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Biofuels

Topping up the fuel mix

Project report



Renewable energy

16 projects funded by the
Intelligent Energy-Europe
programme

April 2008



Biofuels

Renewable energy



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Editorial information

Projects Reports are published by the Executive Agency for Competitiveness and Innovation of the European Commission (EACI). The reports showcase projects funded across the European Union by the Intelligent Energy-Europe programme (IEE) which promotes energy efficiency and renewable energy. The projects are presented by theme and contain contact details for participants to help build a network of project participants across the EU. The reports are available in English, French and German.
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Introduction

The European transport sector is 98% dependent on fossil fuels and accounts for around a quarter of all CO₂ emissions in the EU. Diminishing fossil fuel reserves and escalating global demand have combined to push up prices and increase market volatility. Future supply is uncertain.

This is why the EU is supporting alternative fuels, in particular biofuels, with the triple objective of reducing greenhouse gas emissions, diversifying fuel supply and developing long-term replacements for fossil fuels. Boosting biofuel production is also expected to create job opportunities in rural areas.

There are many different actors involved in the biofuels sector: farmers, foresters, fuel producers and retailers, filling station owners, vehicle manufacturers, local authorities and their energy/transport/development agencies, fleet managers and drivers, as well as stakeholders from the environment and education sectors.

Biofuels projects co-funded by the Intelligent Energy-Europe programme (IEE) aim to stimulate action at all levels, throughout the supply chain, across the European Union. The overall aim is to increase the production and use of greener, alternative fuels whilst at the same time improving their economic competitiveness and minimising their environmental impacts.

The projects also aim to transfer experience and understanding of the use of biofuels. They should help ensure that regions where markets are less developed benefit from the experience of those who are further down the path. They should also

develop business opportunities in agricultural communities and promote contacts between different actors, while at the same time offering training to professionals, farmers, technicians and craftsmen. Nearly all projects involve new Member States.

The barriers faced by biofuels in the EU vary according to their specific characteristics. This is reflected in the choice of IEE projects, which address the barriers related to each fuel. A number of existing projects specifically target biodiesel, which is currently the most used biofuel in Europe. Others deal with biogas and natural gas, while some target more than one fuel. There is at the moment no IEE project fully dedicated to the promotion of bioethanol, though it is touched upon by those targeting more than one fuel. Bioethanol projects are expected to kick off in the next few years.

Second generation biofuels will have an important role to play as soon as they are ready for the market. They should be more sustainable, boasting both a lower environmental impact and lower costs. Whilst research continues on the development of second generation biofuels, the IEE programme is working with the biofuels already available to create favourable market conditions. IEE projects are also addressing sustainability criteria and the international trading of biofuels.

Ongoing projects can be grouped into three main areas:

Projects promoting the development of local biofuel supply chains.

These are designed to give a boost to local and regional networks along the biofuel supply chain. They support the sharing of knowledge and experiences between local and regional actors on the one hand, and between different EU regions on the other. They also aim to develop best practice.

BIODIENET, BIODIESEL CHAINS, BIO-NETT, PROBIO, BIOMOTION, BIONIC.

Projects stimulating the demand for alternative fuels and vehicles.

Projects under this heading help decision makers in the transport sector with specially designed tools; provide training to fleet managers; draft model procurement procedures; and help cities join together for the procurement of clean vehicles.

COMPRO, PROCURA, STAR BUS, SUGRE, MADEGASCAR.

Projects tackling horizontal issues related to the production and use of alternative fuels.

Examples include a project to develop labels and standards for promoting sustainable biofuels; the improvement of logistics for the production and distribution of specific fuels; the development of economic modelling tools and the evaluation of the impact of biofuels on other markets.

CARBON LABELLING, MAGALOG, PRO-BIODIESEL, REFUEL, ELOBIO.

These projects have thrown up some interesting challenges. The full involvement of all stakeholders is vital for the successful promotion of biofuels. Action can take place on a local level, but the exchange of experiences between actors plays a crucial role. The sector is highly dynamic; markets are growing rapidly and evolving. Actors need to be ready to adapt to new conditions.

Last but not least, the sustainability of biofuels and their potential impacts on other sectors — including land use — are and will remain critical issues.

