tax on renewable fuels - 2013 • Lower tax on company cars if they are ”clean” - 2011 • From April 2006 all large fuelling stations need to provide one renewable fuel - 700 stations in 2006 - 2 400 (out of 4 000) stations in 2009 • State funding programs - production of fuel and demonstration of vehicles • 85 % of all vehicles bought by state administrations should be ”clean” • Low blending: 5% in all petrol (soon to be 10% ?) and 5 % FAME in all diesel Local incentives in Stockholm Clean procurement in Stockholm: • Demand clean transport in procurement of all transport services - i.e taxi, goods distribution, waste collection

		Taxis: • Clean taxis get customers first at Stockholm Arlanda Airport (soon also on the Central Train Station) • A clean taxi is automatically chosen when ordering from the telephone number within the City • Taxi companies carrying out services for the city need to have 100+50+50 clean taxis • When paying for taxi services for elderly and sick - clean taxis get more money per km driven Local incentives: • vehicles - common procurement activities • free parking between 2005 and 2008 (no prolongation after the end of 2008) • no congestion charging for clean cars until 2012 if they are registered before Dec 31 2008. • information - web-site - newsletter - test fleet - sales promotion Input from BEST to: • No possible to legally convert petrol cars to ethanol E85 • Standard bioethanol fuelled buses • Standard adapting electric-hybrid to bioethanol: Toyotas work on adapting their electric-hybrid vehicles to bioethanol-fuel • European standard clean vehicles • Emission standards for flexi fuel vehicles

Barriers	• Lack of suitable vehicle models (e.g. van or large family car) • Lack of automatic transmission & Risk for cold start • Increased consumer price of ethanol • High production costs for European bioethanol • Public lack of awareness/knowledge • Not enough local production of ethanol • Debate on potential for ethanol and LCA • Higher operational costs (service needed more often) • Unsure second hand market Low interest/knowledge among car dealers/car manufacturers	• 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 LCA • 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) • Debate on sustainability issues – fuel vs. food, working conditions during production of fuel in poorer countries etc
Public attitudes	• Survey in 2006 • 77% of the general public in Stockholm think that it is easy to buy clean cars today	A survey in Stockholm 2008, showed that 83 % (compared with 77% in 2006) of the general public in Stockholm knows that it is easy to buy clean cars today. The same study asked if the respondent believe that they will choose a clean car if they buy a car the following years. 41 % (compared with 28% in 2006) answered that they would by a new or second-hand car. 28 % (25% in 2006) did not intend to buy a car. 25 % (37% in 2006) answered that they did not know and 5 % (8% in 2006) did not think clean cars suited them. Within BEST, Umeå University has done a survey on the attitude of the general public regarding the use of biofuels. Several surveys about attitudes to clean vehicles and fuels have been conducted among **drivers** of clean vehicles. BEST D 1.14 is soon on is way to be finalized. A survey carried out in September- October 2008 among clean car owner that recently (within the last 8 months) had bought a clean car show the different reasons for this clean car purchase

* There are no reports yet for 2008

3.3 The Basque Country

Criteria	2007	2008
Local Government Programme component	EVE Basque Energy Organisation (Ente Vasco de la Energía) from the Industry, Commerce and Tourism Department of the Basque Government (Departamento de Industria, Comercio y Turismo del Gobierno Vasco)	EVE Basque Energy Organisation (Ente Vasco de la Energía) from the Industry, Commerce and Tourism Department of the Basque Government (Departamento de Industria, Comercio y Turismo del Gobierno Vasco)
Geographical Application	Basque Country, four regions (A.C. of Euzakadi, Alava, Guipuzcoa, Biskaia)	Basque Country, three regions (Araba, Bizkaia and Gipuzkoa)
BEST objectives (vehicles)	28 FFVs bought – 27 Fords, 1 Saab for EVE There are no fuel stations operating yet. EVE is working to get 3 up and running, even paying for stations, this was not anticipated in the beginning	73 FFVs bought – 62 Fords, 6 Saab and 5 Renault. There are 3 fuel stations operating. EVE is working to get 6 more running in 2009.
BEST related to other EU projects	EVE is a part of 9 EU projects, none with biofuels	EVE is a part of 9 EU projects, one with biofuels
Local PPPs related to biofuels	BEST lies within the Energy Strategy of the Basque Country to 2010. This is called 3E-2010 which states the following objectives: Biodiesel production: 50,000 t/year Bioethanol production: 220,000 t/year Use of biofuels: 177,000 tep/year (11.9% in transport) • BEST covers only a part of EVE's bioethanol activities – all activities under Ecomovil • The Basque Energy Plan covers the period to 2010. The Plan covers consumption and production, and has the promotion of agricultural and industrial development as strong drivers. • There is no Spain-level plan but there are tax incentives. Last week, Spanish Environment Minister announced last week financial incentives for electric, hybrid, CNG, etc. but not for bioethanol Law 22/2005 is a modification of previous 38/1992	BEST lies within the Energy Strategy of the Basque Country to 2010. This is called 3E-2010 which states the following objectives: Biodiesel production: 50,000 t/year Bioethanol production: 220,000 t/year Use of biofuels: 177,000 tep/year (11.9% in transport) • BEST covers only a part of EVE's bioethanol activities – all activities under Ecomovil • The Basque Energy Plan covers the period to 2010. The Plan covers consumption and production, and has the promotion of agricultural and industrial development as strong drivers. • There are tax incentives. • In October 2009 a new obligation for using biofuels was approved by the Spanish Government. This new legal requirement establishes the obligation of using a 3.4% of biofuels in 2009, 5.83% in 2010 and 7% in 2011.

