

BIOSES

Biofuels Sustainable End use

DURATION OF THE PROJECT

Phase 1: 15/12/2006 – 31/01/2009
Phase 2: 01/02/2009 – 31/01/2011

BUDGET

688.504 €

KEYWORDS

Biofuels, environmental performance, micro-economic analysis, macro-economic analysis, scenario calculations

CONTEXT

The transport sector has a serious impact on the environment because of greenhouse gas emissions and other vehicle emissions. Besides the emission problem, the energy consumption in transport creates a problem of energy dependency as it relies almost completely on petroleum. One of the action points of the European Commission in this frame is to introduce biofuels in transport (see directive 2003/30/EC). Belgium has set a target to reach 5.75% biofuels in 2010. Different scenarios are possible to reach this.

The use of biofuels in the transport sector should happen in a sustainable way that balances the main transport related challenges of greenhouse gas reduction, reducing oil dependency and improving air quality.

PROJECT DESCRIPTION

Objectives

The BIOSES project analyses the impact of different market introduction scenarios of biofuels in the Belgian transport system, with the focus on the end user perspective (demand side). Time horizon for the analyses goes from short term (2010) over medium term (2020) up to long term (2030).

Based on up-to-date data (complemented with own measurements) of energy use, emissions and cost, the project will look into the practical feasibility and the ecological, socio-economic and macro-economic impact of the introduction of biofuels in Belgium. The project will use the results to create a roadmap for the introduction of liquid biofuels in Belgium, with the emphasis on the demand side (end users), identifying technical and policy needs on short, medium and long term.

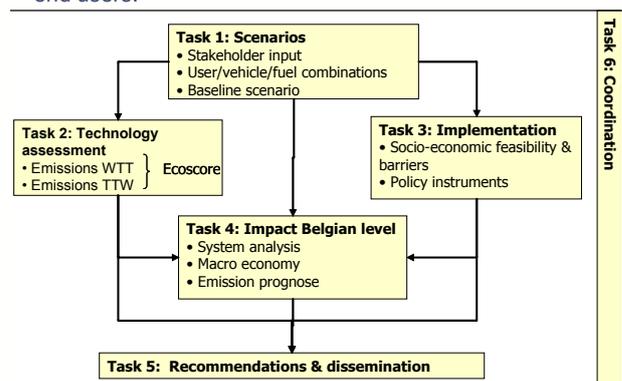
Methodology

The analysis will be done through:

- developing scenarios for fossil fuel and biofuel demand on short, mid and long term, aggregated and differentiated for different user/vehicle/fuel combinations. These scenarios will be discussed in stakeholder meetings;
- analysing the impact of the scenarios from a user perspective: analysis of energy use and emissions related to the introduction of biofuels, both from WTT as TTW perspective. TTW energy use and emissions will be quantified from lit-

erature, complemented by measurements in real traffic circumstances;

- analysing the total energy and environmental impact of the different biofuel vehicles and compare them with conventional and other alternative vehicle technologies on a well-to-wheel basis. Three indicators will be developed: Eco-score, global warming and energy consumption.
- analysing the socio-economic feasibility of the introduction of the biofuel scenarios, possible barriers and develop implementation pathways for the introduction, including different policy instruments; this will lead to a biofuel roadmap for the Belgian situation;
- analysing the impact of the scenarios on the Belgian transport system as a whole. This includes a system analysis, macro-economic analysis and quantifying the effect of scenarios on total emissions related to transport in Belgium.
- drawing up recommendation documents, which will be disseminated through workshops towards policy makers and end users.

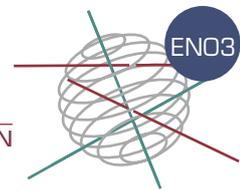


INTERACTION BETWEEN THE DIFFERENT PARTNERS

The three partners in the project all contribute to most tasks and will therefore cooperate intensively. For each task though there is one responsible partner.

VITO coordinates the project and will focus on data collection of vehicle emissions (including measurements), developing scenarios for relevant sectors and calculating the impact of these scenarios to emission prognoses on country level. The policy recommendations and dissemination are VITO's responsibility though the other partners will give important input.





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Biofuels Sustainable End uSe

For VUB three departments are involved. The group ETEC will predominantly work on technology assessment on vehicle level (EcoScore), global warming and energy efficiency. The MECH department will focus on data collection of well-to-tank emissions (fuel production) and will further elaborate a system analysis tool (SPA). The group MOSI will focus on macro-economic analyses based on the SPA calculations.

UCL will focus on the socio-economic feasibility for end users, including an analysis of the cost per biofuel, and look into possible barriers and implementation pathways in preparation of a biofuel roadmap for Belgium.

EXPECTED RESULTS AND/OR PRODUCTS

- Possible scenarios for the introduction of biofuels, directed towards different groups/sectors of end users,
- listing of typical WTT emissions per biofuel chain,
- listing of emission data of vehicles using biofuels (or blends), including results of dedicated emission measurements on new types of vehicles,
- extended EcoScore database with biofuel options,
- overview of well-to-wheel impact

and EcoScore for different biofuels-vehicle combinations towards greenhouse gases, other emissions and energy use,

- further extension of the SPA model (system perturbation analysis) and calculations on Belgian level,
- macro-economic impact and emission prognoses of different biofuel introduction scenarios,
- socio-economic feasibility of the use of biofuels by different end user groups / sectors, including a cost overview per biofuel, possible barriers and possible implementation pathways.
- 2 public reports for end users (1st after 2 years, 2nd after 4 years) on the implications of biofuels for end users on economic, technical, social and environmental level.
- 2 public reports for policy makers (1st after 2 years, 2nd after 4 years) on possible scenarios and a possible roadmap for the implementation of biofuels in Belgium.

Dedicated workshops will be organized for end users (2) and policy makers (2) to present and discuss the project outcomes and advice. The results will also be presented on other for a (e.g. conferences, journals). The public documents will be made available on the project website, which will also be used for the stakeholder consultations.

PARTNERS - ACTIVITIES

VITO-ETE

- energy use and environmental impact on vehicle level.
- market introduction of new vehicle technologies and alternative motor fuels.

VITO-IMS

- evaluation models (incl. scenarios) for policies in relation to sustainable development.

VUB-ETEC

- innovative and environmentally friendly vehicle technologies, with focus on electric, hybrid and fuel cell vehicles, and components such as electric drives and batteries.
- Environmental assessment (EcoScore)

VUB-MECH

- production of thermal and electric energy
- several energy policy activities, biomass in particular

VUB-MOSI

- evaluation methods in the human sciences, in particular for social and economical decision problems. Focus on transport and logistics, sustainable mobility, multi-criteria analysis and location analysis.

UCL-ECAV

- implementation of bio-energy routes, like technical matters, environmental aspects and micro-economic issues.

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Follow-up Committee

For the complete and most up-to-date composition of the Follow-up Committee, please consult our Federal Research Actions Database (FEDRA) by visiting <http://www.belspo.be/fedra> or <http://www.belspo.be/ssd>