Concrete results are starting to materialise. Transport companies and local authorities are using the experience gained to improve the use of green vehicles and fuels in their fleets. Professionals, such as farmers or foresters, who, until now, have not thought of themselves as energy suppliers, are getting involved and seeking new business opportunities. Fleet managers are taking better informed decisions. Joint procurement initiatives between different cities have been put in place. The tools developed within the projects provide market actors and policymakers with greater understanding, so that they can take informed decisions on this complex subject.

Alternative fuels provide an important contribution towards climate change mitigation and security of supply. They are, however, only part of the solution, and must be considered within a wider context, in which efforts are also being made to reduce transport demand, improve transport efficiency and encourage the use of environmentally friendly modes of transport.

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Biodiesel from waste cooking oils

1

Developing a network of actors to stimulate demand for locally produced biodiesel from used cooking oils BioDieNet

Duration: 1/2007–12/2009

Objective

BioDieNet seeks to encourage localised, small-scale production of biodiesel from used cooking oils. This approach is designed to facilitate the substitution of fossil fuels while avoiding the side effects of large-scale, centralised production of crops.

Seventeen partners in 10 regions are coming together to form a network to share practical information on how to increase the take-up of biofuels from used cooking oils in public and private vehicles.

The project aims to stimulate local collection of waste oil, biodiesel production and distribution to users.

Results

- > 12 small-scale biodiesel-from-used-cooking-oil production plants will be set up across Europe.
- > A handbook and a training programme will be produced for those looking to break into the biodiesel market.
- > 30 new filling stations will supply higher concentrations of biodiesel.
- > 2 500 more vehicles will run on higher concentrations of biodiesel.

Budget: €1 564 394 (EU contribution: 50%)



CO₂ labels for vehicle fuels

CO₂star
care for climate!

2

Carbon/efficiency labelling and bio-blending for optimising benefits of biodiesel and additive use. Carbon Labelling

Duration: 10/2006–9/2008

Objective

The Carbon Labelling project aims to inform consumers about the savings they can make by switching to biodiesel through a series of professionally designed labels. The labels will show the 'carbon life cycle' calculated using greenhouse gas models put together by leading European research institutes. The labels can be applied to products such as biodiesel, fuel efficiency improvements or even 'low carbon' freight services.

Results

- > Carbon labelling pilot programme for B100 biofuel underway at fuel stations of German retailer Q1.
- > Carbon labelling pilot programme for freight services operating with B100 underway in the Netherlands.
- > Pilot programme extended to lubricants and additives.
- > Dutch flower transporters have asked to use the CO₂ 'star' label.

Budget: €808 726 (EU contribution: 50%)

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3

**Marine Fuel Gas Logistics
 MAGALOG**

Duration: 1/2007–12/2008

Objective

After efforts by land-based industries to reduce their emissions, shipping has in recent years come to be considered one of the EU's main polluters. The MAGALOG project attempts to improve air quality in port towns and along the developing 'highways of the sea' by encouraging a switch to an alternative fuel: liquefied natural gas. Emphasis will be placed on shipping in the Baltic Sea, with a pioneer project in Lübeck, Germany. Partners from Norway, Germany and Poland are involved in studies, while the project itself will use input from public authorities at local and European level, as well as the shipping industry.

Results

Lübeck LNG terminal feasibility study now underway.

- > Potential terminals identified in Bergen, Helsinki, Stockholm.
- > Potential use identified in short sea shipping, fisheries, coastguards, military.
- > Strong support from politicians and media in Germany.

Budget: €1 257 745 (EU contribution: 50%)



4

**Overcoming non-technical barriers
 for full-scale use of biodiesel
 in Europe
 Pro-Biodiesel**

Duration: 1/2006–12/2007

Objective

Biodiesel must become a commercial and competitive product using the broadest range possible of raw materials from both north and south Europe.

Pro-Biodiesel aims to overcome barriers to this transformation and successfully put on the market 35 000 tonnes a year of biodiesel, from at least eight different raw materials. It will involve assessing barriers in the logistics and distribution industries and proposing improvements to EU regulations and standards. Barriers preventing the large scale roll-out of biodiesel use in vehicles must be understood and removed.

Results

- > Comparative study on the best raw materials for mass production of biodiesel, including additives for improved fuel characteristics.
- > Contribution made towards modification of EU biodiesel standard.
- > Study on biodiesel storage and distribution issues.
- > Assessment studies of biodiesel social acceptability in Germany, France and Spain completed with a view to improving sales.