Original conditions		
Number of vehicles using biofuels (2006)	None	None
Number of cars (light vehicles) registered (2006)	Until 2005 a total of 117586 cars in the four regions	Until 2005 a total of 117586 cars in the three regions
Incentives	• There are three taxes included in the price of fuels in Basque Country, the largest of these has been removed from biofuels until 2013.	• There are three taxes included in the price of fuels in Basque Country, the largest of these has been removed from biofuels until 2013.
Barriers	• Consumers tend not to trust a new product and are used to fulfilling recommendations by car manufacturers • The chicken-and-egg problem of getting car manufacturers and fuel suppliers to both commit to ethanol. EVE is working on this within larger BEST framework • Price is the biggest barrier – if the price is not competitive, ethanol will not be bought. Price needs to be 30% lower per litre compared with gasoline, though at about 20% lower some institutions will buy • Equipment was not legalised in Spain, especially flexi-pumps • Blending at consumption point was not allowed; flexi-pumps have only been legal since June • Only Ford and Saab models are available, more needed. The Volvo FFV can be ordered but is not available in showrooms. Renault has announced that next year they will offer the Renault Megan, the best-selling car in Spain, in FFV model. This should be significant, as Renault is very popular make in Spain, while Ford and Saab are not. • Because of the removal of taxes, biodiesel is now competitive with diesel, but bioethanol is not quite competitive with petrol	• Consumers tend not to trust a new product and are used to fulfilling recommendations by car manufacturers • The chicken-and-egg problem of getting car manufacturers and fuel suppliers to both commit to ethanol. EVE is working on this within larger BEST framework • Price is the biggest barrier – if the price is not competitive, ethanol will not be bought. Price needs to be 30% lower per litre compared with gasoline, though at about 20% lower some institutions will buy • Equipment was not legalised in Spain, especially flexi-pumps • Blending at consumption point was not allowed; flexi-pumps have only been legal since June • Only Ford and Saab models are available, more needed. The Volvo FFV can be ordered but is not available in showrooms. Renault has announced that next year they will offer the Renault Megan, the best-selling car in Spain, in FFV model. This should be significant, as Renault is very popular make in Spain, while Volvo and Saab are not. • Because of the removal of taxes, biodiesel is now competitive with diesel, but bioethanol is not quite competitive with petrol
Public attitudes	No reported	No reported

3.4 Madrid, Spain

Criteria	2007	2008
Local Government Programme component	• BEST is located in the Environment Section of Madrid City Council. This is the directorate-general on sustainability and Agenda 21 issues	• BEST is located in the Environment area of Madrid City Council. This is the directorate-general on sustainability and Agenda 21 issues
Geographical Application	Madrid region (Comuna de Madrid)	Madrid City (Ayuntamiento de Madrid) Madrid region (Comunidad de Madrid)
BEST objectives (vehicles)	25 FFV with EU funding, 5 buses and 4 E85 pumps	25 FFV with EU funding 1 FFV non funded, 5 buses and 1 E85 pump and 1 E-95 pump
BEST related to other EU projects	None	None
Local PPPs related to biofuels	• Madrid will provide information on number of stations selling biodiesel at start of BEST, since it will not be possible to determine number of vehicles using biodiesel, as biodiesel is generally included in B5 blends which can be used by all diesel vehicles • There is no biogas in use in vehicles in Madrid • There are currently 2 plants under construction in Madrid to produce biomethane from the organic fraction of municipal solid waste; these are in advanced stages of construction, due for completion around next spring; one plan is to supply EMT buses which use natural gas • There is no pure plant oil use in Madrid • Air Quality and Climate Change Strategy of the Madrid Community (2006-2012) • BEST activities in Madrid are primarily motivated by need to improve local air quality • A Local Air Quality Strategy has been approved this year, will be in place until 2010. Madrid currently meets air quality requirements but is concerned to be able to meet future, more stringent requirements • There is a national law mandating inclusion of biofuels in transport fuels	• Madrid will provide information on number of stations selling biodiesel at start of BEST, since it will not be possible to determine number of vehicles using biodiesel, as biodiesel is generally included in B5 blends which can be used by all diesel vehicles • There is no biogas in use in vehicles in Madrid • There are currently 2 plants under construction in Madrid to produce biomethane from the organic fraction of municipal solid waste; these are in advanced stages of construction, due for completion around next spring; one plan is to supply EMT buses which use natural gas • There is no pure plant oil use in Madrid • Air Quality and Climate Change Strategy of the Madrid Community (2006-2012) • BEST activities in Madrid are primarily motivated by need to improve local air quality A Local Air Quality Strategy has been approved in 2006, will be in place until 2010. Madrid currently meets air quality requirements but is concerned to be able to meet future, more stringent requirements • There is a national law mandating inclusion of biofuels in transport fuels • The first public pump station of E-85 was opened in Madrid in 2008

