

IEE – Intelligent Energy for Europe

Project Idea “SMOB” (Sustainable MObility by BioFuels)

Introduction

The project aims at spreading Bio-fuels production and use that are produced locally within the public transport in those territories characterized by high level environmental sensibility and high tourist intensity.

The study areas of the project are the territorial areas able to assure the covering of the energetic demand/need of /for specific public transport means, through the local production of Biogas and Bio-Syngas that can be used both for thermal engine supply and for electric engines.

A feasibility study will be carried out: it will concentrate on specific seaside and mountain tourist areas characterized by a high level environmental sensibility; the study will handle the use of bus routes supplied with locally produced Bio fuels.

A valuation of the benefit that will invest the application area will be provided: the terms will be the reduction of the main pollutants and of the greenhouse gases.

Therefore a new system by pilot-project will be implemented on a specific local public transport route. It will be developed for a specific application area and there will be pointed out; the possibility to apply this system on international scale for other seaside and mountain tourist areas characterized by high environmental sensibility.

Project Structure

Project SMOB will be structured in Task on:

- **WP1.**Project management and coordination
- **WP2.**Bio Gas/SynGas production and treatment, Bio–methane production and relative costs
- **WP3.**Using of Bio-methane in public transport (ICE/TG-ALT/FC) and analysis of relative costs
- **WP4.** Monitoring of pollutants, assessment of environmental benefits and relative costs
- **WP5.**Demonstration and transferability (pilot cases)
- **WP6.**National and common dissemination

Partnership:

- Italy: APAT (National Agency for the Environmental Protection and Technical Services), MATTM (Ministry of the Environment and the Protection of the Territory and the Seas), EURAC (European Academy), FEM (Edmund Mach Foundation), Autonomous Province of Trento, CSST (Centre for Studies on Transport Systems), TRANSDOLOMITES, CRPA

(Research Centre on Animal Production), CETA (Centre of Theoretical and Applied Ecology), Brescia University.

- Austria: ABC (Austrian Bio-Energy Centre), Graz
- Spain: Murcia - Ministry of Public Works, Housing and Transports, Directorate General of Transports and Roads / Burgos – Centro Europeo de Empresas e Innovación de Burgos,
- Greece: CREA - Regional Energy Agency of Crete
- Malta: MTA (Malta Transport Authority)

Project Costs:

The project total cost will be contained within **1.5** millions of euro.

Work Packages Description

WP1. Project management and coordination (APAT, Project Leader; EURAC, co-Project Leader)

Coordination of the administrative and financial management of the project, being the connection between EU and partners as concerns: distribution of payments to participating entities and auditing of the same (in accordance with EC requirements); transmission of reports to the partners and to the European Commission, etc...

WP2. Bio Gas/SynGas production and treatment, Bio–Methane production and relative costs (.....)

The resource assessments will be updated and classified by each Partner in the selected pilot area as those with the economic potential for feedstocks for the production of transportation fuels. This will include biomass wastes from manure, agriculture, forestry and municipal wastes. In addition to quantification of the current production of potential and available resources for fuels production an assessment will be made of how to most economically increase production of biomass resources dedicated for the conversion to fuels.

Anaerobic digestion Reactors and Gasifiers will be considered for relative production of Biogas and Syngas; moreover technologies and relative costs will be also analysed.

Biogas and Syngas, after their production in Digesters and Gasifiers, will be treated to separate relatively:

- Bio-Methane from CO₂,
- Hydrogen, CO and Methane from CO₂, N₂,

Hydrogen and CO will be cooled at about 300 °C to obtain an inverse reaction of steam reforming for production of Methane (methanation).

At least only Bio-Methane will be produced, and a cost analysis for gas treatment and Bio-Methane production will be performed.

WP2 Partners:

WP2.1 ABC - Graz

WP2.2 CRPA

WP2.3 FEM*

**These activities will be carried out with CETA collaboration.*

WP3. Using of Bio-methane in public transport (ICE/TG-ALT/FC) and analysis of relative costs (.....)

The produced Bio-Methane will be utilised in different way in function of selected transportation type. In fact Bio-Methane will be utilised in ICE or in TG-ALT/FC for production of electricity to feed train/tram/trolley. An analysis of costs for the utilisation will be performed.

WP3 Partners:

WP3.1 Trento Energy Agency

WP3.2 ABC - Graz

WP3.3 CREA - Crete

WP3.4 Murcia - Spain

WP3.5 MTA - Malta

WP4. Monitoring of pollutants, assessment of environmental benefits and relative costs (APAT)

An specific analysis of the emissions in the region will be conducted based upon the implementation of a settled development model. This model will define the ingredients necessary for different levels of implementation in the region.

Formulation and implementation of an action plan to reduce the vehicle emissions will involve:

- Local agencies for environmental protection or University;
- Representatives from inspection stations, industry and public transportation companies.

Expected results are:

- Type of biomass available and related territorial density;
- Quantity and destination of wastes (manure, agriculture, forest and municipal);
- Data base;
- Average fuel consumption (m³/y);
- Feedback of emissions.

Based upon levels of the implementation of Bio-Methane, the impacts on emissions will be evaluated. This activity will be conducted in coordination with people involved in the reduction of pollution resulting from vehicle emissions in the region.

Products of task will include:

- Organisation and management of data-base referring to the emissions of all potential application areas;
- Definition of measures and scenarios regarding the functionality of new bio-fuel shuttle lines on different application areas;
- Evaluation of the emission impacts in the application areas as the result of various level of implementing the transportation model.

A relative analysis of costs will be performed.

WP4 Partners:

WP4.1 EURAC (Brescia University)

WP4.2 ABC - Graz

WP4.3 CREA - Creta

WP4.4 Murcia - Spain

WP4.5 MTA - Malta

WP5. Demonstration and transferability (pilot cases) (Trento Province)

Based on data of local transportation and relative impact on air quality, municipalities will perform analysis on reduction of pollutants by use of a shuttle bus fed only with bio-fuels. Tests performed in Trentino Municipality will be utilised for mobility analysis.

Test performed in Trentino Municipalities will be utilised for mobility analysis in other localities.

WP5 Partners:

WP5.1 Transdolomites

WP5.2 Trentino Municipality

WP5.3 EURAC/CSST

WP5.4 ABC - Graz

WP5.5 Murcia - Spain

WP5.6 CREA - Crete

WP5.7 MTA - Malta

WP6. National and common dissemination (MATTM)

The objective of this task is that to promote the Bio-Methane usage from economic point of view:

- Market analysis
- Cost-benefit analysis
- Identifying barriers to implement Bio-Methane
- Suggestions to promote Bio-Methane according to regional situation
- Seminars will be arranged with different topics related to Bio-Methane (cost-benefit and market); these seminars will provide necessary information for final report:

WP6 Partners:

WP6.1 FEM

WP6.2 ABC - Graz

WP6.3 CREA - Crete

WP6.4 Murcia/Burgos - Spain

WP6.5 MTA - Malta

Rome - May, 27 - 2008

SMOB PROJECT