Budget: €772 244 (EU contribution: 50%)

Quality
 standards
 for
 biodiesel

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Roadmap to 2030 for biofuels



5

Renewable Fuels for Europe Roadmap to 2030 for biofuels

Duration: 1/2006–8/2008

Objective

Getting to the point where biofuels have achieved significant market penetration requires a 'roadmap.'

Refuel has set up an ambitious yet realistic roadmap for biofuels in the fuel mix for EU transport in 2030. It has analysed the least-cost options for a biofuel mix which will meet EU targets, as well as production chains, conversion technology and biomass feedstocks.

It lays out actions required from all players in the chain, from the producer to the consumer, and suggests a timetable for these actions. Refuel includes recommendations on the policies needed to mobilise stakeholders and create the right incentives.

Results

- > According to the evaluation of available land, which the project consortium carried out taking into consideration European food demand, nature conservation, and expansion of built-up land, 40 million hectares of land may become available for alternative use by 2030 in a conservative scenario.
- > In the consortium's opinion, while first generation biofuels would reach the current EU targets, the successful introduction of second generation biofuel technologies would be needed in view of the underlying policy objectives of climate protection, security of energy supply and competitiveness.
- > The roadmap also highlights the different risk profile and challenges faced by second generation biofuels compared to first generation, and how different policy options might influence them.

Budget €1 836 570 (EU contribution: 50%)

Promoting biofuel use in vehicle fleets

6

Sustainable Green Fleets SUGRE

Duration: 1/2006–12/2008

Objective

SUGRE aims to encourage vehicle owners to switch to cleaner fuels, whether they are biofuels, methane or hybrid systems using both combustion engines and electric propulsion. There is a need to show to users that vehicle fleets are viable when run on alternative fuels. This will be achieved using 'captive' fleets as forerunners. The captive fleets will form the basis of training and briefing sessions for other fleet owners, which should help the new technology to spread. When fleet owners are convinced, individual car buyers should follow. Information on refuelling sites will be distributed via an Internet platform. A support desk will also help with issues such as procurement.

Results

- > Initial results have identified the need for Member States to use the tax and public procurement systems to create incentives for biofuel vehicles.
- > This is especially important for forerunner fleets, due to the increased investments in refuelling systems and vehicle adaptation.

Results €2 580 000 (EU contribution: 50%)



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7 Promoting favourable conditions to establish biodiesel market actions Biodiesel Chains

Duration: 1/2006–12/2007

Objective

Actors from EU countries with a less developed biodiesel market are taking part in the Biodiesel Chains project, which will help them learn from success stories elsewhere.

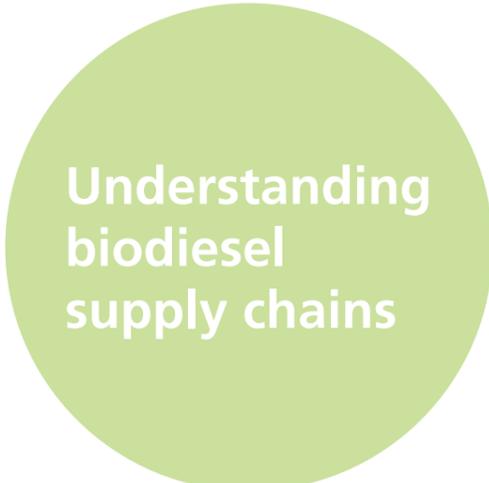
The project targets six countries: Greece, Belgium, Poland, Cyprus, Romania and Bulgaria, where moves towards the setting up of biodiesel market chains have, until now, been limited.

It revolves around a critical analysis of market developments in the wider EU of 25 nations, including drivers, barriers and windows of opportunity, and best practices in leading European Member States. It will aim to pass on these success stories to the six countries identified.

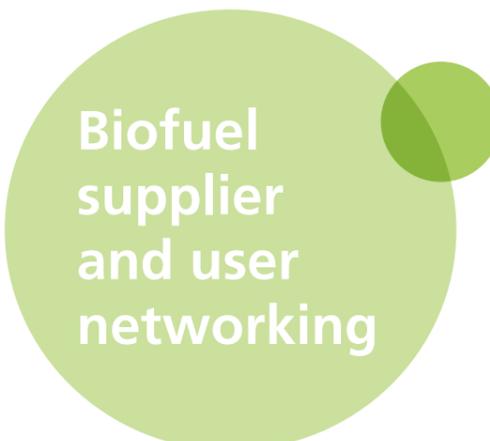
Results

- > EU-25 biodiesel status report.
- > Best practice stories and case studies.
- > Exchanges with key stakeholders in order to create favourable conditions for the biodiesel market.