Original conditions		
Number of vehicles using biofuels (2006)	0	0
Number of cars (light vehicles) registered (2006)	276.633	276.633 Total cars in Madrid region 3.326.579 (2007) Cars registered annually approx. 300.000
Incentives	Tax exemption including the following laws: • Ley 38/1992, de 28 de diciembre, Special Taxes. • Ley 22/2005, de 18 de Noviembre, Taxes related to energy and electricity according to EU	Tax exemption including the following laws: • Ley 38/1992, de 28 de Diciembre, Special Taxes. • Ley 22/2005, de 18 de Noviembre, Taxes related to energy and electricity according to EU
Barriers	• Currently, there are no taxes on bioethanol, but producers cannot sell ethanol at lower price per litre than gasoline, so ethanol is more expensive than gasoline • Tax ministry has a problem with additives used in E95 – these are non-standard fuel additives and are not in officially approved list of denaturants. This means that E95 may be subject to the same tax as potable alcohol. The ethanol producers have reported that this situation is likely to improve soon, and prices should be cheaper in the future. Abengoa should be able to offer cheaper prices by next year. They are in conversation with the tax ministry and optimistic about the future tax situation • There are not enough supply points for bioethanol in Madrid. The BEST project is improving this situation, with 4 ethanol stations to open in the Madrid region	• Currently, there are no taxes on bioethanol, but producers do not offer low prices for ethanol due to lack of distribution network and costs of production. Final price of E-85 is not attractive for potential users. • Tax ministry had a problem with additives used in E95 – these are non-standard fuel additives and are not in officially approved list of denaturants. This means that E95 could be subject to the same tax as potable alcohol. The situtation was solved in 2007. • There are not enough supply points for bioethanol in Madrid. The BEST project is improving this situation, promoting the opening of public pumps. In 2008 there are2 pumps for exclusively use of administration fleets (municipal and national government), 1 for Madrid buses and 1 pubic.
Public attitudes	There have been dissemination activities in Madrid and participation in a public survey with Umea.	There have been dissemination activities in Madrid and participation in a public survey with Umea.

3.4 La Spezia, Italy

Criteria	2007	2008
Local Government Programme component	The Mobility and Transport Department from Municipality and Province	
Geographical Application	The Municipality and the Province of La Spezia	
BEST objectives (vehicles)	10 FFVs, 3 ethanol buses, 1 E95 fuel station and 2 E85 fuel pumps, plus (without EU funding) 90 additional FFVs and an e-diesel test with a small fleet of buses	
BEST related to other EU projects	• Polis • Eurocities • Citelec • ICLEI • Cities for Climate Protection • European Sustainable Cities and Towns Campaign	
Local PPPs related to biofuels	• Law Decree n.128 of 30 May 2005, adoption of Directive 2003/30/EC, set national targets for biofuel consumption: • 1% by 2005 and 2,5 % by 2010 • Budget Law 2005, valid for the period 2005-2007: 200.000 tons/year of biodiesel tax exempted • Law n.81, 11 March 2006 • Bioethanol production and marketing will be supported starting from January 2008 for a 6 years period	Law n. 81 , 11 March 2006, was modified by the Budget Law 2007. Thanks to this Budget Law 2007, a Law Decree n. 100, 23 April 2008 (*Regolamento recante le sanzioni amministrative per il mancato raggiungimento dell'obbligo di immissione in consumo di una quota minima di biocarburanti*) and a Law Decree n.110, 29 April 2008 (*Regolamento recante criteri, condizioni e modalita' per l'attuazione dell'obbligo di immissione in consumo nel territorio nazionale di una quota minima di biocarburanti*) were issued. Waiting for the Law Decree for the excise duty reduction for bioethanol
Original conditions		
Number of vehicles using biofuels (2006)	None	Number of vehicles using biofuels (2007): 6 flexifuel cars + 3 E95 buses Number of vehicles using biofuels (2008): 8 flexifuel cars + 3 E95 buses
Number of cars (light vehicles) registered (2006)	116, 640	Number of cars (light vehicles) registered (2007): 118,368
Barriers	• Economic is the main one due to high ethanol fuel price . • No political support has been addressed to	there is a problem about the blending of bioethanol and petrol (more than 5% of bioethanol in the blend) due to some complications in Italian policies and legal aspects.

	biofuels.	Now the blending is possible thanks to an appeal made at the beginning of 2008, but we are waiting for a national decision
Public attitudes	• Current attitude of general public regarding the use of biofuels (e.g. previous surveys): there is a lack of knowledge in Italy regarding biofuels	

3.5 Rotterdam, The Netherlands

Criteria	2007	2008
Local Government Programme component	Environmental Ministry	Air Quality / Rotterdam Climate Initiative
Geographical Application	Rotterdam region	Rotterdam region
BEST objectives (vehicles)	950 FFV, 3 buses	950 FFV
BEST related to other EU projects	None	None
Local PPPs related to biofuels	The Netherlands are following the EU bio-fuel directive. • A certificate based trading system will be arranged, so that it will become possible to buy the mandatory bio-fuel part at other fuelling companies. With this system it is foreseen that some of the fuel suppliers will be able to sell a large quantity of E85 in the future. All these items are subject of discussion in the nationwide E85 working group, chaired by Shells' energy transition manager and with GW Rotterdam as participant • Rotterdam Energy Program from the Municipality of Rotterdam which includes identifying and cataloguing regulations related to the use of biofuels until 2008.	The Netherlands are following the EU bio-fuel directive. • A certificate based trading system is in practice. With this system it is foreseen that some of the fuel suppliers will be able to sell a large quantity of E85 in the future. All these items are subject of discussion in the nationwide E85 working group, chaired by Shells' energy transition manager and with GW Rotterdam as participant • Rotterdam Climate Initiative partly from the Municipality of Rotterdam includes identifying and cataloguing regulations and related to the use of biofuels until 2010.
Original conditions		
Number of vehicles using biofuels (2006)		
Number of cars (light vehicles) registered (2006)		
Incentives	• Energy use labels; partial reduction on BPM (special tax for passenger vehicles (except buses and taxis) private vans and motorcycles) for bio-fuels and clean techniques, no road tax over extra weight hybrid vehicles; • Tax reductions based on the energy content of respective fuels are still in discussion on a national level. An extra grant could be possible in the future when it is proven that second generation produced bio-ethanol is used. • Environmental zones for heavy vehicles and later on	• Energy use labels is extended with new tax friendly vehicle groups. • Tax reductions based on the energy content of respective fuels is still in discussion on a national level. • Environmental zones for heavy vehicles and later on also for vans and passenger cars are subject in the local and regional action programmes for air quality measures. The national agreement on environmental zoning has now been signed by the applicable ministers, a number of cities including Rotterdam and the city region and most importantly also the applicable transport trade

	also for vans and passenger cars are subject in the local and regional action programmes for air quality measures. The national agreement on environmental zoning has now been signed by the applicable ministers, a number of cities including Rotterdam and the city region and most importantly also the applicable transport trade organisations.	organisations.
Barriers	Oil company is controlling the market and influences the national Government; government is afraid to loose too much tax income with tax incentives.	• Higher prices of bio fuels with respect to their fossil counterparts. • Necessary change of vehicle technology in order to use biofuels.
Public attitudes	Survey on attitudes of general public	Please see outcomes of Survey on attitudes of general public (not jet finished)

3.6 Nanyang, China

Criteria	2007	2008
Local Government Programme component	No information provided	
Geographical Application	Nanyang City, Henan Province, P.R. China	Nanyang City, Henan Province, P.R. China
BEST objectives (vehicles)	100 FFV and 4 buses	10 FFV and 4 buses
BEST related to other EU projects	none	none
Local PPPs related to biofuels	Recycle Economy framework within 11th Five-Year plan of Henan province.	Recycle Economy framework within 11th Five-Year plan of Henan province.
Original conditions		
Number of vehicles using biofuels (2006)	All the gasoline vehicles in Nanyang use E10. And all the diesel vehicles in Nanyang use petroleum diesel.	All the gasoline vehicles except the army vehicles in Nanyang use E10, including 75,000 cars and 200,000 motorcycles.
Number of cars (light vehicles) registered (2006)	Total number of cars is 75,000 at the end of 2005.	75,000
Incentives	Government pays more and more attention to biofuels now. More and more general public realize the necessary and importance of using biofuels.	1. The excise of denatured fuel ethanol (5%) is exempted. 2. The value-added tax of denatured fuel ethanol is levied first, and then given back to the ethanol provider. • The price of denatured fuel ethanol sold to the fuelling stations is (0.9111*manufacturer's price of 90# gasoline). An allowance of 1373 Chinese Yuan per ton of denatured fuel ethanol is paid to the ethanol provider.
Barriers	There is no E85 standard in China. There are no fuel taxes in China. The price of ethanol is almost the same as gasoline in China and vehicles consume more ethanol than gasoline/diesel. So it is more expensive to use ethanol as fuel than gasoline.	There is no E85 standard in China. There are no fuel taxes in China. The price of ethanol is the same as gasoline in the fuel market in China and vehicles consume more ethanol than gasoline/diesel. So it is more expensive to use ethanol as fuel than gasoline. China central government forbad any more food-based fuel ethanol plants beyond the existing four fuel ethanol plants in 2007. This affects the attitudes of some organizations and companies including auto companies towards biofuels.
Public attitudes	Umea produced a survey in 2007	There are more opposite opinions towards biofuels since 2007, regarding the food security.

3.7 São Paulo, Brazil

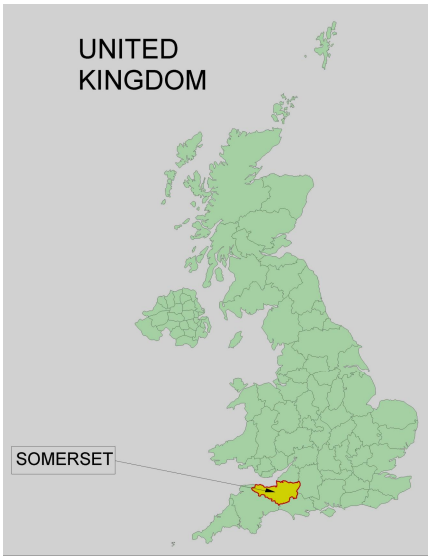
Criteria	2007	2008
Local Government Programme component	• The BEST project activities are co-ordinated by the BEST partner BUN/CENBIO. Close linkages are established with the São Paulo State Secretariat of Environment acting as a driving force. • The demonstration of HEV vehicles is performed in co-operation with Toyota do Brasil and PETROBRAS. • The demonstration of ethanol buses is performed in co-operation with Scania do Brasil, the bus operator Marcopolo and UNICA (Sugar-cane Producers National Union).	• No change
Geographical Application	Sao Paulo State	Sao Paulo State
BEST objectives (vehicles)	3 buses	1 bus (amendment as no E95 engines are available)
BEST related to other EU projects	None	None
Local PPPs related to biofuels	• The São Paulo State Secretariat for the Environment plans potential tax reductions for future large-scale implementation of Bioethanol buses. Besides that, there is currently no consideration within the legal or political framework. • Currently, ethanol production is regulated by a Presidential Decree that sets a range for the total alcohol content in the gasoline (currently 20 to 24 percent). The current percentage is determined by the Alcohol Inter-ministerial Committee (CIMA) comprising of representatives of the Ministry of Agriculture, Ministry of Finance, the Ministry of Mines and Energy, as well as the Ministry of Industrial Development and Commerce.	• The São Paulo State Secretariat for the Environment plans potential tax reductions for future large-scale implementation of Bioethanol buses. Besides that, there is currently no consideration within the legal or political framework. • Currently, ethanol production is regulated by a Presidential Decree that sets a range for the total alcohol content in the gasoline (**currently 25 percent).** The current percentage is determined by the Alcohol Inter-ministerial Committee (CIMA) comprising of representatives of the Ministry of Agriculture, Ministry of Finance, the Ministry of Mines and Energy, as well as the Ministry of Industrial Development and Commerce.
Original conditions		
Number of vehicles using biofuels (2006)	• In 2005, the number of produced flexi fuel cars reached a total of 906.366 units. During 2006, the production of FVVs reached a total of 1.279.040, which reflects a growth rate of more than 41 percent (data from the Associação Nacional dos Fabricantes de Veículos Automotores (Anfavea).	• Due to available data from the Associação Nacional dos Fabricantes de Veículos Automotores (Anfavea) production figures of 2008 are as follows: • GASOLINE (E25): **483.512** • FLEX FUEL: **1.815.182** • ÁLCOOL: **12.691**