Results €759 995 (EU contribution: 50%)



Understanding
biodiesel
supply chains



Biofuel
supplier
and user
networking

8 Developing Local supply chain networks, linking biofuel producers with public sector users Bio-NETT

Duration: 1/2006–8/2008

Objective

Biofuels need networked markets if they are to achieve their potential, and Bio-NETT aims to bring together these markets on a regional level. By linking suppliers and users in both the countryside and the town, the project will build up markets by developing skills and giving financial support. It will also help raise awareness among public sector fleet managers and spread knowledge at local, national and European level. Each partner participating in the project will contribute to exchange of information on biofuels. The project will capitalise on the huge appetite in the public and the private sector for the use of biofuels, which has already generated a positive response to the project's goals.

Results

- > Ten regional biofuel networks have been set up.
- > Five biofuels transport projects established, representing a potential carbon dioxide emission reduction of 1 500 tonnes of CO₂ per year.
- > Publication of best practice tools and project documentation; 500 project brochures and 100 CD-ROMs distributed per partner establishing a biofuel information exchange centre.
- > Identification of two pilot projects in the production, distribution or use of biofuels in each partner's country and, where possible, help with implementation.
- > Production and dissemination of technical tools for encouraging the production and the use of biofuels in public transport (for example, business plan model, list of third-party financing sources, vehicle conversion kit).

Results €1 148 305 (EU Contribution: 50%)



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9

COMMon PROcurement of collective and public service transport clean vehicles COMPRO

Duration: 1/2007–12/2009

Objective

COMPRO aims to create an international buyers' consortium of local authorities for the joint procurement of clean, collective, public service transport vehicles. The group of investors will begin with four local authorities and will quickly expand to include more cities, thus creating a critical mass and leading to more competitive prices.

With help from industry the project team will keep in touch with the latest technological advances. The ultimate aim is the promotion of a clean vehicles market on a European scale, identifying, in the process, barriers to production and distribution.

Results

- > Following an internal debate, participants have opted to use compressed natural gas and hybrid technologies.
- > Definition of common tender structure.
- > Convergence of interests towards standardised vehicles.
- > First potential follower cities have been contacted.

Results €1 593 594 (EU contribution: 45.98%)



Public procurement of clean vehicles



10

Integrated promotion of the biodiesel chain PROBIO

Duration: 1/2007–6/2009

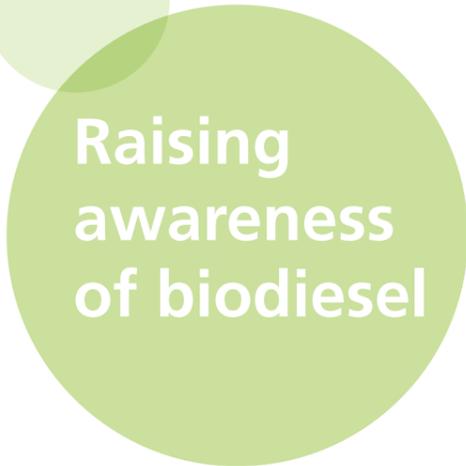
Objective

PROBIO aims to bring together biodiesel producers and consumers throughout Europe and in five regions in particular: Burgos, Ávila and Huelva (Spain), Pomurje (Slovenia) and Abruzzo (Italy). The plan is three-pronged: new market development; promotion; and training. The project attempts to overcome barriers such as the lack of knowledge among farmers (leading to a lack of raw material) and a lack of awareness among the public, among local authorities and in the transport sector. With the cultivation of more energy crops, biodiesel consumption should increase by 4% to 5% by 2010. Much of the work is aimed at farmers.

Results

- > Barriers to use identified in different EU countries.
- > Current rate of biodiesel use identified in different EU countries.
- > Biodiesel consumption will be increased through commercial contracts with groups such as farmers' associations, taxi drivers' associations, and heavy machinery suppliers.
- > Increased use of micro-installations.