		http://www.anfavea.com.br/tabelas/autoveiculos/tabela10_producao.pdf
Number of cars (light vehicles) registered (2006)	Not applicable	Tbd
Incentives	Transport industry interest and local transport Ministry.	Transport industry interest and local transport Ministry.
Barriers	• Due to the already established large scale market for FVVs in Brazil, there are no barriers that can be identified.	• Due to the already established large scale market for FVVs in Brazil, there are no barriers that can be identified.
Public attitudes	In Brazil ethanol is an accepted fuel since many years. The current sales figures of FFV vehicles underline the positive public perception of biofuels.	In Brazil ethanol is an accepted fuel since many years. The current sales figures of FFV vehicles underline the positive public perception of biofuels.

3.8 Somerset (United Kingdom)

Somerset County Council is the local government authority for the County of Somerset. The County has an area of 3,450 km^2 and is largely rural in character with a population of 498,000.

At present, monitoring of carbon dioxide emissions from road transport is not carried on an annual basis at County level. However, the Somerset Energy Profile[2] provides baseline information detailing energy use and emissions in 2002 for all sectors, including road transport. The profile was designed to help inform sustainable policies and practice at county level.



Car travel is a significant transport mode in Somerset and is likely to remain so as the car is an efficient solution for many rural communities. Cars in Somerset are generally older and larger than the national average. This reflects both; lower income levels in rural areas which means that cars tend to be older, and that cars tend to be larger irrespective of economic status due to the longer distances travelled. This fleet composition will tend to produce higher vehicle emissions than the national average.

Criteria	2008
Local Government Programme component	The Somerset County Council Renewable Energy Strategy, approved in 2003, was the key local policy document initiating Somerset participation in the BEST Project. The Strategy was prepared in the context of national policy objectives to reduce greenhouse gas emissions by 20% of 1990 levels by 2010. The South West Regional Renewable Energy Strategy 2003-2010[3] focuses primarily on renewable electricity production, in line with then current national policies. The Strategy recognises the potential of renewable transport fuels and begins to identify measures to take the opportunity forward.
Geographical Application	Somerset also supports local partner Wessex Grain/ Green Spirit Fuels in the development of bioethanol production in the County. Green Spirit have planning consent for a 100,000 tonne ethanol from grain facility at their site in Henstridge, which would bring 40 full time jobs at the plant and inward investment of some £70m to the County. The Project is currently on hold, waiting for the relationship between wheat

[2] *Somerset Energy Profile*, Centre for Sustainable Energy for Somerset County Council, Oct 2003
[3] *Regional Renewable Energy Strategy for the South West of England 2003-2010*, Centre for Sustainable Energy for South West Regional Development Agency, Apr 2003

	and ethanol prices to properly reflect the value of these products, and also for government to confirm its long-term commitment to the UK biofuels industry.
BEST objectives (vehicles)	
BEST related to other EU projects	
Local PPPs related to biofuels	Current national policies in the UK support the deployment of biofuels (biodiesel and bioethanol) in road transport vehicles at a controlled rate through an obligation mechanism on fuel suppliers, similar to the Renewables Obligation for electricity suppliers. The Road Transport Fuel Obligation (RTFO) essentially sets a maximum level for deployment of biofuels, which stands at 2.5% by volume in the current year from 1st April 2008.
Original conditions	
Number of vehicles using biofuels (2006) or other alternative fuel	**2006** Petrol/gas 331 Gas/bi-fuel 138 Hybrid-electric 104 Gas 14 Electric 8 Steam 1 Gas Diesel 1 **2002** Petrol/gas 132 Gas/bi-fuel 27 Hybrid-electric 10 Gas 10 Electric 3
Number of cars (light vehicles) registered (2006)	2006 Petrol: 202,263 Diesel: 67,419 2002 Petrol : 21840 Diesel : 3912
Incentives	Following publication of the Gallagher Review of the Indirect Effects of Biofuel Production, the UK Government has proposed that the annual rate of increase of the RTFO should be slowed until adequate controls are in place to address concerns regarding the wider environmental and social impacts of biofuel production. The UK has agreed to meet the EU mandatory target of 20% of all energy to be produced from renewables by 2020. To achieve this, the UK Government has issued a draft UK Renewable Energy Strategy for consultation that aims to supply 15% of all UK energy from Renewables by 2020. The Strategy recommends that 10% of transport

	fuels should come from biofuels by 2020, which will not be achieved with existing fiscal support measures.
Barriers	It is clear that the RTFO is not bringing forward widescale deployment of high blend bioethanol in flexi fuel vehicles. The Low Carbon Vehicles Partnership has commissioned TTR and Fleetsolve Consultants to carry out a study[4] to evaluate the market opportunities for high blend (>10% by volume) liquid and gaseous biofuels, and to recommend the most appropriate mechanisms to stimulate take-up. Somerset is providing information to TTR on experiences with introducing high blend bioethanol into UK markets in the BEST Project The major barrier to the wider deployment of flexi fuel vehicles in Somerset and the UK is the price of fuel per kilometre. This issue needs to be addressed by introduction of appropriate government fiscal incentives targeted to support the price of bioethanol in high blend mixtures. More recently, adverse and unbalanced media coverage of negative aspects of biofuel sustainability has eroded political support for these measures. These issues are discussed in greater detail in the Somerset BEST deliverable D5.13 Somerset Incentives Report BEST Dec 2008. Current public attitudes to the use of biofuels
Public attitudes	Public attitudes to the use of biofuels in Somerset are contained in the BEST deliverable D3.13 Survey on consumer acceptability and preferences for ethanol blends. Oct 2008

[4] http://biomethanefortransportnews.blogspot.com/2008/12/survey-market-opportunities-for-high.html

Somerset vehicle data

Data on the composition of the Somerset vehicle fleet is available from 2 sources. The Transport section of the Somerset Energy Profile, carried out by TTR Consultants contains the following data for vehicles licensed in Somerset in 2002.

Somerset County Council commissioned TTR Consultants to produce a summary of vehicles registered in Somerset[5] in 2006 by fuel type. The method does not reveal the presence of flexi fuel vehicles registered in Somerset and it is assumed that they are registered as petrol engined vehicles. It is also possible that some FFVs in Somerset are registered outside the County, e.g Avon & Somerset Constabulary vehicles.

[5] Somerset vehicle numbers 2006, TTR report for SCC, 2007

Emissions data

Road transport emissions data for Somerset in 2002 were calculated for the Somerset Energy Profile and a summary is reproduced in table 6.

Total Vehicle Emissions (absolute tonnes, except for energy measured in MJ)							
		Motorway	Major - urban	Major - rural	Minor - urban	Minor - rural	**TOTAL**
Petrol	Fuel (tonnes)	35,747	21,876	62,373	48,258	27,323	195,578
	Energy (MJ)*	1,693,323,315	1,036,274,620	2,954,622,615	2,285,996,505	1,294,301,921	9,264,518,975
	1 CO2 (tonnes)*	**113,782**	**69,632**	**198,534**	**153,606**	**86,970**	**622,524**
	2 NOx (tonnes)	**753**	**277**	**1,234**	**571**	**425**	**3,260**
	3 PM (tonnes)	**6**	**3**	**9**	**8**	**4**	**30**
Petrol Sub-total (1+2+3)	**(tonnes)**	**114,541**	**69,913**	**199,777**	**154,185**	**87,399**	**625,814**
Diesel	Fuel (tonnes)	6,033	3,515	10,109	7,769	4,340	31,766
	Energy (MJ)*	276,261,674	160,958,550	462,875,705	355,731,802	198,734,583	1,454,562,315
	1 CO2 (tonnes)*	**18,932**	**11,031**	**31,721**	**24,378**	**13,619**	**99,682**
	2 NOx (tonnes)	**78**	**39**	**122**	**87**	**48**	**374**
	3 PM (tonnes)	**8**	**5**	**13**	**11**	**6**	**41**
Diesel Sub-total (1+2+3)	**(tonnes)**	**19,018**	**11,074**	**31,856**	**24,475**	**13,673**	**100,096**
Road Type TOTAL	**(tonnes)**	**133,559**	**80,987**	**231,633**	**178,660**	**101,072**	

* From fuel consumption

Table 6 Fuel consumption and air pollutant emissions for Somerset vehicles (absolute values) 2002

4. Overview of sites assessment

A general assessment of the data regarding its relevance to the sustainability principles (E, S, EC, P) is shown in table 15 and compares the original data against the 2008. The sites for which data was not provided or available are shown as nd. The positive or negative baseline condition of the site is shown (+) and (-) respectively. This means that the original conditions are favourable (+) for the sustainability principles of a developing market on ethanol. This does not take into account the production or the biofuel or the sustainability characteristics of imported biofuel. These last issues will be reviewed in a further sustainability assessment.

If assessed negatively (-) this means that original conditions are not yet ready or present. It is worth noting that "unfavourable" conditions are not taken into account as work is still being carried out.

It is difficult to assess the progress in terms of sustainability for several reasons including:

i) need to update data until the end of 2008
ii) lack of data of some particular sites, particularly Brandenburg which has not provided original data and it is therefore not possible to compare
iii) lack of data in terms of the supply chains of non-GHG accountability data (e.g., social economic and environmental).

	2007								
Criteria	**BFR**	**Basque Country**	**La Spezia**	**Madrid**	**Nanyang**	**Rotterdam**	**Sao Paulo**	**Stock-holm**	**Somerset**
Local Government Programme component (E, S, Ec)	All	E, Ec	E, Ec	E	Ec	E	E	E	
Geographical Application (Regional, national)	R	N	R	R	R	R	R	R	
BEST objectives (vehicles/buses)	+	+	+	+	+	+	+	+	
BEST related to other EU projects	+	+	+	-	nd	-	-	+	
Local PPPs related to biofuels	+	+	+	+	+	+	+	+	
Number of vehicles using biofuels (2006)	++	-	-	-	-	-	+++	++	
Number of clean cars vs registered cars	ni						nd	ni	
Incentives	++	++	+	+	-	+	+	++	
Barriers	-	--	-	-	-	--	nd	-	
Public attitude	+	nd	nd	+	+	nd	+	+	