Results €965 121 (EU contribution: 49%)



Raising awareness of biodiesel



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Public procurement of alternative fuel vehicles



11

Green Fleet Procurement Models PROCURA

Duration: 1/2006–12/2008

Objective

To achieve the EU's aim of a 10% switch from oil-based motor fuels to alternative fuels by 2020, there will need to be large-scale buying of green vehicles. PROCURA aims to lay the groundwork for the development of a large Alternative Fuel Vehicles (AFV) market by tackling the barriers that exist and finding new ways to overcome them.

The strategy is to develop and test models for centralised buying, by encouraging pools of potential customers and targeting privately owned fleets. Green vehicles will need a certification system and there will also need to be a second-hand market if the AFV industry is to take off. Both these issues are also tackled.

Results

- > The first fleet scans have been carried out; 150 in total are planned by the end of the project.
- > Manuals are being developed for pilot programmes in the Netherlands, Italy, Portugal, Poland and Spain.
- > Alternative fuel vehicle infrastructure opened in the Netherlands.
- > Study has identified buying motives so that potential buyers can be targeted.
- > Two hundred green vehicles will be bought as a result of the project's activities.

Results €1 748 646 (EU contribution: 50%)

Decision tool for bus procurement

12

Promoting sustainable energetic pathways for bus fleets STAR BUS

Duration: 1/2006–12/2008

Objective

Taking public transport is a greener alternative to driving a car, but that is no reason to suggest that buses can be excused from cleaning up their act.

STAR BUS, a three-year project, aims to provide transport authorities on both local and national levels with the tools and methodologies they need to decide what kind of fuels can be both cost-efficient and low in pollutants. It will analyse the benefits and drawbacks of biofuels, LPG and diesel, among others, in order to come up with models to help managers choose. It will take into account factors such as maintenance costs, noise and greenhouse gas emissions.

Results

- > Eleven out of 20 'pathways' already measured, taking into account different fuel and engine combinations to achieve pollutant and consumption readings.
- > Preparations advanced for road-testing of this information on real buses to collect data for different routes.
- > Partial results of tests and newsletter posted on website.

Results €1 407 194 (EU contribution: 50%)



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Promoting biofuels with information centres

13

Information, Motivation and Conversion strategies for biofuels with consideration of the special regional structures BioMotion

Duration: 9/2007–4/2010

Objective

BioMotion aims to increase the use, knowledge and acceptance of biofuels. Given that one of the main obstacles to the use of biofuels is a lack of awareness and insufficient knowledge, BioMotion will create a solid and extensive knowledge platform. An international cluster of relevant actors and seven biofuel information centres will be established. A number of highly visible examples, or 'beacons', will be used to demonstrate the use of various raw materials for the production of different biofuels on a commercial scale. A BioMotion-Tour, with vehicles powered by several types of biofuels, will show the advantages of using biofuels. The project should encourage the development of biofuel supply chains and highlight market opportunities, particularly in rural areas.

Expected results

- > The development of an international 'cluster' of actors in the biofuels sector.
- > The setting up of seven biofuel information centres.
- > The BioMotion-Tour — a public relations campaign.
- > The creation of a number of best practice examples (beacons).
- > The establishment of value-added biofuels supply chains for rural areas 'from field to tank'.

Results: €98 641 800 (EU contribution: 50%)

Biofuels policy's impact on other markets

14

Effective and low-disturbing biofuel policies ELOBIO

Duration: 11/2007–4/2010

Objective

Increased demand for biofuels could have long-term impacts on several commodity markets; this has led to resistance from market actors who fear a growth in the use of biofuels. Evidence of such market impacts is however limited, and there is a lack of information on price correlations between biofuels and food and lignocellulosic markets. Such information is needed to distinguish real from perceived market impacts of biofuels. The ELOBIO project aims to help reduce the information gap by collecting and reviewing the available data and developing 'low-disturbing' policy options which promote biofuels with as few side effects on other markets as possible.

Expected results

- > A clear vision on policy options. A vision of a policy with the least impact on other markets which will be shared with policy makers and relevant market actors from the food, feed and lignocellulosic materials markets.
- > Optimised Member State policies on biofuels and related domains. ELOBIO results will be available to Member States and will help them improve their own policies. They will clarify the important dynamics that dominate biomass markets.
- > A reliable estimate of the potential and costs of biofuels. The results will separate fact from fiction by providing scientifically-based estimates of costs and potentials which can then serve as base for future discussions on biofuels.
- > Improved models and tools to assess the relationship between biofuels policies and the affected markets. The assessment of future developments in the interaction between the food, feed, lignocellulosic will be more precise.