2008									
Criteria	BFR	Basque Country	La Spezia	Madrid	Nanyang	Rotterdam	Sao Paulo	Stock-holm	Somerset
Local Government Programme component (E, S, Ec)	All	E, Ec	E, Ec	E	Ec	E	E	E	E, Ec
Geographical Application (Regional, national)	R	N	R	R	R	R	R	R	R
BEST objectives vehicles buses	++ --	+ /	-- ++	++ ++	--- ++	++ /	/ +	+++ +++	+ /
BEST related to other EU projects	+	+	+	-	nd	-	-	+	nd
Local PPPs related to biofuels	+	++	nc	++	nc	nc	nc	++	++
Number of vehicles using biofuels	++	--	--	+	-	+	+++	++	+
Number of clean cars vs cars registered	ni	-	-	-	-	+	+++	+++	-
Incentives	++	++	+	+	nc	++	+	++	-
Barriers	-	--	-	-	-	--	nd	-	--
Public attitude	+	nd	nd	+	+	nd	+	+	-

Key E= environment; S=social; Ec=economic; R=regional; N=national; +=positive; -=negative; nd=no data available; ni=no information provided; / not applicable; nc= no change

Table 7 Matrix of assessment of criteria per site

This comparison shows the differences the sites have experimented in a two year period showing some advances in some sites (e.g. Stockholm, Madrid, Nanyang, Rotterdam) and some sites with no changes or few changes (e.g. La Spezia, Somerset, Brandenburg).

The final sustainability report will be able to present a more comprehensive assessment of all sites.

4.1 Fuels and FFV sales

Two more indicators for the sustainability assessment of the BEST project are considered: fuels and flexi fuel vehicle sales. The main reason of their inclusion is that considering that a market is being developed in Europe the data to assess how this market is growing is best related to these sales. These will be link to the study on supply chains considered within the WP9 of Evaluation. The ethanol suppliers for all the partners within BEST vary significantly. Table 16 shows the current activity regarding the trade of ethanol though data is still missing and site partners are still working on it.

From the reports of partners and the reports of Progress in numbers (2008) it can be observed that the number of FFV vehicles has incremented (Figure 2). Although the difference compared to petrol and diesel cars is still significant the progress towards sales in FFV vehicles has incremented (see Figure 3). São Paulo is the partner site with more biofuel vehicles registered.

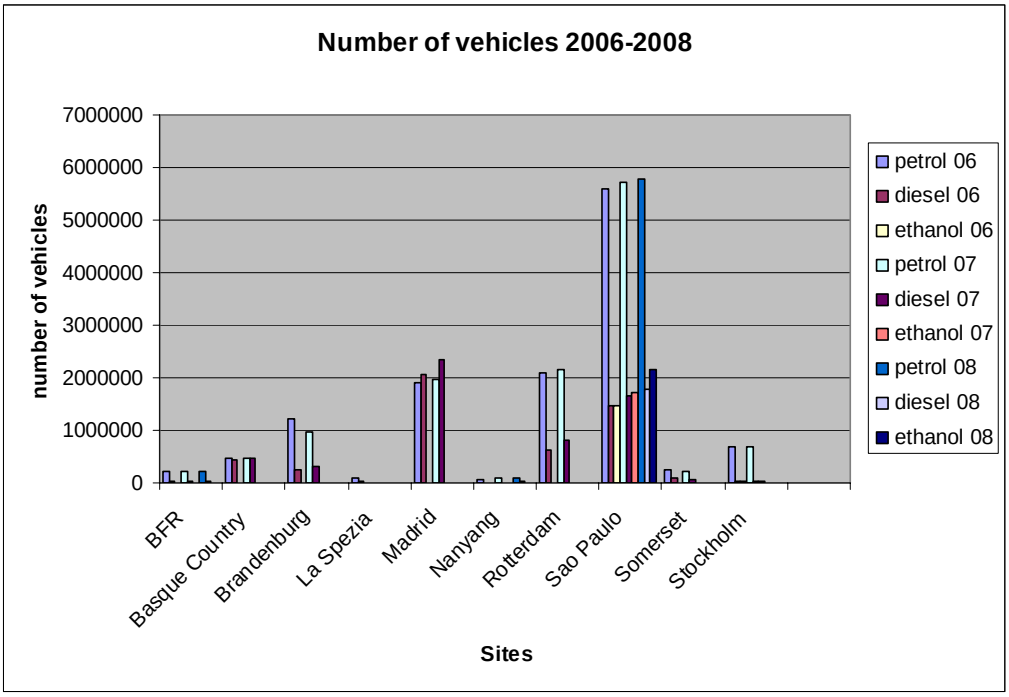


Figure 2 BEST sites number of vehicles 2006-2008

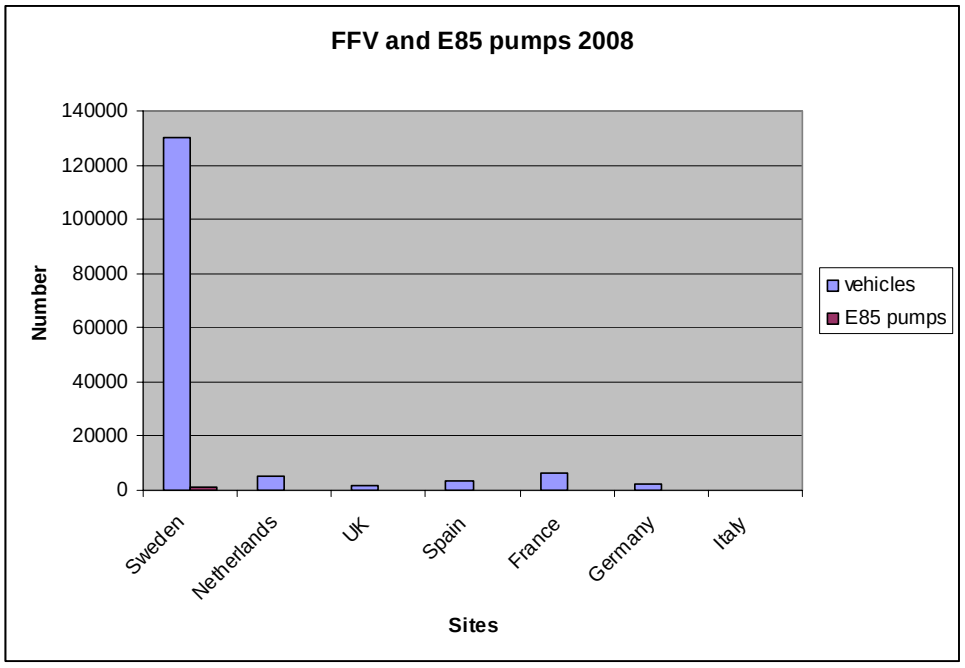


Figure 3 Selected EU countries FFV and E85 pumps

From figure 3 it can be observed that the comparison among different countries in Europe is still difficult to assess due to the experience and developed market of Sweden. Nevertheless, when assessing national markets the progression to move to biofuels and other clean vehicles is encouraging.

The BEST WP1 on FFV collected data from 2005 on sales of different brands of FFV in Europe. It can be seen that the sales have increased as well as the number of brands sold in Europe.

	2005		2006		2007		2008 Jan-Aug*	
	Units	Share	Units	Share	Units	Share	Units	Share
Volvo	800	10%	6 700	26%	9 100	22%	14 000	34%
Saab	3 200	42%	11 000	43%	19 000	44%	12 000	29%
Ford	3 500	47%	8 200	32%	12 000	28%	6 300	15%
VW							3 000	7%
Peugeot					600	1%	1 700	4%
Renault					1 100	3%	1 300	3%
Citroen					700	2%	1 200	3%
Other				0%	200	1%	1 700	4%
Total	7 500		25 900		42 700		41 200	

Table 8 FFV sales 2005-2008 (Source: WP1 BEST, 2008)

5. SUSTAINABILITY SCHEMES

Since the EU Directive on Biofuels (EC, 2003) came into force, there has been a growing concern over the availability of resources and the increasing demand for energy crops to produce them. There has also been a concern for the increasing demand for biofuels imports from developing countries. This increment is expected to come mainly from sugar cane, soya, palm oil, rape seed, wood products and other biofuel feedstock (see Walter & Rosillo-Calle, 2008; Diaz-Chavez & and Woods, 2008).

It is important to be aware that vegetables oil market is driven primarily by demand for edible oil rather than for the biodiesel market. Often biodiesel is a by-product of the edible oil market.

One of the first calls to put an eco-certification system for biofuels in Europe came from a report from WWF (WWF, 2006), not only for those biofuels produced internally but also for those imported. The EU Commission also acknowledged this indicating that depending on the production process and on the land used for this purpose, biofuels could be either an environmentally friendly process that contributes positively to climate change mitigation, or the opposite (COM, 2006).

Currently there are different efforts being made towards the development of standard and certification systems specifically dedicated to biofuels. These are briefly explained as follows:

However, currently the only applied Government-level biofuel sustainability reporting scheme is implemented by the Renewable Fuel Agency in the United Kingdom through the Renewable Transport Fuel Obligation (RTFO) (RAF, 2008). Furthermore, corporate bilateral agreements exist that verify biofuel sustainability such as the agreement between the Swedish fuel retailer SEKAB and Brazilian ethanol producers.

The Round Table of Sustainable Biofuels (RSB).

The Roundtable on Sustainable Biofuels created in 2007, is an international multi-stakeholder initiative that has brought together over 500 individuals from companies, NGOs, governments, and experts in nearly forty countries. The work of the different stakeholders resulted in a draft standard for sustainable biofuels production and processing. Through a series of on-line consultations, teleconference discussions, and in-person stakeholder meetings in Brazil, China, South Africa, and India held between June 2007 and July 2008, the Roundtable drafted a series of principles and criteria of a global sustainability standard called "Version Zero". This version is under review and still receiving comments. The RSB is currently moving to a new stage in order to continue with the work (RSB, 2008). This initiative is foreseen as the main organisation to organise the efforts on the sustainability schemes and to look for a form to harmonise them.

SEKAB

Currently SEKAB has announced a "Verified Sustainable Ethanol Initiative" with a series of criteria and indicators currently under verification (Sekab, 2008) and on sale in Sweden. These criteria include the following issues:

- At least 85 % reduction in fossil carbon dioxide compared with petrol, from a well to-wheel perspective
- At least 30 % mechanisation of the harvest now, plus a planned increase in the degree of mechanisation to 100 %
- Zero tolerance for felling of rainforest
- Zero tolerance to child labour
- Rights and safety measures for all employees in accordance with UN guidelines
- Ecological consideration in accordance to UNICA's environmental initiative
- Continuous monitoring that the criteria are being met

6. CONCLUSIONS AND FUTURE WORK

The sustainability assessment of the BEST project has been centred on the certification system evolving in the European Union. This was considered to be important as currently most BEST site partners are importing biofuel or producing it in a small to medium level. Furthermore, Brazil being a BEST partner is the main ethanol exporter in the world.

The final report on the sustainability assessment of the BEST will be presented in two forms. A sustainability report with the assessment of the sites and comparing them during the four years of the project and a second report showing the changes of the debates in biofuels in general and specifically on ethanol during the time this project ran.

The final sustainability report will be able to present a more comprehensive assessment of all sites.

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