Budget: €1 040 383 (EU contribution: 50%)



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Stimulating demand for gas-powered vehicles



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(Mälardalen Energy Agency), Sweden
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Market DEvelopment of GAS-driven CARs including supply and distribution of natural gas and biogas MADEGASCAR

Duration: 9/2007–2/2010 (30 months)

Objective

MADEGASCAR sets out to increase the use of gas-driven vehicles, powered by both natural gas and biogas, by addressing both consumers and providers.

Before being prepared to change their vehicles consumers must be convinced of the advantages of gas-powered cars. This project will promote the benefits of such cars to fleet owners, car dealers, local authorities and fuel station owners using training seminars and promotional campaigns.

The project will also look at increasing the supply of biogas and integrating it into gas networks. It will undertake a series of activities designed to strengthen the supply and distribution infrastructure for biogas and natural gas. These include plans for expanding fuel stations and feasibility studies for biogas plants.

Expected results

- > Expansion of supply and distribution of gas fuels – including planning for the expansion/ establishment of fuel station networks, feasibility studies for biogas plants and promotion of newly established fuel stations.
- > Promotion of gas-driven vehicles – including seminars for fleet managers, training program for car purchasers and car dealers, promotional campaigns at suitable events and feasibility studies for car fleets.
- > One European and 10 regional networks made up of actors in the whole biogas chain.
- > Market strategies for the promotion of gas as car fuel in 12 regions of Europe.

Results: €1 411 558 (EU contribution: 50%)

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Biofuels Networks in the Community BIONIC

Duration: 11/2007–10/2010

Objective

The project will address the issue of biofuel supply and use in transport specifically from the perspective of local authorities. The project focuses on five participating regions — North West England (United Kingdom), Cantabria (Spain), Varmland (Sweden), Prahova (Romania) and Pazardjik (Bulgaria). The aim of the project is to promote the regional production and use of transport biofuels by establishing regional networks, identifying and promoting case studies in each region, and subsequently developing practical regional biofuel strategies. Regional authorities will lead the way and, ultimately, everyone in the chain, from suppliers to end-users, will be involved in boosting biofuels.

Expected results

- > Creation of networks of biofuel suppliers and potential users in the participating regions.
- > Strengthening biofuel supply chains in each of the partner regions as a result of greater awareness, availability and uptake of transport biofuels.
- > Establishment of best practice guidelines explaining the role of regional authorities in promoting biofuels in their areas and showing how to address the market barriers.
- > Case studies to illustrate best practice.
- > Creation of regional biofuel strategies.

Results: €1 406 284 (EU contribution: 50%)

Regional biofuels networks

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Fédération Européenne des Agences Régionales de l'Énergie et de l'Environnement (FEDARENE), Belgium

Projectreport



Find out more about biofuels

The EACI's biofuels video provides more information about biofuels projects across the EU. Find out more about the IEE-funded projects by watching or ordering the video online at:

<http://www.tvlink.org/vnr.cfm?vidID=257>.

Intelligent Energy-Europe 2008

The 2008 call for proposals has been published. €45 million will be made available to organisations across Europe to invest in intelligent energy projects.

Any public or private organisation from the European Union, Iceland, Norway, Liechtenstein and Croatia can and apply and EU funds can be used to cover up to 75% of eligible project costs. The deadline for submitting applications is 26 June 2008. Applications must be submitted online this year.

To find out how to apply visit the website

http://ec.europa.eu/energy/intelligent/call_for_proposals/index_en.htm

Biofuels Topping up the fuel mix

Biofuels have an important role to play in fighting climate change and reducing Europe's dependence on external energy supplies. The Intelligent Energy-Europe programme is supporting projects across the European Union and beyond to promote the development and use of these fuels. This brochure showcases 16 such projects.

The Intelligent Energy-Europe programme promotes energy efficiency and renewable energy in order to create a more energy-intelligent Europe. This series of reports provides examples of projects funded by the programme in key areas. To find out more about the programme visit the website www.ec.europa.eu/energy/intelligent/index_en.html.